**UNIVERSITY OF GHANA**

**COLLEGE OF HUMANITIES**

# SOCIAL MEDIA HEALTH INFORMATION: A STUDY OF USER ENGAGEMENT AND USER EMPOWERMENT AMONG HIGHER EDUCATION STUDENTS IN A DEVELOPING COUNTRY

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**(10876777)**

**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA-LEGON, IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF A MASTER IN PHILOSOPHY DEGREE IN MANAGEMENT INFORMATIONS SYSTEMS**

## DECLARATION

I do hereby declare that this work is the result of my own research under supervision, and has not been presented by anyone for any academic award in this or any other University. All references used in the work have been fully acknowledged.

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## DEDICATION

To my Lord and personal saviour Jesus Christ; my hope and my trust. Psalm 71:5.

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## LIST OF ABBREVIATIONS

Health Information Seekers ........................................................................................ HIS
Social Media Health Information .............................................................................. SMHI
Online Health Information Seekers. ........................................................................ OHIS

## ABSTRACT

Recent studies have emphasized the improvements in social media health information seeking. However, there are persistent challenges regarding user health information-seeking behaviour. Considering the inadequacy of knowledge in the area of social media health-seeking behaviour in developing countries, this study sought to comprehensively examine the factors impacting students' intention to use Social Media Health Information (SMHI), with a specific focus on the role of psychological empowerment. Additionally, the study aims to explore how psychological empowerment interplays with students' intention to use SMHI and how both these factors collectively influence the intention to recommend social media health information.

Existing literature on social media health information seeking has seldom focused on user engagement and user empowerment. Consequently, many studies have called for multidisciplinary research into social media health information-seeking behaviour. To address this gap, the study adapted a conceptual framework of the Unified Theory of Acceptance and Use of Technology and the Psychological Empowerment Model. A quantitative approach and a survey were developed to investigate user engagement and empowerment determinants. Furthermore, the study used a stratified random sampling technique to choose 300 respondents from the University of Ghana and the University of Professional Studies. Also, the Partial Least Square Structural Equation Modelling was used to analyse the primary data collected.

The findings from the study showed that for user engagement, performance expectancy and facilitating conditions were the main determinants of students' intention to use SMHI. Social influence and effort expectancy did not influence students' intention to use SMHI. Additionally, psychological empowerment proved to be a significant determinant of students' intention to use SMHI. Finally, psychological empowerment and intention to use were

identified to have a positive influence on students' intention to recommend SMHI. However, psychological empowerment proved to have a more significant influence on the intention to recommend.

With implication to policy, the study proposed that policymakers should consider the impact on user behaviour when implementing laws and policies regarding health information on social media and other online platforms. The policies implemented should give users autonomy in accessing health information online. Furthermore, the study addresses a theoretical gap in research in the context of social media health information by combining the Unified Theory of Acceptance and Use of Technology Model and the Psychological Empowerment Model to investigate health information seeking behaviour. Also, policies regulating online health information content should be strict to avoid misinforming users about their health. The study recommends that future research should adopt a qualitative or mixed-method approach to adequately explore the phenomen

# CHAPTER ONE

# INTRODUCTION

## 1.0 Research Background

Presently, over 65% of the world's population have access to the internet largely as a result of massive technological advancements and lower-cost of access to broadband internet (Johnson, 2022). Consequently, the increase in access to the internet has increased access to social media globally(Zhuravskaya et al., 2020). Studies have defined social media as a platform or tool that leverages internet capabilities to enable individuals or groups of individuals to gather and communicate. Social media allows these individuals or groups of individuals to create, share and distribute information in the form of ideas and experiences through text, videos, images, etc. (Zhou et al., 2018). Also, social media sites present a range of features that serve different purposes for users. These purposes range from virtual reality and gaming environment (second life), social networks (Facebook, Twitter), media sharing (YouTube), content production (Tumblr), information aggregation (Wikipedia), and professional networking (LinkedIn). (Dizon et al., 2012; Lambert et al., 2012). In the past decade, popularity and usage of social media has increased massively globally (Boulianne, 2015). For example, a 2021 report by Pew Internet & American Life Project revealed that over 70% of Americans use social media to connect, entertain themselves, and share information. According to the report, in 2005, 5% of Americans used social media, this implies that there is a 65% increase in social media usage from 2005 to 2021. The report further revealed that the number of older adults using social media has increased and Facebook and YouTube are the most popular social media sites in America (*Pew Research Center*, 2021). Although America has recorded a high adoption of social media within the past decade, 61% of adults browse for health information online, and 39% utilise social media sites like Facebook (Harris et al., 2013). Similarly, adoption rates in

Europe vary, for example, 45% of health facilities in Norway and Sweden use LinkedIn, and 22% use Facebook for health information; German hospitals recorded less than 10% social media health information adoption rate (Nölke et al., 2015). Additionally, in Africa, there is also an increase in the usage of digital technologies and this has consequently increased use of social media considerably, especially among the young and growing population of the continent (Delloitte, 2016; World Health Organization, 2014).

Furthermore, a study by Zhou et al. (2018) attributed the upsurge in social media usage to a corresponding increase in online health communities that are creating, sharing, and distributing health information for information seekers. Health information seeking as described by Griffin et al. (1999), is the active, intentional efforts made by an individual to acquire specific knowledge and information on health. Correspondingly, more health information seekers (HIS) are turning to social media for information about health, medical treatments, and medications and to connect and share personal health-related experiences with other HIS or health professionals. (Chretien & Kind, 2013; DeAndrea & Vendemia, 2016). Additionally, social media provides an avenue for HIS to join virtual communities, receive financial aid, engage in research, set exercise goals, and track personal progress; individuals can use ratings and reviews from other HIS to differentiate between available information provided (Lee Ventola, 2014). Also, studies have identified two types of health information: experienced-based information which is based on a layperson's experience of health issues, and expert-based information which is authored by medical professionals (Tuckett, 1985). Currently, both types of health information are present on social media, however, reports from Pew Internet & American Life Project show that although health professionals contribute to online health information, individual HIS are responsible for an increasing number of health information present on the internet (Fox & Duggan, 2013). It is estimated that 26% of HIS read or watched someone else's experience about a health issue and 16% of online HIS intentionally sought for others' experiences on a particular health issue (Fox, 2015). Additionally, a study showed that social media allow information seekers to either find peers experiencing similar health concerns or get professional opinions on certain health conditions. (Yonker, et al., 2015).

According to Rus and Cameron (2016), social media presents unparalleled opportunities to improve health communication and information; the constrain to didactic transactions in media and medical settings delivered to a passive audience are no longer valid. Consequently, HIS are actively seeking information from social media more frequently than they do from their health professionals (Fox & Jones, 2009), thus the need to understand the importance and effects of using social media resources in keeping up with the evolving trends in health information communication. Rus and Cameron (2016), explained that researchers will have to understand the factors influencing user engagement with health information in the social media context to leverage social media for health information Also, there should be an understanding of the relevant features required for social media health information (SMHI) to be vital in promoting user engagement. Although social media health information has been leveraged in numerous ways to improve healthcare and health communication, research on the topic is still in an early stage. Zhou et al (2018) confirmed this by stating that many issues and challenges concerning behavioural, technical, and data management aspects of social media health information and communication have inadequate solutions. The study also proved that there is a lack of empirical evidence to support the effectiveness of social media health information and communication and some findings are inconclusive or contradictory.

As stated earlier, Rus a Cameron (2016) explained the need for research into the area of user engagement concerning social media health communication. Further conclusions from the study indicated that creating information that engages the user is important in enhancing the user's engagement with social media health information. Consequently, user engagement in social media health information gives the user the ability to make their own health decisions;

this is crucial for health care policymakers and relevant stakeholders since user engagement forms a pivotal part of improving contemporary health care delivery (Khodyakov et al., 2017). Terms such as 'user participation', 'user involvement', and 'user empowerment' have sometimes been substituted for user engagement (Barello et al., 2014). Nonetheless, some studies have explained that user empowerment differs from user engagement. In Khuntia et al. (2017), the researcher defined an empowered user as one who uses available information to make decisions in changing their lifestyle regarding disease conditions and overall health issues. These are HIS who know how to make the right inquiry about their health by asking relevant questions, seeking care when necessary, and taking responsibility for their health. Although this definition of user empowerment might be similar to user engagement, some research points to the fact that user empowerment influences user engagement (Graffigna et al., 2013). The study by Graffigna et al. (2013), states that user empowerment is relevant in sustaining user engagement, thus, information technologies are providing solutions in the form of mobile app-based consultation, telehealth, and internet-based online health services (under which social media health information can be classified). These solutions are aimed at improving user empowerment which directly influences the sustenance of user engagement. Furthermore, a study by Fox and Duggan (2013), stated that user engagement in seeking health information online in the US has increased from the previous 30% recorded.

### 1.1 Research Problem

Recent studies have shown that social media has made tremendous strides toward improving health information seeking. Notwithstanding the improvements and advantages, social media faces a lot of challenges regarding user health information seeking (Li, Wang, Lin, & Hajli, 2018). Many studies have focused on the issue of social media and health information seeking, for example, a study by Moorhead et al. (2013) reviewed the literature to identify the benefits and uses of social media for health communication. Furthermore, the study investigated the limitations faced by health information seekers (HIS) and professionals and identified gaps in the literature. This study used literature from 10 electronic databases and made recommendations for future online health information. Similarly, Afful- Dadzie et al. (2021), reviewed 93 published articles between 2000 and 2019 to investigate how the issue of the quality of social media health information (SMHI) has been addressed. The researchers found that there is an alarming trend in the quality of health content and the quality of communication on social media.

Another study by Tennant et al. (2015), focused on investigating the extent to which social determinants, electronic devices, and sociodemographic influences the use of social media for health information among older adults and baby boomers in the US. This study adopted a structural influence model of health communications as the theoretical framework for the research. Further research by Diviani et al. (2016), employed a mixed-method approach and a conceptual framework to explore the link between health literacy appraisal of online health information. These studies have all conducted research in the area of social media health information from diverse perspectives.

Recent studies have explored more into the phenomenon of social media health information with a focus on the perspective of the user. For example, in 2016, Rus and Cameron (2016), conducted a quantitative study using the common-sense model of illness self-regulation to analyze health information between diabetes-related Facebook (social media) pages to identify message features predicting user engagement. Following Rus and Cameron (2016), Zhao and Zhang (2017) also conducted research by reviewing 21 carefully selected articles on user health information seeking on social media. The objective of the study was to summarize current research related to social media health information seeking by users. A subsequent study by Li et al. (2018) was conducted to investigate the factors that affect users' intentions to seek and share health information on social media. This study developed a net-valence model based on the social support theory and earlier e-service adoption research as the conceptual framework for the research and conducted two studies in Italy and China to test the model. Although all the studies conducted various research concerning health information, the issue of user empowerment and user engagement with social media is arguably scanty.

Fernández-Luque and Bau (2015) stated that there is a need for multidisciplinary research into the use of social media for health information given the lack of knowledge in the area. Also, Zhao and Zhang (2017) affirmed that although studies have made contributions to health information seeking, earlier studies have seldom provided insight on how current improvements in social media have influenced HIS' behaviour. Furthermore, studies by Zhou et al. (2018), identified a similar gap in literature by stating that there exist user behavioural issues and challenges in social media health information seeking that remain unsolved. This further shows that very few studies have explored user behavior by combining user empowerment and engagement in the social media health information context to investigate how user empowerment influences user engagement. Also, the researcher identified studies that used the Unified Theory of Acceptance and Use of Technology (UTAUT), Technology Acceptance Model and Self-efficacy theory to explain user behavior in health information seeking but none combined the empowerment model and the UTAUT to explain user behavior with social media health information seeking (Cilliers et al., 2018; Kuika et al., 2020; Tennant et al., 2015) indicating a gap in theory. Finally, most of the studies were conducted in the US, Asia, and Europe; research on the issue in Africa especially Sub-Sharan Africa is very scanty. Most of the studies in Africa were conducted in South Africa, for example, Cilliers et al. (2018) studied user behavior with health information among university students in the Eastern Cape, South Africa. Similarly, Kubheka et al. (2020), also conducted a study in South Africa to analyze the challenges and use of social media for health information. This clearly indicates a gap in context with regard to studies on social media health information. Nonetheless, Fayoyin (2016), researched to investigate how social media is transforming health information in Nigeria. Therefore, from the above discussions, there is an issue gap, theory gap, and context gap that needs to be addressed. This can be achieved by investigating another perspective of the issue, social media health information (SMHI), from a user empowerment and engagement angle by combining two theories to get more understanding in a developing economy context.

## 1.2 Research Purpose

The main purpose of this research is to comprehensively examine the factors impacting students' intention to use Social Media Health Information (SMHI), with a specific focus on the role of psychological empowerment. Additionally, the study aims to explore how psychological empowerment interplays with students' intention to use SMHI and how both these factors collectively influence the intention to recommend social media health information.

## 1.3 Research Objectives

The objectives set for this study are:

1. To investigate the determinants of students' intention to use SMHI.
2. To investigate the influence of psychological empowerment on students' intention to use social media health information.
3. To investigate the influence of both psychological empowerment and students' intention to use on intention to recommend social media health information.

## 1.4 Research Questions

The questions set for this study are:

1. What are the determinants of students' intention to use SMHI?

2. What is the extent of the influence of psychological empowerment on users' intention to use SMHI?
3. What is the extent of the influence of both psychological empowerment and students' intention to use on intention to recommend SMHI?

### 1.5 Significance of the Study

The significance of this study is in three main aspects namely: research, policy, and practice. Concerning research, this study seeks to add to an existing body of knowledge in the area of health information with a focus on social media health information from a developing country perspective. The study will present another dimension on which the topic of health information can further be investigated.

On the subject of policy, this study will inform regulators and policymakers in the health information domain on the weight of social media health information on the user and how policies can be drawn to mitigate any risk associated with social media health information. The study will also influence how policies will be drawn to regulate the activities of all relevant stakeholders in the health information domain.

On the aspect of practice, this study will present a different view to relevant stakeholders (which may include but are not limited to health information seekers (HIS), health professionals, and health infomediaries) to help in improving operations and development of health information on social media. HIS will utilize social media health information more effectively.

### 1.6 Chapter Outline

The research is organized in the following chapters. The first chapter is the introduction which comprises of the research background, research problem, research purpose, research objectives, research questions, research significance, and organization of the research; this chapter gives a general overview of the study.

The second chapter is the literature review which contains a review of related literature for the study; related literature on the key concepts derived from the topic of the study. This chapter reviews scholarly material to discuss trends and issues about social media health information.

Chapter three contains the research framework and constructs of the framework related to the study and further justifies the choice of the chosen framework.

Following chapter three is chapter four which covers the study's methodological approaches, highlighting the sampling techniques and sample size, study population, data collection techniques and instruments, data processing and mode of analysis, and data processing.

Chapter five covers the data presentation and analysis of findings; this chapter presents detailed reports on the findings from the data collected from the various respondents.

In the next chapter, chapter six, the findings are further discussed concerning the research framework to critically answer the research questions to meet the research objectives.

Chapter seven is the final chapter and that will comprise the summary, recommendations, limitations, future research directions, and finally conclusions. References and appendix follow this chapter.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Chapter Overview

This chapter detailed a review of relevant literature in the area of social media health information carefully identifying studies that have conducted research on various aspects of SMHI. The literature reviewed allowed the study to define social media, identify the role of social media in health information, expose the challenges and benefits of SMHI and outline certain factors that affect SMHI-seeking behaviour. The chapter presents theoretical approaches used in the literature review.

## 2.1 Social Media

Social media serves as a platform where people network, create content, bookmark, and share at a rapid rate (Asur & Huberman, 2010). Many researchers have defined social media based on the purpose and use of the technology. A more explanatory definition by Agarwal (2010) explains that social media as a collection of a number of services ranging from blogs, networking sites, wikis, media sharing sites, etc which have the capability to stand alone or be integrated with other sites to produce user-developed widgets. According to Agarwal (2010), social media generally possess the following characteristics:

1) Accessibility: Readily available usually for free or at a low-cost.
2) Reach: Social media sites have a global audience since it leverages internet resources to operate.
3) Recency: Communication is instantaneous with an almost zero-time lag.

4) Permanence: Social media sites can be altered at any time. Users can edit their profiles, blog posts, etc unlike print media that once published cannot be edited instantaneously.
5) Usability: No special skill is required to create content. Technologies are provided at no operational costs.

Furthermore, the characteristics of social media presented above make it susceptible to certain challenges. Researchers have outlined some of the challenges as follows:

1) Spam – Spam is irrelevant and inaccurate information that makes information search on social media difficult thereby deterring users from using the resource and acknowledging social media as a credible information source. Low barriers and open standards have made social media an easy target for spammers (Oard, 2006).
2) Information overload- According to (Agarwal et al., 2008), social media faces the issue of information overload since there is a rapid rate of content generation by users all over the world. It is likely that users get easily overwhelmed with information on social media and search engines are forced to present fresh information rather than relevant and accurate information. Following what is happening on social media becomes a challenge.
3) Contextual relevance- Due to the vast difference in culture and orientation of social media users and the global reach it provides, the information presented on social media becomes highly contextual in the sense that what is relevant to one user will be totally irrelevant to another (Zhu et al., 2008).
4) Intentional misspelling and colloquial usage: Once again the open standards of social media present another challenge of colloquial usage or intentional misspelling of words that may distort the understanding of the content. Although some misspellings are used

to stress emotion or convey some sentiment of a sort, users that are not familiar with the misspelling may not get the intended meaning of the word (Prevost, 1996)

5) Up-to-datedness of information: According to Hayes and Avesani (2007), social media users have varied interests that are short-lived, hence there is a tendency for users to drift their attention from one topic to another or from social media itself. Social media communication is highly dynamic with an almost zero lag time between communication which makes it easier for users' attention to drift away from a topic of interest.

According to Agarwal (2010), social media can be categorized under various functionalities. Below is a table showing the various categories and examples of social media sites that fall under that category.

**Table 2. 1 Social media sites and their categories**

| Category | Social Media Sites |
|---|---|
| Blogs | Wordpress, Blogger, Blogcatalog, MyBlogLog |
| Media Sharing | Photobucket, Multiply, Flickr, Justin.tv, Ustream, YouTube |
| Micro Blogging | Twitter |
| Wikis | Wikipedia, Scholarpedia, AskDrWiki, Ganfyd |
| Social Network | Facebook, MySpace, Bebo, Instagram, Snapchat |
| Social News | Digg, Reddit |
| Social Bookmarking | StumbleUpon, Del.icio.us, |

Source: (Agarwal, 2010)

### 2.2 Social Media as Source of Health Information

According to various studies, the internet has become the leading choice for health information (Case et al., 2004; Hesse et al., 2005). The range of health information sources provided by the internet includes search engines, health websites, health infomediaries, social networking sites (social media), and other online health communities. These sources offer diverse functionalities for interactivity with some allowing for only information access and others allowing user participation. For this reason, content from the various sources varies in diversity, quality, quantity, accuracy, and comprehensiveness (Sussanah Fox & Purcell, 2010; Zhang, Sun, &

Kim, 2017; Zhang, Sun, & Xie, 2015). Therefore, selecting a source for health information is vital since users have to consider certain influential factors like the nature of information needs (e.g. chronic or acute needs), characteristics of individual users, user-source relationships, and source attributes (Zhang, 2014).

Although social media boasts of diversity, user participation, and quantity in health information, studies have proved that quality is the main challenge in social media health information (Madathil et al., 2015; Moorhead et al., 2013). Nonetheless, social media applications leveraging internet resources continuously serve as a source of education, empowerment, and engagement for both consumers and health care providers and professionals. From health conditions management to emotional support, consumers use social media for various purposes(Zhao & Zhang, 2017). Furthermore, in the Web 2.0 era, social media is considered an evolving, pervasive, and increasingly influential aspect of our daily lives and health behavior (AuYong & Yeoh, 2017). Consequently, the Medicine 2.0 concept was developed to match with the improvement of internet resources afforded by Web 2.0. Medicine 2.0 is identified by five major themes namely:1) participation, 2) social networking 3) openness 4) collaboration and 5) apomediation (Eysenbach, 2008). However, Eysenbach (2008) indicated that these themes are effectively executed through social media which serves as a central venue for merging Web 2.0 and Medicine 2.0 to engage users in seeking relevant health information. Additionally, social media serves more effective, personal, and relevant health information to the user as compared to information retrieved from search engines(Zhang et al., 2017). Therefore, there is an implication from these studies that social media is considered within the health information domain as a valuable source of information.

