



BINDURA UNIVERSITY OF SCIENCE EDUCATION

**THE INFLUENCE OF FATE CONTROL, PERCEIVED HEALTH RISK, AND
PRIVACY CONCERNS ON THE ACCEPTANCE OF HUMAN
PAPILLOMAVIRUS (HPV) SCREENING DIGITAL ADVERTISING: THE
MODERATING ROLE OF DIGITAL LITERACY**

BY

CHITSAMBA ALEC

B242945B

**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE MASTER OF SCIENCE IN DIGITAL
MARKETING DEGREE**

FACULTY OF COMMERCE

BINDURA UNIVERSITY OF SCIENCE EDUCATION

BINDURA, ZIMBABWE

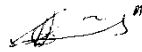
NOVEMBER 2025

APPROVAL FORM

The undersigned certify that they have read and recommend to the Bindura University of Science Education for acceptance, a dissertation entitled “The Influence Of Fate Control, Perceived Health Risk, And Privacy Concerns On The Acceptance Of Human Papillomavirus (HPV) Screening Digital Advertising: The Moderating Role Of Digital Literacy”, submitted by Chitsamba Alec in partial fulfilment of the requirements for the Master of Science Degree in Digital Marketing

STUDENT: CHITSAMBA ALEC

SIGNATURE:



DATE 18 NOVEMBER 2025

SUPERVISOR: DR D.C. JARAVAHA

SIGNATURE:

DATE

DEPARTMENTAL CHAIRPERSON: DR P MUKUCHA

SIGNATURE:

DATE

RELEASE FORM

NAME OF AUTHOR: CHITSAMBA ALEC

REG NUMBER **B242945B**

DISSERTATION TITLE: The Influence of Fate Control, Perceived Health Risk, and Privacy Concerns On the Acceptance of Human Papillomavirus (HPV) Screening Digital Advertising: The Moderating Role of Digital Literacy.

YEAR DEGREE GRANTED: 2025

Permission is hereby granted to the Bindura University of Science Education Library to produce single copies of this project and to lend or sell such copies for scholarly or scientific research purpose only. The author does not reserve other publication rights and the dissertation may not have extensive extracts from it be printed or otherwise reproduced without the author's written permission.

SIGNED: 

DATE: 18/11/2025

RESIDENTIAL ADDRESS: Mutare Polytechnic,
26 Vincent Avenue,
Mutare

DECLARATION

I, Chitsamba Alec, declare that this research is my own work and has not been copied from any source without the acknowledgement of the source.

Signed:



Date:

18/11/2025

DEDICATION

This dissertation is a tribute to my lovely wife, Tendai Kusosa, and our three loving children, Alex, Alvin, and Alma. Thank you for your love, patience, and support during this academic journey. To my Dad and Mom, I want to say thank you for the financial support, encouragement, and trust you had in me. I will never forget the sacrifices you made for me to accomplish this journey today. To my friends Bridget, Caroline, Samantha, Dzidzai, and Yvonne, thank you for the emotional support and let this achievement be part of your success stories. Dzidzai you made this so possible through your words of encouragement and your support when I could not believe in myself or stand on my own. To Kule Tafara, thank you for believing in me. This dissertation is a dedication to all those who wish to live a health life, never let fate and fear decide your life.

ABSTRACT

The increasing global adoption of digital communication technologies has created new opportunities for public health promotion while on the contrary the acceptance of Human Papillomavirus (HPV) screening digital advertising has remained inconsistent across many cultural contexts especially in developing nations. This study examined the influence of fate control, perceived health risk, and data privacy concerns on the acceptance of HPV screening digital advertising among Zimbabwean women aged 18 to 49 years. Digital literacy was assessed as a moderating variable. The research borrows from the Biopsychosocial (BPS) Model, Protection Motivation Theory (PMT), and the Digital Health Literacy Competence (DHLC) Framework to generate a new integrated framework that addresses the acceptance of digital communications in HPV screening. A cross-sectional, quantitative research design was employed using a structured questionnaire distributed to a sample of 760 urban and peri-urban women in Zimbabwe through both an online and offline distribution. 670 valid responses were analysed using Structural Equation Modelling (SEM) in AMOS. The results revealed that fate control had a significant negative effect on the acceptance of HPV screening digital advertising. Perceived health risk had a significant positive effect on the acceptance of HPV screening digital advertising. Data privacy concerns did not exhibit a significant negative relationship with the acceptance of HPV screening digital advertising as previously guessed. This is an indication that institutional trust and perceived health benefits are likely to outweigh privacy apprehensions among women in the age 18 to 49 years. The moderation analysis showed that digital literacy can intensify both the negative impact of fate control and the positive impact of perceived health risk. On the contrary, digital literacy significantly failed to moderate the influence of privacy concerns on the acceptance of HPV screening digital advertising. The study findings therefore confirm that sociocultural and cognitive beliefs remain powerful determinants of digital health behaviour, even in technologically advanced societies. Health authorities should be now encouraged to design digital advertisements that align health messages with local cultural values, personalized risk communications, and compliment digital competence to generate trust among the public in Zimbabwe and in the region.

Key words: Fate Control, Perceived Health Risk, Data Privacy Concerns, Digital Literacy, HPV Screening, Digital Health Advertising, Protection Motivation Theory, Biopsychosocial Model, Zimbabwe, Cultural Beliefs.

ACKNOWLEDGEMENT

I wish to express my deepest gratitude to everyone who contributed in one way or another to the successful completion of this research. My heartfelt appreciation goes to my supervisor, Dr. D. C. Jaravaza, for his outstanding mentorship, patience, understanding, and encouragement throughout this academic journey. His guidance and dedication are invaluable to the success of this dissertation. My sincere thanks also go to the Principal and Vice Principal of Mutare Polytechnic for their unwavering support and encouragement. Credit goes to my workmates too who emotionally stood by me during this demanding period. A special mention goes to Mr. D. Muchakubvura, my diligent research assistant, whose assistance and commitment were crucial to the completion of this study. I also extend my appreciation to everyone who contributed directly or indirectly to the success of this project, including the research participants and the printing and binding teams for their professional service. To my beloved wife, Tendai Kusosa, my dear friends, my parents, and my siblings, your love, encouragement, and emotional support gave me the strength and determination to see this journey through. I am truly grateful for your patience and belief in me. My profound gratitude also goes to the lecturers in the Marketing Department at Bindura University, whose vast knowledge, enthusiasm for teaching, and willingness to engage in thoughtful academic discussions greatly enriched my understanding of various marketing concepts and has to this day poked my intellectual curiosity. Finally, I would like to extend my appreciation to my fellow classmates for creating a lively and stimulating academic environment. Your collaboration, insightful discussions, and constructive feedback have played a significant role in refining and enhancing this research.

Table of Contents

THE INFLUENCE OF FATE CONTROL, PERCEIVED HEALTH RISK, AND PRIVACY CONCERNS ON THE ACCEPTANCE OF HUMAN PAPILLOMAVIRUS (HPV) SCREENING DIGITAL ADVERTISING: THE MODERATING ROLE OF DIGITAL LITERACY	i
APPROVAL FORM	ii
RELEASE FORM.....	iii
DEDICATION	v
ABSTRACT.....	vi
ACKNOWLEDGEMENT	vii
LIST OF TABLES	xii
LIST OF FIGURES	xiii
LIST OF APPENDICES	xiv
LIST OF ABBREVIATIONS	xv
CHAPTER ONE	1
1. INTRODUCTION	1
1.1. Introduction	1
1.2. Background of the study.....	1
1.3. Problem Statement.....	4
1.4. Purpose of the Study.....	4
1.5. Research Objectives	5
1.6. Hypotheses.....	5
1.7. Significance of the Study.....	6
1.8. Assumptions of the Study	7
1.9. Delimitation of the Study	8
1.10. Limitations of the Study.....	8
1.11. Definition of Key Terms	9
1.12. Summary	10
CHAPTER TWO	11
2. LITERATURE REVIEW	11
2.1 Introduction	11
2.2. Theoretical Framework.....	11
2.2.1. The Biopsychosocial (BPS) Model.....	11

2.2.2. Protection Motivation Theory	13
2.2.3. The Digital Health Literacy Competency (DHLC) Framework	15
2.2.4. An Integration of the Three Theoretical Contributions	17
2.3. Hypotheses Development	18
2.3.1. Fate Control and Acceptance of HPV Screening Digital Advertising.....	18
2.3.2. Perceived Health Risk and Acceptance of HPV Screening Digital Advertising	21
2.3.3. Privacy Concerns and Acceptance of HPV Screening Digital Advertising	22
2.3.4. The Moderating Role of Digital Literacy	24
2.4. Gap Analysis.....	27
2.5. Conceptual Framework.....	28
2.6. Summary.....	28
CHAPTER THREE	30
3. RESEARCH METHODOLOGY.....	30
3.1. Introduction	30
3.2. Research Design	30
3.3. Target Population	30
3.3.1. Sampling Technique.....	31
3.3.1.1. Sample Size	31
3.4. Questionnaire Development.....	32
3.4.1. Validity and Reliability of the Questionnaire	35
3.5. Data Collection Procedure.....	35
3.6. Data Analysis Procedures	36
3.7. Ethical Considerations	37
3.8. Summary.....	38
CHAPTER FOUR.....	39
4. DATA PRESENTATION, ANALYSIS AND DISCUSSION.....	39
4.1. Introduction	39
4.2. Response Rate.....	39
4.3. Demographic Characteristics.....	40
4.3.1. Age Distribution.....	40
4.3.2. Level of Education	40
4.3.3. Frequency of Message Reception	40
4.3.4. Methods Used to Receive HPV Screening Messages	41

4.3.5.	Sources of Messages or Adverts	42
4.3.6.	Trusted Information Sources	42
4.4.	Factor Analysis	42
4.4.1.	The Uni-dimensionality tests	42
4.4.1.1.	Fate Control Factor Analysis	43
4.4.1.2.	Perceived Health Risk Factor Analysis	44
4.4.1.3.	Data Privacy Concern Factor Analysis	46
4.4.1.4.	Acceptance of HPV Screening Digital Advertising Factor Analysis.....	47
4.4.1.5.	Digital Literacy Factor Analysis	49
4.5.	Normality Tests	50
4.6.	Measurement Model Evaluation.....	52
4.6.1.	Model Fit Analysis	52
4.6.2.	Construct Validity	55
4.6.3.	Convergent Validity and Reliability	56
4.6.4.	Discriminant Validity	57
4.7.	Structural Equation Modelling (SEM) Analysis	58
4.7.1.	Direct Effects.....	58
4.7.2.	The Moderation Effect of Digital Literacy	60
4.8.	Discussion of Findings	62
4.8.1.	The Impact of Fate Control on the Acceptance of HPV Screening Digital Advertising.....	63
4.8.2.	The Influence of Perceived Health Risk on the Acceptance of HPV Screening Digital Advertising.....	64
4.8.3.	The Effect of Data Privacy Concern on the Acceptance of HPV Screening Digital Advertising.....	64
4.8.4.	The Moderating Effect of Digital Literacy on the Relationship between Fate Control and the Acceptance of HPV Screening Digital Advertising.....	65
4.8.5.	The Moderating Effect of Digital Literacy on the Relationship between Perceived Health Risk and the Acceptance of HPV Screening Digital Advertising ...	66
4.8.6.	The Moderating Effect of Digital Literacy on the Relationship between Data Privacy Concerns and the Acceptance of HPV Screening Digital Advertising.....	66
4.9.	Summary.....	67
CHAPTER FIVE		68
5.	SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	68
5.1.	Introduction	68

5.2. Summary.....	68
5.3. Conclusions	69
5.4. Recommendations	70
5.4.1. Address Fatalistic Beliefs.....	70
5.4.2. Enhance Risk Communication	71
5.4.3. Promote Digital Literacy	71
5.4.4. Integrate Privacy Assurance Measures	71
5.4.5. Tailor Messages to Target Audiences	72
5.4.6. Improve Access to Digital Infrastructure	72
5.5. Contribution to Knowledge	72
5.6. Limitations and Future Research.....	73
References.....	74
Appendix A.....	84
Measurement Scales.....	84
Appendix B	85
RESEARCH QUESTIONNAIRE.....	85
Appendix C	90
Permission Letters	90
Permission Letter from RCZ Mutare (Chitakatira)	90
Permission Letter from SDA Church Toronto	91
Letter to Mutare City Council	92

LIST OF TABLES

Table 1: Summary of Measurement Scales	33
Table 2: Response Rate.....	39
Table 3: Demographic Characteristics.....	41
Table 4: Fate Control Factor Loadings	43
Table 5: Improved Communalities and Tests For Fate Control	44
Table 6: Perceived Health Risk Factor Loadings	45
Table 7: Improved Communalities and Tests For Perceived Health Risk.....	45
Table 8: Data Privacy Concern Factor Loadings	46
Table 9: Improved Communalities and Tests For Data Privacy Concerns.....	47
Table 10: Acceptance of HPV Screening Digital Advertising Factor Loadings	48
Table 11: Improved Communalities and Tests For Acceptance of HPV Screening Digital Advertising.....	49
Table 12: Digital Literacy Factor Loadings	50
Table 13: Tests of Normality	51
Table 14: Model Fit Summary Before Model Adjustment.....	53
Table 15: Model Fit Summary for the Revised Model	54
Table 16: Standardized Regression Weights	55
Table 17: Convergent Validity and Reliability	56
Table 18: Discriminant Validity	57
Table 19: Hypotheses Testing for Direct Effects.....	59
Table 20: Hypotheses Testing for Moderation Effects	61
Table 21: Measurement Scales	84

LIST OF FIGURES

Figure 1: An adapted educational version of Engel’s Biopsychosocial Model of Mental Health.....	12
Figure 2: The Protection Motivation Model Adapted from Rogers (1983).....	14
Figure 3: The Cognitive Mediating Process of the Protection Motivation Theory.. ..	14
Figure 4: The Digital Health Literacy Competency Framework.. ..	16
Figure 5: The Research Model of the Study	28
Figure 6: Initial Measurement Model	53
Figure 7: Final Measurement Model.....	54
Figure 8: The Structural Model.....	59
Figure 9: The Moderation Effects of Digital Literacy Model.....	60

LIST OF APPENDICES

Appendix A.....	84
Appendix B.....	85
Appendix C.....	90

LIST OF ABBREVIATIONS

Abbreviation	Meaning
AHDA	Acceptance of Human Papillomavirus Screening Digital Advertising
AMOS	Analysis of Moment Structures (Statistical Software)
BPS Model	Biopsychosocial Model
CFA	Confirmatory Factor Analysis
DHLC	Digital Health Literacy Competence Framework
DL	Digital Literacy
DPC	Data Privacy Concern
EFA	Exploratory Factor Analysis
FC	Fate Control
H	Hypothesis
HIL	Health Information Literacy
HPV	Human Papillomavirus
MoHCC	Ministry of Health and Child Care (Zimbabwe)
PMT	Protection Motivation Theory
PHR	Perceived Health Risk
RCZ	Reformed Church in Zimbabwe
SDA	Seventh-Day Adventist
SEM	Structural Equation Modelling
SPSS	Statistical Package for the Social Sciences
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
URL	Universal Resource Locator

CHAPTER ONE

1. INTRODUCTION

1.1.Introduction

Acceptance of digital advertising is important in promoting HPV screening among Zimbabwean women as digital communications are now dominating the narrative on public health. This chapter provides the background information for the research to allow for a more in-depth look into the cultural beliefs, health perceptions, privacy issues and technological factors that influence the acceptance of digital health messages. An outline of the research problem, research objectives, and scope of the research will follow in order to lay a compelling foundation for the research. This study bridges African cultural philosophy and contemporary health communication with the aim to improve the prevention and control of Human papillomavirus (HPV) infections through an improved engagement with HPV screening digital advertisements.

1.2.Background of the study

There has been a growing scepticism on the authenticity and importance of Human Papillomavirus screening programmes, with most women especially from the rural areas seeing it as just a gimmick. The factors resulting in the rejection or acceptance of HPV screening digital advertisements are not so well established and should therefore be exposed through this research. The extent to which digital advertising is used in health promotions is also not so defined. This may be the reason why cervical cancer fight remains a challenge especially in low income and middle income countries such as Zimbabwe (Bray et al., 2018; Ferlay et al., 2019). A look into the pattern of events dating from the year 2018 up to year 2025, global statistics show that Human Papillomavirus (HPV) is the primary causative agent of cervical cancer among other possible threats and causative agents such as a weakened immune system, prolonged contraception use, obesity and smoking. In line to this observation, an estimated 2.2 million infection-attributable cancer cases were diagnosed globally in 2018, with HPV responsible for approximately 690,000 cases and an age-standardised incidence rate (ASIR) of 8.0 per 100,000 person-years (Bray et al., 2018; De Martel et al., 2020). In this regard, the burden is attributed to be very high and threatening in low income countries with statistics showing that HPV related cancers have an ASIR of 16.1

as compared to 6.9 in high-income countries (De Martel et al., 2020). The Sub-Saharan African region is on top of the statistics reporting a high ASIR of 33.1 per 100,000 person-years (Bruni et al., 2022; De Martel et al., 2020). HPV remains one of the leading cancer-related killers among Zimbabwean women too (WHO, 2024). WHO (2024) statistics show that about 3,043 Zimbabwean women have been diagnosed with cervical cancer, and an estimated 1,976 Zimbabwean lives were lost to the disease in 2023 alone. According to WHO (2024), approximately 20% of the Zimbabwean women has had access to screening services as of the year 2019, and in that respect urban areas exhibited an alarming low rate of 3% while their rural counterparts recorded a slightly higher rate of 10%. Statistics from WHO (2024) further show that women in the age range eighteen to forty-nine years constitute the primary at-risk group in Zimbabwe. The same age group represent the greatest proportion of digital media users as is shown by the internet penetration rate of 45 per cent in urban areas for households headed by women (ZIMSTAT, 2024). This study therefore focused on the 18 to 49 years demographic group in order to align with Zimbabwe's legal age of consent and the prevailing patterns of digital usage.

Zimbabwe continues to predominantly rely on traditional channels including television, radio adverts, road shows, print media, and word-of-mouth to disseminate public health information even at a time that digital media and digital literacy has become profound globally and locally (Gentili et al., 2022). In addition, traditional methods are effective as far as a broad reach is concerned, however, they do not have the level of accuracy, interaction and cost efficiency found in digital advertising (Gentili et al., 2022). This represents an important technological use gap for both the government and those responsible for organizing cancer awareness campaigns. Fate control is one factor among many psychological, cultural and contextual factors that explains the willingness of an individual to accept health advertisements (WHO, 2024) and is also a key tenet of both African philosophies of Ubuntu and self-care. Fate control is guided by an individual's destiny. Among most African cultures, destiny is perceived to be a guiding force in one's life outcomes (Mbiti, 2018; Mlungwana, 2020). This therefore suggests that beliefs about African health may influence public, scientific and modern health-seeking behaviour and also highlight a need for culturally-based strategies to be used within health communications as well. In a more disturbing situation, it is estimated that around twenty percent of eligible women have had an HPV test in the last five years (WHO, 2024). This indicates that fate control might not be the only possible factor, but perceived risk should be considered too. According to the 20% statistics, if it is not fate

control, then perceived risk has also influenced the women's demotivation to go for HPV screening programmes. This reflects possibly a low risk perception and the likely challenges in information access among Zimbabwean women especially the rural folk. In addition to the mix is the fear of stigma associated with reproductive health information. In line with Alhammad et al. (2024) and Alzghaibi (2025) findings, lack of confidentiality and exacerbated stigmatisation of the whole HPV screening process act as blockade or impediment to the acceptance of digital health interventions. Digital Literacy is directly related to the ability of individuals to understand health information and to evaluate how to protect their own privacy online as well as use digital platforms effectively. The Data Protection Act of 2021 also helps to create a culture of trust with regard to the use of personal health information online through the creation of a framework that provides protections and guidelines that safeguard this type of information. These two concepts complement each other by providing women the knowledge and powers to not only seek out HPV Screening Advertising but to be able to act upon those advertisements. The worry is now that only 38 percent of Zimbabwean women aged eighteen to forty-nine are said to have moderate to high digital literacy (ZIMSTAT, 2024). This shows a low number of women in this age group who can engage with HPV screening digital advertising. WHO (2020) therefore stressed for the need of a nationwide, evidence-based communication to address social and cultural barriers affecting HPV vaccine acceptance and further noted that some communities actually require extra efforts to overcome hesitancy and misinformation.

The above evidence and insights therefore show that little is known about how fate control, perceived health risk, and privacy concerns collectively combine to influence the acceptance of digital health advertising in any African context such as Zimbabwe. Most existing research has had studied the impact of these variables separately and this has resulted in an oversight of the cultural and contextual variations that exist globally. These variables actually have possible collective impact on health decisions and must be tested not in isolation. By addressing this gap, the present study seeks to blend sociocultural philosophy with behavioural and digital communication frameworks, which will offer fresh, culturally grounded insights that are essential for designing impactful and sensitive digital health campaigns aimed at improving HPV screening digital advertising acceptance across Zimbabwe and other African countries.

1.3. Problem Statement

The growing prominence of digital advertising as a channel for health communication has not acted as a guarantee to the acceptance of human papillomavirus (HPV) screening digital advertisements and it has remained complex and confusing. HPV infections continue to pose a major public health threat (Li et al., 2025), among women aged eighteen to forty-nine (WHO, 2024), yet the existing digital campaigns that targets this demographic age range remain fragmented and also lack strategic cohesion. Experiences from previous researches have shown that cultural beliefs, perceived health risks, and privacy concerns were studied in isolation and in that case, this has provided a reduced understanding of how these factors interact to influence digital health communications (Mbiti, 2018). In addition, there have been no studies on how the moderate effect of digital literacy impacts the degree of acceptance of HPV screening digital advertising. This knowledge gap will limit public health stakeholders' ability to develop culturally relevant digital programmes that increase screening utilisation rates and ultimately reduce the incidence and mortality from cervical cancer in African communities. There is therefore a void for an integrative framework that includes both sociocultural beliefs and values; psychological perception; and technological competency which limits the creation of targeted and effective digital strategies to promote HPV screening and awareness.

1.4. Purpose of the Study

This study aims to explore the manner in which fate control, perceived health risk and privacy concerns affect the acceptance of human papillomavirus screening digital advertising among women aged eighteen to forty nine years in Zimbabwe. The study further aims to explore how digital literacy moderates the relationships fate control, perceived health risk, privacy concerns and the acceptance of HPV screening digital advertisements. The research seeks to provide a cultural, responsive and technological centred paradigm that will inform the design of effective and sensitive digital health communication strategies. Overall, the study intends to contribute to an improved HPV screening uptake and cervical cancer prevention within Zimbabwe, Africa and the world at large through an increased digital awareness and message acceptance.

1.5. Research Objectives

The following objectives guide the study in examining how fate control, perceived health risk, privacy concerns influence the acceptance of human papillomavirus screening digital advertisements among women aged eighteen to forty nine in Zimbabwe.

1. To determine the effect of fate control on the acceptance of HPV screening digital advertising.
2. To assess the influence of perceived health risk on the acceptance of HPV screening digital advertising.
3. To examine the impact of privacy concerns on the acceptance of HPV screening digital advertising.
4. To explore whether digital literacy moderates the relationships between fate control and the acceptance of HPV screening digital advertising.
5. To evaluate the moderating role of digital literacy on the relationship between perceived health risk and the acceptance of HPV screening digital advertising.
6. To investigate the moderating effect of digital literacy on the relationship between privacy concerns and acceptance of HPV screening digital advertising.

1.6. Hypotheses

- H1:** Fate control has a significant negative effect on the acceptance of HPV screening digital advertising.
- H2:** Perceived health risk has a significant positive effect on the acceptance of HPV screening digital advertising.
- H3:** Privacy concerns have a significant negative effect on the acceptance of HPV screening digital advertising.
- H4:** Digital literacy modifies the relationship between fate control and the acceptance of HPV screening digital advertising.
- H5:** Digital literacy strengthens the relationship between perceived health risk and the acceptance of HPV screening digital advertising.

H6: Digital literacy modifies the relationship between privacy concerns and the acceptance of HPV screening digital advertising.

1.7. Significance of the Study

The outcomes of this research will be useful for all stakeholders who have a role to play in both cervical cancer prevention and digital health promotion in Zimbabwe and other African countries. This includes, for example, public health professionals, and policy makers. They can utilize the data from this study to create culturally appropriate and effective digital advertising strategies to increase access to HPV screening adverts over the Internet. Health communications specialists will be able to utilize the findings from this study to develop messages that align themselves with cultural constructs (e.g., Fate Control) as well as address the identified perceptions of health risk and privacy concerns that will have a positive impact on how messages are developed. The final group that will benefit from this research is digital platform creators and educators. The findings from this research will assist them in developing and creating digital interventions that are accessible and user-friendly; and directed towards young adult women (ages 18-49) by understanding how digital literacy impacts user engagement.

This research will add to the scholarly literature about digital advertising and digital literacy. Integrating sociocultural philosophy with behavioural and digital communication theories will advance the understanding of health communication acceptance within African settings. Young women are expected to be able to access better quality, easy-to-use, culturally centred digital health resources and applications (to improve their knowledge about HPV) and therefore be more likely to accept and undergo early screening for HPV. Furthermore, increasing the number of young women participating in HPV testing may reduce deaths from cervical cancer, lessen the strain on the healthcare system, and improve the overall quality of life in the community. In other words, the more young women are involved with HPV screening programmes, the greater the potential to lower the rates of cervical cancer and death from that disease. The ultimate results could help reduce the burden placed on the healthcare system as a whole and improve the quality of life for all members of the community.

This research project provides the university with an opportunity to enhance its public health and digital communication research potential. Additionally, this study will provide a foundation for additional academic studies as well as multi-disciplinary collaborative efforts in which the university can further contribute toward solving many of the major reproductive health problems facing Zimbabwe. Furthermore, this study will help create opportunities for continued strong engagement between the university and policymakers and health organizations that will support the university's commitment to student scholarships and community service.

