

**The Catalytic Role of Entrepreneurship Digitalisation in Advancing
Women's Entrepreneurial Performance: Evidence from Mashonaland
West, Zimbabwe**

By

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APPROVAL FORM

The undersigned certify that they have read and recommended to the Department of Business Management and Entrepreneurship, Chinhoyi University of Technology, for acceptance a thesis entitled “The Catalytic Role of Entrepreneurship Digitalisation in Advancing Women’s Entrepreneurial Performance: Evidence from Mashonaland West, Zimbabwe”, submitted by Rahabhi Mashapure in fulfilment of the requirements for the Doctor of Philosophy in Business Management and Entrepreneurship.

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DECLARATION

I, Rahabhi Mashapure, student number C22148510N, do hereby declare that this DPhil research thesis, submitted to the Directorate of Research and Graduate Studies, School of Entrepreneurship and Business Sciences of Chinhoyi University of Technology, Zimbabwe entitled “**The Catalytic Role of Entrepreneurship Digitalisation in Advancing Women’s Entrepreneurial Performance: Evidence from Mashonaland West, Zimbabwe,**” is my own effort and is a reflection of research executed by me. This study has not been submitted for examination at this or any other university or institution.

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When the Lord remembers us we were like those who were in a dream.

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ABSTRACT

The study aimed to develop a contextualised entrepreneurship digitalisation model to enhance the performance of women-led enterprises in Mashonaland West Province, Zimbabwe. Grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model 2 (TAM2), the research employed a positivist paradigm and a quantitative design. A purposive sample of 950 women entrepreneurs was drawn from an estimated population of 20,000 using judgmental sampling techniques to ensure the inclusion of information-rich cases. Data were collected through a structured, self-administered questionnaire using a 5-point Likert scale. Quantitative analysis was conducted using SPSS® v22 for descriptive statistics and AMOS® v21 for structural equation modelling (SEM). To complement SEM and address its limitations, an Artificial Neural Network (ANN) model was employed for predictive validation, detection of non-linear patterns, and ranking of variable importance, thus enhancing robustness through methodological triangulation. The findings reveal that perceived usefulness, perceived ease of use, prior digital experience, and voluntariness significantly and positively influence digital adoption, which in turn has a direct impact on entrepreneurial performance. Notably, past experience with digital tools, even informally, was a strong predictor of digital engagement, which points to the potential of incremental exposure strategies (e.g., mobile money, online ordering) to foster deeper adoption. The study also identifies language barriers as a critical constraint, underscoring the need for localised digital platforms in indigenous languages such as Shona, Ndebele, Chewa, Kalanga, Tonga, and Venda to ensure inclusivity. Importantly, the study integrates moderating variables—education level and age—to examine how these demographic factors influence the relationship between digitalisation and entrepreneurial performance. This novel inclusion addresses a critical gap in existing literature, where such interactions have largely been overlooked in studies on women entrepreneurs in developing economies. Based on these findings, the study recommends a multi-pronged policy approach: enhancing digital literacy, improving access to affordable ICT tools and internet, designing age- and education-sensitive support interventions, promoting gender-inclusive digitalisation policies, expanding digital infrastructure, and integrating digital and entrepreneurial education at early childhood levels. The research contributes significantly to the entrepreneurship and technology adoption literature, offering practical implications for policymakers, NGOs, and development practitioners seeking to leverage digitalisation as a catalyst for women's economic empowerment in emerging contexts.

MAIN ABBREVIATIONS

ANN - Artificial neural networks

AVE – Average variance extracted

CAMFED – Campaign for Female Education

GDP - Gross domestic product

GEM - Global Entrepreneurship Monitor

GoZ - Government of Zimbabwe

HBB - Home-based businesses

ICT – Information communication technology

IT – Information technology

KMO – Kaiser-Meyer-Olkin

M - Mean

MAE - Mean absolute error

MSE - Mean squared error

MSE - Micro, small, and medium enterprises

MSME - Micro, small and medium scale enterprises

MWACSME - Ministry Of Women Affairs, Community, Small and Medium Enterprises

MWACSMED - Ministry of Women Affairs, Community, Small and Medium Enterprises Development

NGO – Non-governmental organisations

PEOU – Perceived ease of use

PU – Perceived usefulness

R^2 – R squared

RMSE – Root mean square error

SD – Standard deviation

SEM – Structural equation model

SICC - Squared inter-construct correlations

SME – Small and medium-sized enterprises

SPSS – Statistical Package for the Social Sciences

TAM - Technology Acceptance Model

UTAUT - Unified Theory of Acceptance and Use of Technology

DEFINITION OF KEY TERMS

Catalytic: causing, speeding up, or facilitating a change or reaction without being permanently altered itself or causing things to happen or they increase the speed at which things happen (Cambridge Dictionary).

Digital transformation - is presented as the integration of digital technologies and business processes in a digital economy (Liu et al., 2024).

Digitalisation - defined digitalisation is the practice of redefining operations and activities by using technology to build an efficient business environment, where gains are maximised, and costs and risks are minimised (CIPS, 2025).

Enhancement – to improve or increase women business performance

Entrepreneurship - is the process of identifying potential business opportunities and exploiting them through the recombination of existing resources or the creation of new ones to develop and commercialize new products and services (Muneeb, Ahmad, Abu Bakar, & Tehseen, 2023).

Entrepreneurship digitalisation - refers to the adoption of digital tools, platforms, and technologies by entrepreneurs in their business operations (Le Dinh, Vu, & Ayayi, 2018).

Entrepreneurship performance - performance of women entrepreneurs was measured by sales growth, customer reach, productivity, profitability, innovation, and sustainability of businesses.

Experience of the past – any event, situation, or occurrence that has happened in an individual's life prior to the present moment.

Impediments – a hindrance or obstruction in doing something

Perceived ease of usefulness - is the “degree to which a person believes that using a particular system would be free of effort” (Gumbo, Halimani, & Diza, 2017). The easier it is for a user to interact with a system, the more likely he or she will find it useful.

Perceived usefulness - is well-defined as the degree to which a person believes that using a particular digital technology would enhance his or her job performance (Chandra, Shirish, & Srivastava, 2020).

Voluntariness to digitalise - is related to a decision maker's calculations of advantage and disadvantage, cost and benefit, considered on both conscious and unconscious levels.

Women entrepreneurship - is an economic activity where female or groups of females are involved in handling all the business events.

TABLE OF CONTENTS

APPROVAL FORM	ii
DECLARATION	iii
ACKNOWLEDGEMENTS	iv
DEDICATION	vi
ABSTRACT	vii
MAIN ABBREVIATIONS	viii
DEFINITION OF KEY TERMS	ix
LIST OF FIGURES	xviii
LIST OF TABLES	xix
CHAPTER ONE	1
INTRODUCTION	1
1.0 Background to the study	1
1.2 Statement of the problem	3
1.3 Research objectives	4
1. To determine the role played by perceived usefulness of digital technology in influencing women entrepreneurship performance.	5
2. To establish the role played by perceived ease of use of digital technology in influencing women entrepreneurship performance.	5
3. To examine the effect of experience of the past use of digital technology in influencing women entrepreneurship performance.	5
4. To ascertain whether voluntariness on the use of digital technology influences women entrepreneurship performance.	5
5. To test the moderating effect of age on entrepreneurship digitalisation and women entrepreneurship performance.	5
6. To test the moderating effect of level of education on entrepreneurship digitalisation and women entrepreneurship performance.	5
1.4 Research questions	5
1.5 Conceptual framework.....	6
1.6 Significance of the study	7
1.7 Scope of study	8
1.9 Organization of the study	9
1.10 Chapter summary.....	9
CHAPTER TWO	11
LITERATURE REVIEW	11
2.1 Chapter introduction.....	11
2.2 Major blocks building the study.....	11

2.2.5 Entrepreneurship digitalisation	19
2.3 Theoretical framework	25
2.3.1 Digitalisation theories	26
2.4 The role played by perceived usefulness of digital technology in influencing women entrepreneurship performance	31
2.5 The role played by perceived ease of use of digital technology in influencing women entrepreneurship performance	42
2.6 The role played by experience of the past use of digital technology in influencing women entrepreneurship performance	48
2.7 The role played by voluntariness on the use of digital technology in influencing women entrepreneurship performance	52
2.8 The moderating effect of age on entrepreneurship digitalisation and women entrepreneurship performance.	61
2.9 The moderating effect of level of education on entrepreneurship digitalisation and women entrepreneurship performance	64
2.9 Challenges faced by women entrepreneurs in the process of adopting digital technology for women entrepreneurship enhancement.....	71
2.9.1 Missing of supporting institutions	72
2.9.2 Lack of appropriate incentives.....	73
2.9.3 Lack of user involvement, family involvement, and community involvement in digital technology adoption by women entrepreneurs.....	73
2.9.4 Unavailability of Infrastructure	74
2.9.5 High cost of digital technology equipment.....	74
2.9.6 Language barrier	75
2.9.7 Lack of general understanding on information technology.....	76
2.9.8 Unavailability of electricity and unstable internet.....	77
2.9.9 Lack of business models that supports digital technology adoption.....	77
2.9.10 Lack of digital technology knowledge.....	78
2.9.11 Demographic or socio-economic variables.....	79
2.9.12 Lack of time.....	80
2.9.13 Digital data complexity	81
2.9.14 Lack of ethical issues.....	81
2.9.15 Lack of accessibility to digital technology.....	82
2.9.16 Problem of technology growing old/obsolescence	83
2.9.17 Resistance to change or attitude and beliefs.....	83
2.9.18 Lack of cyber security or privacy risk	84
2.9.19 Lack of software capabilities.....	85
2.9.20 Social risk.....	86

2.10 Chapter summary.....	87
CHAPTER THREE	88
RESEARCH HYPOTHESES AND RESEARCH MODEL DEVELOPMENT.....	88
3.1 Chapter introduction.....	88
3.2 The effect of perceived usefulness of digital technology on women entrepreneurship performance	88
3.3 The effect of perceived ease of use of digital technology on women entrepreneurship performance	89
3.4 The effect of experience of the past in using digital technology on women entrepreneurship	90
3.5 The effect of voluntariness on the use of digital technology on women entrepreneurship performance	91
3.6 Entrepreneurship digitalisation for women entrepreneurship performance	91
3.7 The moderating effect of entrepreneurs age on the relation between entrepreneurship digitalisation and women entrepreneurship performance	91
3.8 The moderating role of entrepreneurs level of education in the relationship between entrepreneurship digitalisation and women entrepreneurship performance.....	92
3.9 Research model.....	93
3.10 Research gap	94
3.11 Chapter summary.....	95
CHAPTER FOUR	96
RESEARCH METHODOLOGY	96
4.1 Chapter introduction.....	96
4.2 Research philosophy	96
4.3 Research strategy.....	97
4.4 Research design	98
4.5 Target population	99
4.6 Sampling and sample size	100
4.7 Sampling techniques and methods.....	101
4.8 Research instruments	102
4.8.1 Questionnaire	102
4.9 Pilot study	104
4.10 Reliability.....	105
4.11 Validity	106
4.11.1 Construct validity	106
4.11.2 Convergent validity	107
4.11.3 Discriminant validity	108
4.12 Sensitivity	109

4.13 Artificial neural networks.....	110
4.14 Ethical considerations	110
4.15 Chapter summary.....	111
CHAPTER FIVE.....	112
RESULTS.....	112
5.1 Chapter introduction.....	112
5.2 Response rate	112
5.3 GENERAL INFORMATION ABOUT THE RESPONDENTS.....	113
5.3.1 Age of respondents.....	113
5.3.2 Marital status	114
5.3.3 Level of education.....	115
5.3.4 Nature of business	117
5.3.5 Number of years of respondents in business	118
5.4 Descriptive statistics	119
5.4.1 Descriptive statistics for the role played by perceived usefulness of digital technology in influencing women entrepreneurship performance	119
5.4.2 Descriptive statistics for the role played by perceived ease of use of digital technology in influencing women entrepreneurship performance	120
5.4.3 Descriptive statistics for the effect of experience of the past use of digital technology in influencing women entrepreneurship performance	122
5.4.4 Descriptive statistics for the effect of voluntariness of use of digital technology in influencing women entrepreneurship performance	123
5.4.5 Descriptive statistics for the effect of entrepreneurship digitalisation on the women entrepreneurship performance	124
5.5 Sampling adequacy	125
5.6 Scale validation	126
5.7 Reliability.....	127
5.8 Convergent validity test results	128
5.9 Model fit indices	128
5.9 Constructs, items, Standardised Factor loading and CR	128
5.10 Discriminant validity	129
5.11 Construct, Items and Factor loadings	130
5.12 Measurement model fit indices results	131
5.13 Testing research hypotheses (H_{1a-d} and H_1).....	132
5.14 Results for the moderation effect of age and level of education	134
5.15 Coefficients of moderated regression model	134
5.16 Evaluation of the Model	136

5.17 Model results	137
5.18 Variable importance	138
5.19 Chapter summary.....	139
CHAPTER SIX.....	140
DISCUSSION OF RESULTS	140
6.1 Chapter introduction.....	140
6.2 The effect of perceived usefulness of digital technology in influencing women entrepreneurship performance	140
6.3 The influence of perceived ease of use of digital technology in influencing women entrepreneurship performance	142
6.4 The influence of experience of the past use of digital technology in influencing women entrepreneurship performance	143
6.5 The effect of voluntariness on the use of digital technology in influencing women entrepreneurship performance	144
6.6 The moderating effect of entrepreneurs age on the effect of entrepreneurship digitalisation on women entrepreneurship performance	145
6.7 The moderating effect of entrepreneurs level of education on the influence of entrepreneurship digitalisation on the enhanced of women performance.....	147
6.8 Chapter summary.....	148
CHAPTER SEVEN	149
CONCLUSIONS AND IMPLICATIONS	149
7.1 Chapter introduction.....	149
7.2 Conclusions	149
7.2.1 The effect of perceived usefulness of digital technology on women entrepreneurship performance	149
7.2.2 The effect of perceived ease of use of digital technology on women entrepreneurship performance	149
7.2.3 The effect of experience of the past use of digital technology on women entrepreneurship performance	150
7.2.4 The effect of voluntariness on the use of digital technology on women entrepreneurship performance	150
7.2.5 The effect of entrepreneurs age has a moderating effect on the relationship between entrepreneurship digitalisation and women entrepreneurship performance	150
7.2.6 The effect of entrepreneur's level of education plays a moderating role on the relationship between entrepreneurship digitalisation and women entrepreneurship.....	151
7.2.7 The effect of entrepreneurship digitalisation on women entrepreneurship performance	151
7.3 Proposed entrepreneurship digitalisation implementation model for enhanced women entrepreneurship	152

7.4 Theoretical implications.....	155
7.4.1 Implications for digitalisation theory and knowledge	155
7.5 Methodological implications.....	156
Sampling and representativeness.....	156
Data collection methods	156
Longitudinal vs. cross-sectional design.....	156
Technology types and use cases	157
Bias and reliability.....	157
Barriers to access and contextual factors	157
Technology adoption models.....	157
Ethical research practices	158
7.6 Ethical implications	158
Informed consent.....	158
Privacy and confidentiality.....	158
Cultural sensitivity.....	158
Digital divide and inclusivity.....	159
Economic and social impact.....	159
Transparency in reporting.....	159
7.7 Social implications.....	159
Economic inclusion	159
Gender equality and empowerment	160
Social status and community impact	160
Challenges to traditional gender roles.....	160
Digital divide and inequality.....	161
Work-life balance and mental health	161
Impact on education and skill development.....	161
Social networks and community building.....	162
Societal transformation	162
Ethical and legal concerns.....	162
7.8 Economic implications	163
Increased business productivity and efficiency	163
Access to new markets	163
Financial inclusion.....	163
Job creation and employment growth.....	163
Reduction in business costs	164
Contribution to GDP and economic growth	164

Reducing gender gaps in entrepreneurship.....	164
Innovation and economic diversification.....	164
Mitigating informality in business.....	165
Reducing economic inequalities	165
Challenges and risks to consider	165
Impact on supply chains.....	166
Policy and regulatory implications.....	166
7.9 Implications on policy and practice	166
7.10 Research limitations and mitigation measures taken.....	169
7.11 Recommendations	170
7.12 Implications on future research.....	172
REFERENCES.....	174
APPENDIX 1: QUESTIONNAIRE	228
APPENDIX 2: RESEARCH CLEARANCE LETTER.....	233
APPENDIX 3: PLAGIARISM REPORT	234

LIST OF FIGURES

Figure 2.1: Unified Theory of Acceptance and Use of Technology.....	32
Figure 3.1: Conceptual framework.....	86
Figure 5.1 shows the age distribution of the respondents.....	109
Figure 5.2: Marital status of the respondents.....	109
Figure 5.3: Level of education of the respondents.....	110
Figure 5.4: Nature of business of the respondents.....	111
Figure 5.5: Number of years of respondents in business.....	112
Figure 5.6: Model 1 for H _{1a} , H _{1b} , H _{1c} , H _{1d} and H ₁	122
Figure 7.1: Proposed implementation model for entrepreneurship digitalisation for women entrepreneurship enhancement.....	141

LIST OF TABLES

Table 4.1: Construct, number of items and Cronbach's (α).....	103
Table 4.2 Constructs, items, Standardised Factor loading and CR	104
Table 4.3 Mean (M), standard deviation (SD), AVE and SICC.....	106
Table 5.1: Descriptive statistics of the role played by perceived usefulness of digital technology in influencing women entrepreneurship performance.....	113
Table 5.2: Role played by perceived ease of use of digital technology in influencing women entrepreneurship performance.....	114
Table 5.3: Effect of experience of the past use of digital technology in influencing women entrepreneurship performance.....	116
Table 5.4: The effect of voluntariness of use of digital technology in influencing women entrepreneurship performance.....	117
Table 5.5: The effect of entrepreneurship digitalisation on women entrepreneurship performance.....	118
Table 5.6: KMO and Bartlett's Test.....	121
Table 5.7 Construct, number of items and Cronbach's (α).....	123
Table 5.8: Constructs, items, Standardised Factor loading and CR	124
Table 5.9 Mean (M), standard deviation (SD), AVE and SICC.....	125
Table 5.10: Construct, Items and Factor loadings.....	126
Table 5.11 Measurement model fit indices results.....	127
Table 5.12: Measurement model fit indices results.....	128
Table 5.13: Results of hypotheses H1a, H1b, H1c, H1d and H1.....	128
Table 5.14: Coefficients of moderated regression model.....	130

CHAPTER ONE

INTRODUCTION

1.0 Background to the study

Globally, women are increasingly taking control of their professional paths by launching entrepreneurial ventures (Gimenez-Jimenez, Edelman, Dawson, & Calabrò, 2022). Women entrepreneurs now represent one of the fastest-growing segments of entrepreneurship worldwide, drawing growing attention from scholars and policymakers alike. They are predominantly engaged in micro, small, and medium-sized enterprises (MSMEs), which account for over 97% of all enterprises, contribute 60% to national GDP, and generate 94% of total employment (Roseline, Ibrahim, & Opeyemi, 2020). The spectrum of women's entrepreneurship ranges from home-based businesses to MSMEs. Their contributions are crucial to job creation, economic development, and poverty alleviation (Subedi & Gautam, 2024; Murzacheva, Sahasranamam, & Levie, 2020).

The performance of women-led enterprises has increasingly become a focal point for researchers and practitioners. Various factors, such as entrepreneurial traits, innovation, and digitalisation, have been identified as key drivers of success (Zeb & Ihsan, 2020). In Western countries, women's entrepreneurship is shaped by a wide range of socio-cultural, economic, and technological factors. Government policies and initiatives play a pivotal role in fostering inclusive entrepreneurial ecosystems (Bullough, Guelich, Manolova, & Schjoedt, 2022). According to the Global Entrepreneurship Monitor (GEM, 2023), access to education, gender norms, financing options, and strong support networks significantly influence women's participation in entrepreneurship. The rise of digitalisation has further transformed the entrepreneurial landscape, enabling women to access markets, resources, and customers more efficiently (Orrensalo, Brush, & Nikou, 2024). Digital tools such as e-commerce platforms and online marketing channels have empowered women entrepreneurs to scale their businesses beyond traditional constraints (Varadarajan, Welden, Arunachalam, Haenlein, & Gupta, 2022).

In African countries, women's entrepreneurship is a vital component of economic development and social inclusion. Despite systemic barriers such as socio-cultural norms, limited access to finance, and inadequate institutional support, many women have shown remarkable resilience

and innovation. The increasing penetration of digital technologies offers a transformative opportunity for women to overcome traditional barriers and participate more fully in economic activities (Abate et al., 2023). However, challenges remain. The International Telecommunication Union (ITU, 2023) reports that only around 32% of women in sub-Saharan Africa use the internet, highlighting the persistence of a digital gender divide.

Key enablers of women's entrepreneurship in Africa include access to finance, supportive networks, and digital literacy (Alao, Brink, Chigona, & Lwoga, 2022). Policy interventions such as Rwanda's National Gender Policy and Ghana's Digital Skills Training Programme represent proactive efforts to bridge gender gaps and enhance women's entrepreneurial capabilities (Dabić, Dana, Nziku, & Ramadani, 2022). In Nigeria, although vibrant entrepreneurial activity is evident, women face barriers such as cultural norms and infrastructural deficits. Support initiatives like Women's Entrepreneurship Day and the Nigerian Women's Trust Fund aim to empower women in business (Woldesenbet Beta, Mwila, & Ogunmokun, 2024). In Kenya, the widespread use of mobile technology and digital platforms has enabled women to access local and global markets. Organisations such as the Kenya Women Microfinance Bank and the Kenya Women Entrepreneurship Programme offer critical financial and capacity-building support (Mamo, Sisay, Gilo, Gebreselassie, & Debisa, 2023). Similarly, in South Africa, despite a robust entrepreneurial ecosystem, women still grapple with challenges related to digital literacy and access to capital. Efforts like the South African Women in ICT Forum are working to narrow the digital divide and promote women's participation in tech-based entrepreneurship (Alao et al., 2022).

In Zimbabwe, entrepreneurship has been recognised as a key driver of economic growth and poverty alleviation, particularly in response to high unemployment, economic instability, and limited formal job opportunities (Nhapi & Mangwende, 2020). Women entrepreneurs contribute significantly to national development through their involvement in sectors such as small-scale agriculture, informal trading, and artisanal crafts. Despite their impact, they face major barriers, including limited access to ICTs, finance, markets, training, and supportive networks. Cultural norms and gender stereotypes often reinforce domestic roles for women, further limiting their entrepreneurial ambitions.

Although Zimbabwe has made some progress through initiatives led by the government, NGOs, and international organisations, such as capacity-building programmes and gender-focused business support services, much more is needed to create an enabling environment for

women entrepreneurs (Derera, Croce, Phiri, & O'Neill, 2020). The digitalisation of the economy, underpinned by increasing mobile penetration and improved telecommunications infrastructure, presents an opportunity for transformation (Moyo & Tengeh, 2021). Women entrepreneurs can leverage digital tools to expand market access, streamline operations, and access information and finance.

However, the effectiveness of this digital transition is closely linked to national ICT policy frameworks. While Zimbabwe's National ICT Policy aims to promote digital inclusion, its implementation has been hindered by inadequate funding, lack of gender-focused digital strategies, and infrastructural challenges. These limitations have contributed to the continued marginalisation of women in the digital economy. In contrast, SADC countries like Rwanda and Mauritius have adopted more proactive and inclusive approaches. Rwanda's National Gender and ICT Strategy promotes digital inclusion through targeted training, infrastructure investment, and gender-sensitive policy integration. Mauritius has embedded gender considerations into its national development and digital transformation strategies, resulting in a more balanced digital participation rate.

Globally, countries such as Estonia and Finland stand out as examples where national ICT strategies have successfully bridged gender gaps. Their approaches combine public-private partnerships, robust digital literacy programmes, and inclusive innovation ecosystems that empower women to thrive as entrepreneurs.

Understanding how Zimbabwe's ICT policy landscape compares with regional and international best practices is critical for identifying gaps and opportunities. Drawing lessons from successful models can inform the development of a more inclusive digital strategy that supports the growth and sustainability of women-led enterprises. Against this backdrop, this study aims to develop a model that enhances women's entrepreneurship performance through digitalisation, with a focus on identifying how national ICT frameworks, digital infrastructure, and gendered digital inclusion policies can be leveraged to create a more enabling environment for women entrepreneurs in Zimbabwe.

1.2 Statement of the problem

Despite growing recognition of women entrepreneurs as key drivers of inclusive economic growth, women-owned businesses in Zimbabwe continue to underperform. Women have limited adoption and integration of digital technologies in their business ventures. While

digitalisation has emerged globally as a powerful enabler of entrepreneurial performance, Zimbabwean women entrepreneurs particularly in micro, small, and informal businesses face persistent barriers, including inadequate digital infrastructure, low digital literacy, unaffordable ICT tools, and entrenched socio-cultural norms that restrict their technological engagement.

This digital divide has intensified over the past decade, especially in the aftermath of the COVID-19 pandemic, which highlighted the urgency of digital transformation for business resilience. Yet, many women-led businesses remain offline, home-based, and geographically restricted, undermining their competitiveness in an increasingly digital economy. Existing research in Zimbabwe has explored general entrepreneurial constraints (Nhuta & Mukumba, 2017; Mandongwe & Jaravaza, 2020), but none has critically examined digitalisation as a core driver of women's entrepreneurial performance. Moreover, the dominance of Western-centric models in the literature presents a gap in understanding localised dynamics within developing contexts. The continued exclusion of women from digital entrepreneurship risks deepening socio-economic inequalities, stalling progress toward national development goals such as Vision 2030 and the SDGs. Addressing this gap through a contextualised digitalisation model could empower women entrepreneurs, enhance their business performance, and contribute to broader economic transformation.

1.3 Research objectives

The main objective of the study was to develop an entrepreneurship digitalisation model to enhance the performance of women-led businesses. The research was influenced by the following specific objectives which are:

1. To determine the role played by perceived usefulness of digital technology in influencing women entrepreneurship performance.
2. To establish the role played by perceived ease of use of digital technology in influencing women entrepreneurship performance.
3. To examine the effect of experience of the past use of digital technology in influencing women entrepreneurship performance.
4. To ascertain whether voluntariness on the use of digital technology influences women entrepreneurship performance.
5. To test the moderating effect of age on entrepreneurship digitalisation and women entrepreneurship performance.
6. To test the moderating effect of level of education on entrepreneurship digitalisation and women entrepreneurship performance.

1.4 Research questions

1. What role is played by perceived usefulness of digital technology in influencing women entrepreneurship performance?
2. To what extent does perceived ease of use of digital technology influences women entrepreneurship performance?
3. To what extent does past experience of using digital technology influences women entrepreneurship performance?
4. To what extent does voluntariness in the use of digital technology influences women entrepreneurship performance?
5. To what extend does age moderate relation between entrepreneurship digitalisation and women entrepreneurship performance?
6. To what extent does level of education moderate relation between entrepreneurship digitalisation and women entrepreneurship performance?

1.5 Conceptual framework

To aid in the explanation of the relationships between the research constructs, a conceptual framework was created. The conceptual framework and related hypotheses for the study are shown in Figure 1.1.

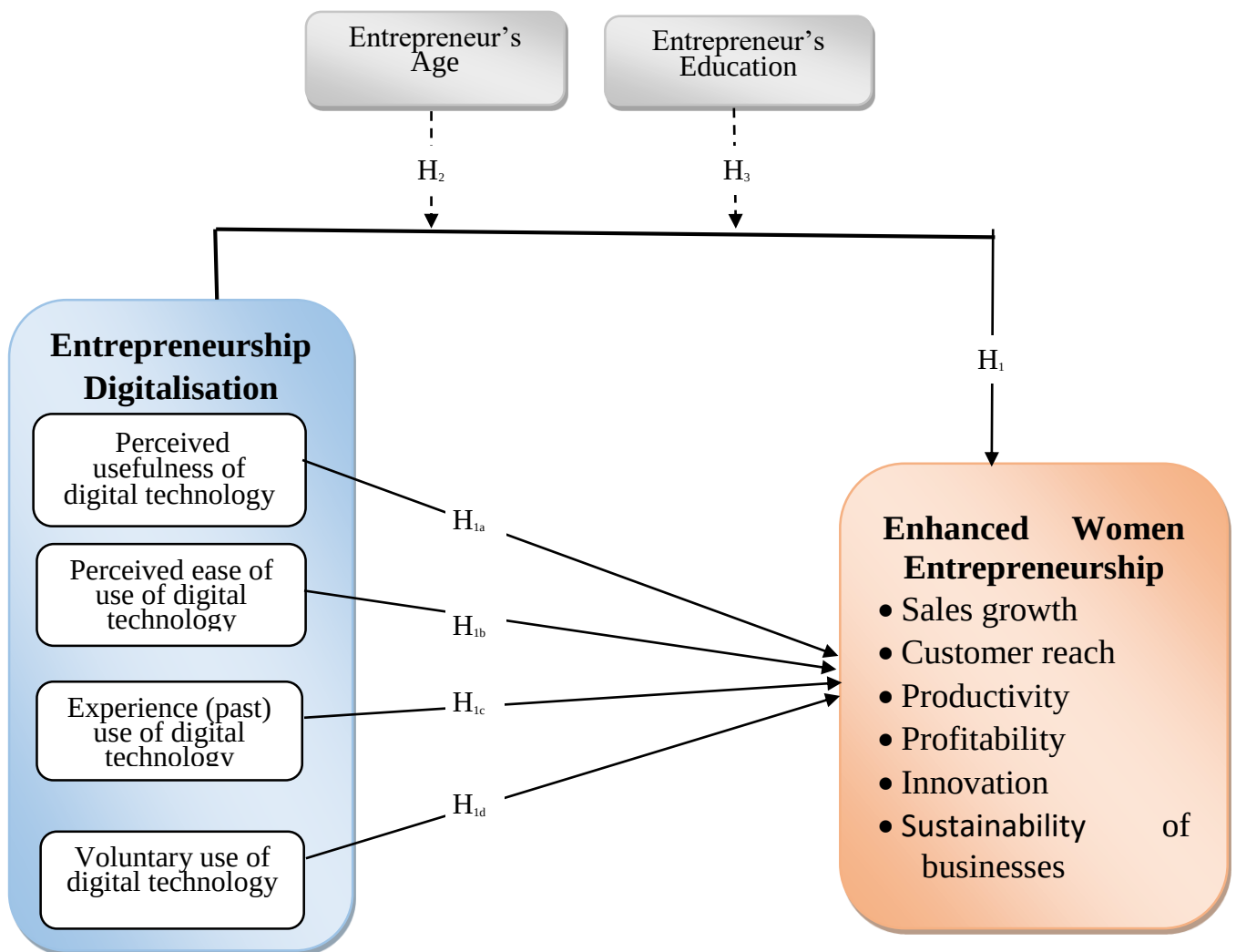


Figure 1.1: Conceptual framework

Source: Derived from Literature study

Based on the conceptual framework in Figure 1.1, the study proposes the following:

H_{1a} : Perceived usefulness of digital technology positively influences women entrepreneurship performance.

H_{1b}: Perceived ease of use of digital technology significantly impacts women entrepreneurship performance.

H_{1c}: Experience of the past of using digital technology positively impacts on women entrepreneurship performance.

H_{1d}: Voluntariness in the use of digital technology positively influences women entrepreneurship performance.

H₁: Entrepreneurship digitalisation positively enhances women entrepreneurship performance.

H₂: Entrepreneur's age has a moderating effect on the relationship between entrepreneurship digitalisation and women entrepreneurship performance.

H₃: Entrepreneur's level of education plays a moderating role on the relationship between entrepreneurship digitalisation and women entrepreneurship.

1.6 Significance of the study

This study holds significant implications for various stakeholders, contributing to both practical advancements and academic understanding. Its findings are particularly relevant to the following areas:

Operational convenience to women entrepreneurs

Digitalization offers a transformative solution for women entrepreneurs, enabling them to manage and operate their businesses remotely (Ahmed et al., 2025). This significantly reduces the necessity for physical mobility, which is a critical advantage in rural and peri-urban areas where transport and infrastructure challenges often impede business operations. Digital tools provide flexible platforms, allowing women to effectively engage in entrepreneurial activities while successfully balancing their domestic responsibilities.

Improved business efficiency

The adoption of digital technologies is pivotal in enhancing overall business processes. It leads to a reduction in operational costs, fosters improved customer engagement, and streamlines supply chains (Holloway, 2024). This research specifically highlights how digitalization drives innovation, facilitates business scalability, and establishes more effective communication channels between entrepreneurs, their clients, and suppliers.

Policy makers and policy formulation

The insights derived from this study are designed to inform government departments, non-governmental organizations (NGOs), and development partners regarding the specific digital needs and challenges encountered by women entrepreneurs. The findings will support evidence-based policy formulation by pinpointing priority areas for intervention, guiding resource allocation, and facilitating the development of inclusive digital infrastructure, with a particular focus on underserved communities.

Contribution to other researchers

This study provides valuable empirical data and contextual insights that enrich the existing academic literature on women's entrepreneurship and digital transformation within developing countries. Researchers can utilize these findings as a foundational basis for further investigation into the intricate intersection of gender, technology, and entrepreneurship, not only in Zimbabwe but also in broader contexts.

Model for sustainable women entrepreneurship

The conceptual framework meticulously developed within this study serves as a practical and actionable model for enhancing women's entrepreneurial performance through strategic digitalization. It offers clear guidance to stakeholders on how to build and nurture sustainable women-led businesses by effectively integrating digital solutions that specifically address local constraints and capitalize on emerging opportunities.

1.7 Scope of study

This study examines the impact of entrepreneurship digitalisation on the performance of women-led enterprises in Mashonaland West Province, Zimbabwe. It targets women entrepreneurs within the micro, small, and medium enterprise (MSME) sector operating in key urban and rural areas of seven districts of the province, such as Chegutu, Hurungwe, Kariba, Makonde, Mhondoro-Ngezi, Sanyati, and Zvimba, where women's entrepreneurial activities and digital adoption are growing.

The target population comprises active women entrepreneurs running businesses across various sectors, including agriculture, retail, manufacturing, and services. A sample of 950 women entrepreneurs will be selected using a judgemental (purposive) sampling method. This non-

probability technique is justified to deliberately include participants who have experience or interaction with digital technologies in their businesses and can provide relevant insights into digitalisation's influence on entrepreneurial performance.

A quantitative research design will be employed, using structured questionnaires to collect data on the role played by perceived usefulness of digital technology, perceived ease of use of digital technology, experience of past use of digital technology, and voluntariness of use of digital technology influences on women's entrepreneurship performance. The moderating effects of age and level of education on entrepreneurship digitalisation and women entrepreneurship performance were tested. The large sample size enhances the reliability and generalisability of the findings within the regional context. Data analysis will apply statistical techniques to assess the relationship between digitalisation and women entrepreneurs' business outcomes.

Focusing on Mashonaland West allows for an in-depth study of a dynamic entrepreneurial ecosystem and contributes to informing policies aimed at promoting digital inclusion and economic empowerment of women in Zimbabwe.

1.9 Organization of the study

Chapter One introduced the research problem. Firstly, background of the research were highlighted as well as the statement of the problem, then the study objectives, research questions, hypotheses and the conceptual framework followed thereafter. The significance of the study were provided followed by the scope of the study.

The rest of the research were organised as follows. Chapter Two reviews the relevant literature, theoretical perspectives and evidence from practice. Chapter Three shows empirical evidence, hypothesis development and research model. The research methodology and procedure were discussed in Chapter Four. Chapter Five presents results, and Chapter Six discussion, while Chapter Seven presents the summary, conclusions, and policy implications of the study.

1.10 Chapter summary

Chapter one introduced research highlights and study concepts. Areas covered comprised the introduction to the study, background to the concepts of women entrepreneurship enhancement through digital technology adoption that motivated the study to be carried out. Furthermore, the chapter highlighted the statement of the problem, research objectives, and research

questions. A conceptual framework and research hypotheses were also articulated. The structure of the thesis was set out. The significance of the study, its scope, and limitations were also presented in Chapter One. Chapter two looks at the literature review.

CHAPTER TWO

LITERATURE REVIEW

2.1 Chapter introduction

The preceding chapter introduced the study and gave its overview. The literature review is the main topic of this chapter. A literature review is essential because it gives the researcher knowledge about significant earlier research. The foundation of a good study is good literature (Mohamed Shaffril, Samsuddin, & Abu Samah, 2021). According to Obert (2023), a study is ruined by an inadequate literature review. A strong literature evaluation is the foundation of sound research methodology and theory (Snyder, 2019). Critical literature reviews improve the quality of the conversation by offering a foundation for connecting current findings to those of previous research (Oztemel & Gursev, 2020). Critical reviews of the literature are necessary, and new ideas must be presented by logically for the main ideas (Baktheer & Classen, 2024; Wright & Michailova, 2023). Literature in this chapter covers mainly two major themes namely; women entrepreneurship performance and digitalisation. Literature focused on theories of digital technology adoption, the role played by perceived usefulness of digital technology in influencing women entrepreneurship performance; the role played by perceived ease of use of digital technology in influencing women entrepreneurship performance; the effect of experience of the past of using digital technology in influencing women entrepreneurship performance; the influence of voluntariness in the use of digital technology in influencing women entrepreneurship performance, to test the moderating effect of age on entrepreneurship digitalisation among women entrepreneurs performance and to test the moderating effect of level of education on entrepreneurship digitalisation among women entrepreneurship performance. The chapter also established challenges faced by women entrepreneurs on the process of adopting digital technology.

2.2 Major blocks building the study

2.2.1 Entrepreneurship

Entrepreneurship is the process of identifying potential business opportunities and exploiting them through the recombination of existing resources or the creation of new ones to develop

and commercialize new products and services (Muneeb, Ahmad, Abu Bakar, & Tehseen, 2023). Generally, entrepreneurship is a catalyst of economic development and an engine that promotes productivity, innovation and employment creation. Meyer and Hamilton (2020) defined entrepreneurship as a process that involves a willingness to rejuvenate market offerings, innovate, risk-taking, trying out of new and uncertain products, services, markets and being more proactive than competitors towards exploring new business opportunities. Rudhumbu, Du Plessis, and Maphosa (2020) define entrepreneurship as the process of starting, developing, growing, and maintaining a business, assembling an entrepreneurship team, and acquiring the resources required to take advantage of a market opportunity for long-term financial gain and wealth. Entrepreneurship is generally termed to be any impact that is placed over a nation or a place through the application of strategic measures in maintaining social wellbeing through monetary transactions (Alrasheedi & Abualfalayeh, 2020). According to the authors' definition, entrepreneurship is the ability and desire to create, plan and oversee a business endeavor with the goal of turning a profit. Entrepreneurship is the dynamic process of creating vision, adopting change, and creation through application of energy and passion toward the design and implementation of innovative ideas by adopting suggested solutions (Kuratko, 2016).

Entrepreneurship involves recognising and seizing opportunities, transforming those opportunities into marketable goods or services, assuming risk, and realising rewards, and may occur in a variety of settings, including new and old ventures, non-profit institutions, and the public sector. In short, new value creation is the defining characteristic of entrepreneurship (Hire et al., 2020). Entrepreneurship is a field of business that seeks to understand how opportunities to create something new arise, and who then use various means to develop them, thus producing a wide range of effects (Kuratko, Fisher, & Audretsch, 2021). Entrepreneurship enables to employ and organize factors of production while recognizing the associated rewards and risks. Entrepreneurship involves creating new items with a value by dedicating the indispensable time and effort, assuming the social risks and receiving rewards of monetary and personal satisfaction (Hisrich, Peters, & Shepherd, 2017; Mwasomola, Mbunda, Kapinga, & Kirumirah, 2020).

2.2.2 Women entrepreneurship

Women's entrepreneurship is not a "female entrepreneurship" as stated by some authors in the literature (Mashapure, Hamunakwadi, & Tapera, 2023; Rugina, 2019). Entrepreneurship is not a process that varies by gender or race. In this context, women entrepreneurship is not a type of entrepreneurship. Woman entrepreneurship is a self-possessed, inventive, and inventive women skilled of attaining economic freedom independently or in co-operation, creates work opportunities for others through originating and operating a business by keeping pace with their family, social and personal life (Mashapure, 2021; Tabares, Londoño-Pineda, Cano, & Gómez-Montoya, 2022; Warsanga & Shadrack, 2020).

Women entrepreneur identified as an individual who creates business idea, evaluates the best opportunity, producing innovative business ideas, combines the factors of production, considers the possible risks and takes these risks, aims to earn profit, creates emotional difference and transforms this difference into creative design in products and services. According to Makurumidze and Mpofu (2021) and Swid, Rukobo, and Maro (2023), women entrepreneurship consists of a business that is owned and run by a women, has a minimum financial stake of 51% of the capital, and provides at least 51% of the jobs created in the business to women. Abu Bakar and Ahmad (2016) perceived female entrepreneur is a person who accepts thought-provoking role to meet her own needs and come to be economically independent. In present day women entrepreneurs are recognized as an instrument for economic development and wealth of a country as their businesses became important for creating employment for women across the globe (Valdez-Bocanegra, Maldonado-Guzmán, & Castrejón-Mata, 2020). Thus, female entrepreneurs are defined as the females who initiate, establish and run a corporate initiative.

Romeu Gordo, Stypińska, and Franke (2022), Byrne, Fattoum, and Diaz Garcia (2019) and Hisrich and Fülöp (1997) agreed that women entrepreneurs are capable of contributing value both to the families and to the society, given their strong desire of doing positive things. Women entrepreneurs contribute greatly to the emerging economies' development agenda by engaging in productive activity, for instance, adding value by processing food products. In the process of searching for a dependable market, women entrepreneurs tend to walk with their products looking for customers, especially in highly congested areas like bus stands, marketplace, and in public gatherings due to the small size market (Kapinga & Montero, 2017). Women entrepreneurs are striving to create products by dedicating the indispensable time and resources

in order to earn profits and improve their household well-being. Women in the entrepreneurship domain use the opportunities and resources available in their surroundings to process different food products with the aim of improving income to support their families. Coming closer to the construct of the research, many definitions have been alluded and there is no single agreed definition as far as women entrepreneurship is concerned. When attempting to characterise women's entrepreneurship, some scholars contend that while entrepreneurship itself is constant, the reasons and difficulties that impact its practitioners vary (Shaikh, Tunio, & Qureshi, 2021).

Women's entrepreneurship is an intellectual action, not developed against men's entrepreneurship, but an idea designed to promote entrepreneurship. The reason why this entrepreneurship is called women's entrepreneurship is that women have emotional motivation, their world views and their creativity are different vis-à-vis men. Creative design ideas about implementation reveal the entrepreneurial spirit of women in the process of the evaluation of opportunities. The woman accomplishes her ideas by enriching her own essence with her emotions and considering the details. According to women, mission and vision are not concepts with definite limits. The aim and the target are considered by the woman as a whole. Visually, presentation, quality and benefit are important for women. Although the main purpose is income, women also take into consideration other objectives. Owing to the biological and physiological structure of the woman, emotional, maternity, family and values are always at the forefront. Therefore, women do not ignore these factors in production, marketing, design and offering service. The service does not end with the service delivery according to the woman. The sustainability of the service after offering and maintaining relations are important issues in women entrepreneurship.

Woman entrepreneurship can be well-defined as a self-possessed, inventive, and inventive women skilled of attaining economic freedom independently or in co-operation, creates work opportunities for others through originating and operating a business by keeping pace with their family, social and personal life (Warsanga & Shadrack, 2020). Koroye (2023) viewed female entrepreneurship as the business headed by a female and takes the inventiveness of initiation a novel project. In 2006, the government of India described female entrepreneurship as founded on justness and occupation of an industry initiative (Gupta, 2019).

Accordingly, the Government of India (GOI 2006) describes a woman entrepreneurship as an initiative owned and organised by a woman having financial interest of at least 51 percent of

the capital and giving 51 percent to woman (Gupta, 2019; Kaviarasu, HendryRuban, & Francis, 2018). Women entrepreneurship is regarded as an emancipatory act of revolution formation (Jennings, Larson, & Yun, 2016). Geetha and Rajani (2021) defined female entrepreneurship as a process of boosting an idea into business venture and corporate possession that allow females economically by increasing their economic rights and position in society. Hundera, Duysters, Naudé, and Dijkhuizen (2019) suggested that women entrepreneurship comprises of identifying opportunity, gather resource adequate to start and grow an entrepreneurial venture. Women entrepreneurship is clearly regarded as the study of sources of opportunities, opportunity identification and utilization, and concerns for the economy (Meunier, Krylova, & Ramalho, 2017). From the above definition, women entrepreneurship can be viewed as any economic activity being done by a woman to earn a living (Miah, Khan, Misto, & Karim, 2018). This study views women entrepreneurship as an economic activity where female or groups of females are involved in handling all the business events.

2.2.3 Women entrepreneurship performance

The development of women business as an entrepreneurial endeavour is very closely related to the performance of entrepreneurs. Women entrepreneurs as managers run business organizations by implementing production management, resource capacity, financial governance, with the courage to take opportunities and risks, and marketing. The ability to achieve business targets based on potential and resource ownership becomes a challenge for every entrepreneur's performance. Performance is usually evaluated based on the accomplishment of a task and measured against preset known standards of factors such as accuracy, completeness, cost, or speed. Concepts for measuring companies' performances are diverse, as there are several ways to think about corporations themselves, and each has different implications for performance assessments.

Alim et al. (2023) stated that entrepreneurial performance is the ability to achieve established entrepreneurial goals. Further conveying that performance as an ability utilizes the available business opportunities to increase the effort. Performance is related to achieving work based on business targets by leveraging available opportunities. These conditions contain measurable risks that an entrepreneur should analyze and anticipate. Several factors are determined in preparing for entrepreneurship. Entrepreneurial attitudes and intentions can be explained by several factors such as need for achievement, risk perception, and locus of control (Wardana et al., 2020).

Sariwulan, Suparno, Disman, Ahman, and Suwatno (2020) state that the four dimensions in an organization's performance are financial perspectives, customer perspective, business process perspectives, and "learn and grow" perspectives. Based on this view, performance is very closely related to business development targets to be able to grow and take advantage of opportunities and conditions both financial, customer, and production capacity. In entrepreneurship with an women business focus, the improvement in the performance of entrepreneurs is seen from the increasing production capacity and the achievement of the number of sales in generating total production and the total profit that can be achieved.

The performance of women entrepreneurs is also related to the efficient and effective management of resources. This will be very influential in achieving business results with proper management of production capacity. Kisubi, Aruo, Wakibi, Mukyala, and Ssenyange (2022) entrepreneurial performance is measured by return on investment, market share, profitability, and sales growth. This indicates that the performance is very close to the achievement and improvement of business in production, sales, and profit.

The performance requires objectivity to make the decision for specifications or goals (Ravelomanantsoa, Ducq, & Vallespir, 2019). Entrepreneurial performance is the individual's ability to be effective in many careers (e.g., Medication, Store, Suppliers, Marketing, etc.) help to achieve better outcomes in negotiations (Sharma, Bottom, & Elfenbein, 2013; Wojciechowski, 2013), to obtain company success. Entrepreneurial performance is to promote primary company concepts, developing new products, identifying market opportunities, make a modern environment, building healthy investor relationships, and also ready to react upon amazing market patterns (Vaitoonkiat & Charoensukmongkol, 2020). Entrepreneurial performance refers the act of performing or execution or accomplishment of work or entrepreneurial success/failure or entrepreneurial outcome (Subedi, 2021). It is also concerned with accomplishment of entrepreneurial goals by exploiting designed mechanism and available resources. Entrepreneurial performance is defined as 'the achieving of set entrepreneurial goals' (Sebikari, 2019); entrepreneurial performance utilizes the available opportunities to grow the business, (Subedi, 2021). Performance is a yardstick by which the founder measures success (Pepple & Enuoh, 2020; Reshma & Sripirabaa, 2019). The entrepreneurial performance construct has been used interchangeably to identify new venture survival, growth and success of business organization in entrepreneurship domain.