**Table 2. 2 Definition of Key Terms**

| Term | Definition | Source |
|---|---|---|
| Social Media | A group of internet-based applications that leverage Web 2.0 technologies and ideologies and also permit exchange and creation of user-generated content. | (Kaplan & Haenlein, 2010) |
| Health Information | Literature on general health, specific populations, drugs, supplements, environmental health, toxicology, clinical trials, genetics, and biomedicine. | (Oelschlegel & Gonzalez, 2014) |
| Health Information Seeking | Random use of available media resources for an interpersonal conversation on any health-related topic. This includes behaviours such as asking friends, family or medical professionals about healthrelated issues, using search engines to find health information on the internet, viewing programs about health treatments and diagnoses etc. | (Niederdeppe et al., 2007) |
| Health information seeker/user/consumer | Individuals who deliberately seek information about health-related issues, for example, disease prevention and treatment, health promotion, drugs and supplements etc. | (Lewis et al., 2006) |
| User Engagement | The quality of a user's experience with an online application that is expressed through repeated and continuous usage of that application. | (Lalmas et al., 2014) |

### 2.2.1 Benefits of Social Media Health Information (SMHI)

Many studies have emphasized the rise in the use of social media as a tool for the search for health-related information (Househ et al., 2014). This rise, as revealed by (Househ et al., 2014) can be attributed to the benefits HIS derive from using social media to obtain health information; health information seekers (HIS) have rather developed an active attitude in the search for online health information (OHI) to support health decision making (de Martino et al., 2017). Additionally, a study by Yonker et al. (2015), made several discoveries on the benefits of SMHI. The researchers found that social media provides an alternate platform to the traditional office setting thereby making it possible to discuss and engage adolescents and young adults on very delicate and private health issues. Considering how involved these adolescents and young adults are in social media, the study described this benefit as a "gold mine" of incorporating social media in health information. Also, the study revealed that the postings of health information by social media users present healthcare providers with the opportunity for timely intervention in identifying risky health practices and behaviours. A general conclusion made by this study stated that the frequency with which health issues are discussed on social media, especially among young people will generally improve their lives. Similarly, a study by Zhao and Zhang (2017), proved that HISs use social media for diverse purposes including emotional support, social support, empathy, and health decision management. This happens through interactions on social media platforms which consequently empowers and educates HISs in finding more personalized solutions to their health needs. A further study by Benetoli, Chen, and Aslani (2019) confirmed the finding by Zhao and Zhang (2017) that social media health information empowers the user. The researchers explained that HISs viewed themselves positively and as a result, experienced an increased sense of empowerment. Furthermore, Benetoli et al. (2019), also discovered that social media health information is easy to access, user-friendly, and easy to understand thereby having a greater impact on HISs than information received through traditional sources (healthcare providers); this was attributed to the fact that information posted on social media is created by the users themselves.

Evidently, the benefits of social media health information have been adequately explored by research and user empowerment emerged as a benefit identified by several researchers. This presents the need to focus on exploring the aspect of user empowerment.

### 2.2.2 Challenges of Social Media Health Information

Over the years, the influence of social media on the lives of people all over the world cannot be over-emphasized. Social media use has transcended from social networking to health information seeking (Zhan et al., 2016). In 2016, a survey by Pew research center identified health information seeking on social media as a consistent activity with 33% of people having discussed health-related issues on social media over the past seven years (Chen et al., 2016). Notwithstanding the tremendous increase in SMHI seeking, there are several issues that raise concerns. Studies have identified the issue of trust as a challenge facing social media health information; Health information seekers (HIS) do not fully trust social media health information (Antheunis et al., 2013). According to a survey by Fox and Duggan (2013), 20% of SMHI seekers find health information on social media to be inconsistent when compared to professional opinion. Additionally, a study by Wang and Li (2014) proved that health content on social media is generated by both professionals and laypersons; with a lack of professional knowledge, laypersons may provide health information that is not credible hence raising the issue of trust. If social media users trust health information provided by the various social media platforms, there is a probability that they perceive that information as one that is quality and may positively affect user engagement on social media health information; this makes it important to understand the issue of trust as a challenge in social media health information. In examining the role of trust toward SMHI, Li and Wang (2018), confirmed that trust is essential in maintaining user engagement and the absence of trust may deter users even if the information provided by social media may be useful. The paper concluded that trust remains the biggest challenge in gaining user engagement on social media health information although there is an increase in the number of users seeking health information.

In addressing the issue of trust, the quality of information plays a crucial role. Over ten thousand websites and social media sites serve as a source of online health information thereby presenting the challenge of determining quality information on one social media site from the other (Afful-Dadzie et al., 2016). According to Afful-Dadzie et al. (2016), the layperson struggles to determine what health information provided online is quality, and therefore to address the issue, the study used a fuzzy VIKOR method to derive a framework that will enable users to determine quality health information from substandard health information. Although the study derived a framework to address the issue, a limitation in conflicting criteria was identified and the researchers directed towards a strategic resolution of the conflict. In contrast, Diviani et al. (2016), proved in their findings that many users are not aware of the evaluation criteria used in determining the quality of health information online. Although many use some criteria in evaluating the quality of health information, the study proved that the criteria used are often not established or proven to be ineffective. From the above studies, the researcherderive a vivid representation of the challenge of determining the quality of health information on social media; it is clear that the solution to this challenge though available to the user, is fairly unknown and under-utilized. Many questions have been raised about the authority and quality of SMHI due to the nature in which it generates content; it is argued that its user-generated content may inhibit the usefulness of SMHI (van de Belt et al., 2013).

### 2.3 Factors Affecting Social Media Health Information Seeking Behaviours

As explained by de Martino et al. (2017), social media presents the user with some benefits as well as challenges. These benefits and challenges together with other factors like cultural variations, self-efficacy and perceived risks, worry, advancement and adoption of digital media and technologies and many more are bound to influence the behavior of Health Information Seekers (HIS) on social media. Researchers have conducted studies that prove how these factors affect the behavior of HIS. Furthermore, existing research has pointed toward the area of online health-seeking behavior as one that needs to be explored extensively (Zhao & Zhang, 2017). Hence, the researcher reviews literature to analyze some of the factors that affect SMHI-seeking behavior.

#### 2.3.1 Cultural Variations

In 2016, Lin et al. (2016), conducted a comparative survey among respondents from the USA, Hong Kong, and Korea to investigate the cultural variation in how youths within these three countries engage with social media health information and the level at which these youths exercise self-disclosure of health-related issues on social media. The study discovered that respondents from the Asian continent recorded a higher level of online self-disclosure than those from the USA. Likewise, the study discovered that it is more popular among respondents from the USA to check others' experiences on health-related issues on social media than their Asian counterparts. This study revealed cultural variations in online health-seeking behaviours among respondents from two parts of the world. Similarly, Song et al. (2016), in their study aimed to investigate cultural variations among the same set of respondents as Lin et al. (2016). This study focused specifically on patterns of Online Health Information Seekers (OHIS) behavior from perceptions of OHI sources with finding showing that 51.5% of Americans, 76.9% of Koreans, and 81.4% of Hong Kongese reported using social network sites for health information, whereas 66.2% of Americans, 86.1% of Hong Kongese, and 94.6% of Koreans reported using blogs for health information. Further findings also revealed that although social media serves as a vital health information source among all three cultures, there are evident differences in the type and preference of health information posted or shared among the three cultures. Furthermore, findings from the study supported the derived hypothesis based on the Nisbett Cultural theory which hypothesized that, as compared to Americans, Koreans and Hong Kongese are more likely to trust and use SMHI. Finally, Song et al. (2016), concluded with the assertion that the structure of social media affords OHIS a higher chance of finding someone sharing a rare health condition, hence, health needs based on cultural variations may be met. The above studies make it clear that cultural variations affect the OHIS behavior of HIS.

While the applicability of the results is somewhat limited due to variations in the studies, Song et al. (2016) and Lin et al. (2016) focused on participants from the USA, Korea, and Hong Kong, whereas Li et al. (2018) adopted the net valence model and social support theory to cross-culturally compare individuals from Italy and China. The study focused on factors that affect HIS's intention to seek and share health information on social media. The findings from this study corroborate findings from both Lin et al. (2016) and Song et al. (2016) in that, there were significant variations between the two culture's intention to seek and share health information on social media. Consequently, the relationship between perceived risk and relevant factors is stronger for Italians than for the Chinese; likewise, the relationship between perceived risk and intention to seek or share information is stronger for Italians than for the Chinese. Therefore, Li et al. (2018) provide more evidence on the role of cultural variations on the OHIS behavior of HISs from a different context which allows for better generalization in accepting the fact that cultural variations indeed affect OHIS behaviours.

### 2.3.2 Self-Efficacy, Perceived Risk, and Role of Worry

To understand how worry plays a role in influencing OHIS behavior, Lee and Hawkins (2016), conducted a study to ascertain whether the level of worry changes after HISs obtain health information online. Results from this study showed that levels of worry decrease in HISs as they obtain information on health-related issues online; perceived knowledge about a health issue increases which ultimately decreases the level of worry. Furthermore, results from Lee and Hawkins (2016), established the importance of investigating the cause of worry to predict the behavior of HIS. The investigation revealed that when worry is caused by a lack of knowledge of the nature of a health issue, HISs tend to have an increased desire to seek health information online. In other words, HISs perceived risks associated with the health issue and hence developed a desire to seek information online. The issue of perceived risk as a factor affecting OHIS behavior was investigated in a study by Deng and Liu (2017). The study integrated social support and risk perception attitude framework to understand OHIS behaviours on social media from patients in 3 hospitals in China. Concurrently, the study sought to investigate how self-efficacy influenced the behaviours of HIS. Furthermore, the study presented results proving that perceived risk and self-efficacy considerably affect HIS behavior in their intention to use SMHI. Although both perceived risk and self-efficacy affect behavior, the study showed that self-efficacy exerts a significantly higher effect on HIS intention to use than perceived risk does. In these studies, Lee and Hawkins (2016) and Deng and Liu (2017), analyzed the behavior of HIS on how they perceived risks associated with health issues, the role worry plays in motivating HIS to seek information, and the significant effect of self-efficacy HIS intention to use SMHI. All three factors serve as motivating factors in influencing HIS in using SMHI

### 2.3.3 Advancement and Adoption of Digital Media and Technologies

Health communication is faced with challenges in finding new and improved ways of communicating with relevant stakeholders within their scope of operation as existing channels are now considered obsolete (Lober & Flowers, 2011). Consequently, healthcare providers have adopted social media as an alternate channel to engage patients and HIS. As of 2011, it was estimated that 1229 hospitals in the USA use Facebook, YouTube, Twitter, Foursquare, and blogs as information communication channels (Thielst, 2011). Findings from this study indicated that the adoption of digital media specifically social media as an alternate channel for health information communication influenced HIS behavior towards SMHI. Theilst (2011) indicated that social media addressed the challenges facing health communication, thereby improving the ease of access to health information for HIS.

In a more recent study, findings showed that the surge in the adoption and use of SMHI and other online health information channels for health communication and development can be attributed to advancements in digital technologies (Fayoyin, 2016). Taking a look at a study in a more related context, Cilliers et al. (2018) conducted a study in South Africa to examine the adoption of mobile technologies in accessing SMHI among university students in South Africa. Using the Unified Theory of Acceptance and Use of Technology (UTAUT) framework, the results proved that over 77.2% of the students indicated an above-average use of digital devices. Based on this statistic, it was evident that students are likely to use their devices to access health information on social media if they perceive the device as useful and easy to use for that purpose. A clear deduction made from the finding is that the usage of digital devices as covered in the UTAUT framework explains the behavioural intention of HIS to use SMHI. Similarly, an assumption drawn from the finding is that adoption of technology influences the behavior of HIS toward accessing SMHI.

#### 2.3.4 Electronic-Health (e-health) Literacy and Socio-demographic Variables

According to Eysenbach (2001), e-health is health information delivered and health services rendered over the internet and other related technologies. Therefore, social media, which is an aspect of the internet plays a huge role in e-health promotion and e-health literacy also affects SMHIS behavior. This is confirmed in a study by Diviani et al. (2016) when findings showed that HIS with high e-health literacy vary from HIS with low e-health illiteracy in the criteria they both use to evaluate information on social media and the extent to which they rely on SMHI. HIS with high e-health literacy tend to use established criteria for evaluating the information on social media and are more reliant on SMHI than HIS with a lower level of e-health literacy. Previously, findings by Tennant et al. (2015) to find the extent to which sociodemographic factors affect e-health and the use of online health information proved that gender, age, ethnicity, and other social determinants like employment status, and marital status are not significant predictors of the use online health information. However, educational level and frequent use of electronic devices appeared to be major predictors of the use of online health information. On the other hand, another study by Jacobs et al. (2017) showed that age, socioeconomic factors, and ethnicity influence health-seeking behavior. Contrary to Tennant et al. (2015), Jacob et al. (2017) showed that being younger was a predictor of health information-seeking behavior; younger Americans were more inclined toward online health information than older Americans. Additionally, ethnicity was also identified as a predictor of online health information seeking. Nonetheless, both studies identified education as a predictor of online health information by proving that HIS with higher education are more likely to use online health information than HIS with relatively lower education. Both studies made assumptions that indicated that education influenced e-health literacy which in turn influences the intention to use online health information.

### 2.4 Contextualizing User Engagement and User Empowerment with SMHI

In decades past, studies have shown there is a need for the interaction between humans and technology to move from just usability to understanding and designing for a more engaging user experience (Hassenzahl & Tractinsky, 2006; Laurel, 1993). Consequently, many studies have defined user engagement in different contexts and fields, for example, Laurel (1993), defined user engagement as a first-person experience coupled with playfulness and sensory integration. Similarly, Quesenbery (2003) stated that user engagement is an aspect of usability highlighted by the enjoyment and fulfillment obtained by a user at the first interaction with an application. Furthermore, according to Lalmas et al. (2014), to satisfy sensual and realistic needs, users tend to spend a lot of time, attention, and emotion when using any online application, thus user engagement is considered a key concept in developing online applications. Therefore, Lalmas et al. (2014), claimed that user engagement goes beyond a single usage of the application, rather user engagement measures the active, intentional, and continuous usage of a digital resource. The authors further argued that the success of an application is measured not just by usage but rather through engagement. This argument was confirmed by O'Brien and Toms (2008) by giving examples of what constitutes a failure of a variety of applications or online technologies with respect to user engagement. According to O'Brien and Toms (2008), a website that is boring and unable to transmit information or an online forum that fails to provoke a sense of community among users is hastily discarded. Likewise, a failure to engage users on an e-commerce site may result in an inability to make sale on that site. Collectively, these examples emphasize the importance of user engagement in the success of any technology. Drawing parallels from the mentioned examples, the researcherdeduce that 1) user engagement is very vital in determining the success of SMHI and 2) user engagement with SMHI can be determined by the intentional and continuous use of social media for health information. Therefore, for the purposes of this study, the researcher concludes that user engagement can be measured as the intention to use an SMHI.

From both practical and research standpoints, empowerment is considered a vital tool in promoting particular behaviours and attitudes in individuals (Knezovic & Musrati, 2018). This view was confirmed by Spreitzer's (1995) definition of psychological empowerment which states that psychological empowerment is an inherent motivation focused on increasing the user's level of power in decision making. Therefore, in the context of SMHI information, user empowerment can be described as the inherent motivation a user receives from using SMHI and can be measured by the degree of power a user possesses that enables health decision-making. Also, Macintosh (2004), described psychological empowerment as the utmost expression of engagement. This implies that when a user is psychologically empowered, it reflects in their intentional and continuous use of an SMHI.

**2.5 Related Literature on Social Media Health Information**

According to Knopf (2006), a literature review should specifically summarize the vital conclusions related to the research interest and evaluate the state of knowledge in the research interest. For that reason, this study carefully selected related works on social media health information. This allowed the researcher to be well informed on the gaps in research which further enabled the selection of a strong research topic. The literature reviewed also informed the study on the research objectives and questions with further exposure to the theoretical position of social media health information in research. Reviewed literature included works from researchers around the world to seek their opinions on online health-seeking behavior across diverse cultures, adoption, and usage of online or SMHI and other related technologies, etc. (Cilliers et al., 2018; Lee & Hawkins, 2016; Song et al., 2016). The literature reviewed also showed the challenges and benefits of social media health information (Fernández-Luque & Bau, 2015). A more related study was conducted by Khuntia, Yim, Tanniru, and Lim (2017) to explore the influence of the three empowerment types: psychological, discretional, and leadership on sustaining user engagement with health infomediaries. Additionally, it was discovered that the majority of available literature on social media health information used a quantitative approach ( Li et al., 2018; Permwonguswa et al., 2017; Strekalova, 2017).

### 2.5 Theoretical Approaches to Social Media Health Information

Researchers have used several theories to address issues surrounding social media health information with the aim of finding solutions and adding to existing knowledge (Song et al. 2016; Strekalova 2017). This section highlights some theoretical frameworks that were adopted in social media health information research to enable this study to suggest theoretical gaps for future research. The review discovered that in the area of social media health information, many theories for example, Technology Acceptance Model (Davis 1989) and social amplification of risks framework (Kasperson et al. 1988) have been employed from different perspectives to address issues and further find solutions and predict future research directions. Below is a table outlining a few of the studies on social media health information.

**Table 2. 3: Related literature**

| Author | Title | Objective | Theory | Approach |
|---|---|---|---|---|
| Strekalova (2017) | Health Risk Information Engagement and Amplification on Social Media: News About an Emerging Pandemic on Facebook. | To add to an understanding of information behaviours of online audiences by showing empirical differences in audience engagement with online health information | social amplification of risks framework | Quantitative |

| | | | | |
|---|---|---|---|---|
| Song et al. (2016) | Trusting Social Media as a Source of Health Information: Online Surveys Comparing the United States, Korea, and Hong Kong | To investigate if cultural variations exist in patterns of online health information seeking, specifically in perceptions of online health information sources. | Nisbetts Cultural theory | Quantitative |
| Li et al. (2018) | Seeking and sharing health information on social media: A net valence model and cross-cultural comparison | Focuses on the factors that affect users' intentions to seek and share health information on social media. | Net valence model, Social Support Theory | Quantitative |
| (Cilliers et al., 2018) | A study on students' acceptance of mobile phone use to seek health information in South Africa | This research sought to examine the adoption of mobile phones to access health information among students at a traditional university in the Eastern Cape, South Africa. | Unified Theory of Acceptance and Use of Technology | Quantitative |
| (Miller & Bell, 2012) | Online Health Information Seeking: The Influence of Age, Information Trustworthiness, and Search Challenges | To determine how age influences role of trust and ease of search by individuals in deciding whether to use or not to use the internet to search for health information | Technology Acceptance Model | Quantitative |

### 2.6 Chapter Summary

As explained by Boateng (2020), a literature review combines available resources relating to the topic of study to critically analyze or describe each work. This chapter reviewed available literature relating to social media health information and critically analyzed the literature to inform the study on the theoretical frameworks and methodologies used in the area of social media health information. This served as a direction in choosing a conceptual framework to underpin this study.

# CHAPTER THREE

# CONCEPTUAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

## 3.0 Chapter Overview

After a careful review and analysis of available literature on SMHI, a conceptual framework was developed for this research by combining two theories. This chapter discusses the two theories: Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) and the Psychological Empowerment Model (PE) (Spreitzer, 1995), upon which the conceptual framework was developed. Additionally, the chapter discusses how the two theories have been applied in research. Also, the constructs of the theories, their meanings, and the relationships that exist between them were discussed and relevant hypotheses were developed from the conceptual framework. Furthermore, the chapter provides a justification for developing the conceptual framework. The conceptual framework was adopted because it adequately addresses user empowerment and user engagement.