1.8. Assumptions of the Study

In order to conduct this research, the following assumptions were made.

- Women aged eighteen to forty nine in Zimbabwe regularly use digital platforms and are exposed to human papillomavirus screening digital advertising.
- Respondents will provide honest and well thought responses about their perceptions of fate control, perceived health risks, privacy concerns, digital literacy and acceptance of digital health messages.
- Anonymity during data collection will encourage openness and truthful reporting.
- Fate control, privacy concerns, perceived health risk, digital literacy are the only factors relevant in influencing health decisions within the target population.
- Women have different digital literacy levels which will affect how health communications are received and understood.
- The findings from this study will be representative of similar populations in Zimbabwe and potentially applicable to comparable African contexts.

These assumptions are therefore essential in ensuring the validity and reliability of the research outcomes (Bell et al., 2022).

1.9.Delimitation of the Study

The current study only focuses on women from ages eighteen through to forty-nine that are residing in the urban and peri-urban parts of Zimbabwe. The selection of this age range and geographic area was based on the fact that this demographic meets the criteria for being able to participate in HPV screening, as well as having an interest in engaging in digital media, which will allow the researchers to assess how much this demographic accepts HPV screening digital advertising. This study will be limited solely to digital advertising related to human papillomavirus (HPV) screening and will not include other methods of cervical cancer awareness or screening. The study will also be limiting itself to the variables of fate control, perceived health risk, privacy concerns, and digital literacy as predictors of acceptance of HPV screening digital advertising and will not include additional predictors such as socio-economic status or accessibility to healthcare. The geographic area for the study will only include urban settings since the internet penetration and the use of digital media in these areas is significantly greater than in rural areas. The research will be a cross-sectional study, allowing the researchers to capture the perceptions and behaviours of participants at a single point in time and not longitudinally. This is due to the academic time limit to submit this research.

1.10. Limitations of the Study

The fact that the study focused exclusively on urban-dwelling women aged 18 to 49 may limit the applicability of this study's findings to women who live in rural areas and who are older than 49 years. Furthermore, a cross-sectional research methodology captures perceptions and behaviours at only one time period and prevents assessment of associations among variables that vary over time. Additionally, the study's identification of causal relationships has a limited duration. The method used to collect data was based upon participant self-reports, which can be influenced by participants' responses due to social desirability bias or respondent bias, even though efforts were made to ensure participant anonymity. Finally, the study evaluated four specific factors (fate control, perceived health risk, privacy concerns, and digital literacy), but the study did not evaluate the possibility that there are other important factors influencing the study including; sociocultural status, broader cultural differences, digital connectivity and the quality of the online health platforms in Zimbabwe.

1.11. Definition of Key Terms

Digital advertising is a form of paid or sponsored online communications that are meant to deliver targeted promotional messages to specific audience segments while also allowing interactions, and real-time engagement at a lower cost (Belch & Belch, 2018; Elrod & Fortenberry, 2020).

Acceptance is the decision to use a good, service, or concept both temporarily and permanently (Sheikhalizadeh & Soltani, 2023).

The Acceptance of digital advertising is the willingness of individuals to receive, engage with and act upon health messages that are delivered through digital platforms such as social media, websites, mobile applications, and online advertisements (Sheikhalizadeh & Soltani, 2023).

Health fate control represents the belief that a person's health outcomes are predetermined or influenced by a higher power or destiny (Mbiti, 2018).

Perceived health risk is an individual's assessment of their susceptibility to a health threat and the seriousness of its consequences which can motivate preventive health behaviours (Gaubé et al., 2019).

Privacy concerns involve worries about the confidentiality and security of personal information shared or collected during digital health interventions, particularly sensitive data related to sexual and reproductive health (Alhammad et al., 2024).

Digital literacy refers to the ability to effectively find, understand, evaluate and use information through digital technologies, therefore impacting how individuals interact with digital health communications (UNESCO, 2018).

Human Papillomavirus (HPV) is a group of viruses commonly transmitted through sexual contact and recognised as the primary cause of cervical cancer (WHO, 2020).

HPV screening refers to medical tests conducted to detect the presence of HPV infection, an essential component of cervical cancer prevention (WHO, 2020).

1.12. Summary

This chapter has thus provided a solid foundation for the research through the presentation of the study's background, purpose, objectives, assumptions, delimitations and limitations. It has brought into focus the critical concepts of fate control, perceived health risk, privacy concerns, digital literacy, and the acceptance of human papillomavirus (HPV) screening digital advertising. Building on this groundwork, the next chapter presents a comprehensive review of the literature which will provide a robust theoretical framework to guide and enhance the understanding of these pivotal factors.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Introduction

This chapter will delve and explore into various literature sources in order to provide a basing on the theoretical foundations, hypotheses development, research gap and the conceptual framework. The explored literature is meant to generate sound empirical evidence on the relationship between fate control, perceived health risk, privacy health concerns, digital literacy and public health digital advertising. Emphasis will be specifically on views about the acceptance of Human Papillomavirus (HPV) screening digital advertising and the above defined antecedents. Information used in this chapter is a product of various literature sources such as Google scholar, PubMed, JSTOR, Wiley, blogs and other internet sources. The chapter is a product of theories, empirical findings, and contextual evidences that were weaved and synthesized to generate a strong foundation and basis for the study. The review therefore starts with the theoretical underpinnings followed by hypotheses development. A research gap is further articulated and presented to reinforce the intention of this study. The chapter concludes with the conceptual framework of the study.

2.2. Theoretical Framework

2.2.1. The Biopsychosocial (BPS) Model

The BPS model was developed by Engel (1977). Engel (1977) explained how biological, psychological and social factors are all interconnected to impact on an individual's overall health outcome. This shows that health behaviour is both impacted by the individual's own beliefs about health behaviour and the encouragement to do so from society. The BPS model has been used extensively in public health research to assess how well individuals make decisions to seek preventive care and how they will respond to health interventions. As such, the multi-dimensional nature of the BPS model is assumed to provide a relevant framework for understanding the effectiveness of preventive health campaigns when there is a presence of culturally defined norms, privacy concerns or limited access to digital technologies. The adapted model is thus illustrated in Figure 1 immediately below.

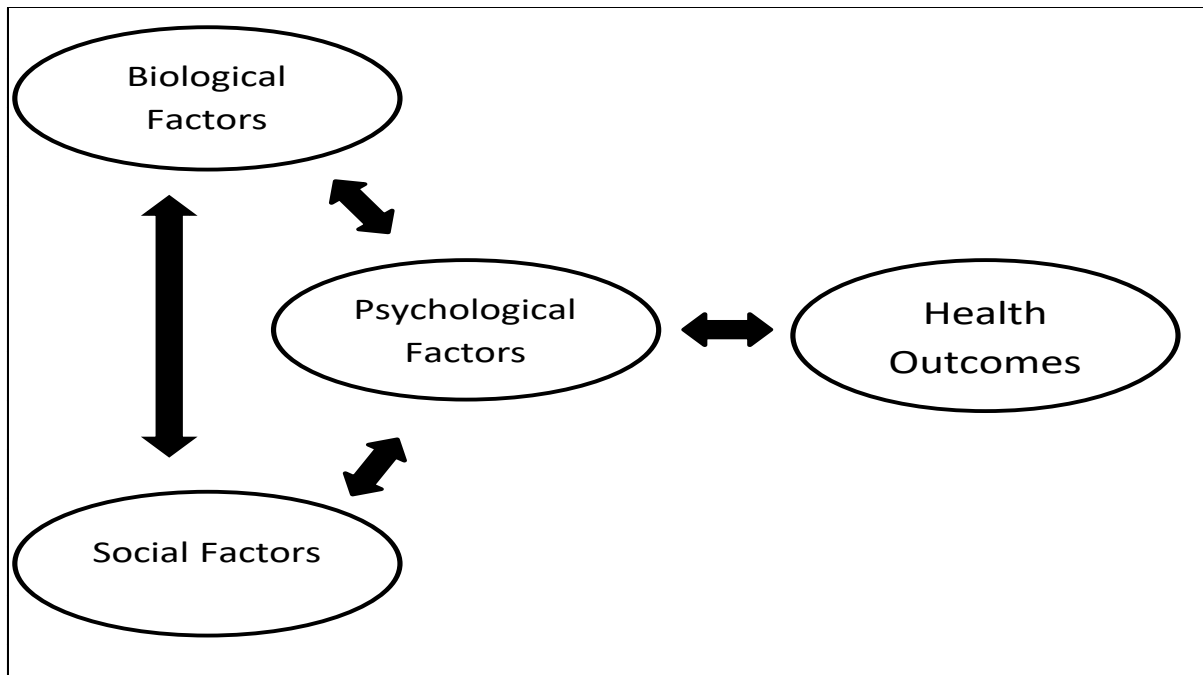


Figure 1: An adapted educational version of Engel's Biopsychosocial Model of Mental Health. Source: Based on Engel (1977).

In the context of this study, perceived health risk represents the biological factor because it is controlled by how women judge and react on the underlying health concern of cervical cancer after continuous exposure to the human papillomavirus (HPV) infections. Perceived health risk is a strongly influential dimension to a person's readiness to accept a proactive preventive attitude such as HPV screening. This engenders the cognitive distortion to respond to and counter an infection. The psychological outlook in this case is wide and includes destiny control and privacy factors. Fate control reflects the belief that health outcomes are largely determined by destiny or spiritual forces (Mbiti, 2018). Beliefs anchored on destiny are likely to discourage preventive health-seeking behaviours or, some cases may encourage women to accept HPV screening digital advertisements. In accordance with this outlook advertisements may be accepted if the content of the advertisement appears to be in accordance with divine or ancestral guidance (Liu et al., 2019). Privacy issues relate to concerns about privacy (Y. Kim et al., 2023) that women will have a need for when they come in contact with sexual and reproductive health information in the digital media. The social aspect of the model is operationalized through the use of digital advertising as a communicative vector. Different digital platforms exist which would present an opportunity to reach women and afford them messages concerning HPV screening. However, a low level of digital literacy may result in inefficient reading and use of digital health messages. The

attitude or moral standing of society as regards to sexual and reproductive health which is generally associated with stigma and misinformation may also have an impact on the reception of the many digital health screening campaigns. The original Biopsychosocial model omitted health outcomes and concentrated on the interaction effect of the three stated variables. The continuing consideration of the model became imbued with the effect the biological, psychological and social interaction had on the behavioural health outcomes.

The focus of this study relates to the acceptance/rejection of digital advertising for HPV screening and is assumed to be related to a combination of psychological and social variables that are fully influenced by the level of digital literacy an individual has. Taking this integrative view allows the study to take account of the varying roles of health beliefs, cultural differences and interest in technology in women's responses to digital health campaigns. The present research model assumes that all relationships between biological, psychological and social variables are unidirectional in nature rather than bidirectional, as previously assumed and proposed by Engel (1977). This operational interpretation allows for clear testing of certain hypothesis relationships as to fate control, health risk perception, privacy issues (psychological), digital advertising exposure (social) and advertising reception (outcome). This simplification of the model is not a contradiction of Engel's all-embracing vision but does allow for a more research orientated view towards hypothesis formulation which can be statistically tested. Despite this, the model remains of a descriptive nature and will need complementary hypotheses that account for other theories which will give a richer insight into the cognitive and behavioural processes through which fate control, health risk perceptions, privacy fears and digital literacy impact on HPV screening digital advertisements.

2.2.2. Protection Motivation Theory

The PMT is believed to be one of the fundamental theoretical frameworks employed in research involving health communication (Floyd et al., 2000; Milne et al., 2000). The PMT outlines that the protective behaviour of an individual is determined by threat appraisal and coping appraisal (Floyd et al., 2000). Threat appraisal is the process by which an individual assesses the severity of a health threat and their vulnerability to it, while coping appraisal is the name for the process by which they assess the recommended response, their self-efficacy and the cost or barriers associated with the behaviour (Milne et al., 2000). Collectively, these two appraisals which are internal to the individual can either lead to the public undertaking

adaptive protective behaviours or maladaptive avoidance responses (Milne et al., 2000). Figure 2 and 3 below present the model of the PMT theory as adapted from Floyd et al. (2000).

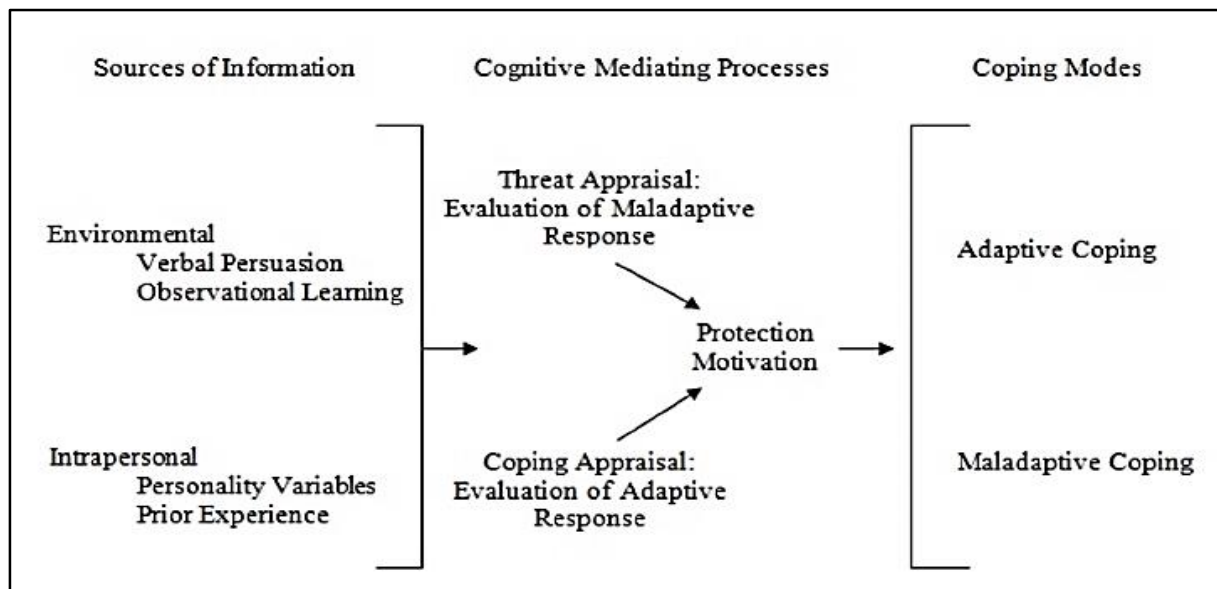


Figure 2: The Protection Motivation Model Adapted from Rogers (1983). Source: (Floyd et al., 2000, p.410)

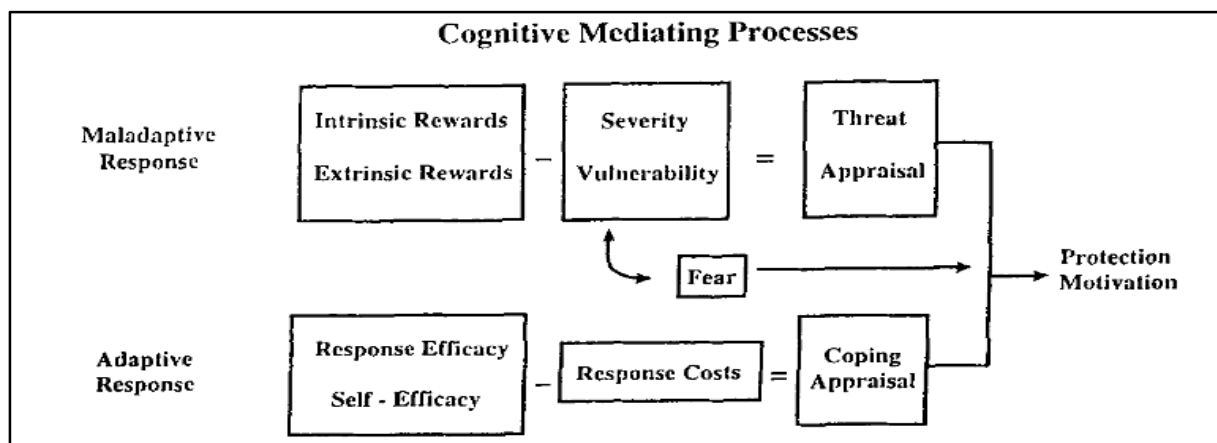


Figure 3: The Cognitive Mediating Process of the Protection Motivation Theory. Source: (Floyd et al., 2000, p.410).

Within the context of this study, perceived health risk is related to coping appraisal because it is assumed that the perceptions that individuals hold with respect to the susceptibility and severity of HPV infection are influential on how the responses to HPV screening messages are received by them. Fatalistic views express an intrapersonal or psychological orientation which may in itself decrease coping appraisal. Fatalistic beliefs may act to undermine the

views that are taken of self-efficacy and the perception that the health behaviours which are preventive in terms of health are worthwhile. Privacy factors, on the other hand, tend to fit in with the perceived costs or responses of coping appraisal. This, therefore, is indicative of the inhibitions which diminish motivational responses, although the acknowledgement of the severity of the threat is there. The acceptance of the digital advertising with respect to HPV screening is analogous to the protective behavioural intentions which were indicated in the PMT, and, thus, the response by women to the advertising is responded to in terms of their decisions particularly with respect to preventive health communication. The study is, in its integration of the theory of PMT, useful in indicating the predictive explanation of how on dimensions of risk, control beliefs, and perceived costs evidence etc. will fit in with acceptance of a digital health intervention. The PMT further illuminates on how individuals protect themselves and how personal intellectual processes interrelate with the characteristics of the health publicity messages to affect behavioural intention.

Evidence presented by Zhou et al. (2019) suggests that even when the degree of health risk is severe, privacy concerns continue to inhibit the adoption of mobile health applications. This correlates with the coping appraisal mechanism expressed in the PMT. Ramondt & Ramírez (2017) also supported this theory when reporting that fatalistic health beliefs cause less self-efficacy, which does lead to a lower exposure to health information from the media. This evidence supports the relevancy of the PMT in highlighting how the current latent variables interact to influence the acceptance of digital advertising for screening of HPV.

2.2.3. The Digital Health Literacy Competency (DHLC) Framework

The Digital Health Literacy Competence (DHLC) Framework is another complimentary model to this research. The framework reinforces explanations from the two above theories. However, the DHLC framework focuses mainly on how digital literacy improve the relationship between fate control, perceived health risk, privacy concerns and the acceptance of HPV screening digital advertising. In that regard, the framework conceptualises digital health behaviour as the outcome of individuals' abilities to access, manage, evaluate, and utilise health information through digital technologies. The model combines two key domains, i.e., Health Information Literacy and Digital Competences (Rachmani et al., 2022). The two together influence the individual's ability to engage with digital health messages (Rachmani et al., 2022). Health Information Literacy (HIL) refers to the process of accessing, managing, synthesising and analysing health information. The Health Information Literacy

refers to the way in which one interprets the notion of the digital health content made available to them (Rachmani et al., 2022). Digital Competences, though, are a range of abilities and dispositions including but not limited to communicating and collaborating with digital tools to create and share digital content, and online safety and problem solving (Rachmani et al., 2022). These Competences permit the ability for individuals to safely & meaningfully interact with digital environments. Within this study, Digital Literacy is derived from the DHLC framework and is conceptualised as a moderating construct that enhances users' ability to comprehend, appraise, and trust HPV screening digital advertising messages. Figure 4 below shows the summary of the DHLC Framework as proposed by Rachmani et al. (2022).

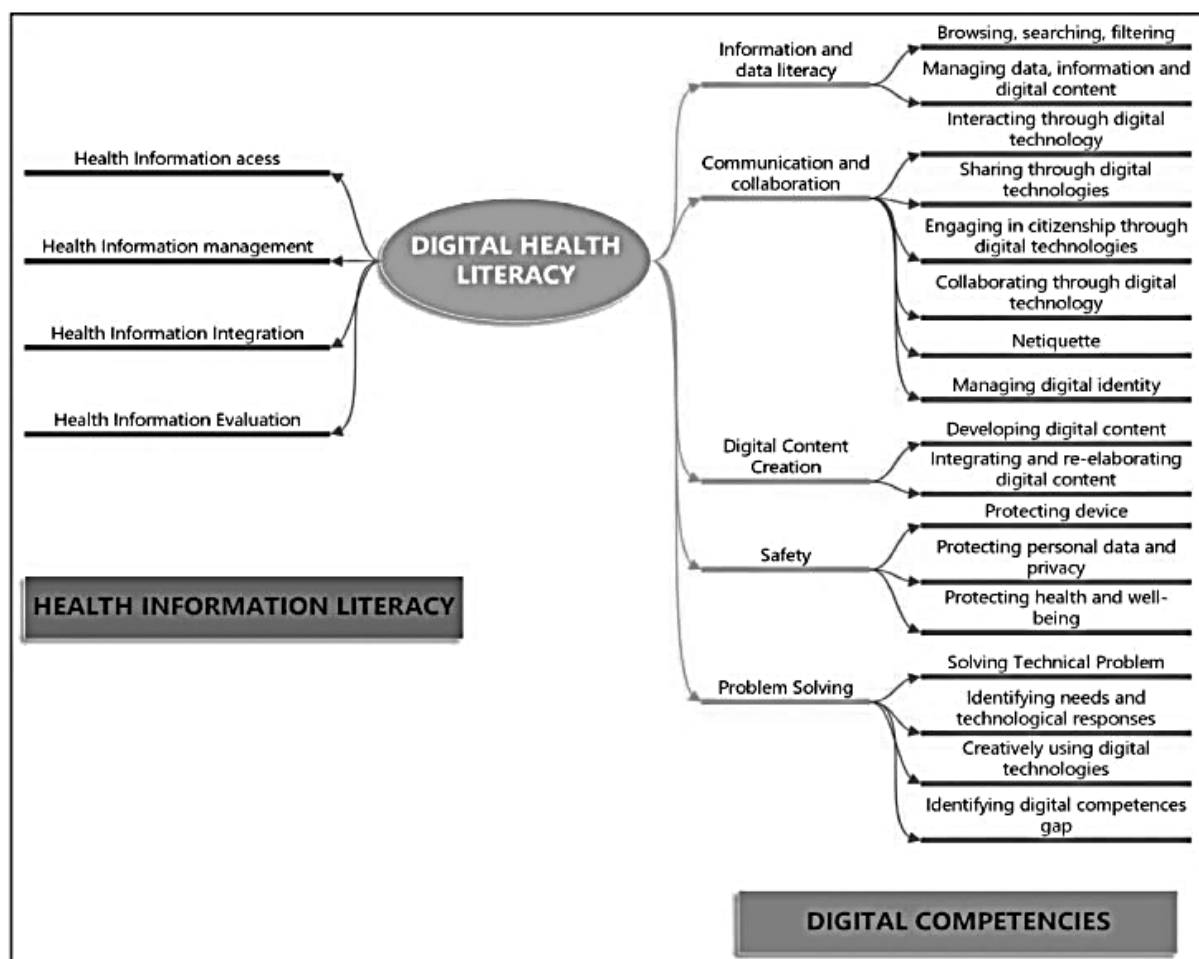


Figure 4: The Digital Health Literacy Competency Framework. Source: Rachmani et al. (2022, p.3).

The DHLC framework provides an explanation of how digital competencies translate into health-related behavioural outcomes. People with more digital literacy have more ability to

search and assess health information. This means that they improve their perceived awareness of health risk problems but also facilitate the decision-making process that is consistent with precautionary health behaviours. Furthermore, the safety aspect of the framework relates directly to issues of privacy. Thus, this indicates that the willingness to engage in digital health-related programmes is mediated by the personal confidence with which one is able to deal with personal information and the privacy of digital identity. In this study, digital literacy is herein conceptualised as a moderator which impacts on the relationships between the various other determinants and the outcome. Thus people with high digital literacy are supposed to be sufficiently good at evaluating the credibility of claims made in HPV screening advertisements and at managing privacy issues and at evaluating risk claims contained in these advertisements with respect to possible protective intentions. Conversely, lower or non-existent digital literacy would moderate susceptibility to misinformation, pronounced fears about privacy and fewer acceptances of digital health campaigns. Thus, the DHLC framework is of relevance in this study since it defines and moderates how sensitive reproductive health information is perceived and accepted in connection with digital health messages and educational products. This thus shows that digital competencies are vital with respect to information specific to both information and privacy problems related to HPV digital health screening messages.

2.2.4. An Integration of the Three Theoretical Contributions

The limitations of each of the aforementioned theories necessitate a triangulation of their contributions in order to create one clear and focused framework for the study. The adapted BPS model acts as the overarching theory that provides a multi-faceted classification of the latent variables in the study into biological, psychological and social realms with the acceptance of HPV screening digital advertisement being regarded as the health outcome. The theory attempted to classify perceived health risk to no avail. The PMT addresses this shortcoming by presenting cognitive appraisal processes. The PMT details how people assess the severity of risk, their vulnerability, their coping capacity. The PMT enhances the study framework by detailing the cognitive processes through which health risk perception, fate control and privacy concerns influence behavioural intention. The BPS model fails to fully engrave the biological element to this study thus creating the need to consult and employ the PMT towards the attainment of a holistic framework that is in synch with this study. However, the PMT assumes a rational evaluation which is based on available information and

fails to address any discrepancies in access to or understanding of the said information. The DHLC framework describes how competencies in online health information access mediate the effects of risk, control and privacy on the outcomes of HPV screening digital advertisement acceptance. This triangulated theoretical foundation ensures that the study will not only have a coherent way of grouping its latent variables but will also add further explanatory depth and contextual relevance.

2.3. Hypotheses Development

2.3.1. Fate Control and Acceptance of HPV Screening Digital Advertising

Digital advertising is defined as the use of online channels and platforms to send messages to audiences, influence behaviour, and engage target audiences through measurable and interactive formats (Lee & Cho, 2020). This communications medium utilises the internet and mobile technologies to relay customised messages to audiences in real time, thus enabling proper targeting to be achieved based on demographic, behavioural or psychographic characteristics (Chaffey & Ellis-Chadwick, 2019; Chiguvi, 2022; Lee & Cho, 2020). Digital advertising is the use of social media (Facebook, Instagram, Twitter and TikTok), search engines (Google and Bing), websites, mobile applications and email (Chaffey & Ellis-Chadwick, 2019) to inform, attract and/or persuade, reinforce or differentiate the institution's offering of services. Digital advertising is interactive and personalised and makes use of real-time monitoring and analytics to assess the reach or effectiveness of advertising campaigns (Dodson, 2016; Kumar & Gupta, 2016). It is also cost effective.