The characteristic, entrepreneurial performance, underlies the individual's learning ability to continue as an entrepreneur (Zhao & Wibowo, 2021). In the study by Cai, Guo, Fei, and Liu (2017), almost all unsuccessful entrepreneurs will eventually learn from their failures, even though some successful entrepreneurs may decide to stop running their own company. As a result, entrepreneurs who have a strong learning initiative for personality and skill traits produce entrepreneurial performance.

Organisation performance can be conceptualised as the ability of organisations to fulfil their aims and goals side by side to their key competitors effectively Aasi and Rusu (2017), also as the value outcomes from meeting intended determinants. Since the performance measurement should be performed for different classes (dimensions) of organisation performance, those performance outcomes could involve financial and non-financial measures (Nwankpa & Roumani, 2016).

Women entrepreneurs tend to look outward with self-monitoring and self-management, collaborate with and learn about the world at large, and fully comprehend the learning opportunities that present themselves in order to be as prepared as possible for entrepreneurial performance. Female businesses can learn valuable lessons and managerial knowledge that they obtain from outcomes, such as the performance to employ technology, to support unconventional strategies, to strive for strategic innovation, and to develop a heightened sense of competition (Ayar Şentürk & Özkan, 2023; Heracleous & Johnston, 2009). Entrepreneurial performance makes entrepreneurial knowledge and experience possible to recognize the measures needed to develop the business and networks provide access to information and resources reducing the disadvantages of novelty and lack of size (Harms & Schwery, 2020; Kirschenhofer & Lechner, 2012).

Based on the above review of the performance, women entrepreneurship performance is the ability to manage their resources according to the objective stipulated. In this study, the performance of women entrepreneurs was measured by the ability to increase production, business unit development, increase in the volume of sales, and business profits.

2.2.4 Digitalisation

Given that digitalisation is a complex phenomenon, definitions still deviate. It is of paramount importance to break down the concept in order to understand the term digitalisation as it is interchangeably named by various authors as digitisation, or digital transformation. Verhoef et

al. (2021) and Parker (2017) have taken a flow-oriented perspective in differentiating digitalisation, digitalisation, and the digital transformation. There are several definitions of “digital” (Abdurakhmonov, Snider, Ridge, & Hasija, 2023; Klimsch & Puapradit, 2023) but the study utilise a definition developed by McKinsey which states that digital is less about any one process and more about how companies run their business (Abdurakhmonov et al., 2023). McKinsey’s definition of “digital” can be broken down into three primary focal points which are: i) creating value at the new frontiers of the business world; ii) optimizing the processes that directly affect the customer experience and iii) building foundational capabilities that support the entire overall business initiative (Schallmo & Williams, 2018). In this context, the author freely use the terms; digitalisation, digitisation and digital transformation.

Digitalisation is transforming nations society in several ways, bringing several new opportunities and challenges for firms operating in this dynamic setting (Elg, Birch-Jensen, Gremyr, Martin, & Melin, 2021). Digitisation is commonly driven by technologies that focus on enhancing efficiency by automating existing processes. Digitisation is the process of converting physical or analogue information into digital formats for processing, storage, and transmission by computers (Lichy, Farquhar, & Kachour, 2021; Loebbecke & Picot, 2015). In the same vein Hagberg et al., (2016) defined digitalisation as the “integration of digital technologies into everyday life by the digitisation of everything that can be digitized”. Verhoef et al. (2021) based on Hsu (2007) defined digitisation as “the increasing use of digital technologies for connecting people, systems, companies, products and services”. As such, digitalisation has been characterised as a disruptive change that tests industries, their accepted logics and even individual businesses (Hänninen, Smedlund, & Mitronen, 2018; Verhoef et al., 2021).

As this transformation is pervasive, it encompasses changes ranging from individual work tasks to new business models, new forms of relationships, the digitisation of existing practices, and novel technical solutions that provide better customer value. Digitalisation is far from a futuristic prediction but is rather part of today’s changing landscape for firms (Elg et al., 2021). Jovanović (2020) viewed digitalisation as “the adoption or increase in use of digital or computer digital technology by an organization, industry, country, etc.” Digitalisation according to Barnewold and Lottermoser (2020) refers to the use of computerised or digital devices or systems and digitised data that are to reduce costs and improve business productivity. Digitalisation describes how the use of information and communications digital

technology alters an organization's business model, including creating new or improved ways of delivering services, communicating, and improving the quality of offerings (Kraus et al., 2021; Ramaswamy & Ozcan, 2016). Such a change often involves new sociotechnical structures with digital artefacts that would be impossible without information digital technology as a critical enabler (Dougherty & Dunne, 2012). Last, the digitalisation is the most pervasive phase, one that leads to the emergence of entirely new business models based on radically novel logics to create and capture value (Mancha & Shankaranarayanan, 2021).

Baiyere, Grover, Lyytinen, Woerner, and Gupta (2023) posits that there being digitized entails moving from analogue to digital data for streamlining existing processes such as building an operational backbone or introducing ERP-systems through a standardized process where the end state is known. In line with Kreiss and McGregor (2018) "digitisation" is used to describe the transformation from analogue to digital data: "the technical process of converting streams of analogue information into digital bits of 1s and 0s with discrete and discontinuous values". Digitisation is the increased availability of digital data enabled by advances in creating, transferring, storing, and analysing digital data, has the potential to "structure, shape, and influence the contemporary world" (Brenner & Hartl, 2021). Chartered Institute of Procurement and Supply (CIPS, 2025) defined digitalisation is the practice of redefining operations and activities by using technology to build an efficient business environment, where gains are maximised, and costs and risks are minimised.

2.2.5 Entrepreneurship digitalisation

In line with Hull, Hung, Hair, Perotti, and DeMartino (2007), "entrepreneurship digitalisation is a subcategory of entrepreneurship in which some or all of what would be physical in a traditional organization has been digitised" and thereby can be seen "as the reconciliation of traditional entrepreneurship with the new way of creating and doing business in the digital era" (Le Dinh, Vu, & Ayayi, 2018). Kraus, Palmer, Kailer, Kallinger, and Spitzer (2019) highlight the broad range of business models predestined for digital entrepreneurship as "products, distribution, the workplace – any of these and more could take digital form in an entrepreneurial venture". In addition, Giones and Brem (2017) add a more digital technology centred view by listing "New products and services based on the internet. Services running only in the cloud; using big data or artificial intelligence" as potential types of entrepreneurship digitalisation and understand "Digital technology as an input factor". Entrepreneurship digitalisation is broadly defined as creating new ventures and transforming existing businesses by developing novel

digital technologies and/or novel usage of such technologies, (Elia, Margherita, & Passiante, 2020; Nedumaran, Saroja, & Scholar, 2020). Elia et al. (2020) and Nugent and Rhinard (2015) stated that entrepreneurship digitalisation embraces all new ventures and the transformation of existing businesses that drive economic and/or social value by creating and using novel digital technologies. The foundation of entrepreneurship digitalisation can be recognized in concepts such as Internet-driven business models and Internetworked Businesses (Safronchuk & Sergeeva, 2021), Extended or Virtual Enterprises (Thorius, Lindo, Martínez-Álvarez, & Sullivan, 2024), and Business Webs (Elia et al., 2020). All these concepts have in common the goal to use digital technology to create open innovation communities (West & Sims, 2017) and networks able to generate value and benefits over those of a single firm or market transaction (Möller, Nenonen, & Storbacka, 2020). According to Ballı (2020) and Miglo (2022), digital entrepreneurs face a lot of differences compared to traditional entrepreneurs.

According to West and Sims (2017), digital entrepreneurship is the creation and pursuit of business possibilities via the use of technical platforms and other information communication tools. Entrepreneurship digitalisation can therefore be classified under a variety of business categories (Antonizzi & Smuts, 2020; Richter et al., 2017). These categories such as marketing, sales, products, distribution, stakeholder management, and operations will develop along with digital technology, and new categories may emerge as well (Aasi & Rusu, 2017). Digital entrepreneurs rely upon the characteristics of digital media and IT to pursue opportunities. In doing so, they exacerbate changes in the competitive landscape, as they attempt to seize the opportunities and thereby potentially further the creative destruction process of the digital economy.

Sussan and Acs (2017) expand this view of entrepreneurship digitalisation by considering the user dimension: However, the study views digital entrepreneurs here as Kirznarian entrepreneurship that operate within the confines of existing platforms. Entrepreneurship digitalisation comprises “the sale of digital products or services across electronic networks” (Kraus et al., 2019; Shamsrizi, Pakura, Wiechers, Pakura, & Dauster, 2021). Besides different definitions of the phenomenon of digital entrepreneurship, the terminology of entrepreneurship digitalisation is not used throughout all articles in the same way. It is substituted by digital venture, digital innovation, digital enterprise or digital business. Accordingly, in this literature review the same terminology, which was used in the corresponding articles, was used.

Entrepreneurship digitalisation can be divided into three types (Rosin, Forget, Lamouri, & Pellerin, 2020). The first, mild entrepreneurship digitalisation, involves venturing into the digital economy as a supplement to more traditional venues. The second, moderate entrepreneurship digitalisation, requires a significant focus on digital products, digital delivery, or other digital components of the business. Moderate entrepreneurship digitalisation could not exist without the digital infrastructure. The third, extreme digital entrepreneurship, means the entire venture is digital, including production, the goods or services themselves, advertising, distribution, and the customers. Selling digital products and services, transforming existing digital goods, possibly even conducting transactions in digital currency these are the companies on the digital edge. And for these ventures, entrepreneurship is a very different proposition from that faced by their more traditional counterparts. The distinctions between traditional and digital entrepreneurship, and those among the three types of digital entrepreneurship, can be seen in the context of ease of entry, ease of manufacturing and storing, ease of distribution in the digital marketplace, digital workplace, digital goods, digital service, and digital commitment.

For entrepreneurs to digitalise they need to have willingness to digitalise, experience of the past, voluntariness in adopting digital technology, perceived usefulness as well as perceived ease of use. Once these variables are present in most cases people are willing to adopt technological change:

Voluntariness to digitalise: Voluntariness is related to a decision maker's calculations of advantage and disadvantage, cost and benefit, considered on both conscious and unconscious levels. It is through willingness that decision makers recognize opportunities and then translate those opportunities into alternatives that are weighed in some manner (Starr, Siverson, & Starr, 2021).

Voluntariness to digitalise is influencing technology's behavioural intention which is a psychological condition that appears as a consequence of both positive thoughts and a barrier that controls users' intention to use technology the customer's mental readiness to accept new technologies, has been proposed as such a factor. Voluntariness to digitalise includes four dimensions which are innovativeness, optimism, discomfort and insecurity (Kaushik & Agrawal, 2021). Readiness is related to the level of threat and the feeling of insecurity. In fact, studies have shown that users feel vulnerable when using technology putting more emphasis on offline tools as a safe and more convenient environment. The cause behind the low openness

to using technology is related to security and privacy reasons which may lead to users' abundance (Almaiah et al., 2022).

Voluntariness to digitalise has remarkably been considered a crucial factor that can either foster or hinder the adoption of technology. This stems from the fact that willingness to digitalise has a significant impact on people's propensity to use new technology for the sake of fulfilling their goals. Being a state of mind, willingness to digitalise may result from mental users and inhibitors that can collectively estimate users' predisposition to use new technologies (Troisi, Fenza, Grimaldi, & Loia, 2022).

Experience of the past: Experience of the past is any event, situation, or occurrence that has happened in an individual's life prior to the present moment. Experience is explained as direct and hands-on involvement with the system (Lim, Kim, & Maglio, 2018; Venkatesh, 2000). From the technological aspect, experience can enhance the accuracy of information search and the ability to revisit the information and repeated behaviours (Tavitiyaman, Zhang, & Tsang, 2022). Technology adoption is influenced and shaped by previous experiences. Inexperienced users feel stressed out during their first exposure to digital technology. Familiarity with and enjoyment of digital technology usage among tourists increases with their experiences (Jung, Kim, Cho, Lee, & Choi, 2021).

Prior experience has been found to be an important determinant of behavior (Baldick & Jang, 2020). It has been suggested that knowledge gained from past behavior will help to shape intention (Miralles, Giones, & Riverola, 2016), in part because experience makes knowledge more accessible in memory (Higgins, Kuiper, & Olson, 2022), and also because past experience may make low probability events more salient, ensuring that they are accounted for in the formation of intentions (Laukkanen, 2022). This implies that digital technology usage may be more effectively modeled for experienced users. Given this, it is important to assess the utility of models such as the augmented TAM for understanding the behavior of inexperienced users. More importantly, there may be differences between experienced and inexperienced users in the relative influence of the various determinants of digital technology usage. Such differences may suggest alternative ways to effectively manage the development and implementation of new systems.

Perceived usefulness: The degree to which an individual feels that utilising a specific digital technology would improve his or her performance at work is known as perceived usefulness

(Chandra, Shirish, & Srivastava, 2020; Davis, 1989). This follows from the definition of the word useful: "capable of being used advantageously." This is when the prospective users personally believe that using a specific application system will increase his or her job performance within an organizational context. Perceived usefulness of digital technology is based on certain beliefs, a person forms an attitude about a certain object, on the basis of which he or she forms an intention to behave with respect to that object (Acharya, Sassenberg, & Soar, 2022). In other words, perceived usefulness belief is when women entrepreneurs believe that the use of business digital technology would yield positive benefits for task performance. Within an organizational context, the ability of a business to implement a strategy to achieve organizational objectives and overall goals as a business, information on past revenue and expected future revenue, profit margins, expenses, market share, and the specific KPIs you choose to measure (Al-Dhaafri & Alosani, 2021). A system high in perceived usefulness, in turn, is one for which a user believes in the existence of a positive use-performance relationship. In fact, digital adoption research suggests that "a system that does not help people perform their jobs is not likely to be received favourably" (Tetteh, Agyei, & Ashong, 2018).

Perceived ease of use: refers to "the degree to which a person believes that using a particular system would be free of effort." The ease of use refers to the individual's perception that using a certain system is effortless or simply easy to do (Lai, 2017; Taylor & Todd, 1995). This follows from the definition of "ease": "freedom from difficulty or great effort." Effort is a finite resource that a person may allocate to the various activities for which he or she is responsible (Wickens, 2020). All else being equal, the study claim, an application perceived to be easier to use than another is more likely to be accepted by users. Because of this, it is regarded as one of the characteristics that has the biggest influence on whether a new digital technology is accepted (Park et al., 2022). According to Han and Conti (2020), because of its instrumentality and self-efficacy, simplicity of use has a dual effect on attitude. On the one hand, one of the primary drivers of intrinsic motivations, motivations that stimulate environmental-focused activities is efficacy. However, as demonstrated by the TAM, enhancements in usability can also be crucial, leading to improved performance through utility (Kishore, 2016; Shanmugam, Savarimuthu, & Wen, 2014). Particularly in the Vijayasathy (2004) defines it as the extent to which individuals believe that using digital technology would be free of effort. The researcher defined it as the women entrepreneur's perception on perceiving digital technology as easy and effortless when using it in their businesses.

Perceived ease of usefulness is the “degree to which a person believes that using a particular system would be free of effort” (Gumbo, Halimani, & Diza, 2017). The easier it is for a user to interact with a system, the more likely he or she will find it useful (Chan, Thong, Brown, & Venkatesh, 2025). Thus digital technology need to be both easy to learn and easy to use for women entrepreneurs to adopt and digitalise their businesses.

2.2.6 Digital transformation

The term digital transformation was adopted from the private sector and is mostly associated with the need to use new technologies to stay competitive in the internet age, where services and products are delivered both online and offline (Mohsen & Magdi, 2022). The focus of this digitisation is anything and everything that intersects business workflows and personal streams of life and this process of digitisation is often referred to as digital transformation, and it is profoundly changing the shape of business today, impacting companies in every industry and consumers around the world (Alexopoulos, Pihir, & Furjan, 2022). Digital transformation is about adopting disruptive technologies to increase productivity, value creation, and the social welfare such as social media, mobile digital technology, analytics, or embedded devices to enable major business improvements including enhanced customer experiences, streamlined operations, or new business models (Meyers, Vagner, Janoskova, Grecu, & Grecu, 2019). Ahmad and Mustafa (2022) defined digital transformation as the use of digital technology to radically improve the performance or reach of enterprises.

Digital transformation is the combined effects of several digital innovations bringing about novel actors (and actor constellations), structures, practices, values, and beliefs that change, threaten, replace, or complement existing rules of the game within organizations, ecosystems, industries, or fields (Al-Ayed, Al-Tit, & Alashjaee, 2023). Kraus et al. (2021) and Anthony Jnr (2021) are of the view that digital transformation is a consistent networking of all economic sectors and an adaption of actors to new circumstances of the digital economy. Liu, Zhang, Jasimuddin, and Babai (2024) also assert that digital transformation is an organizational transformation that integrates digital technologies and business processes in a digital economy. Muehlburger, Rueckel, and Koch (2019) define digital transformation based on Matt, Hess, and Benlian (2015) as a process of significant changes within a company’s value creation chain or a company’s internal structure that are either triggered by or are a precondition for the usage of digital technology. Digital transformation according to Morakanyane, Grace, and O’reilly (2017) is the introduction of information and digital technologies. A new type of transformation

is presented by the usage of information and communication technologies and the emergence of new digital technologies, as well as by the adoption and use (intentional or not) of these technologies. While some researchers associate digital transformation with business models and strategy, others view digital transformation as a paradigm or as a process (Berman, 2012; Korachi & Bounabat, 2020). Zaoui and Souissi (2020) define it as a new development model that calls for redefining relationships between companies, their stakeholders, and clients and reviewing previous approaches to offering services and products, as companies undergo multidimensional transformation.

In a broader sense, digital transformation is presented as the integration of digital technologies and business processes in a digital economy (Liu et al., 2024). Arribas and Alfaro (2018) digital transformation comprises not only the use of new technologies (e.g. advanced analytics, machine learning, artificial intelligence applications, the Internet of Things), but also the changes of the key business elements, including strategy, business model, business processes, organizational structures and organizational culture. Rydning, Reinsel, and Gantz (2018) contracted that digital transformation is not about the evolution of devices (though they will evolve), it is about the integration of intelligent data into everything that women do. More accurate recognition under the influence of digital transformations implies three entrepreneurial aspects: from the outside, with the improvement of the client's experience and the change of his entire life cycle; on the inside, the impact on business objectives, basic leadership and hierarchical structures; and in general, when all business sections and opportunities are influenced, usually leading to completely new business models (Hanelt, Bohnsack, Marz, & Antunes Marante, 2021; Hess, Benlian, Matt, & Wiesböck, 2016).

2.3 Theoretical framework

This section offers particular theoretical review of the classification and concept of women entrepreneurship and digitalisation. Various theoretical models have been established to study the behavioural intentions to adopt technologies. Such models are the Theory of Reasoned Action (Nickerson, 2023), the Theory of Planned Behaviour (Ajzen, 2020), the Technology Acceptance Model (Davis, 1989), the Combined-TAM-TPB model (Taylor & Todd, 1995), the Motivational Model (Davis, Bagozzi, & Warshaw, 1992), the Innovation Diffusion Theory (Miller, 2015), Model of PC Utilization (Thompson, Higgins, & Howell, 1991), Social Cognitive Theory (Bandura, 1986). Venkatesh, Morris, Davis, and Davis (2003) combined these 8 models to form Unified Theory of Adoption and Use of Technology to study the

behavioural intention to use digital technology (Liebenberg, Benade, & Ellis, 2018). It has been observed that Technology Acceptance Model (TAM) and Unified Theory of Adoption and Use of Technology (UTAUT) are being widely used by the researchers to study the behavioural aspect in using digital technology. Unified Theory of Acceptance and Use of Technology (UTAUT) and Technology Acceptance Model (TAM 2) were adopted to inform the current study.

2.3.1 Digitalisation theories

2.3.1.1 Unified Theory of Acceptance and Use of Technology (UTAUT)

Figure 2.1 showing Unified Theory of Acceptance and Use of Technology (UTAUT). UTAUT is one of the theories guiding the study.

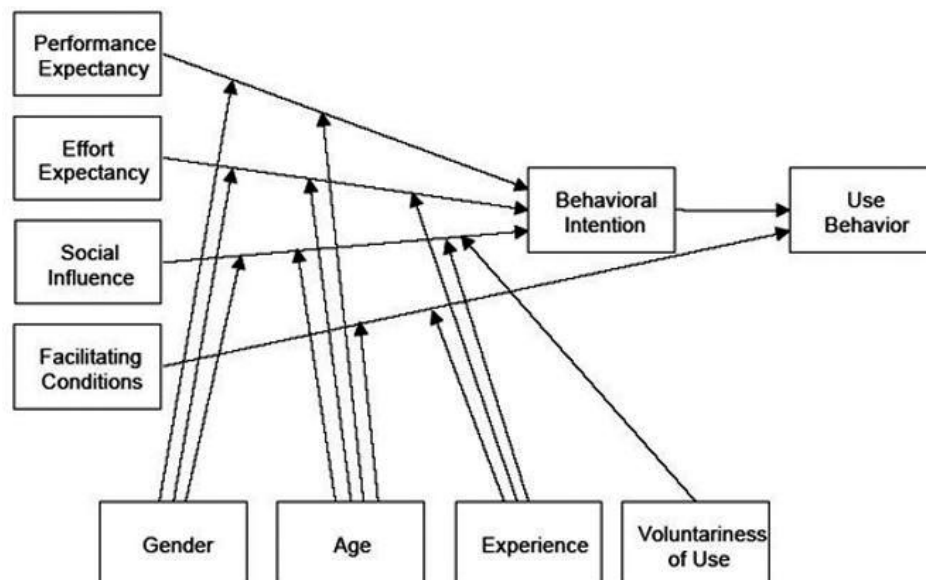


Figure2.1: Unified Theory of Acceptance and Use of Technology

Source: Venkatesh et al. (2003)

Venkatesh et al. (2003) studied from the previous models/theories and formed Unified Theory of Acceptance and Use of Technology (UTAUT). The UTAUT has four predictors of users' behavioural intention and these are performance expectancy, effort expectancy, social influence and facilitating conditions. The five similar constructs including perceived usefulness, extrinsic motivation, job-fit, relative advantage and outcome expectations form the performance expectancy in the UTAUT model while effort expectancy captures the notions of

perceived ease of use and complexity. As for the social context, Venkatesh et al. (2003) validation tests found that social influence was not significant in voluntary contexts.

2.3.1.2 Technology Acceptance Model (TAM 2)

The Technology Acceptance Model was proposed in the 1980s based on social psychology theory by studying the relationship between cognitive, emotional factors, and digital technology application. The model is widely used in the fields of information digital technology. The working principle is studying the influence of digital technology use on the belief, attitude, and intention of users based on external observation variables. TAM is composed of four basic elements: (1) user behaviour that is the actual operation behaviour of the users to the new digital technology; (2) behavioural intention refers to the willingness of users to try new technologies; (3) perceived usefulness is the subjective understanding of users for the utility of the newly adopted digital technology; and (4) perceived ease of use is the degree of effort that the digital technology users make use of new technologies (Wulandari & Dasman, 2023).

The Technology Acceptance Model (TAM) is an information systems theory that models how users come to accept and use a digital technology. The actual system use is the end-point where people use the digital technology. Behavioural intention is a factor that leads people to use the digital technology. The behavioural intention (BI) is influenced by the attitude (A) which is the general impression of the digital technology.

Venkatesh and Bala (2008) combined TAM2 (Venkatesh & Davis, 1996), and the model of the determinants of perceived ease of use (Venkatesh, 2000), and developed an integrated model of digital technology acceptance known as TAM3. The authors developed the TAM3 using the four different types including the individual differences, system characteristics, social influence, and facilitating conditions which are determinants of perceived usefulness and perceived ease of use. In TAM3 research model, the perceived ease of use to perceived usefulness, computer anxiety to perceived ease of use and perceived ease of use to behavioural intention were moderated by experiences. The TAM3 research model was tested in real-world settings of IT implementations.

The model suggests that when users are presented with a new digital technology, a number of factors influence their decision about how and when they will use it, notably:

- Perceived usefulness (PU): This was defined by Fred Davis as "the degree to which a person believes that using a particular system would enhance their job performance". It means whether or not someone perceives that digital technology to be useful for what they want to do.
- Perceived ease-of-use (PEOU): Davis defined this as "the degree to which a person believes that using a particular system would be free from effort" (Davis 1989). If the digital technology is easy to use, then the barriers in digitalisation are conquered. If it's not easy to use and the interface is complicated, no one has a positive attitude towards it.
- External variables such as social influence is an important factor to determine the attitude. When these things (TAM) are in place, people will have the attitude and intention to use the digital technology. However, the perception may change depending on age and gender because everyone is different.

The TAM has been continuously studied and expanded the two major upgrades being the TAM 2 (Venkatesh & Morris, 2000) and the Unified Theory of Acceptance and Use of Technology (UTAUT), (Venkatesh & Bala, 2008; Venkatesh, Thong, Chan, Hu, & Brown, 2011). A TAM 3 has also been proposed in the context of e-commerce with an inclusion of the effects of trust and perceived risk on system use (Venkatesh & Bala, 2008).

Kang, Choi, and Kim (2021) found that new technologies such as personal computers are complex and an element of uncertainty exists in the minds of decision makers with respect to the successful adoption of them, people form attitudes and intentions toward trying to learn to use the new digital technology prior to initiating efforts directed at using. Attitudes towards usage and intentions to use may be ill-formed or lacking in conviction or else may occur only after preliminary strivings to learn to use the digital technology evolve. Thus, actual usage may not be a direct or immediate consequence of such attitudes and intentions. (Oye, A. Iahad, & Ab. Rahim, 2014).

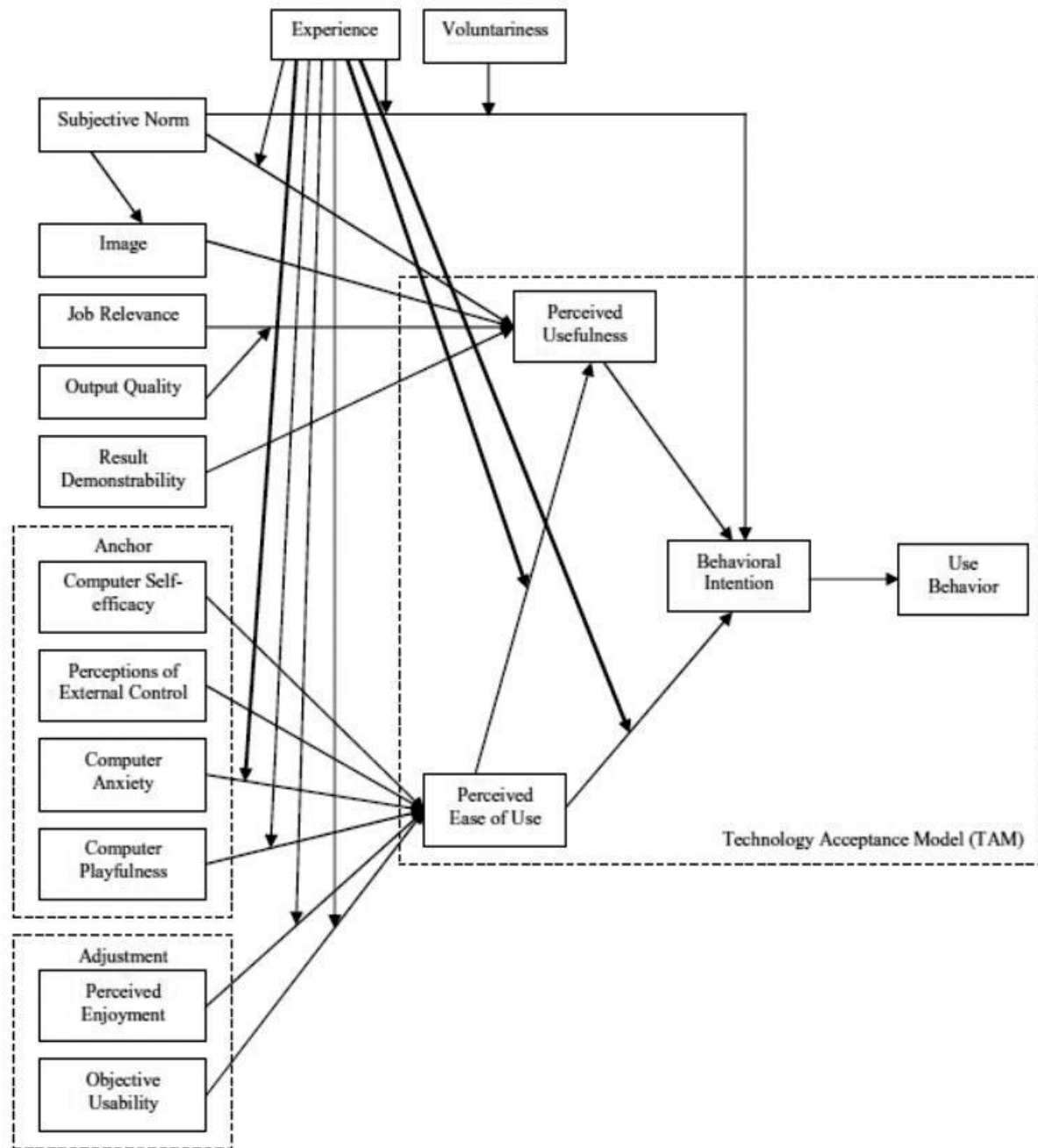


Figure 2.2: Technology Acceptance Model (TAM 2)

Source: Venkatesh and Davis (2000)

2.3.1.3 Theoretical Framework Justification

This study is anchored in the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model 2 (TAM 2), which collectively provide a robust foundation for understanding the factors influencing the adoption and effective use of digital technologies among women entrepreneurs in Zimbabwe. The exploration of these frameworks

will illuminate the unique challenges and opportunities faced by women entrepreneurs in this context, enabling a nuanced understanding of how digital tools can enhance their business operations and overall success. By analysing the interplay of personal, social, and organisational influences, this study aims to identify strategies that can facilitate greater technology adoption among this demographic. This will not only empower women entrepreneurs but also contribute to the broader economic growth of Zimbabwe. Ultimately, the findings of this study could serve as a blueprint for policymakers and support organisations to create targeted initiatives that foster an inclusive digital ecosystem.

The Technology Acceptance Model 2 (TAM 2) introduces two key constructs perceived usefulness and perceived ease of use, which directly inform the first and second research objectives: Objective 1: To determine the role played by perceived usefulness of digital technology in influencing women's entrepreneurial performance and Objective 2: To establish the role played by perceived ease of use of digital technology in influencing women's entrepreneurial performance. These constructs help explain how entrepreneurs form attitudes toward digital tools and how these perceptions ultimately impact business outcomes.

The UTAUT model contributes further depth by introducing constructs such as experience and voluntariness, which align with the third and fourth objectives: Objective 3: To determine the effect of prior experience with digital technology on women's entrepreneurial performance and objective 4: To ascertain whether voluntariness in the use of digital technology influences women's entrepreneurial performance. Understanding these dynamics is crucial for fostering an environment where women entrepreneurs can thrive in the digital landscape. By examining these factors, the government and its supporting structures can develop targeted strategies and support systems that enhance their performance and overall success in leveraging digital technologies.

UTAUT also accounts for moderating variables such as age and education level, which are central to: Objective 5: To test the moderating effect of age on the relationship between entrepreneurship digitalisation and women's entrepreneurial performance and Objective 6: To test the moderating effect of level of education on the relationship between entrepreneurship digitalisation and women's entrepreneurial performance. Understanding these moderating effects is crucial for developing tailored interventions that can effectively support women entrepreneurs in navigating the challenges of digitalisation. By examining how age and

education influence entrepreneurial performance, so as to identify specific needs and create resources that empower women to thrive in the digital economy.

2.4 The role played by perceived usefulness of digital technology in influencing women entrepreneurship performance

Prior studies in education research have examined the gender differences in perception of usefulness (closely correlated with and described herein as “perceived usefulness”) of computer technologies and found that male college students evaluated computers as more useful than female students (Afolayan, 2016; Leong, Ooi, Chong, & Lin, 2013). E-learners completed learning processes via electronic technologies including computers in e-learning are like students in schools, implying that men’s rating of perceived usefulness is higher than women’s. On the other hand, users are generally reinforced for good performance by raises, promotions, bonuses and other rewards within an organization. This implies that an e-learning system with a high level of perceived usefulness is one for which a user believes that there is a positive user-performance relationship. A significant body of prior research has shown that perceived usefulness has a positive effect on behavioural intention to use (Davis, 1989; Hess, McNab, & Basoglu, 2014; Rabaa'i, 2016). Additionally, Venkatesh (2000) indicated that men consider perceived usefulness to a greater extent than women in making their decisions considering usefulness or productivity-related factors of a new digital technology, and that men are more driven by instrumental factors than women as cited in (Alshurideh, Al Kurdi, Masa'deh, & Salloum, 2021).

Perceived usefulness determine the intention of users through their attitudes (Singh, Kediya, Band, & Shukla, 2023; Syarwani & Ermansyah, 2020). Furthermore, behavioural intention is influenced both by the attitudes of users and the usefulness of the digital technology. TAM regards the intention of users as the most direct manifestation of user behaviour. Furthermore, TAM points out that perceived usefulness is directly affected by perceived ease of use, that is, if the digital technology is easier to use, users can feel its usefulness (Burton, Zakaria, & Wang, 2023; Su & Li, 2021). In online education, the characteristics of online teaching system, teaching methods, teachers, and the difference between students are the factors that cause the understanding of the usefulness and simplicity of the digital technology, and then affect the attitude and intention of users toward information digital technology use, and ultimately, determine the actual use effect of online education (Mardhiyah, Futuwah, Hilmi, Rosidi, & Zain, 2023). In the same way, Rattanaburi and Vongurai (2021) observed that perceived

usefulness and ease of use explained a significant percentage of the variation in attitude toward using the mobile Internet, which in turn influenced actual usage.

Perceived usefulness is defined as “the potential consumer’s subjective belief that using a particular system would enhance his or her job performance in an organizational context” (Ariffin, Abd Rahman, Muhammad, & Zhang, 2021). On several occasions, perceived usefulness has also been seen as a perceived relative advantage; for this reason, Wani and Ali (2015) considers it as “the extent to which an innovation is perceived to be better than its predecessor”. In the online environment, perceived usefulness will show that the use of a given digital technology might be useful for someone to achieve a particular result. Camilleri and Falzon (2021) defines it as “the extent to which the consumer believes that the online purchase will offer him/her access to useful information, will make offer comparison easier and will speed up the purchasing process. For all of the above-mentioned reasons, ease of use and perceived usefulness are proposed as the two main factors that determine the acceptance and use of ICTs (Malatji, Eck, & Zuva, 2020). In the present case, the researcher suggest this will also be applicable to the use of a new payment tool. Therefore, given that the new payment tool is considered a new innovation within the existing payment systems, the usefulness it provides to the consumer will be closely related to its advantages.

The TAM theory suggests that both the ease to use and the usefulness of digital technology affect the behavioural intention, thereby affecting the final user experience. Some researchers point out that the attitude is the response obtained through learning and experience, and the ease to use of the digital technology and the understanding of usefulness can be strengthened through learning, thus changing the attitudes of users (Singh et al., 2023; Su & Li, 2021). Therefore, the psychological factors can transmit the influence of the external environment on the new digital technology, and external parameters do not directly affect the use intention and behaviour. The influence mainly comes from the inner understanding and attitudes of the user (Liu, Chiu, Chu, & Zheng, 2022; Sipayung & Wibawa, 2020; Sugeng, Prasetyo, & Zaman, 2020).

Perceived ease of use is the degree to which one believes that using the digital technology will be free of effort (Chan & Hu, 2023; Davis et al., 1989). TAM further suggests that perceived ease of use is instrumental in explaining the variance in perceived usefulness. Prior studies have validated TAM as a robust and parsimonious framework for understanding the user's adoption of digital technology in a variety of contexts including banking digital technology

(Chan & Hu, 2023; Ha & Stoel, 2009), m-commerce (Thangavel & Chandra, 2023), email (Jan, Alshare, & Lane, 2024), online games (Bhukya & Paul, 2023), desktop video conferencing (Al-Samarraie, 2019), telemedicine digital technology (Shen, Chen, Yue, & Xu, 2021) and so on. Since e-shopping is a retail format innovation and makes use of innovative digital technology systems, and e-shopping behaviour (e.g., browsing, transaction, etc.) is a type of consumer usage system, TAM provides a useful foundation for research investigating consumer acceptance of online shopping. Despite the robustness of TAM, research has shown inconsistent findings regarding the effect of ease of use on attitude. While some studies found positive and significant effects of ease of use on attitude (Li, Chung, & Fiore, 2017), others revealed insignificant relationships (Islam, Furuoka, & Idris, 2021). Researchers suggest belief factors such as usefulness, enjoyment, trust, and performance may influence one's attitude toward using a digital technology more strongly than by ease of use (Chetioui, Lebdaoui, & Chetioui, 2021).

According to the analysis, perceived usefulness are affected by individual differences, system characteristics, social influence, and convenience (Alzubi, 2023; Suharman & Supriadi, 2023), in which personality or demographic characteristics are individual differences, and they have a certain impact on the level of perceived usefulness and perceived ease of use (Adha, Hong, Agrawal, & Li, 2023; Allday, Spriggs, Jones, & Noel, 2023; Amiruddin, Nurdin, & Ali, 2021). Social impact refers to the degree of perception of an individual on the system under the guidance of social processes and mechanisms. Convenience refers to the support and helps for people to use the system.

To explicitly model the role of intrinsic motivation in usage of digital technology Abdullah and Ward (2016) introduce the concept of perceived enjoyment. Perceived enjoyment is defined as “the extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated” (Thapa, Bhandari, & Pathak, 2021). Perceived enjoyment is theorised to influence usage intention directly. To test the influence of enjoyment two studies were conducted, one involving the adoption of a word-processing program by 200 U.S. MBA students and another concerned with the adoption of a graphics program by 40 U.S. MBA students. The results confirmed the strong relationship between usefulness and user intention and a weaker relationship between enjoyment and intention. The influence of perceived ease-of-use was fully mediated through perceived usefulness and enjoyment. A few studies have been done in which the perceived enjoyment

concept is further developed. Marangunić and Granić (2015) studies found strong relationships between perceived usefulness and usage, but weak, insignificant links between enjoyment and usage. Similarly, Shiva, Singh, Sharma, and Sethi (2024) studied the effect of perceived fun/enjoyment using data from 471 respondents from a diverse range of U.S. based organisations. In this study, support was found for a positive relationship between perceived fun/enjoyment and system usage. Perceived complexity (the opposite of perceived ease-of-use) was negatively correlated with perceived enjoyment. Huang, Teo, and Scherer (2022) employed a web-based survey to investigate the impact of ease-of-use, usefulness, and enjoyment on Internet use. Their findings indicate that respondents use the Internet both through perceived usefulness and perceived enjoyment.

Motivation theorists have argued that behaviour (usage) is determined by both intrinsic and extrinsic motivation. Individuals adopt digital technology because its use is enjoyable and because they derive some benefits from its use. Khan, Hassan, Pravdina, and Akhtar (2023) has shown that perceived use-fullness affects behaviour and hence, usage of computers. A plausible reason is that individuals will use computers only if they perceive that such usage would help them to achieve the desired task performance. Hence, it is not surprising that previous research has found that perceived usefulness has a strong and consistent relationship with usage. In the context of the Internet, the study can postulate that perceived usefulness is positively related to Internet usage.

Previous TAM research demonstrates strong empirical support for a positive relationship between perceived ease-of-use and perceived usefulness. Similarly, perceived ease-of-use can be associated with perceived relative enjoyment: the easier the system is to use, the more enjoyable it is. Empirical research has also found support for this relationship in traditional settings (Hornbæk & Hertzum, 2017). Perceived relative enjoyment is related to the psychological concept of “flow” (Hyun, Thavisay, & Lee, 2022), which is described as an “intrinsically enjoyable experience”. Flow, which has also been studied in an Internet context (Becker & Jaakkola, 2020; Kannan, 2017) arises under a number of conditions. One of these is the instant feedback following a person’s stimuli. It is conceivable that a website that is easier to use provides better feedback to a visitor’s stimuli, and consequently, leads to increased enjoyment and flow.

In UTAUT, performance expectance is driven from perceived usefulness (TAM/TAM2), relative advantage (IDT), extrinsic motivates (MM), job-fit (MPCU), and outcome

expectations (SCT). In mobile banking studies, Sutcliffe, Vogus, and Dane (2016) empirically demonstrated that the greater the perceived relative advantage, the more likely mobile banking would be adopted. Similarly, Alalwan, Dwivedi, and Rana (2017) and Shaikh and Karjaluoto (2015) identified perceived usefulness as a crucial factor, while Samsudeen, Selvaratnam, and Hayathu Mohamed (2022) concluded that relative advantages significantly influence individual's intention to individuals to adopt mobile banking. Although focusing on the adoption of mobile digital technology instead of mobile banking, Babić Rosario, De Valck, and Sotgiu (2020) concluded that performance expectance significantly influenced people to adopt mobile technologies via 221 samples. Similarly, through using mobile data services instead of mobile banking services, Ngwenyama, Rowe, Klein, and Henriksen (2023) employed UTAUT as a research basis to survey 1320 respondents and illustrated that perceived usefulness significantly influenced people to use mobile services.

Research by Shakerinejad, Navak, Hatemzadeh, Haghi, and Haghigizadeh (2023) and Jahandideh, Balasi, Saberi, and Dadgaran (2016) revealed that men's perception of usefulness was the more significantly direct and more salient than women's in determining behavioural intention to use e-learning. This finding suggests that men tend to concentrate on the usefulness of a new digital technology, and that they appear to be fairly "pragmatic", considering productivity-related factors when using this new digital technology. This finding seems to be consistent with the results of recent studies and suggests that useful content is an important pragmatic factor attracting male users to use e-learning. Pedagogical principles, including principles of developing and packaging content, could be employed in the development and evaluation of e-learning content (David & Govindasamy, 2017).

Previous researchers Zaman, Bhatti, and Khurshid (2018), Butler Lamar, Samms-Brown, and Brown Iii (2016) and Abroud, Choong, Muthaiyah, and Fie (2015) agreed that perceived usefulness is an important indicator for digital technology acceptance. Perceived usefulness in some studies showed a direct effect on intentions to use over and above its influence via attitude (Dwivedi, Rana, Jeyaraj, Clement, & Williams, 2019) and, in others, revealed a much stronger impact over future IT/IS use than ease of use (Garg et al., 2021). Meanwhile, a few studies did not find any significant impact of perceived usefulness on predicted future use of IS (Harner-Morrill, 2023; Jenjob, 2022; Kang et al., 2021). Entering the 21st century, a number of researchers started to test the TAM model for adoption of the more complex information systems including intranet (Marangunić & Granić, 2015), desktop video conferencing in virtual

workgroups (Owens et al., 2020), academic use of Internet (Hsu & Lin, 2016) low-cost portable system for postural assessment (Blackwell et al., 2018; Kaye, Somoray, Rodwell, & Lewis, 2021). The empirical findings in those studies provide additional support to the initial TAM model as viable for predicting use of those telecommunication systems. Perceived usefulness was found to have a significant stronger effect over adoption than perceived ease of use. However, none of those studies examined this construct in the context of non-work related individual adoption of an innovation.

Within a high-tech context, engineers are generally reinforced for good performance by raises, promotions, bonuses and others. This implies that an e-learning system with a high level of perceived usefulness is one for which a user believes that there is a positive user performance relationship. There is also extensive research in the IS community providing evidences of the effect of perceived usefulness on behavioural intention to use (Venkatesh, 2000; Wang, Wang, Wang, Wei, & Wang, 2020). The ultimate reason that engineers exploit e-learning is that they find the system improves their performance.

According to results by Lin, Wang, Wang, and Lee (2021), perceived usefulness had an impact on both students' attitudes toward and intentions to use technology. However, perceived ease of use was found to be unrelated to attitude. Meanwhile, Alshurideh, Salloum, Al Kurdi, Monem, and Shaalan (2019) integrated TAM with flow theory, which emphasizes concentration in the structural model. They argued that university e-learning system users should be regarded as both system users and learners. In addition, Peng and Dutta (2023) adopted the e-learning presentation type as an external variable in the model. They concluded that e-learning presentation type and users' intention to use eLearning were related to one another, and concentration and perceived usefulness were considered intermediate variables. Kemp, Palmer, and Strelan (2019) added system and learner characteristics as external variables that were hypothesized to impact perceived usefulness, perceived ease of use, and use of an e-learning system. After conducting a structural equation modelling technique with LISREL, they concluded that system characteristics were important determinants of perceived usefulness, perceived ease of use, and use of an e-learning system, and that the theoretical model based on TAM was well supported. Sukendro et al. (2020) and Granić and Marangunić (2019) also insisted that university students' participation and involvement were important to successful e-learning systems, and therefore students' acceptance behaviour should be

assessed. They suggested that TAM was a solid theoretical model whose validity could extend to the multimedia and e-learning contexts.

The importance of perceived usefulness has been widely recognized in the field of electronic banking (Abdulkarim, 2021; Adewoye & Akinde, 2023; Jahangir & Begum, 2008). According to them usefulness is the subjective probability that using the digital technology would improve the way a user could complete a given task. Based on theories in social psychology, such as the theory of reasoned action (TRA) (Ajzen, 2020; Pryor, 2022; Sok, Borges, Schmidt, & Ajzen, 2021) and the theory of planned behaviour (TPB) (Memon, Azhar, Haque, & Bhutto, 2020), the Technology Acceptance Model (TAM) has been validated as a powerful and parsimonious framework (Sciarelli, Prisco, Gheith, & Muto, 2022; Zaineldeen, Hongbo, Koffi, & Hassan, 2020). According to the TAM, perceived usefulness is the degree to which a person believes that using a particular system would enhance his or her job performance. Caffaro, Cremasco, Roccato, and Cavallo (2020) perceived usefulness refers to consumers' perceptions regarding the outcome of the experience. Hung, Le Hoang, Do Thi Thu, and Hang (2022) defined perceived usefulness as the individual's perception that using the new digital technology will enhance or improve her/his performance. Similarly, Stavrianea and Kamenidou (2022) and Deng and Tang (2020) defined perceived usefulness as the extent to which a person deems a particular system to boost his or her job performance. Hurmelinna-Laukkanen, Nätti, and Pikkarainen (2021) applied TAM in Finland and they found perceived usefulness as a determinant of actual behaviour which encouraged the user of the twenty-first century banking to use more innovative and user-friendly self-service technologies that give them greater autonomy in performing banking transactions, in obtaining information on financial advices, and in purchasing other financial products. However, Tengeh and Gahapa Talom (2020) noted that the perceived usefulness depends on the banking services offered such as checking bank balances, applying for a loan, paying utility bills, transferring money abroad, and obtaining information on mutual funds. There are extensive evidences proving the significance of effect of perceived usefulness on adaptation intention (Abdulkarim, 2021; Ananda, Devesh, & Al Lawati, 2020; Chayanon, Srisorn, & Punluekdej, 2020; Jahangir & Begum, 2008). Venktaramana et al. (2022) suggested that the perceived usefulness is an important factor in determining adaptation of innovations. As a consequence, the greater the perceived usefulness of using electronic banking services, the more likely that electronic banking will be adopted (Alalwan, Dwivedi, Rana, & Algharabat, 2018; Baabdullah, Alalwan,

Rana, Kizgin, & Patil, 2019; Rahman, Ming, Baigh, & Sarker, 2023; Setiawan, Nugraha, Irawan, Nathan, & Zoltan, 2021; Zhang, Weng, & Zhu, 2018).