## 3.1 Overview of UTAUT

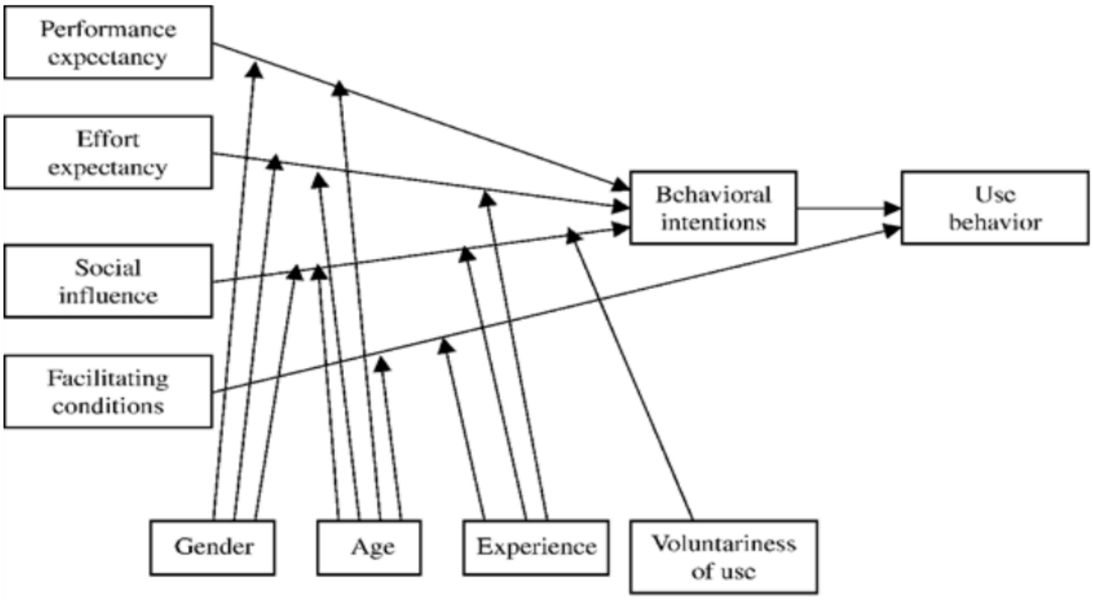
The ongoing pursuit to ensure technology acceptance among individuals or a group of individuals is a challenge in information systems research that has made technology adoption and diffusion a more relevant area for researchers to explore user behavior (Schwarz & Chin, 2007; Venkatesh et al., 2003) This challenge has resulted in the use of various exploratory techniques in different contexts to determine user behavior towards different technologies in different contexts (Williams et al., 2009). As a result, there are various theoretical models designed to predict the behavioural intention and use of technology. To resolve the issue and harmonize the research on the acceptance and use of technology, Venkatesh et al. (2003) developed the UTAUT model (see figure 3.1). The UTAUT as devised by Venkatesh et al. (2003), predicts technology acceptance and behavioural intention to use technology on an individual level (Attuquayefio & Addo, 2014). According to (Chang, 2012; Williams, Rana, and Dwivedi, 2015), UTAUT was developed by integrating the primary constructs of eight existing models that have been successfully used in research from various disciplines in marketing, management, computer science, and human behavior. These models are, 1) Social cognitive Theory (Compeau & Higgins, 1999), 2) Innovation Diffusion Theory (Moore & Benbasat, 2001), 3) Model of PC Utilization (Thompson et al., 1991), 4) Technology Acceptance Model (TAM) (Davis, 1989), 5) Theory of Reasoned Action (Fishbein & Ajzen, 1975), 6) Combined TAM and TPB (Taylor & Todd, 1995), 7) Motivational Model (Davis, Bagozzi, & Warshaw, 1992), and 8) Theory of Planned Behavior (Ajzen, 1991). The UTAUT model suggests that there are four main independent constructs namely: performance expectancy, effort expectancy, facilitating conditions, and social factors. Additionally, these independent constructs are moderated by four other constructs namely: gender, age, experience, and voluntariness of use. Furthermore, the independent constructs together with the moderating constructs influence two main dependent constructs (behavioural intention and use behavior) on the acceptance and use of technology in a given context (Attuquayefio & Addo, 2014; Chang, 2012; Venkatesh et al., 2003).

### 3.1.1 Application of UTAUT in Research

The UTAUT model has been used extensively in information systems research to understand the adoption behavior of individuals towards a variety of technologies in different contexts. The theory has proven to be effective in research into behavioural intentions and usage behavior of individuals (Venkatesh et al., 2012). For example, the UTAUT model was used by (Liebenberg et al., 2018) in a higher education setting in South Africa to determine students' intentions to use two digital technologies: an eBook and a Student Learning Management System (SLMS). Findings from the study showed that performance expectancy, effort expectancy, and facilitating conditions showed a significant relationship with the intention to use but gender as a moderator did not reflect the original finding of the UTAUT model. Also, Deniswara, et al. (2021), determined the perceptions auditors have on the existence of big data using the UTAUT model as support. The study revealed that the variables of social influence, facilitating conditions, performance expectancy, and business expectations had no significant effect on behavioural intentions.

Additionally, in health information, many studies have used the model to predict and understand the behavioural intentions of users towards health information technology. For example, (Kavandi & Jaana, 2020), used the UTAUT model in conducting a systematic review to understand the factors that affect the adoption of health information technologies in seniors. The study concluded that given the low adoption rate of health information technologies among seniors, it is relevant that research should focus on that area. Also, Bawack and Kala Kamdjoug (2018), investigated the adequacy of the UTAUT model in understanding the factors that affect the adoption of health information systems by clinicians in Cameroun. Conclusions from the findings indicated that the explanatory power of the model is increased when age is used as the only moderating factor.

**Figure 3. 1 Unified Theory of Acceptance and Use of Technology**




UTAUT (Venkatesh et al., 2003)

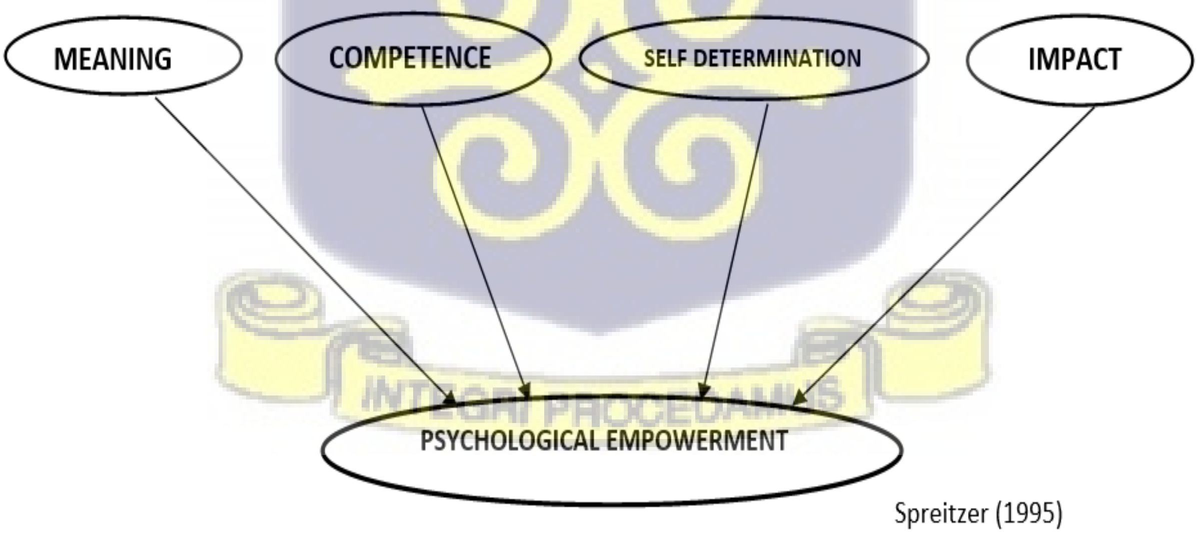
### 3.2 Overview of Psychological Empowerment Theory

Psychological Empowerment Theory is a theory that has mainly been used to understand motivations in organizations or any other working environment. The theory was initially described as "a connection between a sense of personal competence, a desire for, and a willingness to take action in the public domain" (Perkins & Zimmerman, 1995; Rappaport, 1987; Zimmerman et al., 1992). Subsequently, Spreitzer (1995), derived a multidimensional criterion of psychological empowerment and defined it as a motivational construct categorized under four dimensions: impact, meaning, self-determination and competence. In addition, these four dimensions are argued to collectively create the complete construct of psychological empowerment. As a result, the overall degree of psychological empowerment diminishes with an omission of a single dimension.

### 3.2.1 Applications of the Psychological Empowerment Model in research

The psychological empowerment model has been used in many fields of research, especially in an organizational or work context (Naranjo-Zolotov et al., 2019). For example, (Bordin et al., 2007), explored the antecedents and consequences of psychological empowerment among information technology employees in Singapore. Also, a recent study by (Ali Shah et al., 2019), examined the relationship between psychological empowerment and employee satisfaction by assessing the role of psychological capital. Nonetheless, in information systems research, Li (2016), introduced the theory in a social media context to assess the link between passive and active social media use and psychological empowerment. Furthermore, (Y. J. Kang et al., 2017), demonstrated how user empowerment can regulate knowledge sharing using a knowledge management system. Additionally, Naranjo-Zolotov et al. (2019), applied the theory in a conceptual framework to determine how citizens' perception of empowerment can influence the intention to recommend or intention to use e-participation.

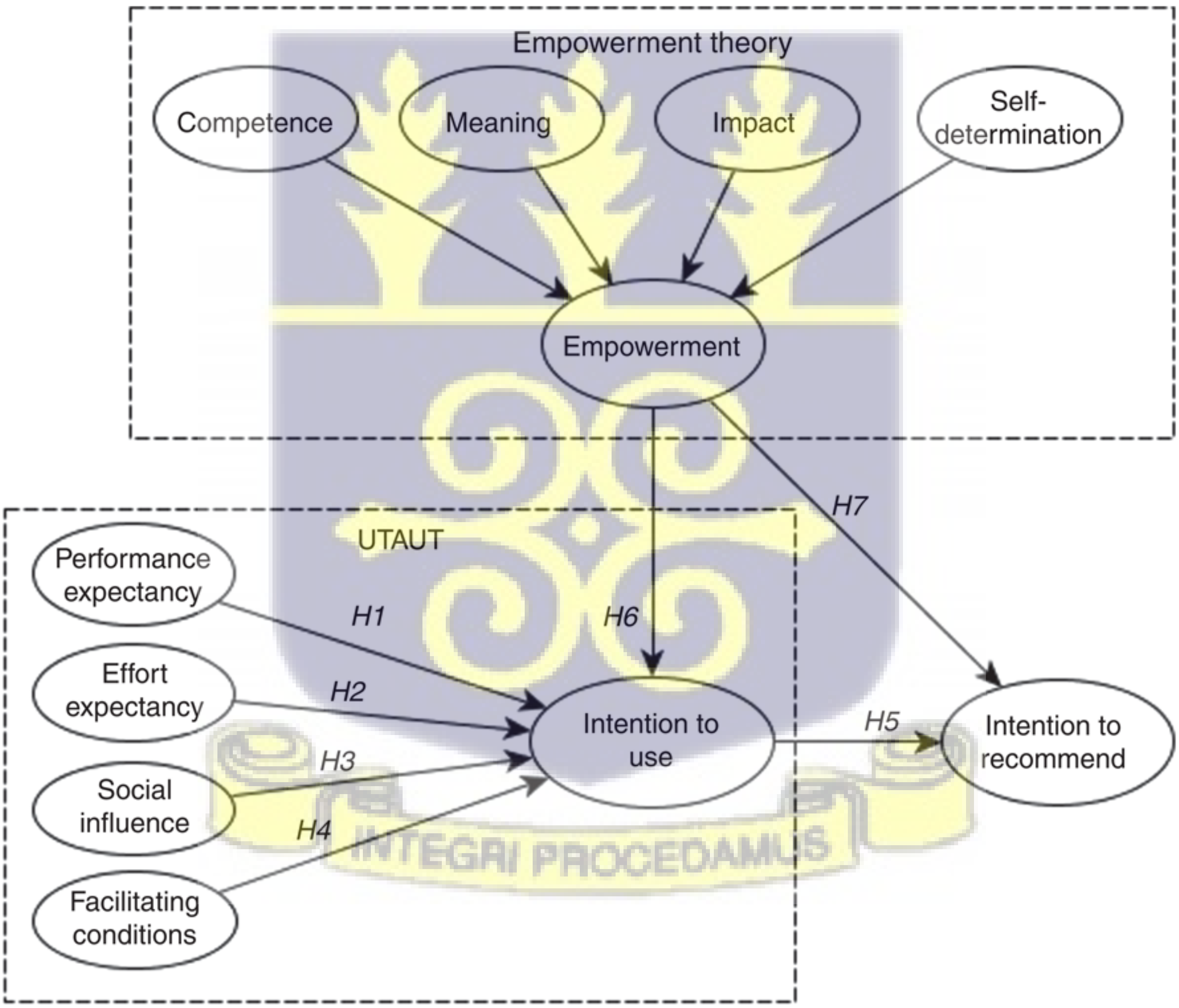
**Figure 3. 2 Psychological Empowerment Model**



### 3.3 Development of Conceptual Framework

The conceptual framework was developed by combining the UTAUT by Venkatesh et al. (2003) and the PE by Spreitzer (1995). The behavioural intention construct in the UTAUT was replaced by the intention to use and the intention to recommend was introduced as a form of user behavior. Psychological empowerment was set as a second-order construct to intention to use and intention to recommend SMHI. Psychological empowerment is defined by its first-order dimensions: impact, meaning, self-determination and competence.

**Figure 3. 3 Conceptual Framework**




Adapted from (Naranjo-Zolotov et al., 2019)

### 3.3.1 Constructs Definition and Hypothesis Development

#### 3.3.1.1 Performance expectancy

As one of the main constructs of the UTAUT model, performance expectancy measures the level of belief a user possesses in using a system. This construct is based on the individual's perception of whether the system in use is capable of yielding positive results (Venkatesh et al., 2003). Furthermore, Venkatesh et al. (2003), from their study predicted that under both mandatory and voluntary settings, it was discovered that performance expectancy remains significant and the strongest predictor of the intention of use. Herein, performance expectancy is defined as the degree to which a user of social media believes that health information obtained will be beneficial or gainful to their health needs. Performance expectancy implies that the user believes that he/she can improve their health and well-being through social media health information. The available social media sites allow users to create share and access health information through texts, videos, and images. Thus, the use of SMHI may increase the user's expectation of obtaining relevant information that may influence a healthier lifestyle. Hence our hypothesis:

*H1- Performance expectancy positively influences the user's intention to use SMHI.*

#### 3.3.1.2 Effort Expectancy

The effort expectancy construct measures the ease of use of a particular system or technology (Venkatesh et al., 2003, 2012). This construct focuses on how easily an individual uses an information system to perform a required task and how this ease influences the intention to use. According to Carr and Hayes (2015), social media content is primarily user-generated thus there is a need for users to be able to use the system easily. By implication, difficulty in the use of social media may be a deterrent factor to its use. Herein the researcher define effort expectancy as the ease with which a user finds relevant health information on social media. It is expected that a user applies minimum effort in seeking health information on social media thus the ease of use of social media may increase the user's expectation of obtaining readily available health information.

Hence our hypothesis:

*H2- Effort Expectancy positively influences the user's intention to use SMHI.*

#### 3.3.1.3 Social Influence

Social influence measures the perception an individual has based on the beliefs of important people (family and friends) around them (Venkatesh et al., 2012). This construct predicts that an individual's behaviour towards a particular technology can be measured by how they believe others will view them as a result of using the technology(Venkatesh et al., 2003). By implication, a user will use a system to feel accepted within a group of friends or family. Herein, the researcher define social influence as the degree to which a user perceives that family and friends believe he or she should use social media to seek health information. The higher the perception of the user, the higher the intention to use SMHI.

Hence our hypothesis:

*H3- Social Influence positively influences the user's intention to use SMHI.*

#### 3.3.1.4 Facilitating Conditions

The degree to which a user believes that there exists a conducive organizational environment and relevant technical infrastructure to support the optimum usage of a system is measured by the facilitating condition construct (Luo et al., 2010; Venkatesh et al., 2012). Furthermore, Venkatesh et al. (2003), explained that facilitating conditions encompass organizational and technical environments that are specially designed to remove barriers to using a particular technology or system. Primarily, access and use of social media are supported by internet connectivity and smart devices or computers. In this context, facilitating conditions can vary across users because of different smart devices and access to internet connectivity. For example, it will be easier for a user with a better smart device and better internet connectivity to access social media for health information than for a user with poor internet connectivity. Herein, the researcher define facilitating conditions as ease of access to resources that will remove barriers to using SMHI.

Hence our hypothesis:

*H4- Facilitating Conditions positively influence the user's intention to use SMHI*

#### 3.3.1.5 Intention to Use and Intension to Recommend

According to (Ajzen, 1991), behavioural intention explains the user's readiness to perform a given action in response to influencing conditions or factors. The behavioural intention as indicated by the adapted model is the intention to use construct. Furthermore, as proved by Venkatesh et al. (2003),behavioural intention has a significant positive influence on technology usage which is a post-adoption behaviour represented in the adapted model as intention so recommend. According to Luo et al. (2010), recommendation is classified as a post-adoption behaviour therefore, the intention to recommend is vital for the successful diffusion of SMHI. By implication, a user's intention to use social media to obtain health information is likely followed by an intention to recommend SMHI. Herein, the researcher define intention to use as the user's readiness to use SMHI and subsequently recommend the SMHI.

Hence our hypothesis:

*H5- Intention to use positively influences user intention to recommend SMHI.*

### 3.3.1.6 Meaning

According to (Thomas & Velthouse, 1990), the meaning dimension of psychological empowerment measures the value of a goal or purpose in connection to the individual's standards or expectations. A fit between an individual's expectations of a work role and their beliefs, behaviours, and values creates meaning for the individual (Brief & Nord, 1990). Herein, the researcher define meaning as the individual's judgment on the value of SMHI for a user. For example, does health information on social media meet the expectations of the user to further compel the user to use and recommend SMHI?

### 3.3.1.7 Competence

Competence or self-efficacy is defined as the ability of an individual to perform a particular task with a level of skill (Spreitzer, 1995). Herein, the researcher define competence as the degree to which a user can obtain health information on social media with skill.

### 3.3.1.8 Impact

Impact is the measure of the extent to which an action of an individual results in an intended influence or effect (Li, 2016; Thomas & Velthouse, 1990). Herein the researcher define impact as the measure of the extent of influence on a user's behaviour or action by SMHI.

### 3.3.1.9 Self-Determination

According to Deci, Connell, and Ryan (1989), self-determination is an individual's choice of initiating, continuing, and regulating actions about a particular activity. Herein the researcherdefine self-determination as the user's choice to use SMHI without any external influence. The user has autonomy on how, why, and when to use SMHI.



### 3.3.1.10 Psychological Empowerment

Psychological empowerment is a measure of the degree of activity by an individual to shape their existing role or context (Spreitzer, 1995). By implication, an individual's active orientation to change their environment or condition is reflected by their level of psychological empowerment. This is measured by a combination of the four dimensions stated above. Herein, the researcherdefine psychological empowerment as the degree to which a combination of meaning, impact, competence, and self-determination influence a user to use social media for health information and subsequently recommend SMHI.

Hence our hypotheses:

*H6- Psychological Empowerment positively influences intention to use SMHI*
*H7- Psychological Empowerment positively influences the intention to recommend SMHI*

**3.3.2 Justification of the Conceptual Framework**

Integrating the UTAUT model, with the psychological empowerment model, fills a gap in the analysis of SMHI pre-adoption and post-adoption behaviour. As proven by Macintosh (2004), psychological empowerment demonstrates a high form of engagement. Furthermore, Kang (2014), showed that empowerment is a vital component of engagement which subsequently results in a recommendation. Thus, there is a suggestion from these studies that psychological empowerment may adequately measure the intention to use and intention to recommend adding to existing knowledge in the field of health information. Also, as earlier stated, the UTAUT model is a combination of eight different models and theories thus in comparison to other theories, the UTAUT model better explains the variance in individual behaviour toward adoption (Venkatesh et al., 2012). This makes it a better choice for studying user engagement which in this study is measured as the intention to use. Also, the intention to recommend, a post-adoption behaviour can be easily investigated. Therefore, a combination of these two models specifically brings more understanding to the pre-adoption and post-adoption behaviour of users in SMHI.

Chapter Summary

n this chapter, the researcher presents a robust overview of the conceptual framework and the subsequent development of hypotheses. The foundation of the conceptual framework stems from the integration of two influential models: the Unified Theory of Acceptance and Use of Technology by Venkatesh (2003) and the Psychological Empowerment Model by Spreitzer (1995). This synthesis provides a comprehensive lens through which to analyze the determinants of students intention to use SMHI and the combined role of psychological empowerment and intention to use in influencing intention to recommend SMHI.

# CHAPTER FOUR

# METHODOLOGY

## 4.0 Chapter Overview

This chapter discusses in detail the methodology adopted for this study. It focused on explaining the research paradigm, the research approach, population, sample size, and sampling techniques used in this study. Also, this chapter detailed the data collection tool and data analysis techniques employed in conducting the research.