Public health digital advertising is currently one of the recently emerging powerful tools that have been used by most institutions in the developed world to market and increase the uptake of public health screening and prevent the spread of communicable virus diseases among women (Roy & Malloy, 2023). If digital advertising campaigns are well engaged with, they are likely to engender women into adopting preventive behaviours, and live a healthy lifestyle based on accurate, accessible and culturally competent standard messaging Fitzpatrick (2023). Contributions by G. Chan et al. (2025) and (GSMA, 2023)) found that such digital interventions that have been shaped to match the languages, cultural norms and technology usage practices of the target populations lead to an improved public health awareness. This process of optimising these digital health messages requires the shaping of content, channels,

timing, and interactivity of delivery via gamification features like quizzes and chatbots or prompts (Bol et al., 2020). This is a prerequisite to ensure that health advertising campaign messaging resonates with women (Bol et al., 2020).

While the use of digital communication strategies has presented some great benefits internationally, back home health communication campaigns continue to rely mainly on the use of traditional media such as television, radio, community road shows and print materials (Lee & Cho, 2020; Werder & Holland, 2024; Zhao, 2020). The traditional media can be limiting in terms of reach, timing and engagement of the messages in the case of younger, urban, connected females. The 45 percent increase in internet usage in the urban areas (ZIMSTAT, 2024) should be an indication that there is an even greater opportunity for the digitalisation of public health awareness as well as the increase in uptake of preventive health services such as the HPV screening. The increased use and acceptance of digital advertising should therefore facilitate a more efficient dissemination of culture-sensitive messages as well as an increase in interactive engagement opportunities. This will culminate positively in improved health outcomes for women in Zimbabwe. W. Li et al. (2024) and Z. Li et al. (2025) have shown that the use of interactive digital applications incorporating multimedia content features, which enhance user engagement, has greatly increased the women's cervical cancer screening rates. In a study by Richardson-Parry et al. (2023), there was also support that well-tailored and focused digital interventions are likely to increase public health awareness and generate increased understanding of the accepting guidelines of HPV screening in digital advertising.

Fate control is a concept of health psychology and cultural studies which conveys the belief that individual health is a function of fate, divine will, or spirituality and not of personal actions (Mbiti, 2018). Fate control is theoretically considered similar to external locus of control, whereby events are believed to be determined and served by outside sources which are beyond the direct control of the individual (Rotter, 1966). In health behaviours, therefore, it is likely that through fate control, the process of decision making, the motivation to perform preventive habits, and reactions to health communications are likely to be influenced. In some African societies, fate control is imbedded in cultural, spiritual, and religious views (Gaibazzi & Gardini, 2015) resulting in its critical role in defining women's health behaviour. Several studies have indicated the practical implications of fatalism in preventive health in African societies. Mafiana et al. (2022) reported that women who

strongly subscribe to fatalistic views are less likely to attend cervical cancer screening programmes. A study involving black women by Sage et al. (2020) showed that black women who ascribe health results to spiritual forces will commonly postpone and or avoid screening interventions. However, other studies show that fatalism is not always regarded as prohibiting preventive habits (Miller, 1995; Moreira-Almeida, 2025). Moreira-Almeida (2025) and (Liu et al. (2019) showed that in most cases culturally or spiritually informed understanding can be shared in (more modernized) contexts with the modern health practices, leading to acceptance.

This may therefore serve as a benchmark for using tailored and context-dependent HPV screening digital advertisements in Zimbabwe and the world at large. This serves to therefore justify why fate control is part of this study. There is need to explore whether it acts as a barrier or an enabler in the acceptance of digital HPV screening advertisements among Zimbabwean women. Understanding the role of fate control is thus essential for designing culture sensitive health communication strategies that resonate with women's beliefs while promoting engagement with preventive health services.

Individuals with fatalistic orientations and who perceive health outcomes as determined by external forces, are less likely to engage in central processing, but instead depend more heavily on peripheral cues (Jackson et al., 2017). This perspective is aligned with Rotter's (1966) locus of control theory, which suggests that the externalisation of responsibility reduces the perceived value of a preventive action. Within the Health Belief Model, originally formalised by (Rosenstock, 1966) and later refined by (Becker, 1974) such orientations weaken the perceptions of benefits and self-efficacy while simultaneously reinforcing perceived barriers to action.

In a quasi-experimental analysis in Accra, Ghana, culturally tailored mobile messaging had a conducive, statistically relevant impact on cervical cancer screening (Addo-Lartey et al., 2024). This supports the need for messages that resonate appropriately with one's cultural orientation. It was found that a tailored digital storytelling approach focusing on Vietnamese American and Korean American mothers was very feasible and acceptable (S. W. Kim et al., 2023). This information supports the conclusion that culturally and linguistically relevant advertising formats enhance the acceptance of health information about HPV screening. Further controlled studies indicate that these statements are true in that story-driven digital campaigns improve awareness and participation with HPV screening information-laden

formats (Gül Öztaş & Işık, 2025). In sum, when viewed together, these pieces of evidence suggest that control of fate will result in a negative influence on the acceptance of digital advertising formats for HPV screening unless this circumstance is ameliorated with the strategic use of peripheral cues that are relevant to cultural adaptation, credibility and relevance. Thus, the following hypothesis is suggested:

H1: Fate control has a significant negative effect on acceptance of HPV screening digital advertising.

2.3.2. Perceived Health Risk and Acceptance of HPV Screening Digital Advertising

Health risk perception refers to an individual's assessment of his or her vulnerability to a health problem or disease and the severity of the resulting consequences (Yin & Lui, 2024). This measurement includes the individual's perception of the likelihood of infection with HPV and the severity of the resulting consequences, namely cervical cancer, if the infection is undetected for a long period of time. The Health Belief Model suggests that individuals are more likely to engage in health-promoting behaviours or accept the advertisement for HPV screening if they are aware of the potential health risks involved (Rosenstock, 1966; Sulat et al., 2018).

D'Souza et al. (2021) and Sulat et al. (2018) note that women who perceive greater health risks will most likely avail themselves to an HPV screening programme. The other findings are based on the belief that women who have an awareness of the serious nature of cervical cancer have a stronger intention to take part in a HPV screening programme (D'Souza et al., 2021) and readily accept HPV screening digital advertisements. However, a high perceived risk does not automatically create acceptance of HPV screening digital advertisements. Barriers may be that there is no access to health care facilities, that there are no HPV screening advertisements and lack of finance. (Ajambo et al., 2017; Mafiana et al., 2022). Furthermore, fear arising from the communication of the risk through advertisements may lead to avoidance of the HPV screening advertisements. (Wanyenze et al., 2017). From the above findings the recognition of perceived health risk is important to regard as a precursor variable during the development of health communications strategies. The women's perception of what suffering they will undergo after becoming cervical cancer victims may be

taken as a basis to develop such targeted interventions aimed at addressing cognitive and emotional constructs influencing the acceptance of the HPV screening digital advertisements.

The Protection Motivation Theory (Rogers, 1975) explains that when individuals believe that they are susceptible to a health risk of some seriousness, they are more receptive to protective messages. Perceived health risk in this instance is seen as a cognitive appraisal which increases attentiveness to preventive messages. Thus the perceived health risk increases the responsiveness of women to digital media advertising. Chen et al. (2021) found that social media campaigns containing threat appeals, efficacy information together with social messages, increased the intentions to take part in human papillomavirus screening and vaccination programmes. Lema et al. (2025) found that Ethiopian women who acknowledged the severity and potential implications of cervical cancer were more motivated to have HPV screening and, as a result were more receptive to health messages that focused on their susceptibility. A quasi-experimental trial evaluating a technology-mediated HPV vaccination awareness intervention using newsletters and Facebook groups found that perceived risk and awareness translated into increased engagement and acceptance of digital messaging (Brandt et al., 2020).

Taken together, these findings suggest that perceived health risk has a positive effect on acceptance of HPV screening digital advertising, provided the advertisements frame the threat in a way that is motivating rather than paralyzing. Accordingly, it is thus hypothesised that:

H2: Perceived health risk has a significant positive effect on acceptance of HPV screening digital advertising.

2.3.3. Privacy Concerns and Acceptance of HPV Screening Digital Advertising

The Privacy Calculus Theory and the Technology Acceptance Model (TAM) provide key bases for studying privacy concerns (Schomakers et al., 2022). The Privacy Calculus Theory postulates that individuals make rational decisions on whether to expose personal information or not based on the perceived benefits against the potential privacy risks (Fernandes & Pereira, 2021). These decisions influence how individuals engage with mobile health applications, online health portals, and digital health campaigns. The TAM on another angle

reinforces this idea that higher privacy concerns have a potential to reduce the intention to accept digital health services (Alsyounf et al., 2023). The two theories detail how data security apprehensions, confidentiality, and online trust can shape the acceptance of digital health advertisements. Martini et al. (2016) also found out that higher privacy concerns are associated with a lower engagement with online HPV screening advertisements. These contributions' emphasis is on the impact of the fear of the unknown that can be generated by HPV screening advertisement links and redirections to landing pages. The slower the loading speed of a link or redirection the higher the anxiety and may therefore lead to a higher online bounce rate before even reading the website awareness advertisement banner. Mbunge et al. (2022) further proposed that trust in data protection policies strongly predicts an individual's willingness to participate in mobile health interventions. This statement is an emphasis on generating online advertisement policies that build confidence to the traffic. Bietz et al. (2019) put forward that individuals may accept moderate privacy risks if the perceived health benefits are substantial. This illustrates a general trade-off that women are likely to make when they come across HPV screening digital advertisements.

The Zimbabwean government has made a great stride in reducing data privacy anxieties by coming up with the Cyber security and Data Protection Act of year 2021. The act provides legal safeguards for personal health information. However, the impact of this new bill has not yet been felt and because of that, the degree of awareness and trust in these protections among women remains unclear. This thus provides a justification on why Privacy concerns are part of this study. Understanding the impact of privacy concerns is therefore imperative in order to successfully design sound HPV screening digital advertisements that are effective and acceptable.

The Technology Acceptance Model developed by Davis (1989) in Davis & Granić (2024) posits that the adoption of digital innovations is shaped by the risks that are associated with their use. This contribution is evidence that women are likely to adopt and use online health platforms to access HPV screening advertisements only if they perceive more benefits than harm or data misuse. Otherwise privacy concerns will represent one of the most salient barriers to HPV screening digital advertisements acceptance. Women often fear stigma, data misuse, or unintended disclosure, which undermines their trust in digital platforms and as such reduces their responsiveness to health communication campaigns. This therefore

underscores that trust and perceived risks in data management are a precondition for message acceptance.

On the other hand, Bietz et al. (2019) argued that when digital health platforms provide clear value propositions that include personalised services and secure data features, users would engage with public health messages despite their initial reservations. This entails that the Point of Difference or value proposition may be good enough to blindfold privacy apprehensions and go for the online HPV screening advertisement. Nebeker et al. (2019) enunciated that a transparent communication of privacy safeguards which aligned with ethical standards was good enough to enhance trust in mobile health interventions across diverse contexts. The emphasis is let women make confirmed decision on the acceptance of HPV screening advertisements without hiding from them the navigation risks associated with clicking advertisement links from unconfirmed sources. On balance, the evidence suggests that strong privacy concerns are likely to inhibit acceptance of HPV screening digital advertising, unless they are mitigated by visible trust-building strategies such as transparent data policies, secure platforms, and adapted communications. It was therefore proposed that:

H3: Privacy concerns have a significant negative effect on the acceptance of HPV screening digital advertising.

2.3.4. The Moderating Role of Digital Literacy

Digital literacy is contextually defined as the ability to access, interpret, and critically evaluate digital content plus health-related messages (Arias López et al., 2023; B. S. K. Chan et al., 2017). Digital literacy in reproductive health is normally based on the eHealth Literacy Model and/or the Health Literacy Framework (Arias López et al., 2023). The eHealth Literacy Model is based on the notion that individuals must possess a combination of traditional literacy skills, information literacy, media literacy, and computer literacy in order to effectively navigate and utilise digital health information (Brørs et al., 2023; Wubante et al., 2023). The Health Literacy Framework extends this concept by emphasizing the need for individuals to not only access and understand health information, but to additionally apply this knowledge when making informed decisions (Squiers et al., 2012). These models are therefore able to bring to light the multifaceted nature of digital literacy and its critical role in enabling individuals to effectively engage with HPV screening digital advertisements.

Cuadros et al. (2024) found out that most rural women who are in their late 40s have a lower digital literacy. This lower digital literacy is deemed to impede the way these women engage with digital health interventions. In another situation, Sørensen et al. (2024) conducted a review on the analysis of African scientific health literacy publications. The analysis revealed that digital health literacy is an emerging determinant of the acceptance of online health messages across the continent. The ZIMSTAT (2024) report indicated that 38 percent of women aged between 18 and 49 inclusive possessed moderate to high digital literacy. This may act as basis for explaining why many Zimbabwean women are struggling to engage with online health content. Moreover, it establishes the critical digital gap that could be hindering the effectiveness of digital health campaigns that are targeted to women groups. This justifies the inclusion of digital literacy in this study with the aim to assess its power in shaping women's reactions towards HPV screening digital advertisements.

According to the Extended Technology Acceptance Model (Venkatesh & Davis, 2000), technology adoption is influenced by the user's capacity to navigate, interpret, and critically evaluate digital content. Digital literacy encompasses these technical competences allows women to understand complex HPV screening information, identify credible sources, and make informed HPV screening decisions. Logic defines that digitally literate women exhibit a greater comprehension of online health campaigns which will increase their likelihood of accepting HPV screening digital advertisements. In line to that, the GSMA (2023) observed that women with higher digital literacy managed to effectively engage with mobile platforms due to their enhanced understanding and responsiveness. Brew-Sam & Chib (2020) further indicated that simplified content and guided support improves engagement among individuals with lower literacy. This suggests that comprehension and logical processing of online information or messages are critical for any campaign effectiveness.

Generating sense from the above statements will mean that digital literacy has a potential to moderate the relationship between fate control and acceptance of HPV screening digital advertising. Women with strong fate control beliefs often perceive preventive measures as unnecessary or ineffective (Joshani, 2022; W. C. H. Wu et al., 2020), and further reduce engagement with digital campaigns. However, a higher digital literacy enhances cognitive processing and logical evaluation which enables women to critically assess the relevance and credibility of online messages (Zakir et al., 2025). This will allow women to reconcile biomedical recommendations with cultural or spiritual beliefs, and weaken the negative

effects of fate control on message acceptance. Online Health digital literacy has the power to reduce the constraining influence of fatalistic attitudes on preventive behaviour (Ghorbani-Dehbalaei et al., 2021). This statement implicates that digitally literate women are not influenced or swayed away from accepting online health information by personal beliefs or fate.

Digital literacy strengthens the positive effect of perceived health risk on the acceptance of HPV screening digital advertisements. Awareness of susceptibility and severity is an established motivator for preventive action (Rogers, 1975), but there is need for cognitive engagement and comprehensions to translate it into good intentions. The belief is that digitally literate women have an improved understanding of various online factors such as risky messages, logical evaluation of potential online consequences, and an accurate interpretation of procedural guidance for HPV screening. This cognitive advantage facilitates a more proactive response to online campaigns. Higher eHealth literacy enhances responsiveness to risk-based messaging, generates increased engagement and increased screening uptake (Diviani et al., 2015). This therefore entails that the relationship between perceived health risk and acceptance of HPV screening advertising is expected to be stronger among women with greater digital literacy.

Digital literacy is further anticipated to moderate the relationship between data privacy concerns and the acceptance of HPV screening digital advertising. Digital literacy equips women with the cognitive skills to evaluate the credibility of privacy statements, understand platform security, and logically weigh potential risks against benefits (Saritepeci et al., 2024). In situations where privacy safeguards are clearly communicated, digital literacy reduces the negative impact of privacy concerns (Ma & Chen, 2023). However, an enhanced awareness and good reasoning abilities have a great possibility of amplifying privacy concerns when campaigns lack explicit privacy assurances (Bietz et al., 2019). This brings to light the role of cognitive capacity and logical reasoning in shaping how privacy concerns influence HPV screening digital acceptance.

Digital literacy therefore enhances cognitive processing, logical evaluation, and comprehension of online health campaigns. It conditions the effects of fate control, perceived health risk, and privacy concerns on the acceptance of HPV screening digital advertising. This means that literate women are better able to mitigate the constraining influence of fatalistic beliefs, translate risk awareness into actionable understanding, and evaluate privacy

risks. This fundamentally brings to the fore the critical moderating role of digital literacy in digital health engagement. The following guesses were therefore made:

H4: Digital literacy modifies the relationship between fate control and acceptance of HPV screening digital advertising.

H5: Digital literacy strengthens the relationship between perceived health risk and acceptance of HPV screening digital advertising.

H6: Digital literacy modifies the relationship between privacy concerns and acceptance of HPV screening digital advertising.

2.4. Gap Analysis

The above literature has shown that there are no models or frameworks that holistically help explain how sociocultural, psychological and technological factors are intertwined when it comes to the acceptance of HPV screening digital advertising. Although digital advertising as a strategic public health communication tool has grown in popularity, this increase has still limited its adoption by low resource countries like Zimbabwe (Mackworth-Young et al., 2024) where they are relying more on traditional media and tools such as road shows and national events to deliver HPV screening information. There have been very few research studies that have investigated how fatalism impacts health coping behaviours (W. C. H. Wu et al., 2020; Joshanloo, 2022; Ghorbani-Dehbalaei et al., 2021), especially when considered as a function of perceived risk and privacy concerns in relation to digital health communication. The bulk of the literature examining perceived health risk has focused on the motivational aspects of health risks and preventive behaviours. However, the relationship between perceived health risk and the acceptability of digital health communications has not been clearly established. Moreover, the degree to which digital literacy may moderate these relationships has not been adequately studied. Furthermore, there are no empirical data indicating digital literacy moderates these relationships. Thus, this gap indicates the need to empirically determine whether digital literacy will be important in defining the acceptability and effectiveness of HPV screening digital advertising. Additionally, addressing these research gaps is important for the development of theory and developing actionable recommendations for creating acceptable, adaptive and effective digital health communications.

2.5. Conceptual Framework

The conceptual model in Figure 5 immediately below illustrates the hypothesised relationships between fate control, perceived health risk, privacy concerns, and the acceptance of HPV screening digital advertising, with digital literacy serving as a moderating factor. It provides a visual representation of how sociocultural beliefs, psychological perceptions, and individual competencies work together to influence online responses. The model integrates theoretical insights from the Biopsychosocial Model, Protection Motivation Theory, and the Technology Acceptance Model and therefore offer a new framework that will guide future empirical investigations while at the same time inform of adaptive, sensitive and acceptable digital health communications.

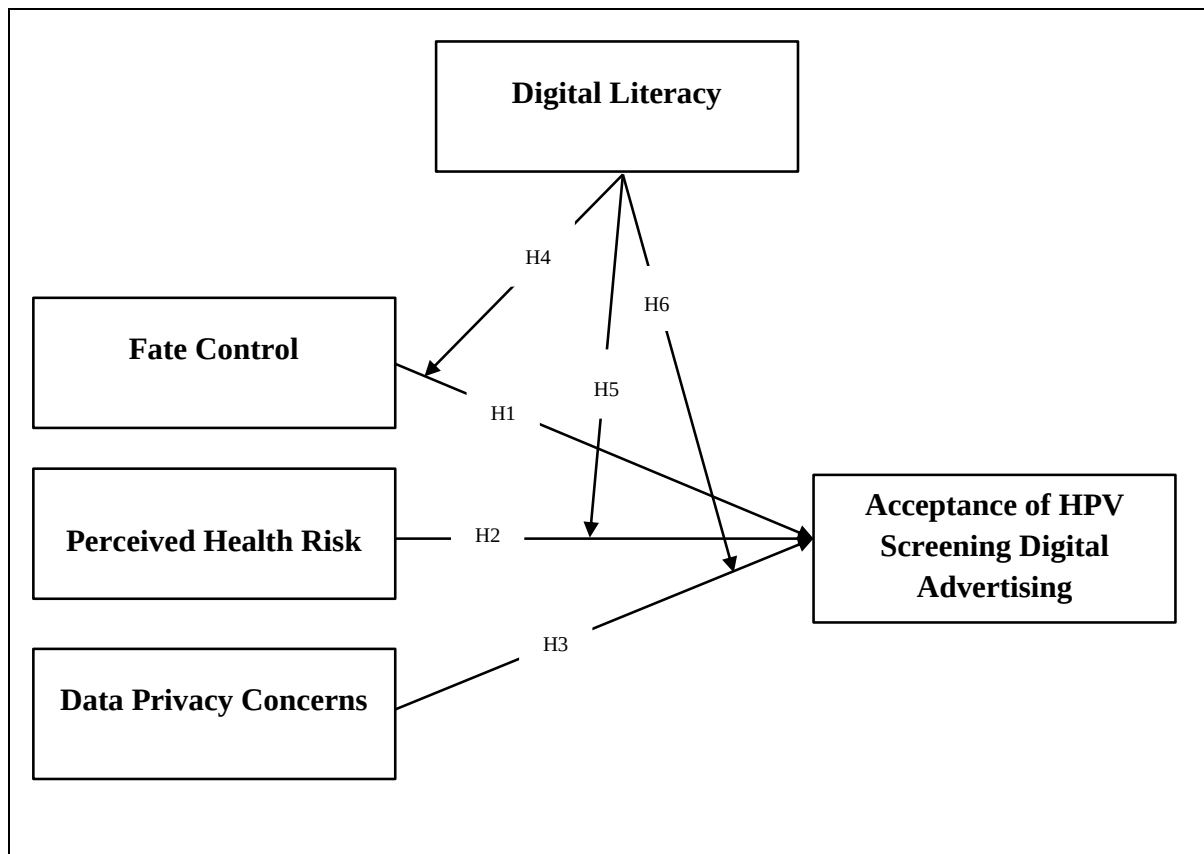


Figure 5: The Research Model of the Study

2.6. Summary

This section provided a detailed description of the research's theoretical structure. The empirical data that supported and contradicted the relationship between the variables were

evaluated and discussed. Sociocultural beliefs, psychological beliefs, and digital competence were found to be the predictors for acceptance of HPV screening digital advertising. Fate control was identified as potentially limiting or motivating a person's positive health intentions. Perceived health risks are the primary motivators for practicing preventive health behaviours. Additionally, it has been shown that privacy concerns will limit the acceptance of HPV screening digital advertising. In addition, digital competence may influence the degree of these variables through either increasing or decreasing an individual's ability to evaluate and respond to health-related information. A conceptual model for this study was generated based on the results of the literature review.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1.Introduction

Chapter three provides a detailed narration of the research methodology that was used to make this research a success. The chapter outlines the research design, population, sampling techniques, sample size, instrument development, pilot testing, data collection procedures, data analysis plan, and ethical considerations. Each section provided sufficient details that ensured that this research adheres and addresses the expected academic standards.

3.2.Research Design

The study employed a quantitative and cross-sectional survey design. A research design provides a systematic framework that ensures methodological rigor and enhances the validity and reliability of findings (Bryman et al., 2022; Creswell & Creswell, 2018). The research design was positivistic in nature. Positivism entails the use of empirical observation and statistical analysis to test hypotheses so as to establish generalizable relationships among variables (Sekaran & Bougie, 2020). The cross-sectional survey design was selected to facilitate the examination of associations among multiple variables simultaneously and at a single point in time. The survey was both online and offline. The online format was meant to ensure better access to online participants while at the same time increase the feasibility of reaching the target sample. The physical distribution was done to cover any network or gadget connectivity problems or costs involved with an online survey. The quantitative approach was aimed at measuring the strength, direction, and statistical significance of relationships among independent variables, the dependent variable, and the moderating variable. The research design was employed in line with the established conventions in behavioural and health communication research, (Bryman et al., 2022; Creswell & Creswell, 2018; Sekaran & Bougie, 2020).

3.3.Target Population

The study focused on urban and peri urban women who were aged eighteen to forty-nine years. These women represented the main demographic group that was anticipated to be at

risk of HPV infections and were considered active users of digital platforms. In that regard the study missed on the responses of women from the rural areas and outside the defined age range. The selected age range was meant to align with Zimbabwe's legal adult consent age and reduce bureaucratic hurdles associated with seeking both assent and consent at the same time. The defined age group also managed to capture women who were digitally engaged and most likely have interest in HPV screening advertisements. The selection of women in urban and peri-urban settings was meant to easily access a large group of women who have smart phones or internet connecting devices. The notion that approximately 45 per cent of the urban women in this age group had access to the internet (ZIMSTAT, 2024) resulted in the general assumption that the target population had sufficient exposure to digital health messages. This target population matched the national health priorities on HPV screening and reproductive message reception as outlined by the Ministry of Health and Child Care (WHO, 2024).

3.3.1. Sampling Technique

The study used a purposive sampling strategy that was complimented by a convenience-based recruitment to select its participants. This strategy is mostly applied in health communications research (Andrade, 2021). The sampling technique allows researchers to select participants who meet a predefined criteria that is relevant to the study's objectives and makes sure that the defined sample is pertinent and accessible (Andrade, 2021). This technique resulted in the selection of women participants who were relevant to the research objectives. The strategy managed to target and selects women who had a direct or potential engagement with digital HPV screening campaigns. A screening question was used in the questionnaire in order to target women had once been involved in HPV screening messages. An integration of the two techniques allowed this study to effectively target the appropriate demographic while at the same time maintaining a feasible recruitment.