Perceived usefulness is regarded as the primary construct and has been used to predict a variety of aspects, including user intents, acceptability of word processing and spreadsheet systems, telecommuting technologies, online and wireless site usability, and continuous system use (Alkhaffaf et al., 2024). "The degree to which a person believes that using a particular system would enhance his or her job performance (Bansah & Darko Agyei, 2022). Teng, Wu, and Kuo (2024) validated the validity and reliability of perceived usefulness as a predictor of desire to utilise information technology.

Researchers have often employed perceived usefulness in the context of e-learning systems. For instance, Hussein, Daoud, Alrabaiah, and Badawi (2020) said that students' attitudes towards their course experience would improve and they would be more likely to take courses online in the future if they felt that the electronic medium was useful for delivering the courses. The idea was validated by the empirical investigation, which also showed that perceived usefulness had a favourable impact on student satisfaction. Chang, Liang, and Chiu (2020) examined perceived usefulness as an exogenous element in his study. On the other hand, some research used perceived usefulness as an internal variable. Teo, Zhou, Fan, and Huang (2019), for instance, investigated the factors that influence how beneficial e-learning platforms are considered. The empirical investigation discovered that the primary factors influencing perceived usefulness were tutor characteristics, course delivery, and enabling circumstances. In a similar vein, the TAM is supported by the findings of Mohammadi's (2015) study, which indicated that perceived usefulness was mostly determined by ease of use.

Examining the validity of this construct as a gauge of e-learning success is the focus of the alternative strategy to address perceived usefulness in the field of e-learning systems. For instance, Andembubtob, Keikhosrokiani, and Abdullah (2023) distinguished between two clusters of enterprise e-learning success elements: "Nice-to-Have" and "Must-Have" components. The 'Must-Have' group's first factor was perceived usefulness. Following this methodology, several studies Sungkono (2020), Peterkin (2022) and Ali, Hameed, Moin, and Khan (2023) looked at the function of this construct as a gauge of the success of e-learning systems. The findings of these studies demonstrated that perceived usefulness is a reliable metric for assessing e-learning effectiveness.

Perceived usefulness is defined by Krath, Schürmann, and Von Korflesch (2021) as the degree to which an information system can help users perform better when presenting a technology acceptance model. The degree to which the user feels the technology will improve their productivity at work is known as perceived usefulness (Kock, Moqbel, Barton, & Bartelt, 2018; Muhammad, Dey, Alwi, & Babu, 2020). Therefore, if someone is impressed with a certain system and discovers that their job performance has improved to some extent, this indicates that the system has a bigger potential for usefulness and will improve their attitude (Strzelecki, 2023). However, user happiness and perceived usefulness are closely correlated, according to (Wang & Chen, 2019).

Similar to this, perceived usefulness clearly identifies or pinpoints the aspects that influence actual use and the decision to continue using technology (Jarah & Iskandar 2019). Perceived usefulness is thought to be a major technical predictor (Raza et al., 2017). Raza et al. (2017) found that perceived ease of use has a substantial positive correlation with both perceived usefulness and attitude, in contrast to perceived usefulness, which has a strong link with attitude and intention to use mobile banking. Technology preparedness is positively connected is positively effected by perceived usefulness.

The TAM model asserts that perceived usefulness influences attitude and behavioural intentions in both direct and indirect ways, which explains the importance of perceived usefulness (Davis, 1989; Prastiawan, Aisjah, & Rofiaty, 2021). Because results have reinforcement value, perceived usefulness affects users' acceptance of computer systems. According to research by Bansah and Darko Agyei (2022) and Hikmah, Ratnawati, and Darmanto (2023), usage behaviour and intentions are significantly influenced by perceived usefulness. It is predicated on the motivation hypothesis, which holds that people are more likely to embrace new technology if they believe it will help them achieve important goals. It has been noted that compared to other variables described in the literature, such as attitude (i.e., satisfaction), perceived usefulness tends to demonstrate a greater and more consistent association with usage behaviour and intentions (Kurniasari & Abd Hamid, 2020). Additionally, it has been shown by the MIS literature that system usage and perceived usefulness are strongly correlated (Chen & Aklikokou, 2020; Yoon, Kwon, & Jahng, 2023). Thus, the first hypothesis states that the two aspects of user acceptance of microcomputer technology usage and satisfaction will be positively correlated with perceived usefulness.

Additionally, it is anticipated that perceived usefulness would influence usage more so than enjoyment.

According to Bolodeoku, Igbino, Salau, Chukwudi, and Idia (2022), perceived usefulness is the degree to which an individual believes that employing a specific framework will improve their performance on the job. According to Park et al. (2014), perceived usefulness is defined as the TAM framework's direct translator of a person's behaviour intention when it comes to utilising a specific technical tool or process. Studies in the areas of e-text (Baker-Eveleth & Stone, 2015), online travel services (Li & Liu, 2014), e-learning (Anthony et al., 2022), blog learning (Yan, Filieri, & Gorton, 2021), instant messaging (Gloria & Achyar, 2018), mobile service providers (Abbas & Hamdy, 2015), and knowledge creation (Hung, Cheng, Hou, & Chen, 2021) are among the areas where research indicates a relationship between perceived usefulness and continuation intention exists.

The idea put forth by Riztyawan and Rahayu (2023) in the paper "The effect of perceived usefulness and perceived ease of use on continuance intention with mediation of perceived value and customer satisfaction: Study on netflix application users" is that perceived usefulness is a measure of an individual's conviction that using a particular technology will improve their ability to do their job. Put another way, this is the conviction that, over time, using this technology would enhance employees' performance.

According to Carnochan, Samples, Myers, and Austin (2014), in their paper "Technology Acceptance: A Quantitative Study of Texas Nonprofit Sectors," information technology can boost internal productivity, facilitate performance evaluation, improve the effectiveness of nonprofit organisations, and open up new service delivery channels. Information technology can thereby increase an organization's efficiency by assisting staff in acclimating to and successfully utilising new technologies. Employee performance improves as a result, and company production rises.

In their article " Knowledge and skills of industrial employees and managerial staff for the industry 4.0 implementation" Saniuk, Caganova, and Saniuk (2023) emphasised how crucial employee attitudes are to the success of implementing new technology in businesses. This results from employees progressively becoming accustomed to the technology over time. They might do better every day as they become more accustomed to the technology.

Based on a paper titled " User acceptance of the human resource information system: a study of a private hospital in Malaysia," Kamaludin and Kamaludin (2017) identified how a few minor adjustments also improved the rating of perceived usefulness. Put another way, as the system advances, employees will grow accustomed to it, which will enhance their ability to do their jobs.

Perceived usefulness is a direct indicator of behavioural intention to use the technology or application in question, according to Riztyawan and Rahayu (2023) article titled "The effect of perceived usefulness and perceived ease of use on continuance intention with mediation of perceived value and customer satisfaction: Study on netflix application users" in relation to the Technology Acceptance Model system. This implies that an women entrepreneurs will be more likely to use a piece of technology on a regular basis if they have the behavioural intention to use it. Furthermore, there may be a notable improvement in the employee's job performance.

Mulyaningsih (2022) found that customer loyalty in digital banking was positively impacted by perceived usefulness, customer trust, and simplicity of use. Ease of use affects consumer trust, whereas perceived usefulness has less of an effect. According to Syaharani and Yasa's (2022) research, repurchase intention was significantly and favourably impacted by perceived usefulness and convenience of use. Perceived usefulness and perceived ease of use have a partly mediation influence on the relationship between the trust factor and the adoption of banking platforms, according to Kabakuş and Küçükoğlu (2022). Perceived ease of use is positively and significantly correlated with perceived usefulness, and perceived usefulness is correlated with intention to use, according to Wardana et al. (2022). Perceived ease of use is positively and significantly correlated with perceived usefulness, and perceived usefulness is correlated with intention to use, according to Wardana et al. (2022). Perceived usefulness, perceived ease of use, and perceived legitimacy all significantly affect how satisfied customers are with mobile banking, according to Londa et al. (2022). Usman et al. (2020) found that both directly and indirectly, expectation performance enhancement, social influence, effort expectancy, condition, and security facilitation will lead to enhanced behaviour intention and use.

2.5 The role played by perceived ease of use of digital technology in influencing women entrepreneurship performance

Kumari and Devi (2023) and Davis (1993) purported that all else being equal, an application perceived to be easier to use than another is more likely to be accepted by users. This construct of perceived ease of use have been extensively investigated by other researchers using different samples and generally confirmed to be important factors in affecting system usage (Hsu, Yu, & Wu, 2014; Sondakh, Asaloei, & Werang, 2023; Subramaniam, 2022). It is expected to influence perceived usefulness, behavioural intention to use, and perceived credibility. Extensive research over the past decade has provided evidence that perceived ease of use has a significant effect on behavioural intention to use, either directly or indirectly, through its effect on perceived usefulness (Ateik, Bardai, & Alzubi, 2020; Rahayu, 2022). On the other hand, Peng and Hwang (2021) pointed out that digital technologies that are easier to use will be less threatening to the individual, implying that perceived ease of use will have a positive effect on users' perceived credibility as interacting with e-learning.

Perceived ease of use has also been found to influence computer usage indirectly via perceived usefulness (Davis, 1989; Prastiawan et al., 2021). Since perceived ease of use is inversely related to the perceived complexity of use of the digital technology, it can also influence perceived usefulness because systems that are difficult to use are less likely to be perceived as useful. A similar argument can be made for the effects of perceived ease of use on perceived enjoyment because systems that are difficult to use are less likely to be perceived as enjoyable. In turn, this will lead to decreased usage. In other words, perceived ease of use can also affect computer usage indirectly through perceived use-fulness and/or perceived enjoyment.

Lai (2017) and Marangunić and Granić (2015) focused on understanding the antecedents of the perceived ease of use. They concluded that computer self-efficacy acts as a determinant of perceived ease of use both before and after hands-on use and that the objective usability was found to be a determinant of ease of use only after direct experience with a system. In the meantime, Shahzadi, Noreen, and Haq (2022) insisted that e-learning self-efficacy was found to have indirect effect on students' intentions through perceived ease of use. In addition, Botao and Duangekanong (2022) and Nodeh and Shahini (2021) found a significant relationship between dispositional barriers and e-learning self-efficacy. They argued that educational practitioners should take into consideration the learners' dispositions and find ways through which e-learning self-efficacy could be improved. In this study, e-learning self-efficacy is

generally represented as the personal confidence in finding information and communicating with an instructor within the e-learning system and the necessary skills for using the system.

Drawing upon other competing models, Kajol, Singh, and Paul (2022) captured the concept of perceived ease-of-use (TAM/TAM2), complexity (MPCU), and easy-of-use (IDT) to define effort expectation as the degree of ease associated with digital technology use. Prior empirical studies of mobile banking adoption Guharay, Tripathy, and Das (2023), and Kiranga and Chotiyaputta (2021) supported perceived ease-of-use as a determinant impacting people to use mobile banking. Grounded in UTAUT, Khan, Hameed, Khan, Khan, and Khan (2022) and Awa and Kalu (2020) employed three constructs of performance expectancy, effort expectancy, and social influence to explore what influences individual intention to accept mobile digital technology and data service, respectively. Both studies supported that effort expectancy significantly influenced human intention to use mobile digital technology or service.

Perceived ease of use is an individual's assessment of the extent to which interaction with a specific information system or digital technology is free of mental effort (Chen & Aklikokou, 2020; Gupta, Prashar, Vijay, & Parsad, 2021). It is one of the major behavioural beliefs influencing user intention to digital technology acceptance in both the original and the revised TAM models. This construct is posited to influence behavioural intentions to use through two causal pathways: a direct effect as well as an indirect effect through perceived usefulness. Empirical support for perceived ease of use as determinant of usage intention, however, has been inconsistent and of less significance, or no significance, compared to the support for perceived usefulness (En, 2020; Iqbal & Ahmed Bhatti, 2015; Kang et al., 2021). Leso and Cortimiglia (2022) even excluded this construct from his modified TAM model. Nevertheless, other researchers believe that in the exploratory stage of digital technology use, ease of use plays an important role. Raza, Umer, and Shah (2017) once proclaimed that for any emerging digital technology, perceived ease of use is an important determinant of users' intention of acceptance and usage behaviour.

A few empirical studies tested ease of use as a predominant determinant of intention to adopt (Chen & Shang, 2018; Parveen, Abessi, & Ainin, 2009). A few confirmed that perceived ease of use, like perceived usefulness, is a pivotal factor. Some found this construct a more important determinant (Mirkovski, Rouibah, Lowry, Paliszkievicz, & Ganc, 2023). Others found this construct exerting a mediation effect (Henderson & Divett, 2003; Kim, Merrill Jr, & Collins, 2021). On the other hand, a few studies examined its effect on perceived usefulness, together

with social norms and Prince Institute Of Innovative Technology (PIIT) (Hwang, Kim, Rouibah, & Shin, 2021), but reached quite different conclusions. These findings may be situation specific and digital technology specific. The degree of easiness perceived by the customers is recognized to be an important determinant for using Wisdom Institute Of Management and Technology (WIMT). A recent survey done by Embedded Solutions among 800 professionals in England revealed ease of use among the top five factors in order of significance for determining the use of wireless handheld devices (Clark-Wilson, Robutti, & Thomas, 2020; Mondschein, Clark-Ginsberg, & Kuehn, 2021). This point was again supported by several very recent studies on mobile data services and mobile commerce (Ovčjak, Heričko, & Polančič, 2015; Saritas, Bakhtin, Kuzminov, & Khabirova, 2021). However, even if these studies have been conducted but there are no studies conducted to measure perceived ease of use using gender perspective.

Previous research has shown that man's of perceived ease of use is higher than women's (Campos & Scherer, 2023). Meanwhile, Akbari, Rezvani, Shahriari, Zúñiga, and Pouladian (2020) and Moon and Kim (2001) pointed out that digital technologies are easier to use and will be less threatening to men and generally men will rate perceived ease of use of e-learning more highly than women. Furthermore, perceived ease of use is expected to influence perceived usefulness and behavioural intention to use, either directly or indirectly, through its effect on perceived use-(Alam, Hoque, Hu, & Barua, 2020; Mustaf, Ibrahim, & Mohammed, 2020; Williams, Rana, & Dwivedi, 2015). On the other hand, Akour, Al-Marroof, Alfaisal, and Salloum (2022) found that low evaluation of perceived ease of use caused an increase in the salience of such perception in determining perceived usefulness and user acceptance decisions. These findings assumed that perceived ease of use was more salient in determining perceived use-fullness and behavioural intention to use for women compared to its salience for men.

Iyer, Pani, and Gurunathan (2020) found retains perceived ease of use from TAM as a direct determinant of technology adoption, since, all else being equal, the less effortful a system is to use, the more using it can increase job performance. There is extensive empirical evidence accumulated over a decade that perceived ease of use is significantly linked to intention, both directly and indirectly via its impact on perceived usefulness (Katebi, Homami, & Najmeddin, 2022; Mollick, Cutshall, Changchit, & Pham, 2023). Although beyond the scope of the present extension of TAM, other research has begun to model the antecedents of perceived ease of use. For example, Venkatesh and Davis (1996) UTAUT model perceived ease of use as being

anchored on one's general computer self-efficacy and adjusted to account for a system's objective usability via direct behavioral experience using the target system. The study note that the mechanisms by which ease of use perceptions are theorized to form and evolve are conceptually distinct from, and complementary with, the technology adoption processes within TAM2.

The relationship between computer self-efficacy and perceived ease of use is based on the theoretical arguments by prior researchers (Caffaro et al., 2020), and researchers have empirically examined whether there exists a causal link between computer self-efficacy and perceived ease of use recently (Chan et al., 2010; Peterkin, 2022; Venkatesh, Thong, & Xu, 2016). These indications suggest that computer self-efficacy has a significant positive effect on perceived ease of use for the e-learning system. Furthermore, researchers have also suggested the existence of gender-based differences in decision-making behaviour (Chen, 2020; Chinyamurindi & Shava, 2015). There is evidence to support the view that women show a relatively high tendency toward emotion (Ferguson et al., 2020). Recently, Manrai, Goel, and Yadav (2021) proposed that women are more motivated by process and social factors than men. Therefore, it is expected that a low evaluation of computer self-efficacy will cause an increase in the salience of perceptions of usefulness and ease of use in an e-learning context.

Lancot and Duxbury (2022) and Anjum (2021) in their studies of perceived usefulness, proposed a six-item measurement tool. The six items include the four items most commonly used: (1) using the application increases my productivity; (2) using the application increases my job performance; (3) using the application enhances my effectiveness on the job; and (4) overall results show that the application is useful in my job. All measures of perceived ease of use are found to lead to an acceptable level of internal consistency (greater or equal to 0.83).

Researchers argued that perceived ease of use is the extent to which a person accepts as true that using an exacting method would be at no cost to that individual (Hassan & Awan, 2017; Sugandini, Rahatmawati, & Istanto, 2016). At first, Rogers (1962) affirmed that perceived ease of use is the term that represents the degree to which an innovation is perceived not to be difficult to understand, learn, or operate (Joseph, Hamzat, & Izuagbe, 2016; Soon, Lee, & Boursier, 2016). In 1963, he further stated that perceived ease of use is the degree to which consumers perceive a new product or service as better than its substitutes (Albers et al., 2017; Dubickis & Gaile-Sarkane, 2015). Similarly, Blut and Wang (2020), Parasuraman and Colby (2015) and Zeithaml, Parasuraman, and Malhotra (2002) stated that the degree to which an

innovation is easy to understand or use could be considered as perceived ease of use. According to Ali, Saleh, et al. (2021), the perceived ease of use is the consumer's perception that banking on the internet will involve a minimum of effort. Similarly, Sahoo, Dash, and Nayak (2023) noted that perceived ease of use refers to the ability of consumers to experiment with a new innovation and evaluate its benefits easily. He further stated that the perceived ease of use a mix of convenience for those with easy access to the internet, the availability of high-standard, secure electronic banking functionality, and the necessity of banking services—determines the drivers of growth in electronic banking. Extensive research over the past decade provides evidence of the significant effect of perceived ease of use on usage intention, either directly or indirectly (Koththagoda & Herath, 2018; Nanyanzi, 2021; Win, 2019). Early in 1962, Rogers noted that understanding digital technology leads to the adaptation of innovative services and products by customers, which is known as ease of use (Addison, 2021; Sawng, Lee, & Motohashi, 2015). Recently, (Hassan & Soliman, 2021), Setiawan et al. (2021) and Jünger and Mietzner (2020) have empirically found that two technological aspects of the interface, namely perceived ease of use and perceived usefulness, significantly affect customer adaptation intentions.

An individual's attitude towards using a specific piece of technology will also be influenced by perceived ease of use (Rauniar et al., 2014). Perceived ease of use refers to how easy a user feels a piece of technology to use (Kumar & Krishnan, 2020). The study's conclusions show that people's motivation to use technology is positively and significantly impacted by perceived ease of use. According to Wardana et al. (2022), perceived ease of use refers to a user's comfort level with technology. The study's conclusions show that people's motivation to use technology is positively and significantly impacted by perceived ease of use. According to Wardana et al. (2022), perceived ease of use refers to a user's comfort level with technology. The effect size study, according to Rahi et al. (2021) findings, indicated that factors like user expectations and satisfaction were the most important in determining whether a banking user would continue using it. But according to Lee & Lehto's (2013) research, assessed utility was unaffected by perceived ease of use. People may recognise the benefits of a certain technology application, but they may also find it difficult to utilise. In this instance, the advantages of the technology outweigh the work required to make use of it.

Chatterjee (2020), in an article titled " Factors impacting behavioral intention of users to adopt IoT in India: from security and privacy perspective", explains that perceived ease of use is the

extent of the reaction to new technology as being inaccessible, inconvenient or complicated to use. Women entrepreneurs may also be convinced that an existing or older form of technology is of better quality than newer versions. If women entrepreneurs can see good levels of perceived ease of use, they will have a better time familiarizing themselves to the new technology and subsequently enhancing their job performance.

The paper titled "New Determinants of Ease of Use and Perceived Usefulness for Mobile Banking Adoption", by Rauniar et al., (2014) emphasizes the fact that perceived ease of use influences one's perspective towards utilizing a specific form of technology. If an application or system is easy to use, people will more eager to learn, adapt and eventually develop the intention to use it. Job performance will be improved after a period of sustained and consistent use of the technology.

Kabir, Saidin, and Ahmi (2017b) in their article "The influence of perceived usefulness and perceived ease of use on the continuous intention to use electronic collection system in Nigerian hospitals: a conceptual approach" state that perceived ease of use was a concept created to have an immediate impact on user intention for the process of electronic air-ticketing systems.

The article "Want to Take a Ride with Me?", by Erasmus et al., (2015), explains how research points to a positive link between perceived usefulness and perceived ease of use. A form of technology which is believed to demand less effort in its utilization will be perceived by individuals as being more useful. As such, the existence of a positive relationship between perceived ease of use and perceived usefulness will facilitate better problem solving and execution of tasks by employees. Furthermore, a system of e-Government will result in the use of the Internet to deliver services and information from the government to the people.

In the paper put forth by Lallmahomed, Lallmahomed, and Lallmahomed (2017) it is posited that perceived ease of use had a significant influence on individual's attitudes in choosing to utilize e-Government applications. In other words, women entrepreneurs age or gender has no consequence on technology use as long as the individual has a positive attitude and perspective regarding the adoption of new and different technology.

The ease of use is a key element in how people perceive a technology, according to (Jarrah & Almatarneh, 2021). One of the main reasons why consumers of mobile banking services prefer the technology is that it is easy to use and needs little effort (Sarfaraz, 2017). Therefore, their

lives should be made easier by the service thanks to its user-friendly design and rapid set-up arrangements, where the banks continued to promote online and mobile banking as extra services for their clients (Kusumawati & Rinaldi, 2020). There is still a necessity to make electronic banking more user-friendly and secure as these are the main barriers to complete support of electronics (Sandhu & Arora, 2022). The development of banking technology has a significant influence on a bank's marketing efforts (Ghani et al., 2022). Findings by Sarfaraz (2017) Analysis showed that users' intentions to utilize mobile banking services are highly influenced by performance expectations, effort expectations, and risk perception.

2.6 The role played by experience of the past use of digital technology in influencing women entrepreneurship performance

Gaining expertise in any domain is defined as going beyond ordinary learning from rule-based and fact-based "know that" towards experience-based "knowhow" (Bhagat & Sambargi, 2019). It is an individual's assessment of the degree of expertise required to effectively use digital technology with ease, which reflects domain-specific knowledge gained through experience or knowledge. Perceived expertise in digital technology could be technical knowhow, how they can effectively make use of digital media for their business growth, an understanding of its operationalization, which digital channels work better for their specific product, how to run an ad on Facebook, how to effectively create an engaging post on different channels, how to utilize their audience to work for their growth, how to create a positive image, search engine optimization

Perceived expertise in the field can directly impact their perception about ease of use, its usefulness, relative advantage, compatibility, and trial-ability to influence the adoption decision, together with entrepreneurs' innovativeness traits to impact the overall intention to adopt digital technology innovation, in this case, digital marketing adoption intention.

As suggested in TAM2, subjective norm, one of the social influence variables, refers to the perceived social pressure to perform or not perform the behaviour (Ajzen, 2020). It seems important to determine how social influences affect the commitment of the user toward use of the information system for understanding, explaining, and predicting system usage and acceptance behaviour (Abbas et al., 2020; Ameen, Tarhini, Reppel, & Anand, 2021). According to the study done by Alkindi, Hafiz, Abulibdeh, Almurshidi, and Abulibdeh (2022) and Silvertre, Miranda, and Gutiérrez (2022) subjective norms were found to be a significant

factor in affecting university students' intentions to use e-learning. In contrast, the study done by de Sousa Jabbour, Ndubisi, and Seles (2020) and Ndubisi, Zhai, and Lai (2021) showed that subjective norms had no significant effect on university students' intentions to use e-learning. This kind of inconsistency may be resolved through structural equation modelling (SEM), which indicates spurious effects and indirect effects as well as direct effects (Sobel, 2020; Tsuchihashi, 2021).

Tavitiyaman et al. (2022) revealed the mean differences in perceived usefulness between experienced and inexperienced users. They found that inexperienced users (before training) rate the lowest mean of perceived usefulness. The mean scores constantly improve with the immediate adoption of a training program and present the highest mean after three months of training (Immonen & Sintonen, 2015; Lei, Clemente, Liu, & Bell, 2022). Liu, Luan, Wu, Zhang, and Hsu (2021) investigated the differences in beliefs and attitudes toward the Internet as a teaching and learning tool between inexperienced (less than one-year Internet experience) and experienced (more than one-year Internet experience) Internet users. However, they found no significant difference in the perceived usefulness of the Internet between both groups (Luan et al., 2020; Tao, Luan, et al., 2022). Mixed empirical evidence verifies the relative importance of identifying the differences between experienced and inexperienced users in terms of perceived usefulness (Hiro & Kei, 2020; Wasala & Kaluarachchi, 2021). However, experienced and inexperienced users insignificantly differ in terms of perceived usefulness.

In accordance with Costa, da Costa, Maciel, Aguiar, and Wanderley (2021), a person's favourable prior experience with a certain object will significantly influence their present behaviour towards that same object. The study therefore recommend that users are more likely to accept the proposed mobile payment method if they have greater familiarity with the Internet, with mobile environments, or even with similar purchases. Users with IT experience will see their aversion to the risk associated with the implementation of other computer systems reduced, thus improving their perception of usefulness and stimulating their continued use over time (Koo & Fallon, 2018; Tripathi, 2018). Several authors Liébana-Cabanillas, Sánchez-Fernández, and Muñoz-Leiva (2014b), Kajol et al. (2022), Sahi, Khalid, Abbas, and Khatib (2021) and Singh, Sinha, and Liébana-Cabanillas (2020) observe that individuals with previous experience in online purchasing will be more likely to buy products online, motivated by higher expected benefits and fewer difficulties with the channel (Roy Dholakia & Uusitalo, 2002). It has been shown that the adoption of e-commerce (Shukla & Misra, 2021) and mobile services

(Ristola, 2010) is influenced by the previous experience of individuals with the Internet, which, in turn, improves their intention of use (Dholakia, Costa, Gammarano, & Arruda Filho, 2021; Liébana-Cabanillas, Muñoz-Leiva, & Sánchez-Fernández, 2018). Elsewhere, Garg (2022) found four moderating factors of digital technology and experience being one of them (together with sex, age, and willingness to use) that have an impact on effort expectations, and they include these in the UTAUT theory. Some research has found that increased experience with the Internet favors relationships with that environment, increasing users' familiarity and perceived benefits of use (Chuah et al., 2016; Liébana-Cabanillas et al., 2014b; Munoz-Leiva, Climent-Climent, & Liébana-Cabanillas, 2017), as well as the intention of use (Slade, Dwivedi, Piercy, & Williams, 2015). Based on the studied literature and the moderating influence of experience, it was discovered that users who are less experienced will need more ease of use than those who have more experience. For these latter users, nevertheless, a more comprehensive evaluation of the website will be provided. In other words, less experienced users will be driven by intrinsic and extrinsic motivations (Hoff & Bashir, 2015; Kim, Wong, Chang, & Park, 2016), meaning that their lack of experience will make them pay more attention to the user interface itself than to the purpose or aim of the visit. Besides, the effect of subjective norms on intentions will be higher for less experienced users because they are more easily influenced (Al-Emran, Elsherif, & Shaalan, 2016). Some authors identify the impact of the user's experience on the usefulness of a website as a moderating effect (Castañeda, Zarzoso-Lacoste, & Bonnaud, 2020; Philippe-Lesaffre, Lusardi, Castañeda, & Bonnaud, 2023). Although this effect does not have an impact on the performance expectancy or the perceived usefulness of a new system in the abovementioned study (Venkatesh et al., 2003), it does reflect a slightly superior relationship between ease of use and usefulness for experienced users, even if the results have not shown significant differences. However, the relationship between usefulness and intention of visiting the website did show a moderating effect of experience with the Internet. Therefore, more experienced individuals will consider perceived usefulness before returning to use this digital technology (Alonso-González et al., 2017; Redweik, Cláudio, Carmo, Naranjo, & Sanjosé, 2017). Callau-Berenguer, Roca i Torrent, Montasell, and Ricart Casadevall (2022) show that usefulness is more important for inexperienced users, contrary to Taylor and Todd (1995) previous research. Although these authors had already noted that their conclusions were not in line with their initial expectations, they did not find differences in the effect of attitude on the intention to use, as other authors did (Ashiru, Nakpodia, & You, 2023; Salazar, Rauniar, & Blodgett, 2021; Shree, Singh, Paul, Hao, & Xu, 2021). Lastly, Sarkar, Chauhan, and Khare (2020) support the notion that familiarity with the

Internet can lessen perceived risk when making purchases online and also lessen anxiety about privacy and security concerns. In relation to the previous model's theoretical proposal, this study investigates the impact of consumers' prior online shopping experiences with comparable payment tools. It is based on the TAM model and its proposed extensions, which go by the moniker MPAM-VSN and include the constructs of perceived risk and trust.

It is expected that consumers who have previous experience with similar payment systems will show higher levels of trust, based on external influences. The explanation lies in consideration of their status within the social network as well as in the influence received from the people around them, making that relationship more secure and the consumer's task easier during the online transaction, which is performed with little effort (Bondanini, Giorgi, Ariza-Montes, Vega-Muñoz, & Andreucci-Annunziata, 2020; Kalinić, Liébana-Cabanillas, Muñoz-Leiva, & Marinković, 2020). According to previous research, more experienced users will show a higher level of trust toward online applications (Eneizan, Alsaad, Abdelbaset Alkhawaldeh, & Rawash, 2020; Sánchez-Franco & Roldán, 2015). For their part, Jun (2020), Pine, Lee, Whitman, Chen, and Henne (2021) and Chen, Cheng, and Kim (2020) found that consumers with high levels of perceived risk, derived from their lack of experience, will require informal advice from their friends, relatives, and colleagues. Therefore, depending on the external influences consumers receive, their trust level will increase.

Consumers with a higher level of experience will show greater trust toward online applications (Cummins, W. Peltier, A. Schibrowsky, & Nill, 2014; Liébana-Cabanillas et al., 2018), since they are aware of the associated risks of this type of tool. Therefore, they will show a higher influence of trust on ease of use and a greater direct influence on attitude. By contrast, consumers with no previous experience with similar payment tools will require a higher level of reliability in order to mitigate the perceived effort inherent to the adoption of the new system.

Additionally, experience of using technology also influence the relationship between perceived usefulness and attitude. Thus, it will have a lower impact on experienced consumers since they already have some knowledge of similar tools and, therefore, of their nature, functionalities, and inherent risks. This will make their evaluation more complicated in comparison with inexperienced consumers, who will be able to better assess the usefulness and their attitude toward the payment system (Franke, Groeppel-Klein, & Müller, 2023; Klepek & Bauerová, 2020).

The level of experience also modifies the relationship between usefulness and intention. Concerning the use of the new payment system, users with no experience with similar tools will establish a stronger link between its perceived usefulness and a favorable attitude regarding the subsequent intention of use. On the contrary, consumers with previous experience with other payment systems will give a lower value to the aforementioned relationship since they will prefer a system they know how to use over a new and unknown tool. For these reasons, the study suggest that experience moderates the abovementioned relationship, where inexperienced users give more importance to the relationship between usefulness and intention than the ones who already use other similar payment tools (Qi, Hu, Huang, & Peng, 2022; Saha, Duarte, Silva, & Zhuang, 2023; Yang, Yang, & Chang, 2023).

2.7 The role played by voluntariness on the use of digital technology in influencing women entrepreneurship performance

Voluntariness is variously hypothesized as a direct influence on behavior (Chen et al., 2015; Hu, Liu, Zhang, Dahlgren, & Chen, 2019; Tsai, Compeau, & Meister, 2017), as a moderator of the influence of subjective norms on behavior (Abbasi, Tarhini, Hassouna, & Shah, 2015), or as a boundary condition for attitude models (Al-Fraihat, Joy, & Sinclair, 2020). In addition, the findings continue to be inconsistent with positive, negative, and no support for most of the hypothesized relationships (Tsai et al., 2017). The presence of these diverse views of voluntariness and the mixed findings in the literature suggest an underlying weakness in the existing understanding of the phenomenon.

Bezrukova, Griffith, Spell, Rice Jr, and Yang (2023) viewed this lack of consensus as a concern for both researchers and managers. For researchers, the possibility of competing, yet unclear, views of and roles for voluntariness makes the development of research models more challenging, and this may hinder theoretical progress. For managers seeking to apply research findings, the lack of clear guidance about whether voluntariness influences use directly or moderates the effect of other concepts on use (or plays a different role) makes it difficult to form clear action strategies. This is especially true in light of research that suggests that decreasing voluntariness may have unintended negative consequences. For example, research has shown that innovative use of technology at work depends on the deliberate actions of individuals, which also implies a voluntary decision (Shibly, Abdullah, & Murad, 2022; Wu, Choi, Guo, & Chang, 2017). Studies by Beaudry, Vaghefi, Bagayogo, and Lapointe (2020) and Samhan (2018) suggested that taking choices away from employees may engender employee

resentment, if not resistance. Imposing decisions regarding the use of technology for one's work on employees may trigger psychological reactance (Dimara, Franconeri, Plaisant, Bezerianos, & Dragicevic, 2018), a tendency for employees to seek to restore lost freedom, and could negatively impact the level of employees' satisfaction and loyalty (Jeyaraj, 2023; Kabir, Saidin, & Ahmi, 2017a).

Personal innovativeness is an individual's intrinsic characteristic or trait that impacts their acceptance of change and influences their behavior towards adopting newness in their personal or professional endeavors. Personal innovativeness refers to the willingness of an individual to embrace change and try out new information technologies (Blut & Wang, 2020; Tarafdar, Cooper, & Stich, 2019). By definition, an innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption (like an organization). Innovativeness has to do with how early in the process of adoption of new ideas, practices, etc. the individual or organization is likely to accept a change. Entrepreneurs are generally highly innovative individuals because of their intrinsic characteristics of starting something new, taking risks, embracing uncertainty, and still moving forward with their innovative ideas to achieve their goals.

In this networked age, the adoption of technological innovations is rapidly integrated into the method of doing business, and the marketing medium is also digitalized. Therefore, identifying the entrepreneurs' characteristics that have a considerable and persistent effect on their intention to adopt digital marketing for their business is of substantial value.

As per innovation diffusion research, it has been acknowledged that highly innovative individuals are active information seekers about new ideas. They are more capable of handling uncertainty and still develop positive intentions toward acceptance (Bhagat & Sambargi, 2019). In the late 1990s, a number of studies in innovation diffusion research, marketing, and social and individual psychology investigated the effect of personal traits on adoption behaviour as an internal motivation stimulus (Avunduk, 2023). Over the years, only a few really integrated personal traits into digital technology acceptance research, and even fewer into the intention to adopt IT/IS innovations (Blut, Chong, Tsigas, & Venkatesh, 2021; Shahab, Ghazali, & Mohtar, 2021).

Given the difficulties in interpreting the multidimensional aspects of use mandatory versus voluntary, informed versus uninformed, effective versus ineffective, and so on Mahmud, Islam,

Ahmed, and Smolander (2022) and Shahzadi et al. (2022) suggested that the intention to use may be a worthwhile alternative. Intention to use is an attitude, whereas use is a behaviour. Substituting the former for the latter may resolve some of the process-versus-cause concerns that Al-Fraihat et al. (2020) has raised. A significant body of research also finds that males are more experienced with and have more positive attitudes about computers than do females (Christensen, 2023; Mykhailenko, Blayone, Usca, Kvasovskyi, & Desyatnyuk, 2022). It can be said that men are more willing to use computers during the learning stage. Furthermore, Tzafilkou, Perifanou, and Economides (2021) investigated gender-based attitudes toward using computer-assisted learning (CAL) among university students, and the results revealed that male students preferred using CAL significantly to females.

Since its inception by Moore and Benbasat (1991), the definition of voluntariness in most technology-adoption studies (if defined explicitly) has been similar to the original (Dwivedi et al., 2019). However, various treatments and assumptions have emerged over the course of a quarter century. According to Bagozzi (2022) and Wuttke, Schimpf, and Schoen (2020), concepts derive meaning not just from their definition but also from how they are operationalized and how they are related to other concepts. Thus, the study review looks not just at the formal definition but also at the measures and roles accorded to voluntariness in technology acceptance models.

Individuals may engage in a particular behaviour if it yields fun and enjoyment. This implies that individuals may adopt digital technology because its use is enjoyable. For example, Mascaret, Montagne, Devrièze-Sence, Vu, and Kulpa (2022) found that perceived enjoyment has significant effects on intention to use a word processing program. Correspondingly, Morales, Cotas, and Esteban-Millat (2023) proposed that affect (i.e., the feeling of joy, elation, pleasure, disgust, or displeasure) may affect behaviour. In the context of the Internet, the study can therefore postulate a positive relationship between perceived enjoyment and Internet usage. Since Internet usage dimensions can be defined in terms of frequency of Internet usage, daily Internet usage, and diversity of Internet usage, perceived enjoyment is positively related to frequency of Internet usage. Perceived enjoyment is positively related to daily Internet usage. Perceived enjoyment is positively related to the diversity of Internet usage. In general, if a system is easy to use, it requires less effort on the part of users, thereby increasing the likelihood of its adoption and usage. It follows that perceived ease of use will positively affect the frequency of Internet usage directly through perceived usefulness and perceived enjoyment.

Ke and Wagner (2024) did a similar research on “What explains the next level of gaming? An experience-anticipation model for amateur esports participation” using Technology Acceptance Model and they integrated TAM with motivational theory. While early electronic commerce research indicated that website design elements could influence online satisfaction and sales (Gera, Fatta, Garg, & Malik, 2021), most research ignored the importance of website design factors and how they can influence customer satisfaction and the likelihood that customers will revisit a website, resulting in customer loyalty (Gade, 2022; Tafti, Rahmati, Mithas, & Krishnan, 2022). Online loyalty, or e-loyalty, has been defined as a consumer’s intention to buy from a website or to visit it again (Hassna, Rouibah, Lowry, Paliszkiewicz, & Mądra-Sawicka, 2023; Mohammadi & Dickson, 2021; Zhang, Yi, & Zhou, 2022). Studies on the Internet suggest that if users are satisfied with the design of a website, they are more likely to exhibit e-loyal behaviour (Al-Hawary & Alhajri, 2020; Cheung & Lee, 2009). Website content can have an influential effect on contributing to repeat site visits (Lee, Kim, & Moon, 2000; Lee, Kim, et al., 2020). Cyr, Head, and Ivanov (2006) discussed an untested conceptual framework for e-loyalty in which five elements were suggested as contributing to online consumer intentions to revisit the website or purchase again from an online vendor. One element proposed was website design, including ease of navigation, personalized features, designing for targeted customers' segments, language options, and effective search functions. Jeon and Jeong (2017) tested a model in which website properties and navigation functionality were expected to result in website trust and website satisfaction. The properties included width of product selections, accuracy of online information, and the firm’s reputation, while navigation functionality involved overall operational efficiency, usefulness of help functions, and speed of online navigation. Jeon and Jeong (2017) further suggested that trust results from confidence in the website and the buyer-seller exchange, while satisfaction relates to factors that induce users to return to the site. Website trust was found to be significantly related to the properties of the website, while satisfaction was significantly related to navigation functionality, and both trust and satisfaction positively influenced e-loyalty. In alignment with the definition of loyalty for an Internet site, mobile loyalty, or m-loyalty, also depends on the user's willingness to revisit a site (Khan, Hollebeek, et al., 2023; Kumar, Purani, & Viswanathan, 2018). Solakis, Katsoni, Mahmoud, and Grigoriou (2024) examined the determinants of customer loyalty in mobile contexts and found loyalty to be influenced by perceived value, habit, trust, and satisfaction. Jin and Lim (2021) found that information quality was a key element of the mobile Internet and that it enhanced customer loyalty for mobile services. Jebarajakirthy et al. (2021) and Stocchi, Pourazad, Michaelidou, Tanusondjaja, and

Harrigan (2021) found that user attitudes significantly influenced their intention to use a device or service.

The TAM model suggests that customer adaptation behaviour is determined by the intention to use a particular system, which in turn is determined by the perceived usefulness and perceived ease of use of the system (Al-Gasawneh et al., 2022). Liao, Shi, and Yee (2021) utilized an alternative research approach that assumes that customer adaptation is determined by the intention to perform the behaviour. However, factors affecting the adaptation of a new information digital technology are likely to vary with the digital technology, target users, and context (Kirk, Chiagouris, Lala, & Thomas, 2015; Marquez, Cianfrone, & Kellison, 2020). Kwateng, Atiemo, and Appiah (2018) pointed out that customer adaptation describes beliefs about having necessary resources and opportunities for an individual's intention to perform. These are facilitating conditions, which refer to the availability of resources, i.e., the technological resources and infrastructure needed to engage in the adaptation. Kwon and Ahn (2023) suggested that the adaptation of electronic banking depends on the service firm's resource management by lowering delivery costs and by releasing service personnel to provide better and more varied service. Adaptation of electronic banking is important not only in terms of reducing costs and improving competitiveness but also in terms of a bank's ability to retain the existing customer base and attract new customers (Hossain, Bao, Hasan, & Islam, 2020; Jahangir & Parvez, 2012; Oruç & Tatar, 2017). According to recent findings by Nagy, Molnár, and Papp (2024) and Martínez-Navalón, Fernández-Fernández, and Alberto (2023), perceived usefulness and perceived ease of use influence system adaption. These factors are linked to attitude, which in turn influences actual use.

Empirical studies related to the diffusion of technological innovations have expanded the use of the TAM model to include attitudes as defined by the Theory of Reasoned Action (Saleem, Aslam, Kim, Nauman, & Khan, 2022). Ankamah-Yeboah, Jacobsen, and Olsen (2018) noted that attitude is the driver of consumer utility or attributes. Jabeen, Dhir, Islam, Talwar, and Papa (2023) described attitude as an individual's positive or negative behavior towards innovation adaptation. Jabeen et al. (2023) further stated that attitude portrayed the perceptions of the usefulness of electronic banking, adaptation features, bank electronic features, risk and privacy, and personal preferences. TAM suggests that attitude is based on the salient beliefs that a person has about the consequences of a given behaviour and his or her evaluation of those consequences. More specifically, Sharma, Mishra, and Nandre (2022) suggested that

customer attitude is composed of one's attribute beliefs about the object and the perceived importance (weight) of that attribute in making the decision to adopt. In the electronic banking context, consumers' attitudes are assorted in terms of perceptions regarding product information, form of payment, delivery terms, service offered, risk involved, privacy, security, personalization, visual appeal, navigation, entertainment, and enjoyment. Understanding the determinants of consumers' attitudes, it is argued that this attitude has a strong, direct, and positive effect on consumers' intentions to actually use the new digital technology or system (Win, 2019).

Attitudes reflect people's favourable or unfavourable feelings towards a given behaviour (Naneva, Sarda Gou, Webb, & Prescott, 2020), which means that attitudes are developed over time as people acquire experience. The different theoretical models (TAM, TRA, and TPB) have proven that attitude is an essential pre-requisite for the intention to develop a particular behaviour (Gimpel, Sudzina, & Petrovcikova, 2016; Liébana-Cabanillas, Ramos de Luna, & Montoro-Ríos, 2015). Ajzen, Fishbein, Lohmann, and Albarracín (2018) consider attitude a multidimensional construct composed of a cognitive, an emotional, and a conative or behavioural dimension. The cognitive component refers to an individual's knowledge about a product or service (experience, beliefs, and opinions); the emotional component refers to the individual's preferences about a given object (feelings, emotions, and evaluations); and finally, the conative component is the behavioural intention (purchase intent, purchase response, and rejection response) (Liébana-Cabanillas, Sánchez-Fernández, & Muñoz-Leiva, 2014a). The main criticism against this conception of attitudes is related to the lack of independent measurements since the majority of consumers respond to the emotional component, which largely complicates the correct measurement of the user's attitude. Because of the complexity of the classical multidimensional conception of attitude, a one-dimensional conception is established, as a result of which familiarity with the product stands as an antecedent, while the user's willingness or conative component stands as a direct consequence of emotions (attitude). This way, the cognitive and conative components are relocated outside the concept of attitude, while the first component is renamed 'beliefs' or 'knowledge' and the conative component as 'intention' (Munoz-Leiva et al., 2017).

Previous studies have demonstrated the significance of perceived utility, perceived usability, and prior experience with Venkatesh et al. (2003)'s UTAUT model. Akinuwesi et al. (2022) postulate that voluntariness of usage has a direct impact on the intention to use open data

technologies, contrary to the original UTAUT model's expectation that it would mitigate the effect of social influence on behavioural intention. The degree to which individuals or groups consider their adoption and utilisation of open data technologies to be voluntary or a matter of free choice is known as the voluntariness of use. The concept that individuals can voluntarily produce value with open data is what motivates the use of open data (Jetzek, Avital, & Bjorn-Andersen, 2014). However, an individual's intention to utilise open data technologies is higher the less voluntarily they use them. Depending on their line of work, certain people may need to employ open data technology. For example, the behavioural intention to utilise open data technologies is higher for researchers or journalists who aim to produce text articles based on the visualisation of public datasets as part of their work. It is less probable that someone will truly use open digital technologies if they are not required to.

Voluntariness represents a state of an individual to act or behave in a certain manner without the element of coercion (Bervell & Arkorful, 2020). The performance condition (whether mandatory or voluntary) determines the extent to which users put new technology to use (Shareef et al., 2024). The UTAUT factor of voluntariness represents the condition under which the intended usage of technology is to be performed. For validation purposes, Mardiana, Tjakraatmadja, and Aprianingsih (2018) identified two possible environments under which performance is expected to operate, namely the mandatory and voluntary settings. The originators of UTAUT postulated and empirically confirmed that, the differing influence in the two performance conditions on technology acceptance cannot be gainsaid. They represent two completely different environments that inhibit or facilitate the effect of certain factors in the UTAUT model.

Voluntariness is recognized as an important influence on individual and collective technology acceptance (Tsai et al., 2017). Voluntariness is variously hypothesized as a direct influence on behavior (Engler & Alpar, 2017; Wong, 2020), as a moderator of the influence of subjective norms on behavior (Tarhini, Hone, Liu, & Tarhini, 2017; Tırpan & Bakırtaş, 2024) or as a boundary condition for attitude models (Lim, Koay, & Chong, 2021). In addition, the findings continue to be inconsistent with positive, negative and no support for most of the hypothesized relationships (Bezrukova et al., 2023; Simón, Revilla, & Sáenz, 2024). Three studies tested the moderating effect of voluntariness on the relationship between various user beliefs and use or intention to use, and the findings are mixed (Tsai et al., 2017). For instance, in Dwivedi et al. (2019) results demonstrated that the strength of the links between user beliefs and behavioural

intention attenuated as environment-based voluntariness decreased, although this relationship was not statistically significant when the dependent variable was use. In contrast, Hamzah, Othman, and Cheumar (2023) found perceived voluntariness to moderate the relationship between user beliefs and use. The direction of the effect was, however, surprising: The coefficient of the interaction term for perceived ease of use and use is positive, but that for perceived usefulness and use is negative. The presence of these diverse views of voluntariness and the mixed findings in the literature suggest an underlying weakness in the existing understanding of the phenomenon.