## 4.1 Research Paradigm

Many researchers have defined research paradigms from different perspectives in different fields of study. For example, American philosopher Thomas Kuhn simply described a paradigm as a philosophical way of thinking (Kuhn et al., 1970). Another definition from Lather (1986), explained that a research paradigm highlights how a researcher perceives the world in which they live; it constitutes abstract beliefs and principles on how the researcher interprets and acts within the world they live in. Furthermore, Guba and Lincoln (1994), defined a research paradigm as a set of beliefs or a school of thought that directs a research investigation. Additionally, a definition by Mackenzie and Knipe (2006) in educational research, defined a research paradigm as the researcher's perspective, beliefs, and thoughts that inform the researcher's interpretation of research data. Collectively, these three definitions broadly explain a research paradigm as how research is undertaken from the researcher's perspective, ideals and beliefs. According to Guba and Lincoln (1994), a research paradigm is made up of four elements namely; epistemology, axiology, methodology, and ontology. Epistemology is concerned with the nature of existing knowledge, forms of knowledge, and how they can be acquired and communicated to others (Cooksey & McDonald, 2019). The second element, axiology, is defined as the ethical considerations made when planning research; it centers on the philosophical approach to making the right decisions during research (Finnis, 2011). The third element is the methodology which also stands for the general term used to classify the research design, methods, approaches, and procedures used in research (Keeves, 1997). Finally, the last element, ontology refers to the assumptions made to establish the reality and nature of a phenomenon; it deals with the philosophical study of nature and reality (Scotland, 2012). These elements together make up a research paradigm.

Although a number of paradigms have been proposed by researchers over the years, Candy (1989), grouped all of them into three main taxonomies namely; positivist, critical realist, and interpretivist paradigms. However, Tashakkori and Teddlie (2003), also proposed a fourth paradigm known as the pragmatic paradigm. This paradigm possesses elements from the three paradigms proposed by Candy (1989).

### 4.1.1 Interpretivist Paradigm

According to Bogdan and Biklen (1998), the essential principle of the interpretivist paradigm is that reality is socially constructed. This paradigm places efforts on understanding the individual and the world around them from the subject's perspective rather than the observer's perspective. As stated earlier by Guba and Lincoln (1989), the central aim of this paradigm is to expose and understand the subjective world of human experience. As a result, when research takes this approach, the theory is grounded on the data collected during research thus instead of theory preceding research, it rather follows it (Strauss & Corbin, 1990). According to Morgan (2007), research using the interpretivist approach usually exhibits the following characteristics:

- Prioritizes an understanding of the individual over universal laws
- Believes that knowledge is created from findings

- Believe that in pursuing knowledge systematically, contextual factors should always be considered.
- Proposes that it is impossible to understand the social world from the standpoint of an individual
- Believe in multiple realities that are socially constructed.

### 4.1.2 Critical Realist Paradigm

The critical realist paradigm considers specific aspects of a phenomenon, for example, certain social components. Also, in the case of information technology, the paradigm considers the breadth of an information system in a particular context to investigate and explain in detail the phenomenon under study (Wynn & Williams, 2012). This paradigm assumes a transactional epistemology that requires an interaction between the researcher and the participants and an ontology of historical realism which also posits that a phenomenon is better studied within its societal context (Kivunja & Kuyini, 2017a). Also, the paradigm assumes a dialogic methodology that affords the researcher an opportunity to interact and investigate a phenomenon in a comprehensive manner. As proposed by Martens (2015), research adopting the critical realist paradigm exhibits the following characteristics:

- A consideration of the power relationships set up in social structures
- An approach to research that dictates that research is not just discovery but rather a construction
- Extensive use of ethnomethodology to focus knowledge historically and socially
- Prioritization of participatory research

### 4.1.3 Pragmatic Paradigm

The main argument made by this paradigm is that a mono-paradigmatic approach to research was inadequate hence philosophers such as Alise and Teddlie (2010), Biesta (2015), Patton (1990) proposed that there is a need for a more comprehensive and pluralistic paradigm that will combine methods from other paradigms. This was aimed at better investigating and explaining various phenomena such as human behavior in a more holistic and diverse view. As a result, the pragmatic paradigm assumes a mixed methods methodology that combines quantitative and qualitative approaches and a non-singular reality ontology which proposes that all individuals have unique interpretations of realities. The paradigm also advocates a relational epistemology and value-laden axiology which seeks to conduct research beneficial to people (Kivunja & Kuyini, 2017). Furthermore, Martens (2015), defined some attributes associated with the pragmatic paradigm and they are as follows:

- The phenomenon under study utilizes the best line of action to investigate and explain that said phenomenon
- The purpose of the research defines the choice of research method
- Emphasis on the workability of research
- Research is not compelled to be situated under a positivist or interpretivist paradigm
- Advises a perspective that allows research design and methodologies that are best suited for a study

### 4.1.4 Positivist Paradigm

The positivist paradigm according to Kivunja and Kuyini (2017), was first proposed by French philosopher, Auguste Comte, and the paradigm simply defines a perspective to research based on research methods as the scientific method of investigation. According to Comte (1856), the surest way of advancing knowledge and human understanding is through experimentation, observation, and reason based on experience. Similarly, Fadhel (2002) identified the scientific method as the preferred research approach that comprises the use of experimentation to analyze observations and further interpret observations in evidences and measurable outcomes. These measurable outcomes are based on four assumptions proposed by Cohen et al. (2002), which are: determinism, parsimony, generalizability, and empiricism. Each of these four assumptions explains the requirements that satisfy a positivist paradigm approach to research. The assumption of determinism states that observed events are caused by certain factors and to understand the causal relationships between these factors, there is a need to make predictions to control the impacts of the explanatory factors on existing dependent factors. Also, parsimony dictates that the researcher should be able to explore and explain the phenomenon under study in the most economical way. Additionally, the generalizability assumption infers that by inductive reference, results from research conducted under a positivist paradigm in a particular context should be applicable to another in a similar context. Finally, the empiricism assumption states that to explore a research problem, there should be verifiable empirical data supporting the chosen theoretical framework to enable accurate testing of formulated hypothesis. Furthermore, the positivist paradigm assumes an objectivist epistemology that proposes that the application of reason leads to advancement in human understanding (Fadhel, 2002). Additionally, the positivist paradigm assumes an experimental methodology that states that research involves the manipulation of the predictor variable to determine the changes in the dependent variable which allows the researcher to test the developed hypothesis (Burns, 2000). Again, the paradigm assumes a naïve realist ontology and beneficence axiology which is a requirement that all research should prioritize the benefit of mankind (Martens, 2015). The positivist paradigm exhibits the following characteristics Fadhel (2002):

- Assumes that context is not important

- Believes that knowledge is discovered through research
- Asserts that theory is universal hence generalizations can be made across contexts
- Believes that results can be quantified
- Uses empirical and analytical approaches
- Applies scientific method.

#### 4.1.5 Study Paradigm and Justification

For the purpose of this study, the researcher adopted the positivist paradigm. A justification for the choice is explained below.

Positivist Paradigm derives conclusions and makes explanations to a phenomenon under study through deductive logic, formulation and testing of hypotheses, mathematical equations and calculations which offer operational definitions and extrapolations (Kivunja & Kuyini, 2017). The paradigm assumes that to explore and analyse a research problem, there should be a collection of verifiable empirical data that can support the chosen theoretical framework and developed hypotheses. Since this research explores the extent to which user engagement and user empowerment affects the intension to use and intention to recommend Social Media Health Information (SMHI), the positivist paradigm affords the researcher the tools to collect empirical data that supports the conceptual framework and further test the developed hypotheses. Also, the paradigm assumes that context is not important hence, it enables the generalization of results from this research in similar contexts. Additionally, the positivist paradigm afforded the researcher a better understanding of the factors and the causal relationship between them and the extent to which these factors influence intention to use and intention to recommend SMHI.

### 4.2 Research Method

The research approach is a strategy and technique that includes everything from general assumptions to specific data collecting, analysis, and interpretation procedures. As a result, it is dependent on the nature of the research problem under study (Chetty, 2016). Additionally, other researchers defined the research approach as the building blocks of the scientific enterprise; they explain how knowledge is built systematically (Patten & Newhart, 2017). There are three main approaches to research namely qualitative, quantitative, and the mixed-method approach (Patten & Newhart, 2017).

#### 4.2.1 Qualitative Approach

According to Fossey, Harvey, Mcdermott, and Davidson (2002), the qualitative approach to data collection and interpretation in research focuses mainly on understanding a research problem from a humanistic and idealistic viewpoint. Similarly, Boateng (2020), defined qualitative research as investigating the meanings humans associate with a phenomenon by analyzing the phenomenon in its natural context. Baoteng (2020) further explained that qualitative research is relatively unstructured considering the nature of the instruments (e.g interviews and observations) used in the data collection process. This approach collects non-numerical data (either interactive or non-interactive) to understand human behaviours, attitudes, and beliefs and address queries pertaining meaning of experiences surrounding human social environments (Creswell, 2009). Furthermore, the design, evaluation, interpretation, and conduct of the qualitative research approach are governed by the critical realist paradigm and the interpretivist paradigm (Williams, 2007).

### 4.2.2 Quantitative Approach

The quantitative approach emerged from the positivist paradigm which was originally developed by Auguste Comte (Guo, 2013). A typical characteristic of the quantitative approach is the use of rigorously structured data collection instruments, hypothesis testing, standardized measures, and deductive approaches to examine the cause and effect of a specific phenomenon (Marlow, 1993). In essence, the quantitative approach as defined by Rubin and Babbie (2001), is a systematically structured investigation or analysis of a social phenomenon to acquire and increase the knowledge base of the phenomenon through the usage of established mathematical theories and statistical models. Therefore, the quantitative approach collects mainly numerical data to either describe the phenomenon or make inferential or explanatory deductions about the cause and effect of a phenomenon. Hence, the quantitative approach can either be descriptive or explanatory (Guo, 2013). Due to the nature of this approach, results on tested practices from a sample of the population can be generalized to the whole population with evidence to support policy and practice.

### 4.2.3 Mixed Method Approach

The research approach effectively combines elements from both the quantitative and qualitative approaches with the aim of better investigating and understanding a phenomenon. As defined by Morse (2016), the mixed-method approach employs the core components of qualitative and quantitative data which are numerical and non-numerical data in addition to other supplementary elements from the two paradigms to explain a phenomenon or answer a research problem. The two approaches used here can be sequential or simultaneous. Furthermore, Guba and Lincoln (2005) affirmed that merging elements from both qualitative and quantitative approaches present the researcher with a broader worldview of the phenomenon under study. Another identified advantage of the combination of approaches is the possibility of the triangulation of data (Tashakkori & Creswell, 2007).

### 4.2.4 Study Approach and Justification

This study adopted the quantitative approach and the choice for this approach is justified below. The study analysed the extent of user psychological empowerment and user engagement on the intention to use and intention to recommend SMHI. A quantitative approach enabled the researcher to test the relationship between the variables by obtaining numerical data that was measured and analyzed using statistical procedures (Creswell, 2009). Hence the constructs present in the chosen conceptual framework were measured numerically to analyze and understand the relationship between them and the extent to which these constructs influence intention to use and intention to recommend. Also, the positivist paradigm which was the chosen paradigm for this study relies on deductive logic, formulation and testing of hypothesis, mathematical calculations and expressions to draw conclusions (Kivunja & Kuyini, 2017). This requirement of the positivist paradigm can only be met through a quantitative approach where numerical data is collected to enable the researcher to make deductive analyses and test the hypothesis formulated. This approach enabled the researcher to collect the required data needed to test the formulated hypotheses from the conceptual framework.

## 4.3 Population

Taherdoost (2016) argues that a research population represents the entire set from which the researcher draws out a sample in generalizing a characteristic of that sample to the entire population. Again, according to Banerjee and Chaudhury, (2010), population in research can be defined as the overall group of people from which data will be collected to provide information about the phenomenon under study. In selecting a population for this study, the research purpose and research questions suggest that University students were amongst the appropriate group that could provide data on how psychological empowerment and user engagement influence intention to use and intention to recommend SMHI. Studies have shown that university students are heavy users of social media, for example, a report by Pew Research Center showed that 86% of undergraduate students and 82% of graduate students who have access to the internet use social media (Smith, Rainie, & Zickuhr, 2011). Also, Lau (2017) in a study to determine the effects of social media usage on the academic performance of university students stated emphatically that university students are indeed heavy users of social media. This informed the study of the chosen population.

Furthermore, Davis (2000) emphasizes that logistical challenges, including high travel costs and time-intensive journeys, can often impede the comprehensiveness of data collection efforts. By narrowing the geographic scope to nearby locations, researchers can mitigate these challenges, optimizing resource allocation and research efficiency. Therefore, based on logistical convenience and accessibility, respondents were students chosen from two public universities in Accra, namely, University of Ghana, Legon (UG) and University of Professional Studies (UPSA).

### 4.4 Sampling Techniques

It is near impossible for the researcher to collect data from an entire population in order to answer the research questions and achieve the purpose of the research, thus, there is a need to select a sample (Taherdoost, 2016). Hence, the sample is a chosen representative of the entire population whose response can be generalized to that population. According to (Boateng, 2020), the process and method of selecting samples from a population to form the basis of studying that population is termed a sampling technique. Therefore, in choosing a sample from a population, researchers mainly use two main methods namely: probability and non-probability sampling techniques (Ebeto & Babat, 2017). The non-probability sampling technique is usually used in qualitative research and the researcher in this instance selects based on subjective judgment rather than randomly, hence not all members of the population stand a chance of being selected. On the other hand, the probability sampling technique ensures that all members of the population stand equal chances of being selected as part of the sample, and selection is based on the theory of probability (Johnston & Sabin, 2010). Furthermore, there are a number of ways of sampling using the probability sampling technique. Examples are simple random sampling, stratified random sampling, cluster sampling, and systematic sampling (Taherdoost, 2016). The stratified random sampling technique divides the population into many subgroups and a random sample is taken from each of these groups. Considering the population of the study, the researcher employed the stratified random sampling technique. The population was divided into two subgroups representing the two public universities. Additionally, the researcher allocated 150 questionnaires for each university. To give an equal probability of selection of all units in the university community Singh (2003), three residential halls were chosen from each of the two universities and the questionnaire was shared equally between the halls. A simple random sample of 50 respondents was taken from each of the residential halls.

### 4.5 Sample Size

To obtain an accurate sample size for the study, the researcher identified principles from Partial Least Square-Structural Equation Modelling (PLS-SEM) which was used in analyzing the data. According to (Kock & Hadaya, 2018), one of the basic issues in PLS-SEM is sample size estimation. The author states that estimating a sample size to adequately represent a population is a daunting task for most researchers. Nonetheless, the 10-times rule has been widely used in estimating the minimum sample size because of the simplicity of its application (Hair, Anderson, Babin, & Black, 2010). The rule states that the sample size should be greater than 10 times the highest number of links pointing at a variable in the conceptual framework (Goodhue, Lewis, & Thompson, 2012).

Mathematically,

$n = L * 10$ (Goodhue, Lewis, & Thompson, 2012)

Where,

n = minimum sample size

L= maximum number of links.

From the conceptual framework (see figure 3.3),

$$L = 4$$

$$\text{Hence, } n = (4 * 10)$$

$$= 40$$

This implies that the minimum number of respondents to adequately represent the population should be greater than 40. Therefore, the researcher selected 300 respondents as the sample size for this study to increase the level of precision of the data obtained.

**4.6 Data Collection Tool**

An essential part of research is collecting primary and secondary data; hence the researcher must select the appropriate tool for data collection (Jain, 2021). A study by (Babbie, 2013), listed observations, interviews, experimentation, surveys, case studies, and records as methods of collecting data. According to Morgan (2001), data collection is acquiring data and information relevant to answering the research questions and achieving the research purpose. However, there are two main sources from which data is collected; that is the primary source and the dependent source (Boateng, 2020). The primary source includes questionnaires and interviews whereas the secondary source includes documentation, physical data, and archival records. In this study, the researcher relied on a primary data source; the researcher used a survey questionnaire as the data collection tool. The questionnaire contains standardized questions that operationalize the various constructs present in the conceptual framework. The questionnaire contained 30 questions with 10 constructs from both the UTAUT and the psychological empowerment models. Also, responses to the questions were based on a 5-point Likert scale. The Likert scale is a psychometric response scale that allow respondents to express agreement or disagreement with each question in five points: 1) Strongly Agree; 2) Agree; 3) Neutral 4) Disagree; 5) Strongly Disagree (Preedy & Watson, 2010). The researcher designed the questionnaire using google forms and shared a link through WhatsApp.

**Table 4. 1 Operationalization of the Constructs**

| Constructs | No. of Items | Source | Measure |
|---|---|---|---|
| Performance Expectancy | 3 | Venkatesh et al. (2003); Venkatesh et al. (2012) | 5-point Likert |
| Social Influence | 3 | Venkatesh et al. (2003); Venkatesh et al. (2012) | 5-point Likert |
| Effort Expectancy | 3 | Venkatesh et al. (2003); Venkatesh et al. (2012) | 5-point Likert |
| Facilitating Conditions | 3 | Venkatesh et al. (2003); Venkatesh et al. (2012) | 5-point Likert |
| Intention to Use | 3 | Venkatesh et al. (2003); Venkatesh et al. (2012) | 5-point Likert |
| Meaning | 3 | Spreitzer (1995); Naranjo-Zolotov et al. (2019) | 5-point Likert |
| Competence | 3 | Spreitzer (1995); Naranjo-Zolotov et al. (2019) | 5-point Likert |
| Self-Determination | 3 | Spreitzer (1995); Naranjo-Zolotov et al. (2019) | 5-point Likert |
| impact | 3 | Spreitzer (1995); Naranjo-Zolotov et al. (2019) | 5-point Likert |
| Intention to Recommend | 3 | Oliviera et al. (2016) | 5-point Likert |

**4.7 Data Analysis**

To draw relevant conclusions that answer the research questions and also fulfill the purpose of the research, there is a need to analyze the data collected. Data analysis is answering the research question by examining the collected data and filtering out the unnecessary components of the data and further re-modeling the data to convey vital information (Tukey, 1962). To achieve this, collected data was coded and structured with the Statistical Package for Social Sciences (SPSS). Afterwards, the data was uploaded to the Smart-PLS 4 software for further inferential analysis. The Smart-PLS is a software that allows for Partial Least Square Structural Equation Modeling (PLS-SEM). Structural Equation Modeling as a second-generation multivariate data analysis method used in research and Partial Least Square (PLS) is one of the several approaches to SEM (Kwong & Wong, 2013).

Additionally, PLS as an approach to SEM has no data distribution assumptions unlike Covariant-Based- SEM (CB-SEM) which assumes that the data should be normally distributed; hence PLS is a better alternative to CB-SEM especially when the sample size is relatively small and predictive accuracy is paramount (Bacon, 1999; Hair, Sarstedt, et al., 2019; Hwang at al., 2010). According to Hair et al. (2019), PLS-SEM utilizes predictive relevance to examine the link between dependent and independent variables which aids in discovering patterns in the data and evaluating the hypothesis to develop explanations. To achieve this, the measurement model was evaluated to test for the model's reliability and validity which included indicator reliability, internal consistency for reliability, convergent validity, and discriminant validity using standard judgment methods (Hair et al., 2021). Afterward, as recommended by Hair et al. (2019), the structural model of the constructs was assessed using the five critical phases; Assessment of collinearity of the structural model, assessment of the significance and relevance of the structural model, assessment of data goodness of fit, assessment of effect size (f-square) and assessment of predictive relevance (q-square).

### 4.8 Ethical Considerations

According to (Zegwaard et al., 2017), the focus on ethical conduct which is personal and professional actions during research has increased due to society's expectation of accountability. This study was guided by expected ethical considerations as outlined by (Denzin & Lincoln, 2011; Lune & Berg, 2017). The authors identified anonymity and confidentiality, informed consent, risk of harm and conflict of interest as aspects of ethical considerations necessary for a study to meet accepted ethical standards. This study ensured that these considerations were met in data collection to protect the participants.

#### 4.8.1 Informed Consent

In their study, Denzin and Lincoln (2011), described informed consent as a fundamental requirement in ethical conduct. The researcher is required to give a full description of what is required of the participant, what the data collected will be used for and any consequences (if there be) associated with participating in the research. The participant on the other hand is also required to give full consent to actively take part in the research. This study ensured that this criterion was adequately met; the participants were fully informed of what the research is about and how the data will be used. Also, a consent form was provided for participants to give full consent to taking part in the research.

#### 4.8.2 Risk of harm, Anonymity and Confidentiality

In a bid to reduce the risk of harm to participants it is vital to ensure that participants' identity is kept anonymous and confidential (Fleming & Zegwaard, 2018). The study ensured that data from known participants were de-identified and their identity was kept confidential. Also, survey questionnaires that reached some anonymous participants were also kept anonymous. In a further step to reduce the risk of harm, the study considered all potential harm to both the researcher and the participant and also the wider university community where data was collected and the society at large. The potential harm included physical, emotional, resource (loss of time or money) and reputational risks.