3.3.1.1. Sample Size

The sample size for this study was determined based on the requirements of the Structural Equation Modelling (SEM) using AMOS. A pilot study was carried out so that a parameter based rule of thumb will be used to determine the study sample size (Hair et al., 2019; Kline, 2023). A pilot study involving fifty-five ($n = 55$) respondents was therefore conducted to pre-test the questionnaire for clarity and internal consistency and also obtain the preliminary model estimates that were necessary in the determination of the appropriate sample size. The pilot model generated 351 distinct sample moments and 62 parameters which resulted in and

this resulted in 289 degrees of freedom ($351 - 62 = 289$). However, the pilot study sample size was not sufficient enough to generate accurate statistics in AMOS. The information was just generated for the sake of generating parameters to estimate the study sample size. Following the established guidelines for SEM and as defined by Kline (2016) and Hair et al. (2017), the parameter-based rule of thumb was used to estimate the required sample size. This approach recommends a minimum of ten observations per estimated parameter to ensure adequate model identification, estimation stability, and statistical power (Hair et al., 2017). Basing on this rule, the required minimum sample size was calculated as follows:

$$\begin{aligned} N &= 10 \times \text{number of estimated parameters} \\ &= 10 \times 62 \\ &= 620 \end{aligned}$$

A minimum of 620 respondents was therefore set for this study. Relying on the minimum sample size was risky due to the probability of non-response from some of the targeted respondents. To cater for incomplete or invalid responses, a target sample size of approximately 760 participants was set. The estimated non response was therefore set at approximately 23%. The online platform targeted 400 respondents while the physical distribution aimed for a total of 360 respondents. This conservative target aligns with recommendations by Hair et al. (2017), who suggested that a sample size must be increased beyond its minimum requirement so as to improve the robustness of complex SEM models. This is normally encouraged when moderation effects need to be tested. This approach ensured that the final measurement model had sufficient statistical power, generated accurate parameter estimation, and acceptable model fit indices.

3.4. Questionnaire Development

The study employed a structured questionnaire. All key constructs in the questionnaire were measured using previously generated measurement scale(s) that were adapted with the context of the study. The structured questionnaire managed to standardize responses while at the same time reduced the measurement error. Fate control was measured using five items adapted from the Social Axioms Survey II (SAS-II) Scale by Leung et al. (2012). The scale managed to capture the beliefs regarding the role of destiny in health outcomes and its influence on acceptance of HPV screening digital advertising. Perceived health risk was

measured with four items adapted from the Health Belief Model Scales by Garaus & Hudáková (2022). The scales allowed the assessment of the perceived consequences of not participating in HPV screening. Privacy concerns were captured using five items adapted from Adhikari and Panda (2018)'s Digital Privacy Concern Scale. This provided the study the opportunity to evaluate apprehensions about personal data use and confidentiality issues in digital health advertisements. Acceptance of HPV screening digital advertising was measured using six items which were adapted from the Online Advertising Acceptance Scale by L. Wu (2016). The scale focused on attitudes, intentions, and the level of engagement with online advertisements. Digital literacy was measured using six items adapted from the Digital Literacy Scale by Ng (2012), eHealth Literacy Scale by Van Deursen et al. (2016) and Nikou et al. (2022)'s Digital Literacy Skills Scale. The Digital Literacy scale assessed women's ability to navigate, evaluate, and interact with digital advertisements responsibly. Below is Table 1 which provides a summary of the study constructs, number of items per construct, and the sources of the measurement scales.

Table 1: Summary of Measurement Scales

Construct	Number of Items	Modified Scale	Source
Fate Control (FC)	5	Social Axioms Survey II (SAS-II) Scale	Leung et al. (2012)
Perceived Health Risk (PHR)	4	Health Belief Model Scales	Garaus & Hudáková (2022)
Privacy Concerns (DPC)	5	Digital Privacy Concern Scale	Adhikari & Panda (2018)
Acceptance of HPV Screening Digital Advertising (ADA)	6	Online Advertising Acceptance Scale	Wu (2016)
Digital Literacy (DL)	6	Digital Literacy Scale eHealth Literacy Scale Digital Literacy Skills Scale	Ng (2012); Nikou et al. (2022); Van Den Muijsenbergh et al. (2016)

The Social Axioms Survey II (SAS-II) Scale developed by Leung et al. (2012), in order to assess Fate Control, contained only three items. Two additional items were added to the Fate control scale in an effort to further investigate the degree to which an individual's beliefs about their control over their life are influenced by factors outside of themselves. The modification to the Fate Control Scale was implemented based upon recommendations from

W. C. H. Wu et al. (2020). They pointed out that it is necessary to both modify and adapt previous fatalism-based scales to fit the specific health context of a particular study population.

The primary purpose of the Health Belief Model Scales was to measure an individual's degree of tolerance to a perceived health threat and the potential serious harm or danger associated with that threat. For the purposes of this study, the items were modified to be more specific to "HPV screening", as opposed to general to illnesses. As a result, a four item scale that was specifically designed to meet the needs of the target population was developed. Ambuehl & Inauen (2022) recommended that when conducting research within the field of public health, researchers should use disease/health related adaptations to scales to ensure that the data collected through surveys will accurately reflect the real world context in which the research is being conducted.

The Digital Privacy Concern Scale was originally designed to measure trust and data security perceptions in mobile health systems. The five-item scale was adapted for this study by rephrasing the items so that they would match the concerns associated with the sharing of personal health data online. The phrasing was adjusted to enhance the scale's contextual relevance. Other comparable contextual adaptations were once made by Mbunge et al. (2022) when they were examining trust in the South African mHealth applications study.

The Online Advertising Acceptance Scale developed by Wu (2016) had four items which measured the general attitude towards the overall acceptance. The inclusion of the two new items in this study permitted the assessment of the willingness to click or forward HPV Ads, as well as the assessment of the intention to engage in behaviours related to the HPV screening message. As a result, the modified Acceptance Scale now contains six items. Nikou et al. (2022) previously expanded the scale too with the aim to measure the cognitive and behavioural aspects in their study.

For the purpose of this study, six items were selected and adapted from Digital Literacy Scale, eHealth Literacy Scale and Digital Literacy Skills Scale to measure the technical, cognitive, and social-emotional components of Digital Literacy. The selected items were designed to assess the women's capacity to search, appraise, and use digital HPV screening advertising in a responsible manner. To allow for greater access and easy understanding to all

participants, the technical terminology used in the previous scales was reduced to its most basic form.

3.4.1. Validity and Reliability of the Questionnaire

The research questionnaire was tested for quality to ensure that it was both valid and reliable. The questionnaire validity and reliability was tested using the results of a pilot study of 55 participants. The results of the study were confirmed using the Exploratory Factor Analysis (EFA). Each construct items were assessed by examining its factor loadings. Items with low factor loadings were revised to enhance coherence and discriminant validity of the scales. The internal consistency of the constructs' items was determined using Cronbach's Alpha. Each of the study construct achieved a Cronbach's alpha above 0.50, indicating a fairly acceptable reliability scale according to conventional standards (Hussey et al., 2025).

3.5.Data Collection Procedure

A mixed approach was used to collect data for the study. Data was collected using an online survey and an offline questionnaire distribution. The same questionnaire was used to collect data from online respondents and offline respondents. Both the online and the physically distributed questionnaires were of the same structure and questions. The purpose of complimenting the online survey with the physical distribution of questionnaires was accommodate respondents who were in areas that have weak data networks or who could not afford to buy data bundles but at the same time are respondents who have once received or viewed HPV screening information.

The Google Forms platform was used to administer the online survey. The Google forms survey was chosen because it is free, captures data easily and maintains anonymity. Anonymity helped to boost confidants in respondents and allowed to them to freely and honestly express themselves. Respondents were invited to participate in the study through various social media platforms and social communities on Facebook, X and WhatsApp. Targeted emails were also generated for most of the respondent in the working class. The online questionnaire posting was limited to urban or peri-urban social groups, but all across Zimbabwe. However, the loophole was that the online questionnaire link or URL could become viral and could end up being answered by anyone who was in contact with the link.

Those who expressed that they have already responded to the online questionnaire were exempted from answering the printed questionnaires. The offline survey was carried out through selected churches, workplaces, and communities in Mutare. A trained research aide was employed throughout the data collection process.

The questionnaire used a screening question in its first section so that the study could only capture the views on those who had previously been exposed to HPV screening advertisements. The screening question was, 'How often do you receive messages or adverts about HPV screening on your phone?' And for those who answered 'Never' were screened out during data capture. Before the main section of the survey, respondents were presented with an information statement that clearly outlined the objectives of the study, the potential benefits, and the ethical considerations involved in the study. Only questionnaires that were fully completed were captured on excel first before being imported in SPSS. This whole process was done to ensure statistical accuracy and reliability in data analysis.

3.6.Data Analysis Procedures

Data was analysed using SPSS version 30 and AMOS version 26. SPSS was used in the preliminary stages of chapter four to present demographic information of the study and to carry out factor analysis (non-dimensionality tests). A normality test was carried out to determine the most suitable data analysis method in AMOS. Data was proved to be not normally distributed and so the Maximum Likelihood Estimation with bootstrapping was used to analyse the data. Internal consistency was measured and evaluated using Cronbach's Alpha. A threshold of greater or equal to 0.70 as borrowed from Hair et al., (2017). Composite Reliability minimum threshold of 0.70 was set as exposed by Hair et al., (2017). Convergent Validity was measured using AVE values with the minimum value set at 0.50 as once confirmed by Cheung et al. (2024).

Discriminant validity was assessed using the Fornell–Larcker criterion. The criterion uses the square root of each construct's AVE to assess if the square root values exceed its inter-construct correlations (Fornell & Larcker, 1981; Hair et al., 2017). The model measurement was further assessed using the model fit analysis and the following indices were used: Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI) with targeted thresholds of ≥ 0.90 , while Root Mean Square Error of Approximation (RMSEA) and Root Mean Square

Residual (RMR) were held at ≤ 0.08 , a criteria grounded in contemporary SEM guidelines (Hu & Bentler, 1999; Kline, 2023; Panda & Mohapatra, 2024). In order to balance the statistical indicators with the theoretical validity, ethical usage of fit indices was also prioritized and this in line with recommendations from Stone (2021). After the study model has demonstrated an acceptable fit, the structural model was then tested. Direct paths from fate control, perceived health risk, and privacy concerns towards acceptance of HPV screening digital advertising were assessed. The moderation effect of digital literacy was tested via interaction terms. All the statistical tests were done at a significance level of $\alpha = 0.05$. The effect sizes were interpreted alongside p-values to expose the significance of each relationship and its practical importance (Haji-Othman & Yusuff, 2022).

3.7. Ethical Considerations

Ethical considerations in research refer to the application of moral principles and professional standards that safeguard participants' rights, dignity, and welfare throughout the research process (Bryman et al., 2022). These principles helped to ensure that the study was conducted responsibly and with respect for autonomy, privacy, and justice. This helped to minimise any potential harm while at the same time maximizing the social benefits. Informed consent was obtained from all participants before any form of participation. This ensured that participants participated in the study without fear or force. The researcher made sure that the research participants understood the purpose of the study, its voluntary nature, and their right to withdraw at any time without any consequences. No personal identifiers were collected to assure participants of confidentiality and anonymity. Data was securely stored on a password-protected device which was only accessible to the researcher. In case of organisations such as churches, workplaces and the community, permission was first sought. Permission in some cases was in written form while in most workplaces and communities it was by word of mouth. For online social communities, research permission was sought through the group administrators or data controllers.

The sensitive nature of human papillomavirus (HPV) screening and reproductive health required particular attention to privacy which was also ensured and respected. The study complied with the ethical standards of the Bindura University of Science Education and also adhered to the relevant national regulations, including the Zimbabwe Data Protection Act

(Chapter 11:12) of 2021, which governs the lawful processing and protection of personal health information.

The study tried by all means possible to follow the principles of beneficence. The principle states that it the obligation of any researcher to maximise research benefits (Beauchamp & Childress, 2019). The principle of non-maleficence was also adhered to. It states that it is the responsibility of any researcher to avoid harm to participants (Beauchamp & Childress, 2019).

3.8. Summary

This chapter has detailed the manner and stages in which this study was executed. It managed to describe the study research design, target population, sampling technique, and sample size. This chapter expressed the rationale behind focusing the study on women who were aged eighteen to forty-nine years. The development of the online questionnaire, pilot study, and procedures for ensuring validity, reliability, and ethical compliance were all explained. The data collection and analysis procedures were explained and justified. The pilot study confirmed the clarity, reliability, and cultural appropriateness of the instrument and was foundation for the main survey. Collectively, these steps ensured that the study generated a robust, credible, and ethical dataset good enough to test the research hypotheses.

CHAPTER FOUR

4. DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1. Introduction

This chapter is a presentation, interpretation, analysis and discussion of the research findings. The chapter starts with the presentation and analysis of the demographic characteristics and followed by a factor analysis to screen out items that reduces the robustness of the measurement model. A normality test was tested to determine the nature of the data distribution of study and decide on the best method to run the data in SPSS AMOS. Convergent validity and reliability were performed as part of the confirmatory factor analysis. After the assessment of the measurement model, the structural equation modelling was presented two parts, that is directs effects and the moderation effects. The chapter wraps up with the discussion of the tested hypotheses.

4.2. Response Rate

The study showed an overwhelming response and recorded a response rate of 88.12%. The online survey contributed 82.75% of the overall response rate while the offline survey contributed 94.17% of the total response rate. The high response rate was attributed to the continuous follow ups and reminders made during the online survey, while the physically distributed questionnaires performed well because most questionnaires were responded to while the researcher or assistance waited for them. Moreover, the offline survey had better room for clarifications and this motivated respondents to quickly answer the questionnaires. Most of the unreturned questionnaires were recorded from employed women and business women who stated that they had busy schedules. Table 2 below summarises the study response rate

Table 2: Response Rate

Mode of Response	Expected Responses	Actual Responses	Response Rate (%)	Remarks
Online	400	331	82.75	Follow-ups improved participation
Offline	360	339	94.17	Immediate collection increased completion
Total	760	670	88.16	Good response rate

4.3. Demographic Characteristics

Table 3 immediately below depicts the age, level of education, the number of times messages have been received, the channels in which the messages have been received through, the current sources of messages and lastly the preferred future sources of HPV screening messages. The study sample was comprised of individuals who had once received HPV screening messages through various digital communication channels.

4.3.1. Age Distribution

The age distribution from the two defined age groups was fairly distributed. The 35 to 49 age group had a slightly higher distribution. This might be an indication that this group valued this research and its possible impact more than their younger counterparts. Moreover, this age group might have already gone through the effect of HPV infections and have a higher perceived benefit from the study. The distribution has a high potential to represent the concerns and perceptions of women in the age group 18 to 49 years. This will allow for a fair analysis of the research variables.

4.3.2. Level of Education

Most of the women who participated in this study had secondary education meaning the majority of women in this study were able to read and interpret HPV screening advertisement and could even log online without difficulty. The educational profile illustrated in Table 3 indicates a moderate to high literacy level. This educational profile is a testimony that women in this study can easily define what deters or encourages them to accept HPV screening online advertisements.

4.3.3. Frequency of Message Reception

Information in Table 3 further illustrates that HPV screening online messages are not a common feature in Zimbabwe. The majority of the respondents (65.7%) reported that they have rarely received HPV screening messages. This finding suggests that while digital HPV awareness initiatives exist in Zimbabwe, the frequency and consistency of message delivery remain low. This has a potential to affect message recall and behavioural response. This shows that the Ministry of Health and Child Care (MoHCC) occasionally promotes the Screening of HPV online. The reduced frequency might limit the level of assessment of variables such as fate control, privacy concerns and digital literacy affect the acceptance of HPV digital advertising.

Table 3: Demographic Characteristics

Variable	Attribute	N	Percent
Age	18 - 34 years	326	48.7
	35 - 49 years	344	51.3
Level of Education	Primary Level Education	37	5.5
	Secondary Level Education	186	27.8
	National Foundation Certificate or National Certificate Level	129	19.3
	Diploma	153	22.8
	Degree	113	16.9
Frequency of Message Reception	Post Graduate	52	7.8
	Rarely (once in several months)	440	65.7
	Occasionally (about once a month)	163	24.3
	Often (2 - 3 times a month)	40	6.0
	Very often (at least once a week)	27	4.0
Methods Used to receive HPV screening messages	SMS (text messages)	253	37.8
	WhatsApp messages	134	20.0
	Social Media Advertisements	233	34.8
	Email	7	1.0
	Automated voice calls	2	.3
	Other	41	6.1
Sources of Messages or Adverts	Ministry of Health and Child Care (MoHCC) campaigns	295	44.0
	Hospitals or Clinics	125	18.7
	Non-Governmental Organisations (NGOs) or Health agencies	67	10.0
	Social media influencers or health pages	118	17.6
	Friends of family (forwarded messages)	42	6.3
	Other	23	3.4
Trusted Information Source	Ministry of Health and Child Care (MoHCC) campaigns	461	68.8
	Hospitals or Clinics	152	22.7
	Non-Governmental Organisations (NGOs) or Health agencies	28	4.2
	Social media influencers or health pages	19	2.8
	Friends of family (forwarded messages)	7	1.0
	Other	3	0.4

4.3.4. Methods Used to Receive HPV Screening Messages

The data in Table 3 also shows that most HPV screening messages were received through the SMS platform or through the social media. The major use of the SMS platform by health institutions and the Ministry of Health and Child Care is a testimony that they do not trust the local networks or else they believe that most women are not connected to the internet. However, the adoption of the social media is an indication that the ministry is also acknowledging the changes in digital trends in the marketing communication industry. It can

be seen also as a means to embrace most of the women in the 18 to 34 years group who spend most of their time online and on social media.

4.3.5. Sources of Messages or Adverts

The research data showed that the Ministry of Health and Child Care (MoHCC) has delivered most of the HPV screening digital messages (44.0%). Hospitals and clinics are also reaching communities within their vicinity while social media influencers or health pages compliment the effort by the government institutions. This may also be an indication that government agencies, hospitals and the health ministry at large receive a budget from the WHO to support the HPV screening initiatives while the private sector has to rely on their budgets and as such offers personalised services.

4.3.6. Trusted Information Sources

The study has shown that the Ministry of Health and Child Care is the most trusted source of information about HPV screening. Hospitals and clinics follow on second. Non-Governmental Organisations (NGOs), social media influencers, and friends or family were trusted by very few respondents. This demonstrates that most women in this study had strong institutional trust in government and health facilities when it comes to health information dissemination. Future digital health campaigns should therefore emanate or originate from the Ministry of Health and Child Care or else, the ministry must endorse every HPV screening advertisement.

4.4. Factor Analysis

4.4.1. The Uni-dimensionality tests

The uni-dimensionality test was conducted to ensure that each measured study construct represented a single underlying factor. According to Hair et al. (2019) and Kline (2016), uni-dimensionality tests help to confirm if latent variable indicators can consistently in represent a single theoretical concept rather than a multiple unrelated dimensions in one variable. Uni-dimensionality tests are done before confirmatory factor analysis (CFA). This is because multidimensionality if not addressed, can distort parameter estimates or may weaken the construct validity (Byrne, 2013, 2016; Verma & Verma, 2024) which will affect the quality of the measurement model.

4.4.1.1. Fate Control Factor Analysis

Table 4: Fate Control Factor Loadings

Code	Measurement Item	Factor
FC1	Getting HPV is completely determined by fate.	0.593
FC2	I have no control over my health outcomes.	0.532
FC3	My risk of getting HPV is set by fate, regardless of any HPV screening advertisements I see.	0.713
FC4_R	I can control my health outcomes by taking preventive actions such as responding to HPV screening advertisements.	0.129
FC5	HPV screening is unnecessary because fate decides health outcomes.	0.443
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.758
Bartlett's Test of Sphericity	Approx. Chi-Square	708.716
	Df	10
	Sig.	<.001
Eigen Value		2.410
Variance Explained		48.203%
Cronbach's Alpha		0.564

Extraction Method: Principal Component Analysis

Tables 4 and 5 present the results of a factor analysis that was conducted to assess the validity and reliability of the Fate Control construct. The analysis was undertaken in two stages. Table 4 shows the initial factor loadings and the psychometric test results. Table 5 reflects the refined solutions after removing the poorly performing items. The initial factor analysis extracted a single factor with an eigenvalue of 2.410, explaining 48.203% of the variance. The KMO value (0.758) and significant Bartlett's Test ($\chi^2 = 708.716$, $p < .001$) confirmed data suitability.

Factor loadings ranged from 0.129 to 0.713, with FC4_R showing a very weak loading (0.129). The reasons for this weak loading was may be the reverse wording, and/or that it was wrongly included in Fate Control. After more analysis, it was discovered that FC4_R represents internal locus of control instead of external locus of control. The Cronbach's Alpha (0.564) although above 0.50, indicated a low internal consistency. The decision was therefore to remove weak and conceptually inconsistent items.

After retaining the three strong items FC1, FC2 and FC3 only, the model improved remarkably. The KMO (0.677) and Bartlett's Test ($\chi^2 = 497.771$, $p < .001$) remained in the

acceptable range. The single extracted factor recorded an eigenvalue of 2.017, which hence explained 67.224% of the variance and was supported by loadings above 0.6.

Table 5: Improved Communalities and Tests For Fate Control

Code	Item	Factor
FC1	Getting HPV is completely determined by fate.	.675
FC2	I have no control over my health outcomes.	.609
FC3	My risk of getting HPV is set by fate, regardless of any HPV screening advertisements I see.	.733
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.677
Bartlett's Test of Sphericity	Approx. Chi-Square	497.771
	Df	3
	Sig.	<.001
Eigen Value		2.017
Variance Explained		67.224
Cronbach's Alpha		0.756

Extraction Method: Principal Component Analysis

After a review of Fate Control items, reliability improved significantly to $\alpha = 0.756$ which therefore confirmed a better internal consistency for the variable. The removal of the weak items strengthened the factor structure and improved reliability which can therefore imply that the construct was now able to capture the fatalistic health beliefs.

4.4.1.2. Perceived Health Risk Factor Analysis

Tables 6 and 7 present the factor analysis results for Perceived Health Risk (PHR). Table 6 is a display of the initial factor solution, while Table 7 presents the version obtained after removing the weaker item with the aim of improving reliability and validity of the construct. The initial analysis extracted a single factor that had an eigenvalue of 2.488 and explained 62.191% of variance which was therefore the basis for confirming the uni-dimensionality of the PHR construct. The KMO value of 0.749 and significant Bartlett's Test ($\chi^2 = 869.113$, $p < .001$) helped to confirm the sample adequacy. Factor loadings for PHR ranged from 0.445 to 0.717 and only the first three items (PHR1–PHR3) showed strong loadings of above 0.6. PHR4 loaded weakly (0.445) and this suggested a poor alignment with the PHR construct. The Cronbach's Alpha of 0.796 indicated good reliability and played no part in the removal of the weak item PHR4. After removing PHR4, the construct improved notably.

Table 6: Perceived Health Risk Factor Loadings

Code	Measurement Item	Factor
PHR1	Not getting screened for HPV could endanger my health.	0.635
PHR2	Avoiding HPV screening would be harmful to my health.	0.717
PHR3	Ignoring HPV screening puts my health at serious risk.	0.690
PHR4	It is unsafe to delay HPV screening.	0.445
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.749
Bartlett's Test of Sphericity	Approx. Chi-Square	869.113
	Df	6
	Sig.	<.001
Eigen Value		2.488
Variance Explained		62.191%
Cronbach's Alpha		0.796

Extraction Method: Principal Component Analysis

The KMO (0.688) and Bartlett's Test ($\chi^2 = 690.689$, $p < .001$) remained satisfactory. The revised factor recorded an eigenvalue of 2.164 and managed to explain 72.135% of the variance. This was resulted in stronger factor loadings that were in the range 0.635 to 0.783.

Table 7: Improved Communalities and Tests For Perceived Health Risk

Code	Item	Factor
PHR1	Not getting screened for HPV could endanger my health.	0.635
PHR2	Avoiding HPV screening would be harmful to my health.	0.783
PHR3	Ignoring HPV screening puts my health at serious risk.	0.746
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.688
Bartlett's Test of Sphericity	Approx. Chi-Square	690.689
	Df	3
	Sig.	<.001
Eigen Value		2.164
Variance Explained		72.135%
Cronbach's Alpha		0.806

Extraction Method: Principal Component Analysis

Reliability also improved slightly to $\alpha = 0.806$. The refined three-item scale demonstrated a valid and reliable uni-dimensional structure. Removing the weak item strengthened the factor coherence and variance explained (Acar GüvendiR & Özer Özkan, 2022). These results helped to confirm that perceived health risk is a stable construct.

4.4.1.3. Data Privacy Concern Factor Analysis

Tables 8 and 9 present the factor analysis results for the Data Privacy Concerns (DPC) construct. The construct was introduced to assess the respondents' anxieties when sharing personal information through HPV screening online advertisements links. Table 8 reports the initial factor extraction. Table 9 provides the new results after improving the scale's psychometric properties. The initial analysis managed to extract a single factor that had an eigenvalue of 3.122 and accounted for 62.438% of the total variance.

Table 8: Data Privacy Concern Factor Loadings

Code	Measurement Item	Factor
DPC1	I worry that my personal data requested through HPV screening online advertisements could be used for wrong purposes.	0.670
DPC2	I am concerned that my personal data requested by HPV screening advertisers could be accessed by unknown parties.	0.702
DPC3	I usually think twice before sharing personal information with HPV screening online advertisers.	0.541
DPC4	I feel HPV screening online advertisers request too much personal information.	0.453
DPC5	I am concerned that my personal data collected through HPV screening online advertisements could be used in ways unknown to me.	0.756
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.836
Bartlett's Test of Sphericity	Approx. Chi-Square	1425.272
	Df	10
	Sig.	<.001
Eigen Value		3.122
Variance Explained		62.438%
Cronbach's Alpha		0.845

Extraction Method: Principal Component Analysis

This showed that that all the DPC items managed to measure the common underlying construct. The sampling adequacy was confirmed using the KMO value of 0.836, and the Bartlett's Test results ($\chi^2 = 1425.272$, $p < .001$). The Bartlett's test results were significantly high meaning the items were good enough for a factor analysis. The resulting factor loadings were in the range 0.453 to 0.756. This showed that most items were strongly related to the DPC construct, except for DPC4 (0.453), which fell below the recommended 0.5 threshold as stipulated by Hair et al. (2019). The Cronbach's Alpha of 0.845 indicated good reliability for the construct.