Voluntariness has been defined as an organisational standard that restricts an individual's ability to act in accordance with their personal beliefs and as a perceptual component that may influence an individual's behavioural intention. In certain situations, voluntariness encourages use or usage intention, whereas in other situations, it inhibits it. A few justifications have been provided in the literature for discrepancies or unexpected outcomes. Temporal dynamics is one explanation. Initial adoption may be influenced by various parameters than subsequent adoption or continuous use (Attié & Meyer-Waarden, 2022; Hasan, Lowe, & Petrovici, 2019). Furthermore, as technology use advances, normative pressure the primary driver of both environment-based and perceived voluntariness diminishes (Liu, Liang, Zhang, Song, & Xing, 2019). The operationalization of technology use is a plausible factor as well. It is not reliable to gauge actual use using self-reported data (Wu, Yang, Gong, & Davison, 2023). The comparison is further complicated by the variety of operationalisations (e.g., self-assessed frequency of usage, self-assessed duration of use, and actual use based on system logs) (Vedechkina & Borgonovi, 2021). The literature has promoted the complicated nature of technology as an additional reason. According to Petersen, Christensen, and Hildebrandt (2020), "users will have considerable discretion in exercising different functions and features in a complex system, which will be used in a number of ways."

Park et al. (2022) work has been a significant first step in elucidating the multiple possible interpretations of voluntariness and developing more theories of its impacts. Nonetheless, there are still problems that need to be investigated in order to fully understand and operationalize voluntariness, as Lee et al. (2017) contend. Two issues that have not received enough attention are revealed by the study review. The first is that the control and compliance components of environment-based voluntariness are not well defined. The variety of behavioural responses that have been observed to coincide with the loss of freedom is a second problem. The prevalent

perspective in the literature holds that people will match their behaviour with whatever source of control they have over how they use technology. The prevailing perspective in the literature is that people would conform their conduct to whatever is imposed upon them when they are deprived of their freedom to use technology.

Like previous researchers, Almgren and Skobelev (2020) created the total return index and examined its implications for a range of technologies, but he neglected to take into account the fact that using technology is sometimes required and other times voluntary. This is unexpected given that accepted acceptance theories hold that voluntariness plays a significant moderating role in the link between technological attitudes and technology usage (Maruping, Bala, Venkatesh, & Brown, 2017). The degree of free will involved in using technology is referred to as voluntariness (Wu et al., 2023). Actions that are optional and obligatory are not the same. Service providers frequently require the usage of a particular technology without giving clients the option to get the service in another way. Customers are forced to use self-service technologies like ticket machines since many service companies, for instance, are closing their ticket counters and cutting back on the number of service employees. Non-voluntary behaviours are compelled by external forces, whereas voluntary actions are decided upon internally by individuals (Bervell et al., 2022). Research by Pappa, Iliopoulos, and Massouras (2018) shows that consumers' attitudes and beliefs about technology are reflected in their desire to use and actual usage when it is optional, but in non-voluntary contexts, consumers adhere to strict policies. People become aware that their personal ideas are less significant in these situations. In a similar vein, it is suggested that in voluntary contexts, the customer's broad technological beliefs are more significant. The TR motivators and inhibitors are more likely to influence how technology is perceived and used in this situation. Khurshid et al. (2022) made reference to the theory of reasoned action in their argument that, in voluntary-use contexts, an individual's views have a stronger influence on behavioural intention and usage. According to the theory of planned behaviour by Ajzen and Fishbein 2005, a person's positive outlook and key beliefs are mostly responsible for their voluntary action (Batool, Wani, Shah, & Dada, 2024).

Xiu et al. (2017) researched into how Chinese consumers switched cloud storage providers, and they came to the conclusion that customer happiness is influenced by voluntariness. After include moderating variables like voluntariness and experience in their study, Mutahar, Aldholay, Isaac, Jalal, and Kamaruddin (2022) discovered that the explanatory power of their

TAM model increased from 35% in the absence of moderators to 53% in the presence of moderators. According to the research, there is a strong correlation between utilisation and voluntariness, meaning that when employee voluntariness declines, usage rises. Additionally, it was shown that there is a strong correlation between utilisation and voluntariness, meaning that employee happiness rises as voluntariness declines.

2.8 The moderating effect of age on entrepreneurship digitalisation and women entrepreneurship performance.

Numerous studies have discussed the effects of demographics on new digital technology adoption (Blichfeldt & Faullant, 2021; Lashitew, 2023; Singh, Sahni, & Kovid, 2020). However, compared to traditional innovation diffusion studies which reveals that earlier adopters of technological innovations as typically younger in age, having higher incomes, better educated, and having higher social status and occupation, research findings in the context of electronic banking are not consistent (Loos, Peine, & Fernández-Ardèvol, 2021). In the mobile banking adoption literature, some research indicated typical users of electronic banking were relatively young (Choudrie, Junior, McKenna, & Richter, 2018) or discovered that the elderly had more resistance to change and a negative attitude toward using mobile banking services (Laukkanen, 2015; Touchaie & Hashim, 2018). However, certain studies found that respondents aged 50 or over were mostly eager to use mobile banking services (Choudrie et al., 2018; Shaikh, 2016), typical mobile banking users were aged between 30 and 49 (Chawla & Joshi, 2017), and middle-aged or older customers were the main users of electronic banking (Vahdat, Alizadeh, Quach, & Hamelin, 2021; Yapabandara & Nagendrakumar, 2022). Additionally, Suseno and Abbott (2021) and Palas (2016) randomly interviewed 300 respondents in the streets in six major Chinese cities and reported that mobile banking main users were not necessarily young and highly educated. Laukkanen (2015) found that respondents who were over 55 were divided into two categories based on factors such as danger, tradition, and image obstacles. Nyeko, Moya, Kabaale, and Odongo (2014) investigated 3585 respondents in Brazil and claimed that older people perceived mobile banking as more difficult to use than younger people did. Likewise, by collecting 666 respondents in Brazil, Baptista (2017) observed that typical users of mobile banking were less than 30 years old. Based upon the above conflicting results, there is a need to ascertain the moderating effect of age.

In order to achieve the goals of the research research, the study propose to include the study of age as a variable, together with the antecedents analysed in the scientific literature, on the basis of a review of the main classical models (TAM, TRA, and UTAUT). The age of users has an important effect on their behaviour (Kajol et al., 2022; Karpusheva, 2018; Liébana-Cabanillas et al., 2014a). Because of this, the study try to check whether the research about the adoption of a new digital technology will also be decisive. Since the first research that studied the impact of the internet on society, the different authors have not been able to define a common line of reasoning in defence of the moderating effect of this variable. Some studies identified a positive relationship between the age of the consumers and the probability of them buying products online (Arshad, Zafar, Fatima, & Khan, 2015), while others obtained negative results (Mwencia, Muathe, & Thuo, 2014) or simply no relationship (Turner & Szymkowiak, 2019). From the study point of view, these divergences could stem from multiple factors, such as the sample selection criteria (Olaniyan-Shobowale, Bamiro, Salau, & Yahya, 2021) and the time when the study was conducted (Bryan & Zuva, 2021). Junqueira, Freire, Grützmann, and Zitkus (2023) establish that age is a vital factor for technological acceptance. Thus, young users are the least affected by acceptance problems, unlike older users, as proven in the different reports and statistics that stand at the basis of the present study (Alexandrakis, 2019; Guido, Ugolini, & Sestino, 2022).

Multiple studies have tried to establish whether age can be considered an influencing factor for consumers' attitudes and behaviours by analysing aspects such as auto-scanning, automatic debiting, and online services (Pryor, 2022), the use of the internet (Bezrukova et al., 2023), self-service technologies (Liébana-Cabanillas et al., 2018), and technologies in the retail sector (Bermúdez-Gallegos, 2022), instant messaging (Rampersad & Althiyabi, 2020) and mobile commerce (Mehra, Paul, & Kaurav, 2021), among others. With regard to the theoretical proposal of the previous model, the present study explores the role of the age of the user, based on the TAM model and the proposed extensions, including the constructs of perceived risk and trust and bearing the name MPTAM (Mobile Payments Digital Technology Acceptance Model).

Research regarding effects of age in digital technology adoption and use has indicated that younger digital technology users value usefulness of the digital technology more than older users when deciding on use intentions (Kraus et al., 2020). Furthermore, older users are considered to be more affected by social influence than young ones (Blackwell et al., 2018;

Şahin, Doğan, İlic, & Şahin, 2021; Uğur, Koç, & Koç, 2016) in their digital technology adoption processes, potentially due to higher affiliation needs (Tao, Fu, Wang, Zhang, & Qu, 2022; Welch, Alade, & Nichol, 2020). This could be especially pertinent to organizational contexts where younger employees may seek to be more autonomous (Raemdonck, Beusaert, Van der Heijden, & Segers, 2022) than older ones. However, in an organizational context the effect of age on social influence in IT adoption has been reported to diminish in the long term (Graf-Vlachy, Buhtz, & König, 2018; Lorenz & Buhtz, 2017). The lesser effect of social influence on younger users may be a result of the fact that younger users have been exposed to digital technologies at a younger age (Marikyan & Papagiannidis, 2021). This so called digital divide between generations (de Kok & Klaiber, 2022; Manis & Choi, 2019) has developed as younger generations become exposed to digital technologies earlier and earlier. Consequently, older generations tend to experience lower self-efficacy and more computer anxiety than younger people and so perceive their skills in using digital technologies as lower (Jokisch, Schmidt, Doh, Marquard, & Wahl, 2020; Long et al., 2022; Petrie & Darzentas, 2020). Furthermore, it has been shown that digital technology acceptance (Hauk, Hüffmeier, & Krumm, 2018; Manis & Choi, 2019) and perceived usability (Schnack, Wright, & Holdershaw, 2019; Turetken, Ondracek, & IJsselsteijn, 2017), which are affected by age (Lee & Coughlin, 2015; Schuster & Cotten, 2024), play a major part in digital technology adoption and digital gaming. Older digital technology-users emphasize ease of use more when assessing the usefulness of a given system (Hargittai, Piper, & Morris, 2019; Hauk et al., 2018; Tamilmani, Rana, Wamba, & Dwivedi, 2021). As learning to use new devices or services may become a more time-consuming process with age, the trade-off between perceived ease of use and perceived benefits of the device or service becomes relevant (Koivisto, 2017; Solomon, 2020). Findings of age having no effect on perceptions of ease of use or usefulness of, for example, online communities have also been published (Assaker, 2020; Jokisch, Scheling, Doh, & Wahl, 2022), which prompts examination of the effects of the services' content and affordances from an age perspective (Dincelli & Yayla, 2022).

It is equally expected that younger users, guided by greater knowledge about and access to technological tools (Lladós-Masllorens et al., 2022) will show a higher level of trust and ease of use than older users, who will act more reluctantly towards the new payment tool which are significant differences in the abovementioned studies. On the other hand, according to (Jatmiko, Syukron, & Mekarsari, 2020), younger users are more likely to disclose information on social networks and they ignore the potential risks, while Pentzold and Bischof (2023) and

Koosha (2018) claims that young users show a higher level of trust in the self-service systems. Therefore, it becomes apparent that younger users will show greater predisposition to the new technologies, thanks to more trust and less effort dedicated to examining the details of the web service itself and to evaluating its quality, and hence increasing the perceived ease of use (Matassi & Boczkowski, 2020). Besides, younger users will give greater importance to extrinsic rewards (equivalent to the perceived usefulness) and will have fewer difficulties to process complex stimulus (Wut, Ng, Leung, & Lee, 2021), which will therefore determine to a greater extent the intention to use the new payment system. On the other hand, older users will be more influenced by the opinion of others (Chang, Liu, Huang, & Hsieh, 2019; Meng, Guo, Peng, Ye, & Lai, 2022).

Correspondingly, younger users will show greater inclination towards new technologies, and thus more trust and less effort will be dedicated to examining the details of the web service itself and to evaluating its quality, hence reducing effort and improving their attitude towards the service (Anshu, Gaur, & Singh, 2022; Elia, Solazzo, Lorenzo, & Passiante, 2019; Lorenzo-Romero, Chiappa, & Alarcon-del-Amo, 2013; Ragucci et al., 2023).

2.9 The moderating effect of level of education on entrepreneurship digitalisation and women entrepreneurship performance

A plethora of empirical literature has identified a wide range of factors that influence digital technology adoption decisions by farmers (Paudel et al., 2020). Among such factors, and being consistent with the human capital theory, education may be one of the most frequently used variables in empirical models. Research points out that education is positively correlated with digital technology adoption. In agriculture, farmers with higher education have better access to information and knowledge that are beneficial to farming operation. They also tend to possess higher analytic capability of the information and knowledge necessary to successfully implement new digital technology and realize expected results. Hence, higher education allows farmers to make efficient adoption decision (Sennuga, Fadiji, & Thaddeus, 2020) and early adopters who can take advantage of new digital technology are likely to extract maximum profit (Abdulai, Abdul-Rahaman, & Issahaku, 2021). Highly educated farmers also tend to adopt digital technology with greater intensity (Gao, Zhang, Lu, Wu, & Yin, 2017; Saha, Raut, & Kumar, 2023).

In agriculture, human capital of farm operators can be represented by a number of different ways, with formal education and farming experiences being two of the most commonly adopted measures. Although farming experience can be a preferred measure in a static environment in which accumulated knowledge in farming operation or in the job training experiences do not depreciate or become obsolete, formal education is widely considered to be the most important form of human capital (Lulle, Janta, & Emilsson, 2021) in a dynamic political and economic environment where new digital technology and information are regularly developed (Nadezda & Josef, 2021). In such a more realistic setting, formal schooling will play a more prominent role than farming experience for farm operators to constantly update their knowledge and farming practices to stay competitive.

A number of empirical studies have shown the positive effect of education on adoption of various types of digital technology in agriculture. For example, education is found to have a positive impact on adoption of forward pricing methods (Nienhaus, Franken, & Pennings, 2023), computer digital technology (Ahmed & Ahmed, 2023), use of the internet (Ma, Nie, Zhang, & Renwick, 2020), reduced tillage (Basnet, 2021), recombinant bovine somatotropin (rbST) (Ufer, Ortega, Wolf, McKendree, & Swanson, 2022), precision farming (Kolady, Van der Sluis, Uddin, & Deutz, 2021), genetically engineered corn (Anam & Anum, 2023) and the level of participation in government-supported conservation programs (Lambert, Hogan, Solinas-Saunders, Morrow, & Vickovic, 2024; May, Lambert, Leone, Keena, & Haynes, 2020), to name a few.

On the other hand, there are also some empirical evidences of insignificant or even negative effect of education on digital technology adoption. Farmers' education has insignificant effect on adoption of variable rate digital technology (Maré, Zahonogo, & Savadogo, 2023) and GPS guidance system for cotton farmers (Edge et al., 2018; Velandia et al., 2016). Roussy, Ridier, and Chaib (2017) identified factors affecting adoption of best management practices (BMP) for Louisiana crawfish producers, but education was found to be insignificant for adoption of all but one BMP, where education was found to be negatively correlated with BMP adoption. There are studies that discovered mixed effects of education on different technologies; Pratt, Tanner, and Thornsberry (2021) found that education positively affected adoption of conservation tillage whereas it had no significant impact on adoption of medium term practices such as contour farming, strip cropping, and grassed waterway; Alarcón and Lema (2023)

found a positive impact of education on adoption of cattle feeding digital technology but not such impact is found for implanting digital technology.

Canales, Bergtold, and Williams (2018) studied factors affecting adoption of conservation tillage for farmers. They unexpectedly found that education is negatively correlated with adoption, holding other factors (such as the proportion of off-farm work time to on-farm work time, among others) constant. This implies that highly educated farmers are less likely to adopt conservation tillage, given the same proportion of off and on farm work time. Because highly educated farmers are more likely to earn higher wages from off-farm work, they are expected to have a higher proportion of off-farm income to on-farm income given the same proportion of on and off farm work time. Therefore, it seems plausible if highly educated farmers, who are more reliant on off-farm income, have fewer incentives to spend time and effort on farming, including adoption of digital technology such as conservation tillage.

According to Neumeyer, Santos, and Morris (2020) the issue of digital technology and digital literacy is particularly prevalent in the context of poverty entrepreneurship in developed economies, where educational systems are challenged to provide general literacy, to the detriment of providing the poor with comprehensive learning environments to develop digital technology and digital literacy. Additionally, businesses founded by the impoverished are frequently survival endeavors with few or no employees, which restricts their ability to absorb new information beyond the founder's proficiency with digital technology.

For low-income entrepreneurs, the first priority must be to enhance their digital technology literacy. For some, digital technology literacy is primarily associated with computer literacy, or the knowledge and ability a person has to use computers or to use computer programs and other applications associated with computers (McMillan, 1996). Others prioritize Information and Communication Digital technology (ICT) literacy, or the person's ability to gather, organize, analyse, and report information using digital technology (Leu, Kinzer, Coiro, Castek, & Henry, 2018). Yu, Lin, and Liao (2017) and Oh et al. (2021) took a more comprehensive view, defining digital technology literacy as "an individual's abilities to adopt, adapt, invent, and evaluate digital technology to positively affect his or her life, community, and environment." Gross et al. (2023) suggested that a technologically literate person can "use digital technology as a tool for organization, communication, research, and problem solving." Therefore, digital technology-literate people know what the digital technology is capable of; they are able to use the digital technology proficiently; they make intelligent decisions about

which digital technology to use and when to use it; and they can leverage digital technology in the creation of new entrepreneurial ventures.

The related concept of digital literacy refers to the competencies needed to participate in a knowledge society through the use of and interaction with digital devices such as smartphones, tablets, laptops, and desktop PCs (Dingli & Baldacchino, 2018; Jan, 2018). Digital literacy enables (poverty) entrepreneurs to supply digital artifacts as well as connect their ventures to digital platforms (Nambisan, Lyytinen, Majchrzak, & Song, 2017; von Briel, Recker, & Davidsson, 2018). Building on the three distinct elements of digital technologies as defined by von Briel et al. (2018), Attuquayefio, Aboagye-Darko, and Okronipa (2023) and Garzoni, De Turi, Secundo, and Del Vecchio (2020) and propose that digital literacy in the context of entrepreneurship entails being able to effectively use digital artifacts (i.e., “a digital component, application, or media content that is part of a new product (or service) and offers a specific functionality or value to the end user”), digital platforms (i.e., “a shared, common set of services and architecture that serves to host complementary offerings, including digital artifacts”) and digital infrastructure (i.e., “tools and systems such as cloud computing, data analytics or online communities, among others, that offer communication, collaboration, and/or computing capabilities to support innovation and entrepreneurship”).

Digital technology is a key to identifying, evaluating, and exploiting opportunities (Denner, Püschel, & Röglinger, 2018), scaling a venture’s competitiveness (Nouicer, Zaim, & Abdallah, 2017), achieving improvements in efficiency and effectiveness (Srivastava et al., 2022), as well as to innovating (Assing Hvidt et al., 2023). Yet, the poor often struggle to access and utilize many of the available digital technologies. There are several reasons for this. Dy, Marlow, and Martin (2017) point out that race, sexual orientation, and poverty often translate into negative customer biases, leading entrepreneurs to alter their online identity. Second, poverty entrepreneurs lack the necessary financial resources for digital technology adoption. Basic hardware (e.g., computer, smartphone) or software (e.g., Excel) that would be a manageable investment for a regular small business, poses an often insurmountable challenge to the poor. Finally, despite the significant presence of smartphones and other technological devices, poverty entrepreneurs often lack the necessary digital literacy and practice capabilities that are needed to leverage digital technology for their ventures.

As demonstrated with even relatively basic technologies such as smartphones and desktop or laptop computers, there is a significant gap in usage by those with low incomes. Close to half

of African American and Hispanic households in the US do not have broadband access, while more than half of teachers in low-income schools struggle to incorporate digital technology into their teaching because of lack of student access (Wästberg, 2019; Zunimova, Soltan, Likhachevski, Ismailova, & Issayeva, 2023). In an OECD study involving 40 countries, 30 of which have developed economies, the evidence suggests the digital divide is growing among the poor (Hutt, Mills, White, Donnelly, & D'Mello, 2016).

Much attention is devoted to expanding affordable (or free) Internet access in low-income neighbourhoods. The dissemination of smartphones has helped in this regard and for some it is their only avenue to the digital world (Smith, 2015). However, access itself is not sufficient. As Hargittai and Dobransky (2017) and McCloud, Okechukwu, Sorensen, and Viswanath (2016) pointed out, individuals with a low socioeconomic position use the Internet less for beneficial capital-enhancing activities such as helping with career advancement or utilizing financial services than higher income individuals. Similarly, Neumeyer et al. (2020) and Livingstone, Mascheroni, and Staksrud (2018) reported evidence from the OECD that the poor in developed economies use the Internet in different ways. Specifically, low-income teenagers are more likely to use the Internet to chat or play games and less likely to search for practical information or read the news, when compared to their higher income counterparts. The author notes that these usage patterns also correlate with academic performance. Appreciating the potential of the Internet is also affected by teacher preparation. Greenhow, Lewin, and Staudt Willet (2021) cited evidence that teachers in high-poverty schools are less likely than those in wealthier schools to have received training in how to integrate digital technology into classroom instruction. In addition to the use of the Internet, social media, and downloadable apps, potential entrepreneurs need exposure to innovative approaches for facilitating transactions electronically, building, and mining databases, and using software to accomplish basic business activities such as keeping records and accounts and managing payroll. Furthermore, while discussions of digital technology and the poor stress challenges with using information, communication, and digital-related technologies, these tend to be especially critical for managing processes within start-up ventures. Beyond this, the study consider many of the highest potential products and services being developed by entrepreneurs today, they often incorporate nano, energy, biorelated, chemical, polymer, medical, laser, sonar, robotics, advanced manufacturing, and other technologies. These entrepreneurs increasingly rely on artificial intelligence in their operations and decision-making processes. A key implication is that more effort must be devoted to science and mathematics in primary and second schools

attended by the poor, and to getting more of those from poverty into science and engineering fields in colleges. While so-called science, digital technology, the arts, engineering, and math (STEAM) learning is getting more attention in low-income schools, it is not enough. Greenhow et al. (2021) and Tyler Sr (2021), in comparing the use of digital technology in a poorer school district with one that is economically better off, concludes that other problems tend to take precedence in the poor district, while the transformative potential of newer models of hands-on, tech-infused, project-based learning is less appreciated. The learning challenge is to help low-income entrepreneurs advance through at least three, and in some cases four, levels of digital technology and digital literacy.

- i) Level 1 (Basic Usage):** Developing a solid understanding of how to perform basic tasks (e.g., writing, communicating, searching for information) using contemporary digital technology and digital devices such as desktop and laptop computers, smartphones, tablets, or similar technical equipment.
- ii) Level 2 (Application):** Mastery of more complex tasks such as completing economic transactions (e.g., buying and selling) in the digital world, use of web applications, or basic financial management and planning software.
- iii) Level 3 (Development):** Developing the ability to collect and process data using digital platforms, and/or use complex digital artifacts and/or equipment such as medical devices, machining tools, and 3D printers.
- iv) Level 4 (Transformation):** Achieving the ability to, (a) use coding language to develop new software that gets computers and products to do things, (b) build complex prototypes for new products, and/or (c) create and transform digital artifacts, platforms and infrastructures.

With respect to the poor in developed economies, digital technology and digital literacy is frequently limited to levels 1 or 2. This helps explain the very low proportion of digital technology-centric ventures that are created in economically disadvantaged neighbourhoods (Neumeyer, Santos, & Morris, 2018). However, many of the product and process technologies used in start-up ventures are increasingly accessible with a level 1 or 2 mastery of digital technology. The first level represents the upper limit on what is accomplished in many low-income neighbourhood schools. The second level includes the use of software for managing a range of business activities, from accounting to customer relationship management (CRM). There are some natural barriers for low-income entrepreneurs at this level of digital technology

engagement, starting with the cost of software licensing and affordable training (Fischer, Guerrero, Guimón, & Schaeffer, 2021). E-commerce platforms such as Amazon, eBay, Shopify, Magento, Squarespace, and Symphony Commerce offer the poor an opportunity to access a wider target audience for their products and/or services.

The highest levels find the entrepreneur actually developing new technologically-intensive products and services. The creation of application software has been the focus of many high-growth digital technology ventures, often operating from digital technology incubators/accelerators in specific geographic regions such as Silicon Valley or the Research Triangle. With respect to low-income entrepreneurs, this can be most challenging, as it can require a combination of seed funding, mentoring, digital technology literacy and skills, and access to incubator and accelerator space. Research has shown that entrepreneurial ecosystems are not very permeable to entrepreneurs from poverty-stricken areas (Neumeyer et al., 2018). Yet, computer coding is increasingly accessible. An interesting example can be found with the efforts of the Raspberry Pi Foundation in the United Kingdom. Working with educational partners they bring very low-cost computing, a basic mastery of coding, and digital-maker projects to those in adverse circumstances.

Research by Çam and Erdamar Koç (2021) shows that a better and more powerful future for countries depend on the quality of the training they provide for their young individuals with and on the rich learning environments they establish for these individuals. Studies conducted demonstrate that education systems play an important role in the development of countries and that the financial growth and development of countries increases in line with the number of trained and equipped individuals. For this reason, the most important funds of a country are the individuals in that country (Lundahl, 2021; Ngamaba, Kandala, Ilenda, & Mupolo, 2023). Countries aware of this fact have put educational institutions under governmental control and management. Thus, the major environments that provide educational services are schools (Demirel, Özmat, & Elgün, 2016).

The education level of hotel guests is related to the level of digital technology usage. In 2017, Peer Research Center presented the statistics of US adults who use the Internet based on their education level in 2016 (Villanti et al., 2017). Results revealed that 68% of the adults with less than high school diploma, 81% with high school diploma, 94% with a community college degree, and 98% with college degrees spent time on the Internet (Silver et al., 2019; Smith & Anderson, 2018; Villanti et al., 2017). These trends will continue to grow in the coming years.

Evidently, digital technology is applied and embedded in the higher education sectors. Students can upload an assignment and respond to the instructor on the online platform. Thus, highly educated people are likely familiar with advanced digital technology and its applications. Advanced digital technology would enhance the learning experiences of students. Cambridge Assessment International Education (2018) reported that students in Indonesia are the highest users of digital technology (Ambarwati & Mandasari, 2020; Durriyah & Zuhdi, 2018).

Consumer demographics like gender and education level can directly and indirectly affect a customer's intention to use digital technology (Kim, Kim, Badu-Baiden, Giroux, & Choi, 2021; Tavitiyaman et al., 2022). Kanwal and Rehman (2017) explored the relationship between education level and perceptions toward personal computers use among the employees of government agencies in Pakistan. When compensation is used as a control variable, the mean value of perceptions toward personal computer use gradually decreases based on education level (i.e., high school, bachelor's degree, master's degree, and doctoral degree). Gupta and Yadav (2022) and Mutahar, Daud, Thurasamy, Isaac, and Abdulsalam (2018) examined the relationship among education level, perceived usefulness, and perceived ease of use and found no relationship between education level and intention to use digital technology. These existing studies have not produced any consistent findings regarding the impact of education level on digital technology acceptance and perceived usefulness. Another investigation on these relationships is suggested. The notion of past experience and education level reflects the perception of tourists from the perspective of technological application and its perceived usefulness. The attributes of tourists in terms of past experience and education level can interrelate with the overall perception of the perceived digital technology adoption.

2.9 Challenges faced by women entrepreneurs in the process of adopting digital technology for women entrepreneurship enhancement

Previous studies claim that there is a positive relationship that exists among the performance and the four constructs; perceived usefulness, perceived ease of use, experience of the past and voluntary use of technology (Akgül, 2018; Jahandideh et al., 2016; Lee, 2016; Lin, Chang, & Kuo, 2018; Rajapaksha & Dk, 2019). Moreover, in a studies by Merhi, Hone, Tarhini, and Ameen (2021), Magsamen-Conrad and Dillon (2020), Acheampong et al. (2018) and Berkowsky, Sharit, and Czaja (2017) highlighted that age positively influences adoption of digital technology. Cimbaljević et al. (2023) examined the relationship among education level, perceived usefulness, and perceived ease of use and found no relationship between education

level and intention to use digital technology, unlike Tavitiyaman et al. (2022) and Tarcan and Varol (2010) who found that there was a positive relationship between level of education and adoption of digital technology.

However, even if different researches found positive influences, women entrepreneurs face many impediments which to a greater extent restrain them from digitalising their entrepreneurial activities. Researchers have used the term barriers or impediments in their research papers and have classified obstacles to ICT intergration in a variety of ways. Octaberlina and Muslimin (2020) categorized these impediments as material or non-material. Inadequate ICT infrastructure, such as computures and software copies, are the tangible obstacles. Non-material barriers include entrepreneurs lack of ICT expertise, time constraints, and ignorance of the connection between ICT and education. These obstacles were separated into intrinsic and extrinsic barriers in several investigations. According to Cutri, Mena, and Whiting (2020), extrinsic barriers also known as first order barriers are mentioned as time, acess, support, training and resources. Steinke et al. (2021) and Hendricks and Mwapwele (2024) established that to increase adoption of ICTs in less developed countries, a focus must be placed on meeting the needs and addressing the limitations of the end user by demonstrating the advantages to adopting a given ICT innovation. Literature shows that women entrepreneurs are affected by some of the challenges discussed below.

2.9.1 Missing of supporting institutions

A lack of supporting institutions creates additional challenges for entrepreneurs (Amini Sedeh, Pezeshkan, & Caiazza, 2022), especially in developing countries. Several works in the Indian context are contributing to this stream of research. Aryal et al. (2020) highlight that this is an issue both for the entrepreneurs and for the system level, since technologies and practices such as the climate smart agriculture could support both environmental and economic sustainability. Murugesan and Sudarsanam (2020) confirm the same relationship, in the even more specific field of sustainable rural development. Nonetheless, to do so, institutions should support the upscaling and out scaling of technologies through investment, policy and institutional framework at the micro, meso (industry) and macro (system) levels and both nationally and locally. Kaur, Pannu, and Malhi (2019) confirms that Indian policymakers should explore technologies to maximize their outreach and extend the benefits to a larger set of population, improving food security. Richards et al. (2009) show that the African countries face challenges in how to integrate new sources of knowledge within their farm to improve food security.

Technical support is crucial before the provision of ICT resources in schools so as to provide timely elucidation for technical faults. Providing resources to schools is not sufficient for effective use of these resources. As teachers without the technical knowledge and skills need assistance and guidance of technical personnel. Moreover, maintenance of ICT resources also requires the presence of these technical personnel for the swift retrieval of the technical problem (Hew & Brush, 2007). Furthermore, even when schools are provided with ICT resources and teachers are using these resources effectively, if technical faults arise, this will interrupt the smooth delivery of lessons and will waste time until the problem is resolved (Lim & Khine, 2006). Although ICT training is beneficial for teachers but lack of technical support concerns teachers. Therefore, there must be proper mechanism of providing technical support to teachers for encouragement of using technologies (Adtani, Neelam, Raut, Deshpande, & Mittal, 2023). In this respect, ICT coordination and support is mandatory in schools for the effective use of ICT (Sang & Edabu, 2023).

2.9.2 Lack of appropriate incentives

Carmela Annosi, Brunetta, Capo, and Heideveld (2020) state that the implementation of digital projects must be executed by firms and individuals who have the appropriate incentives to work with groups. Also, Khanna and Sharma (2021) claim that the adoption rates are often low due to behavioural factors and that those factors can be solved by appropriate incentives. Another issue is related to the fact that, within complex supply chains, the sustainable development of digital technology can be limited by a perception of diverse incentives by different players, since benefits and costs do not always accrue in an equitable manner (Carmela Annosi et al., 2020). Thus, the adoption may critically depend on relationships and incentives. Within their study, Li, Li, Song, and Fan (2021) suggest solutions such as contract designing and sourcing channel to set mutual benefits, in order to create that “shared value”, which stands at the basis of sustainable development.

2.9.3 Lack of user involvement, family involvement, and community involvement in digital technology adoption by women entrepreneurs

Our review has highlighted three barriers related to the lack of involvement, at three different levels: (i) the lack of user involvement, or even the user resistance, related to a lack of an entrepreneurial mind-set of entrepreneurs, which impacts on the demand growth rate, limiting the diffusion of knowledge related to the innovation and enhancing the adoption and diffusion costs for sustainable entrepreneurs (Gruenhagen & Parker, 2020); (ii) partner involvement and

commitment, meant as their propensity to adopt or to bear costs and risk of the new technologies (Wang, Jin, Yang, & Zhou, 2020); (iii) the involvement of community, which seems to play a relevant role, especially when searching for solutions to ensure the needs of the poorest classes of people, such as access to technologies, education and knowledge (Habiyaemye, Kruss, & Booyens, 2020). Community involvement, but of a different type – integrated resource management communities – is also at the core of the study by Sanders and Masri (2016), focussing on the energy–water agriculture nexus.

2.9.4 Unavailability of Infrastructure

Another obstacle to the development of ICT is the poor condition of the infrastructure, in terms of quantity and quality. Of course, this poor condition affects the ease to get access to information. In connection with the availability of infrastructure it makes access to information costly, which in turn makes the use of ICT low. Many African countries have a very low base from which to implement ICT interventions in education management in schools. It is estimated that less than 1 per cent of people in Africa uses or have access to the Internet (Shava, 2022). The figure of 139 students per computer is given for World participants. Listed in order of rank, aspects that inhibit schools from acquiring computers are an absence of electricity, lack of funding, insufficient building space, lack of available and trained staff, and poor security. In Malawi, where most technology infrastructure is government controlled, very low levels of infrastructure for and use of ICTs are found, and many government departments have themselves not yet acquired computers. In sub-Saharan Africa, the low tele density and high costs of installing and maintaining lines are major barriers. Wireless technology is seen as a possibility for rural schools (e.g. in Lesotho). Some countries have implemented pilot projects for wireless technology in rural areas, for example SchoolNet Uganda.

2.9.5 High cost of digital technology equipment

Access seems also to be a challenge to the sustainable development of digital technology due to the high costs of equipment, maintenance and connectivity (Carmela Annosi et al., 2020). Many regions and firms cannot afford to improve their infrastructure as most of the time they lack financial resources to do so. Entrepreneurs indeed, complain about the fact that they do not have access to a better broadband connection or access overall as confirmed by Pant and Odame (2017), in their study of Canadian farms. Additional, in supply chains the infrastructure seems to work as a critical bridge between small and big data and therefore needs to rely on access (Coble, Mishra, Ferrell, & Griffin, 2018). Rotz et al. (2019) conquered by suggesting

that there is need to improve the infrastructure, decision-makers must consider the acquiring, installing and maintaining costs. According to the statistic given by the Human Resources Development Fund, around 98.5% of the business in Malaysia are micro, small, medium enterprises (MSME) (Human Resources Development Fund, 2019). Half of them claimed that funding is the main issue to digitalisation due to high costs (Calderon-Monge & Ribeiro-Soriano, 2024). Digitalisation requires a high network connection to perform economic activity. However, the broadband are low speed yet highly-priced and connectivity issue might still occur (Seah et al., 2021). This reduces the likelihood of the owners to spend for the technologies to be digitalised. Moreover, Malaysian lacks IT skills (Husin et al., 2023).

Entrepreneurs do also face high costs in the extension of learning presentations since those are costly in terms of resources (also in terms of travel time) and distance for extension agencies. Hidden costs do also play a role in the adoption of digital technologies (Gerli, Clement, Esposito, Mora, & Crutzen, 2022). The knowledge like Science, Technology Engineering and Mathematics are highly required to adapt the evolving technologies (Lee, Grover, Martin, Pillai, & Malyn-Smith, 2020). This requires the SMEs to spend more to upskill their staff. 3% to 4% of the employee costs is expected to spend on technical training (Ssenyonga, 2021). It will require the SMEs to upraise their budget and their business cost. The business owners will earn a lesser profit. On another hand, outsources could be one of the solutions to solve the shortage of internal technical manpower, but the costs are typically high. Hence, the business owner might not be willing to digitalise their businesses as it is unnecessary, and they could still make a profit from the traditional way of business. Another relevant element is the switching cost from lower cost and higher diffusion of alternative technologies, which is particularly relevant when significant financial investment is required to adopt technology, even in the light of higher potential sustainability (Chatterjee, Greenland, Low, Watson, & Nguyen, 2023). For example, in terms of adoption of big data within the whole agricultural value chain, Li, Lin, Ouyang, and Luo (2022) argue that, although there are high volume costs, the adoption of big data will eventually result in reducing operational and processing costs.

2.9.6 Language barrier

Languages within a country can differ a lot, because countries may use a main common language while also having many local languages. For example, in Zambia, the development information is accessed in eight languages (Gille & Lepawsky, 2022). It requires a lot of effort to translate knowledge and informative knowledge in order to serve every local group. When

different groups of entrepreneurs cannot access the information in their language, this can result in a lack of usage of ICT by these groups. Research shows that 80% of software and online content are in English. This is a serious barrier for countries where English is not the first language like India and Pakistan (Salam, Jianqiu, Pathan, & Lei, 2017). This limits the access for people who are not fluent in English. The country of Bangladesh with poor economies and low literacy has the problem of language and curricula. Schools are offering education with local curricula in Bangla language. Since standard software are designed in English, availability of software in the local language and curricula are hampering the successful implementation of ICT (Osama & Latif; Salam, Zeng, Pathan, Latif, & Shaheen, 2018). Outdated curricula and medium of instruction are stumbling blocks to adopt ICT in education in Nigeria (Martens et al., 2020). Medium of instruction and outdated curricula remain the main hurdles in the integration of ICT in public schools of Pakistan (Rafeeq & Ali, 2021).

2.9.7 Lack of general understanding on information technology

In the 21st Century, Information Technology (IT) is one of the most important things that connect the world. However, entrepreneurs lack of general knowledge about information technology (Low, Seah, Cham, & Teoh, 2022). This was due to people who are having poverty or refuse to use digital technology (Aguilera, 2019). Jamil (2021) examines the difference between castes in rural Pakistan and their use of digital technologies, concluding that the use of ICT is dependent on the literacy of the people. Castes of entrepreneurs should be much more educated in order to make use of the technologies Newsome (2021) state that the position of women in the agriculture will be diminished when they are not educated, but they also mention that lack of education is a barrier in adoption. In congruent to Cherotich, Sibiko, and Ayuya (2022), Bannor and Arthura (2024) pointed out that lower education levels put women entrepreneurs in Kenya at a disadvantage compared to men. While gender gap in primary education in Kenya has decreased in recent years, the gap remains high at secondary and tertiary education levels. Lower education does not emphasize entrepreneurship skills. It decreases the chances that women will have the knowledge needed to excel in business, and thereby contribute to the country's overall economic growth. In education, preference is given to boys, thus the educational level of most women entrepreneurs is very low, creating a barrier to them accessing training and other business developments services (Bhatti, A Al Doghan, Mat Saat, Juhari, & Alshagawi, 2021). Lack of sufficient education and training for women is another impediment to micro-enterprise success. Culturally, and especially in the rural setting, the girl child was not given equal opportunity to study like the boys; hence they had limited

education and training (if any) which tends to affect effective performance in later life. In addition, women are usually less educated than men, making them less well equipped to manage a business (Kabeer, 2021). Ndungu and Anyieni (2019) noted that entrepreneurial education and training play a key role in stimulating entrepreneurship and self-employment. Despite the presence of Business Development services in Kenya not many women entrepreneurs use it because of cost, access, necessity, or availability (Ogundana, Simba, Dana, & Liguori, 2021).

2.9.8 Unavailability of electricity and unstable internet

For the effective use of ICT tools in classrooms, access to electricity and internet is crucial. Most of the rural schools of Kenya are deprived of electricity and internet. The same situation prevails in most of the developing countries of the world (Ogundana et al., 2021). In a recent study carried out by Ntorukiri, Kirugua, and Kirimi (2022) in Kenya, the provision of electricity and internet is a key challenge in implementing ICT in schools. However, Rao and Rao (2019) stated that in some slum areas of India, schools were provided electricity with solar panels, where electricity was not available. Most of the rural schools of Bangladesh are deprived of electricity and internet access (Parvin & Alam, 2022). Power interruption and low-connectivity of internet impedes the teachers' use of ICT in classes (Prasad, Lalitha, & Srikar, 2015; Salam et al., 2018). In the age of technology, it is imperative for teachers to use ICT in their teaching practice, however, due to power failure and slow internet connection in Pakistan, teachers face problems in using ICT effectively in their classes. This situation is alarming in rural areas of Pakistan as most of the public schools of rural areas are deficient in the provision of electricity and internet (Salam et al., 2018).

2.9.9 Lack of business models that supports digital technology adoption

Carmela Annosi et al. (2020) and Atanga (2020) highlight that the successful sustainable development of digital technology in agri-food sector is partially dependent on the business models that providers adopt, especially for the successful adoption and diffusion. If those are not designed to embrace such innovations (Mazzucato, Kattel, & Ryan-Collins, 2020), both financial investments and in the development of skills will not take place. Gericke and Torbjörnsson (2022) agreed that most reforms in schools fail because of flawed implementation. According to Ziegele and van Vught (2020) the second impetus has been standardization by modelling schools on factories with the expectation of uniformity of outcome. The difficulty associated with facilitating change in people's values, attitudes, and

behaviour is grossly underplayed and often ignored (Mbaka, 2014). Venkatesh and Davis (2000) proposed that change in adopting technology means changing attitudes, norms, beliefs, and values associated with the corporate culture. Business managers who had adopted more progressive ICT oriented management styles over time felt that ICTs helped them change, but they do not acknowledge ICTs as the catalyst for change; instead, they cite reflection upon experience, classes taken, and the context or culture of the corporate (Faruq, 2020). For entrepreneurs to implement the use of technology in a constructivist manner, they must have opportunities to construct pedagogical knowledge in a supportive (Ngo, 2024; Taylor & Todd, 1995). Vahvanen (2022) details how each new development in the popularization of information and entertainment technology (radio, film, television, computers) in society at large brought with it a corresponding insistence that the deployment of this revolutionary machine into schools would, finally, bring the classroom out of the dark ages and unto the modern world. This has not been the case. Providers must consider the complexity of technologies and the technological readiness of adopters. In this light, the proposed value proposition, as well as the design of revenue and cost model to deliver such proposition is of critical importance.

2.9.10 Lack of digital technology knowledge

Limited knowledge and skills for using ICT by entrepreneurs contribute to the challenges (Baumüller & Addom, 2020) or in delayed development (Murugesan & Sudarsanam, 2020). Mendes et al. (2022) in their survey found this to be a major issue, especially with respect to the lack of knowledgeable, trained and skilled workers capable of operating digital technologies and systems. In this direction, to face the lack of informative platforms, Pliakoura, Beligiannis, and Kontogeorgos (2020) suggest entrepreneurs to share their knowledge through videos. Still related to knowledge and competencies, the work by AlMindeel and Martins (2021) recalls the role of competence and knowledge related to advisors, consultants and services, proposing a scale for its measurement. Knowledge, training and capacity of advisors and consultants are of crucial relevance and shall be considered to make sure that technologies are correctly delivered, and their benefits are transmitted to entrepreneurs and entrepreneurs and could be enhanced by designing trainings and initiatives (Umar, Ameh, Muriithi, & Mathai, 2019).

While dealing with ICT tools, teachers face technical problems that prevent them from using ICT (Warioba, Machumu, Kulunga, & Mtweve, 2022). Hence, timely assurance of technical

support may help teachers in saving time and smooth delivery of lessons in classes. Technical barriers include internet connection failure and malfunctioning of ICT tools. Many respondents in various studies conducted by different researchers showed their concerns about technical faults and lack of technical support (Atambeogo, 2020; Hammou & Elfatihi, 2021). Teachers argued that fear of breaking down of ICT tool during a lesson might discourage them from using ICT in their teaching practice (Gbemu, 2022). In some western countries schools are provided with technical support to help teachers in using ICT effectively (Essuman, Korda, Essigyan, Febiri, & Aboagye, 2022).

Technical support is crucial before the provision of ICT resources in schools so as to provide timely elucidation for technical faults. Providing resources to schools is not sufficient for effective use of these resources. As teachers without the technical knowledge and skills need assistance and guidance of technical personnel. Moreover, maintenance of ICT resources also requires the presence of these technical personnel for the swift retrieval of the technical problem (Verhoeven, Heerwegh, & De Wit, 2020). Furthermore, even when schools are provided with ICT resources and teachers are using these resources effectively, if technical faults arise, this will interrupt the smooth delivery of lessons and will waste time until the problem is resolved (Tomczyk & Walker, 2021). Although ICT training is beneficial for teachers but lack of technical support concerns teachers. Therefore, there must be proper mechanism of providing technical support to teachers for encouragement of using technologies (Adtani et al., 2023). In this respect, ICT coordination and support is mandatory in schools for the effective use of ICT (Sang & Edabu, 2023).

2.9.11 Demographic or socio-economic variables

Age seems to be an important aspect in the adoption of technology (Caffaro et al., 2020). In fact, there is an agreement that demographic or socio-economic variables such as age significantly helped to explain differences between the adopters and non-adopters (Al-Ghaith, Sanzogni, & Sandhu, 2010; Gupta, Singh, & Bhaskar, 2018). Ribeiro, Barbosa, Moreira, and Rodrigues (2024) found that the individuals who tended to use the Internet early in Australia were young males, with high level of income and education. Chatterjee, Kar, and Dwivedi (2022) also confirmed that the economic status for individuals influences their ability to own and then use a technology. Moreover, Alipour, Salim, Stewart, and Sahin (2020) showed that demographic attributes play an important role in predicting adoption and that economic status (income) is highly correlated to initial adoption. Rogers, in his diffusion of innovation (DOI)

theory proposes that new technologies are initially adopted by those who have more resources. The older a farmer is, the less likely is that this person is going to adopt digital technologies within his or her business. However, according to the results of Marshall (2021), this is not the case for grazier women in Queensland as, in that context, other factors, such as attitude and lower education, were more likely to hinder the implementation of digitalisation technologies.

2.9.12 Lack of time

Various researchers have found time limitations as a major impediment for using ICT by teachers (Hammou & Elfatih, 2021). Most of the entrepreneurs were of the view that they require more time for web browsing. Moreover, dealing with technical issues and obtaining the required training needs time (Flin & O'Connor, 2017). Similarly, many teachers argued that due to insufficient time they are unable to browse internet sites, explore the educational software and prepare the technology interceded lessons. Teachers pointed out that the preparation of traditional lessons require less time as compared to the lessons aided by the use of technologies (Alshareef, Imbeau, & Albiladi, 2022). In Bangladesh teachers have heavy workload of multiple classes and hence are unable to arrange technology material and prepare lessons by using ICT (Cross, Chowdhury, & Khan, 2022; Hasan, Khan, & Clement, 2015). Similarly, Wong (2016) investigated about the perspectives of primary teachers regarding the use of ICT in Hong Kong. He stated that teachers lack time to use technology in their classes. Hence, using ICT in classes would be unsuccessful because of insufficient time of teachers (Al-Mamary, 2022; Albugami & Ahmed, 2016).