### 4..8.3 Conflict of Interest

A researcher is likely to create a conflict of interest in reporting findings from collected data as a result of previous or existing activities. Similarly, a researcher's business interest could also create a conflict of interest in reporting findings from the data (Connelly, 2014). Hence, the researcher ensured that all previous activities and existing activities are mutually exclusive in the data collection and analysis process. The researcher did not identify any business interest in collecting and analyzing the data. Additionally, all other activities associated with conducting this research were purely academic as stated in the questionnaire and all conflicts of interest were duly eliminated.

## 4.9 Chapter Summary

The methodology adopted for this study was clearly explained in this chapter. The various paradigms were explained and a justification for choosing the positivist paradigm was also given.

The chapter discussed the methodology adopted for this study. The various paradigms which were the interpretivist, critical realist, pragmatic and positivist paradigms were explained and also the justification for choosing the positivist paradigm for this study was given. Again, the chapter looked at the three main research approaches for conducting a study which is, qualitative, quantitative and mixed method approaches. The chosen research approach, the quantitative approach, was defined and a suitable justification was given for the choice. Furthermore, the chapter identified the population, sample technique, and sample size from which data was collected and subsequently explained the tool used to collect and analyze the data.

# CHAPTER FIVE

# RESULTS AND ANALYSIS

## 5.0 Chapter Overview

Following the methodology outlined by the researcher in the previous chapter, this chapter seeks to report and analyze the data collected on Social Media Health Information: A Study on User Engagement and User Empowerment of University Students in a Developing Country. This chapter carefully analyses all 11 constructs of the conceptual framework by systematically grouping the analysis process into various sections.

The first section outlined the demographic variables of the respondents. Among these variables are notably; gender, age, level of education, current year of study, the programme of study, how long respondents have used social media health information (SMHI), the frequency of usage of SMHI, and finally the specific social media platforms used by respondents in accessing SMHI. Additionally, the chapter outlines the second section of the analysis process. Here, the researcher used the SmartPLS application to conduct a PLS-SEM analysis to examine the fitness and validity of the conceptual model presented in chapter three. Finally, PLS-SEM is used to test the seven hypotheses stated earlier by the researcher in chapter three.

## 5.1 Demographic Variables

Below is a table that summarized the demographics of the respondents for this research. This table gives a brief profile of the respondents and their usage of social media. From the 300 respondents targeted, the researcher gathered 258 usable samples. The remaining 42 refused to give consent hence did not respond to the questionnaire. Out of 258 usable samples, 52.7% were male respondents which formed the majority, 46.5% were female and the remaining 0.8% preferred not to say which gender of the two they belonged to. The majority of the respondents were between the ages of 18-26 which accounted for 75.6% of the total, followed by 27- 35 also accounting for 19%. Furthermore, the age range of 36-44 and above 44 accounted for 5.8% and 1.6% respectively. Additionally, the majority of the respondents are pursuing a first degree which accounted for 68.6%, followed by a Master's degree which also accounted for 21%. Respondents pursuing a diploma/HND and Doctorate degrees recorded 5.4% and 3.5% respectively. Additional information according to the data collected indicated that a majority of 34.1% of respondents were in their second year, followed by the first year, third year, and final year recording 22.5%, 21.7%, and 17.1% respectively.

Again, the data indicated that, the majority of respondents (37.9%) have used SMHI for just about a year, followed by respondents who have used SMHI for over a year (28.6%). Only 15.3% of the respondents have used SMHI for above 5 years. Consequently, the data indicated that, students do not use SMHI very often, rather, the frequency of usage of SMHI is moderate. This is shown in the table as only 15% of the respondents agreed to use SMHI very often with a majority indicating their usage as moderate. A large number (35.4%) indicated their usage as rare. Finally, the data indicated a number of social media platforms which include Instagram, WhatsApp, Facebook, Twitter and YouTube as very popular social networks that students use for health information.

**Table 5. 1 General Information and Demographics**

| Category | Variables | Frequency(n=258) | Percentage (%) |
|---|---|---|---|
| Gender | Male | 136 | 52.7 |
| | Female | 120 | 46.5 |
| | Prefer not to say | 2 | 0.8 |
| Age | 18-26 | 190 | 75.6 |
| | 27-35 | 49 | 19 |
| | 36-44 | 15 | 5.8 |
| | Above 44 | 4 | 1.6 |
| Level of Education | Diploma/HND | 14 | 5.4 |
| | 1st Degree | 177 | 68.6 |
| | Masters | 58 | 21 |
| | Doctorate | 9 | 5 |
| Current Year of Study | 1st Year | 58 | 22.5 |
| | 2nd Year | 88 | 34.1 |
| | 3rd Year | 56 | 21.7 |
| | Final Year | 44 | 17.1 |
| | Other | 12 | 4.6 |
| How long have you used SMHI? | About a year | 94 | 37.9 |
| | Over a year | 71 | 28.6 |
| | Between 2 to 5 years | 45 | 18.1 |
| | Above 5 years | 38 | 15.3 |
| How often do you use SMHI? | Rarely | 91 | 35.4 |
| | Moderately | 126 | 49 |
| | Very often | 40 | 15.6 |
| State the social media platforms you use. | State the various platforms applicable | Instagram<br>Facebook<br>Twitter<br>WhatsApp | |

Source: Author's Construction (2022)

### 5.2 Model Assessment

In PLS-SEM data analysis, two (2) models are evaluated and validated to successfully analyze the collected data; these models are the measurement model and the structural model Hair et al. (2017). According to researchers, there are rules of thumb that serve as guidelines in assessing both the measurement model and the structural model (Chin, 1998; Götz et al., 2010; Henseler, 2017a). In analyzing the data, the researcher first assessed the measurement model to ensure that the set rules have been adequately met then proceeded to assess the structural model using the rules as guidelines.

However, according to Chin (2010), higher-order constructs use the same model evaluation criteria. Nevertheless, the higher order construct considers two measurement models which are:

1) Measurement of the lower-order components (without the second-order derivatives).
2) Measurement of the higher-order construct as a whole which is represented by the relationship between the higher-order construct and the lower-order constructs.

For this study, the researcher used the disjoint two-stage approach which is recommended for estimating higher-order constructs to report and validate the data (Sarstedt et al., 2019).

### 5.2.1 Measurement Model Assessment (First-Order Constructs)

In PLS-SEM data analysis, the measurement model assessment helps to evaluate the relationship between the latent variables and their respective indicators (Sarstedt et al., 2022). Similarly, Hair et al. (2021), consider model assessment as a means of providing empirical measurements of the relationship between indicators and their constructs. Considering the nature of the constructs used for the model, the researcher identified the need to assess the reliability and validity of the measurement model of the first-order constructs. According to Hair et al. (2020), assessing the measurement model includes evaluating the indicator reliability, internal reliability, convergent validity, and discriminant validity of the model.

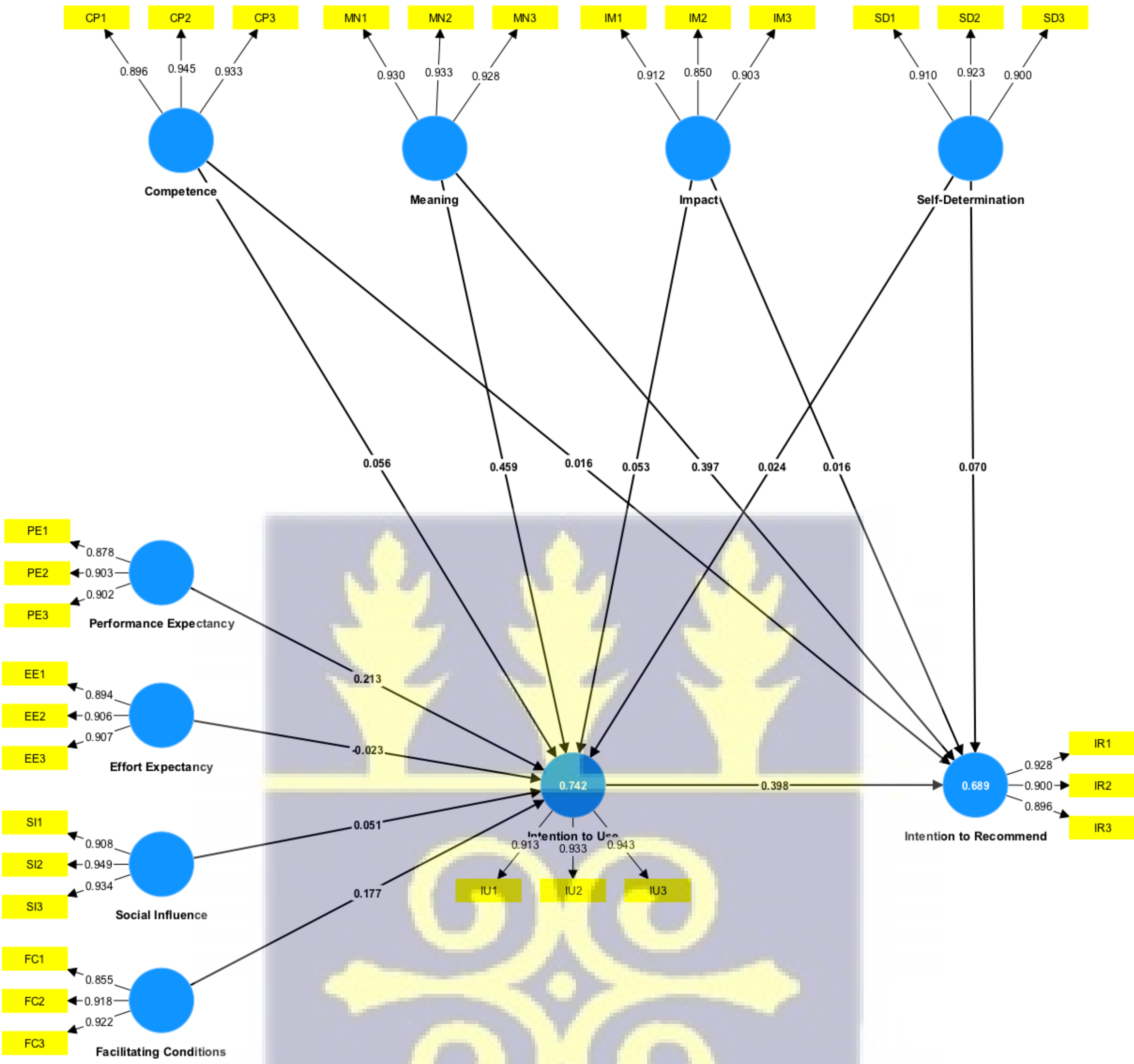
#### 5.2.1.1 Indicator Reliability (First -Order Constructs)

According to Hair et al. (2021), in evaluating the reliability of the indicators present in the model, indicator loadings above or equal to 0.70 are maintained. This means that all other indicators apart from those above or equal to 0.70 are deleted from the model. Consequently, indicator reliability shows the consistency and degree to which variables measure their assigned latent variables (Urbach & Ahlemann, 2010). Hence, researchers recommend that all indicators loading above 0.70 be maintained because they provide a higher degree of consistency in measuring the constructs in the model (Hair et al., 2020).

With regards to this study, all indicator loadings were above 0.70 and therefore met the threshold stipulated by Hair et al. (2020). Hence, all indicators were maintained with none deleted. This confirms that the indicators showed a required degree of consistency in measuring the latent variables.

Figure 5.1 below shows a graphical representation of the model and the indicator loadings on the variables when the PLS algorithm was run.

**Figure 5. 1 Results of PLS analysis (First-Order constructs)**




Source: Author's Construction (2022)

Where PE= Performance Expectancy, EE= Effort Expectancy, SI=Social Influence, FC= Facilitating Conditions, IU=Intention to Use, IR= Intention to Recommend, CP= Competence, MN= Meaning, IM= Impact, SD= Self-Determination

### 5.2.1.2 Internal Consistency Reliability

Although previous studies reported on internal consistency using Rho_A and Cronbach Alpha values, in recent publications, researchers have indicated that internal consistency reliability is accurately measured using composite reliability ( Hair et al., 2019; Hair et al., 2021; Sarstedt et al., 2022). With regard to this study, the researcher reported the internal consistency using Rho_A, Cronbach's Alpha and Composite Reliability to assess the internal consistency reliability of the model.

In Cronbach's alpha internal consistency assessment, all values should not fall below a threshold of 0.70 which implies that values below this threshold show a bad outcome of the model (Taber, 2018). As shown in Table 5.2 below, all the variables present in the model had Cronbach's alpha values that are above the stipulated threshold and thus show a good outcome for the model. Similarly, Rho_A values of 0.70 and above are accurate requirements for a good outcome of a model. As explained by Dijkstra and Henseler (2015), the Rho_A is a good measure of the internal reliability of a model, and variables with values of 0.70 or above 0.70 are appropriate for acceptance. This is also confirmed in Table 5.2, all values for Rho_A were above the threshold hence the measurement model is considered reliable.

Finally, for composite reliability, researchers regard values between 0.60 and 0.70 as acceptable, and values between 0.70 and 0.90 as good indicators. All values exceeding 0.95 are regarded as problematic as they are considered more than necessary causing a decline in the internal reliability of the model (Aguirre-Urreta et al., 2013). This is clearly illustrated in Table 5.3, all the values for the composite reliability were good indicators except for social influence (SI) and meaning (MN) which produced values of 0.951 each.

### 5.2.1.3 Convergent Validity (First-Order Constructs)

According to Cheah et al. (2018) and Hair et al. (2019), convergent validity measures the degree to which indicators of a particular construct converge or focus as compared to different indicators of a different construct. In assessing the convergent validity of a measurement model, Fornell and Larcker (1981), proposed the use of the Average Variance Extracted (AVE) as an appropriate measure. Furthermore, researchers recommend the threshold value for the AVE of all the constructs to be above 0.50 to adequately express a convergent validity of a model ( Hair et al., 2019; Hair et al., 2020). The established minimum threshold of 0.50 explains the significant part of each latent variable indicator's variance therefore convergent validity is considered acceptable. The respective AVE values for this study are accurately shown in Table 5.2 and all the values shown for the latent variables are above the threshold. This signifies that, convergent validity for the model is acceptable.

**Table 5. 2 Internal Consistency/ Convergent Reliability**

| Variables | Items | Loadings | Cronbach's Alpha | Composite Reliability | (Rho_A) | AVE |
|---|---|---|---|---|---|---|
| Performance Expectancy | PE1 | 0.878 | 0.875 | 0.923 | 0.876 | 0.800 |
| | PE2 | 0.903 | | | | |
| | PE3 | 0.902 | | | | |
| Effort Expectancy | EE1 | 0.894 | 0.886 | 0.929 | 0.887 | 0.814 |
| | EE2 | 0.906 | | | | |
| | EE3 | 0.907 | | | | |
| Social Influence | SI1 | 0.908 | 0.923 | 0.951 | 0.931 | 0.866 |
| | SI2 | 0.949 | | | | |
| | SI3 | 0.934 | | | | |
| Facilitating Conditions | FC1 | 0.855 | 0.881 | 0.926 | 0.898 | 0.808 |
| | FC2 | 0.918 | | | | |
| | FC3 | 0.922 | | | | |
| Intention to Use | IU1 | 0.913 | 0.921 | 0.950 | 0.922 | 0.864 |
| | IU2 | 0.933 | | | | |
| | IU3 | 0.943 | | | | |
| Intention to Recommend | IR1 | 0.928 | 0.893 | 0.934 | 0.894 | 0.824 |
| | IR2 | 0.9 | | | | |
| | IR3 | 0.896 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Competence | CP1 | 0.896 | 0.916 | 0.947 | 0.927 | 0.855 |
| | CP2 | 0.945 | | | | |
| | CP3 | 0.933 | | | | |
| Meaning | MN1 | 0.931 | 0.922 | 0.951 | 0.922 | 0.866 |
| | MN2 | 0.933 | | | | |
| | MN3 | 0.927 | | | | |
| Impact | IM1 | 0.91 | 0.867 | 0.919 | 0.87 | 0.790 |
| | IM2 | 0.852 | | | | |
| | IM3 | 0.903 | | | | |

Source: Author's Construction (2022)
Where PE= Performance Expectancy, EE= Effort Expectancy, SI=Social Influence, FC= Facilitating Conditions, IU=Intention to Use, IR= Intention to Recommend, CP= Competence, MN= Meaning, IM= Impact, SD= Self-Determination

#### 5.2.1.4. Discriminant Validity

The fourth and final step in assessing the measurement model is the evaluation of the discriminant validity. Discriminant validity is the extent to which constructs in a model differ empirically from each other. Additionally, discriminant validity shows how an indicator can distinctly represent its construct (Götz et al., 2010; Hair et al., 2019). The Fornell and Larker (1981) criteria, the Heterotrait-Monotrait Ratio(HTMT) and the cross-loading results are used to determine the discriminant validity of a model.

The first approach used by the researcher for this study is the cross-loading results. With the cross-loading approach, it is stated that outer loadings should be greater than its cross-loadings on other constructs (Sarstedt et al., 2022). Therefore, acceptable discriminant validity is achieved when cross-loadings that are less than the outer-loadings are realized from the results. Hence, the researcher refers to Table 5.3, where all cross-loadings are less than the outer loadings on the constructs. This is a valid indication that the indicators representing the various constructs differ empirically from each other and therefore are discriminant of each other.

**Table 5. 3 Indicator Items Cross-Loading**

| | CP | EE | FC | IM | IR | IU | MN | PE | SD | SI |
|---|---|---|---|---|---|---|---|---|---|---|
| CP1 | **0.896** | 0.639 | 0.642 | 0.646 | 0.507 | 0.559 | 0.559 | 0.440 | 0.649 | 0.413 |
| CP2 | **0.945** | 0.631 | 0.676 | 0.730 | 0.649 | 0.684 | 0.706 | 0.549 | 0.721 | 0.434 |
| CP3 | **0.933** | 0.647 | 0.657 | 0.738 | 0.615 | 0.672 | 0.718 | 0.508 | 0.719 | 0.406 |
| EE1 | 0.623 | **0.894** | 0.596 | 0.601 | 0.524 | 0.590 | 0.560 | 0.634 | 0.597 | 0.355 |
| EE2 | 0.614 | **0.906** | 0.576 | 0.561 | 0.550 | 0.557 | 0.541 | 0.594 | 0.562 | 0.397 |
| EE3 | 0.629 | **0.907** | 0.648 | 0.561 | 0.501 | 0.541 | 0.526 | 0.600 | 0.578 | 0.313 |
| FC1 | 0.586 | 0.519 | **0.855** | 0.528 | 0.420 | 0.470 | 0.387 | 0.424 | 0.578 | 0.286 |
| FC2 | 0.685 | 0.665 | **0.918** | 0.601 | 0.525 | 0.605 | 0.521 | 0.541 | 0.703 | 0.303 |
| FC3 | 0.641 | 0.614 | **0.922** | 0.595 | 0.508 | 0.603 | 0.476 | 0.540 | 0.649 | 0.329 |
| IM1 | 0.652 | 0.581 | 0.595 | **0.912** | 0.672 | 0.704 | 0.768 | 0.607 | 0.590 | 0.524 |
| IM2 | 0.693 | 0.564 | 0.553 | **0.850** | 0.582 | 0.608 | 0.690 | 0.452 | 0.659 | 0.443 |
| IM3 | 0.699 | 0.555 | 0.561 | **0.903** | 0.615 | 0.670 | 0.750 | 0.500 | 0.641 | 0.433 |
| IR1 | 0.607 | 0.506 | 0.503 | 0.637 | **0.928** | 0.735 | 0.731 | 0.603 | 0.535 | 0.525 |
| IR2 | 0.562 | 0.514 | 0.512 | 0.643 | **0.900** | 0.691 | 0.711 | 0.605 | 0.533 | 0.484 |
| IR3 | 0.581 | 0.566 | 0.464 | 0.635 | **0.896** | 0.717 | 0.704 | 0.590 | 0.544 | 0.488 |
| IU1 | 0.595 | 0.599 | 0.577 | 0.660 | 0.722 | **0.913** | 0.722 | 0.694 | 0.573 | 0.516 |
| IU2 | 0.685 | 0.558 | 0.580 | 0.706 | 0.735 | **0.933** | 0.774 | 0.606 | 0.575 | 0.525 |
| IU3 | 0.657 | 0.585 | 0.595 | 0.711 | 0.739 | **0.943** | 0.768 | 0.674 | 0.615 | 0.480 |
| MN1 | 0.667 | 0.534 | 0.486 | 0.737 | 0.720 | 0.756 | **0.930** | 0.637 | 0.561 | 0.618 |
| MN2 | 0.672 | 0.576 | 0.484 | 0.780 | 0.735 | 0.741 | **0.933** | 0.624 | 0.577 | 0.542 |
| MN3 | 0.673 | 0.569 | 0.478 | 0.797 | 0.745 | 0.770 | **0.928** | 0.631 | 0.597 | 0.539 |
| PE1 | 0.531 | 0.608 | 0.493 | 0.517 | 0.608 | 0.650 | 0.633 | **0.878** | 0.488 | 0.413 |
| PE2 | 0.476 | 0.607 | 0.519 | 0.520 | 0.558 | 0.606 | 0.575 | **0.903** | 0.488 | 0.423 |
| PE3 | 0.449 | 0.599 | 0.500 | 0.540 | 0.601 | 0.640 | 0.609 | **0.902** | 0.444 | 0.438 |
| SD1 | 0.718 | 0.593 | 0.642 | 0.653 | 0.542 | 0.627 | 0.617 | 0.468 | **0.910** | 0.325 |
| SD2 | 0.681 | 0.582 | 0.645 | 0.623 | 0.546 | 0.546 | 0.560 | 0.449 | **0.923** | 0.300 |
| SD3 | 0.662 | 0.579 | 0.679 | 0.652 | 0.527 | 0.551 | 0.519 | 0.532 | **0.900** | 0.314 |
| SI1 | 0.410 | 0.381 | 0.281 | 0.481 | 0.498 | 0.452 | 0.535 | 0.411 | 0.312 | **0.908** |
| SI2 | 0.439 | 0.369 | 0.345 | 0.495 | 0.512 | 0.540 | 0.566 | 0.467 | 0.318 | **0.949** |
| SI3 | 0.411 | 0.353 | 0.321 | 0.495 | 0.525 | 0.523 | 0.596 | 0.445 | 0.330 | **0.934** |

Source: Author's Construction (2022)

Where PE= Performance Expectancy, EE= Effort Expectancy, SI=Social Influence, FC= Facilitating Conditions, IU=Intention to Use, IR= Intention to Recommend, CP= Competence, MN= Meaning, IM= Impact, SD= Self-Determination

The second option for assessing discriminant validity is the Fornell and Larcker (1981) criterion. These researchers proposed that a model possesses discriminant validity within its indicators when the latent variables share more variance with their assigned indicators. The idea, according to the Fornell-Larcker criterion is that to attain discriminant validity, the constructs in the model must share a higher value of variance with their assigned indicators than with any other constructs in the model. Therefore, the Fornell-Larcker criterion measure the correlation between the constructs and the value of the square root of the AVE. An illustration in Table 5.4 proves that the latent variables share greater variance with their assigned indicators than any other variable in the model. This implies that the model has successfully attained discriminant validity.