After removing the weak loading item (DPC4), the construct improved. The KMO (0.794) and Bartlett's Test ($\chi^2 = 1198.412$, $p < .001$) still confirmed data suitability. The refined factor recorded an eigenvalue of 2.762, which accounted for 69.044% of the variance. All factor loadings were above 0.53 as expected. The Cronbach's Alpha increased slightly to 0.849 which further reflected a stronger internal consistency.

Table 9: Improved Communalities and Tests For Data Privacy Concerns

Code	Item	Factor
DPC1	I worry that my personal data requested through HPV screening online advertisements could be used for wrong purposes.	0.711
DPC2	I am concerned that my personal data requested by HPV screening advertisers could be accessed by unknown parties.	0.743
DPC3	I usually think twice before sharing personal information with HPV screening online advertisers.	0.535
DPC5	I am concerned that my personal data collected through HPV screening online advertisements could be used in ways unknown to me.	0.773
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.794
Bartlett's Test of Sphericity	Approx. Chi-Square	1198.412
	Df	6
	Sig.	<.001
Eigen Value		2.762
Variance Explained		69.044%
Cronbach's Alpha		0.849

Extraction Method: Principal Component Analysis

The improved variance explained and the high alpha value confirmed that respondents consistently expressed concern about the potential misuse, unauthorized access, or excessive collection of personal data by HPV screening advertisers or online advertisement links. It was concluded that the DPC construct effectively captured the digital privacy apprehensions that were relevant to online health communication. This therefore supported its inclusion in the structural model.

4.4.1.4. Acceptance of HPV Screening Digital Advertising Factor Analysis

Tables 10 and 11 present the factor analysis results for the Acceptance of HPV Screening Digital Advertising (AHDA) construct. The AHDA construct measured an individual's openness and behavioural intention toward online HPV screening promotions. Table 10

shows the first factor extraction while Table 11 depicts the refined model after the construct's item optimization.

Table 10: Acceptance of HPV Screening Digital Advertising Factor Loadings

Code	Measurement Item	Factor
AHDA1	I feel positive about HPV screening digital advertisements.	0.463
AHDA2	I am willing to receive HPV screening digital advertisements.	0.664
AHDA3	I read HPV screening digital advertising messages that I receive.	0.678
AHDA4	I have a strong intention to accept HPV screening digital advertisements.	0.710
AHDA5	I consider accepting HPV screening digital advertisements in the future.	0.679
AHDA6	I usually accept HPV screening digital advertisements.	0.656
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.884
Bartlett's Test of Sphericity	Approx. Chi-Square	2083.083
	Df	15
	Sig.	<.001
Eigen Value		3.851
Variance Explained		64.182%
Cronbach's Alpha		0.886

Extraction Method: Principal Component Analysis

The initial analysis managed to extract a single factor that had an eigenvalue of 3.851 and an explained variance of 64.182%. This successfully confirmed the uni-dimensionality of the construct. The sampling adequacy was excellent showing a KMO value of 0.884. The Bartlett's Test ($\chi^2 = 2083.083$, $p < .001$) indicated that the level of suitability of the items for factor analysis was significantly high. Factor loadings for AHDA ranged from 0.463 to 0.710 and all items contributed positively. However, AHDA1 loaded weakly with a score of 0.463. This may have suggested a conceptual misalignment or low discriminant value with the model. The construct displayed a strong internal consistency, with Cronbach's Alpha = 0.886.

Table 11 shows that after removing the weak item (AHDA1), the model improved. The KMO value remained high (0.879), and the Bartlett's Test ($\chi^2 = 1764.198$, $p < .001$) still confirmed a sample adequacy for the AHDA construct. The new extracting factor achieved an eigenvalue of 3.462 and accounted for 69.248% of the total variance. Factor loadings ranged from 0.650 to 0.751. Reliability remained robust with $\alpha = 0.867$.

Table 11: Improved Communalities and Tests For Acceptance of HPV Screening Digital Advertising

Code	Item	Factor
AHDA2	I am willing to receive HPV screening digital advertisements.	0.674
AHDA3	I read HPV screening digital advertising messages that I receive.	0.710
AHDA4	I have a strong intention to accept HPV screening digital advertisements.	0.751
AHDA5	I consider accepting HPV screening digital advertisements in the future.	0.650
AHDA6	I usually accept HPV screening digital advertisements.	0.677
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.879
Bartlett's Test of Sphericity	Approx. Chi-Square	1764.198
	Df	10
	Sig.	<.001
Eigen Value		3.462
Variance Explained		69.248%
Cronbach's Alpha		0.867

Extraction Method: Principal Component Analysis

The refined five-item AHDA construct demonstrated an improved and stronger validity and reliability than the initial extraction. The improved variance explained and high Cronbach's Alpha confirmed that the items managed to collectively and coherently capture the respondents' attitudes and intentions to engage with digital HPV screening messages.

4.4.1.5. Digital Literacy Factor Analysis

Table 12 presents the uni-dimensionality test results for the Digital Literacy (DL) construct. The construct generally captured the individual's capability, confidence, and engagement with HPV screening digital advertisements. The factor analysis extracted a single factor with an eigenvalue of 3.059, and variance explained of 50.987%. This indicated that the items of the construct successfully measured a uni-dimensional construct. The Kaiser-Meyer-Olkin (KMO) value of 0.786 suggested an adequate sampling adequacy, while Bartlett's Test of Sphericity ($\chi^2 = 1311.864$, $p < .001$) confirmed that the dataset was suitable for factor analysis. Factor loadings ranged from 0.632 to 0.737 and therefore showed that all items were strongly linked to the latent construct DL. The reliability analysis indicated (Cronbach's Alpha = 0.806) that there was a good internal consistency among the measure items.

Table 12: Digital Literacy Factor Loadings

Code	Measurement Item	Factor
DL1	I feel positive about HPV screening digital advertisements.	0.734
DL2	I am willing to receive HPV screening digital advertisements.	0.652
DL3	I read HPV screening digital advertising messages that I receive.	0.676
DL4	I have a strong intention to accept HPV screening digital advertisements.	0.632
DL5	I consider accepting HPV screening digital advertisements in the future.	0.737
DL6	I usually accept HPV screening digital advertisements.	0.714
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.786
Bartlett's Test of Sphericity	Approx. Chi-Square	1311.864
	Df	15
	Sig.	<.001
Eigen Value		3.059
Variance Explained		50.987%
Cronbach's Alpha		0.806

Extraction Method: Principal Component Analysis

The results demonstrated that the six-item Digital Literacy construct was valid and reliable. The strong factor loadings and high internal consistency confirmed that respondents' confidence, engagement, and willingness to interact with HPV screening digital advertisements were adequately captured.

4.5. Normality Tests

The study dataset was exposed to a normality test in order to decide on the analysis method in AMOS. Table 13 immediately below presents the results of the Kolmogorov–Smirnov and Shapiro–Wilk tests which was conducted to assess the normality of the data for all measurement items across the constructs. Both tests examined whether the observed distribution of the data significantly deviated from a normal distribution. For large samples ($30 < n < 2000$) the Kolmogorov–Smirnov tests will be more ideal, but the minor deviations from normality often result in significant test statistics (Ghasemi & Zahediasl, 2012). As shown in Table 13 immediately above, all items recorded significant p-values ($p < .001$) under both the Kolmogorov–Smirnov and Shapiro–Wilk tests which were an indication that the null hypothesis of normality was rejected for each variable. These results suggested that the data was not normally distributed. Although the Kolmogorov–Smirnov and Shapiro–Wilk tests indicated significant departures from normality, this did not compromise the validity of the analysis.

Table 13: Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
FC1	.310	670	<.001	.828	670	<.001
FC2	.331	670	<.001	.788	670	<.001
FC3	.327	670	<.001	.822	670	<.001
PHR1	.351	670	<.001	.771	670	<.001
PHR2	.358	670	<.001	.781	670	<.001
PHR3	.335	670	<.001	.783	670	<.001
DPC1	.302	670	<.001	.855	670	<.001
DPC2	.349	670	<.001	.807	670	<.001
DPC3	.320	670	<.001	.833	670	<.001
DPC5	.316	670	<.001	.833	670	<.001
AHDA2	.312	670	<.001	.786	670	<.001
AHDA3	.340	670	<.001	.751	670	<.001
AHDA4	.321	670	<.001	.784	670	<.001
AHDA5	.307	670	<.001	.768	670	<.001
AHDA6	.310	670	<.001	.814	670	<.001
DL1	.234	670	<.001	.888	670	<.001
DL2	.242	670	<.001	.879	670	<.001
DL3	.272	670	<.001	.863	670	<.001
DL4	.192	670	<.001	.895	670	<.001
DL5	.318	670	<.001	.828	670	<.001
DL6	.315	670	<.001	.820	670	<.001

a. Lilliefors Significance Correction

The study employed a large sample size ($n = 670$). According to the Central Limit Theorem, the distribution of the sample means will tend towards normality as the sample size increases and this reduces the impact of non-normality in parameter estimation (Feyo Bantu et al., 2025). The Maximum Likelihood Estimation (MLE) method is known to be robust in moderating deviations from normality when sample sizes exceed 200 (Kline, 2023). The Maximum Likelihood Test was therefore employed to measure the model fitness and generate correlational coefficients using AMOS. Bootstrapping procedures were applied during structural equation modelling to adjust for any bias in standard errors and confidence intervals resulting from non-normal data (Byrne, 2016). Consequently, the analysis proceeded under the assumption that the observed non-normality was not severe enough to distort parameter estimates or model fit indices.

4.6. Measurement Model Evaluation

4.6.1. Model Fit Analysis

Confirmatory Factor Analysis (CFA) was performed to establish the validity of the measurements of the constructs in this study and to confirm the uni-dimensional structure established through the uni-dimensionality tests. The CFA served as the basis for hypothesis testing. A primary function of CFA is to validate a measurement model by examining the relationship between the observed indicator variables and the latent constructs they are intended to measure (Hoyle, 2023; Roos & Bauldry, 2022). In addition to validating the measurement model, CFA serves as an important step to ensure that each item used to represent a construct will appropriately capture its intended construct (Hoyle, 2023; Roos & Bauldry, 2022). The reason for conducting a CFA prior to analysing the structural relationship between fate control, perceived health risk, data privacy concern, digital literacy, and acceptance of HPV screening digital advertising is to establish a robust measurement model so that the results can be confidently interpreted. Figure 6 below provides the measurement model based on factor analysis. Figure 7 also displays the measurement model based on factor analysis, with the remaining items deleted from it for each defined construct.

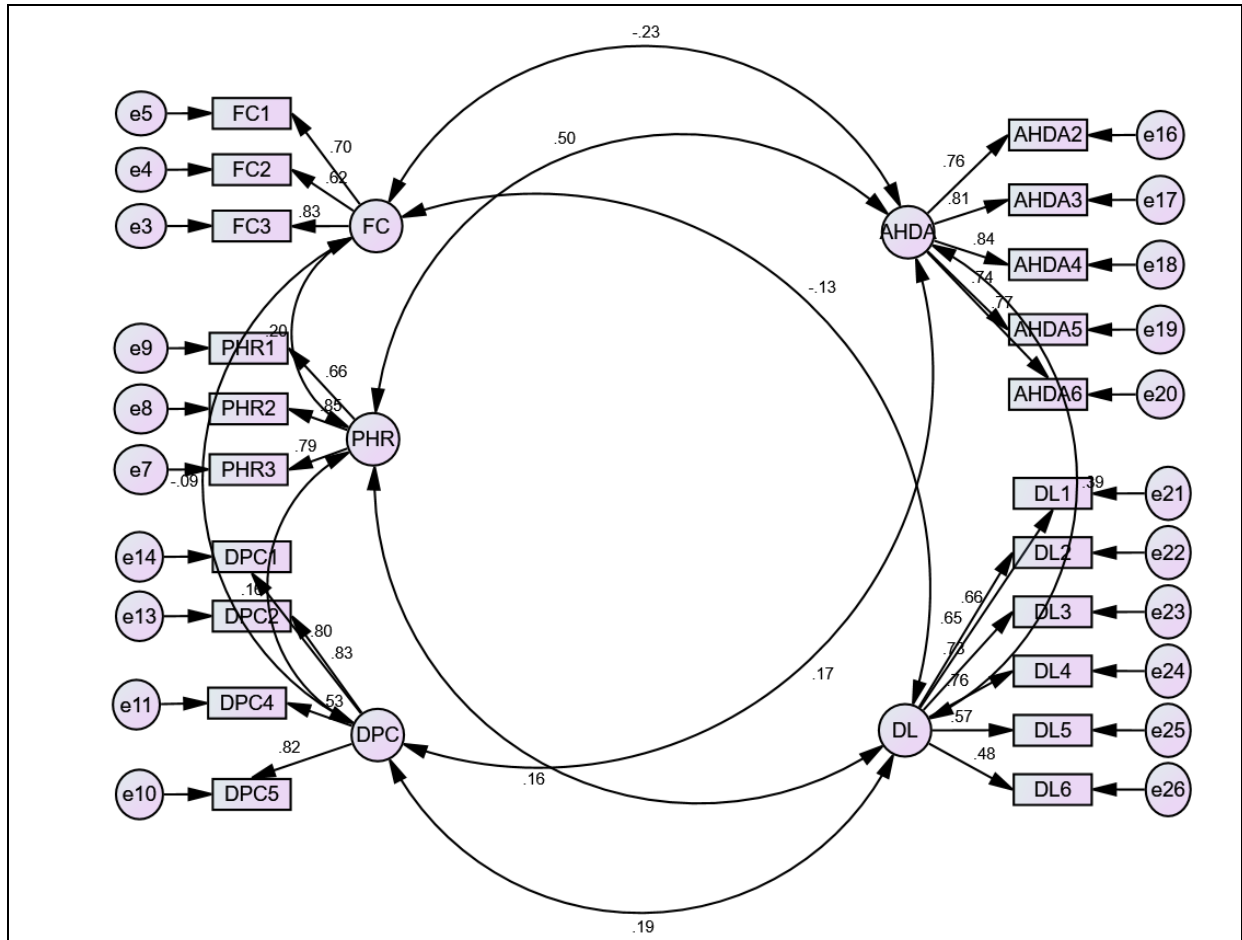


Figure 6: Initial Measurement Model

Table 14: Model Fit Summary Before Model Adjustment

Fit Index	CMIN/DF	GFI	CFI	TLI	NFI	RMSEA	RMR
Default Model	6.883	0.849	0.836	0.808	0.815	0.094	0.079

The CFA results for the first model assessment were not as expected. The results revealed a suboptimal model fit (Table 14), with CMIN/DF = 6.883, GFI = 0.849, CFI = 0.836, TLI = 0.808, NFI = 0.815, RMSEA = 0.094, and RMR = 0.079. According to Kline (2016) and Byrne (2016), an acceptable model fit is achieved when CFI and TLI exceed 0.90, RMSEA < 0.08, and RMR < 0.05. The poor fit indicated therefore indicated that there were weak indicators and redundant items (DPC4, DL4, DL5 and DL6) within this measurement model despite a successful factor analysis. This necessitated a model respecification through a process of item deletion and re-examination of modification indices. DL4 had a good factor loading but continued to cause problems to the model due to shared similarity (Roos & Bauldry, 2022) with D2. Considering the fact that D2 had a higher factor loading than D4, D4 was therefore deleted. According to Hair et al. (2019) and Kline (2016), such deletion helps

to reduce redundancy and ensures that the indicator with the higher factor loading strongly contributes to the underlying dimension. However, Roos & Bauldry (2022) advocates for other statistical packages such as R, Stata and SAS, but for this study the deletion method was employed.

After removing the problematic or redundant items (DPC4, DL4, DL5, and DL6), the revised measurement model was re-estimated. The new model produced significantly improved goodness-of-fit indices as shown in Table 15. The revised model achieved CMIN/DF = 4.520, GFI = 0.927, CFI = 0.923, TLI = 0.904, NFI = 0.904, RMSEA = 0.073, and RMR = 0.042. These results fell within the acceptable thresholds proposed by Hu & Bentler (1999) and Hair et al. (2019). Hence this confirmed an improved good model fit and construct adequacy.

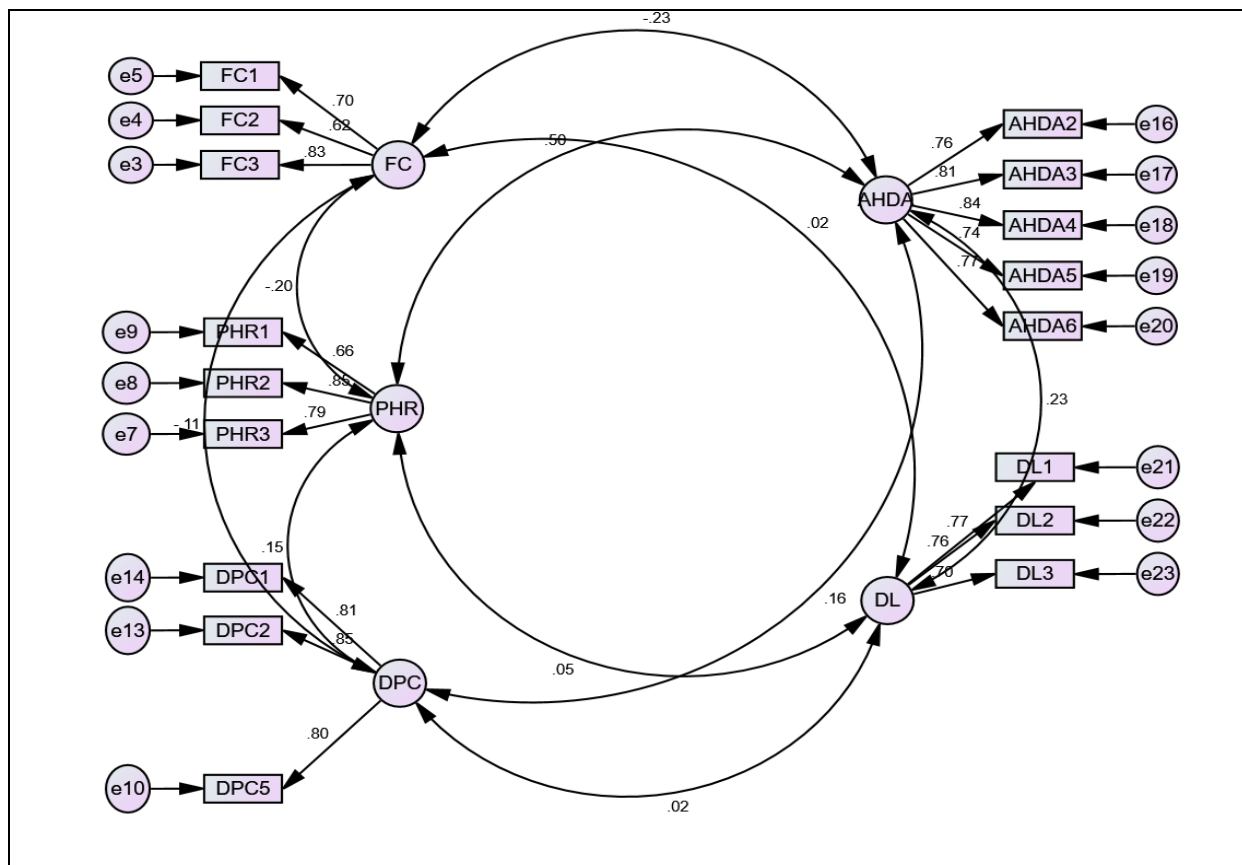


Figure 7: Final Measurement Model

Table 15: Model Fit Summary for the Revised Model

Fit Index	CMIN/DF	GFI	CFI	TLI	NFI	RMSEA	RMR
Default Model	4.520	0.927	0.923	0.904	0.904	0.073	0.042

The improvement in fit indices demonstrated the effectiveness of the item refinement process and hence ensured parsimony and theoretical coherence in the revised study model. The CFI and TLI values which exceeded 0.90 suggested a robust comparative fit, while the RMSEA value below 0.08 indicated a reasonable approximation of the population covariance structure. The RMR value of 0.042 further signified minimal residual variance and implied that the measurement model closely reproduced the observed data.

4.6.2. Construct Validity

Table 16 below depicts the standardized regression weights generated after a confirmatory factor analysis.

Table 16: Standardized Regression Weights

Measurement Item	Standardised Estimate
FC → My risk of HPV is set by fate regardless of ads I see	0.830
FC → I have no control over my health outcomes	0.617
FC → Getting HPV is determined by fate	0.696
PHR → Ignoring HPV screening puts my health at serious risk	0.793
PHR → Avoiding HPV screening would be harmful to my health	0.847
PHR → Not getting screened for HPV could endanger my health	0.660
DPC → I worry personal data collected is used in ways unknown to me	0.802
DPC → I worry that my online data can be accessed by unknown parties	0.845
DPC → I worry that my data requested online could be used wrongly	0.809
AHDA → I am willing to receive HPV screening digital ads	0.758
AHDA → I read HPV screening digital ads that I receive	0.807
AHDA → I have a strong intention to receive HPV digital ads	0.843
AHDA → I consider accepting HPV screening digital ads in future	0.741
AHDA → I usually accept HPV screening digital ads	0.772
DL → I can adjust privacy settings on online platforms	0.718
DL → I can tell if digital ads are trustworthy or not	0.758
DL → I consider if my data is used ethically online	0.732
DL → I understand online safety issues	0.747

The standardized regression weights in Table 16 indicated that all measurement items loaded strongly onto their respective constructs, with values ranging from 0.617 to 0.847 and exceeded the 0.5 threshold which is recommended for a successful confirmatory factor analysis (Hair et al., 2017; Roos & Bauldry, 2022; Verma & Verma, 2024). The CFA results therefore demonstrated that Fate Control, Perceived Health Risk, Data Privacy Concern, Acceptance of HPV Screening Digital Advertising, and Digital Literacy were well-

represented by their indicators after factor deletion. The strong loadings provided a clear evidence of convergent validity and hence confirmed that each item managed to reliably measure its intended construct. This therefore supported the overall adequacy and robustness of the measurement model.

4.6.3. Convergent Validity and Reliability

Table 17 represents reliability and validity scales after a successful CFA. Convergent validity and reliability were examined to assess the degree to which the indicators of each construct converge when they represent their respective latent factors. The results demonstrated an acceptable level of internal consistency and shared variance across all constructs.

Table 17: Convergent Validity and Reliability

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Expected (AVE)	N
Fate Control (FC)	0.756	0.529	0.518	3
Perceived Health Risk (PHR)	0.806	0.625	0.593	3
Data Privacy Concerns (DPC)	0.858	0.711	0.671	3
Acceptance of HPV screening Digital Advertising (AHDA)	0.888	0.755	0.617	5
Digital Literacy (DL)	0.785	0.570	0.553	3

According to Hair et al. (2017) and Fornell and Larcker (1981), Cronbach's alpha and Composite Reliability (CR) values above 0.70 indicate an acceptable internal consistency, while the Average Variance Extracted (AVE) values above 0.50 confirm that, on average, more than half of the variance in each construct is explained by its indicators. As presented in Table 17 above, all constructs exceeded the recommended reliability thresholds. The greatest internal consistency among the constructs was observed in acceptance of HPV screening digital advertising ($\alpha = 0.888$, CR = 0.755) and data privacy concern ($\alpha = 0.858$, CR = 0.711). Therefore, the most homogeneous measurement items were those measuring acceptance of HPV screening digital advertising and data privacy concern. Moderate internal consistency ($\alpha = 0.75$, CR = 0.53) and acceptable reliability values for fate control and digital literacy ($\alpha = 0.78$, CR = 0.57) indicated that there was sufficient homogeneity among the retained items in each construct following model refinement. Further, the AVE values for all constructs ranged from .518 to .67, thereby providing evidence that all constructs had adequate convergent

validity (i.e., the items within each construct accounted for a significantly large proportion of the variance in common that was theoretically expected). Therefore, the findings provided evidence of internal reliability and convergent validity for the measurement items and, thus, a suitable basis for testing the hypothesised structural relationships.

4.6.4. Discriminant Validity

The purpose of assessing discriminant validity was to establish whether the latent constructs measured in the structural model were, both conceptually and empirically, different from each other. Discriminant validity was evaluated using the Fornell-Larcker criterion (Fornell & Larcker, 1981) and consisted of comparing the square root of the average variance extracted (AVE) for each construct to its correlation with each of the other constructs. From the data presented in Table 18, the square root of the AVE for each construct (fate control, perceived health risk, data privacy concern, acceptance of HPV screening digital advertising, and digital literacy) exceeded the correlation between each pair of constructs.

Table 18: Discriminant Validity

Construct	$\sqrt{\text{AVE}}$	FC	PHR	DPC	AHDA	DL
Fate Control (FC)	0.719	0.719	0.312	0.295	0.287	0.301
Perceived Health Risk (PHR)	0.770	0.312	0.770	0.354	0.369	0.325
Data Privacy Concern (DPC)	0.819	0.295	0.354	0.819	0.392	0.334
Acceptance of HPV Screening Digital Advertising (AHDA)	0.786	0.287	0.369	0.392	0.786	0.351
Digital Literacy (DL)	0.744	0.301	0.325	0.334	0.351	0.744

For example, Fate Control's average explained variance (AVE) of 0.719 was greater than the correlations between it and Perceived Health Risk (.312), Data Privacy Concern (.295), Acceptance of HPV Screening Digital Advertising (.287), and Digital Literacy (.301). The same types of patterns were observed for all of the other constructs as well, thus demonstrating that each of the latent variables accounted for more variance in its own indicators than it did for the other constructs in the model. Therefore, these results demonstrated that the constructs were empirically different from one another, providing substantial support for discriminant validity and demonstrating that the measurement model would be appropriate to test for structural validity (Fornell & Larcker, 1981; Hair et al., 2017).