In Saudi Arabia, teachers argued that limited class time of 45 minutes is insufficient to use ICT, secondly, use of ICT tools wastes time, moreover, classes are overcrowded and usually teachers loose class control when using ICT (Salam et al., 2018). Therefore, the class time should be extended and curricula must be reduced so that teachers can get ample time to use ICT tools while delivering their lessons (Parajuli & Koirala, 2021). Teachers have insufficient time for course planning. If teachers' time is strictly fragmented or limited with the number of classes, then teachers are unable to learn new skills and develop new methodologies for teaching (Brown et al., 2021). Insufficient time due to the overburdened time table and other school responsibilities hamper teachers to take out time for searching on internet and use of computers for teaching aid (Bozkurt et al., 2020). In Bangladesh, teachers are overburdened because of taking classes in two shifts. They are also engaged with administrative tasks. Resultantly, teachers do not have time to collaborate with peers, to learn the use of ICT tools and software

and to plan their lessons accordingly (Stockless, Villeneuve, Bisaillon, Fournier, & Venant, 2022; Tondeur, Scherer, Siddiq, & Baran, 2020). In Swaziland, teachers in schools teach number of subjects along with teaching ICT. Therefore, it is hard for them to manage and design ICT mediated lessons for different subjects (Mabena, Mokgosi, & Ramapela, 2021).

2.9.13 Digital data complexity

When digital technologies are successfully adopted within a company, a great amount of data is generated. This big data can be used by policymakers and decision makers in order to make punctual and efficient decisions. Big data propose a holistic to cope with the complexities related to entrepreneurial (e.g. farmer's and consumer's needs, efficiency, predictive analytics, supply chain integration). According to Faruk, Hossain Sarker, Al Mamun, and Hasan (2022) while the adoption of big data analytics could potentially bare huge opportunities and benefits, the applicability to agriculture is still debated, due to the complex structure of this technology which can be hard to implement without a support from institutions and services and a strong initiative. Hammann (2024) underline that data can be very complex to be managed due to structure, as confirmed by Aydin (2021) that analyse the need to coordinate the efforts of diverse stakeholders to provide relevant data gathered from heterogeneous sources. In this light, Shepherd, Turner, Small, and Wheeler (2020) suggest that data governance should be designed to enable an equal share of the benefits of digital agriculture. Quach, Thaichon, Martin, Weaven, and Palmatier (2022) support these argumentations, noticing that the high technical content of information and data hinder the potential usefulness. These problems can lead to difficulties for policymakers to process data, especially in lack of formal systems that help managing big data. Finally, Castro and Lechthaler (2022) explore these issues for managers aiming at finding and selecting relevant information, providing as a solution a generalized mathematical bioeconomic model which managers can use for livestock production systems.

2.9.14 Lack of ethical issues

The usage of technologies for a sustainable development is also related to the presence of dedicated services, at the institution, private firm or consultancy level. Ethical issues in the oral history field arise as digital oral histories may be placed on the internet. Ethical issues include protection from hackers; intellectual property rights; and archival custody. Archivists should ensure that oral history interview placed on the internet is protected from those who may manipulate it to suit their own needs. This places a responsibility on the archivists to put

appropriate measures to guarantee that information remains reliable and authentic as it was at the time it was collected. As information will be accessed online, Botswana National Archives Records Services (BNARS) may lose custody of the oral history collection. Issues of copyright are also a concern as online information may be reproduced without due regard for copyright issues. To deal with the issue of copyright, the University of Alaska at Fairbanks was hesitant to post oral history interviews online before consulting interviewees directly according to (Wheeler, Trimble, Quinlan, & Sommer, 2023). Sarker, Peng, Yiran, and Shouse (2020) highlight the need to support government initiatives, private sector's involvement and public private partnerships, to aim for a large-scale development of big data technology and the implementation of sustainable business models. According to Carmela Annosi et al. (2020), farms seem to limit their usage of agricultural information services as a consequence of a lack of promotion and training.

2.9.15 Lack of accessibility to digital technology

Inadequate amount of ICT resources creates this type of barrier if these resources are not available in time to users (teachers and students). In a study carried out by Joshi, Vinay, and Bhaskar (2021), respondents complained about the inaccessibility of computers due to several periods (classes) in a row and could not work on computers as they were shared by other teachers or they were in use by other teachers. Poor organization of ICT resources, inappropriate software, non-maintenance of ICT resources are some factors of inaccessibility to these resources. No access to internet and scarcity of pedagogical software were impediments in the use of ICT in Saudi schools (Alam, Khurshid, & Alam, 2024). About one third of the European schools do not have access to Internet (Korte, Burton, et al., 2022). However, accessibility to ICT resources does not mean that it is being applicable successfully but quality of hardware, inappropriate software and access to ICT tools by all users are some other barriers hampering the effective implementation of ICT in schools (Salam et al., 2018).

For the successful implementation of ICT, accessibility to ICT resources and the pedagogical relevance of these resources are necessary. Limited availability of resources in schools are hampering the use of ICT by teachers. Provision of ICT training to teachers and the availability of digital resources motivate teachers to help their students in the construction of knowledge rather than imparting knowledge. Bangladesh, being the developing country is facing challenges in the integration of ICT in education. So far, due to poverty, health and developmental challenges, education sector is facing problems of the provision of ICT

resources in schools. Apart from this, internet access is also very poor in schools, therefore, teachers are unable to make innovations in their teaching strategies with the use of ICT tools (Baş & Baştuğ, 2021). A study was carried out by Keshtiarast, Salehi, Tabatabaei, and Baharlooie (2021) in thirty high schools of Isfahan (Iran) to explore the challenges faced by English teachers while integrating ICT. The results of the study revealed that high school teachers were about the use of ICT but due to lack of resources, they were unable to adopt ICT in their teaching practice. A research carried out by Mlambo, Albert Maeko, and Khoza (2023) in 12 secondary schools and revealed that lack of insufficient ICT resources hamper teachers' confidence in using ICT. Moreover, few teachers were ICT trained but lack of resources negatively impact teachers' willingness for using ICT in their teaching practice.

2.9.16 Problem of technology growing old/obsolescence

Research by Lischer-Katz (2022) showed that digitising the oral history collections faces problems of technological obsolescence as new versions of hardware and software are regularly adopted. Allmendinger (2021) sees it as ironic that while the study should be celebrating the benefits brought about by digital technology, study are instead faced with threats of innovation, longevity and accessibility. Developing nations will have to put measures in place to ensure that digital information is accessible despite changes in technology over the years. McIlwaine and Ouda (2020) also note that the character of the IT industry is that it doesn't support long term access as the dynamic market forces work against standardization. Research into the technology use of entrepreneurs in Bangladesh argued that neither education nor income is a real barrier in the use of digital technologies, but that being modern (i.e. having children or being young) is very important (Sharmelly, Patidar, & Elahee, 2022). This means that when entrepreneurs have children or are from a younger generation, they are more likely to use digital technology within their businesses, because this "modern generation" uses it more often and thus faces less barriers in its usage.

2.9.17 Resistance to change or attitude and beliefs

Another challenge that is influencing the use of digital technologies is the lack of essential improvements. Literature refers to these in two ways. First of all, Omara (2021) claim that higher-level forms of organizations need to make several adjustments in order to realize the profits promised by the digital technologies. Another type of improvement lays within the technology itself, as described by Meske, Junglas, and Stieglitz (2019) looking at online calendar services or more in general at the degree of improvement at the technological levels.

For example, Broccardo, Zicari, Jabeen, and Bhatti (2023), looking at the Russian agricultural industry, show that significant investments in fixed assets and growth of physical capital did not create long-term growth in labour productivity. This is in view of a relation to a weak innovation activity at the country level and low technological competitiveness with respect to the international arena.

Research by Sibande (2021) indicated that teachers' attitude and beliefs play a significant role in bringing about didactic change related to the use of ICT for teaching and learning. The results of the study of Major, Francis, and Tsapali (2021), indicated that teachers believed that they were not being rewarded, supported or guided by the use of technology in their teaching practice. Not all countries have similar problems. In Europe that only few teachers were opposed of using technologies. The fact is that teachers are not guided about the need for didactic change and are not provided with the opportunities for making sense of new technologies for themselves (Korte, Körkkö, et al., 2022). Assessment of teachers' beliefs and attitudes towards the use of technologies is critical before the provision of ICT resources. Moreover, reforms in education policy regarding the technological planning must include some strategies to change the teachers' attitude and resolving their fear factor towards ICT. Entrepreneurs motivation for professional development and strong commitment to their students' learning can help in the effective integration of ICT (Soomro & Shah, 2022). Education entrepreneur's perception about the use of ICT in the class, ease of the use of available resources and incentive to pedagogical change by the school and policy makers are great hurdles in the integration of ICT in schools (Ngulube, 2022).

Limited availability of resources in schools are hampering the teacher's use of ICT. Lack of ICT resources in the classrooms results in the lack of digital competence of pupils. Provision of ICT training to teachers and the availability of digital resources motivate teachers to help their students in the construction of knowledge rather than imparting knowledge. While bringing technology into classrooms, there is an urgent need to change the teachers' attitude towards the use of technologies as teachers are at the forefront when it comes to enhance their teaching practice with the use of ICT. Therefore, technology user's positive attitude can bring about an enhanced learning environment (Raygan & Moradkhani, 2022).

2.9.18 Lack of cyber security or privacy risk

This is defined as a potential loss due to fraud or a hacker compromising the security of an online bank user. Phishing is a new crime skill by which phishers attempt to fraudulently

acquire sensitive information, such as usernames, passwords and credit card details, by masquerading as a trustworthy entity in an electronic communication (Mabuyana, 2023). A phishing attack takes place when a user receives a fraudulent email (often referred to as a spoof email) representing a trusted source that leads them to an equally fraudulent website that is used to collect personal information (Bera, Ogbanufe, & Kim, 2023). Both fraud and hacker intrusion not only lead to users' monetary loss, but also violate users' privacy, a major concern of many Internet users. Many consumers believe that they are vulnerable to identity theft while using online banking services (Kaur & Arora, 2020). This was supported by Keakopa (2019) who stated that the increasing creation of electronic records in Botswana government Departments has raised challenges of preservation of digital heritage materials for archivists and librarians. Ambira (2016) agreed that the importance of conducting oral history interviews at the BNARS cannot be overemphasised, though the suitability of digital audio recording equipment for long-term preservation of oral history recordings is still yet to be established. Kugara and Mokgoatšana (2022) advises that the new technology should be approached with vigilance with respect to oral history archives until its usefulness for long-term preservation has been assessed. Therefore, as an archival institution with the mandate of preserving information for longer periods, adopting digital technologies may not be an easy option for developing countries. Digital preservation is also an expensive undertaking as Robertson (2023) argue that preservation of digital information is unquestionably expensive and requires highly skilled staff and equipment.

2.9.19 Lack of software capabilities

Most of the functionality of industrial augmented reality (IAR) systems is related to the software. One focus area of research is the tracking technology (Janmajaya, Shukla, Muhuri, & Abraham, 2021; Masood & Egger, 2020). When placing digital content in the real world, reliable tracking of the physical world is essential to provide a coherent user experience, but hard to achieve. In some countries projects focus on training for the implementation and sustainability of ICT-based interventions in education. Some see pre-service training as essential, such as the revised national policy on education in Botswana and the aims of SchoolNet Namibia (Mbaka, 2014) while others consider in-service training the appropriate response. Some hope that "cascade" models will work, like in the Ministry of Education in Gambia (Kipsoi, Chang'ach, & Sang, 2012). Some claim that it has already done so, as in the case of Ghana (Adomako, Quansah, & Mensah, 2022). Others still rely on volunteers, both young and old, to sustain the intervention. Training goals vary but most are based on training

schedules using workshops to cover the various skills. In general, training is seen more in terms of time spent on training than in terms of outcomes such as proficiency in the skills, comfort with the technology or experience in integrating use of the Internet into curricula. Training generally includes basic computer literacy, exposure to the basics of email, search engines, website design and the integration of technology in the classroom, in a concentrated period with groups at various levels of competence. ICTs have clearly made new demands on an already stretched sector while simultaneously offering opportunities in support of current difficulties. The enthusiasm for ICTs may well ultimately be the catalyst for transforming dominant education practices (Younie & Bradshaw, 2018). As the technology matures, the integration of IAR solutions into the current IT infrastructure, like product lifecycle or quality management tools is of importance (Tambare, Meshram, Lee, Ramteke, & Imoize, 2021; Zhang, Ren, Liu, Sakao, & Huisinigh, 2017; Zulqarnain, Wasif, & Iqbal, 2022). As industrial systems become digitally enabled, interfaces and content creation (authoring) need to follow certain standards (Pivoto et al., 2021; Trappey, Trappey, Govindarajan, Chuang, & Sun, 2017). While there is a vast number of standards available (Trappey et al., 2017), none of them is dominant yet.

2.9.20 Social risk

This refers to the possibility that using online banking may result in disapproval of one's friends/family/work group. The status of women in a patriarchal social structure makes women dependent on males in their lives husbands or fathers and family resistance is a major disincentive to business start-up. Other close male family members often make decisions for women hence going against the independent spirit of entrepreneurship. It is possible that one's social standing may be enhanced or diminished depending on how online banking is viewed. It may well be that people have unfavourable or favourable perceptions of online banking that in turn affect their views of its adopters; or, alternatively, not adopting online banking may also have negative or positive connotations. However, Hay and Pearce (2014) and Marshall (2021) found that women are using digital technologies three times more often than men. Despite the fact that gender divisions still exist, the increasing use of digital technologies in rural areas is bridging this gap. Kerras, Sánchez-Navarro, López-Becerra, and de-Miguel Gomez (2020) and Vassilakopoulou and Hustad (2023) found that the access and use of digital technologies are hindered by marginalization of gender, but that other variables, such as a language barrier, high costs and limited skills and knowledge, are playing a bigger role in this context.

2.10 Chapter summary

Literature review absorbed mostly on areas that include; the role played by perceived usefulness of digital technology in influencing women entrepreneurship performance and the role played by perceived ease of use of digital technology in influencing women entrepreneurship performance. The literature review went further to allude the effect of experience of the past use of digital technology in influencing women entrepreneurship performance, determine the impact of voluntariness in the use of digital technology in influencing women entrepreneurship performance and test the moderating effect of age as well as level of education on the effect of entrepreneurship digitalisation on enhanced women entrepreneurs. The subsequent chapter focuses on the hypotheses and research model development.

CHAPTER THREE

RESEARCH HYPOTHESES AND RESEARCH MODEL DEVELOPMENT

3.1 Chapter introduction

The previous chapter looked at literature review underpinning this study. Literature on entrepreneurship digitalisation and women entrepreneurship was extensively reviewed. The knowledge gap in entrepreneurship and digital technology that forms the basis for this study was identified as incomplete understanding of the moderating role of entrepreneurs age and level of education in relation to entrepreneurship digitalisation and women entrepreneurship performance in Zimbabwe. This chapter discusses empirical findings of the study, research hypotheses and research models in detail. This section provides knowledge and an oral voice on entrepreneurship digitalisation and women entrepreneurship performance. Also, an oral voice and knowledge on the moderation effect of entrepreneurs age and entrepreneurs level of education is discussed.

3.2 The effect of perceived usefulness of digital technology on women entrepreneurship performance

Cheng (2019) conducted a study to assess the degree to which the constructs—perceived usability and perceived security of the website as independent variables, perceived usefulness and attitude as intervening variables, and intention to use as the dependent variable—have any hypothesised relationships. The findings validate the robustness of the expanded TAM model in forecasting customers' desire to use online banking. According to Cheng (2019), utilising digital technology speeds up task completion. Citing Venkatesh and Zhang (2010) and Azman and Zabri (2022), it was discovered that an individual's reported propensity to use mobile banking is determined by perceived usefulness. Likewise, Majumdar and Pujari (2022) determined that perceived utility was an important component, Similar to how Majumdar and Pujari (2022) determined perceived utility to be an important factor and came to the conclusion that relative benefits have a substantial impact on an individual's desire to consider elements influencing an individual's decision to use mobile banking. According to Le Dinh et al (2018), using digital technology increases a business's effectiveness and makes it easier to stay in touch with customers. Perceived utility is a key predictor of digital technology adoption, according to Chau and Hu (2001). According to numerous other studies, people's acceptance and use of

different technologies are mostly motivated by their perceived utility (Rafique et al., 2019). In certain research, perceived usefulness has a direct impact on usage intentions in addition to its attitude-based influence (Davis et al., 1989) and, in others, revealed a much stronger impact over future IT/IS use than ease of use (Hastie, 2022). According to Hastie (2022) ease of use had a far lesser influence on future IT/IS adoption than did ease of use. However, some research (Acharya & Ganesan, 2019) found no evidence of a significant relationship between perceived utility and anticipated future usage of IS. According to Rosin et al. (2020), a key element in deciding how innovations are adapted is perceived utility. Therefore, the likelihood of electronic banking being adopted increases with the perceived utility of using such services (Baabdullah et al., 2019). In light of this conversation, the following hypothesis was made:

H_{1a}: Perceived usefulness of digital technology positively influence women business performance.

3.3 The effect of perceived ease of use of digital technology on women entrepreneurship performance

The term "ease of use" describes a person's opinion of how simple or easy it is to utilise a certain system (Davis, 1989). Because of this, it is thought to be among the characteristics that has the biggest influence on whether or not a new digital technology is accepted (Moore & Benbasat, 1991). According to Davis et al. (1989), because of its instrumentality and self-efficacy, simplicity of use has a dual effect on attitude. One can argue that efficacy plays a major role in the development of intrinsic motivations, or the drives that direct attention to one's surroundings. However, the TAM (Motwani & Sharma, 2016) has demonstrated that improvements in usability can also be crucial, leading to higher performance through utility. Specifically, according to Cheng (2019), it is the degree to which people think adopting digital technology will be effortless. According to some studies, a system that is simple to use will be adopted more extensively than one that is more complex (Ali et al., 2023). The researcher described it as the belief held by female entrepreneurs that utilising digital technology in their enterprises is simple and uncomplicated. Thus, it was postulated that:

H_{1b}: Perceived ease of use of digital technology positively influence women business performance.

3.4 The effect of experience of the past in using digital technology on women entrepreneurship

Previous research, users' experience has a big impact on how easy they perceive e-learning systems to use (PEU) (Mailizar, Almanthari, & Maulina, 2021; Rahmi, Birgoren, & Aktepe, 2018). Experienced users typically view technology's ease of use more favorably (Chang, Hajiyeve, & Su, 2017; Liu & Chou, 2020). Past research on perceived utility (PU) of e-learning has shown that users' experiences have a major impact on PU (Abdullah, Ward, & Ahmed, 2016; Lee et al., 2013; Rahmi et al., 2018). Based on prior research, users' computer experience influences their behavioral intention when it comes to using e-learning technology (Siron, Wibowo, & Narmaditya, 2020; Stiller & Wager, 2023). More computer experience was linked to higher levels of computer skill, according to earlier end-user computing research (Havelka, 2003; Penna & Stara, 2010; Saadé & Kira, 2007).

It was discovered that the impact of the usage factor varies significantly between expert and beginner users. Intentions and usage were more closely related for seasoned users (Andika, Masudin, & Zulfikarijah, 2022). There is a better association between behavioral intention and conduct (use) for experienced users, conferring to the findings of Taylor and Todd's (1995) study comparing the usage of inexperienced and experienced users. Venkatesh and Morris (2000) discovered that people's assessments of the advantages and disadvantages of utilizing technology improve with increased direct experience with the tool. Khlaisang, Songkram, Huang, and Teo (2023) and Igbaria and Iivari (1995) discovered that user beliefs and usage are influenced by experience both directly and indirectly through beliefs, and that user beliefs and usage are related to individual skills and expertise. Thi Chung and Thi Tram Anh (2022) discovered that the usage of computer technology is contingent upon both the technology itself and the user's degree of proficiency. Teo, Luan, and Sing (2008) and Agarwal and Prasad (1999) provided empirical evidence for the idea that experience, whether manifested as skills or expertise, is related to these things. Cham, Cheah, Cheng, and Lim (2022) demonstrated that prior experience, or past usage, has a significant impact on how easy a system is to use and is a crucial element in predicting future usage. Successful studies also show that people's attitudes toward technology adoption are influenced by their experience and its link (Bhattacharjee & Premkumar, 2004; Czaja et al., 2006; Kalayou, Endehabtu, & Tilahun, 2020; Sayaf, Alamri, Alqahtani, & Alrahmi, 2022). In light of the above discussion, it was therefore posited that:

H_{1c}: Experience of the past of using digital technology positively impacts women business performance.

3.5 The effect of voluntariness on the use of digital technology on women entrepreneurship performance

According to Chau and Hu (2001), an individual's attitude towards innovation adaption can be defined as either positive or negative. According to Azman et al. (2022), attitudes are a reflection of people's positive or negative feelings towards a certain behaviour. As a result, attitudes evolve throughout time as people gain experience. This suggests that a positive outlook enhanced businesses' readiness to employ digital technology. The findings indicated that my behaviour in managing the firm has been positively impacted by my voluntary usage of digital technologies. The findings align with the theoretical frameworks (TAM, TRA, and TPB) which demonstrate that attitude is a crucial prerequisite for the desire to cultivate a specific behaviour (Kijisanayotin et al., 2009). According to Hastie (2022), attitude is a multifaceted concept made up of three different dimensions: cognitive, affective, and behavioural. This confirms the widespread belief in the literature that women's entrepreneurship success is positively impacted by voluntariness in the usage of digital technologies. It was therefore postulated that:

H_{1d}: Voluntariness on the use of digital technology significantly impacts the influence of women business performance.

3.6 Entrepreneurship digitalisation for women entrepreneurship performance

The following dimensions representing digitalisation (perceived usefulness of digital technology, perceived ease of use of digital technology, experience of the past use of digital technology and voluntariness) have shown that they all influence women entrepreneurship, thus it can be proposed that:

H₁: Entrepreneurship digitalisation predicts women entrepreneurship performance

3.7 The moderating effect of entrepreneurs age on the relation between entrepreneurship digitalisation and women entrepreneurship performance

The age of users has an important effect on their behaviour (Fanaja et al., 2023). While some studies (Joines et al., 2003) found no relationship at all or a negative relationship between

respondents' age and the likelihood of using digital technology, other studies (Dabholkar et al., 2003) found a positive relationship between the two variables. According to research by Laukkanen et al. (2007), older people are less likely to embrace change and have a negative attitude toward using mobile banking services. Laukkanen et al. (2007) studies reveal that the elderly had increased resistances to change and negative attitude toward adopting mobile banking services. In contrast to Laukkanen et al. (2007), who discovered that the majority of mobile banking users were middle-aged or older and that the majority of electronic banking users were middle-aged or older, Tam & Oliveira (2017) found that respondents who were 50 years of age or older were the most eager to use mobile banking services (Alalwan et al., 2017). Furthermore, Laforet and Li (2005) found that the majority of mobile banking users were not always young and well-educated, conducting street interviews with 300 respondents in six major Chinese cities at random. In a similar vein, Puschel et al. (2010) found that average mobile banking users were less than 30. Determining the moderating influence of age is necessary in light of the contradictory results mentioned above. Following the discussion, it was therefore hypothesised that:

H₂: Entrepreneurs age has a moderating effect on the relationship between entrepreneurship digitalisation and women entrepreneurship performance.

3.8 The moderating role of entrepreneurs level of education in the relationship between entrepreneurship digitalisation and women entrepreneurship performance.

Existing research (Abbasi, Irani, & Chandio, 2010; Abbasi et al., 2015; Alhasan et al., 2022; Hu, Al-Gahtani, & Hu, 2013), education level is associated with knowledge and skills, which in turn influence behavioral beliefs (perceived usefulness and perceived ease of use) on acceptance and use of new technologies. Similar to other individual characteristics, educational level has been investigated as a moderator that influences the link between behavioral intention and primary determinates and as an antecedent of perceived usefulness or perceived ease of use (Agarwal & Prasad, 1999). (Burton-Jones & Hubona, 2006). The correlations between perceived ease of use, perceived usefulness, and behavior intentions were discovered to be specifically influenced by educational level (Porter & Donthu, 2006; Rogers, 2003; Sun & Zhang, 2006; Zakaria, 2001; Mahmood, Hall, & Swanberg, 2001; Burton-Jones & Hubona, 2006).

Venkatesh et al. (2003) discovered a favorable association between perceived usefulness and educational attainment. Similarly, Shankar and Datta (2018) and Abbasi et al. (2015) proposed that increased knowledge has a positive correlation with perceived usefulness and makes users less susceptible to perceived ease of use since it lowers anxiety related to computers and enhances mood. On the other hand, Agarwal and Prasad (1999) discovered that while there was a link with perceived ease of use, there was none with perceived usefulness. Similarly, in the context of Arab countries, Al-Gahtani (2008) discovered that educational attainment merely moderates the influence of perceived ease of use on behaviour intention; no moderating effects were observed in the association between perceived usefulness and behaviour intention for the voluntary use of computer applications. Based on Abu-Shanab (2011), there is a moderating influence of educational attainment on the correlation between the majority of the major factors influencing UTAUT and the adoption of online banking in Jordan. Furthermore, it has been discovered that educational attainment has a detrimental impact on the social influence on behavior when implementing new technology in a company because experience and education both give users more authority (Binyamin, Rutter, & Smith, 2019; Heng, Ithnan, Yeap, & Lai, 2021; Macharia & Nyakwende, 2009).

Although there have been conflicting findings, it is undeniable that educational attainment can moderate the adoption and acceptability of technology (Abbasi et al., 2015) and (Tarhini, Hone, & Liu, 2014). Therefore, it is anticipated that for users with higher educational levels, the linkages between perceived usefulness, perceived ease of use, voluntariness and experience of the past will be stronger, while for users with lower educational levels, the relationships between entrepreneurship digitalisation and women entrepreneurship performance will be stronger. Therefore, this study proposes the following hypothesis:

H₃: Entrepreneurs level of education plays a moderating role on the relationship between entrepreneurship digitalisation and women entrepreneurship.

3.9 Research model

Based on the hypothesised relationships, research model in Figure 3.1, is proposed.

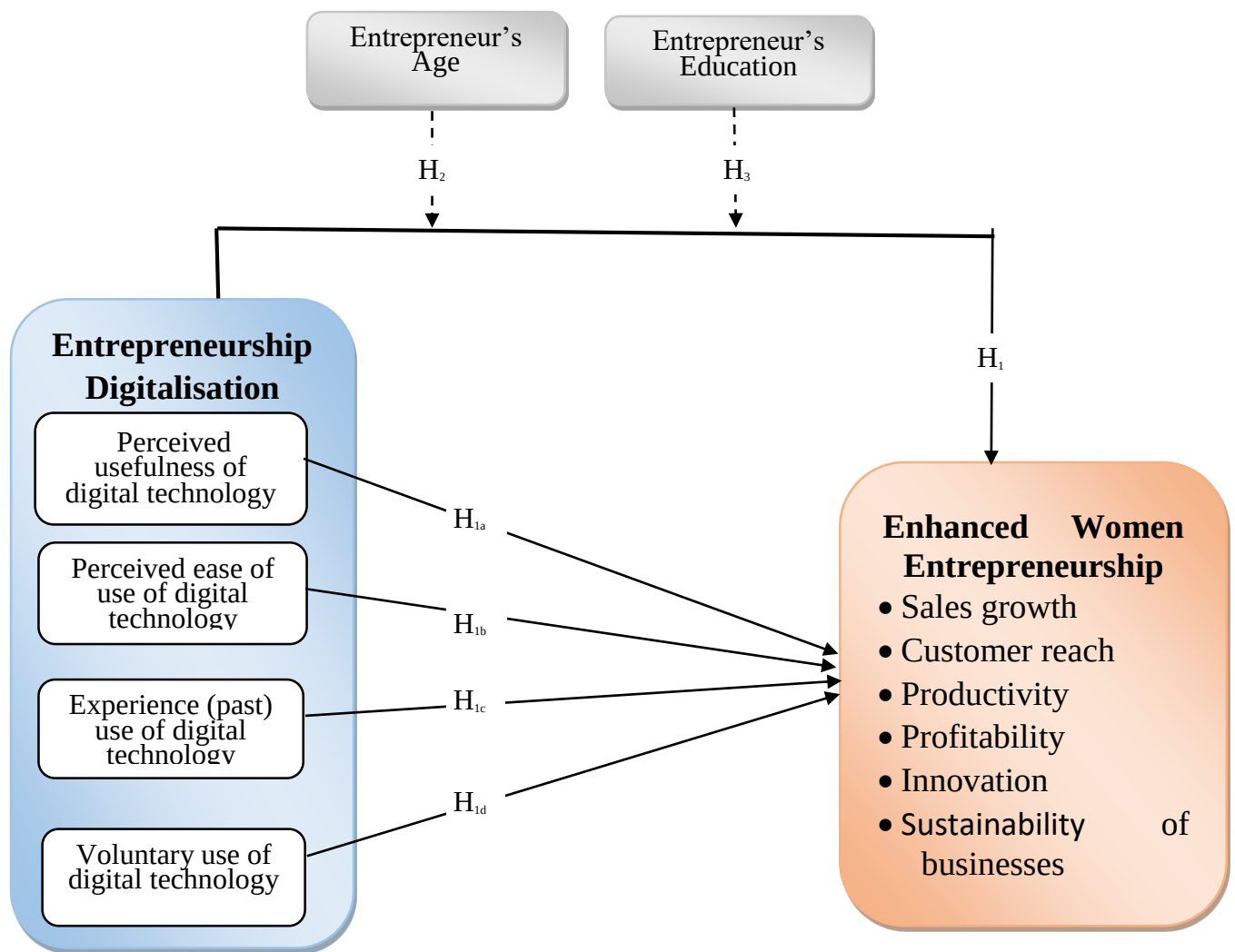


Figure 3.1: Conceptual framework

Source: Author (2024)

3.10 Research gap

Researches on women entrepreneurship in developing countries are still moderately few compared to those in established nations (Carmichael & Mazonde, 2016; Kim, Abdullah, Thuy, & Boey, 2020). Those done in developing countries were mainly biased towards urban areas than rural areas. Also, few studies have explored the adoption of digital technology by women entrepreneurs in relation to women entrepreneurship enhancement (Hossain et al., 2020; Kapinga & Montero, 2017; Paoloni, Secundo, Ndou, & Modaffari, 2019; Sultan & Sharmin, 2020; Suseno & Abbott, 2021). According, to the best knowledge of the author there is no study which has been conducted in Zimbabwe, and the previous authors were biased towards social media adoption by women entrepreneurs, adoption of mobile applications and challenges faced by women when adopting ICT. Additionally, these studies are not directly linked to

entrepreneurship digitalisation as the enhancement strategy and there is limited knowledge about the effect of entrepreneurship digitalisation and women entrepreneurship in this particular context. Therefore, the knowledge gap in this area is insufficient understanding of the influence of entrepreneurship digitalisation on the women entrepreneurship performance in Zimbabwe. This research intends to contribute to entrepreneurship body of knowledge by establishing the effect of women entrepreneurship digitalisation on the women entrepreneurship performance of Mashonaland West province in Zimbabwe.

3.11 Chapter summary

The previous chapter focussed on previous and related studies. Results from previous studies were reviewed and research hypotheses were developed. Hypotheses were developed after establishing relationships among study constructs (perceived usefulness of digital technology, perceived ease of use of digital technology, experience of the past and voluntariness in the use of digital technology). Also included in hypotheses development was the moderating role of entrepreneurs age and level of education in the relationship between entrepreneurship digitalisation and women entrepreneurship performance. Research models were formulated after a thorough literature review and empirical study. The succeeding chapter focuses on the research methodology chosen for the study

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Chapter introduction

The preceding chapter focused on literature review and the development of research hypotheses as well as conceptual framework. Each research requires a specific methodology that is best suited to answer the questions under study. This section comprises of the methodology to be used during the research process. Easterby-Smith, Jaspersen, Thorpe, and Valizade (2021) delineated study procedure as a combination of ways and means used to examine into a particular situation. Akinmolayan (2020) postulate that a clear understanding of research methodology is of vital significance for guiding proper study. The focus of this section is on the research philosophy, research strategy, research design, target population, sample size, sampling technique, research instrument, data collection method, data analysis and presentation procedures. The research methodology which had been adopted will address the research objectives which are to determine the role played by perceived usefulness of digital technology in influencing women entrepreneurship performance, to evaluate the role played by perceived ease of use of digital technology in influencing women entrepreneurship performance, to analyse the effect of experience of the past use of digital technology in influencing women entrepreneurship performance, to ascertain the effect of voluntariness on the use of digital technology in influencing women entrepreneurship performance, to assess the moderating effect of age on entrepreneurship digitalisation and women entrepreneurship performance and to establish the moderating effect of level of education on entrepreneurship digitalisation and women entrepreneurship performance.

4.2 Research philosophy

The researcher adopted positivism as the research philosophy. A research philosophy is an approach undertaken when conducting research (Kraus, Breier, et al., 2022). Research philosophy is concerned with the research of information, truth, and veracity (Bleiker, Morgan-Trimmer, Knapp, & Hopkins, 2019). Žukauskas, Vveinhardt, and Andriukaitienė (2018) theorize that study philosophy is the foundation of the study which comprises the select of study approach, data collection and data presentation processes. Javanmardi, Liu, and Xie (2020) states that philosophy is concerned with the way in which knowledge is established and

it further postulates the nature of the knowledge regarding the study. Selection of research philosophy depends on the assumptions about the way the researcher understands the world (Okita, Akuku, Musau, & Onyango, 2021). The method consideration and research strategy are determined by these assumptions. Buriro, Ednut, and Khatoon (2021) identified phenomenology and positivism as two major philosophies used in research. The study adopted a positivist philosophy. Positivism relies on the use of statistics in bringing out reality and objectivity, thus in decisions making. The philosophy is free from bias as the researcher does not influence results. In addition, positivism is amenable to objective and scientific analysis. Positivism is grounded in the belief that actual facts are used to validate knowledge and that numbers do not lie (Panya & Nyarwath, 2022; Shah & Al-Bargi, 2013). Positivists also believe that generalisation of research findings can be based on other cases (Marutha & Dikotla, 2022). The philosophy considers bigger samples as compared to phenomenology (Onyango, Browne, Fulchand, & Kilgour, 2023). Younus and Zaidan (2022) points out that deductive reasoning is used in positivism as one of the tools to test and confirm theories. Building on Saunders et al. (2018), Tshabangu, Ba, and Madondo (2020) further claims that positivism is based on the idea that the social world exist externally and therefore its material goods must be measured objectively as compared to subjective methods such as reflection, sensation or intuition.

4.3 Research strategy

The study adopted quantitative research strategy. Gogo and Musonda (2022) identified qualitative, quantitative and mixed-methods as research strategies that can be employed during a study. In their explanation, Perera, Nayak, and Nguyen (2022) claims that quantitative approach makes use statistical solutions to formulate opinions whereas the qualitative approach uses respondents' perceptions in opinion formulation. The qualitative research technique is regarded as inductive towards a study (Mason, Augustyn, & Seakhoa-King, 2021). The approach focuses on drawing the meaning from the experiences and opinions of individuals (Almalki, 2016). The mixed method strategy comprises facilitation, triangulation and complementarity. Quantitative research strategy comprises the producing data in a quantitative nature which can then be analysed formally and systematically (Creswell & Poth, 2016). Gray, Wong-Wylie, Rempel, and Cook (2020) defines quantitative research as a type of research which explains certain phenomena by gathering numerical data before analysing it by mathematical methods particularly statistics.

Quantitative research method allows researchers to measure variables on a sample of subjects and also expresses the relationship between these variables using statistics (Dubey & Kothari, 2022; Ragab & Arisha, 2018). The quantitative research strategy has several numerical advantages. The numerical attributes of quantitative research benefit models like the UTAUT model as it enables measurement of many dimensions. The UTAUT model encompasses computing the difference between scores for perceptions and expectations. Such computations would not be possible to perform with non-numeric attributes. Therefore, quantitative research becomes the ideal research strategy for studies using models like the UTAUT model because of their association with numbers. Consistent procedures and clear adherence to set rules associated with quantitative research enables replications and further research to be carried out. Quantitative research therefore, facilitates continuous measurement of the phenomenon under investigation. They are relatively low costs involved in conducting quantitative research as compared to qualitative research makes it more attractive for studies like this. Quantitative research strategy is better preferred because of its the ability to cover a large sample with limited resources proved valuable.

4.4 Research design

The research used cross-sectional survey which allows the gathering and investigation of an extensive choice of data and conclusions are made basing on what the investigator finds out at that moment. The scholar chose a cross sectional survey since it offers; exact results, good statistical significance, high representativeness, and convenient data gathering and little observer subjectivity. Kimiti, Muathe, and Murigi (2020) postulates that a cross sectional survey permits the investigation of relations between variables which this research pursues to attain. Tetering, Laan, Kogel, Groot, and Jolles (2020), suggested cross-sectional survey design allows the respondents of huge samples and investigation of several cases at the same time. Additionally, Saunders, Lewis, and Thornhill (2003) note that cross sectional survey allows the investigation of relationships between variables since no time is available data for ordering between the variables as data gathering is done more or less concurrently. Cross-sectional surveys also “provide assessment of both the exposure and outcome in a sample of the population at a point in time”(Wang & Cheng, 2020).

4.5 Target population

The research population consisted of formal and informal female entrepreneurs in Zimbabwe. In terms of distribution of the population, the census results show that Zimbabwe is rapidly urbanizing with the proportion of urban households increasing to 38.6 % from 33% in 2012. These figures translate to approximately 5.86 million of the country's 15.18 million people are now living in the urban areas with a sex ratio of 92 males for every 100 females (ZIMSTAT, 2022). Mashonaland West Province being the highest with 98 males per 100 females (ZIMSTAT, 2022). The total population for women entrepreneurs in Zimbabwe is not known since most of their businesses are informal, operated from home and are not registered. Therefore, there are difficulties in quantifying the figures due to women entrepreneurs operating informally. Some research indicate that most women register their businesses using their spouses' name since patriarchy has forbidden them to register in their names as it is a sign of disrespect (Yeste, Zeguari, Álvarez, & Folch, 2020). Ministry of Women Affairs, Community, Small and Medium Enterprises in Zimbabwe did not have an updated list of entrepreneur's businesses as most entrepreneurs operate informally without being registered which makes it difficult to account for such businesses. The Mashonaland West province was chosen also due to the fact that most activities done in Mashonaland West resemble all those in other Zimbabwean provinces, thus, it can represent all provinces within the country. The Province has seven administrative districts and these are; Kariba, Sanyati, Zvimba, Chegutu, Makonde, Mhondoro Ngezi and Hurungwe. The urban and rural local authorities are semi-autonomous and these are run by elected councillors and a Secretariat. The Province is located to the North of the country and shares the international border with Zambia in the North. Internally, the provinces borders with Midlands Province in the West, Matebeleland North in the West, Mashonaland Central in the East, Harare and Mashonaland East in South East. Mashonaland West has a comparative advantage as it has the highest number of water bodies 240 offering huge opportunities for irrigation, fish farming and water sport. Chirundu One - Stop boarder post- facilitate trade in Africa. Availability of land in virtually every Local Authorities for infrastructure development. Highest number of silos in Zimbabwe-8/13-opportunity to invest in driers which is a big business. The climate and soils are conducive for growing virtually any type of crop.

4.6 Sampling and sample size

The sample for the study was 950 women in business from Mashonaland west province, Zimbabwe. Mweshi and Sakyi (2020) defined sampling as the process of surveying only few and selected elements to make inferences about a population. Sampling is a procedure of choosing models from a collection or population to become the basis for approximating and forecasting the result of the populace as well as to spot the unknown portion of information (Haydam & Steenkamp, 2020). A sample is a subset of individuals selected to represent total population (Sabeti, Abdollahi, & Friswell, 2021). When carrying out a research, it is not feasible to study the entire population due to cost and time constraints (Perera et al., 2022). Aila and Ombok (2015) posit that a researcher may only use a part of the total population when making inferences about the populace. Levy and Lemeshow (2013) further conclude that the researcher may conclude basing on estimation of the true picture of the population drawn from a small portion of the total population. The idea behind sampling is that it may not be possible to access all elements of the population due to time constraint (Hair Jr, Babin, & Krey, 2017). Bernard (2017) concur with Teeroovengadum and Nunkoo (2018) and further assert that sampling reduces manpower requirements, costs and saves time. Furthermore, sampling provides dependable and precise results as compared to a census which is prone to errors due to huge volumes of work involved (Oosthuizen & Ferreira, 2019; Saunders, Lewis, & Thornhill, 2009). Field (2013) is of the opinion that it is easy to monitor and manage a small team as compared to working with a large group or working with the whole population.

Determination of a sample size that is appropriate for a research study is debatable amongst scholars nonetheless researchers agree that a sample should sufficiently represent the population (Osman, Nordin, & Abd Rahman, 2021). A larger sample may be used to reduce the likelihood of low response rate (Adam, 2020). The researcher considered determinants of sampling and sample size as stressed (Jenkins & Quintana-Ascencio, 2020). Using the insight acquired from these previous studies, the researcher resorted to a sample size of 950 women entrepreneurs all drawn from Mashonaland West Province. In coming up with the sample, the researcher also weighed recommendations by Braun and Clarke (2021) and Field (2013) that a minimum sample size of 200 may be used in such statistical analysis. Reference to previous related studies was also used to justify the sample size. For example, Gupta (2020) used 435 respondents in his study to measure adoption of digitalisation for teaching and learning by business schools. Shahadat, Nekmahmud, Ebrahimi, and Fekete-Farkas (2023) used 535

respondents in their study on digital technology adoption in SMEs: what technological, environmental and organizational factors influence in emerging countries. Reference to literature were used to determine sample size since the exact figure of women in entrepreneurship is not known. Generally, women entrepreneurs in Zimbabwe are still informal, thus their statistical standing is not yet known and there are no records at the relevant ministry justifying the need for empirical evidence to ensure that their statistical records are put in place. Moreover, quantitative studies require larger samples when analysing data. In this case, 950 women entrepreneurs were used for the study. The sample were deemed sufficient enough for a study of this nature.

Selected women entrepreneur's businesses were grouped into rural and urban areas as this helped the researcher to select respondents from all districts. The researcher ensured that respondents were not from the same district by asking councillors and village heads on the demarcation of their areas.

4.7 Sampling techniques and methods

The researcher adopted judgemental sampling technique which is under non probability sampling. Creswell (2021) submitted that sampling falls into probability sampling (stratified, systematic, simple random and cluster sampling) and non-probability sampling (judgemental/purposive sampling, quota sampling, snowball sampling and convenience sampling). Saunders and Rojon (2014) assert that the choice of a sample design is influenced by the advance knowledge of participants under consideration, degree of accuracy as well as the availability of resources. Probability sampling affords every participant within each population an equal chance to be selected (Harrison, Reilly, & Creswell, 2020). Non-probability sampling technique is based on the judgement by the researcher (Wiśniowski, Sakshaug, Perez Ruiz, & Blom, 2020). Rashid et al. (2021) acknowledged that non-probability sampling techniques make use of non-random techniques that include the researcher's judgement of convenience selection. Bae, Park, and Jeon (2022) supports the use of non-probability sampling in a study because of its practicality.

The researcher adopted non-probability sampling techniques, namely judgemental sampling techniques to select women entrepreneurs to participate in the study. Considering that the study covered Mashonaland West Province, which has urban and rural areas, the researcher found it worthy to divide the respondents into two sub-populations, which are the urban and rural

population, so as to have them represented in the investigation. Judgemental sampling technique was then used to select respondents from their sub-populations. The study employed judgemental (purposive) sampling to select women entrepreneurs operating in Mashonaland West Province, Zimbabwe, who have adopted or attempted to adopt digital technologies in their businesses. This approach was deemed appropriate as it allowed the researcher to intentionally target respondents with relevant experience and knowledge to answer the research questions effectively (Opoku et al., 2016).

4.8 Research instruments

The researcher adopted a structured questionnaire as the research instrument. In view of the nature of the study which had to measure concepts such as factors influencing entrepreneurship digitalisation, the test of moderating factor (entrepreneurs age and entrepreneurs level of education) among entrepreneurship digitalisation and women entrepreneurship performance and challenges faced by women entrepreneurs on adopting entrepreneurship digitalisation the scholar used a Likert scale structured questionnaire to collect quantitative data. Sekhon, Cartwright, and Francis (2022) defined a questionnaire as a simple and cheap technique of data collection.

4.8.1 Questionnaire

The questionnaire was designed in such a way that it would address all research objectives for the study. Appendix 1 is a sample of the questionnaire used in this investigation. A badly designed questionnaire is equivalent to gathering pointless data that doesn't advance the researchers understanding of the subject. A good questionnaire design should concentrate on three main aspects, according to Fan and Wang (2022). These aspects include (i) question phrasing; (ii) problem preparation including the categorisation, scaling and coding of the variables; (iii) the overall look of the questionnaire. The questionnaire's content was changed to fit the needs of the current study after being taken from earlier related research studies on the same topic. The questionnaire comprised of seven main sections namely: perceived usefulness of digital technology in influencing women entrepreneurship performance; perceived ease of use of digital technology in influencing women entrepreneurship performance; effect of experience of the past of using digital technology in influencing women entrepreneurship performance; impact of voluntariness in the use of digital technology in influencing women entrepreneurship performance; to test the moderating effect of

entrepreneurs age on entrepreneurship digitalisation among women entrepreneurs performance and on test the moderating effect of entrepreneurs level of education on entrepreneurship digitalisation among women entrepreneurs performance.

The first section of the questionnaire captured the respondents' demographic data (Ray & Fellow, 2020) such as age, level of education, form of business, type of business and number of years in business. The second division of the questionnaire measured perceived usefulness of digital technology in influencing women entrepreneurship performance. Items of the instrument was borrowed from literature review and other studies like (Prastiawan et al., 2021; Ghani et al., 2022). The third section measured perceived ease of use of digital technology in influencing women entrepreneurship performance (Davis, 1989; Prastiawan et al., 2021). The fourth section of the questionnaire required respondents to point out effect of experience of the past of using digital technology in influencing women entrepreneurship performance (Koay et al., 2022; Foroudi et al., 2018). The fifth section measured impact of voluntariness in the use of digital technology in influencing women entrepreneur's performance (Mushi & Jafari, 2018; Bervell & Arkorful, 2020). Related literature informed questionnaire design and the concepts were modified to suit the study at hand. Respondents were requested to indicate their level of agreement to the given statements on a five-point Likert scale. A 5-point Likert scale structured questionnaire was used since it suits well the study at hand and the data collected can be analysed quantitatively.

The questionnaires were personally administered by a group of field workers which consisted of two field supervisors and five enumerators. The supervisors were trained by the researcher before field work commenced. The enumerators were in turn trained by the two supervisors. The field workers were carefully selected based on their qualifications, entrepreneurship experience and, their intense knowledge of the area. All field workers have a minimum of a diploma with the supervisors possessing a minimum of a bachelor's degree in the related field. All the enumerators and field supervisors were stationed and employed by the Ministry of Women Affairs, Community, Small and Medium Enterprises in Mashonaland West province. By virtue of their positions in society, they command a certain level of respect in the communities that they are employed. This had a positive effect on the data collection process. Four questionnaires were delivered to two field supervisors who in turn distribute the questionnaires to the enumerators. To ensure quality and consistency during data collection the questionnaire was designed in such a way that it included such information as the questionnaire number, name of enumerator, date and place where data was collected from. Also the two

supervisors checked all collected questionnaires on a daily basis to avoid errors being carried over. Any errors identified were immediately rectified with the enumerator.

Due to the fact that the questionnaire was lengthy, detailed and was compiled in English, yet targeting women entrepreneurs who might not understand English, the enumerators in most cases translated the questions contained in the questionnaire to the respondents in the vernacular language (Shona). Women who are able to complete the questionnaire were given the opportunity to do so, while those who require assistance were assisted by the research assistants.