**Table 5. 4 Discriminant Validity (Fornell-Larcker Criterion)**

| | CP | EE | FC | IM | IR | IU | MN | PE | SD | SI |
|---|---|---|---|---|---|---|---|---|---|---|
| CP | **0.925** | | | | | | | | | |
| EE | 0.689 | **0.902** | | | | | | | | |
| FC | 0.711 | 0.672 | **0.899** | | | | | | | |
| IM | 0.764 | 0.637 | 0.641 | **0.889** | | | | | | |
| IR | 0.643 | 0.582 | 0.543 | 0.703 | **0.908** | | | | | |
| IU | 0.695 | 0.624 | 0.628 | 0.745 | 0.787 | **0.93** | | | | |
| MN | 0.721 | 0.601 | 0.519 | 0.829 | 0.788 | 0.812 | **0.93** | | | |
| PE | 0.543 | 0.676 | 0.563 | 0.588 | 0.66 | 0.708 | 0.678 | **0.894** | | |
| SD | 0.755 | 0.642 | 0.719 | 0.706 | 0.591 | 0.632 | 0.622 | 0.53 | **0.911** | |
| SI | 0.451 | 0.394 | 0.341 | 0.527 | 0.55 | 0.545 | 0.608 | 0.475 | 0.344 | **0.931** |

Source: SmartPLS Algorithm (2022)
Where PE= Performance Expectancy, EE= Effort Expectancy, SI=Social Influence, FC= Facilitating Conditions, IU=Intention to Use, IR= Intention to Recommend, CP= Competence, MN= Meaning, IM= Impact, SD= Self-Determination

Although the Fornell-Larcker criterion assesses the discriminant validity of a model, researchers (Hair et al. 2016; Hensler et al. 2015) have had reservations about its accuracy when indicator loadings on the latent variables are slightly different, for example when indicator loadings are between 0.65 and 0.85. Hence, Henseler et al. (2015), proposed a new criterion for evaluating the discriminant validity where the short falls of the Fornell-Larcker criterion can be addressed. This criterion was then termed as the Heterotrait-Monotrait (HTMT) correlations. According to Hair et al. (2021), HTMT is able to assess the actual correlations between two constructs that are perfectly measured. Additionally, the HTMT provides higher sensitive rates of around 97% and 99% which are higher than those of Fornell-Larcker criterion which ranges between 0.00% and 20.82% (Henseler et al., 2015). In establishing discriminant validity based on the HTMT, studies have used 0.90 as a threshold (Hair et al., 2019; Henseler et al., 2015; Sarstedt et al., 2022). With regard to this threshold, all HTMT values that exceed 0.90 signifies a non-existent discriminant validity, however, with cases where the constructs in the model are conceptually different, a lower threshold value of 0.85 is accurate (Dijkstra & Henseler, 2015). As exhibited in Table 5.5, all values in the HTMT matrix are below the recommended threshold of 0.90 except Meaning (MN) and Impact (IM) which showed a value of 0.926.

**Table 5. 5 Discriminant Validity: Heterotriat-Monotrait Ratio(HTMT)**

| | CP | EE | FC | IM | IR | IU | MN | PE | SD | SI |
|---|---|---|---|---|---|---|---|---|---|---|
| CP | | | | | | | | | | |
| EE | 0.767 | | | | | | | | | |
| FC | 0.789 | 0.755 | | | | | | | | |
| IM | 0.857 | 0.727 | 0.731 | | | | | | | |
| IR | 0.705 | 0.654 | 0.607 | 0.797 | | | | | | |
| IU | 0.751 | 0.69 | 0.691 | 0.832 | 0.868 | | | | | |
| MN | 0.778 | 0.664 | 0.57 | **0.926** | 0.868 | 0.881 | | | | |
| PE | 0.602 | 0.767 | 0.636 | 0.671 | 0.745 | 0.788 | 0.754 | | | |
| SD | 0.83 | 0.719 | 0.805 | 0.803 | 0.66 | 0.694 | 0.682 | 0.598 | | |
| SI | 0.491 | 0.436 | 0.376 | 0.588 | 0.606 | 0.589 | 0.659 | 0.527 | 0.377 | |

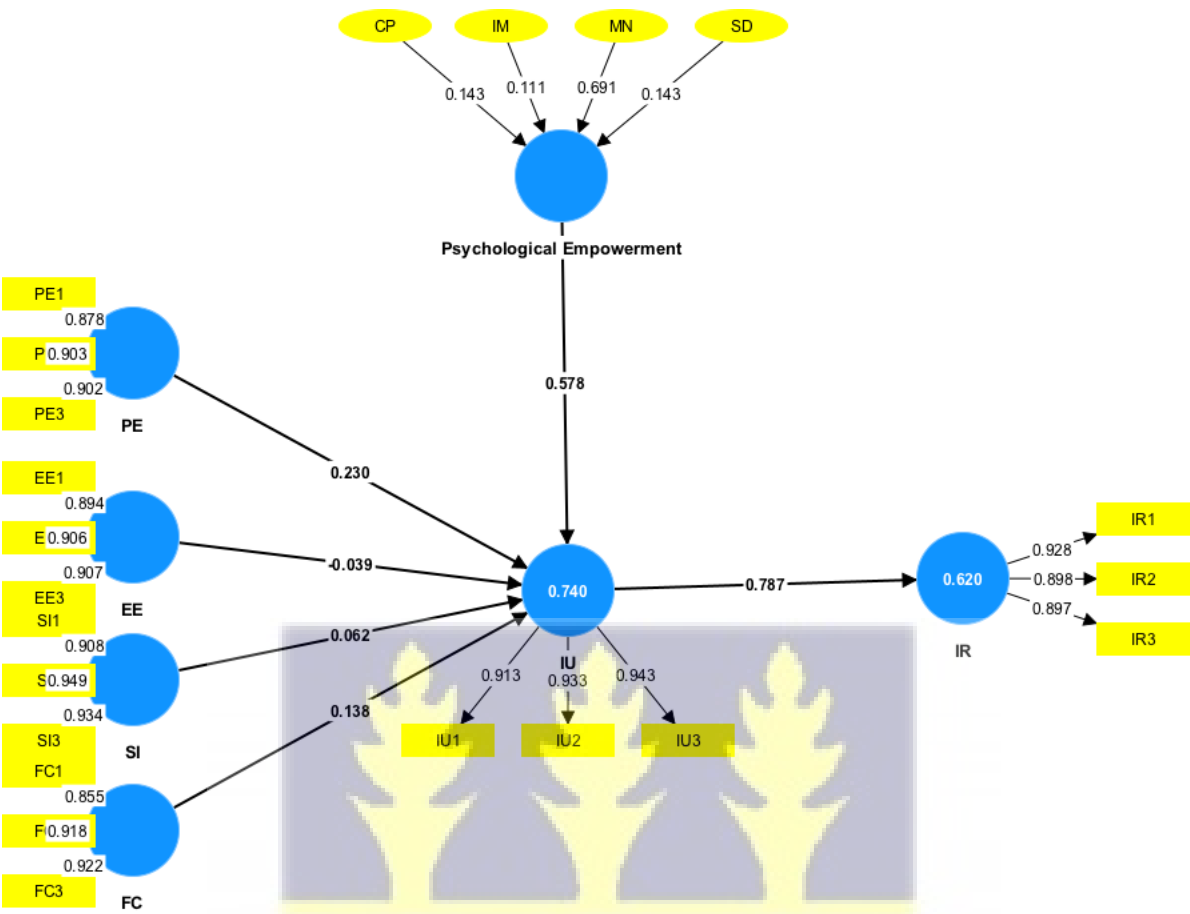
Source: SmartPLS Algorithm (2022)
Where PE= Performance Expectancy, EE= Effort Expectancy, SI=Social Influence, FC= Facilitating Conditions, IU=Intention to Use, IR= Intention to Recommend, CP= Competence, MN= Meaning, IM= Impact, SD= Self-Determination

However, bootstrapping analysis can be used to assess HTMT values that have exceeded the threshold. During bootstrapping, smaller samples are randomly drawn from the data set repeatedly to obtain a larger sample size which then creates a bootstrap confidence interval. Consequently, the confidence interval defines the range within which the true HTMT population value falls at a 95% level of confidence (Hair et al., 2019). As a result, a confidence level interval indicating 1 or higher shows NO discriminant validity. Conversely, the value 1 will fall outside the interval range when there are two constructs that are empirically different. Therefore, researchers have suggested that since the HTMT confidence interval is dependent on inferential analysis, it is a recommended criteria for validating the discriminant validity of a measurement model.

#### 5.2.1.5 Validating the Second-Order Construct

For this study, the model presents psychological empowerment as a second-order construct with competence, meaning, impact, and self-determination as first-order components. In order to evaluate second-order construct validity, outer weights, outer loadings and VIF were assessed (Sarstedt et al., 2019). The outer weights were found to be significant (Hair et al., 2017). Additionally, outer loadings were found to be greater than 0.50 for all first-order constructs (Sarstedt et al., 2019). Finally, collinearity was checked by assessing all VIF values. The checked VIF values were all below the advised value of 5 ( Hair et al., 2017). As depicted in Table 5.6, all criteria were met hence the validity of the second-order construct, psychological empowerment, was established.

**Figure 5. 2 Measurement Model (Second-Order Construct)**




Source: Author's Construction (2022)

Where PE= Performance Expectancy, EE= Effort Expectancy, SI=Social Influence, FC= Facilitating Conditions, IU=Intention to Use, IR= Intention to Recommend.

First-order constructs: CP= Competence, MN= Meaning, IM= Impact, SD= Self-Determination

**Table 5. 6**

| 2nd Order Construct | 1st Order Construct | Outer Weight | Outer Loading | VIF |
|---|---|---|---|---|
| PSEM | CP | 0.143 | 0.833 | 3.262 |
| | MN | 0.111 | 0.894 | 4.208 |
| | IM | 0.691 | 0.975 | 3.401 |
| | SD | 0.143 | 0.759 | 2.566 |

Source: Author's Construction (2022)

Where PSEM= Psychological Empowerment, CP= Competence, MN=Meaning, IM= Impact, SD= Self-Determination.

### 5.2.2 Structural Model Assessment.

This section outlines the assessment of the structural model. As stated by Hair et al. (2019), the structural model assessment is the second step in analyzing PLS-SEM results. There are five vital steps outlined by Sarstedt et al. (2019) that is used to evaluate the structural model. These steps are: assessment of multicollinearity issues, path coefficient significance, the goodness of fit, effect size, and predictive relevance of the model. The steps are clearly discussed below:

#### 5.2.2.1 Multicollinearity Assessment

To assess the multicollinearity of a model, it is recommended that researchers use the Variance inflation factor (VIF) as a criterion (Sarstedt et al., 2019; Urbach & Ahlemann, 2010). According to Kock (2015), two formative indicators are collinear when there exists a strong correlation between them. Consequently, multicollinearity exists when multiple indicators are strongly correlated. However, strong collinearity is considered an issue because it affects the weights and the statistical significance of the formative indicators.

Therefore, to avoid collinearity concerns within constructs, the VIF values present should be less than 5.0 (Hair et al., 2017). By implication, all indicators that satisfy the condition of having VIF values less than 5 have a perfect linear correlation with their independent variables. In Table 5.7, the VIF values presented for the model fall within the threshold with none exceeding 5.0, hence there exists a perfect linear correlation between the variables in the model.

**Table 5. 7 Multicollinearity Statistics Assessment (Inner VIF)**

| | EE | FC | IR | IU | PE | PSEM | SI |
|---|---|---|---|---|---|---|---|
| EE | | | | 2.536 | | | |
| FC | | | | 2.04 | | | |
| IR | | | | | | | |
| IU | | | 3.268 | | | | |
| PE | | | | 2.315 | | | |
| PSEM | | | 3.268 | 2.867 | | | |
| SI | | | | 1.577 | | | |

Source: Author's Construction (2022)
Where PE= Performance Expectancy, EE= Effort Expectancy, SI=Social Influence, FC= Facilitating Conditions, IU=Intention to Use, IR= Intention to Recommend.
PSEM= Psychological Empowerment

#### 5.2.2.2 Path Coefficient Significance Assessment

The path coefficients are the relationships among constructs in the model that have been hypothesized (Chin, 2010). Therefore, the significance of the path coefficients in a model are evaluated by assessing the strengths of the hypothesized paths between the constructs. The standard values of the path coefficients are expected to fall within the -1 and +1 boundaries. Additionally, values that are closer to +1 are deemed to have high and positive correlation. Ideally, the reverse which means that the values are closer to -1 is considered to have a strong negative correlation, nonetheless, they are considered statistically significant although their relationships are weaker (Hair et al., 2019). Even so, the coefficient's significance is dependent on the standard errors obtained by bootstrapping (Sarstedt et al. 2016). According to Streukens and Leroi-Werelds (2016), bootstrapping is a non-parametric resampling process that evaluates the variability in sample data to assess the correctness of the estimates.

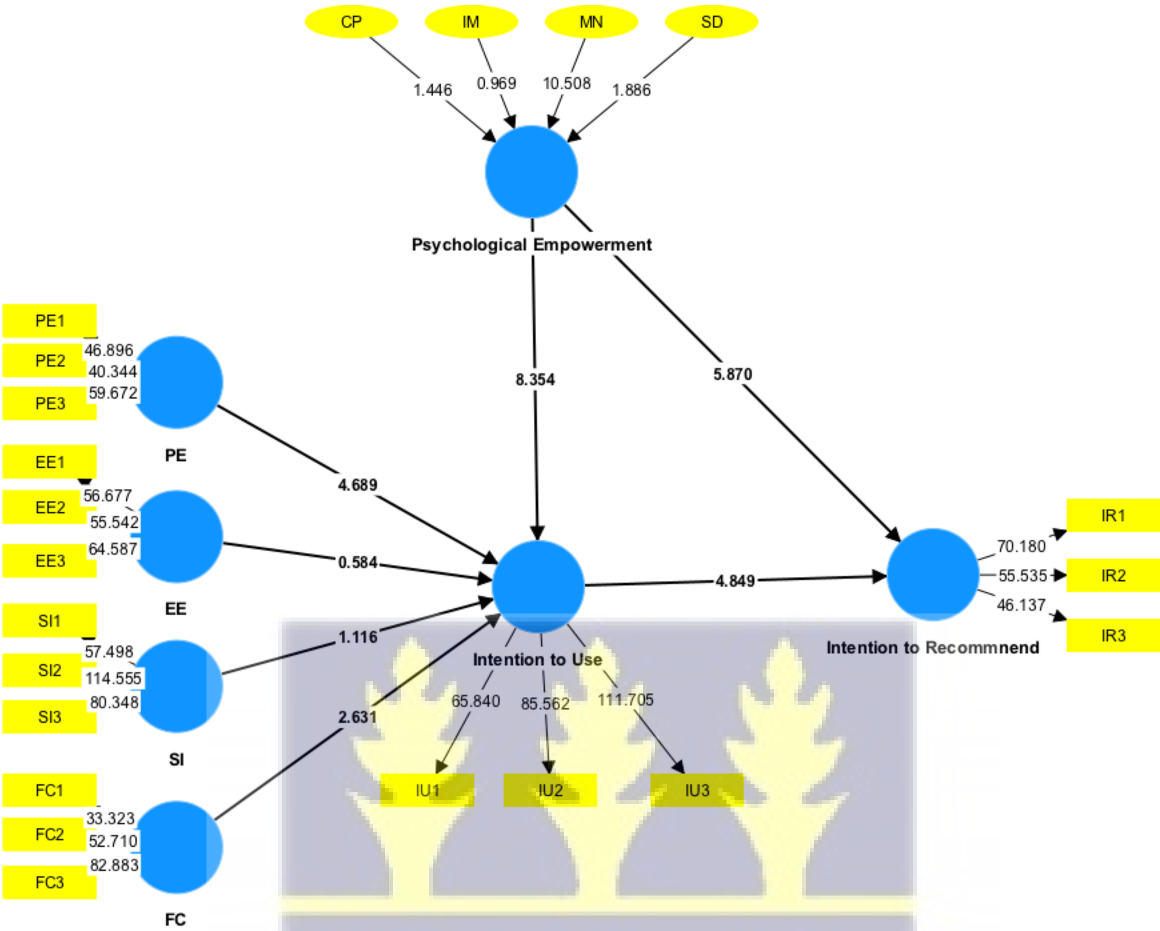
The model was bootstrapped using a subsample size of 5000 with a 5% two-tailed distribution to obtain the t-statistic. Furthermore, the t-statistic was used to analyze the direct and indirect effects. After the t-statistic is obtained, it is recommended that the values be compared to the critical values of the respective significance level used in bootstrapping the model. For this study, the significance level applied was 5% (0.05), hence the critical value to be compared to the t-statistic is 1.96 (Hair et al.,2015; Sarstedt et al., 2021). From Table 5.8, it is observed that 5 out of 7 t-statistic values were above the critical value of 1.96. A graphical representation is seen in Figure 3 displaying the t-statistic for the path coefficients. This implies that the 5 path coefficients were significant and thus are considered to support the confidence level of the study.

**Table 5. 8 Path Coefficient Assessment and Hypothesis Decision**

| Hypothesis | Relationship | Std Beta (β) | Std Error | t-stats | Decision | 0.025 | 0.975 |
|---|---|---|---|---|---|---|---|
| HI | PE -> IU | 0.223 | 0.048 | 4.689 | Supported | 0.127 | 0.315 |
| H2 | EE -> IU | -0.034 | 0.058 | 0.584 | Rejected | -0.145 | 0.080 |
| H3 | SI -> IU | 0.060 | 0.054 | 1.116 | Rejected | -0.039 | 0.170 |
| H4 | FC -> IU | 0.147 | 0.056 | 2.631 | Supported | 0.038 | 0.253 |
| H5 | IU -> IR | 0.395 | 0.082 | 4.849 | Supported | 0.222 | 0.551 |
| H6 | PSEM -> IU | 0.574 | 0.069 | 8.354 | Supported | 0.442 | 0.710 |
| H7 | PSEM -> IR | 0.471 | 0.080 | 5.870 | Supported | 0.317 | 0.634 |

Source: Author's Construction (2022)
Where PE= Performance Expectancy, EE= Effort Expectancy, SI=Social Influence, FC= Facilitating Conditions, IU=Intention to Use, IR= Intention to Recommend.
PSEM= Psychological Empowerment.