4.7. Structural Equation Modelling (SEM) Analysis

The structural model was evaluated to test the hypothesised direct relationships between the independent variables (Fate Control, Perceived Health Risk, and Data Privacy Concern) and the dependent variable (Acceptance of HPV Screening Digital Advertising). The moderating role of Digital Literacy was also structurally tested using SPSS Amos 26. The results of the path analysis are presented in Table 19, Table 20 and Figure 8 below.

4.7.1. Direct Effects

H1: Fate control has a significant negative effect on acceptance of HPV screening digital advertising.

The relationship between Fate Control and Acceptance of HPV Screening Digital Advertising was negative and statistically significant ($B = -0.136$, $t = -3.147$, $p = 0.002$). This result was in support of H1. This finding has indicated that individuals with stronger beliefs in fate or predetermined health outcomes were less likely to accept HPV screening digital advertisements. In essence, individuals with a higher sense of fate control find HPV screening digital advertisements of little or no relevance in their lifetime. They viewed health outcomes being beyond personal control. This result was consistent with the Protection Motivation Theory (PMT) by Rogers (1983). The theory emphasized that perceived self-efficacy and control were key in motivating health-protective behaviours among individuals.

H2: Perceived health risk has a significant positive effect on acceptance of HPV screening digital advertising.

The results in Table 19 show that Perceived Health Risk had a positive and highly significant influence on Acceptance of HPV Screening Digital Advertising ($B = 0.462$, $t = 9.367$, $p < 0.001$). In that regard, H2 was accepted. This foretells that individuals who perceived a higher risk of contracting HPV were more likely to accept and respond favourably to HPV screening digital advertisements. The strong positive correlation coefficient was a sign that risk perception would be a key cognitive driver in the adoption of preventive health behaviours. This outcome supported the assumptions of both the Biopsychosocial (BPS) Model and the Protection Motivation Theory, which posited that heightened risk appraisals increased the

motivation towards the adoption of protective actions such as accepting HPV screening online advertisements.

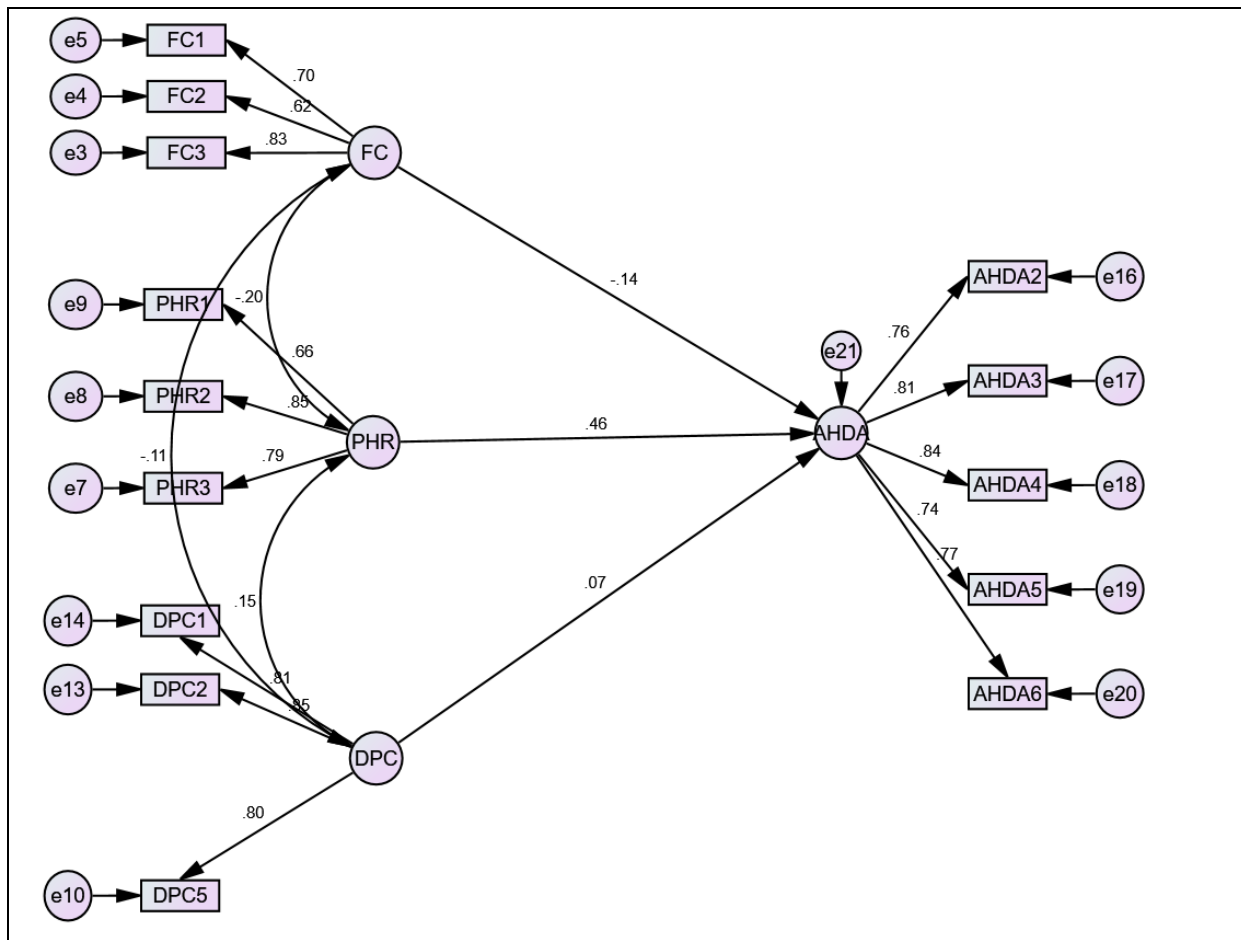


Figure 8: The Structural Model

Table 19: Hypotheses Testing for Direct Effects

Hypothesis	Path	B-value	S.E.	t-value	p-value	Decision
H1	FC → AHDA	-0.136	0.033	-3.147	0.002	Accepted
H2	PHR → AHDA	0.462	0.046	9.367	***	Accepted
H3	DPC → AHDA	0.072	0.027	1.784	0.074	Rejected

H3: Privacy concerns have a significant negative effect on the acceptance of HPV screening digital advertising.

The path from Data Privacy Concerns to Acceptance of HPV Screening Digital Advertising was positive but statistically insignificant ($B = 0.072$, $t = 1.784$, $p = 0.074$) and resulted in the rejection of H3. Although the direction of the relationship was positive, the effect did not reach the acceptable significant level of $p < 0.05$. This implied that online privacy concerns

were not good enough to reduce an individual's acceptance of digital HPV screening advertisements. One possible explanation to this result was that respondents tend to prioritise perceived health benefits over privacy apprehensions when the message involves a life-threatening or sensitive health condition. Alternatively, the insignificant result could have indicated a moderate level of trust in digital health platforms, which might have minimized the deterrent effect of privacy concerns.

Overall, the results of the direct effects highlighted that cognitive appraisal of health risk and fate control played a more decisive role in shaping the acceptance of digital health interventions than data privacy concerns.

4.7.2. The Moderation Effect of Digital Literacy

The moderating role of Digital Literacy on the relationships between the independent variables (Fate Control, Perceived Health Risk and Data Privacy Concern) and the Acceptance of HPV Screening Digital Advertising was tested using interaction terms in the structural model. Figure 9 below depicts the structural model of the moderation analysis.

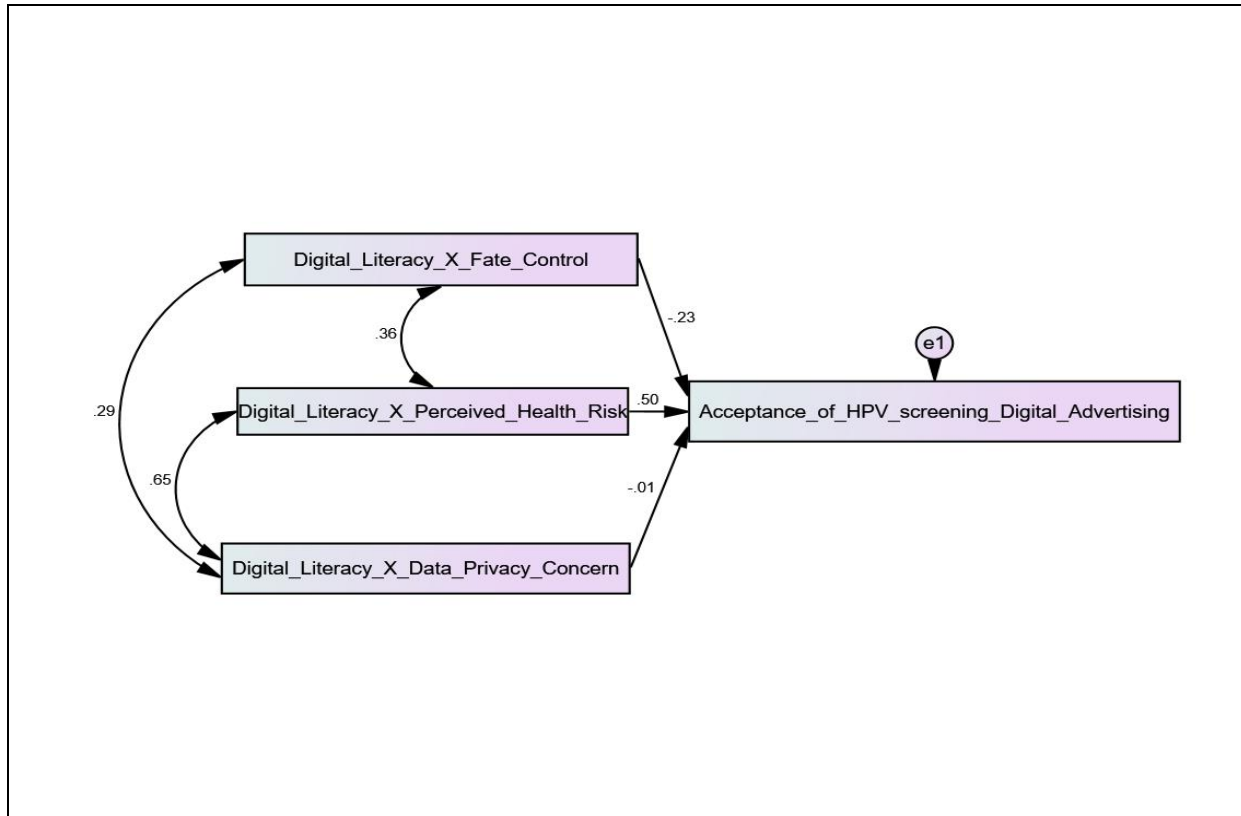


Figure 9: The Moderation Effects of Digital Literacy Model

Table 20 below present the results of the moderation analysis. Table 20 displays the standardized regression coefficients (B-values), standard errors, t-values, and p-values for each hypothesized moderating path.

H4: Digital literacy modifies the relationship between fate control and acceptance of HPV screening digital advertising.

The results in Table 20 and in Figure 9 showed that the interaction between digital literacy and fate control was statistically significant and negative ($B = -0.229$, $t = -6.231$, $p < 0.001$). This resulted in the acceptance of H4. This is a sign that digital literacy magnified the negative relationship between fate control and the acceptance of HPV screening digital advertising. In other words, for individuals who strongly believed that health outcomes were predetermined by fate, a higher digital literacy further intensified their resistance towards accepting HPV screening digital advertisements. Rather than mitigating the influence of fatalistic beliefs, digital literacy appeared to heighten awareness of the conflict between personal agency and fatalism and therefore led women to strongly reject online persuasive health messages. This entails that digitally literate women who have high fatalistic orientations were likely to use their digital competence to critically evaluate and even dismiss digital health content that contradicts their deep-seated beliefs about fate control. They could cite a lot of loopholes of the health communication system and justify why people are still dying despite being well informed and taking precautionary measures. Their final warning and decision is God has control over everything no matter how knowledgeable one is.

Table 20: Hypotheses Testing for Moderation Effects

Hypothesis	Path	B-value	S.E.	t-value	p-value	Decision
H4	$DL \times FC \rightarrow AHDA$	-.229	0.007	-6.231	***	Accepted
H5	$DL \times PHR \rightarrow AHDA$	.504	0.007	10.876	***	Accepted
H6	$DL \times DPC \rightarrow AHDA$	-.014	0.006	-0.301	0.764	Rejected

H5: Digital literacy strengthens the relationship between perceived health risk and acceptance of HPV screening digital advertising.

The interaction between Digital Literacy and Perceived Health Risk was positive and highly significant ($B = 0.504$, $t = 10.876$, $p < 0.001$). This was in line the dictate and guess of H5.

This implied that digital literacy strengthened the positive relationship between perceived health risk and the acceptance of HPV screening digital advertisements. Participants who were both digitally literate and highly aware of HPV risk were more responsive to digital health messages. They could use the online platforms to seek more information on the level of risk and at the same time sought for preventive mechanism such as online information on HPV screening. This result reinforced the idea that digital competences tend to enhance the ability to interpret and trust online health information, and because of that it will amplify the motivational effect of perceived risk on health-related behavioural intentions.

H6: Digital literacy modifies the relationship between privacy concerns and acceptance of HPV screening digital advertising.

The moderating effect of Digital Literacy on the relationship between Data Privacy Concern and Acceptance of HPV Screening Digital Advertising was statistically insignificant ($B = -0.014$, $t = -0.301$, $p = 0.764$). This finding was an expression that digital literacy cannot be a guarantee in improving the relationship between data privacy concerns and the acceptance of HPV screening advertisements. This concluded by rejecting H6. Regardless of participants' level of digital literacy, their concerns about data privacy appeared not to alter their willingness to accept digital HPV screening information. This outcome reflected that data privacy apprehensions are just hygienic factors in the model. They matter most when they are not considered or respected, but once all mechanisms are put in place to guarantee data privacy other factors determine the level of acceptance of HPV screening digital advertising. For instance, perceived trust on the source of the advertisement will override the impact of data privacy anxieties on online communication platforms. On the other hand, it may be a reflection of the ability of women to control and adjust privacy settings on online health platforms. In some cases, it may also be due to the individuals' prioritization of health benefits of accepting HPV screening digital messages over privacy issues.

4.8. Discussion of Findings

The present study provided evidence that several cognitive, psycho-social and technical factors influence the acceptance of HPV screening digital advertisements by Zimbabwean women aged between 18 and 49 years.

4.8.1. The Impact of Fate Control on the Acceptance of HPV Screening Digital Advertising

This study has shown that a belief in fate control has an inverse relationship to the degree to which Zimbabwean women perceive HPV screening digital advertisements to be relevant. For example, fatalism tends to make individuals feel that engaging with HPV screening online information is irrelevant since they believe that God determines everything, so their choices will not affect their destiny. Ultimately, fatalists will think that life events are predetermined. Prior studies referenced in the literature reviews of this study demonstrated similar findings regarding fatalistic beliefs affecting Black women's access to health care and treatment. Mafiana et al. (2022), Sage et al. (2020), and Mbiti (2018) each found that fatalistic beliefs negatively affected individuals' ability to obtain health care and treatment. For instance, a study conducted by Sage et al. (2020) found that many Black women believed their lives were determined by destiny and divine will rather than by science for achieving a long life. Engle (1977), in his Biopsychosocial model, found that fate control (a psychological factor) affects health outcomes based upon interactions between social and biological factors.

Additionally, the study supported H1 of the Protection Motivation Theory (Rogers, 1983) regarding fate control. Specifically, individuals with an external locus of control have a lower level of coping appraisal (Milne et al., 2000). That is to say, women who believe that their health outcomes are controlled by destiny are less likely to perceive HPV screening digital advertisements to be personally relevant or beneficial to them in addressing their health issues. However, Liu et al. (2019) and Moreira-Almeida (2025) have reported that health messages should be tailored to the local beliefs and norms of a given society in order to align with those beliefs and norms. Such alignment can lead to the development of culturally consistent and culturally adapted health preventative behaviours. Therefore, the negative impact of fate control can be decreased by creating digital advertisements that reflect the health recommendations that are culturally relevant to the target population. As a result, HPV screening digital campaigns should include traditional storytelling or faith-based endorsements that portray screening as an act of divine stewardship and not an act against destiny.

4.8.2. The Influence of Perceived Health Risk on the Acceptance of HPV Screening Digital Advertising

The study has revealed that perceived health risk is a predictor of the acceptance of HPV screening digital advertisements. These results support previous studies by D'Souza et al. (2021) and Sulat et al. (2018). Both of these studies demonstrated that women are more likely to participate in online health screenings when they fear that the health risk posed by the online message will lead to serious harm or death. These results demonstrate that if women are able to recognise their own vulnerability to the threats posed by HPV infections, they are likely to take action to protect themselves (for example, respond positively to online messages promoting HPV screening).

Further supporting the study's findings in relation to the association between perceived health risk and acceptance of HPV screening digital advertisements, Lema et al. (2025) also observed that women will pursue health prevention/intervention when they perceive themselves to be at risk from the severity of the health threat. Similarly, Brandt et al. (2020) reported that women who received digital newsletters and social media messages illustrating the risks of HPV infections and the consequences of not undergoing HPV screening were highly proactive in obtaining cervical cancer screening programmes. Therefore, the study lends support to the findings of Lema et al. (2025) and Brandt et al. (2020), demonstrating that Zimbabwean women who understand the potential health risks associated with HPV infections are more likely to evaluate online messages advocating screening as credible and useful.

4.8.3. The Effect of Data Privacy Concern on the Acceptance of HPV Screening Digital Advertising

There was no association between data privacy concerns and acceptance of HPV screening digital advertisements. It appears that the majority of the women surveyed in the study did not feel anxious about the privacy of their data online. There are two possible reasons for this. First, the results of this study contradict the Privacy Calculus Theory. The Privacy Calculus Theory states that when making decisions about online behaviour, individuals weigh the perceived online benefits versus the perceived online privacy risks (Fernandes & Pereira, 2021). Secondly, Martini et al. (2016) and Mbunge et al. (2022) reported that fear of misuse

of personal data and shame associated with sharing reproductive health information online can deter women from participating in online activities.

Thirdly, Bietz et al. (2019) reported similar findings to this study. Their study findings showed that frequent visits to an online site resulted from the user's high perceived benefits from the visit. Additionally, they reported that the frequency of online visits was accompanied by a user's high trust/credibility of the online site and low privacy concerns. Demographic characteristics of the participants in this study indicated that if women primarily receive digitally endorsed health messages from government or hospital organisations, then they are more likely to accept the messages. Therefore, the study's findings suggest that the participants had high levels of trust and confidence in the official health organisations and therefore did not express a sense of anxiety regarding their data privacy. Therefore, the absence of concern for privacy was due to a high level of institutional credibility and perceived health benefits. While privacy concerns were not statistically significant, it is clear that continued education regarding data protection policies is important to prevent the development of distrust if a breach of privacy occurs.

4.8.4. The Moderating Effect of Digital Literacy on the Relationship between Fate Control and the Acceptance of HPV Screening Digital Advertising

An increased level of digital literacy has exacerbated the negative relationship between fate control and the acceptance of HPV screening digital advertisements for women. Although the expectation was contrary to the majority of previous literature, fatalistic beliefs had a diminished acceptance of HPV screening digital advertisements for women with high levels of digital literacy. The current findings support the views of Mbiti (2018) that modern rationality and cultural fatalism are in conflict. As literacy increases, individuals validate information they believe is congruent to their worldview more selectively. Contrary to the views of Diviani et al. (2015) and Ghorbani-Dehbalaei et al. (2021) that hypothesized that digital literacy would lessen the negative impacts of fatalism through providing individuals with cognitively processed online information, the findings of this study show that in Zimbabwe, access to information alone will not modify one's worldview; however, literacy without culture alignment will increase scepticism in women toward screening. Therefore, digital literacy initiatives should be supplemented with culturally appropriate digital content that communicates screening as part of destiny and faith.

4.8.5. The Moderating Effect of Digital Literacy on the Relationship between Perceived Health Risk and the Acceptance of HPV Screening Digital Advertising

The results of the moderation analysis provided support for H5, and demonstrated that digital literacy moderated the positive relationship between perceived health risk and acceptance. Specifically, digitally literate women were able to interpret online health messages in relation to their own health risk, and consequently, accept HPV screening advertisements. These findings are consistent with those found by Diviani et al. (2015), who demonstrated that digitally literate individuals have better comprehension, confidence, and behavioural intentions regarding health related digital content. Additionally, the findings support the DHLC framework, which states that digital competency enables users to assess and act upon health information critically (Rachmani et al., 2022).

4.8.6. The Moderating Effect of Digital Literacy on the Relationship between Data Privacy Concerns and the Acceptance of HPV Screening Digital Advertising

The findings of the study demonstrated that digital literacy did not have a statistically significant effect as a moderator variable in the relationship between data privacy concerns and the acceptance of HPV screening digital advertising, and thus rejected H6. The findings of this study differ from previous studies that posit that when individuals have a better understanding of online security protocols, data privacy anxieties tend to decrease (Ma & Chen, 2023). This explains that when women get more acquainted with how to log on and change settings or block threats online, their fears to interact with online advertisements diminishes. On the other hand, Bietz et al. (2019) suggested that digital literacy enhances privacy sensitivity. This view entails that the more an individual is well versed with how to surf the internet and log on to websites, the more the individual understand online threats and how harmful they are. This may therefore lead to reduced online visits and acceptance of unconfirmed online links. The findings of the current study suggest that in Zimbabwe, privacy perceptions are more heavily influenced by trust in institutional sources, and perceived message benefit, versus individual digital competencies. These findings support the contributions by Mbunge et al. (2022), and GSMA (2023), which stated that women are more likely to engage with health platforms that are endorsed by recognized government and medical institutions. It therefore entails that there is need to increase transparency and

institutional communications for a more effective engagement with women than to develop technical literacy programmes that reduce privacy concerns.

4.9. Summary

This chapter presented the response rate of the study, the demographic characteristics of the participants, and both the uni-dimensional tests, and the confirmatory factor analyses (CFAs) that provide a robust base for structural equation modelling (SEM). The results of the SEM analysis provided the basis for confirming or rejecting the research hypotheses. The research hypotheses guided the results section. The results of the study demonstrated that fatalistic beliefs negatively affected acceptance, that perceived health risk was a statistically significant motivator of acceptance, and that data privacy concerns had no statistically significant effect on participation. Digital literacy was shown to have unique moderating effects, including enhancing the positive effect of perceived health risk, worsening the disengagement effect of fatalism, and not having a statistically significant effect on privacy concerns. The findings of the study were interpreted within the context of the complex interplay of cognitive, psychosocial, and technological factors that affect behaviours associated with digital health.

CHAPTER FIVE

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter provides a summary of the key findings, conclusions, and practical recommendation to various stakeholders and sectors. It begins with a summary of the study's main results, followed by the conclusions that were drawn from the tested hypotheses. This chapter also offer recommendations to policymakers, health practitioners, and digital marketers. The chapter further presents the study's contributions to knowledge. The last section to this chapter details the limitations and recommendations to future research.

5.2. Summary

The results showed that fate control negatively affected the acceptance of HPV screening digital advertising. This showed that individuals who perceive their health outcomes as predetermined are less likely to engage with digital health messages. Perceived health risk showed that it had a strong positive effect on the acceptance of HPV screening digital advertisements. This suggested that higher awareness of personal vulnerability to HPV infections may motivate engagement with awareness messages and this is consistent with the Protection Motivation Theory. Data privacy concerns showed a positive but non-significant effect, and therefore implied that privacy apprehensions do not substantially deter the acceptance of HPV screening digital advertisements in this context. Digital literacy significantly moderated key relationships: it amplified the negative effect of fate control and the positive effect of perceived health risk on HPV digital advertising acceptance, while its interaction with data privacy concern did not yield a significant effect. Overall, these findings highlight that cognitive appraisal of risk and personal beliefs are primary drivers of engagement with digital health interventions and digital literacy is a critical factor that can either strengthen or attenuate these effects.

5.3. Conclusions

Conclusions were generated based on the research objectives and hypotheses. The study adopted and accepted H1. This means the framework of this study can be guided by the negative relationship between fate control and the acceptance of HPV screening digital advertising. This relationship entails that individuals who perceive their health outcomes as predetermined by fate will less likely engage with digital HPV screening messages. It reinforces the belief that a strong sense of destiny can reduce women's motivation to accept online HPV screening advertisements. Fatalistic beliefs should therefore never be ignored in health communications, but should be modified to adapt individuals to online HPV screening advertising.

The adoption and support of H2 in this study highlighted the notion that women are guided by perceived risks in accepting online HPV screening digital advertisements. The higher the potential severity of HPV infections, the more women are likely to respond to HPV screening digital health communications. This therefore emphasises the need to include HPV infections perceived risks in digital advertisements and health awareness campaigns.

The rejection of H3 was a testimony that data privacy concerns did not substantially hinder engagement with digital HPV screening messages and anticipated. The results also indicated that the positive relationship between data privacy concerns and the acceptance of HPV screening digital advertising was insignificant. This may therefore imply that there are other cognitive and motivational factors that outweigh privacy apprehensions in influencing online health behaviour.

The acceptance of the alternate hypothesis H4 proved that the digital literacy increases the level of fatalism among women. The more digitally literate women are, the more they are able to compare the credibility and relevance of digital health messages with their cultural beliefs or religious expectations. Those with fatalistic tendencies and are digitally literate become more naive even when digital access and their skills are high. They may reason out that online platforms are not what define existence. They totally believe that HPV infections are part of the ecosystem and can only be fought by divine will.

The study results supported H5 which may be an indication that digitally literate individuals are more responsive to perceived health threats when engaging with digital HPV screening messages. This confirms that digital literacy enhances the cognitive processing of health

information. It facilitates informed decision-making. This means that as the use of online platforms and the internet connecting gadgets become more profound, women are exposed to more health information sharing sites. These online sites explain the severity of infections such as HPV infections. The more women are exposed to health information the more they will be able to define perceived risks using various health websites or platforms. Digital literacy increases navigation speed and online reach without fear.