4.9 Pilot study

Pilot testing involves trying out the questionnaire on a smaller number of the proposed sample in order to get an idea of how the research participants would react and complete the proposed instrument (Aithal & Aithal, 2020). Agreeing to Aithal and Aithal (2020), Aslam et al. (2020) “the sample for pre-testing may include four or five individuals but not more than thirty individuals”. This process is carried out before the actual data collection takes place (Karamitri, Kitsios, & Talias, 2020). Pilot testing ensures that (1) participants understand the questions as the researcher expects them to do; (2) eliminate the majority of difficulties that arises in data recording; and (3) validity and reliability (Nievas Soriano, García Duarte, Fernández Alonso, Bonillo Perales, & Parrón Carreño, 2020). For this study, the pilot test was conducted in two ways. Firstly, pilot testing was conducted using ten females. The selected females were not taken from the proposed population sample. Errors and questions that were vague were rephrased for clarity. Additions of key areas are done if there are any missing items. Secondly, pilot testing was conducted on thirty women entrepreneurs from the proposed population sample. Corrections were effected. Reliability and validity were also tested. According to Okumu (2020) an instrument is said to be sensitive if it has high ability to measure variability within a concept. According to Ali, Dogan, Amin, Hussain, and Ryu (2021), sensitivity is the ability to discriminate among meaningful differences in perceptions or attitudes; implying that sensitivity is often used in perception or attitude measurement. In this study, the 5-point response categories were used. This has been arrived at after a careful consideration.

4.10 Reliability

Reliability is the degree to which results attained by a measurement procedure may be replicated and produce similar results on repetitive trials (George & Mallery, 2018). Similarly, Tore, GÜMÜŞSOY, and Oskay (2019) describes reliability as the extent to which variables in a study are consistent with what they are supposed to measure. Thus, reliability has much to do with replicability of results after several attempts. The instrument must be reliable so that results are consistent (Henseler, 2017). Reliability is regarded as an important measurement scale in quantitative research. Internal consistency of a construct determines reliability as it stipulates the standardisation of items of a measurement scale (Kamis et al., 2020). Cronbach's alpha value designates the internal correlation of all the items in a questionnaire (Tore et al., 2019). Cronbach's alpha refers to the reliability of a construct if the study measures only a single construct (Nadler & Kros, 2018). A Cronbach's alpha (α) was adopted to regulate the constructs which are reliable. Tore et al. (2019) considered alpha threshold 0.7 or any value higher validate internal consistency. In the present study, pilot study were conducted to measure the realibility of the instrument.

Pilot testing involves trying out the questionnaire on a smaller number of the proposed sample in order to get an idea of how the research participants would react and complete the proposed instrument (Aithal & Aithal, 2020). Agreeing to Aithal and Aithal (2020), Aslam et al. (2020) "the sample for pre-testing may include four or five individuals but not more than thirty individuals". This process is carried out before the actual data collection takes place (Karamitri et al., 2020). Pilot testing ensures that (1) participants understand the questions as the researcher expects them to do; (2) eliminate the majority of difficulties that arises in data recording; and (3) validity and reliability (Nievas Soriano et al., 2020). For this study, the pilot test was conducted in two ways. Firstly, pilot testing was conducted using ten females. The selected females were not taken from the proposed population sample. Errors and questions that were vague were rephrased for clarity. Additions of key areas are done if there are any mising items. Secondly, pilot testing was conducted on thirty women entrepreneurs from the proposed population sample. Corrections were effected. Reliability and validity were also tested. Table 4.1 shows that all the measured constructs exhibited reliabilities above the minimum benchmark higher than 0.7 which is acceptable in social science (Taber, 2018). Internal consistency of constructs was measured using the Cronbach's Alpha (α). Reliabilities of the study's constructs are represented in Table 4.1.

Table 4.1: Construct, number of items and Cronbach's (α)

Construct	Number of items	Cronbach's (α)
Perceived usefulness	6	.905
Perceived ease of use	6	.825
Experience of the past	5	.845
Voluntariness on the use	6	.858
Entrepreneurship digitalisation and women entrepreneurship performance.	10	.947

Source: Author (2024)

Table 4.1 shows all constructs that had Cronbach's alpha (α)'s reliability with a cut-off point of more than 0.6 as recommended by (Bujang, Omar, & Baharum, 2018).

4.11 Validity

Validity refers to the degree to which the research instruments measure its intended purpose in solving the research objectives (Gani, Imtiaz, Rathakrishnan, & Krishnasamy, 2020). Validity relates to the integrity of the conclusions that are generated from a piece of research (Coleman, 2022). Thus, it is concerned with whether the findings of a study are about what they appear to be about (Saunders & Rojon, 2011). Threats to validity include among others, history, maturation, mortality and testing (Saunders, 2009). Harrison (2020) distinguishes between the different types of validity which are: construct validity, convergent, discriminant validity among others. Content validity is another type of validity that is important in research. These different types of validity are explained next.

4.11.1 Construct validity

This type of validity applies primarily to quantitative research and to the measures of social scientific concepts (Fàbregues, Molina-Azorin, & Fетters, 2021). An instrument has construct validity if it measures the constructs that it is intended to measure (Gani, Bhandari, et al., 2020). Put differently, this type of validity has to do with the question of whether or not a measure that is developed for a particular concept really reflects the concept it is supposed to be representing (Chopdar, Lytras, & Visvizi, 2023). If the measure of a concept is unstable and unreliable, it means that the measure cannot be provided as a measure for the concept in

question (Clark, Foster, Bryman, & Sloan, 2021). To ensure construct validity for the current study, the research instrument, questionnaire was subjected to pre-testing or pilot testing to determine whether the constructs were indeed measuring what they were intended to measure. In addition, some questions used in the questionnaire were adopted from previous studies. Where possible, these questions were adopted to suit the country specific context (i.e. Zimbabwe).

4.11.2 Convergent validity

Convergent validity is the assessment to measure the level of correlation of multiple indicators of the same construct that agree. To establish convergent validity, the factor loading of the indicator, composite reliability (CR) and the average variance extracted (AVE) must be considered (Lambert & Newman, 2023). The value ranges from 0 to 1. AVE value should exceed 0.50 so that it is adequate for convergent validity (Cheung, Cooper-Thomas, Lau, & Wang, 2024). In the present study, convergent validity was assessed using standardised factor loadings, critical ratios and average variance extracted (AVE). Table 4.2 presents constructs, standardised factor loadings and critical ratios results.

Table 4.2: Constructs, items, Standardised Factor loading and CR

Construct	Items	Standardised Factor loading	Critical ratios
Perceived usefulness	PUOT1	.792	-
	PUOT2	.684	7.245***
	PUOT3	.755	8.645***
	PUOT4	.814	9.375***
	PUOT5	.717	8.642***
	PUOT6	.828	9.317***
Perceived ease of use	PEOU1	.787	-
	PEOU2	.892	9.987***
	PEOU3	.827	9.922***
	PEOU4	.901	10.324***
	PEOU5	.931	10.418***
	PEOU6	.914	10.381***
Experience of the past use	EPUT1	.921	-
	EPUT2	.845	9.746***
	EPUT3	.694	7.643***
	EPUT4	.686	7.561***
	EPUT5	.924	10.450***
Voluntariness in the adoption	VIUT1	.775	-
	VIUT2	.829	8.452***
	VIUT3	.902	10.120***
	VIUT4	.876	9.879***

Entrepreneurship digitalisation	VIUT5	.735	8.436***
	VIUT6	.683	7.943***
	EDWE1	.746	-
	EDWE2	.866	9.752***
	EDWE3	.914	10.212***
	EDWE4	.828	9.631***
	EDWE5	.784	8.879***
	EDWE6	.827	9.641***
	EDWE7	.830	9.678***
	EDWE8	.917	10.369***
	EDWE9	.786	8.798***
	EDWE10	.717	8.237***
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 7 iterations. Total variance explicated 79.88%			

Note: - CR is fixed; *** p < 0.001

Source: Author (2024)

Table 4.2 clearly shows that rotation converged in 7 iterations namely PUOT1, PEOU1, EPUT1, VIUT1, EDWE1, EAED1, ELED1, and the total variance explained was 79.88%. The total variance explicated was way above the standard limit of 60% as postulated by (Platin & Ergun, 2017). All critical ratios for the items were sufficiently large (W2) and significant at po0.001 (Campbell, Wells, & Parks, 2015). All AVEs for the constructs were greater than the minimum cut-off point of 0.5 (Meng et al., 2021; Segars, 1997) as shown in Table 4.2.

4.11.3 Discriminant validity

Discriminant validity is described as the degree under which items within the construct are strongly associated with other measures of similar variable though different with other items of another construct to which it is unrelated (Cheung et al., 2024). The discriminant validity can be evaluated by using Fornell-Lacker criterion (Ab Hamid, Sami, & Sidek, 2017; Donglong, Taejun, Julie, & Sanghun, 2020). This method compares the average variance extracted (AVE) with the correlation of latent constructs (Sakinah, Ridzwan, Ramlee, & Zaliza, 2020). Average variance extracted (AVEs) were used to measure discriminant validity through comparing them against squared inter-construct correlations (SICCs). Discriminant validity is acceptable if average variance extracted results are greater than the squared inter-construct correlations (Cheung et al., 2024). Results in Table 4.3 indicate that conditions essential for fulfilling discriminant validity were satisfied since they were all bigger than their matching squared inter-construct (Hilkenmeier, Bohndick, Bohndick, & Hilkenmeier, 2020).

Table 4.3: Mean (M), standard deviation (SD), AVE and SICC

Construct	M	SD	PUOT	PEOU	EPUT	VIUT	EAED	ELED
Perceived usefulness (PUOT)	4.75	4.75	.631					
Perceived ease of use (PEOU)	4.98	4.98	.258	.652				
Experience of the past use (EPUT)	4.78	4.78	.314	.214	.578			
Voluntariness in the adoption (VIUT)	4.95	4.95	.158	.325	.334	.593		
Entrepreneurship Performance (EDWE)	4.53	4.53	.298	.228	.214	.276	.711	

Note: Diagonal elements in bold represent AVEs

Source: Author (2024)

Table 4.3 indicates that all average variance extracted figures were above 0.5 and greater than corresponding squared inter-construct correlations (Rasoolimanesh, 2022). Therefore, conditions necessary to achieve discriminant validity were satisfied.

4.12 Sensitivity

Another important measurement or property of a scale is instrument sensitivity. An instrument is said to be sensitive if has high ability to measure variability within a concept (Okumu, 2020). According to Kim and Yim (2022), sensitivity is the ability to discriminate among meaningful differences in attitudes; implying that sensitivity is often used in attitude measurement. Quinn and Malgieri (2021) definition of sensitivity brings to the fore the term discriminatory power which is hereby defined by Hair, Hollingsworth, Randolph, and Chong (2017) as the scale's ability to differentiate between the magnitude of the response categories or points. Thus, the more the scale points, the greater the discriminatory power.

Usually a dichotomous response category (e.g. yes/no or disagree/agree) does not permit the observation of subtle variance in phenomena. This type of scale is said to be less sensitive. Increasing the number of response categories (e.g. strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree) increases the sensitivity of a scale. The sensitivity of a scale that is based on one item/question can also be increased by increasing the number of items/questions. That is, the sensitivity of a scale can be increased either by adding more responses or adding more scale items (Okumu, 2020). However, the more the scale categories there are, the lower the reliability. The reason is that very coarse response categories such as dichotomous scale categories can absorb a great deal of response variability before a change can be noted with test-re test method. By contrast, too many response categories when there

are only a few distinct response positions would result in considerable but unwarranted amount of random fluctuation (Quinn & Malgieri, 2021).

Hair Jr. et al. (2008) suggest that the researcher has to make a decision the number of categories or response points that explain variance in a particular measure. And yet there are no concrete rules that govern the number of response categories or points that can be used in a scale. However, the general recommendation is that scale points should not be more than 10. This is especially true for respondents with lower levels of education and less experience in responding to scales. With more educated respondents, a 10-point scale can still work (Hair Jr. et al., 2008). In this study, the 5-point response categories were used. This has been arrived at after a careful consideration. A 5-point level scale was considered to meet sensitivity and reliability issues (Dawes, 2002; Brink et al., 2021).

4.13 Artificial neural networks

Artificial neural networks have become a powerful tool in the field of prediction in various fields. Their application in environment, financial forecasting, and social sciences has gained a lot of attention. Traditional methods like logistic regression have limitations in predicting non-linear data and hence ANN has become dominant for application in social phenomena (Chen et al., 2023). Moreover, ANN have the advantage of processing big data making them important in social sciences (Di Franco & Santurro, 2023). In addition, the ANN has the advantage of selecting the most important variables thereby making them more reliable (Ardabili, Pourdarbani, Maleki, Jafari, & Hernandez-Hernandez, 2024). Despite their outstanding performances, the ANN has the problem of interpreting results (Wordliczek, 2023). While prediction in ANN is important, especially when making decisions, it is important to recognize their risks where interpretation of the data is critical (Salimian & Grisan, 2024). The model evaluation will be in the form of mean absolute error (MAE), the mean squared error (MSE), the root mean square error (RMSE), and the coefficient of determination (R^2) to evaluate the prediction performance of data modeling (Bhagat, Nishimura, & Shimada, 2021).

4.14 Ethical considerations

Ethics communicate to moral choices affecting standards, behaviour and decisions (Hasan, 2023). Edwards (2020) and Broesch et al. (2020) explains ethics as “moral values which rule individuals’ actions when conducting study”. All phases of the study, including data collection, analysis, and presentation, as well as conclusions and suggestions, were conducted with ethical

considerations in mind. Before, during, and after the data gathering process, ethical guidelines were adhered to. In order to proceed with data collecting, the researcher requests permission from Chinhoyi University of Digital Technology. Permission to collect data in rural areas were asked from traditional local leaders whereby permission to collect data in urban areas will be asked from the MWACSMED and City Council. During the process of data collection, the scholar asked informed agreement from the respondents. This means that the investigator seeks respondents' rights to privacy, consent and anonymity during the data collection process. Respondents participated in the study voluntarily and transparency were ensured in the process. Data collected were reported as it were. The collected data were only used for academic purposes as intended.

4.15 Chapter summary

The study's research methodology was the main topic of this chapter. The research methodology employed in the study was pragmatism. In this study, a cross-sectional survey design was employed. During data collection, women entrepreneurs in Mashonaland West province self-administered a standardised Likert scale questionnaire. The chapter also covered the methods for ensuring validity and reliability, as well as how to measure them. This chapter focused on and covered the procedures for data gathering, analysis, and presentation. In conclusion, ethical concerns were brought up and addressed. The research findings for the study are the subject of the following chapter.

CHAPTER FIVE

RESULTS

5.1 Chapter introduction

The previous chapter looked at the research methodology adopted by the current study. This chapter concentrates on data analysis and presentation of the results attained in the study. The study sought to examine the influence of entrepreneurship digitalisation on the women entrepreneurship performance. Descriptive statistics of variables for the study were presented before hypotheses tests results. The findings form the basis upon which the conclusions and recommendations are drawn. The specific objectives of the study were: - (i) to determine the role played by perceived usefulness of digital technology in influencing women entrepreneurship performance, (ii) to evaluate the role played by perceived ease of use of digital technology in influencing women entrepreneurship performance, (iii) to analyse the effect of experience of the past use of digital technology in influencing women entrepreneurship performance, (iv) to ascertain the effect of voluntariness of use of digital technology in influencing women entrepreneurship performance, (v) to assess the moderating effect of entrepreneurs age has a moderating effect on the relationship between entrepreneurship digitalisation and women entrepreneurship performance and (vi) to establish the moderating effect of entrepreneurs level of education plays a moderating role on the relationship between entrepreneurship digitalisation and women entrepreneurship. The section mainly focused on analysing response rate, respondents' socio-demographic profile effects on the study concepts, descriptive statistics, confirmatory factor analysis and hypotheses testing.

5.2 Response rate

Women entrepreneurs were the targeted respondents during data collection with regards to the women entrepreneurship performance through entrepreneurship digitalisation. A total of 950 questionnaires were administered to women entrepreneurs in Mashonaland West province, Zimbabwe. Of the distributed questionnaires, 840 were returned and usable translating to a 88.42% response rate. The personal distribution of questionnaires and the patience in waiting for responses contributed to a reasonable response rate. The response rate of 88.42% was acceptable as supported by Holtom, Baruch, Aguinis, and Ballinger (2022) who claim that a

response rate of more than 50% is acceptable in a quantitative study. Additionally, Saunders et al. (2009) settled that the response rate is acceptable when it follows studies of a similar nature. It is further concluded that a response rate of more than 50% is adequate to proceed with data analysis (Risjord, 2022). Wu, Zhao, and Fils-Aime (2022) concurred that response rate of 50% is adequate, 60% is good, 70% very good for analysis. The response rate is in line with a related study conducted in Kenya on Influence of women empowerment projects on food security in Mbeere sub-communities by Nyaki (2020) where the response rate was 72.5%. Merluzzi and Burt (2021) study on one path does not fit all: a career path approach to the study of professional women entrepreneurs carried in United States got non-response rate of 39%. In light of these arguments, the response rate of 88.42% was adequate for analysis and therefore results from such a threshold were not only credible but formed a sound basis for drawing conclusions.

The researcher noted that some respondents were reluctant to participate in the study due to pressure of family and limited time to entertain visitors during business hours. However, the researcher took advantage of the use of research assistants in distributing questionnaires. The way women entrepreneurs desisted from taking part in the study, gave the researcher the impression that they had earlier on been subjected to previous women entrepreneurship studies and had not benefited from the exercise.

5.3 GENERAL INFORMATION ABOUT THE RESPONDENTS

This section comprises respondents' general information like age, marital status, level of education, nature of business and number of years of respondents in business.

5.3.1 Age of respondents

One of the personal characteristics that could have an influence upon the women entrepreneurship is the age of the entrepreneurs. The following figure 4.1 shows the distribution of women entrepreneurs in different age groups. The age groups were below 30 years, between 30-39, between 40 to 49, between 50 and 59 and above 60. The women entrepreneurs age is shown in figure 4.1 below.

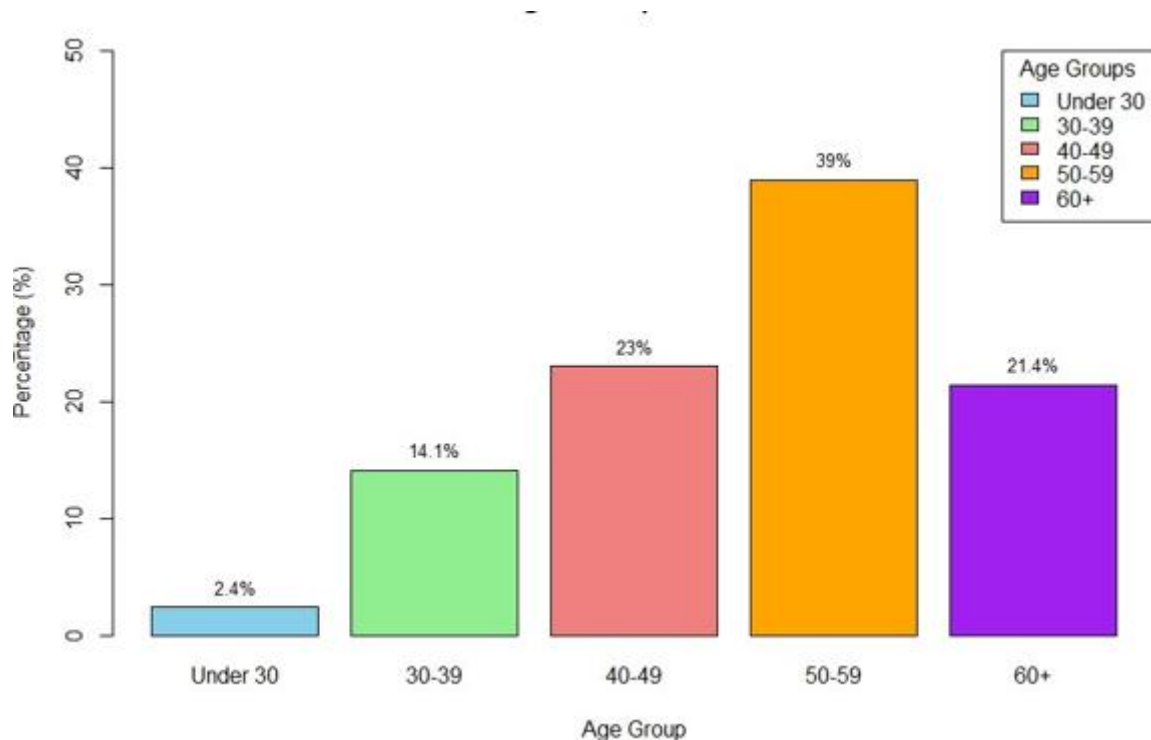


Figure 5.1 shows the age distribution of the respondents.

Source: Author (2024)

Survey result in Figure 5.1 show that most women entrepreneurs (39%) were in the 50 to 59 age group, followed by 23% who were in the 40 to 49 age group. Only 2.4% of the women entrepreneurs who responded said they were younger than 30 years old, while 14.1% of them were between the ages of 30 to 39 years. Of the respondents 21.4% were older than 60. This implies that as women grow older they become entrepreneurially active as 97.5% were 30 years and above. These finding are in line with the study done by Madden and Savage (2000) in Australia, Rajani and Sarada (2008) in Andra Pradesh, India and Nyaki (2020) in Mbeere, Kenya. They found out that generally women think of business ideas in their late thirties. There may be various reasons for it such as lack of support from family, need to look after extended family, involvement in other jobs, child care and others may be few of them.

5.3.2 Marital status

Another personal characteristic that could have an influence upon the women entrepreneurship is marital status of the entrepreneurs. Figure 5.2 below shows the distribution of the respondents by marital status. Marital status was grouped as single, married and widows.

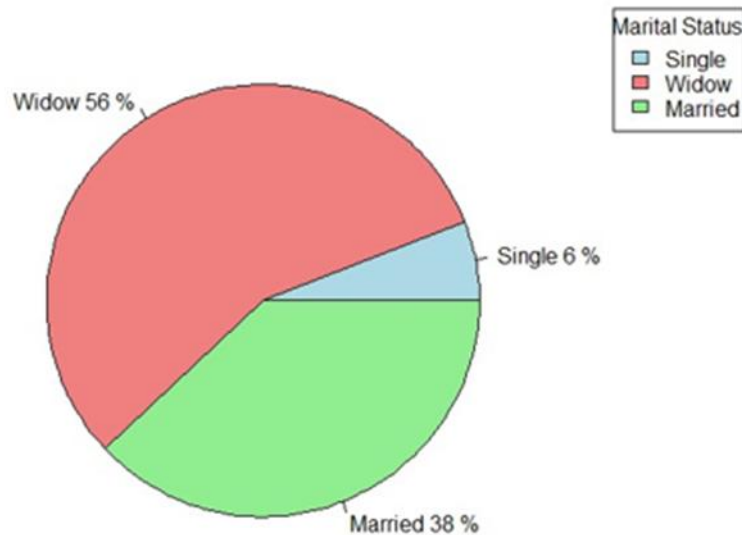


Figure 5.2: Marital status of the respondents

Source: Author (2024)

Results in Figure 5.2 show that most women entrepreneurs in Mashonaland West in Zimbabwe (56%) are widows. This was followed by 38% of the women entrepreneurs who indicated that they are married. Only 6% of the women entrepreneurs indicated that they are single. This signifies that as women become widows they tend to be entrepreneurially active and engage into entrepreneurship more than when they were single and married. Survey research disagree to Mohsin and Lei (2020) and Olateju, Aminu, Shehu, and Danmola (2017) who found that majority of the participants were married.

5.3.3 Level of education

The study also sought to establish education level of the respondents. The categories included below diploma level, diploma, degree and master's levels. The distribution of the level of education is shown in figure 5.3.

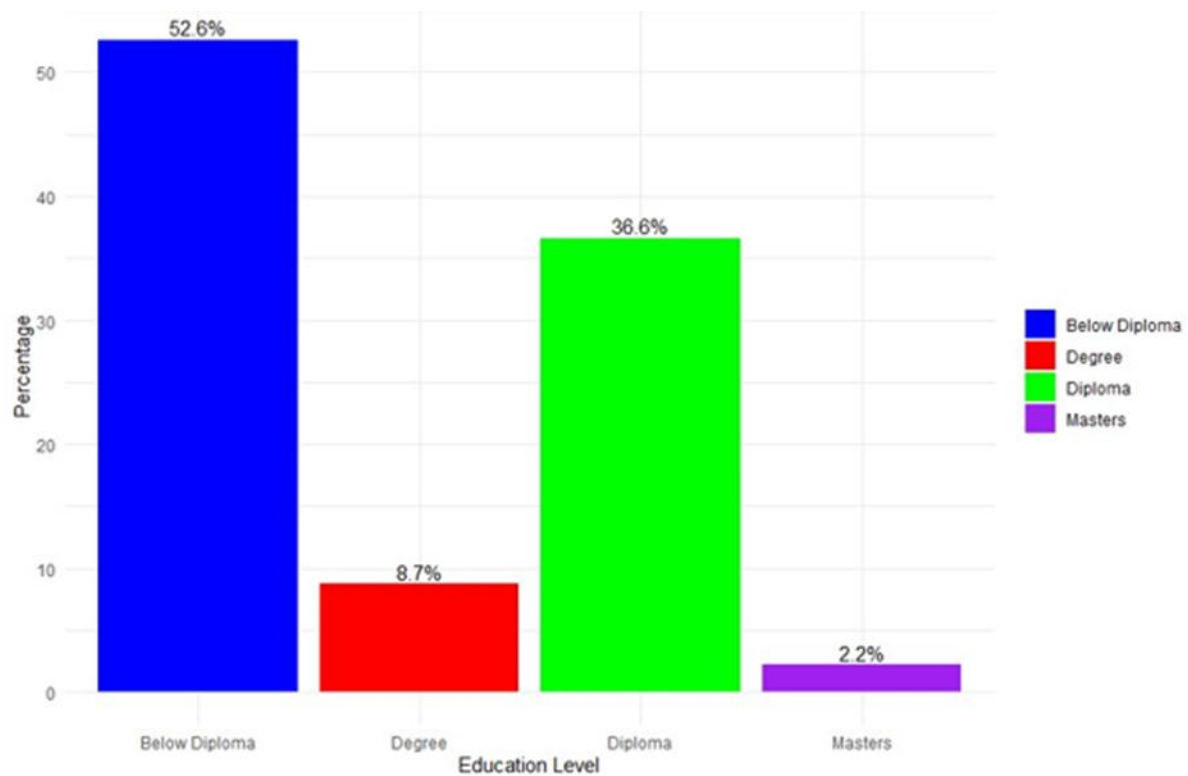


Figure 5.3: Level of education of the respondents

Source: Author (2024)

Figure 5.3 shows that 52.6% of the respondents had below diploma level. Another 36.6% of them indicated that they have attained diploma education level while 8.7% of them had degrees. Only 2.2% of them had a master's level of education. Arguably it can be deduced that a good percentage of women entrepreneurs in Mashonaland West in Zimbabwe have attained basic education. This shows that education significantly enhanced the strength of the relationship between digitalisation and performance. Literature shows that individuals with tertiary education adopted digital tools more effectively, showed greater digital confidence, and translated usage into business outcomes more efficiently (Mexhuani, 2025; Lazar et al., 2020). The results are similar with the study by Reddy et al. (2023) and Alzghaibi (2025) who found that respondents with primary or secondary education exhibited slower adoption or lower performance gains, suggesting a need for tailored digital literacy interventions.

5.3.4 Nature of business

Another characteristic that could have an influence upon the women entrepreneurship is the nature of entrepreneur's business. The following figure 5.4 shows the distribution of nature of business of women entrepreneurs. The nature of business classifications was digital technology, farming, processing, services, manufacturing and retailing. Nature of women entrepreneur's businesses are shown in figure 5.4.

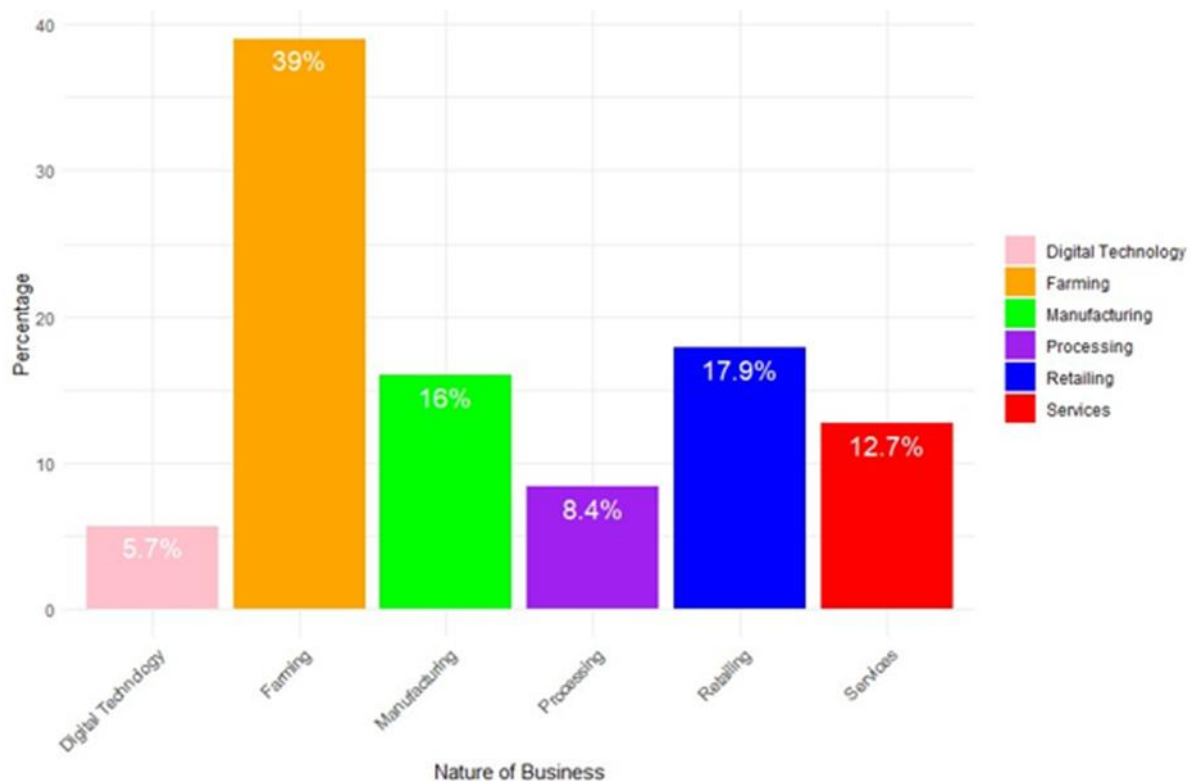


Figure 5.4: Nature of business of the respondents

Source: Author (2024)

Results presented in Figure 5.4 indicate that 39.3% of the respondents were into farming business; 17.9% were into retailing followed by respondents 16% were into manufacturing. This was followed by 12.7% of the respondents who were into services, 8.4% were into processing, and only 5.7% were into digital technology. This implies that women entrepreneurs under study have at least something as far as business concerns. However, these findings are not similar to the findings by Kraus, Durst, et al. (2022) and Elg et al. (2021) and Antikainen, Uusitalo, and Kivikytö-Reponen (2018) who found that women owned businesses tend to be

concentrated in service-oriented sectors such as healthcare and social assistance, information and cultural industries, arts, entertainment, recreation, and retail.

5.3.5 Number of years of respondents in business

The study also sought to establish number of years of respondents in business. The categories included less than 2 years, 2 to 5 years, 6 to 10 years and above 10 years. The distribution of the number of years of respondents in business is shown in Figure 5.5.

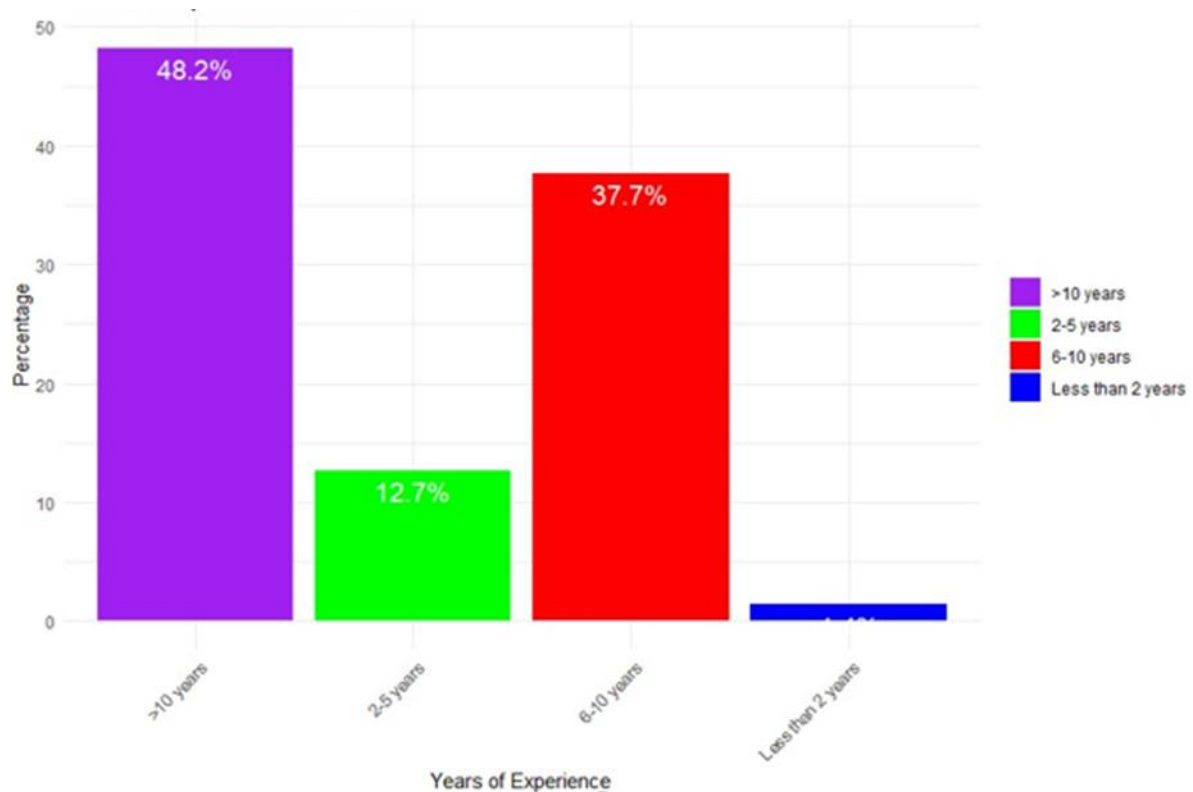


Figure 5.5: Number of years of respondents in business

Source: Author (2024)

The study results in Figure 5.5 reveal that 48.2% of respondents had 10 years and above in business, whilst 37.7% had 6 to 10 years. Additionally, 12.7% of the respondents had 2 to 5 years in business and only 1.4% had less than 2 years. This implies that women businesses

have at least 2 years. These results are in line with Martinez, Al-Kassem, and Aguenza (2022) who found that Micro Small, and Medium Enterprises in Taguig city operated over a decade (46.89%). (Ojong, Simba, & Dana, 2021) found that most women entrepreneurs in Africa carry on their businesses for above 10 years.

5.4 Descriptive statistics

Descriptive statistics results on all six constructs (perceived usefulness of digital technology in influencing women entrepreneurship performance, perceived ease of use of digital technology in influencing women entrepreneurship performance, the effect of experience of the past use of digital technology in influencing women entrepreneurship performance, the effect of voluntariness on the use of digital technology in influencing women entrepreneurship performance, the effect of entrepreneurs' age on the effect of entrepreneurship digitalisation on enhanced women entrepreneurs and the effect of level of entrepreneurs' education on the influence of entrepreneurship digitalisation on women entrepreneurship performance) underpinning this study are presented in this section. These include the standard deviation (SD) and the arithmetic means (M). The standard deviation explains how responses in the study are distributed around the mean. The use of both the mean and standard deviation improves understanding of the data. The questionnaire used in the study needed respondents to indicate the following: 1 – Strongly Disagree, 2 – Disagree, 3 – Neutral, 4 – Agree and 5 – Strongly Agree.

5.4.1 Descriptive statistics for the role played by perceived usefulness of digital technology in influencing women entrepreneurship performance

Figures presented in Table 5.1 show mean scores and standard deviation of items used to measure role played by perceived usefulness of digital technology in influencing women entrepreneurship performance.

Table 5.1: Descriptive statistics of the role played by perceived usefulness of digital technology in influencing women entrepreneurship performance

Code	Item	Mean score	Mean response	SD
PUOT1	Digital technology makes it easy to stay in touch with customers	4.79	Strongly agree	.422
POUT2	My business effectiveness increased because of the use of digital technology	4.67	Strongly agree	.472
PUOT3	My business productivity increased because of the use of digital technology	4.69	Strongly agree	.558
PUOT4	Digital technology makes it easy to collaborate with business partners	4.72	Strongly agree	.531
PUOT5	The use of digital technology enables me to accomplish my tasks more quickly	4.78	Strongly agree	.543
PUOT6	Digital technology improves customer satisfaction	4.82	Strongly agree	.395
	Overall	4.75	Strongly agree	.487

Source: Author (2024)

Results indicated in Table 5.1 specify least mean scores of 4.67, standard deviation = 0.472 (Item POUT2) which states that my business effectiveness increased because of the use of digital technology. This implies that women entrepreneurs strongly agreed that business effectiveness can be influenced by digital technology.

Also results show the highest mean score of 4.82, standard deviation = 0.395 (Item PUOT6). This indicates that women entrepreneurs strongly agreed that digital technology improves customer satisfaction.

Overall results were computed to produce a mean score of 4.75 and a standard deviation of 0.487. This suggests that women entrepreneurs strongly agreed that perceived usefulness of digital technology played a role in influencing women entrepreneurship performance. This implies that women entrepreneurs with a high level of perceived usefulness will digitalise their businesses. These results yield similar results with Prastiawan et al. (2021), Chen and Aklikokou (2020) and Gunawan, Ali, and Nugroho (2019) who found that perceived usefulness has a positive effect on behavioural intention to use digital technology.

5.4.2 Descriptive statistics for the role played by perceived ease of use of digital technology in influencing women entrepreneurship performance

Mean scores and standard deviation for perceived ease of use were calculated to measure the influence in women entrepreneurship performance. The results obtained in the study are indicated in Table 5.2 below:

Table 5.2: Role played by perceived ease of use of digital technology in influencing women entrepreneurship performance.

		Mean score	Mean response	SD
PEOU1	Using digital technology makes it clear and understandable in my business	4.73	Strongly agree	.494
PEOU2	Digital technology require a lot of my mental thinking in my business	4.96	Strongly agree	.199
PEOU3	Using digital technology makes it easy to learn more in my business	4.94	Strongly agree	.259
PEOU4	Using digital technology makes it easy to become skilful in using digital technology in my business	4.94	Strongly agree	.248
PEOU5	Digital technology makes it easy for me to work remotely	4.94	Strongly agree	.248
PEOU6	Digital technology is expensive	4.98	Strongly agree	.127
	Overall	4.92	Strongly agree	0.263

Source: Author (2024)

As shown in Table 5.2, results indicate least mean responses of 4.73 SD = 0.494 (Item PEOU1) using digital technology makes it clear and understandable in my business. This indicates that women entrepreneurs strongly agree that using digital technology makes it clear and understandable in my business.

Results in Table 5.2 also show the highest mean score of 4.98, SD = 0.127 (Item PEOU6). This shows that women entrepreneurs strongly agree that digital technology is expensive. This might mean that women entrepreneurs need some support for them to digitalise.

Computations of mean score indicate an average of 4.92 agree out of a likely score of 5 (strongly agree) and Standard Deviation of 0.263. Results suggest that perceived ease of use of digital technology played a role in influencing women entrepreneurship performance. Previous empirical studies of mobile banking adoption (Kurniasari & Abd Hamid, 2020; Prastiawan et al., 2021; Wilson, Keni, & Tan, 2021) supported perceived ease of use as a determinant impacting people to use mobile banking.

5.4.3 Descriptive statistics for the effect of experience of the past use of digital technology in influencing women entrepreneurship performance

Women entrepreneurs were asked the effect of experience of the past use of digital technology in influencing women entrepreneurship performance. Table 5.3 presents the mean score and standard deviations of all items used to measure the effect of past experience on the use of digital technology.

Table 5.3: Effect of experience of the past use of digital technology in influencing women entrepreneurship performance

Code	Item	Mean score	Mean response	SD
EPUT1	My previous experience with digital technology makes it easy for me in learning to use digital technology in my business	4.66	Strongly agree	.674
EPUT2	My past experience with digital technology helped me becoming skilful at using digital technology in my business	4.78	Strongly agree	.510
EPUT3	My past experience with digital technology increased my interaction with customers	4.81	Strongly agree	.393
EPUT4	My previous experience with digital technology helped me find it easy to use digital technology in my business	4.89	Strongly agree	.308
EPUT5	My past experience with digital technology increased my interaction with my business partners	4.74	Strongly agree	.736
	Overall	4.78	Strongly agree	.524

Source: Author (2024)

Table 5.3 exhibits results of mean responses and standard deviations as follows: lowest mean score ranged being 4.66; SD = 0.674 (Item EPUT1) my previous experience with digital technology makes it easy for me in learning to use digital technology in my business. This implies that women entrepreneurs strongly agree that previous experience with digital technology makes it easy to learn to use digital technology in their businesses.

The highest mean score was 4.89 with the Standard Deviation = 0.308 (Item EPUT4). This shows that women entrepreneurs strongly agree that previous experience with digital technology helped them find it easy to use digital technology in their businesses.

Calculations for the mean score were averaged (overall mean 4.78, SD = 0.524) agree out of a likely score of 5 (Strongly agree). This implies that previous experience of using digital technology played a role in influencing women entrepreneurship digitalisation. This means that women entrepreneurs who have previous experience enjoy using technology in their businesses compared to those with no past experience. This is in line with Tusyanah, Wahyudin, and Khafid (2021) and Bellaaj, Zekri, and ALBUGAMI (2015) who yield similar results that more experienced users will show a higher level of trust toward the online applications. Abbad (2021) and Ye, Zheng, and Yi (2020) found that consumers with high levels of perceived risk, derived from their lack of experience, will require informal advice from their friends, relatives and colleagues.

5.4.4 Descriptive statistics for the effect of voluntariness of use of digital technology in influencing women entrepreneurship performance

Table 5.4 indicate mean scores and standard deviation results for all items used when measuring the effect of voluntariness of use of digital technology in influencing women entrepreneurship performance.

Table 5.4: The effect of voluntariness of use of digital technology in influencing women entrepreneurship performance

Code	Item	Mean score	Mean response	SD
VIUT1	My personal innovativeness helped me to adopt digital technology and use it in my business	4.93	Strongly agree	.256
VIUT2	My positive attitude helped me to use digital technology in my business willingness to use	4.92	Strongly agree	.262
VIUT3	I always enjoy using digital technology in my business	4.94	Strongly agree	.285
VIUT4	Using digital technology in my business helps me yield satisfaction	4.97	Strongly agree	.163
VIUT5	Perceived voluntariness of business is predictor of innovativeness in my business	4.95	Strongly agree	.222
VIUT6	Voluntary use of digital technology has positively influenced my behaviour towards managing the business	4.95	Strongly agree	.216
	Overall	4.95	Strongly Agree	.234

Source: Author (2024)

Results presented in Table 5.4 show least mean scores ranging of 4.92, Standard deviation 0.262 (Item VIUT2) which stated that my positive attitude helped me to use digital technology in my business willingness to use. This shows that positive attitude helped women entrepreneurs to increase willingness in the use digital technology in their businesses.

Computations of highest mean score was 4.95, standard deviation 0.222 (Item VIUT7) using digital technology in my business helps me yield satisfaction. This shows that using digital technology in women entrepreneur's businesses helps them yield satisfaction.

Computed results indicated an overall mean score of 4.95 and a standard deviation of 0.234 agree out of a likely score of 5 (Strongly agree). This implies that women entrepreneur's positive attitude will help them adopt digital technology which will influence women entrepreneurship performance. This has been proved by different theoretical models (TAM, TRA and TPB) which show that attitude is an essential pre-requisite of the intention to develop a particular behaviour (Akinuwa et al., 2022; Margahana, 2019; Marikyan & Papagiannidis, 2021; Shatskaya, Gavrilova, & Chichinina, 2023).

5.4.5 Descriptive statistics for the effect of entrepreneurship digitalisation on the women entrepreneurship performance

Women entrepreneurs were asked the effect of entrepreneurship digitalisation on the women entrepreneurship performance. Table 5.5 presents the mean score and standard deviations of all items used to measure the effect of entrepreneurship digitalisation on the women entrepreneurship performance.

Table 5.5: The effect of entrepreneurship digitalisation on women entrepreneurship performance.

Code	Item	Mean score	Mean response	SD
EDWE1	Digitalisation speeds up the manufacturing process	4.49	Strongly agree	.723
EDWE3	Stakeholder management have increased as I constantly and quickly get feedback using technological communication platforms	4.50	Strongly agree	.719

EDWE3	Digitalisation help producing wide range of customised products according to customer's specifications	4.59	Strongly agree	.554
EDWE4	The adoption and implementation of digitalization allows increased administrative/managerial commitment	4.52	Strongly agree	.672
EDWE5	The firm's digitalization means knowledge can be shared with the suppliers of digital technology	4.50	Strongly agree	.711
EDWE6	Focusing on digital technology allows knowledge-sharing among employees/collaborators	4.53	Strongly agree	.680
EDWE7	Digitalization can help the firm in the global business process	4.56	Strongly agree	.615
EDWE8	The firm's adoption of digital technology can be fundamental in increasing collaboration with customers	4.60	Strongly agree	.570
EDWE9	Customer feedback on the digital technology adopted brings benefits for the firm	4.51	Strongly agree	.684
EDWE10	The adoption of digital technology can increase knowledge-sharing with customers (commercial and technical information)	4.47	Strongly agree	.752
	Overall	4.53	Strongly Agree	.668

Source: Author (2024)

Survey results in Table 5.5 exhibits results of mean responses and standard deviations as follows: least mean score 4.47; SD = 0.752 (Item EDWE10) which states that the adoption of digital technology can increase knowledge-sharing with customers (commercial and technical information). This means that digital technology usage increase knowledge sharing with customers both commercial and technical information.

Highest mean score 4.60, SD = 0.570 (Item EDWE8) which states that the firm's adoption of digital technology can be fundamental in increasing collaboration with customers. This means that digital technology adoption is fundamental in increasing collaboration with customers in a business.

Computations for the mean score were averaged (overall mean 4.53, SD = 0.668) agree out of a likely score of 5 (Strongly agree). This implies that women entrepreneurs agreed that entrepreneurship digitalisation has an effect on the women entrepreneurship performance.

5.5 Sampling adequacy

Before performing Confirmatory Factor Analysis, the sustainability of data for factor analysis was evaluated using Kaiser Meyer Olkin Measure of Sampling Adequacy (KMO) and

Bartlett's Test of Sphericity using SPSS Version 21. A KMO measure of sampling adequacy was used to determine the adequacy of the sample. The KMO statistic ranges between 0 and 1; with 0 signifying absolute inadequacy of the sample and 1 representing absolute adequacy of the sample. Kaiser commended a measurement of 0.5 as the simple minimum for the sample to be adequate. The Bartlett's Test of Sphericity was applied in order to determine whether the data indeed allowed factor analysis to be performed. Napitupulu, Kadar, and Jati (2017) recommended that the Bartlett's test of Sphericity should be significant at $p < 0.05$ for factor analysis to be performed. Results for Kaiser Meyer Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity are shown in Table 5.6.