**Figure 5. 3 Hypothesis for Direct Effect (Bootstrapping)**




Source: Author's Construction (2022)
Where PE= Performance Expectancy, EE= Effort Expectancy, SI=Social Influence, FC= Facilitating Conditions, IU=Intention to Use, IR= Intention to Recommend.
First-order constructs: CP= Competence, MN= Meaning, IM= Impact, SD= Self-Determination
Note: Significance level=0.05 (t-statistic >1.96)

### 5.2.2.3 Goodness of Fit (GOF) Assessment.

In PLS-SEM, the goodness of fit (GOF), in addition to multicollinearity and path coefficient assessment helps the researcher to accurately assess the structural model of the study. Here, the GOF assessment of the model demonstrates whether the model is well-fitted for the study or otherwise (Henseler et al.,2015; Hair et al., 2015). Additionally, Dijkstra and Henseler (2015) explained that the GOF assessment helps to identify measurements that have been over-specified in the structural model. In order to perform the GOF assessment, the study evaluated the R-square ($R^2$) Determination Coefficient and the Standardized Root Mean Squared Residual (SRMR).

#### 5.2.2.3.1 R-square ($R^2$) Determination Coefficient Assessment

According to Hair et al. (2015) and Chin (2010), the $R^2$ value explains the existing variance between the endogenous and exogenous constructs in the model under study. Additionally, it has been established that $R^2$ value holds a combined effect on both the endogenous latent variables and the exogenous latent variables (Babin et al., 2008; Hair et al., 2011). Also, considering that the $R^2$ value is the square of the actual and estimated correlation values, it is accurately used as a criterion of measurement of the predictive power of the model estimation (Hair et al., 2019; Hair et al., 2017). The $R^2$ values range between 0 and 1; where the higher values are representative of a higher predictive power and the lower values are representative of lower predictive power (Rigdon, 2012). Nonetheless, diversity in research disciplines and the complexity of models used in research have raised issues regarding the standardized rules for estimating the $R^2$ value. However, Chin (1998), considered $R^2$ values between 0 to 0.190 as weak, 0.333 to 0.660 as moderate and values above 0.670 as substantial. Other researchers also considered $R^2$ values of 0.25 as weak, 0.50 as moderate and 0.75 as substantial (Hair et al., 2019; Henseler et al., 2015). In Table 5.9, the $R^2$ values for this study are presented. The $R^2$ values presented are 0.687 and 0.741. According to Chin (1998) recommendations, all values above 0.65 are substantial and recommendable.

**Table 5. 9 R-square ($R^2$) Determination Coefficient**

| Variables | R-square | R-square adjusted |
|---|---|---|
| IR | 0.687 | 0.685 |
| IU | 0.741 | 0.736 |

Source: Author's Construction (2022)
Where IR= Intention to Recommend and IU= Intention to Use

#### 5.2.2.3.2 Standardized Root Mean Squared Residual (SRMR) Assessment

According to Mulaik et al. (1989), most goodness of fit indices is insensitive to misspecifications. However, using the SRMR criterion as a measurement for the goodness of fit avoids the issue of misspecification of that model and is considered a suitable and accurate measuring criterion (Henseler, 2017b). Therefore, in addition to the $R^2$ criterion, the study assesses the goodness of fit of the model using the SRMR criterion. According to the rule of thumb in using the SRMR criterion, a model is considered to be well-fit if the values presented are lower and closer to zero, and ill-fit, if the values presented, are higher (Maydeu-Olivares et al., 2018). Therefore, when SRMR is zero, the model is considered an absolute fit. Nonetheless, various studies have considered SRMR values below 0.08 as satisfactory. Furthermore, values that are above 0.08 shows an absence of fit.

In Table 5.10 below, the values representing the SRMR which have been boldened are well below the threshold of 0.08. Therefore, according to the criteria for assessing goodness of fit by SRMR, the model is satisfactory.

**Table 5. 10 SRMR Criteria**

| | Saturated model | Estimated model |
|---|---|---|
| **SRMR** | **0.055** | **0.057** |
| d_ULS | 0.779 | 0.818 |
| d_G | 0.538 | 0.544 |
| Chi-square | 786.977 | 794.627 |
| NFI | 0.856 | 0.855 |

Source: Author's Construction (2022)

#### 5.2.2.4 Effect Size ($f^2$ value) Assessment

According to Cohen (1988), the effect size ($f^2$) evaluates the significance of the role of the independent construct on the dependent construct. This effect is measured in the change in $R^2$ when an exogenous construct omitted from the model has a substantial impact on the endogenous constructs in the model (Sarstedt et al., 2022). This implies that the $f^2$ value is a resulting change in the $R^2$ value which explains the effect of an exogenous construct on an endogenous construct. In assessing this weight of the effect, there is a rule of thumb which states that $f^2$ values from 0.02 to 0.15 represent a minor effect, $f^2$ values between 0.15 to 0.35 represents a moderate effect and $f^2$ values above0.35 are considered to have a major effect (Chin, 1998; Cohen, 1988). Additionally, all $f^2$ values that are below 0.02 represent a null effect.

From Table 5.11, the researcher observes the $f^2$ values of the model. Using the rule of thumb specified, the researcher observe that 2 variables: Effort Expectancy (EE) and Social Influence (SI) have no effect on the endogenous construct Intention to Use (IU). However, the remaining constructs showed some level of effect on the endogenous constructs Intention to Use (IU) and Intention to Recommend (IR). Facilitating Conditions (FC) showed and a 0.041 effect on IU. Also, Performance Expectancy (PE) showed minor effect size of 0.083 on the endogenous construct IU. IU on the other hand showed a major effect of 0.153 on IR. Furthermore, Psychological Empowerment (PSEM) showed major effect of 0.217 and 0.444 on both IU and IR respectively.

**Table 5. 11 Effect Size ($f^2$) values**

| | EE | FC | IR | IU | PE | PSEM | SI |
|---|---|---|---|---|---|---|---|
| EE | | | | **0.002** | | | |
| FC | | | | 0.041 | | | |
| IR | | | | | | | |
| IU | | | 0.153 | | | | |
| PE | | | | 0.083 | | | |
| PSEM | | | 0.217 | 0.444 | | | |
| SI | | | | **0.009** | | | |

Source Author's Construction (2022)

### 5.2.2.5 Predictive Relevance Assessment ($q^2$)

Finally, the predictive relevance of the structural model is assessed. As explained by Geisser (1975) and Stone (1974), the predictive relevance determines how an endogenous latent construct is accurately predicted by the model. The researchers recommended that in order to understand the magnitude of the $R^2$ values in predicting the accuracy of a model, the Stone-Geisser Q-square value should be assessed. In model estimation, the PLS-SEM path should be able to accurately predict data not used in order to have predictive relevance. Hence, there is a criterion that determines whether the predictive relevance ($q^2$) value is poor, with no predictive relevance or significant with some level of predictive relevance. For specificity of the level of relevance exhibited by an endogenous variable, Hair et al. (2019) recommended that all $q^2$ values within the threshold of 0.02 have a low level of predictive relevance, 0.15 have a medium level of predictive relevance and 0.35 have a high-level predictive relevance.

In SmartPLS 4, the PLSpredict was used to generate the $q^2$ values. From Table 5.12, the $q^2$ values obtained for the endogenous constructs are seen to be well above 0.35. This therefore is an indication that the endogenous latent variable is highly predicted by the model.

**Table 5. 12 Predictive Relevance ($q^2$) Values**

| | $Q^2$predict | RMSE | MAE |
|---|---|---|---|
| IR | 0.647 | 0.6 | 0.454 |
| IU | 0.717 | 0.537 | 0.397 |

### 5.3 Chapter Summary

This chapter reported the results of the data collected with a detailed analysis using SmartPLS 4. The chapter started with a detailed report on the profile of respondents to the questionnaire by analyzing their demographics. After a detailed report on the assessment of the measurement model was presented, the researcher outlined how the two-stage disjoint method was used to report the second-order construct in the model. In reporting the measurement model, the researcher first reported the model without the second-order construct (psychological empowerment) and proceeded to use the result obtained to report the full model with all the constructs. Overall, the measurement model was validated. This was followed by a detailed report on the structural model with careful analysis on the multicollinearity issues, path coefficient significance, the goodness of fit, effect size, and predictive relevance of the model. Overall, the structural model was successfully evaluated and assessed. A detailed analysis of all the reports were also included in tables and figures.

# CHAPTER SIX

# DISCUSSION OF RESULTS AND FINDINGS

## 6.0 Chapter Overview

In the preceding chapter, the results of the data collected were reported. From the reported results, this chapter elaborates and discusses findings that enabled the researcher to address the objectives stated for this study. First of all, the chapter gives a general overview of the accepted and rejected hypotheses stated in the previous chapter. Furthermore, the chapter addresses the hypothesis by elaborating on the influence of the various performance expectancy, effort expectancy, social influence, and facilitating conditions on intention to use. Additionally, the chapter discusses the influence of psychological empowerment on the intention to use and intention to recommend.

## 6.1 General Discussion

The purpose of this study was to investigate the determinants of user engagement and the extent to which user engagement and user empowerment influence students' intention to recommend social media health information among university students. Based on the purpose, three objectives were outlined by the researcher from which three questions were further derived. The study is based on previous research in the area of e-participation among citizens (Naranjo-Zolotov et al., 2019). A conceptual model developed from a combination of the Unified Theory of Acceptance and Use of Technology and the Psychological Empowerment Model was used to test the validity of the variables among university students in a developing country such as Ghana (Spreitzer, 1995b; Venkatesh et al., 2003). From the findings of the study, it was observed that five of the seven hypotheses were accepted. These five hypotheses were:

- **H1-** Performance expectancy positively influences the user's intention to use SMHI.
- **H4-** Facilitating Conditions positively influence the user's intention to use SMHI.

- **H5-** Intention to use positively influences user intention to recommend SMHI.
- **H6-** Psychological Empowerment positively influences intention to use SMHI.
- **H7-** Psychological Empowerment positively influences the intention to recommend SMHI.

Also, two of the remaining hypotheses were rejected. These were:

- **H2-** Effort Expectancy positively influences the user's intention to use SMHI.
- **H3-** Social Influence positively influences the user's intention to use SMHI.

**Table 6. 1 Summary of Hypothesis Testing**

| Hypothesis | Relationship | t-stats | Decision |
|---|---|---|---|
| HI | PE -> IU | 4.689 | Supported |
| H2 | EE -> IU | 0.584 | Rejected |
| H3 | SI -> IU | 1.116 | Rejected |
| H4 | FC -> IU | 2.631 | Supported |
| H5 | IU -> IR | 4.849 | Supported |
| H6 | PSEM -> IU | 8.354 | Supported |
| H7 | PSEM -> IR | 5.870 | Supported |

Where PE= Performance Expectancy, EE= Effort Expectancy, SI=Social Influence, FC= Facilitating Conditions, IU=Intention to Use, IR= Intention to Recommend.
PSEM= Psychological Empowerment

Of the 5 accepted hypotheses, PSEM -> IU recorded the highest t-statistic which indicates that psychological empowerment has the most significant positive influence on intention to use SMHI when compared to performance expectancy and facilitating conditions. This implies that although performance expectancy and facilitating condition were positive predictors of intention to use, psychological empowerment had a more significant positive influence. Also, PSEM -> IR recorded the highest t-statistic on intention to recommend. By implication, psychological empowerment had a more significant positive influence on intention to recommend than the intention to use had on intention to recommend.

On the other hand, EE -> IU and SI -> IU recorded very low t-statistics of 0.584 and 1.116 respectively. Although both values were below the threshold and are rejected, effort expectancy was recorded as the lowest.

Below, the researcher further discussed in detail the hypothesis decision to address the research objectives and questions by comparing them with extant literature.

### 6.1.1 Determinants of Students' Intention to Use SMHI

To investigate the determinants of students' intention to use SMHI, the researcher adopted the UTAUT model in building the conceptual framework. Under this model, performance expectancy, effort expectancy, social influence, and facilitating conditions were the constructs that aided in the investigation. From Table 6.1, it can be observed that performance expectancy and facilitating conditions were supported. On the other hand, effort expectancy and social influence were rejected.

#### 6.1.1.2 Performance Expectancy

The relationship between performance expectancy and intention to use SMHI among university students was supported. In Table 6.1, it can be observed that the t-statistic for the relationship between performance expectancy and intention to use was 4.689. This value is evidently above the t-statistic threshold of 1.96. This implies that performance expectancy influences students' intention to use social media health information. Explicitly, it can be deduced from the supported hypothesis that students believe that social media as a platform, is capable of yielding positive results when used as a source of health information. Also, it is proof that SMHI is useful in the daily lives of students and helps them get health information faster. Hence, health information obtained from social media will be gainful and beneficial to their health needs. Compared to existing literature, many studies have used the UTAUT model to access the intention to use technology in several contexts. Some of the results from these extant works of literature corroborated findings from this study. For example, in a study by Venkatesh et al. (2003), the researchers discovered that performance expectancy remains significant and the strongest predictor of intention to use among social influence, facilitating conditions, and effort expectancy. As clearly evidenced in Table 6.1, performance expectancy had the highest t-statistic among effort expectancy, social influence, and facilitating conditions. This finding from Venkatesh et al. (2003) corroborated the finding of this study. Also, Naranjo-Zolotov et al. (2019), confirmed in their study that performance expectancy had a significant influence on citizens' intention to use e-participation. Their study sought to investigate how empowerment influences the perception of citizens in using e-participation by using a conceptual model of the UTAUT model integrated with the psychological empowerment model. Additionally, a confirmatory study by Chua et al. (2018), investigated the factors affecting behavioural intention to use social networking based on the UTAUT model and stated that performance expectancy determines behavioural intention to use.

Comparatively, findings from this study concerning the role of performance expectancy in intention to use proved to be concise in relation to the works of Naranjo-Zolotov et al. (2019) and Chua et al. (2018).

#### 6.1.1.3 Effort Expectancy

From Table 6.1, the researcherobserve that the t-statistic for effort expectancy fell below the 1.96 threshold. This implies that the relationship between effort expectancy and intention to use is not supported. Since the relationship is not supported it means H2 - effort expectancy positively influences the user's intention to use SMHI has been rejected. Hence, this study concludes that effort expectancy does not influence students' intention to use social media health information. By implication, the ease with which students find relevant information on social media is not a factor that influences their intention to use SMHI. Also, students' intention to use is independent of the clarity and interactivity presented by SMHI. In reviewing the extant literature, the researcher discovered that some researchers presented findings contrary to the findings of this study.

For example, findings from Vialle et al. (2019), proved that effort expectancy had significant positive effects on behavioural intention to use mobile learning (m-learning). Vialle et al. (2019), used an extended model of the UTAUT to too predict factors affecting consumers' intention to use mobile learning (m-learning). Using PLS to test the hypothesis, the finding from their study proved that effort expectancy positively influenced intention to use m-learning.

Additionally, in the context of the Internet of Things (IoT), Arfi et al. (2021), sought to close the research gap by investigating the adoption of IoT in eHealthcare from a consumer perspective. Findings from their study proved that effort expectancy affirms the intention to use IoT in eHealth. This means that consumers' intention to use IoT in eHealth was influenced by the ease presented by IoT in accessing eHealth.

Another study by Alvi (2021), also contradicted findings from this study. The objective of their study was to investigate the adoption of social networking tools for learning after the COVID-19 pandemic. Findings by Alvi (2021) stated that among the factors influencing intention to use social networking tools among learners in India, effort expectancy stands as a positive predictor. This means that effort expectancy positively influences college students' behavioural intention to use social networking tools for learning in India.

### 6.1.1.4 Social Influence

The third hypothesis for this study which states that social influence positively influences intention to use SMHI was rejected. With a t-statistic of 1.116, social influence fell below the 1.96 thresholds to be considered for acceptance. This implies that the intention to use SMHI by students in a developing country like Ghana has no relation to the perceptions of their family and friends. Hence, this study concluded that university students are not influenced by important people (family or friends) around them to use SMHI. Furthermore, university students do not use SMHI to feel accepted among their peers and relatives.

A corroboratory finding by Naranjo-Zolotov et al. (2019), showed that social influence as a construct in the UTUAT model does not influence citizens' intention to use e-participation. Similarly, a study by Thongsri et al. (2018), also proved that social influence does not affect the intention to use m-learning by learners in developing countries like Thailand. This study also used a conceptual model of UTAUT integrated with the Uses and Gratifications Theory by Blumler and Katz (1974) to investigate the factors that influence the intention to use m-learning by sampling 359 undergraduates in Thailand, a developing country.

Additionally, Puspitasari and Firdauzy (2019), also proved that social influence does not influence the consumers' intention to use behaviour in leveraging social media for e-patient and health-related activities. Puspitasari and Firdauzy (2019), like this study, employed an integrated model based on the UTAUT and Protection Motivation Theory (PMT) to investigate consumer behaviour in leveraging social media for e-patient activities. Both studies by Puspitasari and Firdauzy (2019) and Thongsri et al. (2018) used PLS-SEM as analytical tools and integrated the UTAUT model with a different model to underpin the study. Contrarily, Cilliers et al. (2018), presented findings that do not corroborate the findings from this study. In Cilliers et al. (2018), researchers sought to investigate the adoption of mobile phones by students to seek health information. This study was conducted in South Africa and the results proved that social influence is a positive predictor of intention to use among students in South Africa.

#### 6.1.1.5 Facilitating Conditions

According to Venkatesh et al. (2012), facilitating conditions measure the extent to which a user believes there exists relevant technical infrastructure to support the optimum usage of a system. This study measured facilitating conditions under which students use SMHI. Observing Table 6.1, the t-statistic for facilitating conditions on intention to use is 2.631 which is above the 1.96 threshold. This means the H4 - Facilitating Conditions positively influence the user's intention to use SMHI as stated by the researcher was supported by the model. Hence, the study concludes that university students in a developing country like Ghana easily access the resources needed to optimally use social media to seek health information. By implication, there are minimal barriers concerning technical and organizational structures that hinder university students from using SMHI. The availability of resources such as smart devices and internet connectivity services are examples of technical conditions that facilitate the intentions of university students to use SMHI. This finding has been verified by existing studies in the area of social media and other health-related disciplines.

For example, in the study, "Using UTAUT Model to Predict Social Media adoption among Indonesian SMEs", Abdat (2020), found that facilitating conditions are a significant influence on the behavioural intention to use social media. The purpose of their study was to predict the factors that influence the adoption of social media apps by Indonesian SMEs to market and promote business activities. Similarly, Puspitasari and Firdauzy (2019), in their study on characterizing consumer behaviour in leveraging social media for e-patient and health-related activities, proved that facilitating conditions are a significant influence on consumer intention to use. Other studies by

### 6.1.2 Influence of Psychological Empowerment on Intention to Use

The second objective of this study was to investigate the influence of psychological empowerment on the intention to use SMHI. In this study, psychological empowerment comprised meaning, impact, competence, and self-determination. From Table 6.1, psychological empowerment to intention to use recorded a t-statistics of 8.354, a value that is representative of a supported hypothesis. Therefore, the researcher concluded that hypothesis H6 - Psychological Empowerment positively influences the intention to use SMHI is accepted. This implies that meaning, competence, impact, and self-determination collectively have a significant positive influence on the intention to use SMHI. Explicitly, the ability of the student to use SMHI (competence), the purpose or goal with which a student uses SMHI (meaning), the extent to which SMHI achieves intended results for the student (impact), and the choice by the student to initiate, continue and regulate the usage of SMHI positively influences their intention to use. As explained earlier, the four constructs collectively empower students psychologically thereby influencing their intention to use social media to seek health information. Additionally, it can be observed in Table 6.1 that Psychological empowerment to intention to use has the highest t-statistic as compared to other paths like performance expectancy and facilitating conditions. Therefore, the study concludes that psychological empowerment highly influences the intention to use SMHI among university students in a developing country like Ghana. A careful review of extant literature affirms this conclusion.

For example, a study by Khuntia et al. (2017), explored the three dimensions of psychological empowerment: discretionary, leadership and psychological empowerment and their influence on sustained intention to use health infomediaries. Conclusive evidence from their study proved that psychological empowerment sustains a patient's motivation to use health infomediaries. The researchers explained that a patient who is psychologically empowered is likely to help others whiles helping themselves thus sustaining engagement with the health infomediary.