The fact that we reject H6 indicates that the level of a person's digital literacy does not necessarily determine how privacy concerns will affect their acceptance of digital HPV screening. It seems that privacy concerns are more or less independent of a person's ability to access and/or manipulate digital platforms. Privacy concerns would most likely relate to the platform a person accesses HPV screening information from (online site), rather than how they access it (online message). Additionally, when a person trusts an online health platform, it reduces the concern over the privacy of the data and the ethics surrounding its use.

These results support the idea that both the cognitive appraisal of health risk and the belief in fate will primarily influence the acceptance of digital HPV screening and that digital literacy will serve as the major factor by which these two factors will be amplified. However, it appears that data privacy concerns do not have a significant impact on the context of digital HPV screening and thus, supports the idea that interventions to promote engagement with digital health communications should focus primarily on increasing risk perceptions and decreasing fatalistic attitudes.

5.4. Recommendations

In light of the research findings, the study provided several suggestions for increasing the success and acceptance of digital HPV screening campaigns and related health programmes.

5.4.1. Address Fatalistic Beliefs

Messages from health promotion campaigns can be more effective if they emphasise an individual's power to choose her own behaviour, as opposed to her being controlled by fate when receiving an HPV screening advertisement. Successful examples or call-to-action campaigns will offer alternatives to individuals who hold fatalistic beliefs, meaning they think their health outcomes are predetermined regardless of their actions. Poster campaigns, roadshows, social media, banners, and public relations efforts through digital marketing will

change fatalistic attitudes towards HPV screening tests and advertisements. Health practitioners and digital marketers can educate communities to reduce reliance on destiny in the treatment of an individual's health and develop an understanding of fatalistic views toward HPV screening tests and advertisements.

5.4.2. Enhance Risk Communication

There is a positive relationship between the perceived risk to an individual's health and their likelihood to participate in a campaign intended to promote knowledge of HPV infections. It is recommended that campaigns for HPV screenings clearly indicate the seriousness of the HPV infection and how susceptible an individual is to contracting the disease. Digital media has the potential to increase awareness of and engagement with the issue of HPV infections among women by depicting realistic scenarios that women might encounter, by providing women with personalized risk assessments, and by using interactive risk assessment tools. A community that is knowledgeable of and prepared to receive preventive messages about HPV infections from advertisements such as those for HPV screenings will require a collaborative effort between the Ministry of Health and Child Care, local health centres, non-government organizations and local schools to raise public awareness of the risk of HPV infections.

5.4.3. Promote Digital Literacy

Educational materials (for example, online messages, and social media forums) should be developed to improve user's ability to find, assess and utilize digital health information appropriately. Collaboration between universities, the Ministry of Health and Child Care, and health centres can be established to provide educational opportunities for women to develop digital literacy skills to allow them to identify and interact with credible online health resources. Online tutorials and training in identifying and assessing credibility of health information can be included in these educational experiences to provide women with the opportunity to access and engage with reliable online health platforms.

5.4.4. Integrate Privacy Assurance Measures

Although data privacy was an important concern for many people in this research study, it did not appear to be a major factor affecting the acceptance of HPV screening campaign communications. HPV screening campaign communications and advertising should provide clear and open information about how individuals' data will be handled and protected to enhance their confidence and build trust. Transparency and clearly communicated privacy policies and reassurances related to the confidentiality of personal data will assist in

enhancing confidence. Data subjects must have their HPV screening information respected when they access HPV screening messages online.

5.4.5. Tailor Messages to Target Audiences

HPV screening campaigns should utilise segmentation techniques to categorise audiences according to their level of digital literacy, their health belief systems, and their perceived risks. For example, digitally literate consumers could use interactive content and receive individualised feedback and assessments. On the other hand, consumers who have low digital literacy may require less complex and less interactive communications, i.e., simple and guided communications to enhance their understanding and engagement.

5.4.6. Improve Access to Digital Infrastructure

To increase the reach and coverage of HPV screening awareness, a greater number of remote and local digital platforms must be established to allow access. The Ministry of Health and Child Care, in association with the Ministry of Information and Communication Technology (ICT), can establish free timed access to digital platforms around hospitals and at every growth point to allow locals to access HPV screening awareness. A management system/database needs to be created to track and regulate the flow of information and usage of the free Wi-Fi zones. Non-personal identification numbers can be used as identifiers to access HPV screening awareness and other health awareness information.

5.5. Contribution to Knowledge

This study has contributed to both theory and practice in digital health communication. From a theoretical viewpoint, this study added to the protection motivation theory (PMT) and demonstrated that the perceived health risk to an individual influences their preventive behaviour in digital health communication environments, but that the effect is dependent upon the level of an individual's digital literacy. This adds a technological element to the threat appraisal process in PMT. In addition, this study enhanced the Biopsychosocial model (BPS) by demonstrating that the interaction between psychosocial factors such as fatalistic beliefs and digital competencies influences health behaviour. The study also showed that technical skills can both aid in overcoming cognitive and belief-based barriers to health behaviour and also reinforce those same barriers. Finally, the study enhanced the digital health literacy (DHL) framework by demonstrating that DHL functions in a manner that is

context dependent in terms of the moderating effects it has on perceived health risks and data privacy concerns. While DHL enhances the relationship between perceived health risk and health behaviours, DHL only slightly modifies the relationship between data privacy concerns and health behaviours. Therefore, DHL is not universally empowering. Practically, the study provided insights into developing effective digital health communication strategies, including addressing fatalistic beliefs, enhancing the way risk is communicated, and tailoring strategies according to the user's level of digital competency. Overall, the studies' findings contribute to a better understanding of the interactions between cognition, beliefs and digital skills that influence an individual's engagement with preventive health communication and provide a basis for future research on digital health communications.

5.6. Limitations and Future Research

The study's cross-sectional design restricts the capacity to deduce causality. Further, since the study relied on self-report measures, there will be some degree of bias in the results due to respondent error. As the sample for this study consisted of a relatively narrow demographic group, the generalizability of the findings is limited to other populations or cultural groups. There are several other factors that could potentially have a significant effect on an individual's acceptance of digital ads for HPV screening, such as social influence, emotional responses, and overall health literacy that were not studied in this investigation. The study only focused on factors affecting HPV screening digital advertising and therefore did not examine the potential effects of other health interventions to promote HPV screening. Future studies could examine other health interventions or use longitudinal and experimental designs to test the validity of the relationships observed in this study and the effectiveness of the development of tailored digital health strategies for different population segments.

References

- Acar GüvendiR, M., & Özer Özkan, Y. (2022). Item Removal Strategies Conducted in Exploratory Factor Analysis: A Comparative Study. *International Journal of Assessment Tools in Education*, 9(1), 165–180. <https://doi.org/10.21449/ijate.827950>
- Addo-Lartey, A. A., Bonful, H. A., Sefenu, R. S., Abagre, T. A., Asamoah, A., Bandoh, D.A., Awua, A. K., Adu-Aryee, N. A., Dedey, F., Adanu, R. M. K., & Okuyemi, K. (2024). Effectiveness of a culturally tailored text messaging program for promoting cervical cancer screening in accra, Ghana: A quasi-experimental trial. *BMC Women'sHealth*, 24(1), 22. <https://doi.org/10.1186/s12905-023-02867-2>
- Adhikari, K., & Panda, R. K. (2018). Users' Information Privacy Concerns and Privacy Protection Behaviors in Social Networks. *Journal of Global Marketing*, 31(2), 96–110. <https://doi.org/10.1080/08911762.2017.1412552>
- Ajambo, A., Nawagi, F., Bukenya, D. L., Mukisa, J., Mwaka, A. D., Tumwine, L. K., & Nabirye, R. C. (2017). Awareness and Self-Perceived Risk of Cervical Cancer among Women Living in Namuwongo, an Informal Settlement in Kampala, Uganda. *Journal of AIDS & Clinical Research*, 8(10). <https://doi.org/10.4172/2155-6113.1000741>
- Alhammad, N., Alajlani, M., Abd-alrazaq, A., Epiphaniou, G., & Arvanitis, T. (2024). Patients' Perspectives on the Data Confidentiality, Privacy, and Security of mHealth Apps: Systematic Review. *Journal of Medical Internet Research*, 26, e50715. <https://doi.org/10.2196/50715>
- Alsyouf, A., Lutfi, A., Alsubahi, N., Alhazmi, F. N., Al-Mugheed, K., Anshasi, R. J., Alharbi, N. I., & Albugami, M. (2023). The Use of a Technology Acceptance Model (TAM) to Predict Patients' Usage of a Personal Health Record System: The Role of Security, Privacy, and Usability. *International Journal of Environmental Research and Public Health*, 20(2), 1347. <https://doi.org/10.3390/ijerph20021347>
- Alzghaibi, H. (2025). Barriers to the Utilization of mHealth Applications in Saudi Arabia: Insights from Patients with Chronic Diseases. *Healthcare*, 13(6), 665. <https://doi.org/10.3390/healthcare13060665>
- Ambuehl, B., & Inauen, J. (2022). Contextualized Measurement Scale Adaptation: A 4-Step Tutorial for Health Psychology Research. *International Journal of Environmental Research and Public Health*, 19(19), 12775. <https://doi.org/10.3390/ijerph191912775>
- Andrade, C. (2021). The Inconvenient Truth About Convenience and Purposive Samples. *Indian Journal of Psychological Medicine*, 43(1), 86–88. <https://doi.org/10.1177/0253717620977000>
- Arias López, M. D. P., Ong, B. A., Borrat Frigola, X., Fernández, A. L., Hicklent, R. S., Obeles, A. J. T., Rocimo, A. M., & Celi, L. A. (2023). Digital literacy as a new determinant of health: A scoping review. *PLOS Digital Health*, 2(10), e0000279. <https://doi.org/10.1371/journal.pdig.0000279>
- Beauchamp, T., & Childress, J. (2019). Principles of Biomedical Ethics: Marking Its Fortieth Anniversary. *The American Journal of Bioethics*, 19(11), 9–12. <https://doi.org/10.1080/15265161.2019.1665402>

- Becker, M. H. (1974). The Health Belief Model and Sick Role Behavior. *Health Education Monographs*, 2(4), 409–419. <https://doi.org/10.1177/109019817400200407>
- Belch, G. E., & Belch, M. A. (2018). *Advertising and promotion: An integrated marketing communications perspective* (11e edn). McGraw-Hill Education.
- Bell, E., Bryman, A., & Harley, B. (2022). *Business research methods* (Sixth edition). Oxford University Press.
- Bietz, M. J., Cheung, C., Rubanovich, C. K., Schairer, C., & Bloss, C. S. (2019). Privacy Perceptions and Norms in Youth and Adults. *Clinical Practice in Pediatric Psychology*, 7(1), 93–103. <https://doi.org/10.1037/cpp0000270>
- Bol, N., Smit, E. S., & Lustria, M. L. A. (2020). Tailored health communication: Opportunities and challenges in the digital era. *DIGITAL HEALTH*, 6, 2055207620958913. <https://doi.org/10.1177/2055207620958913>
- Brandt, H. M., Sundstrom, B., Monroe, C. M., Turner-McGrievy, G., Larsen, C., Stansbury, M., Magrader, K., Gibson, A., & West, D. S. (2020). Evaluating a Technology-Mediated HPV Vaccination Awareness Intervention: A Controlled, Quasi-Experimental, Mixed Methods Study. *Vaccines*, 8(4), 749. <https://doi.org/10.3390/vaccines8040749>
- Bray, F., Ferlay, J., Soerjomataram, I., Siegel, R. L., Torre, L. A., & Jemal, A. (2018). Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer Journal for Clinicians*, 68(6), 394–424. <https://doi.org/10.3322/caac.21492>
- Brew-Sam, N., & Chib, A. (2020). Theoretical advances in mobile health communication research. In *Technology and Health* (pp. 151–177). Elsevier. <https://doi.org/10.1016/B978-0-12-816958-2.00008-3>
- Brørs, G., Larsen, M. H., Hølvold, L. B., & Wahl, A. K. (2023). eHealth literacy among hospital health care providers: A systematic review. *BMC Health Services Research*, 23(1), 1144. <https://doi.org/10.1186/s12913-023-10103-8>
- Bruni, L., Serrano, B., Roura, E., Alemany, L., Cowan, M., Herrero, R., Poljak, M., Murillo, R., Broutet, N., Riley, L. M., & De Sanjose, S. (2022). Cervical cancer screening programmes and age-specific coverage estimates for 202 countries and territories worldwide: A review and synthetic analysis. *The Lancet Global Health*, 10(8), e1115–e1127. [https://doi.org/10.1016/S2214-109X\(22\)00241-8](https://doi.org/10.1016/S2214-109X(22)00241-8)
- Bryman, A., Bell, E., & Harley, B. (2022). *Business research methods* (Sixth edition). Oxford University Press.
- Byrne, B. M. (2013). *Structural Equation Modeling with Mplus: Basic Concepts, Applications, and Programming* (1st edn). Routledge. <https://doi.org/10.4324/9780203807644>
- Byrne, B. M. (2016). *Structural Equation Modeling With AMOS: Basic Concepts, Applications, and Programming*, Third Edition (0 edn). Routledge. <https://doi.org/10.4324/9781315757421>

- Chaffey, D., & Ellis-Chadwick, F. (2019). *Digital Marketing* (7. Auflage). Pearson Education, Limited.
- Chan, B. S. K., Churchill, D., & Chiu, T. K. F. (2017). Digital Literacy Learning In Higher Education Through Digital Storytelling Approach. *Journal of International Education Research (JIER)*, 13(1), 1–16. <https://doi.org/10.19030/jier.v13i1.9907>
- Chan, G., Banire, B., Ataguba, G., Frempong, G., & Orji, R. (2025). A Panoramic View of Socio-Cultural Sensitivity in Digital Technologies: A Comprehensive Review and Future Directions. *International Journal of Human–Computer Interaction*, 41(4), 1917–1945. <https://doi.org/10.1080/10447318.2024.2372135>
- Chen, L., Yang, X., & Huang, X. (2021). Promoting HPV vaccination on social media: Interactive effects of threat, efficacy and social cues. *Human Vaccines & Immunotherapeutics*, 17(11), 4442–4456. <https://doi.org/10.1080/21645515.2021.1975449>
- Cheung, G. W., Cooper-Thomas, H. D., Lau, R. S., & Wang, L. C. (2024). Reporting reliability, convergent and discriminant validity with structural equation modeling: A review and best-practice recommendations. *Asia Pacific Journal of Management*, 41(2), 745–783. <https://doi.org/10.1007/s10490-023-09871-y>
- Chiguvi, D. (2022). Effectiveness of traditional and digital advertising platforms for the marketing of tourism. *International Journal of Research in Business and Social Science* (2147- 4478), 11(10), 01–12. <https://doi.org/10.20525/ijrbs.v11i10.2141>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (Fifth edition). SAGE.
- Cuadros, D. F., Huang, Q., Mathenjwa, T., Gareta, D., Devi, C., & Musuka, G. (2024). Unlocking the potential of telehealth in Africa for HIV: Opportunities, challenges, and pathways to equitable healthcare delivery. *Frontiers in Digital Health*, 6, 1278223. <https://doi.org/10.3389/fdgth.2024.1278223>
- Davis, F. D., & Granić, A. (2024). *The Technology Acceptance Model: 30 Years of TAM*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-45274-2>
- De Martel, C., Georges, D., Bray, F., Ferlay, J., & Clifford, G. M. (2020). Global burden of cancer attributable to infections in 2018: A worldwide incidence analysis. *The Lancet Global Health*, 8(2), e180–e190. [https://doi.org/10.1016/S2214-109X\(19\)30488-7](https://doi.org/10.1016/S2214-109X(19)30488-7)
- Diviani, N., Van Den Putte, B., Giani, S., & Van Weert, J. C. (2015). Low Health Literacy and Evaluation of Online Health Information: A Systematic Review of the Literature. *Journal of Medical Internet Research*, 17(5), e112. <https://doi.org/10.2196/jmir.4018>
- Dodson, I. (2016). *The art of digital marketing: The definitive guide to creating strategic, targeted and measurable online campaigns*. John Wiley & Sons, Inc.
- D’Souza, J. P., Van Den Broucke, S., Pattanshetty, S., & Dhoore, W. (2021). The application of health behavior theories to promote cervical cancer screening uptake. *Public Health Nursing*, 38(6), 1039–1079. <https://doi.org/10.1111/phn.12944>

- Elrod, J. K., & Fortenberry, J. L. (2020). Advertising in health and medicine: Using mass media to communicate with patients. *BMC Health Services Research*, 20(S1), 818. <https://doi.org/10.1186/s12913-020-05599-3>
- Engel, G. L. (1977). The Need for a New Medical Model: A Challenge for Biomedicine. *Science*, 196(4286), 129–136. <https://doi.org/10.1126/science.847460>
- Ferlay, J., Colombet, M., Soerjomataram, I., Mathers, C., Parkin, D. M., Piñeros, M., Znaor, A., & Bray, F. (2019). Estimating the global cancer incidence and mortality in 2018: GLOBOCAN sources and methods. *International Journal of Cancer*, 144(8), 1941–1953. <https://doi.org/10.1002/ijc.31937>
- Fernandes, T., & Pereira, N. (2021). Revisiting the privacy calculus: Why are consumers (really) willing to disclose personal data online? *Telematics and Informatics*, 65, 101717. <https://doi.org/10.1016/j.tele.2021.101717>
- Feyo Bantu, A., Kozyra, A., & Wiora, J. (2025). Normality tests for transformed large measured data: A comprehensive analysis. *Statistics in Transition New Series*, 26(3), 195–208. <https://doi.org/10.59139/stattrans-2025-034>
- Fitzpatrick, P. J. (2023). Improving health literacy using the power of digital communications to achieve better health outcomes for patients and practitioners. *Frontiers in Digital Health*, 5, 1264780. <https://doi.org/10.3389/fdgth.2023.1264780>
- Floyd, D. L., Prentice-Dunn, S., & Rogers, R. W. (2000). A Meta-Analysis of Research on Protection Motivation Theory. *Journal of Applied Social Psychology*, 30(2), 407–429. <https://doi.org/10.1111/j.1559-1816.2000.tb02323.x>
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>
- Gaibazzi, P., & Gardini, M. (2015). The work of fate and fortune in Africa. *Critical African Studies*, 7(3), 203–209. <https://doi.org/10.1080/21681392.2015.1075413>
- Garaus, M., & Hudáková, M. (2022). The impact of the COVID-19 pandemic on tourists' air travel intentions: The role of perceived health risk and trust in the airline. *Journal of Air Transport Management*, 103, 102249. <https://doi.org/10.1016/j.jairtraman.2022.102249>
- Gaube, S., Lerner, E., & Fischer, P. (2019). The Concept of Risk Perception in Health-Related Behavior Theory and Behavior Change. In M. Raue, B. Streicher, & E. Lerner (Eds), *Perceived Safety* (pp. 101–118). Springer International Publishing. https://doi.org/10.1007/978-3-030-11456-5_7
- Gentili, A., Failla, G., Melnyk, A., Puleo, V., Tanna, G. L. D., Ricciardi, W., & Cascini, F. (2022). The cost-effectiveness of digital health interventions: A systematic review of the literature. *Frontiers in Public Health*, 10, 787135. <https://doi.org/10.3389/fpubh.2022.787135>
- Ghasemi, A., & Zahediasl, S. (2012). Normality Tests for Statistical Analysis: A Guide for Non-Statisticians. *International Journal of Endocrinology and Metabolism*, 10(2), 486–489. <https://doi.org/10.5812/ijem.3505>

- Ghorbani-Dehbalaei, M., Loripoor, M., & Nasirzadeh, M. (2021). The role of health beliefs and health literacy in women's health promoting behaviours based on the health belief model: A descriptive study. *BMC Women's Health*, 21(1), 421. <https://doi.org/10.1186/s12905-021-01564-2>
- GSMA. (2023). The State of Mobile Internet Connectivity 2023 (GSMA Connected Society). GSMA. <https://www.gsma.com/mobilefordevelopment/connected-society/>
- Gül Öztaş, H., & Işık, K. (2025). The Effect of Cervical Cancer Education Given to Women in Turkey on Knowledge, Attitudes, and Health Beliefs: A Randomized Controlled Study. *Public Health Nursing*, 42(1), 363–373. <https://doi.org/10.1111/phn.13456>
- Hair, J., Hollingsworth, C. L., Randolph, A. B., & Chong, A. Y. L. (2017). An updated and expanded assessment of PLS-SEM in information systems research. *Industrial Management & Data Systems*, 117(3), 442–458. <https://doi.org/10.1108/IMDS-04-2016-0130>
- Hair, J., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Haji-Othman, Y., & Yusuff, M. S. S. (2022). Assessing Reliability and Validity of Attitude Construct Using Partial Least Squares Structural Equation Modeling (PLS-SEM). *International Journal of Academic Research in Business and Social Sciences*, 12(5), Pages 378-385. <https://doi.org/10.6007/IJARBS/v12-i5/13289>
- Hoyle, R. H. (Ed.). (2023). *HANDBOOK OF STRUCTURAL EQUATION MODELING*. GUILFORD.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Hussey, I., Alsalti, T., Bosco, F., Elson, M., & Arslan, R. (2025). An Aberrant Abundance of Cronbach's Alpha Values at .70. *Advances in Methods and Practices in Psychological Science*, 8(1), 25152459241287123. <https://doi.org/10.1177/25152459241287123>
- Jackson, B., Dimmock, J. A., & Compton, J. (Eds.). (2017). *Persuasion and Communication in Sport, Exercise, and Physical Activity* (1st edn). Routledge. <https://doi.org/10.4324/9781315624365>
- Joshanloo, M. (2022). The relationship between fatalistic beliefs and well-being depends on personal and national religiosity: A study in 34 countries. *Heliyon*, 8(6), e09814. <https://doi.org/10.1016/j.heliyon.2022.e09814>
- Kim, S. W., Chen, A. C.-C., Ou, L., Larkey, L., Todd, M., & Han, Y. (2023). Developing a Culturally and Linguistically Congruent Digital Storytelling Intervention in Vietnamese and Korean American Mothers of Human Papillomavirus–Vaccinated Children: Feasibility and Acceptability Study. *JMIR Formative Research*, 7, e45696. <https://doi.org/10.2196/45696>

- Kim, Y., Kim, S. H., Peterson, R. A., & Choi, J. (2023). Privacy concern and its consequences: A meta-analysis. *Technological Forecasting and Social Change*, 196, 122789. <https://doi.org/10.1016/j.techfore.2023.122789>
- Kline, R. B. (2016). *Principles and practice of structural equation modeling* (Fourth edition). The Guilford Press.
- Kline, R. B. (2023). *PRINCIPLES AND PRACTICE OF STRUCTURAL EQUATION MODELING* (Fifth edition). GUILFORD.
- Kumar, V., & Gupta, S. (2016). Conceptualizing the Evolution and Future of Advertising. *Journal of Advertising*, 45(3), 302–317. <https://doi.org/10.1080/00913367.2016.1199335>
- Lee, H., & Cho, C.H. (2020). Digital advertising: Present and future prospects. *International Journal of Advertising*, 39(3), 332–341. <https://doi.org/10.1080/02650487.2019.1642015>
- Lema, T. F., Mosalo, A., & Moleki, M. (2025). Perceived risk of human papillomavirus infection and cervical cancer: A qualitative study among Ethiopian women. *BMJ Open*, 15(9), e103895. <https://doi.org/10.1136/bmjopen-2025-103895>
- Leung, K., Lam, B. C. P., Bond, M. H., Conway, L. G., Gornick, L. J., Amponsah, B., Boehnke, K., Dragolov, G., Burgess, S. M., Golestaneh, M., Busch, H., Hofer, J., Espinosa, A. D. C. D., Fardis, M., Ismail, R., Kurman, J., Lebedeva, N., Tatarko, A. N., Sam, D. L., ... Zhou, F. (2012). Developing and Evaluating the Social Axioms Survey in Eleven Countries: Its Relationship With the Five-Factor Model of Personality. *Journal of Cross-Cultural Psychology*, 43(5), 833–857. <https://doi.org/10.1177/0022022111416361>
- Li, W., Liang, H., Wang, W., Liu, J., Liu, X., Lao, S., Liang, W., & He, J. (2024). Global cancer statistics for adolescents and young adults: Population based study. *Journal of Hematology & Oncology*, 17(1), 99. <https://doi.org/10.1186/s13045-024-01623-9>
- Li, Z., Liu, P., Yin, A., Zhang, B., Xu, J., Chen, Z., Zhang, Z., Zhang, Y., Wang, S., Tang, L., Kong, B., & Song, K. (2025). Global landscape of cervical cancer incidence and mortality in 2022 and predictions to 2030: The urgent need to address inequalities in cervical cancer. *International Journal of Cancer*, 157(2), 288–297. <https://doi.org/10.1002/ijc.35369>
- Liu, F., Kanso, A., Zhang, Y., & Olaru, D. (2019). Culture, Perceived Value, and Advertising Acceptance: A Cross-Cultural Study on Mobile Advertising. *Journal of Promotion Management*, 25(7), 1028–1058. <https://doi.org/10.1080/10496491.2019.1612495>
- Ma, S., & Chen, C. (2023). Are digital natives overconfident in their privacy literacy? Discrepancy between self-assessed and actual privacy literacy, and their impacts on privacy protection behavior. *Frontiers in Psychology*, 14, 1224168. <https://doi.org/10.3389/fpsyg.2023.1224168>
- Mackworth-Young, C. R. S., Charashika, P., Zvatinoda Youth Advisory Group, Larsson, L., Wilding-Davies, O. J., Simpson, N., Kydd, A. S., Chinyanga, T. T., Ferrand, R. A., Mangombe, A., Webb, K., & Doyle, A. M. (2024). Digital Intervention to Improve