Table 5.6: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.902
Bartlett's Test of Sphericity	Approx. Chi-Square	12095.304
	Df	595
	Sig.	.000

Source: Author (2024)

Table 5.6 presents results obtained (KMO = .902, Approx. Chi-square = 12095.304, Degrees of freedom [DF] = 595; $p < 0.000$ and indicated that the sample was suitable and allowed performing of confirmatory factor analysis as recommended by (Habibi, Yusop, & Razak, 2020). The aim of carrying out confirmatory factor analysis was to refine and reduce the number of related variables to a relevant and manageable size before using them in future analyses. Factor rotation method was used to simplify factor results for a better interpretation. Analysis of factors was simplified using the Varimax method as it maximises the total sum of variables of the squared loadings, i.e. squared correlations between variables and factors (Ahmad, Lazim, Shamsuddin, Wahab, & Abu, 2019).

5.6 Scale validation

Prior to conducting descriptive statistics analysis and structural equation modelling to test research hypotheses, data were validated through confirmatory factor analysis through reliability analysis, convergent validity, and discriminant validity testing. These tests were done in SPSS® version 21 and AMOS® version 21. Confirmatory factor analysis was

performed in order to understand item structures of variables and to also find out which items that really measured the underlying constructs within the questionnaire. Watkins (2018) added that the basic purpose of factor analysis is to understand the structure of latent variable and to construct a questionnaire to measure this latent variable.

5.7 Reliability

Reliability is the degree to which results attained by a measurement procedure may be replicated and produce similar results on repetitive trials (George & Mallery, 2018). Similarly, Tore et al. (2019) describes reliability as the extent to which variables in a study are consistent with what they are supposed to measure. Thus, reliability has much to do with replicability of results after several attempts. The instrument must be reliable so that results are consistent (Henseler, 2017). Reliability is regarded as an important measurement scale in quantitative research. Internal consistency of a construct determines reliability as it stipulates the standardisation of items of a measurement scale (Kamis et al., 2020). Cronbach's alpha value designates the internal correlation of all the items in a questionnaire (Tore et al., 2019). Cronbach's alpha refers to the reliability of a construct if the study measures only a single construct (Nadler & Kros, 2018). A Cronbach's alpha (α) was adopted to regulate the constructs which are reliable. Tore et al. (2019) considered alpha threshold 0.7 or any value higher validate internal consistency. In the present study, reliability were tested twice. Firstly it was tested using results from pilot study and secondly after the collection of actual data from women entrepreneurs in Mashonaland west province. Table 5.7 shows that all the measured constructs exhibited reliabilities above the minimum benchmark higher than 0.7 which is acceptable in social science (Taber, 2018). Internal consistency of constructs was measured using the Cronbach's Alpha (α). Reliabilities of the study's constructs are represented in Table 5.7.

Table 5.7: Construct, number of items and Cronbach's (α)

Construct	Number of items	Cronbach's (α)
Perceived usefulness	6	.932
Perceived ease of use	6	.856
Experience of the past	5	.890
Voluntariness on the use	6	.856
Entrepreneurship digitalisation and women entrepreneurship performance.	10	.946

Source: Author (2024)

Table 5.7 shows all constructs that had Cronbach's alpha (α)'s reliability with a cut-off point of more than 0.6 as recommended by (Bujang, Omar, & Baharum, 2018).

5.8 Convergent validity test results

Convergent validity was assessed using measurement model fit indices, standardised factor loadings, critical ratios and average variance extracted (AVE). Table 5.8 presents constructs, standardised factor loadings and critical ratios results.

5.9 Model fit indices

The measurement model fit indices, namely, $\chi^2 / DF = 1.987$, Goodness of Fit Index (GFI) = 0.912, Adjusted Goodness of Fit Index (AGFI) = 0.903, Normed Fit Index (NFI) = 0.921, Tucker-Lewis Index (TLI) = 0.917, Comparative Fit Index (CFI) = 0.948 and root mean square error of approximation (RMSEA) = 0.043 were acceptable. χ^2 / DF should be less than 3, and GFI, AGFI, NFI, TLI and CFI should be close to 1 while RMSEA should be less than 0.07 if the model is to be accepted (Sahoo, 2019; Yoserizal, Tovalini, Hanoselina, & Yudiatmaja, 2023). All individual item reliabilities were above the minimum cut-off point of 0.5 (Kuo et al., 2009) while composite reliabilities for all the constructs were above the minimum cut-off point of 0.7 (Muchandiona, Kakava, & Makanyeza, 2021). Significant at $p < 0.001$, all standardised factor loadings for all items were above the minimum cut-off point of 0.6 (Afthanorhan, 2014).

5.9 Constructs, items, Standardised Factor loading and CR

Table 5.8: Constructs, items, Standardised Factor loading and CR

Construct	Items	Standardized Factor loading	Critical ratios
Perceived usefulness	PUOT1	.792	-
	PUOT2	.684	7.245***
	PUOT3	.755	8.645***
	PUOT4	.814	9.375***
	PUOT5	.717	8.642***
	PUOT6	.828	9.317***
Perceived ease of use	PEOU1	.787	-
	PEOU2	.892	9.987***
	PEOU3	.827	9.922***
	PEOU4	.901	10.324***
	PEOU5	.931	10.418***
	PEOU6	.914	10.381***
Experience of the past use	EPUT1	.921	-
	EPUT2	.845	9.746***

	EPUT3	.694	7.643***
	EPUT4	.686	7.561***
	EPUT5	.924	10.450***
Voluntariness in the adoption	VIUT1	.775	-
	VIUT2	.829	8.452***
	VIUT3	.902	10.120***
	VIUT4	.876	9.879***
	VIUT5	.735	8.436***
	VIUT6	.683	7.943***
Entrepreneurship digitalisation	EDWE1	.746	-
	EDWE2	.866	9.752***
	EDWE3	.914	10.212***
	EDWE4	.828	9.631***
	EDWE5	.784	8.879***
	EDWE6	.827	9.641***
	EDWE7	.830	9.678***
	EDWE8	.917	10.369***
	EDWE9	.786	8.798***
	EDWE10	.717	8.237***
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 7 iterations. Total variance explicated 79.88%			

Note: - CR is fixed; *** p < 0.001

Source: Author (2024)

Table 5.8 clearly shows that rotation converged in 7 iterations namely PUOT1, PEOU1, EPUT1, VIUT1, EDWE1, EAED1, ELED1, and the total variance explained was 79.88%. The total variance explicated was way above the standard limit of 60% as postulated by (Platin & Ergun, 2017). All critical ratios for the items were sufficiently large (W2) and significant at po0.001 (Campbell et al., 2015). All AVEs for the constructs were greater than the minimum cut-off point of 0.5 (Meng et al., 2021; Segars, 1997) as shown in Table 5.8.

5.10 Discriminant validity

Discriminant validity is described as the degree under which items within the construct are strongly associated with other measures of similar variable though different with other items of another construct to which it is unrelated (Omolade, Stephenson, Simkhada, & Keely, 2023). Average variance extracted (AVEs) were used to measure discriminant validity through comparing them against squared inter-construct correlations (SICCs). Discriminant validity is acceptable if average variance extracted results are greater than the squared inter-construct correlations (Henseler, et al., 2014). Results in Table 5.9 indicate that conditions essential for fulfilling discriminant validity were satisfied since they were all bigger than their matching squared inter-construct (Hilkenmeier et al., 2020).

Table 5.9: Mean (M), standard deviation (SD), AVE and SICC

Construct	M	SD	PUOT	PEOU	EPUT	VIUT	EAED	ELED
Perceived usefulness (PUOT)	4.75	4.75	.631					
Perceived ease of use (PEOU)	4.98	4.98	.258	.652				
Experience of the past use (EPUT)	4.78	4.78	.314	.214	.578			
Voluntariness in the adoption (VIUT)	4.95	4.95	.158	.325	.334	.593		
Entrepreneurship Performance (EDWE)	4.53	4.53	.298	.228	.214	.276	.711	

Note: Diagonal elements in bold represent AVEs

Source: Author (2024)

Table 5.9 indicates that all average variance extracted figures were above 0.5 and greater than corresponding squared inter-construct correlations (Rasoolimanesh, 2022). Therefore, conditions necessary to achieve discriminant validity were satisfied.

5.11 Construct, Items and Factor loadings

Factor loadings for each factor are presented in Table 5.10. Factor with loadings below 0.6 were not presented since they were suppressed. Tavakol and Dennick (2011) recommended the consideration of loadings above 0.6 so as to make the understanding much easier. Thus, results in Table 5.10 achieved minimum cut off point for factor loadings as recommended by (Vaske, Beaman, & Sponarski, 2017).

Table 5.10: Construct, Items and Factor loadings

Construct	Items	Factor loading
Perceived usefulness	PUOT1	.841
	PUOT3	.787
	PUOT4	.834
	PUOT5	.765
	PUOT6	.862
Perceived ease of use	PEOU1	.727
	PEOU2	.948
	PEOU3	.949
	PEOU4	.947
	PEOU5	.924
	PEOU6	.986
Experience of the past use	EPUT1	.930
	EPUT2	.842
	EPUT3	.689
	EPUT4	.667
	EPUT5	.971

Voluntariness in the adoption	VIUT1	.740
	VIUT2	.843
	VIUT3	.910
	VIUT4	.870
	VIUT5	.778
	VIUT6	.650
Entrepreneurship digitalisation	EDWE1	.723
	EDWE2	.832
	EDWE3	.957
	EDWE4	.811
	EDWE5	.753
	EDWE6	.803
	EDWE7	.854
	EDWE8	.965
	EDWE9	.761
	EDWE10	.756

Source: Author (2024)

5.12 Measurement model fit indices results

Model fit statistics are usually judged in reference to certain established thresholds, or “rules of thumb” (Iacobucci, 2010). Fit refers to the ability of a model to reproduce the data (i.e., usually the variance-covariance matrix) (Kenny, Kashy, & Cook, 2020). Yaşlıoğlu and Yaşlıoğlu (2020) perceives a good-fitting model as one that is reasonably consistent with the data and so does not necessarily require specification. The major reason for computing a fit index is that the chi square is statistically significant, but the researcher still wants to claim that the model is a "good fitting" model. A good-fitting measurement model is required before interpreting the causal paths of the structural model. Results in Table 5.11 shows that measurement model fit indices were good fitting and they allow preceding to the next level.

Table 5.11 Measurement model fit indices results

Item	Actual	Recommended	Source
CMIN/DF	2.96	Between 0-5	Kline (2005); Shi, Lee, & Maydeu-Olivares, (2019) and Goretzko, Siemund, & Sterner, (2023).
GFI	.932	>.900	
AGFI	.944	>.900	
NFI	.947	>.900	
TLI	.927	>.900	
CFI	.922	>.900	
RMSEA	.303	Between .05 and .10	

Source: Author (2024)

Table 5.11 shows that minimum conditions for model fit indices were satisfied and they allowed preceding to the next level.

5.13 Testing research hypotheses (H_{1a-d} and H₁)

After identifying the factors underlying the constructs, the next step was to test the research hypotheses so as to determine the nature of the relationships between all variables. The variables for this study were perceived usefulness, perceived ease of use, experience of the past use, voluntariness in the adoption, entrepreneurship performance, entrepreneurs' age. And entrepreneurs' education. The research hypotheses were as follows;

H_{1a}: Perceived usefulness of digital technology positively influences women entrepreneurship performance

H_{1b}: Perceived ease of use of digital technology significantly impact women entrepreneurship performance.

H_{1c}: Experience of past use digital technology positively impact on women entrepreneurship performance.

H_{1d}: Voluntariness in the use of digital technology positively influences women entrepreneurship performance.

H₁: Entrepreneurship digitalisation positively influences women entrepreneurship performance.

Hypothesised relationships (H_{1a}, H_{1b}, H_{1c}, H_{1d} and H₁,) were tested in AMOS version 21 using structural equation modelling technique. Entrepreneurs age and entrepreneurs level of education was treated as a second order construct. Maximum Likelihood Estimation (MLE) was used to estimate the structural model (Zhang, Wang, Wan, Mao, & Xu, 2021). Structural equation modelling technique is ideal since it is able to determine relationships and also able to suggest a general fit between observed data and the research model (Derksen & Makam, 2021). The structural model indicated satisfactory model fit indices (CMIN//DF = 3.021; GFI = .867; AGFI = .917; NFI = .908; TLI = .939; CFI = .897 and RMSEA = .256). Table 5.12 shows results of measurement model fit indices results.

Table 5.12: Measurement model fit indices results

Item	Actual	Recommended	Source
CMIN/DF	3.021	Between 0-5	(Goretzko, Siemund, & Sterner, 2023) and (Shi & Maydeu-Olivares, 2020)
GFI	.867	>.900	
AGFI	.917	>.900	
NFI	.908	>.900	
TLI	.939	>.900	
CFI	.897	>.900	

RMSEA	.256	Between .05 and .10	
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Source: Aurthor (2024)

Table 5.12 shows that minimum conditions for model fit indices were satisfied and they allowed preceding to the next level. Table 5.13 shows research hypotheses results. H_{1a}, H_{1b}, H_{1c}, H_{1d} and H₁ were supported.

Table 5.13: Results of hypotheses H_{1a}, H_{1b}, H_{1c}, H_{1d} and H₁

HYPOTHESIS	HYPOTHESISED RELATIONSHIP	SRW	CR	REMARK
H _{1A}	Perceived Usefulness → Women Entrepreneurship Performance	.305	19.785***	Supported
H _{1B}	Perceived ease of use → Women Entrepreneurship Performance	.287	12.041***	Supported
H _{1C}	Experience of past use → Women Entrepreneurship Performance	.338	14.047***	Supported
H _{1D}	Voluntariness in the use → Women Entrepreneurship Performance	.274	11.451***	Supported
H ₁	Entrepreneurship digitalisation → Women Entrepreneurship Performance	.365	20.361***	Supported

Notes: SRW standardised regression weight, CR critical ratio, *** significant at $p < 0.001$, ^{ns} not significant

Source: Author (2024)

Table 5.13 presents results that H_{1a}, H_{1b}, H_{1c}, H_{1d} and H₁ were supported. H_{1a} to H_{1d} supported implies that perceived usefulness, perceived ease of use, experience of the past use, voluntariness in the use of digital technology positively influence women entrepreneurship performance. H₁ supported implies that entrepreneurship digitalisation positively influence women entrepreneurship performance.

Although voluntariness in the use of digital technology was hypothesised to have a moderate impact, its standardised regression weight (SRW = .274) was lower than past experience (.338) or perceived usefulness (.305). This suggests that external pressures (e.g., market demands, peer influence, training initiatives) may be more influential than pure personal choice in driving digital adoption among women entrepreneurs. It highlights the role of institutional support and social nudges over autonomy in tech uptake in this context. Experience of the past use of digital technology was the strongest predictor, more than anticipated. This indicates that women who had previous exposure to digital tools even informally were significantly more likely to embrace and benefit from digitalisation. This finding underscores the need for incremental exposure programs (e.g., mobile apps, online payments) as a gateway to deeper digital engagement.

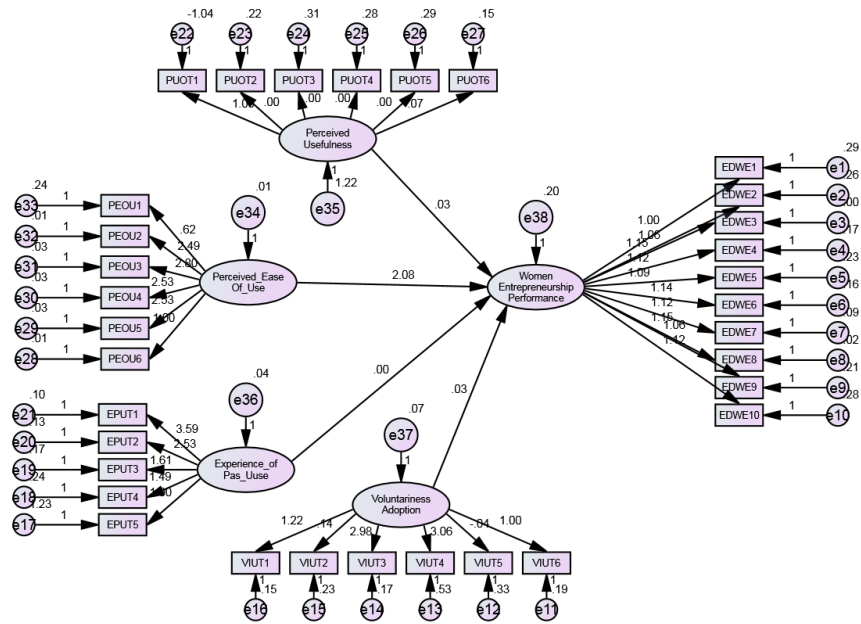


Figure 5.6: Model 1 for H_{1a}, H_{1b}, H_{1c}, H_{1d} and H₁

Source: Author (2024)

5.14 Results for the moderation effect of age and level of education

H₂: Entrepreneurs age has a moderating effect on the relationship between entrepreneurship digitalisation and women entrepreneurship performance.

H₃: Entrepreneurs level of education plays a moderating role on the relationship between entrepreneurship digitalisation and women entrepreneurship.

5.15 Coefficients of moderated regression model

Moderation regression is a common method used for assessing influence of a third variable, called a moderator, on the relationship between two or other variables (Enders, Du, & Keller, 2020). Using this technique, a moderator effect will manifest itself as relationship between dependent variable and the cross product of independent and moderator variable, allowing the postulation of individual differences in the relationships between variables (Abu-Bader & Jones, 2021). Table 5.14 shows coefficients of moderated regression model.

Table 5.14: Coefficients of moderated regression model

Variable	Beta	t-statistic	p value
Entrepreneurship digitalisation	.482	3.031	.000
Age	.424	3.138	.000
Level of education	.397	2.234	.000
Entrepreneurship digitalisation × Age	.521	4.364	.000

Entrepreneurship digitalisation × Level of education	.523	4.029	.000
---	------	-------	------

Source: Author (2024)

H₂ and H₃ were tested using moderated regression analysis. As for H₂ and H₃, coefficients for the interaction terms (Entrepreneurship digitalisation x Age and Entrepreneurship digitalisation x Level of education) were all significant ($p < 0.001$). This suggests that both age and level of education moderate the effect of entrepreneurship digitalisation on women entrepreneurship performance. Thus, H₂ and H₃ were both supported.

The results of H₂ imply that all respondents' age has an impact on the relationship between entrepreneurship and women entrepreneurship performance. This was evidenced by the respondents' distribution according to four age groups that showed a large majority of women entrepreneurs agreed that entrepreneurship digitalisation enhances women entrepreneurship performance belonged to the age group of 30 - 49 years. A smaller size also belonged to the age group of below 30 that digitalisation plays a key role in enhancing women entrepreneurship performance. The larger number of women entrepreneurs belonging to the age group of 30 - 49 years could be a result of time they are mature and ready to digitalise their entrepreneurial ventures. In addition to this, it may also be possible that by this age they appreciate benefits brought by digitalisation.

Also it was shown that older women entrepreneurs with digital exposure are ready to digitalise their businesses. This indicates that older women entrepreneurs with digital exposure can adopt digital technology so easily compared to those without exposure of digital technology. Overall women entrepreneurs' age plays a critical role in influencing women entrepreneurship performance. It is a time of life, and one's qualification and power increase with age. In addition, Sajilan et al. (2015) added that young entrepreneurs impact more on the firm's performance than old entrepreneurs. Prior research found that digital divide between generations has developed as younger generations become exposed to digital technologies (Lekhanya, 2018; Mizser, Garai-Fodor, & Csiszárík-Kocsir, 2022; Rossato & Castellani, 2020). Moreover, Peter and Munyithya (2015) assert that skills of a person improve with age. Acheampong et al. (2018) findings show that there is a positive and significant linkage between age and gender on mobile payment acceptance in Ghana: UTAUT model.

Moderated regression results for H₃ show that entrepreneurs' level of education contributes to entrepreneurship digitalisation and women entrepreneurship performance. This means that formal education played a role in increasing women entrepreneurs' digital technology aptitude.

This also points out that most women having higher education preferred entrepreneurship digitalisation. Those having low education may not get suitable to digitalise their businesses thereby remaining using traditional technology to undertake entrepreneurship. Since women entrepreneurs agreed that women's intellectual aptitude to deal with digital technologies appears to rise when they have access to formal education. This implies that level of education for women entrepreneurs has a significant impact on their acceptance of basic digital technology usage, formally educated women entrepreneurs has higher levels to learn how to operate complicated digital artefacts or collect data using digital technology and informal educated women entrepreneurs has lesser acceptance of digital technology respectively. This implies that women entrepreneurs agreed that entrepreneurs' level of education contribute on entrepreneurship digitalisation and women entrepreneurship performance. Education is presumably related to knowledge, skills, motivation, self-confidence, problem solving ability, commitment, and discipline. These survey results are in line with Tavitiyaman et al. (2022) who observed that tourists perceive the usefulness of technology adoption in hotels based on the effect of past experience and education level. Higher education is expected to increase the ability to cope with problems and seize opportunities (Welsh et al., 2017). In addition, it is believed that entrepreneurs with higher educational qualification are expected to make better quality decisions to manage a firm in a way that reduces the likelihood of failure (Martyakova & Gorchakova, 2019). Additionally, MacDougall and Hurst (2005) believed that the main motive of modern businesses is intellectual awareness and more trained employees, to maintain its competitive advantage on the global market, the more an enterprise becomes more positioned and developed. Therefore, firms owned and managed by entrepreneurs with higher educational experience increases in success than their counterparts (Mozumdar, Hagelaar, van der Velde, & Omta, 2020).

5.16 Evaluation of the Model

Coefficient of determination (R^2) is vital in model evaluation before making a conclusion as it explains the proportion of variance the model explains. Although R^2 may fail to capture the complexity of the relationships between the variables (Chen, Wang, Liu, Li, & Tu, 2024), it can give a clear picture of the contribution of the independent variables in the model. Therefore, researchers are advised to use the R^2 value together with the other indices (Wang, Cheah, Wong, & Ramayah, 2024). In the current, women entrepreneurship has an R^2 value of 78% which is explained by perceived usefulness, perceived ease of use, the experience of the past use, voluntariness in the adoption and entrepreneurship digitalization. Very high coefficient of

determination values which are higher than the Durbin-Watson value may result in spurious regression.

5.17 Model results

The prediction of entrepreneurship digitalization among women in Zimbabwe is very critical. The results displayed in Table 5.15 showed that the model demonstrates high precision with an R^2 value of 98.1% meaning that the total amount of variation in entrepreneurship digitalization is explained by perceived usefulness, perceived ease of use, experience of the past use, and voluntariness in the adoption. The model plot is indicated in Figure 5.7 which shows how the inputs, output and hidden interact with each other. Evaluation metrics like RMSE, MSE and MAE were also used to evaluate the model. The low values of RMSE (0.187), MSE (0.035), and MAE (0.097) indicate the model's ability to predict entrepreneurship digitalization, with small deviations between the predicted value and actual values. These results show that the factors under this model can influence the use of digital tools in entrepreneurship activities. The low values of the evaluation metrics (RMSE, MSE and MAE) mean that the model is reliable in devising new policies aimed at promoting the entrepreneurship of women in Zimbabwe.

Table 5.15. Evaluation metrics

Evaluation metrics	RMSE	MSE	MAE	R^2
	0.187	0.035	0.097	98.1%

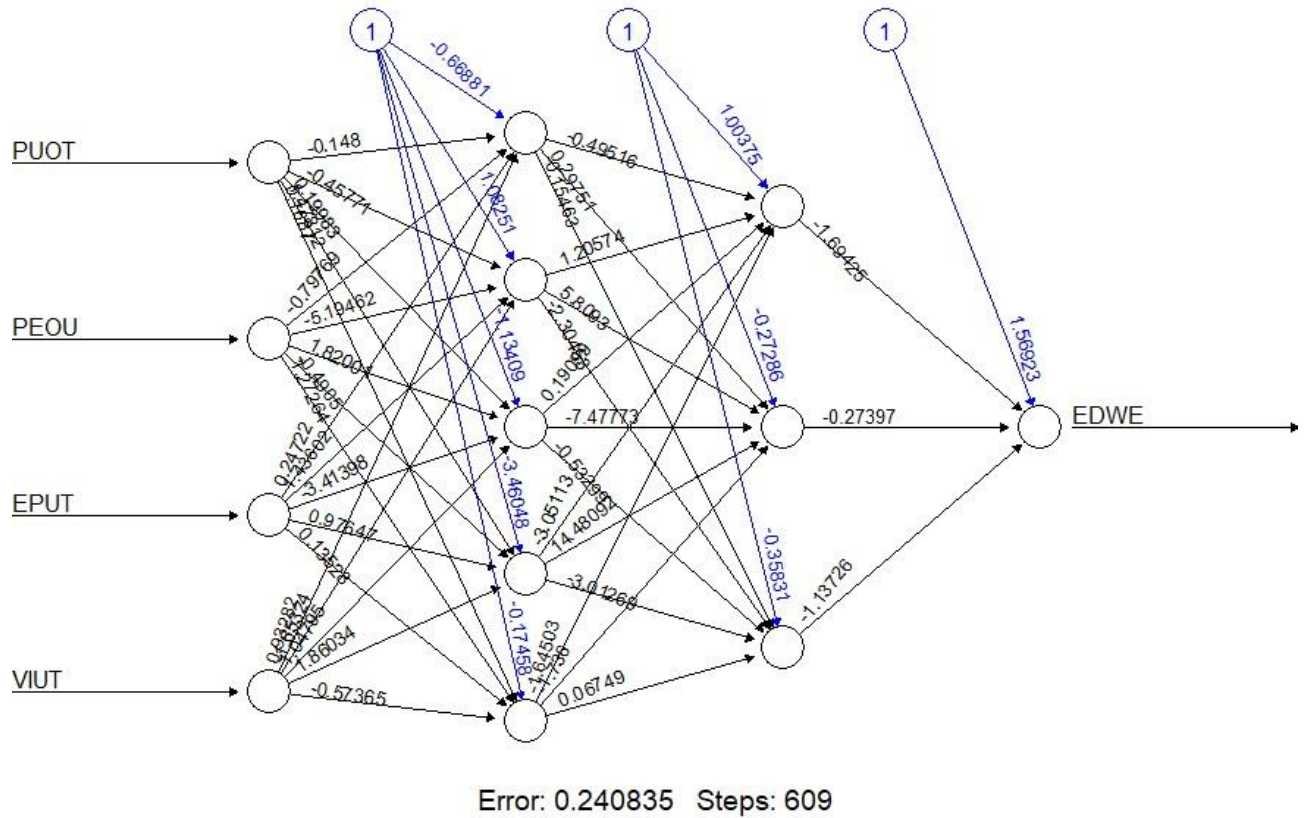


Figure 5.7: The ANN model

Source: Author (2024)

5.18 Variable importance

Variable importance was also done to see which factor contributes more to entrepreneurship digitalization. The results displayed in Figure 5.7, showed that voluntariness in adoption (VIUT) plays the most important role in predicting entrepreneurship digitalization, with a contribution of 38.2% which is quite big. The results are practical since women feel like adopting digital tools when one does it voluntarily. The results indicate that any policy developed must be aimed at promoting freedom in adopting digital technologies rather than cohesion to drive the high rates. The Experience of Past Use (EPUT) had the second highest contribution to entrepreneurship digitalization with a percentage of 35.6% indicating familiarity with the use of digital tools. Meanwhile, the perceived ease of use (PEOU) had the third contribution value of 19.9%. Lastly, perceived usefulness (PUOT) had the lowest contribution value of 6.3% but still plays an important role.

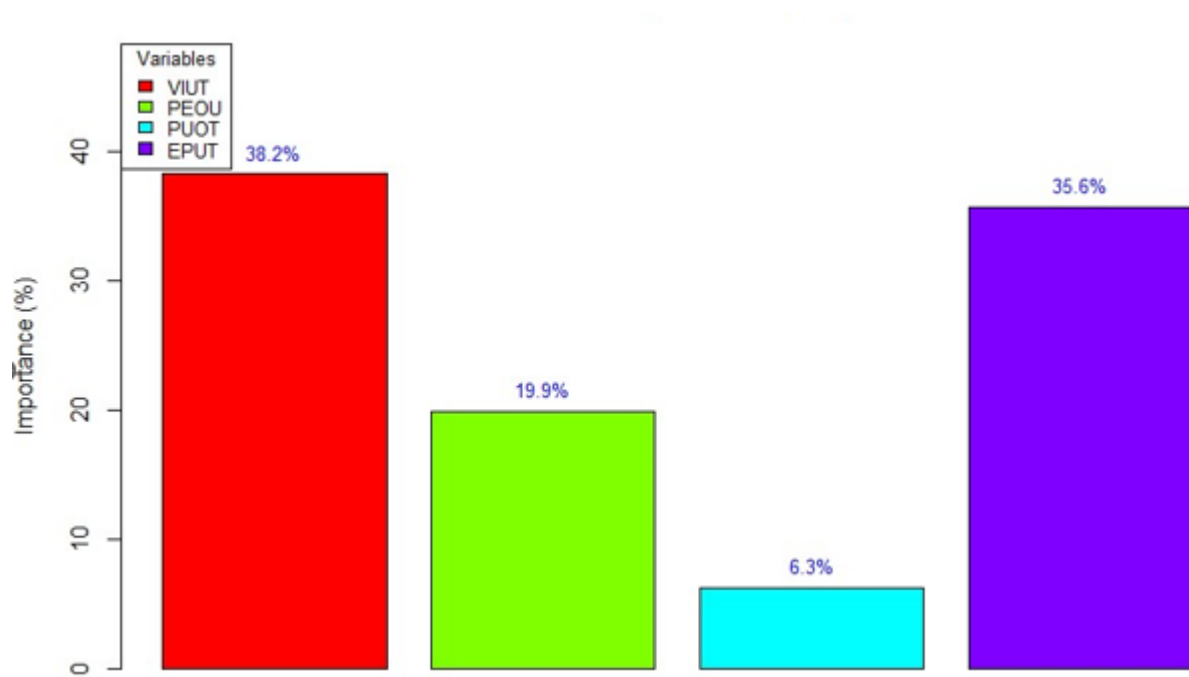


Figure 5.8. Variable importance

Source: Author (2024)

5.19 Chapter summary

Results in Chapter five focused on the analysis of socio-demographic characteristics of the respondents, validity and reliability analysis, descriptive statistics, confirmatory factor analysis and hypotheses testing. Chapter six focuses on the discussion of research findings presented in Chapter five.

CHAPTER SIX

DISCUSSION OF RESULTS

6.1 Chapter introduction

The earlier chapter presented findings of the study. This chapter discusses the findings of the study. The main emphasis of this chapter was to assess the level to which the research objectives were accomplished. The discussion of results was guided by the research objectives and hypotheses. The objectives included: (i) to determine the role played by perceived usefulness of digital technology in influencing women entrepreneurship performance, (ii) to ascertain the role played by perceived ease of use of digital technology in influencing women entrepreneurship performance, (iii) to determine the effect of experience of the past use of digital technology in influencing women entrepreneurship performance, (iv) to ascertain the effect of voluntariness of use of digital technology in influencing women entrepreneurship performance, (v) to establish the effect of entrepreneurs' age on the effect of entrepreneurship digitalisation on enhanced women entrepreneurs and (vi) to establish the effect of entrepreneurs level of entrepreneurs' education on the influence of entrepreneurship digitalisation on women entrepreneurship performance.

6.2 The effect of perceived usefulness of digital technology in influencing women entrepreneurship performance

The study sought to determine the role played by perceived usefulness of digital technology in influencing women entrepreneurship performance. Therefore, it was hypothesised that,

H_{1a}: Perceived usefulness of digital technology positively influence women entrepreneurship performance.

The study established a significant positive relationship between perceived usefulness of digital technology and women entrepreneurship performance. Thus, improvement in digital technology adoption results in speed up the manufacturing process, improved stakeholder management increased as there is constantly and quickly get feedback using technological communication platforms, production of wide range of customised products according to customer's specifications, increased administrative / managerial commitment in my business

and sharing knowledge with the suppliers. Also digitalisation of women businesses allows knowledge-sharing among employees/collaborators, allows their business to grow global business process and increased my collaboration with customers as they constantly get real time customer feedback. Moreover, digital technology increase knowledge-sharing with customers (commercial and technical information). Results also imply that if digital technology makes it clear and understandable in business and does not require a lot of my mental thinking women are willing to digitalise. Also if digital technology makes it easy for me to work remotely and affordable women entrepreneurs are willing to digitalise their businesses. These results are inline with Khoo et al. (2024) whose findings reveal that women tourism entrepreneurs can and have been empowered through utilising digital technologies and digital platforms, but they face significant challenges and barriers, including the lack of digital competencies; lack of access to digital devices, infrastructure, and training; reliance on supporting staff and family members; and concerns around safety, security and work-life balance. On several occasions, perceived usefulness has also been seen as a perceived relative advantage; for this reason, Wani and Ali (2015) considers it as “the extent to which an innovation is perceived to be better than its predecessor”. For all of the above-mentioned reasons perceived usefulness is proposed as the main factor that determine the acceptance and use of ICTs (José Liébana-Cabanillas, Sánchez-Fernández, & Muñoz-Leiva, 2014). Thus, positive improvements in the type of digital technology being introduced will contribute to the adoption by women entrepreneurs. The study results are in line with the study by Abdulkarim (2021) applied TAM in mobile banking adoption and they found perceived usefulness as a determinant of actual behaviour which encouraged the user of the twenty-first century banking to use more innovative and user-friendly self-service technologies that give them greater autonomy in performing banking transactions, in obtaining information on financial advices, and in purchasing other financial products. The results are similar to findings of this study, since both outcomes confirm a positive relationship between perceived usefulness and women entrepreneurship performance. Additionally, results confirm findings by Zaman et al. (2018), Butler Lamar et al. (2016) and Abroud et al. (2015) agreed that perceived usefulness is an important indicator for digital technology acceptance. Results of this study also approve findings by Ugochukwu (2021), Nwe (2019), Al-Subari (2017) and Mansour (2016) suggested that the perceived usefulness is an important factor in determining adaptation of innovations. Likewise, the results validate related literature that there are extensive evidences proving the significance of effect of perceived usefulness on adaptation intention (Khan, Khan, & Xiang, 2017; Patel & Patel, 2018).

6.3 The influence of perceived ease of use of digital technology in influencing women entrepreneurship performance

The objective of the study was to ascertain the role played by perceived ease of use of digital technology in influencing women entrepreneurship performance. Consequently, it was hypothesised that,

H_{1b}: Perceived ease of use of digital technology significantly impact women entrepreneurship performance.

The foregoing findings show that perceived ease of use of digital technology has a positive influence in influencing women entrepreneurship performance. This translate to the fact that entrepreneurship digitalisation by women entrepreneurs results in increase in manufacturing process, improved stakeholder management increased as there is constantly and quickly get feedback using technological communication platforms, production of wide range of customised products according to customer's specifications, increased administrative / managerial commitment in my business and sharing knowledge with the suppliers. Also digitalisation of women businesses allows knowledge-sharing among employees or collaborators, allows their business to grow global business process and increased my collaboration with customers as they constanlty get real time customer feedback. Moreso, digital technology increase knowledge-sharing with customers (commercial and technical information). Similary perceived ease of use increases usage intention (Iqbal & Ahmed Bhatti, 2015). These results are in line with the findings by Olivia and Marchyta (2022) who found significant effect of perceived ease of use on usage intention which can either be directly or indirectly. This construct of perceived ease of use have also confirmed to be important factors in affecting system usage (Iriani & Andjarwati, 2020; Sondakh et al., 2023). However, Chen and Aklikokou (2020) and Nooruddin (2021) found negative effects of ease of use on attitude, Chau and Hu (2001) revealed insignificant relationships. In congruent with Nooruddin (2021) and Chen and Aklikokou (2020) studies of mobile banking adoption by (Farah, Hasni, & Abbas, 2018; Shaikh & Karjaluoto, 2015; Souiden, Ladhari, & Chaouali, 2021; Zhang, Lu, & Kizildag, 2018) supported perceived ease-of-use as a determinant impacting people to use mobile banking. Thus these results support that perceived ease of use of digital technology influenced women entrepreneurship performance.

6.4 The influence of experience of the past use of digital technology in influencing women entrepreneurship performance

The objective of the study was to determine the effect of experience of the past use of digital technology in influencing women entrepreneurship performance. So, it was hypothesised that,

H_{1c}: Experience of the past use of digital technology positively influence women entrepreneurship performance.

The study findings and interpretation suggest that experience of the past use of digital technology impacts positively women entrepreneurship performance. The plausible explanation of the present finding is that women entrepreneurship digitalisation depends on experience of the past use of digital technology. Moreover, satisfied women entrepreneurs confirmed that the experience of the past use of digital technology makes it easy for them in learning to use digital technology in my business. Experience of the past use of digital technology also helped them becoming skilful at using digital technology in business and increased my interaction with customers. Digitalisation can speed up the manufacturing process, improved stakeholder management increased as there is constantly and quickly get feedback using technological communication platforms, production of wide range of customised products according to customer's specifications, increased administrative or managerial commitment in my business and sharing knowledge with the suppliers. Also digitalisation of women businesses allows knowledge-sharing among employees/collaborators, allows their business to grow global business process and increased my collaboration with customers as they constantly get real time customer feedback. Moreover, digital technology increase knowledge-sharing with customers (commercial and technical information). These results are similar with Nooruddin (2021) results users with IT experience will see their aversion to the risk associated with the implementation of other computer systems reduced, thus improving their perception of usefulness and stimulating their continued use over time. The extent to which women entrepreneurs were satisfied with the experience of the past use influenced their women entrepreneurship performance. Tavitiyaman et al. (2022) and Lau and Woods (2009) revealed the mean differences in the perceived usefulness between experienced and inexperienced users. Tavitiyaman et al. (2022) found that inexperienced users (before training) rate the lowest mean of perceived usefulness. The mean scores constantly improve

with the immediate adoption of a training program and present the highest mean after three months of training (Tavitiyaman et al., 2022). Tripathi (2018) and Liébana-Cabanillas et al. (2018) observe that individuals with previous experience in online purchasing will be more likely to buy products online, motivated by higher expected benefits and fewer difficulties with the channel. Thus basing from previous finding experience of the past use of digital technology impacts positively women entrepreneurship performance.

6.5 The effect of voluntariness on the use of digital technology in influencing women entrepreneurship performance

The objective of the study was to ascertain the effect of voluntariness on the use of digital technology in influencing women entrepreneurship performance. Thus, it was hypothesised that,

H_{1d}: Voluntariness on the use of digital technology significantly impacts the influence of women entrepreneurship performance.

There is sufficient evidence from the study findings to suggest that voluntariness on the use of digital technology in influencing women entrepreneurship performance. Thus, entrepreneurship digitalisation was influenced by personal innovativeness, positive attitude towards digital technology adoption, enjoyment and satisfaction received when using digital technology. These factors positively influence attitude of women entrepreneurs thereby increasing their willingness in the adoption of digital technology of women entrepreneurs. Dash, Bhusan, and Samal (2014) described attitude as an individual's positive or negative behaviour towards innovation adaptation. Attitudes reflect people's favourable or unfavourable feelings towards a given behaviour (Kajol et al., 2022; Liébana-Cabanillas et al., 2014b; Patil, Tamilmani, Rana, & Raghavan, 2020), which means that attitudes are developed in time, as people acquire experience. This implies that positive attitude increased business willingness to use digital technology in business. Digitalisation therefore results in speed up the manufacturing process, improved stakeholder management increased as there is constantly and quickly get feedback using technological communication platforms, production of wide range of customised products according to customer's specifications, increased administrative / managerial commitment in my business and sharing knowledge with the suppliers. Also digitalisation of women businesses allows knowledge-sharing among employees/collaborators,

allows their business to grow global business process and increased my collaboration with customers as they constantly get real time customer feedback. Moreover, digital technology increase knowledge-sharing with customers (commercial and technical information). These results are in line with theoretical models (TAM, TRA and TPB) and have proven that attitude is an essential pre-requisite of the intention to develop a particular behaviour (Gunnoo, Subadar, & Fauzel, 2023). Wong, Ng, Lim, and Chua (2020) consider attitude as a multidimensional construct, composed of a cognitive, an emotional and a conative or behavioural dimension. This supports common understanding in literature that voluntariness on the use of digital technology positively influence women entrepreneurship performance.

6.6 The moderating effect of entrepreneurs age on the effect of entrepreneurship digitalisation on women entrepreneurship performance

The objective of the study was to establish the moderating effect of entrepreneurs' age on the effect of entrepreneurship digitalisation on women entrepreneur's performance. Thus, it was hypothesised that,

H₂: Entrepreneurs age has a moderating effect on the relationship between entrepreneurship digitalisation and women entrepreneurship performance.

The study findings suggest that entrepreneurship digitalisation on women entrepreneurship performance is stronger in young than in older women. The plausible explanation of the present finding is that young women entrepreneurs' are more willing to digitalise their businesses compared to older women. This implies that young women are likely to experience speed in the manufacturing process, improved stakeholder management increased as there is constantly and quickly get feedback using technological communication platforms, production of wide range of customised products according to customer's specifications, increased administrative / managerial commitment in my business and sharing knowledge with the suppliers. Also digital technology adoption by young women allows them to enjoy knowledge-sharing among employees/collaborators and increased my collaboration with customers as they constantly get real time customer feedback. These results are similar to the findings of Fahmi and Savira (2023), Chatterjee, Chaudhuri, Vrontis, and Thrassou (2022), Youssef, Boubaker, Dedaj, and Carabregu-Vokshi (2021) who finds that age of users has an important effect on their behaviour. Liébana-Cabanillas, Martínez-Fiestas, Rejón-Guardia, and Muñoz-Leiva (2012)

adds on that a population of women who are diverse in age shows a number of different values, preferences, and experiences making it extremely likely that all their activities create scope for different opinions to be expressed and different approaches to problems. This diversity improves the digital technology adaptability, leading eventually to more innovation, quicker and flexible problem-solving processes with better results and employee performance. Results from this study were in line with Wyslocka, Jelonek, Bylok, and Tomski (2017) who found that typical users of electronic banking were relatively young. Ariff, Yeow, and Zakuan (2014) discovered that the elderly had more resistances to change and negative attitude toward using mobile banking services. These results were supported by Merhi et al. (2021) found that typical mobile banking users were aged between 30 and 49 and middle-aged or older customers were the main users of electronic banking. Additionally, Laforet and Li (2005) randomly interviewed 300 respondents in the streets in six major Chinese cities and reported that mobile banking main users were not necessarily young and highly educated (Haile, 2015). Cruz, Barretto Filgueiras Neto, Muñoz-Gallego, and Laukkanen (2010) investigated 3585 respondents in Brazil and claimed that older people perceived mobile banking as more difficult to use than younger people did (Trinh, Le, & Nguyen, 2020). Likewise, by collecting 666 respondents in Brazil, Puschel et al. (2010) observed that typical users of mobile banking were less than 30 years old (Choudrie et al., 2018). Based upon the above conflicting results, this is a need to ascertain the moderating effect of age. Several studies identified a positive relationship between the age of the consumers and the probability of them buying products online (Akar & Nasir, 2015), while others obtained negative results (Joines, Scherer, & Scheufele, 2003) or simply no relationship (Turner & Szymkowiak, 2019). From the researchers point of view, these divergences could stem from multiple factors, such as the sample selection criteria (Amin, Rezaei, & Tavana, 2015), the time when the study was conducted (Zhou, Dai, & Zhang, 2007). Yang, Pang, Liu, Yen, and Tarn (2015) establish that age is a vital factor for technological acceptance. Thus, young users are the least affected acceptance problems, unlike older users, as proven in the different EUROSTAT, 2011 reports and INE, 2012 statistics which stand at the basis of the present study (Bodner, Bergman, & Cohen-Fridel, 2014). Multiple studies have tried to establish whether age can be considered as an influencing factor for consumer's attitude and behaviour, by analysing aspects such as auto-scanning, automatic debiting and online services (Liebana-Cabanillas & Alonso-Dos-Santos, 2017; Vinitha, 2020), the use of the internet (Ha, Kim, Libaque-Saenz, Chang, & Park, 2015), self-service technologies (Simon & Usunier, 2007), technologies in the retail sector (Dean, 2008; Sabir et al., 2023), instant messaging (Glass & Li, 2010) and mobile commerce (Azeem, 2020), among others. With

regard to the theoretical proposal of the previous model, the present study explores the role of the age of the user, based on the TAM model and the proposed extensions, including the constructs of perceived risk and trust and bearing the name MPTAM (Mobile Payments Digital Technology Acceptance Model). Correspondingly, younger users will show greater inclination towards new technologies, and thus more trust and less effort will be dedicated to examining the details of the web service itself and to evaluating its quality, hence reducing effort and improving their attitude towards the service (Magsamen-Conrad & Dillon, 2020; Neves & Mead, 2021).

6.7 The moderating effect of entrepreneurs level of education on the influence of entrepreneurship digitalisation on the enhanced of women performance

The study sought to establish the moderating effect of entrepreneurs' level of education on the influence of entrepreneurship digitalisation on the women entrepreneurship performance. Hence, it was hypothesised that:

H₃: Entrepreneurs level of education plays a moderating role on the relationship between entrepreneurship digitalisation and women entrepreneurship.

The study established that entrepreneurship digitalisation on women entrepreneurship performance is stronger in highly educated than in less educated women. The level of education affects women's ability to acquire information during the entrepreneurship digitalisation process. Results also imply that women with high education (either formal or informal education) are more likely to digitalise with ease. The level of education affects innovation, creativity and eventually productivity. Intellectual capital is a vital element responsible for digitalisation of any business. Women with high level of education enjoys increased manufacturing process, improved stakeholder management increased as there is constantly and quickly get feedback using technological communication platforms, production of wide range of customised products according to customer's specifications, increased administrative / managerial commitment in my business and sharing knowledge with the suppliers. Also women with high level of education can share knowledge with their employees or business collaborators and this allows their business to grow global business process and increased my collaboration with customers as they constantly get real time customer feedback. Moreso, digital technology increase knowledge-sharing with customers (commercial and technical

information). Tarhini, Tarhini, and Tarhini (2019) who observed that tertiary education enhances the broadening of knowledge and expertise of employees within any organisation. Additionally, Abu-Shanab (2011) believed that the main motive of modern businesses is intellectual awareness and more trained employees, to maintain its competitive advantage on the global market, the more an enterprise becomes more positioned and developed. Therefore, the more women are trained, they will know the scope and expectations and depth of their jobs and would attach building blocks to their professionalism that will improve on their progress as a factor of entrepreneurship enhancement. Research by Lazar, Panisoara, and Panisoara (2020) show that higher education allows farmers to make efficient adoption decision and early adopters who can take advantage of new digital technology are likely to extract maximum profit. Highly educated farmers also tend to adopt digital technology with greater intensity (Kinyangi, 2014). Neumeyer et al. (2020) found that issues of digital technology and digital literacy is particularly prevalent in the context of poverty entrepreneurship in developed economies, where educational systems are challenged to provide general literacy, to the detriment of providing the poor with comprehensive learning environments to develop digital technology and digital literacy. Eisenberg and Johnson (2002) suggested that a technologically literate person can “use digital technology as a tool for organization, communication, research, and problem solving.”