Similarly, Naranjo-Zolotov et al. (2019), proved that psychological empowerment has a significant influence on intention to use. In this study, the researchers employed a similar conceptual model by integrating the Psychological Empowerment Model Spreitzer (1995) and the UTAUT Model Venkatesh et al. (2003) to investigate the influence of psychological empowerment on intention to use. Evidently, their results proved corroborative to the results of this study.

### 6.1.3 Influence of both Psychological Empowerment and Intention to Use on Intention to Recommend

Hypotheses H5 and H7 aided this study to investigate the influence of both psychological empowerment and intention to use on intention to recommend SMHI. H5 stated that "Intention to use positively influences user intention to recommend SMHI" and H7 stated that "Psychological Empowerment positively influences the intention to recommend SMHI". A further look at the t-statistic as shown in Table 6.1 proves that H5 and H7 recorded values of 4.849 and 5.870 respectively. Both values were above 1.96 and therefore H5 and H7 were supported hypotheses. Below, the individual influences of psychological empowerment and intention to use on intention to recommend are discussed. Furthermore, a comparative analysis of the influence of psychological empowerment and intention to use on intention to recommend was discussed.



### 6.1.4 Influence of Psychological empowerment on Intention to Recommend

By establishing that H5 is supported, it implies that psychological empowerment has a positive influence on the intention to recommend. In chapter three, the study stated that psychological empowerment is the degree to which a combination of meaning, impact, competence and self-determination influences a user to use social media health information and subsequently recommend SMHI. Stating emphatically, results from this study show that university students in a developing country like Ghana, when psychologically empowered by SMHI tend to recommend it to their friends and family. As stated earlier, a combination of meaning, impact, competence, and self-determination are the significant determinants of psychological empowerment in this study. Hence, the researcher concludes that when students a) derive the intended goal or purpose from using SMHI, b) can skillfully obtain relevant health information from social media, c) behave and act based on the influence of information obtained from social media and d) have autonomy on how, when, and why they use SMHI, It is evident that they are likely to recommend SMHI. Hence, they are considered psychologically empowered. In reviewing the existing literature on this hypothesis, the researcher discovered a study by Naranjo-Zolotov et al. (2019) in the context of e-participation. These researchers corroborated the findings from this study by stating that psychological empowerment positively influences the intention to recommend e-participation among citizens.

### 6.1.5 Influence of Intention to Use on Intention to Recommend

Finally, supporting H7 implies that intention to use has a positive influence on the intention to recommend SMHI among university students in a developing country like Ghana. Additionally, the researcher concluded that intention to use influences the post-adoption behavior of students causing them to recommend SMHI to family and friends. Consequently, Luo et al. (2010), clarified the importance of recommendation as a post-adoption behavior stating that recommendation is vital in the diffusion of technology. The researchers further proved that intention to use influences the intention to recommend. Also, Naranjo-Zolotov et al. (2019), confirmed this finding.

## 6.2 Comparative Analysis of Influence of Psychological Empowerment and Intention to Use on Intention to Recommend

Comparatively, this study proved that psychological empowerment has a higher influence on students' intention to recommend SMHI than the influence on students' intention to use on intention to recommend. This implies that the meaning of the health information obtained on social media by students and the impact it has on their behaviour has a higher influence than the performance expectancy and facilitating conditions enabling the usage of SMHI. Also, students' ability to regulate the why, when, and how to use SMHI is of greater influence on recommendation than the influence of intention to use on intention to recommend. This is affirmed by the t-statistics presented by the representing hypotheses in Table 6.1. Nonetheless, both psychological empowerment and intention to use are factors that contribute to students' intention to recommend SMHI. A corroborative study by Naranjo-Zolotov et al. (2019) proves that intention to use and psychological empowerment are significant determinants of intention to recommend e-participation.

## 6.3 Chapter Summary

This chapter focused on discussing the findings from the previous chapter. The chapter discussed in detail the findings with reference to the hypotheses of the study as well as existing literature. It was discovered that some literature corroborated findings from this study and others presented contrary findings. This gave a further explanation and understanding of the hypotheses developed for the study and whether they were supported or rejected in relation to the intention to use and intention to recommend SMH.

# CHAPTER SEVEN

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

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## 7.1 Chapter Overview

In the preceding chapter, the study discussed in detail the findings from the analysis by juxtaposing the hypotheses of the study with existing literature. This chapter summarizes the study and outlines answers to the research questions. Additionally, the chapter details recommendations and implications for research, policy, and practice. The limitations of the study were also outlined in this chapter.

## 7.2 Summary of the Study

This study investigated the determinants of user engagement and the extent to which user engagement and user empowerment influence students' intention to recommend social media health information (SMHI) among university students. As stated in chapter one, social media has made tremendous strides toward improving health information seeking, nonetheless, there are persisting challenges regarding user health information seeking (Li et al., 2018). Therefore, a conceptual model based on the UTAUT model and Psychological Empowerment Model by Spreitzer (1995) was used to investigate how university students in Ghana are influenced to use and recommend health information accessed through social media. Based on this, the following objectives were formulated for the research:

1. To investigate the determinants of students' intention to use SMHI.
2. To investigate the influence of psychological empowerment on students' intention to use SMHI.
3. To investigate the influence of psychological empowerment and students' intention to use on intention to recommend SMHI.

To achieve the above-stated objectives, the study formulated these questions:

1. What are the determinants of students' intention to use SMHI?
2. What is the extent of the influence of psychological empowerment on users' intention to use SMHI?
3. What is the extent of the influence of psychological empowerment and students' intention to use on intention to recommend SMHI?

With the formulated objectives and questions, the researcher identified the significance of the study in three aspects namely; research, policy, and practice. The study reviewed literature in the areas of social media, health information, and health infomediaries and identified the role of social media in health information, the challenges and benefits of SMHI and the factors that influence health information-seeking behaviours on social media. The literature reviewed allowed the study to identify theoretical approaches used to underpin studies in the context of social media health information. Some of the theoretical approaches used in the context of SMHI included Technology Acceptance Model, Nisbett's Cultural Theory, the Net Valence Model and UTAUT Model.

After a careful review of the literature, a conceptual framework based on the UTAUT Model by Venkatesh et al. (2003) and Psychological Empowerment Model by Spreitzer (1995) was adopted. Furthermore, the study presented a detailed explanation of all the constructs and formulated hypotheses to answer the research questions based on the relationships between the constructs. As a result, seven hypotheses were developed for this research. The study detailed the application of the two models in research and gave justification for the selection of the adopted conceptual model. According to the justification, the conceptual model is best suited to investigate the determinants of user engagement and also the influence of user engagement and psychological empowerment on users and intention to recommend.

The researcher proceeded to map out a methodology that specified the paradigm, approach, population, data analysis, sampling technique, and sample size used for the study. The positivist paradigm was chosen which allowed the researcher to make deductive conclusions based on the formulated hypotheses. Also, a quantitative approach was selected which allowed the researcher to collect numerical data. Furthermore, the researcher chose the University of Ghana, Legon, and the University of Professional Studies, Accra as the target population and used the 10-times rule to determine the sample size. Based on the research approach, a simple random sampling technique was adopted which gave students an equal probability to be selected. A survey questionnaire was developed based on the 5-point Likert scale and PLS-SEM was used to analyze the collected data.

During analysis, the researcher validated the measurement and structural models and further assessed the developed hypotheses. Out of the seven developed hypotheses, 5 of them were accepted and the remaining 2 were rejected. After the analysis, the researcher discussed the findings from the study. In the discussion, the researcher explained the rejected and accepted hypotheses and juxtaposed them with extant literature.

### 7.3 Summary of Findings

Following the research objectives, the findings of this study were grouped into three categories. The first finding was the determinants of intention to use SMHI, the second was the influence of psychological empowerment on intention to use SMHI, and finally the influence of both psychological empowerment and intention to use on intention to recommend SMHI.

### 7.3.1 Determinants of Intention to Use SMHI

Findings from the study revealed that although university students use SMHI, there are dominant factors that determine their intention to use. For this study, the researcher used the four constructs in the UTAUT Model to determine students' intention to use SMHI. From the findings presented, performance expectancy and facilitating conditions were the determinants of students' intention to use SMHI. Students' engagement with an SMHI is largely influenced by how useful SMHI is in their daily lives and the ease and speed with which they access health information on social media. Additionally, technical and organizational conditions are a determinant factor in students' engagement with SMHI. For example, the availability of smart devices and internet connectivity facilitates the intention to use SMHI.

### 7.3.2 Influence of Psychological Empowerment on Intention to Use

To investigate the influence of psychological empowerment on intention to use, the study used the Psychological Empowerment Model as a second-order construct made up of four first-order constructs. These constructs were meaning, impact, self-determination and competence. From the findings, the researcher observed that psychological empowerment has a significant influence on students' intention to use. The study concludes that a combination of the meaning of SMHI and the impact it has on students' health decision-making is relevant to sustain student engagement with SMHI. Additionally, the autonomy students have over using SMHI and the competence needed to use SMHI is also a significant factor in influencing their intention to use SMHI.

### 7.3.3 Influence of Psychological Empowerment and Intention to Use on Intention to Recommend.

In the third objective, the study investigated the influence of both psychological empowerment and intention to use on intention to recommend. The investigation proved that both constructs have an influence on students' intention to recommend SMHI health information. A critical analysis of the t-statistic presented by both constructs however proved that psychological empowerment, however, has a higher influence on the intention to recommend. This implies that although a student's intention to use SMHI is necessary for influencing their intention to recommend, a greater influence can be obtained from a psychologically empowered student. Nonetheless, the study considers both psychological empowerment and intention to use as significant influencers of SMH

**Table 7. 1 Mapping Research Objectives with Findings**

| Research Objectives | Research Findings | Extant Lliterature | Contributions, Implications and Recommendations |
|---|---|---|---|
| 1.To investigate the determinants of students' intention to use SMHI | The findings of this study showed 2 determinants of intention to use SMHI among university students in a developing country like Ghana. These determinants were assessed using the UTAUT Model and they are mainly : performance expectancy and facilitating conditions. | Venkatesh et al. (2003), Naranjo-Zolotov et al. (2019),Chua et al. (2018), Arfi et al. (2021), Alvi (2021), Puspitasari and Firdauzy (2019) and Thongsri et al. (2018) | Understanding the determinants of intention to use SMHI among university students will adequately inform relevant stakeholders and policy makers in decision making that will further enhance the health information on social media platforms. |

| | | | |
|---|---|---|---|
| 2. To investigate the influence of psychological empowerment on students' intention to use social media health information. | According to the findings of the study, psychological empowerment is a high predictor of intention to use SMHI among university students in Ghana. It was found that meaning, impact,competence and self-determination which make up psychological empowerment influence students' decision to engage with SMHI. | Khuntia et al. (2017), Naranjo-Zolotov et al. (2019) | This objective addresses the challenges faced regarding the knowledge limitation in user health information seeking behavior on social media. Many studies outlined the need for more research to explain behavioural patterns of health information seekers on social media. Additionally, relevant stakeholders, for example, health infomediaries and other online health can leverage on this finding to provide meaning and impactful health information suited for users' needs. |
| 3. To investigate the influence of psychological empowerment and students' intention to use on intention to recommend social media health information. | This study revealed that intention to recommend, a post-adoption behavior, is influenced by both psychological empowerment and intention to use. Among these two, psychological empowerment, however showed a higher level of significance to influencing intention to recommend SMHI among university students' in a developing country like Ghana. | Luo et al. (2010), Naranjo-Zolotov et al. (2019) | Arguably, this is one of a few studies that have integrated psychological empowerment and UTAUT to study user behavior in social media health information context. Hence, this study contributes to knowledge in the respective domain.<br>As stated by research, intention to recommend is vital in diffusion of a technology; herein referred to as SMHI. Hence, knowledge of the factors influencing intention to recommend is vital for stakeholders in the health information domain. This will also inform policy makers on developing the right policies to protect social media health information seekers. |

### 7.4 Recommendations and Implications

The findings from this study made significant contributions to policy, practice and research.

#### 7.4.1 Implications to Research

Prior research elaborated on the importance of social media in propagating health information among users worldwide. This has resulted in a call for researchers to diligently study and uncover behavioural trends of social media users toward health information seeking. As a result, this study purposed to investigate the determinants of user engagement which was measured by their intention to use, and further discover the influences of psychological empowerment and intention to use on their intention to recommend. Although many studies have used the UTAUT Model to investigate behavioural intentions, this research is arguably among the few to have combined psychological empowerment and UTAUT Model to investigate behavioural intentions. As a result, this study addresses a theoretical gap in research in the context of social media health information.

Additionally, most studies have limited their use of the UTAUT Model to specifically address the behavioural intentions, however, this study uses the conceptual model to further investigate post-adoption behaviour which is the intention to recommend. Therefore, this study addressed gaps identified from existing literature in the area of social media and health information.

#### 7.4.2 Implications to Practice

In practice, the study draws attention to relevant stakeholders in the social media and online health information domain. The study reveals the relevant factors that engage the interests of users and how to make health information platforms more engaging and beneficial for users. Therefore, health practitioners, health content creators, online health forums and health infomediaries, and all health organizations are adequately informed on how to successfully make information-seeking beneficial and engaging. Also, these stakeholders should note that psychological empowerment is significant in promoting user engagement and user intention to recommend. Therefore, in developing any platform for health information the constructs of both psychological empowerment and UTAUT should be thoroughly considered.

### 7.4.3 Implications to Policy

With regards to implications to policy, laws and policies regarding health information on social media and all online platforms should consider the impact on user behaviour. For example, users expect to have autonomy over SMHI and this is a deciding factor in psychologically empowering the user. Hence, policies must be implemented to ensure that social media platforms present users with the autonomy required to adequately access health information. Policymakers should also be strict on the type of health content on social media and the meanings users derive from them. This study makes it evident that the meaning one derives from health information on social media is relevant and impacts their health decision-making. This implies that, when the information provided is detrimental to the health of SMHI seekers, there is a likelihood of a health crisis, hence the need for strict regulations and policies on SMHI.

### 7.4.4 Limitations and Future Research Directions

This study presents further insights into the behavioural intentions of users in the context of social media with implications for research, policy and practice. Nonetheless, there are some limitations associated with the study, however, these limitations can be a direction for future researchers in Information systems and other related fields. Firstly, the target population for this study was university students, hence findings cannot be generalized to the whole population. Further research would have to conduct this study using different populations to better understand the behavioural intentions of users of SMHI. Also, the set context for this study prevents the generalization of findings to other studies. Hence, to fully understand the behavioural intentions and intention to recommend, future studies can conduct this study in a different context other than SMHI. Additionally, the findings from a quantitative study might be different from a qualitative or mixed-method approach. Future studies can look into using a mixed method or qualitative approach in this context. Further studies can adopt a different theoretical approach to understanding online health-seeking behaviour in the developing country context.

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# APPENDIX: QUESTIONNAIRE

UG BS
University of Ghana Business School

## INFORMATION AND CONSENT SECTION

**Dear Respondent,**

My name is **Julian Otoo-Provencal,** an MPhil student at the Department of Operations and Management Information Systems of the University of Ghana Business School. I am conducting a study on "**SOCIAL MEDIA HEALTH INFORMATION: A STUDY ON USER ENGAGEMENT AND USER EMPOWERMENT IN A DEVELOPING COUNTRY".**
This thesis seeks to investigate the extent to which user empowerment and user engagement affect user intention to use and further intention to recommend social media health information.

Social media health Information (SMHI) is all health information that includes; Literature on general health, specific populations, drugs, supplements, environmental health, toxicology, clinical trials, genetics, and biomedicine which can be assessed on social media.
For example, do you get fitness and nutrition tips on Instagram or any other social media, are you part of a group on WhatsApp or Facebook that share health-related content, or do you get updates and information on a particular disease, drug, or health-related issue on Twitter or any other social media platform?

**NB: General health includes but is not limited to body fitness and exercises, diet, and nutrition.**
**Social media includes but is not limited to WhatsApp. Twitter. Instagram, Facebook, Snapchat, TikTok, etc.**
**SMHI – Social Media Health Information**

I would be glad if you could take a few minutes to complete the questionnaire below. Please read carefully and pick the appropriate choice for each statement. Make sure to pick **only one** answer. All information provided shall be used purely for research purposes and shall be treated confidentially. All necessary ethical considerations have been met.

**CONSENT**
Do you hereby give active consent to participating in this academic research and understand the rights to access your information and the right to withdraw at any point?

A) Yes, I do
B) No, I don't

SECTION A (General Information and Demographics)

1. Gender
   a) Male [ ]
   b) Female [ ]
   c) Prefer not to say [ ]
2. Age
   a) 18-26 [ ]
   b) 27-35 [ ]
   c) 36-44 [ ]
   d) Above 44 [ ]

3. Level of Education
   a) Diploma/HND [ ]
   b) 1st Degree [ ]
   c) Master [ ]
   d) Doctorate [ ]

4. Current Year of Study
   a) 1st Year [ ]
   b) 2nd Year [ ]
   c) 3rd Year [ ]
   d) Final Year [ ]
   e) Other [ ]

5. What is your course of study?

   ______________________________.

6. How long have you used SMHI?
   a) About a year
   b) Over a year
   c) Between 2 to 5 years
   d) Above 5 years

7. How often do you use SMHI?
   a) Rarely
   b) Moderately
   c) Very often

8. Which social media platform(s) do you usually use to access SMHI?

   ___________________________________.

SECTION B.
Kindly read the following questions carefully and choose the appropriate options.

| ITEM | STATEMENT | STRONGLY AGREE | AGREE | NEUTRAL | DISAGREE | STRONGLY DISAGREE |
|---|---|---|---|---|---|---|
| | **PERFORMANCE EXPECTANCY** | | | | | |
| **PE1** | I find SMHI useful in my daily life. | | | | | |
| **PE2** | Using SMHI helps me get health information more quickly. | | | | | |
| **PE3** | Using SMHI increases my knowledge of health issues. | | | | | |
| | **EFFORT EXPECTANCY** | | | | | |
| **EE1** | Learning how to use SMHI is easy for me. | | | | | |
| **EE2** | Interacting with SMHI is clear and understandable. | | | | | |
| **EE3** | I find SMHI easy to use. | | | | | |
| | **SOCIAL INFLUENCE** | | | | | |
| **SI1** | Important people around me think I should use SMHI. | | | | | |
| **SI2** | People who influence my behavior think I should use SMHI. | | | | | |
| **SI3** | People whose opinions I value think I should use SMHI. | | | | | |
| | **FACILITATING CONDITIONS** | | | | | |
| **FC1** | I have the resources necessary to use SMHI | | | | | |
| **FC2** | I possess the knowledge to use SMHI | | | | | |
| **FC3** | SMHI is compatible with the devices I use | | | | | |
| | **COMPETENCE** | | | | | |
| **CP1** | I have mastery over the usage of SMHI. | | | | | |
| **CP2** | I am self-assured about my capabilities to use SMHI. | | | | | |
| **CP3** | I have confidence in my ability to use SMHI | | | | | |
| | **INTENTION TO USE** | | | | | |
| **IU1** | I intend to continue the use of SMHI in the future | | | | | |
| **IU2** | I will always try to use SMHI in my daily life | | | | | |
| **IU3** | I plan to continue to use SMHI | | | | | |
| | **MEANING** | | | | | |
| **MN1** | SMHI is very important to me | | | | | |
| **MN2** | Using SMHI is meaningful to me. | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **MN3** | Personally, all activities I perform with SMHI are meaningful to me. | | | | | |
| | **IMPACT** | | | | | |
| **IM1** | SMHI usage has a significant impact on my health decision-making. | | | | | |
| **IM2** | Based on SMHI usage, I have significant influence over my health and wellness | | | | | |
| **IM3** | SMHI usage has given me a great deal of control over what happens with my health | | | | | |
| | **SELF-DETERMINATION** | | | | | |
| **SD1** | I have significant autonomy in determining how I use SMHI | | | | | |
| **SD2** | I have enough opportunity for freedom and independence in using SMHI. | | | | | |
| **SD3** | I can personally decide how I use SMHI | | | | | |
| | **INTENTION TO RECOMMEND** | | | | | |
| **IR1** | I will recommend SMHI to my friends and encourage them to subscribe. | | | | | |
| **IR2** | I will recommend SMHI to my friends and encourage them to subscribe. | | | | | |
| **IR3** | I would recommend SMHI to anyone who seeks my advice. | | | | | |

**THANK YOU FOR YOUR PARTICIPATION**