- Health Services for Young People in Zimbabwe: Process Evaluation of ‘Zvatinoda!’ (What We Want) Using the RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) Framework. *JMIR Formative Research*, 8, e53034. <https://doi.org/10.2196/53034>
- Mafiana, J., Dhital, S., Halabia, M., & Wang, X. (2022). Barriers to uptake of cervical cancer screening among women in Nigeria: A systematic review. *African Health Sciences*, 22(2), 295–309. <https://doi.org/10.4314/ahs.v22i2.33>
- Martini, A., Morris, J. N., & Preen, D. (2016). Impact of non-clinical community-based promotional campaigns on bowel cancer screening engagement: An integrative literature review. *Patient Education and Counseling*, 99(10), 1549–1557. <https://doi.org/10.1016/j.pec.2016.05.012>
- Mbiti, J. S. (2018). *Religion and social reconstruction in Africa* (First edition). Routledge, an imprint of Taylor and Francis.
- Mbunge, E., Batani, J., Gaobotse, G., & Muchemwa, B. (2022). Virtual healthcare services and digital health technologies deployed during coronavirus disease 2019 (COVID-19) pandemic in South Africa: A systematic review. *Global Health Journal*, 6(2), 102–113. <https://doi.org/10.1016/j.glohj.2022.03.001>
- Miller, M. A. (1995). Culture, Spirituality, and Women’s Health. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, 24(3), 257–263. <https://doi.org/10.1111/j.1552-6909.1995.tb02471.x>
- Milne, S., Sheeran, P., & Orbell, S. (2000). Prediction and Intervention in Health-Related Behavior: A Meta-Analytic Review of Protection Motivation Theory. *Journal of Applied Social Psychology*, 30(1), 106–143. <https://doi.org/10.1111/j.1559-1816.2000.tb02308.x>
- Mlungwana, Y. (2020). An African approach to the meaning of life. *South African Journal of Philosophy*, 39(2), 153–165. <https://doi.org/10.1080/02580136.2020.1771824>
- Moreira-Almeida, A. (2025). Spirituality and women’s health: The evidence calls to action. *Women & Health*, 65(4), 283–286. <https://doi.org/10.1080/03630242.2025.2488061>
- Nebeker, C., Torous, J., & Bartlett Ellis, R. J. (2019). Building the case for actionable ethics in digital health research supported by artificial intelligence. *BMC Medicine*, 17(1), 137. <https://doi.org/10.1186/s12916-019-1377-7>
- Ng, W. (2012). Can we teach digital natives digital literacy? *Computers & Education*, 59(3), 1065–1078. <https://doi.org/10.1016/j.compedu.2012.04.016>
- Nikou, S., De Reuver, M., & Mahboob Kanafi, M. (2022). Workplace literacy skills—How information and digital literacy affect adoption of digital technology. *Journal of Documentation*, 78(7), 371–391. <https://doi.org/10.1108/JD-12-2021-0241>
- Panda, A., & Mohapatra, S. (2024). Confirmatory Factor Analysis: Fit Indices and Factor Output. In *The Online Healthcare Community* (pp. 113–116). Emerald Publishing Limited. <https://doi.org/10.1108/978-1-83549-140-920241011>

- Rachmani, E., Haikal, H., & Rimawati, E. (2022). Development and validation of digital health literacy competencies for citizens (DHLC), an instrument for measuring digital health literacy in the community. *Computer Methods and Programs in Biomedicine Update*, 2, 100082. <https://doi.org/10.1016/j.cmpbup.2022.100082>
- Ramondt, S., & Ramírez, A. S. (2017). Fatalism and exposure to health information from the media: Examining the evidence for causal influence. *Annals of the International Communication Association*, 41(3–4), 298–320. <https://doi.org/10.1080/23808985.2017.1387502>
- Richardson-Parry, A., Silva, M., Valderas, J. M., Donde, S., Woodruff, S., & Van Vugt, J. (2023). Interactive or tailored digital interventions to increase uptake in cervical, breast, and colorectal cancer screening to reduce health inequity: A systematic review. *European Journal of Cancer Prevention*, 32(4), 396–409. <https://doi.org/10.1097/CEJ.0000000000000796>
- Rogers, R. W. (1975). A Protection Motivation Theory of Fear Appeals and Attitude Change. *The Journal of Psychology*, 91(1), 93–114. <https://doi.org/10.1080/00223980.1975.9915803>
- Rogers, R. W. (1983). Cognitive and physiological processes in fear appeals and attitude change: A revised theory of protection motivation. In J. T. Cacioppo & R. E. Petty (Eds.), *Social psychophysiology: A sourcebook* (pp. 153–176). Guilford Press.
- Roos, J. M., & Bauldry, S. (2022). *Confirmatory Factor Analysis*. SAGE Publications, Inc. <https://doi.org/10.4135/9781071938959>
- Rosenstock, I. M. (1966). Why People Use Health Services. *The Milbank Memorial Fund Quarterly*, 44(3), 94. <https://doi.org/10.2307/3348967>
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, 80(1), 1–28. <https://doi.org/10.1037/h0092976>
- Roy, R., & Malloy, J. (2023). Evolving Role of Social Media in Health Promotion. In B. Swarup Garg (Ed.), *Health Promotion—Principles and Approaches*. IntechOpen. <https://doi.org/10.5772/intechopen.111967>
- Sage, S. K., Hawkins-Taylor, C., Crockett, Rev. A., & Balls-Berry, J. E. (2020). “Girl, just pray ...”: Factors That Influence Breast and Cervical Cancer Screening Among Black Women in Rochester, MN. *Journal of the National Medical Association*, 112(5), 454–467. <https://doi.org/10.1016/j.jnma.2019.02.006>
- Saritepeci, M., Yildiz Durak, H., Özüdoğru, G., & Atman Uslu, N. (2024). The role of digital literacy and digital data security awareness in online privacy concerns: A multi-group analysis with gender. *Online Information Review*, 48(5), 983–1001. <https://doi.org/10.1108/OIR-03-2023-0122>
- Schomakers, E.-M., Lidynia, C., & Ziefle, M. (2022). The Role of Privacy in the Acceptance of Smart Technologies: Applying the Privacy Calculus to Technology Acceptance. *International Journal of Human–Computer Interaction*, 38(13), 1276–1289. <https://doi.org/10.1080/10447318.2021.1994211>

- Sekaran, U., & Bougie, R. (2020). *Research methods for business: A skill-building approach* (Eighth edition). Wiley.
- Sheikhalizadeh, M., & Soltani, Z. (2023). The Effect of Instagram Advertising on the Advertisements Acceptance Between Sports Customers during the COVID-19. *Sports Business Journal*, 3(1). <https://doi.org/10.22051/sbj.2023.42103.1060>
- Sørensen, K., Knoll, V., Ramos, N., Boateng, M., Alemayehu, G., Schamberger, L., & Harsch, S. (2024). Health Literacy in Africa—A Scoping Review of Scientific Publications. *International Journal of Environmental Research and Public Health*, 21(11), 1456. <https://doi.org/10.3390/ijerph21111456>
- Squiers, L., Peinado, S., Berkman, N., Boudewyns, V., & McCormack, L. (2012). The Health Literacy Skills Framework. *Journal of Health Communication*, 17(sup3), 30–54. <https://doi.org/10.1080/10810730.2012.713442>
- Stone, B. M. (2021). The Ethical Use of Fit Indices in Structural Equation Modeling: Recommendations for Psychologists. *Frontiers in Psychology*, 12, 783226. <https://doi.org/10.3389/fpsyg.2021.783226>
- Sulat, J. S., Prabandari, Y. S., Sanusi, R., Hapsari, E. D., & Santoso, B. (2018). The validity of health belief model variables in predicting behavioral change: A scoping review. *Health Education*, 118(6), 499–512. <https://doi.org/10.1108/HE-05-2018-0027>
- UNESCO. (2018). A Global Framework to Measure Digital Literacy. UNESCO Institute of Statistics. <https://uis.unesco.org/en/blog/global-framework-measure-digital-literacy>
- Van Den Muijsenbergh, M., Teunissen, E., Van Weel-Baumgarten, E., & Van Weel, C. (2016). Giving voice to the voiceless: How to involve vulnerable migrants in healthcare research. *British Journal of General Practice*, 66(647), 284–285. <https://doi.org/10.3399/bjgp16X685321>
- Van Deursen, A. J. A. M., Helsper, E. J., & Eynon, R. (2016). Development and validation of the Internet Skills Scale (ISS). *Information, Communication & Society*, 19(6), 804–823. <https://doi.org/10.1080/1369118X.2015.1078834>
- Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2), 186–204. <https://doi.org/10.1287/mnsc.46.2.186.11926>
- Verma, J. P., & Verma, P. (2024). Confirmatory Factor Analysis with Structural Equation Modelling. In J. P. Verma & P. Verma, *Understanding Structural Equation Modeling* (pp. 149–197). Springer International Publishing. https://doi.org/10.1007/978-3-031-32673-8_7
- Wanyenze, R. K., Bwanika, J. B., Beyeza-Kashesya, J., Mugerwa, S., Arinaitwe, J., Matovu, J. K. B., Gwokyalya, V., Kasozi, D., Bukenya, J., & Makumbi, F. (2017). Uptake and correlates of cervical cancer screening among HIV-infected women attending HIV care in Uganda. *Global Health Action*, 10(1), 1380361. <https://doi.org/10.1080/16549716.2017.1380361>
- Werder, O., & Holland, K. (2024). Health Communication: A Social Practice Approach. In P. Crawford & P. Kadetz (Eds), *Palgrave Encyclopedia of the Health Humanities* (pp. 1–

- 13). Springer International Publishing. https://doi.org/10.1007/978-3-030-26825-1_143-1
- WHO. (2020). Global Strategy to Accelerate the Elimination of Cervical Cancer As a Public Health Problem (1st ed). World Health Organization.
- WHO. (2024, May 10). WORLD HEALTH ORGANISATION ZIMBABWE. Ramping up Cervical Cancer Screening in Zimbabwe. <https://www.afro.who.int/node/883>
- Wu, L. (2016). Understanding the Impact of Media Engagement on the Perceived Value and Acceptance of Advertising Within Mobile Social Networks. *Journal of Interactive Advertising*, 16(1), 59–73. <https://doi.org/10.1080/15252019.2016.1160331>
- Wu, W. C. H., Chen, S. X., & Ng, J. C. K. (2020). Does Believing in Fate Facilitate Active or Avoidant Coping? The Effects of Fate Control on Coping Strategies and Mental Well-Being. *International Journal of Environmental Research and Public Health*, 17(17), 6383. <https://doi.org/10.3390/ijerph17176383>
- Wubante, S. M., Tegegne, M. D., Melaku, M. S., Kalayou, M. H., Tarekegn, Y. A., Tsega, S. S., Mengestie, N. D., Demsash, A. W., & Walle, A. D. (2023). eHealth literacy and its associated factors in Ethiopia: Systematic review and meta-analysis. *PLOS ONE*, 18(3), e0282195. <https://doi.org/10.1371/journal.pone.0282195>
- Yin, J. D. C., & Lui, J. N. M. (2024). Factors influencing risk perception during Public Health Emergencies of International Concern (PHEIC): A scoping review. *BMC Public Health*, 24(1), 1372. <https://doi.org/10.1186/s12889-024-18832-z>
- Zakir, S., Hoque, M. E., Susanto, P., Nisaa, V., Alam, Md. K., Khatimah, H., & Mulyani, E. (2025). Digital literacy and academic performance: The mediating roles of digital informal learning, self-efficacy, and students' digital competence. *Frontiers in Education*, 10, 1590274. <https://doi.org/10.3389/educ.2025.1590274>
- Zhao, X. (2020). Health communication campaigns: A brief introduction and call for dialogue. *International Journal of Nursing Sciences*, 7, S11–S15. <https://doi.org/10.1016/j.ijnss.2020.04.009>
- Zhou, L., Bao, J., Watzlaf, V., & Parmanto, B. (2019). Barriers to and Facilitators of the Use of Mobile Health Apps From a Security Perspective: Mixed-Methods Study. *JMIR mHealth and uHealth*, 7(4), e11223. <https://doi.org/10.2196/11223>
- ZIMSTAT. (2024). 2022 ZIMBABWE POPULATION AND HOUSING CENSUS GENDER THEMATIC REPORT. https://www.zimstat.co.zw/wp-content/uploads/Census/Zimbabwe_2022_PHC_Gender_thematic_FINAL_DRAFT_Jan_25.pdf#page=81.08

Appendix A

Measurement Scales

Table 21: Measurement Scales

CONSTRUCT		MEASUREMENT ITEMS	SOURCE OF SCALE ITEM
Fate Control (FC)		FC1: Getting HPV is completely determined by fate. FC2: I have no control over my health outcomes.	Adapted from Leung et al. (2012, p.841)
		FC3: My risk of getting HPV is set by fate, regardless of any HPV screening advertisements I see.	
		FC4: I can control my health outcomes by taking preventive actions such as responding to HPV screening advertisements.	
		FC5: HPV screening is unnecessary because fate decides health outcomes.	
Perceived Health Risk (PHR)		PHR1: Not getting screened for HPV could endanger my health. PHR2: Avoiding HPV screening would be harmful to my health. PHR3: Ignoring HPV screening puts my health at serious risk. PHR4: It is unsafe to delay HPV screening.	Adapted from Garaus and Hudáková (2022, p.4)
Data Privacy Concerns (DPC)		DPC1: I worry that my personal data requested through HPV screening online advertisements could be used for wrong purposes. DPC2: I am concerned that my personal data requested by HPV screening advertisers could be accessed by unknown parties. DPC3: I usually think twice before sharing personal information with HPV screening online advertisers. DPC4: I feel HPV screening online advertisers request too much personal information. DPC5: I am concerned that my personal data collected through HPV screening online advertisements could be used in ways unknown to me.	Adapted from Adhikari and Panda (2018, p.101)
Acceptance of HPV Digital Advertising (ADA)		AHDA1: I feel positive about HPV screening digital advertisements. AHDA2: I am willing to receive HPV screening digital advertisements. AHDA3: I read HPV screening digital advertising messages that I receive. AHDA4: I have a strong intention to accept HPV screening digital advertisements. AHDA5: I consider accepting HPV screening digital advertisements in the future.	Adapted from Wu (2016, p.73)
Digital Literacy (DL)		AHDA6: I usually accept HPV screening digital advertisements. DL1: I can adjust my privacy settings on platforms that display online ads. DL2: I can tell if an HPV screening digital advertisement is trustworthy or not. DL3: Before engaging with HPV screening advertisements, I consider whether my personal data is used ethically. DL4: I understand online safety issues related to HPV screening advertisements, such as misleading links or data misuse. DL5: Digital tools help me make informed decisions when viewing HPV screening digital advertisements. DL6: I use online resources like official health websites, health forums/groups or guides or communities to avoid deceptive or intrusive HPV screening advertisements.	

Appendix B

RESEARCH QUESTIONNAIRE

Dear Respondent:

You are invited to participate in an academic research study in a research conducted by Chitsamba Alec REG Number B242945B, a Master of Science in Digital Marketing student from the Faculty of Commerce, Department of Marketing at Bindura University of Science Education (BUSE). The research is on the topic:

"The Influence of Fate Control, Perceived Health Risk, and Privacy Concerns on Acceptance of Human Papillomavirus (HPV) Screening Digital Advertising: The Moderating Role of Digital Literacy."

The purpose of this research is to understand why women in Zimbabwe aged 18 to 49 accept or reject online advertisements that encourage Human Papillomavirus (HPV) Screening, by looking at how their beliefs about destiny, their sense of risk, and their privacy worries influence their decisions, and whether their ability to use technology changes these effects. Please note the following:

- You have been invited to participate in this study because **you are a woman in the age range 18 to 49 years**, which is the age group targeted for HPV screening programmes in Zimbabwe. **HPV (Human Papillomavirus)** is a common sexually transmitted virus. Some types can lead to cervical cancer if not detected early.
- This study involves an anonymous survey. Your name will not appear and the answers you give will be treated as confidential. It will not identify you in person based on the answers you give.
- Your participation in this study is very important. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- Please answer the questions as honestly as possible. This should not take more than a few minutes of your time.

- The results of the study will be used for academic purposes only and may be published in an academic journal. I will provide you with a summary of my findings upon request.
- For any issues pertaining to the study, may you please contact Mr A Chitsamba on +263773749545 or email to alexchitsamba@gmail.com .

Take note: This study is only for women aged 18 to 49 years.

QUESTIONS

SECTION A: DEMOGRAPHIC INFORMATION

A1. Your Age *(Please tick one option)*

18 - 34 years	1
35 – 49 years	2

A2. Your Level of Education *(Please tick one option)*

Primary Level Education	1
Secondary Level Education	2
National Foundation Certificate or National Certificate Level	3
Diploma	4
Degree	5
Post Graduate	6

A3. How often do you receive messages or adverts about HPV screening on your phone? *(Please tick one option)*

Never	1
Rarely (once in several months)	2
Occasionally (about once a month)	3
Often (2–3 times a month)	4
Very often (at least once a week)	5

A4. Through which methods do you usually receive HPV screening messages or adverts on your phone?

(You may tick more than one option)

SMS (text messages)	1
WhatsApp messages	2
Social Media Advertisements	3
Email	4
Automated voice calls	5

Other (please specify): _____

A5. From which platforms or sources do these messages or adverts mainly come from?

(You may tick more than one option)

Ministry of Health and Child Care (MoHCC) campaigns	1
Hospitals or clinics	2
Non-governmental organisations (NGOs) or health agencies	3
Social media influencers or health pages	4
Friends or family (forwarded messages)	5

Other (please specify): _____

A6. Which of these sources do you trust the most for information about HPV screening?

(Please tick one option)

Ministry of Health and Child Care (MoHCC) campaigns	1
Hospitals or clinics	2
Non-governmental organisations (NGOs) or health agencies	3
Social media influencers or health pages	4
Friends or family (forwarded messages)	5

Other (please specify): _____

SECTION B:

Please indicate the extent to which you agree or disagree with the following statements. Where 1=strongly disagree 2=disagree 3=neutral 4=agree 5=strongly agree . There is no wrong or right answer.

Instructions: Tick the preferred box

THIS SECTION IS ABOUT YOUR PERSONAL BELIEFS ON WHETHER LIFE AND HEALTH OUTCOMES, LIKE CERVICAL CANCER, ARE CONTROLLED BY FATE OR PERSONAL ACTIONS.		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
FC1	Getting HPV is completely determined by fate.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
FC2	I have no control over my health outcomes.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
FC3	My risk of getting HPV is set by fate, regardless of any HPV screening advertisements I see.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
FC4_R	I can control my health outcomes by taking preventive actions such as responding to HPV screening advertisements.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
FC5	HPV screening is unnecessary because fate decides health outcomes.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
THIS SECTION ASKS ABOUT HOW YOU PERSONALLY VIEW YOUR CHANCES OF GETTING CERVICAL CANCER AND THE SERIOUSNESS OF ITS EFFECTS.		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
PRH1	Not getting screened for HPV could endanger my health.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PRH2	Avoiding HPV screening would be harmful to my health.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PRH3	Ignoring HPV screening puts my health at serious risk.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
PRH4	It is unsafe to delay HPV screening.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
THIS SECTION ASKS ABOUT HOW CONCERNED YOU ARE ABOUT THE SAFETY AND USE OF YOUR PERSONAL INFORMATION WHEN RECEIVING OR RESPONDING TO HPV SCREENING ADVERTS ONLINE.		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
DPC1	I worry that my personal data requested through HPV screening online advertisements could be used for wrong purposes.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
DPC2	I am concerned that my personal data requested by HPV screening advertisers could be accessed by unknown parties.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
DPC3	I usually think twice before sharing personal information with HPV screening online advertisers.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
DPC4	I feel HPV screening online advertisers request too much personal information.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
DPC5	I am concerned that my personal data collected through HPV screening online advertisements could be used in ways unknown to me.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

THIS SECTION FOCUSES ON HOW WILLING YOU ARE TO PAY ATTENTION, RESPOND AND ACCEPT DIGITAL ADVERTS THAT ENCOURAGE HPV SCREENING.		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
AHDA1	I feel positive about HPV screening digital advertisements.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
AHDA2	I am willing to receive HPV screening digital advertisements.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
AHDA3	I read HPV screening digital advertising messages that I receive.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
AHDA4	I have a strong intention to accept HPV screening digital advertisements.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
AHDA5	I consider accepting HPV screening digital advertisements in the future.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
AHDA6	I usually accept HPV screening digital advertisements.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
THIS SECTION ASKS ABOUT HOW CONFIDENT AND SKILLED YOU ARE WHEN USING DIGITAL DEVICES AND ONLINE PLATFORMS.		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
DL1	I can adjust my privacy settings on platforms that display online ads.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
DL2	I can tell if an HPV screening digital advertisement is trustworthy or not.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
DL3	Before engaging with HPV screening advertisements, I consider whether my personal data is used ethically.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
DL4	I understand online safety issues related to HPV screening advertisements, such as misleading links or data misuse.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
DL5	Digital tools help me make informed decisions when viewing HPV screening digital advertisements.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
DL6	I use online resources like official health websites, health forums/groups or guides or communities to avoid deceptive or intrusive HPV screening advertisements.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Appendix C

Permission Letters

Permission Letter from RCZ Mutare (Chitakatira)

Reformed Church in Zimbabwe
Chitakatira Branch
Mutare Peri-Urban (Chigodora)

10 October 2025

Mr. Chitsamba Alec
Mutare Polytechnic
26 Vincent Avenue
Mutare
Cell: 0773749545
Email: alexchitsamba@gmail.com

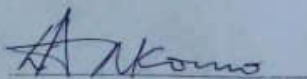
Dear Mr. Chitsamba,

**RE: APPROVAL TO CONDUCT ACADEMIC RESEARCH AMONG WOMEN
CONGREGANTS AT RCZ CHITAKATIRA BRANCH**

Grace and peace be to you in the name of our Lord Jesus Christ. I acknowledge receipt of your letter dated 08 October 2025 requesting permission to conduct academic research among women congregants aged between 18 and 49 years at the Reformed Church in Zimbabwe, Chitakatira Branch. After reviewing the details of your proposed study titled "The Influence of Faise Control, Perceived Health Risk, and Privacy Concerns on the Acceptance of Human Papillomavirus (HPV) Screening Digital Advertising: The Moderating Role of Digital Literacy," I am pleased to inform you that permission has been granted for you to carry out your research within our congregation. Kindly ensure that the research activities are conducted in a manner that respects the church environment and the privacy of all participants. Please liaise with the Church Secretary or designated committee for logistical coordination and scheduling to avoid disruption of church programs.

On behalf of the Reformed Church in Zimbabwe, Chitakatira Branch, we wish you success in your academic pursuit and pray that your research will make a meaningful contribution to both academic knowledge and community health awareness.

Yours faithfully,



Rev. Nkomo (Reformed Church in Zimbabwe – Chitakatira Branch)



Permission Letter from SDA Church Toronto



Toronto
Seventh-Day Adventist
Mutare

12 October 2025

Mr. Chitsamba Alec
Mutare Polytechnic
26 Vincent Avenue

Dear Mr. Chitsamba,

RE: REFERENCE TO YOUR LETTER DATED 10/10/2025 SEEKING PERMISSION TO CARRYOUT A RESEARCH AT TORONTO BRANCH SEVENTH-DAY ADVENTIST CHURCH.

The church acknowledges receipt of your letter dated 10/10/2025 seeking permission to carry out a research among our women congregants at Toronto Branch. After reviewing the details of your proposed study titled "The Influence of Fate Control, Perceived Health Risk, and Privacy Concerns on the Acceptance of Human Papillomavirus (HPV) Screening Digital Advertising: The Moderating Role of Digital Literacy," your request has been approved. However, your reminded to adhere to research ethical principles as governed by your academic and research guidelines. For church guidelines and logistical issues during your research, we refer you to our branch secretary for proper assistance. On behalf of the SDA Toronto branch we wish you success in your academic pursuit and pray that your research will make a meaningful contribution to both academic knowledge and health policy decisions.

Yours faithfully,

Handwritten signature of T. Chiuswa in blue ink.

T. CHIUSWA (MRS)
Church Clerk

Cell: 0777036404

Handwritten signature of A. Ngomeni in blue ink.

A. NGOMENI (MR)
Head Elder

Cell: 0718222039

TORONTO S.D.A. CHURCH
P. O. BOX 882
MUTARE
TEL
DA. 13 oct 2025

Letter to Mutare City Council

Mutare Polytechnic
26 Vintcent Avenue
Mutare
Zimbabwe

25 October 2025

The Town Clerk
Mutare City Council
Civic Centre
Mutare



Dear Sir/Madam,

RE: **REQUEST FOR PERMISSION TO CONDUCT ACADEMIC RESEARCH IN
SELECTED AREAS OF MUTARE**

I am writing to respectfully request permission to conduct an academic research study within Mutare City, specifically in the areas of Mutare Central Business District (CBD), Sakubva, Palmerstone, Greenside, Dangamvura, Hobhouse, and Chikanga. The study is titled "The Influence of Fate Control, Perceived Health Risk, and Privacy Concerns on the Acceptance of Human Papillomavirus (HPV) Screening Digital Advertising: The Moderating Role of Digital Literacy." This research is being carried out in partial fulfilment of the requirements for the Master of Science in Digital Marketing degree at Bindura University of Science Education, under the Department of Marketing in the Faculty of Commerce. The purpose of the study is to examine factors that influence women's acceptance of digital health advertising, particularly messages promoting HPV screening. Data will be collected through short questionnaires administered to women aged between 18 and 49 years residing in or visiting the mentioned areas. All data collected will be handled with strict confidentiality and used solely for academic purposes. Participation will be voluntary, and respondents may withdraw at any stage without any consequence. No names or personal identifiers will appear in the final report.

The research will be conducted with full respect for public order and in compliance with Mutare City Council regulations. Your kind permission to conduct this study in the stated areas will be greatly appreciated. Should you require any further information or clarification, please do not hesitate to contact me at your convenience.

Thank you for your time and consideration.

Yours faithfully,

Chitsamba Alec (MSc Digital Marketing Candidate, Reg. No: B242945B)
(Bindura University of Science Education)