6.8 Chapter summary

Chapter six focused on the research findings comparing study results with related literature. To guide the discussion were major areas of the study the included; research objectives, and related research hypotheses factors expected to influence entrepreneurship digitalisation and women entrepreneurship performance, the moderating effect of entrepreneurs age and level of education of entrepreneurs. Chapter seven completes the study and provides recommendations pertaining to the study.

CHAPTER SEVEN

CONCLUSIONS AND IMPLICATIONS

7.1 Chapter introduction

Chapter seven presents conclusions and implications. This is the final chapter of the thesis, which provides the conclusions of the present research. Research conclusions are grounded in the research objectives and related hypotheses as laid out in Chapter Three. The research conclusions are extracted from the findings and discussion as illustrated in Chapters Five and Six, respectively. The implications of the study findings for policy and practice, the current body of knowledge, and the research methodology are also provided. The research limitations are presented to make relevant recommendations on the basis of the given conclusions. Lastly, suggestions are made on areas that need further research.

7.2 Conclusions

The following are the conclusions that were drawn from the study findings;

7.2.1 The effect of perceived usefulness of digital technology on women entrepreneurship performance

The first objective sought to establish the influence of perceived usefulness of digital technology on women entrepreneurship performance. There is sufficient evidence from the findings and interpretation of the results to suggest that perceived usefulness of digital technology positively influences women entrepreneurship performance. The implication is that usefulness of digital technology results in technology adoption by women entrepreneurs and their employees.

7.2.2 The effect of perceived ease of use of digital technology on women entrepreneurship performance

The study sought to understand whether there exists a relationship between perceived ease of use of digital technology on women entrepreneurship performance. The study results and interpretation show that perceived ease of use of digital technology positively influence women

entrepreneurship performance. Results imply that if technology is easy to use and user-friendly women entrepreneurs would consider using the technology in their businesses.

7.2.3 The effect of experience of the past use of digital technology on women entrepreneurship performance

The study sought to establish the influence of experience of the past use of digital technology on women entrepreneurship performance. The findings of this study show that there exists a positive relationship between experience of the past use of digital technology on women entrepreneurship performance. This implies that experience of using digital technology in the past need for adoption level by women entrepreneurs. Thus, if women entrepreneurs are exposed to digital technology in other areas, they are likely to adopt digital technology in their businesses which will enhance business performance.

7.2.4 The effect of voluntariness on the use of digital technology on women entrepreneurship performance

It was one of the objectives of the study to establish the impact of voluntariness on the use of digital technology by women entrepreneurship performance. The study findings established that voluntariness in the use of technology has a positive impact on women entrepreneur's technology adoption. This implies that women entrepreneur's willingness to use technology influences implementation and performance in their entrepreneurial activities.

7.2.5 The effect of entrepreneurs age has a moderating effect on the relationship between entrepreneurship digitalisation and women entrepreneurship performance

One of the main objectives of the study was to establish the moderating effect of entrepreneurship digitalisation on women entrepreneurship performance is stronger in young than in older women. The study results indicate that entrepreneurs' age mediates the effect of entrepreneurship digitalisation adoption by women entrepreneurs. This suggests that age is a critical factor to improve the adoption of technology by women as the younger the willingness women are to adopt technology for the enhancement of their business performance.

7.2.6 The effect of entrepreneur's level of education plays a moderating role on the relationship between entrepreneurship digitalisation and women entrepreneurship

The study also sought to establish the moderating effect of entrepreneurship digitalisation on women entrepreneurship performance is stronger in highly educated than in less educated women. The study's findings confirm that level of education mediates the effect of entrepreneurship digitalisation by women entrepreneurs. This suggests that women entrepreneurs are educated about the digital technology are willing to adopt technology in their **entrepreneurial activities.**

7.2.7 The effect of entrepreneurship digitalisation on women entrepreneurship performance

The study concluded that perceived usefulness, perceived ease of use, experience of the past use and voluntariness in using digital technology positively influencing enhanced women entrepreneurship. Women entrepreneurs' age and level of education plays a critical role in the adoption of technology by women in business.

7.3 Proposed entrepreneurship digitalisation implementation model for enhanced women entrepreneurship

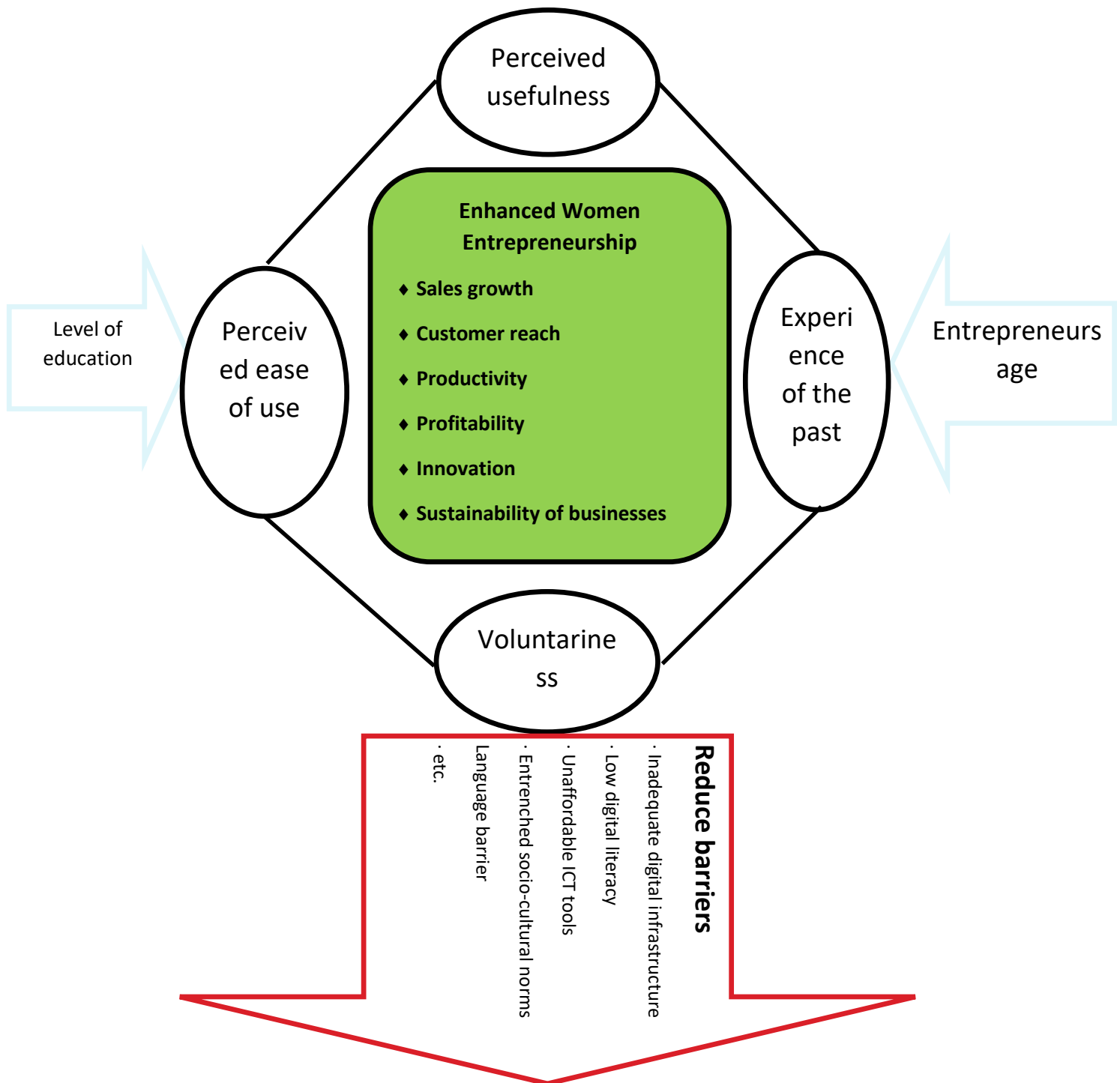


Figure 7.1: Proposed entrepreneurship digitalisation implementation model for enhanced women entrepreneurship

Source: Author (2024)

Figure 7.1 shows the proposed implementation framework and is explained as follows:

Key Constructs Influencing Entrepreneurship Digitalisation

These four constructs represent dimensions of digital technology adoption that contribute to improved entrepreneurial performance:

- i. Perceived usefulness of digital technology: reflects how beneficial women entrepreneurs believe digital tools are to their business success.
- ii. Perceived ease of use of digital technology: indicates how effortless they feel digital technologies are to learn and apply.
- iii. Experience with digital technology: past exposure and familiarity, which influence current attitudes toward using digital tools.
- iv. Voluntariness in the use of digital technology: the degree to which the adoption is self-initiated versus externally imposed.

All four constructs directly impact enhanced women entrepreneurship through the adoption and use of digital tools.

Moderating Variables (Influencing Relationships Indirectly)

Moderation occurs when the strength or direction of the relationship between an independent variable (e.g., digitalisation factor) and the dependent variable (entrepreneurial performance) changes depending on the level of a third variable (the moderator). The model shows that level of education and entrepreneurs' ages influence perceived ease of use, perceived usefulness of digital technology, experience with digital technology and voluntariness in the use of digital technology. These moderators help explain the variation in digital technology adoption among different groups.

The study found that entrepreneurs' age moderated the relationship between digitalisation and entrepreneurship performance. Younger women were more likely to adopt and benefit from digital technologies. Older entrepreneurs showed reduced adoption and efficiency, possibly due to lower digital literacy or resistance to change.

Similarly, it was found that education level significantly enhanced the strength of the relationship between digitalisation and performance. Women with tertiary education adopted digital tools more effectively, showed greater digital confidence, and translated usage into

business outcomes more efficiently. Those with primary or secondary education exhibited slower adoption or lower performance gains, suggesting a need for tailored digital literacy interventions.

Barriers to digitalisation

Listed at the bottom of the framework, these contextual constraints must be addressed to improve outcomes:

- Inadequate digital infrastructure
- Low digital literacy
- Unaffordable ICT tools
- Entrenched socio-cultural norms

The red arrow shows that if these challenges are reduced, the impact of the key constructs on entrepreneurial performance is enhanced.

Central theme: Enhanced women entrepreneurship

The core outcome of your framework is enhanced women entrepreneurship, characterised by:

- Sales growth
- Customer reach
- Productivity
- Profitability
- Innovation
- Sustainability of businesses

Therefore, the model suggests that it is important for the government and its stakeholders to help women entrepreneurs reduce challenges that can hinder the digitalisation process. Once these challenges are not addressed, achieving enhanced women's entrepreneurship might be difficult. Difficulties such as limited access to technology, inadequate training, and insufficient funding can significantly impede progress. Thus, targeted support initiatives and resources must be implemented to empower women and foster a more inclusive entrepreneurial landscape.

7.4 Theoretical implications

7.4.1 Implications for digitalisation theory and knowledge

Studies focusing on the effect of entrepreneurship digitalisation on women entrepreneurship performance are scarce. Thus, this study sought to contribute to the current women entrepreneurship body of knowledge by examining the influence of entrepreneurship digitalisation on the women entrepreneurship performance. Globally, there has been a dearth of women entrepreneurship studies that have specifically focused on the women entrepreneurship digitalisation. The present study is, therefore, a forerunner in women entrepreneurship studies in that it has focused on the entrepreneurship digitalisation for women entrepreneurship performance. From this study, it is therefore for the first time possible, to construct a research model indicating confirmed relationship among perceived usefulness of digital technology, perceived ease of use of digital technology, experience of the past use of digital technology, voluntariness on the use of digital technology, the moderating effect of entrepreneurs' age on the effect of entrepreneurship digitalisation on women entrepreneurs and moderating effect of level of entrepreneurs' education on the influence of entrepreneurship digitalisation on women entrepreneurs as shown in Figure 7.1

As shown in Figure 7.1, perceived usefulness of digital technology, perceived ease of use of digital technology, experience of the past in using digital technology and voluntariness in the use of digital technology positively influences entrepreneurship digitalisation. Entrepreneurship digitalisation also influences women entrepreneurship performance. Likewise, age and level of education influences entrepreneurship digitalisation by women entrepreneurs. Entrepreneurship literature should also pay attention to issues highlighted in the background and literature review. These include; making digital technology available for women, removing the gender parity between male and female, encouraging women to use digital technology. Accordingly, the current theory should be improved to embrace this finding.

Furthermore, the study found out that entrepreneur's level of education moderates the effect of entrepreneurship digitalisation for women entrepreneurship performance. Thus, the existing theory should be expanded to accommodate this new finding. The study also established that entrepreneurs age moderates the effect of entrepreneurship digitalisation for women

entrepreneurship performance. Also, the results of the current study contribute knowledge to existent literature, hence there is need to include this finding.

7.5 Methodological implications

Sampling and representativeness

The present study ensures that all women are represented and they were divided into two sub-groups that is urban and rural populace. This helps to prevent other women with other group to be over-represented compared to the other to reduce skew the results. Also the study shows how to determining an appropriate sample size to capture a wide range of experiences is important. Too small a sample may limit the generalizability of the findings, while too large a sample may be resource-intensive and harder to manage.

Data collection methods

Online surveys or questionnaires are often used to collect data on digital technology adoption, but they may exclude women entrepreneurs who have limited internet access or are not digitally literate. Alternative methods (such as paper-based surveys or in-person questionnaires) were used for inclusivity. Conducting interviews or focus groups may provide richer, more qualitative data on the challenges, motivations, and barriers to digital technology adoption. However, they require more resources and time and may introduce interviewer bias. Therefore, present study used questionnaires to collect data. Questionnaires were developed based on literature review. Incorporating an assessment of digital literacy may be necessary to understand the varying levels of technology proficiency among respondents. This will help contextualize the results and avoid misinterpretation.

Longitudinal vs. cross-sectional design

Tracking digital technology adoption over time can provide insights into the long-term impacts and changes in business outcomes for women entrepreneurs. However, this approach is resource-intensive and may face participant attrition. Therefore, a snapshot approach, were easier to manage, however may not capture the evolution of technology adoption or its sustained impact on business success.

Technology types and use cases

Digital technology is a broad term that can include anything from basic tools like smartphones and social media to advanced technologies such as cloud computing and artificial intelligence. The study must clearly define which technologies are being examined and ensure that they are relevant to the respondents' contexts. Some women entrepreneurs may use digital technologies in innovative ways specific to their business models, while others may rely on more general applications (e.g., social media marketing). The present study should have captured different use cases to avoid overly general conclusions.

Bias and reliability

Digital technology adoption is often self-reported, which can introduce bias. Respondents may overestimate their usage or success due to social desirability bias. Using additional sources of data could improve reliability. Researchers may bring their own biases into the study, particularly when framing questions or interpreting results. Methodological rigor, including peer review and validation, can help mitigate this.

Barriers to access and contextual factors

Understanding the structural barriers (e.g., lack of infrastructure, financial constraints) that women entrepreneurs face in adopting digital technology is critical. Failing to account for these may lead to overly optimistic conclusions about the potential for digital technology to transform women-owned businesses. Digital technology adoption may be influenced by cultural norms and gender expectations. For example, in some societies, women may face restrictions on their use of technology or their participation in certain business sectors. The methodology must account for these contextual factors.

Technology adoption models

Incorporating established models of technology adoption, such as the technology acceptance model (TAM) or unified theory of acceptance and use of technology (UTAUT), helped to provide a structured way to examine the factors that influence digital technology uptake among women entrepreneurs. Some models focus on individual attitudes and behaviours (e.g., perceived ease of use, perceived usefulness), while others focus on external factors like age

and experience. The study chose frameworks that aligns with the research objectives and context.

Ethical research practices

Present study ensured that the study receives proper ethical clearance, especially when dealing with sensitive data such as respondents' financial information or personal circumstances. The methodological design was transparent, with clear justifications for the chosen methods. Additionally, steps were taken to mitigate any biases in data collection, analysis, and interpretation. On data collection, permission from Chinhoyi University of Technology granted permission after scrutiny of the research instrument (questionnaire) which was used to collect data. On data analysis and presentation, research statisticians who have knowledge on the research area were used with the help of supervisors.

7.6 Ethical implications

Informed consent

The study ensured that all respondents understand the nature of the study, what is expected from them, and that their participation was entirely voluntary. Provide clear, accessible information about the purpose of the study, how data will be collected, and how it will be used. Researchers were mindful of any power imbalances especially on respondents who were in vulnerable positions such as economically disadvantaged women entrepreneurs.

Privacy and confidentiality

The study ensured that personal information, including data on respondents' businesses, is kept confidential and anonymized wherever possible. Adopt robust data security measures to prevent unauthorized access to sensitive information about respondents. Respondents were informed that they can withdraw from the study at any time without any negative consequences.

Cultural sensitivity

Current study took into account the cultural and social context of the women involved, since they come from different regions. Researchers tried not to impose values or norms that may not align with local customs. Also, researchers were aware of the challenges faced by women

entrepreneurs in male dominated environments, and ensure that the study doesn't exacerbate gender inequalities or expose women to additional scrutiny or harm.

Digital divide and inclusivity

Not all women may have equal access to digital tools or the internet, and this disparity could influence their participation or the results of the study. Researchers ensured that the study accounts for these differences. They also made sure that the data collection process does not inadvertently exclude certain groups of women entrepreneurs who may be less tech-savvy or lack access to digital technology.

Economic and social impact

Researchers were cautious about the potential economic and social impact of the study findings. For example, digital technology adoption could disrupt traditional business models or disproportionately benefit some groups of women over others. They ensured that the study focuses on empowering women entrepreneurs and not just using their experiences for academic or corporate gain.

Transparency in reporting

Present study ensured that the findings are presented in a way that accurately represents the respondents' experiences and does not mislead policymakers, other entrepreneurs, or investors. Researchers were careful not to reinforce negative stereotypes about women entrepreneurs or their ability to adopt and utilize digital technologies.

7.7 Social implications

Economic inclusion

Digital tools provide women entrepreneurs with the opportunity to access financial services, such as mobile banking and digital payment systems, that they might not have access to through traditional banking channels. This can increase their financial independence and inclusion. As women entrepreneurs scale their businesses using digital technologies, they can create new jobs and contribute to local economies. This ripple effect may also lead to more women entering the workforce. E-commerce platforms and digital marketing allow women

entrepreneurs to overcome geographical limitations and barriers to entry, providing them access to global markets and new business opportunities.

Gender equality and empowerment

Digital technology adoption can contribute to closing the gender gap in entrepreneurship. Women who adopt digital tools may gain greater access to markets, resources, and networks, thereby levelling the playing field with male entrepreneurs. Technology enables women to break free from traditional gender roles and economic limitations, especially in patriarchal societies. By enabling women to manage businesses independently, technology can boost their economic and social empowerment. Access to digital technologies allows women entrepreneurs to have more control over their businesses and personal lives, enhancing their decision making power and overall agency within society.

Social status and community impact

Successful women entrepreneurs who leverage digital technology can serve as role models in their communities, challenging existing gender norms and promoting entrepreneurship as a viable path for women. Digital platforms can give women entrepreneurs more visibility and recognition, allowing them to build networks and credibility, both locally and globally. By embracing digital technologies, women entrepreneurs can contribute to the broader entrepreneurial ecosystem, inspiring more women to start businesses and promoting a culture of innovation.

Challenges to traditional gender roles

As women gain financial independence through entrepreneurship and technology, they may challenge traditional family dynamics and gender roles. This can lead to shifts in household decision-making power, with women becoming key contributors to household income. In some contexts, the shift toward women's increased independence and visibility in the business world may provoke resistance from traditionalist elements of society, leading to tensions or even hostility. As women entrepreneurs enter the male-dominated business environment, they may face social isolation or pressure to conform to traditional expectations, especially in regions where women's entrepreneurial activities are discouraged.

Digital divide and inequality

While digital technology offers many opportunities, there is a risk of deepening inequalities between women who have access to these technologies and those who do not. Factors such as location (urban vs. rural), education, and socioeconomic status may influence the ability of some women to adopt digital technologies. Women entrepreneurs with limited digital literacy may struggle to adopt advanced digital tools, creating a divide even among women business owners. This could reinforce social hierarchies based on education or access to technology. In some regions, poor digital infrastructure (e.g., lack of reliable internet access) may prevent women entrepreneurs from fully benefiting from technology adoption, thus perpetuating regional inequalities.

Work-life balance and mental health

Digital technology can offer women entrepreneurs greater flexibility in managing their work and personal responsibilities, potentially improving their work-life balance. Tools like e-commerce platforms and social media allow them to operate businesses remotely and on their own schedule. On the flip side, the always-on nature of digital technology can blur the boundaries between work and personal life, leading to burnout or stress. This is especially relevant for women who may already be juggling multiple responsibilities, including family care. As women entrepreneurs become more visible and successful through digital technology, they may face increased societal expectations to perform both as business leaders and as traditional caretakers, which can create additional pressure.

Impact on education and skill development

Technologies offer women entrepreneurs' access to online education and training, allowing them to upskill and remain competitive. Platforms like online courses, webinars, and digital workshops can help them enhance their business acumen and technical skills. Women entrepreneurs adopting digital technologies may need to engage in lifelong learning to keep pace with rapid technological changes. This culture of continuous learning can have positive effects on both their personal growth and the broader entrepreneurial ecosystem. As women entrepreneurs embrace digital technologies, they can serve as role models for younger generations, encouraging young women and girls to pursue careers in technology and entrepreneurship.

Social networks and community building

Digital platforms enable women entrepreneurs to build and engage with broader networks, connecting them with peers, mentors, investors, and customers. This increased connectivity can help them overcome social isolation and build support systems. Online communities of women entrepreneurs can offer solidarity and support, helping them navigate challenges in male-dominated industries. These communities may also provide spaces for advocacy and collective action for gender equality in business. Digital platforms facilitate collaboration between women entrepreneurs from different regions and industries, enabling knowledge sharing and partnerships that can lead to innovative solutions and business growth.

Societal transformation

The adoption of digital technology by women entrepreneurs can act as a catalyst for broader social change, including shifting societal attitudes toward gender roles, economic participation, and innovation. As more women successfully adopt technology, societal perceptions of women's capabilities in business and technology may evolve. Women's participation in the digital economy can contribute to more inclusive economic growth, where diverse voices and perspectives are incorporated into the development of new business models and innovations. The success of women entrepreneurs in digital spaces may encourage the development of policies and programs aimed at supporting gender equality in entrepreneurship and technology. This could lead to more initiatives that promote digital inclusion, particularly for women in underserved areas.

Ethical and legal concerns

As women entrepreneurs engage with digital platforms, they may face risks related to data privacy and cybersecurity. Ensuring the protection of their business and personal data is essential to avoid potential misuse or exploitation. In some regions, legal frameworks may not adequately protect women entrepreneurs or provide them with the necessary support to engage in digital commerce. Legal barriers such as discriminatory business registration practices or lack of digital identity infrastructure may limit their opportunities.

7.8 Economic implications

Increased business productivity and efficiency

Digital technologies allow women entrepreneurs to automate tasks such as bookkeeping, inventory management, and customer service, leading to increased efficiency and productivity. This can reduce operational costs, allowing them to focus more on strategic growth. Access to digital tools like data analytics, customer relationship management (CRM) systems, and artificial intelligence can provide women entrepreneurs with real-time insights into market trends and customer behaviour, enabling better-informed business decisions.

Access to new markets

Digital platforms enable women entrepreneurs to expand beyond local markets and reach global audiences through e-commerce websites, social media, and digital marketplaces. This can result in revenue growth, diversified customer bases, and a reduction in geographical barriers to trade. By using digital technology to reach new customers, women entrepreneurs can scale their businesses more quickly. This ability to grow beyond local markets can lead to greater revenues and enhanced economic impact.

Financial inclusion

Digital technology enables women entrepreneurs to access online banking, mobile money services, and digital lending platforms, which are often more accessible than traditional banking systems, especially in underserved or rural areas. This can boost their financial independence and ability to invest in their businesses. Crowdfunding platforms and peer-to-peer lending, powered by digital technology, provide new avenues for women entrepreneurs to raise capital. This can help overcome barriers such as limited access to traditional bank loans, especially for women who may not have collateral or credit history.

Job creation and employment growth

As women entrepreneurs grow their businesses through digital technology, they may create new jobs, contributing to employment growth. This job creation can have a positive impact on the local economy and potentially increase women's employment in the workforce. The adoption of digital technology can also stimulate the creation of jobs in related sectors, such as

logistics, digital marketing, and its support services, creating a ripple effect throughout the economy.

Reduction in business costs

Digital technologies reduce the cost of starting and running a business. Cloud computing, e-commerce platforms, and online marketing tools provide cost-effective ways for women entrepreneurs to manage operations, promote products, and engage customers. By adopting digital payment systems, women entrepreneurs can lower transaction costs associated with traditional banking methods and speed up payments, increasing cash flow and improving overall financial management.

Contribution to GDP and economic growth

By adopting digital technologies, more women entrepreneurs are likely to participate in formal economic activities, contributing to national economic growth. This increased participation can expand the tax base and lead to greater economic diversification. Countries where women entrepreneurs effectively adopt digital technologies can gain a competitive edge in the global market. Increased innovation and business creation can drive a more dynamic economy, making the country more competitive internationally.

Reducing gender gaps in entrepreneurship

Digital technologies can help reduce gender disparities in business ownership and success by providing women with access to the same tools and resources available to male entrepreneurs. This can lead to more equitable economic outcomes and greater gender diversity in entrepreneurship. Successful technology adoption can help women entrepreneurs increase their income and wealth, helping to narrow the gender income gap. Over time, this can contribute to greater wealth redistribution and improved economic security for women.

Innovation and economic diversification

The integration of digital technology into businesses fosters innovation by enabling women entrepreneurs to develop new products, services, and business models. This innovation can drive economic growth, particularly in sectors such as e-commerce, fintech, and digital services. Women entrepreneurs adopting digital technologies often enter diverse sectors, such as tech-driven services, online retail, and creative industries. This diversification contributes to

a more resilient and versatile economy, capable of adapting to changes in the global economic landscape.

Mitigating informality in business

Many women operate in the informal economy, especially in developing countries. The adoption of digital technology can encourage formalization, as it requires participation in digital payment systems, registration on ecommerce platforms, and compliance with legal frameworks. Formalizing businesses can increase access to finance, markets, and legal protections. As more women entrepreneurs formalize their businesses through digital technologies, governments can capture more tax revenue. This additional revenue can be reinvested in public services, infrastructure, and policies that support entrepreneurship and digital inclusion.

Reducing economic inequalities

Digital technology adoption by women entrepreneurs can lead to more inclusive economic growth by enabling marginalized groups, especially women from disadvantaged backgrounds, to participate in and benefit from the digital economy. Digital platforms and tools enable women entrepreneurs in rural or remote areas to access markets, services, and information that were previously only available in urban centres. This can help reduce regional economic disparities and promote more balanced economic development.

Challenges and risks to consider

While technology can offer numerous economic benefits, not all women entrepreneurs have equal access to it. The digital divide, especially in terms of internet access, digital literacy, and affordability, can limit the economic potential for some women, particularly in rural or low-income areas. As more women entrepreneurs adopt digital technologies, competition in digital markets may increase, potentially squeezing smaller businesses. Women-owned businesses that are unable to scale or invest in more advanced digital tools may struggle to remain competitive. The adoption of digital technologies can also lead to the displacement of traditional businesses or jobs that do not embrace technology. This could result in economic disruptions, especially for sectors that rely on low-tech business models.

Impact on supply chains

Digital tools such as inventory management software, online supplier networks, and digital payment systems can help women entrepreneurs streamline their supply chains, reducing waste, improving efficiency, and lowering costs. By adopting digital technologies, women entrepreneurs can diversify their supply chains, reducing reliance on specific suppliers or regions. This can make their businesses more resilient to global economic shocks, such as those caused by pandemics or trade disruptions.

Policy and regulatory implications

Governments may need to introduce policies that support women entrepreneurs in adopting digital technologies, such as offering grants, digital literacy programs, or subsidies for technology investments. Without such policies, many women may be left behind in the digital economy. To maximize the economic potential of digital technology adoption, investments in digital infrastructure (e.g., internet access, mobile networks) are critical, especially in underserved or rural areas. This will ensure that women entrepreneurs have the necessary tools to participate in the digital economy.

7.9 Implications on policy and practice

The study findings have several implications for the study. It was the objective of this study to establish the moderating effect of entrepreneurs age and level of education of entrepreneur's relationship between entrepreneurship digitalisation and women entrepreneurship performance. The findings confirm that entrepreneurs age and level of education influence women entrepreneurship performance as far as digital technology is concerned. Thus, innovators are encouraged to focus on continuous improvement of quality of their digital technology so as to encourage women digital adoption. This is imperative because satisfied women entrepreneurs digitise and contributes to the nation building. The government of Zimbabwe is also advised to use its arms for example Ministry of Women Affairs, Community, Small and Medium Enterprises.

Organisations that deals with society to educate their members that gender should not be an obstacle or criterion for digital technology adoption even in an industry that is traditionally considered male-dominated. Therefore, it is necessary to encourage the participation of women in technical professions and high-level jobs, overcoming educational and professional barriers

and stereotypes, but also ensuring lifelong digital learning to prevent the exclusion of women from the labour market. It is no coincidence that large and powerful organisations have chosen women at the helm of leadership positions.

Furthermore, it is important to take action to increase the number of women in the fields of science, technology, engineering, and mathematics (STEM), as this increase can improve conditions in other sectors as well as in the economy and society as a whole. At the same time, it is important to recognize the growing importance of education in areas related to information and communication technologies, as well as cross-sectoral, business, digital and non-technical skills (such as empathy, creativity, and complex problem solving) in the digital age. Also, mindfulness and conscious awareness as two, top-level metacognitive skills set the grounds for both effective use of technologies and successful.

On the other hand, the presence of women in computer programming jobs can help overcome gender bias which may lurk in the design of a particular technology. Moreover, women entrepreneurship must be supported by removing barriers to women's access to self-employment, as well as by improving access to and quality of social protection measures (Doulou & Skianis, 2023).

In addition, it is important to strengthen the participation of women with disabilities in the digital technology adoption by implementing the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD).

In practice, most women businesses are still at an early stage of adopting advanced digital technologies. It is challenging for women to make decisions on what digital technologies they should adopt, how to adopt them; and to understand how it might affect digital technology adoption and performance. This study provides a guidance of digital technology adoption in practice. It can help women in business understand the potential impact of digital technologies on business operations and management, and support women entrepreneurs to develop appropriate business strategies at different digitalisation levels.

African traditional leaders must take its part in encouraging and wavering patriarchal systems thereby educating and encouraging male figures not to interfere in women businesses for the promotion of digital technology adoption by women entrepreneurs.

There is need of availing of adequate funds. Adequate finding will promote women entrepreneurs purchase digital technology thereby promoting entrepreneurship digitalisation. These can be like the Zimbabwean Women Bank. Although there is need of allowing women businesspersons to get capitals at reasonable interest charges, for instance by decreasing the charges charged by banks and microfinance organizations or generating exceptional monies, which can be retrieved or open to women businesspersons without too much bureaucracy. Government must make sure that these banks have sufficient income to cater for all women in business.

Availing of special grants or awards by the government. The government can offer women entrepreneurs special grants, resources, business centres, enterprise rewards to motivate women entrepreneurs adopting digital technology.

Need for proper digital technology education and training to enhance digitalisation adoption by women entrepreneurs. The research shows that level of education plays a key role between entrepreneurship digitalisation and women entrepreneurship performance. Hence the need of digital technology education and trainings.

Continuous advisory and counselling services are needed to constantly check and monitor progress for women entrepreneurship digitalisation adoption. Women entrepreneurs suffer emotionally hence there is need to make professional counsellors available.

Promoting social capital linkages as a way of promoting entrepreneurship digitalisation. The success of entrepreneurship digitalisation by women entrepreneurs depends on household, husband and community emotional support. Social capital refers to community or society linkages, standards of reciprocity, common help and honesty or dependability. Traditional leaders can take advantage of male gatherings and meetings encouraging male figures to continuously support without interference of women businesses.

Furthermore, the study recommends the development of platforms translated into widely spoken Zimbabwean local languages such as Shona, Ndebele, and other recognized national languages like Chewa, Kalanga, Tonga, and Venda to ensure inclusivity and broader accessibility. Hence the multilanguage-translated digital technologies will motivate women entrepreneurs to digitalise their businesses.

7.10 Research limitations and mitigation measures taken

Social desirability bias is a recognised risk, especially in studies involving technology adoption, where respondents may feel pressure to appear modern or competent. As a way to mitigate the limitation, the questionnaire was self-administered and not interviewer-led, allowing respondents to answer privately and at their own pace, which reduces bias. Wording of items avoided value-laden or judgemental phrasing. For example, instead of asking, "Do you use digital tools effectively?" the items focused on frequency and experience (e.g., "How often do you use mobile money for business transactions?"). The survey included reverse-coded and control questions to help flag response patterns that suggest social desirability.

Limited digital literacy among respondents

Some women entrepreneurs may lack the digital skills needed to understand or respond meaningfully to questions about digitalisation. The researcher used simplified and translated questionnaires in Shona, Karanga, Chewa and Korekore. Also, the use of research assistants' familiar with local dialects and entrepreneurship context.

Geographical and Infrastructural Barriers

Remote or rural areas in Mashonaland West were hard to access due to poor infrastructure or network coverage. The researcher grouped the respondents using Zimstats demarcations of urban and rural areas to ensure diverse representation from both accessible and hard-to-reach areas. Also, the researcher partnered with local cooperatives, business associations, or NGOs to reach women entrepreneurs in remote communities.

Lack of Baseline or Longitudinal Data

It was difficult to assess causality or long-term impacts of digitalisation on performance. So as to mitigate the challenge, the researcher used retrospective questions, for instance, business status before adopting digital tools. Also a quasi-experimental design (e.g., comparing adopter's vs non-adopters). The study also recommended future longitudinal studies as part of your contribution to the literature.

Interpretation caution

During data analysis, the researcher treated digital adoption responses with caution, cross-checking against age, education, and past experience to confirm logical consistency. Results were not solely interpreted at face value, but as part of a broader behavioural pattern.

7.11 Recommendations

The study proposed the following recommendations to enhance the adoption and effectiveness of digitalisation among women entrepreneurs in the Mashonaland West in Zimbabwe:

Enhance digital literacy among women entrepreneurs

The study revealed that limited digital literacy significantly reduces the perceived ease of use and usefulness of digital technologies. It is therefore recommended that government agencies, NGOs, and academic institutions design and implement structured digital literacy programs tailored to the needs of women entrepreneurs. These programs should include practical modules on digital marketing, e-commerce platforms, mobile banking, and basic cybersecurity.

Improve access to affordable ICT tools and internet services

Cost-related barriers were identified as a major impediment to entrepreneurship digitalisation. It is recommended that the government, in collaboration with ICT service providers, introduce subsidies or financing schemes to make smartphones, computers, and internet data more accessible. Investment in affordable broadband infrastructure across Mashonaland West, especially in rural areas, is critical.

Design age- and education-sensitive interventions

The research findings showed that both age and level of education significantly moderate the relationship between entrepreneurship digitalisation and entrepreneurial performance. Therefore, it is recommended that policymakers and support organizations differentiate interventions based on these variables: young entrepreneurs may benefit more from advanced digital skills and innovation bootcamps and older or less-educated women may require foundational digital training and user-friendly platforms. This targeted approach will ensure that all demographic groups are adequately supported.

Promote gender-sensitive digitalisation policies

The study found that entrenched socio-cultural norms continue to hinder women's digital participation. To address this, the government should revise and implement gender-sensitive ICT and SME policies that prioritize the inclusion of women entrepreneurs in digital transformation agendas. These policies must explicitly recognize the unique challenges faced by women and commit resources to close the gender digital divide.

Expand digital infrastructure across the province

Infrastructure limitations, especially in remote districts, were cited as a critical challenge. The government, in partnership with mobile network operators, should invest in expanding and upgrading digital infrastructure, including mobile networks and internet access points. Reliable infrastructure will enhance the perceived usefulness and voluntariness of digital tool usage.

Foster peer learning and digital mentorship programs

The study underscored the role of digital experience in improving performance outcomes. It is recommended that stakeholders establish peer mentorship networks where experienced women entrepreneurs mentor those with limited digital exposure. Platforms such as WhatsApp groups, community hubs, or digital forums could serve as effective knowledge-sharing spaces.

Incentivize digital adoption through innovation grants

To motivate and support the uptake of digital technologies, the government and private sector actors should introduce micro-grants, awards, or tax incentives for women entrepreneurs who successfully integrate digital tools into their business models. Recognition and financial support can serve as powerful motivators for digital transformation.

Engage community leaders to challenge socio-cultural norms

The study identified that deeply rooted cultural beliefs discourage women from actively participating in digital entrepreneurship. It is thus essential to engage traditional leaders, religious institutions, and community influencers in awareness campaigns aimed at challenging and changing these norms. Promoting digitalisation as a tool for economic empowerment and community development can facilitate greater acceptance.

Integrate digital and entrepreneurial education at early childhood levels

To build long-term capacity for entrepreneurship digitalisation, the government and education policymakers should consider incorporating basic digital literacy and entrepreneurial awareness into kindergarten and early childhood education curricula. This could include age-appropriate activities such as interactive games that promote creativity, problem-solving, and innovation; exposure to basic digital devices in a safe and controlled environment; and storytelling or role-play scenarios about business and technology. Early exposure fosters a digital mindset and entrepreneurial curiosity from a young age, which is critical in preparing future generations, especially girls, for the demands of a digital economy. Over time, this could reduce the digital gender gap and increase the number of digitally capable women entrepreneurs.

7.12 Implications on future research

This study was conducted solely in Mashonaland West Province, Zimbabwe, due to funding constraints. As a result, the generalisability of the findings to other regions within Zimbabwe and beyond is limited. The research highlights significant disparities among women particularly those in rural areas who face greater challenges, possess lower levels of digital competency, and have limited access to digital infrastructure. These findings underscore the existence of "parallel worlds" in terms of digital access and empowerment.

Future research could build on these findings by employing mixed-methods approaches to explore barriers such as cultural norms, language differences, and sector-specific challenges in greater depth. Additionally, investigating digital disparities among women entrepreneurs through lenses such as social class and the urban-rural divide would provide a richer understanding of the issue.

The uneven availability of digital technologies and training programmes across countries further complicates the transferability of this study's insights. Comparative studies in similar socio-economic contexts could be valuable, particularly in exploring whether the identified challenges similarly affect male entrepreneurs.

Due to word limitations, this study could not explore the full intersectionality of digital experiences for instance, how access to digital education, proximity to urban centres, or familial support influence women's perceptions of digital platforms. Future research should delve deeper into the various meanings and uses of digital technologies, including materialist, conspicuous, functionalist, and entrepreneurial interpretations.

Finally, the meaning of being a woman varies widely across cultures. While this study did not explore these cultural differences in depth, doing so presents a compelling opportunity for future research.

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APPENDIX 1: QUESTIONNAIRE

INTRODUCTORY LETTER TO CONDUCT A RESEARCH



CHINHOYI UNIVERSITY OF DIGITAL TECHNOLOGY

Private Bag 7724 Chinhoyi, Zimbabwe Website: www.cut.ac.zw Telephone: +263 267 2122203

INTRODUCTORY LETTER TO CONDUCT A RESEARCH

Are you a woman with a business operated in Mashonaland West province entrepreneur?

☐ Yes ☐ No

If **YES**, please proceed to answer the questionnaire.

Dear Respondent

I, **Mashapure Rahabhi Reg. Number C22148510N**, a DPhil student in the School of Entrepreneurship and Business Sciences at Chinhoyi University of Digital technology. As part of the Doctor of Philosophy degree requirements, I wish to conduct a study entitled ***“Towards Developing a Framework for Entrepreneurship Digitalisation for Women Businesses Performance in Mashonaland West, Zimbabwe.”*** The study is conducted in Mashonaland West Province.

You are being invited to participate in this study and I kindly request you to complete this form by putting a tick or an X in the appropriate space or box for each question as honestly as you can. **Participation in this study is voluntary.** I am therefore requesting you to freely provide required information to the best of your knowledge.

Any information obtained in connection with this study that can be identified with you and your organization will remain confidential. **DO NOT WRITE** your name or anything that identifies you in any way. Should you have any questions or concerns about completing this questionnaire contact me or my supervisors: Dr Chikazhe: +263 773 236 018, Dr Mufudza: +263 772 721 561.

Sincerely

Rahabhi Mashapure
+263 776 141 192

SECTION A: RESPONDENTS SOCIO-DEMOGRAPHIC DETAILS

Are you a woman entrepreneur? YES ☐ ☐ NO ☐ If YES, proceed to answer the following questions.

A1. Age: Less than 30 ☐ 30-39 ☐ 40-49 ☐ 50-59 ☐ 60+ ☐

A2. Marital status: Single ☐ Married ☐ Widow ☐

A3. What is your highest level of education?

Below Diploma level ☐ Diploma ☐ Degree ☐ Masters ☐

A4. Please indicate the nature your business

Nature of my business	
Retailing	
Manufacturing	
Services	
Processing	
Farming	
Digital technology	
Other	

A4. If your business is not mentioned above (other) feel free to add here.

.....

A5. For how long have you been in this business?

Less than 2 years	
2 – 5 years	
6 – 10 years	
> 10 years	

A6. What is the means of communication you use in your business to communicate with customers or business partners?

.....

SECTION B

Indicate the extent to which you agree or disagree with the following statements on the adoption of entrepreneurship digitalisation for the enhancement of women entrepreneurship using the following performance scale:

Key: 1 'Strongly Disagree' 2 'Disagree' 3 'Neither Agree nor Disagree' 4 'Agree' 5 'Strongly Agree')

B1. To what extent do you agree that perceived usefulness of digital technology plays a role in influencing entrepreneurship digitalisation in the enhancement of women entrepreneurship?

Key: 1 'Strongly Disagree' 2 'Disagree' 3 'Neither Agree nor Disagree' 4 'Agree' 5 'Strongly Agree')

	Perceived usefulness of digital technology	1	2	3	4	5
PUOT1	Digital technology makes it easy to stay in touch with my customers					
PUOT2	My business effectiveness increased because of the use of digital technology					
PUOT3	My business productivity increased because of the use of digital technology					
PUOT4	Digital technology makes it easy to collaborate with business partners					
PUOT5	The use of digital technology enables me to accomplish my tasks more quickly					
PUOT6	Digital technology improves customer satisfaction					

B2. To what extent do you agree that perceived ease of use of digital technology played a role in influencing entrepreneurship digitalisation in the enhancement of women entrepreneurship in Mashonaland West province, Zimbabwe?

Key: 1 'Strongly Disagree' 2 'Disagree' 3 'Neither Agree nor Disagree' 4 'Agree' 5 'Strongly Agree')

	Perceived ease of use of digital technology	1	2	3	4	5
PEOU1	Using digital technology makes it clear and understandable in my business					
PEOU2	Digital technology require a lot of my mental thinking in my business					
PEOU3	Using digital technology makes it easy to learn more in my business					
PEOU4	Using digital technology makes it easy to become skilful in using digital technology in my business					
PEOU5	Digital technology makes it easy for me to work remotely					
PEOU6	Digital technology is expensive					

B3. To what extent do you agree that experience of the past use of digital technology played a role in influencing entrepreneurship digitalisation in the enhancement of women entrepreneurship in Mashonaland West province, Zimbabwe?

Key: 1 'Strongly Disagree' 2 'Disagree' 3 'Neither Agree nor Disagree' 4 'Agree' 5 'Strongly Agree')

	Experience of the past use of digital technology	1	2	3	4	5
EPUT1	My previous experience with digital technology makes it easy for me in learning to use digital technology in my business					

EPUT2	My past experience with digital technology helped me becoming skilful at using digital technology in my business					
EPUT3	My past experience with digital technology increased my interaction with customers					
EPUT4	My previous experience with digital technology helped me find it easy to use digital technology in my business					
EPUT5	My past experience with digital technology increased my interaction with my business partners					

B4. To what extend do you agree that voluntariness in the use of digital technology played a role in influencing entrepreneurship digitalisation in the enhancement of women entrepreneurship in Mashonaland West province, Zimbabwe?

Key: 1 'Strongly Disagree' 2 'Disagree' 3 'Neither Agree nor Disagree' 4 'Agree' 5 'Strongly Agree')

	Voluntariness in the adoption of digital technology	1	2	3	4	5
VIUT1	My personal innovativeness helped me to adopt digital technology and use it in my business					
VIUT2	My positive attitude helped me to use digital technology in my business willingness to use					
VIUT3	My enjoyment in using digital technology helped me to adopt modern digital technology					
VIUT4	Using digital technology in my business helps me yield satisfaction					
VIUT5	Perceived voluntariness of business is predictor of innovativeness in my business					
VIUT6	Voluntary use of digital technology positively influenced my behaviour towards managing the business					

B5. To what extend does entrepreneurship digitalisation contribute to the enhancement of women entrepreneurship in Mashonaland West province, Zimbabwe?

Key: 1 'Strongly Disagree' 2 'Disagree' 3 'Neither Agree nor Disagree' 4 'Agree' 5 'Strongly Agree')

	Enhanced women entrepreneurship	1	2	3	4	5
EDWE1	Digitalisation speed up the manufacturing process					
EDWE2	Digital technology increased stakeholder management increased as I constantly and quickly get feedback using social media platforms					
EDWE3	Digitalisation helped me producing wide range of customised products according to customer's specifications					
EDWE4	The adoption and implementation of digital technology increased administrative / managerial commitment in my business					
EDWE5	Digital technology helped me to share knowledge with the suppliers					

EDWE6	Focusing on digital technology allows knowledge-sharing among employees/collaborators					
EDWE7	Digitalization helped my firm to grow global business process					
EDWE8	Adoption of digital technology increased my collaboration with customers					
EDWE9	Digitalisation enhances real time customer feedback					
EDWE10	Digital technology increase knowledge-sharing with customers (commercial and technical information)					

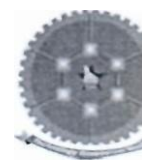
THANK YOU FOR YOUR TIME AND COOPERATION

APPENDIX 2: RESEARCH CLEARANCE LETTER

ANNEX 19 Form GRSD 17 SEBS 14/2023

CHINHOYI UNIVERSITY OF TECHNOLOGY

RESEARCH CLEARANCE LETTER



NAME OF RESEARCHER(S): Rahabhi Mashapure ID: 34-103769N43

Student Registration number: C22148510N

SCHOOL OF: Entrepreneurship and Business Studies

APPROVED RESEARCH TITLE: Entrepreneurship digitalization on the

Enhancement of women entrepreneurship in Mashonaland
West
Province, Zimbabwe

I hereby confirm that the above mentioned Researcher is a Postgraduate Researcher at Chinhoyi University of Technology. The proposed study met all the requirements as stipulated in the University Policies and guidelines and has been approved by the relevant committees.

The proposal adheres to ethical principles as outlined by the University. Permission is hereby granted to carry out the research as described in the attached approval proposal.

The main objective of the research is: To examine the influence of entrepreneurship digitalization on the enhancement of women entrepreneurship.

Expected Outcome: Enhanced women entrepreneurship

Best Regards

A handwritten signature in blue ink, appearing to read 'O. L. Kupika'.

O. L. Kupika

Chairperson, University Research and Innovation Committee'- Research Ethics

tel: +263 6721 22203-5

E-mail: researchandgraduatestudies@cut.ac.zw



APPENDIX 3: PLAGIARISM REPORT

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