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The User Acceptance of an Agricultural E-commerce Platform for Women in Underserved Rural Areas.

A Mini-Dissertation Submitted in Partial Fulfillment of The Requirements for The Degree of Master of Science in Information Technology.

By

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Declaration

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Abstract

Problem Statement: Agricultural e-commerce technologies have the potential to empower farmers in rural areas. These platforms can help agriculturalists by enhancing market access, reducing reliance on intermediaries, increasing sales, providing access to modern technologies, and ultimately leading to genuine economic independence. Despite their potential benefits, current e-commerce platforms remain underutilized by rural farmers, particularly women. The acceptance of these solutions is often hindered by a myriad of factors such as lack of relevance to users' needs, language barriers, infrastructure issues, digital illiteracy, economic barriers, and socio-cultural constraints. This highlights the need for further research to investigate user acceptance of agricultural e-commerce among women. Understanding user acceptance can help identify obstacles and develop strategies for digital inclusion, which is an area that remains understudied in rural settings. Existing literature often falls short of addressing the specific needs and challenges of female farmers in rural areas, overlooking factors such as language, design, and preferences that resonate with this demographic, thus leaving these women underserved.

Purpose of the study: The primary aim of this study was to assess the user acceptance of an agriculture e-commerce platform designed to support female farmers in underserved rural areas.

Research Methodology: The research utilized a convergent parallel mixed-method approach, involving both qualitative and quantitative methods. The study area chosen was Jeppes Reef, a small rural community renowned for its agricultural activities. Thirty participants were selected using snowball sampling, convenience sampling, simple random sampling, and purposive sampling. A structured Survey was administered to twenty female farmers between the ages of 18 and 65. Semi-structured interviews were conducted with five female farmers and five specialists to assess the user acceptance of the platform. The questions of the data collection instruments were based on technology acceptance constructs of perceived usefulness, perceived ease of use, attitude toward using, and behavioral intention to continue using the platform.

Findings: The agricultural e-commerce was well received, with most participants acknowledging its value (Perceived Usefulness) and expressing the intent (Behavioral intention) to use the platform after their suggested improvements were implemented. Furthermore, most participants found the application easy to use (Perceived Ease of Use) and had a positive attitude toward using (Attitude Toward Using) the platform.

However, the research identified underlying technical and external factors that hindered widespread user acceptance. These included issues such as accessibility for individuals with disabilities, a difficult user experience for the elderly, and the lack of inclusion of other South African local languages on the platform. External factors such as internet connectivity challenges, limited access to smart devices, digital illiteracy, and expensive data were also found to impede user interaction and engagement with the application.

Benefits of the study: This research provides important insights for software developers, governments, policymakers, and organizations interested in establishing agricultural e-commerce platforms for women in rural areas. It offers a detailed guide for designing and developing applications tailored to the needs of the intended users and gaining wider user acceptance. Furthermore, the research contributes to the current body of knowledge on the Technology Acceptance Model, offering detailed guidance on its application in various contexts, including gender-based and rural-specific contexts, to measure user acceptance. Overall, the research offers comprehensive guidelines for creating an all-encompassing agricultural e-commerce platform designed to empower women in underserved rural areas.

Key Words: Rural, Agriculture, Women, E-commerce, User Acceptance, Technology Acceptance Model, Digital Inclusion.

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Acronyms & Abbreviations

ATU	Attitude Toward Using
B2B	Business to Business
BI	Behavioral Intention
C2C	Consumer to Consumer
CSS	Cascading Style Sheets
DAFF	Department of Agriculture, Forestry and Fisheries
HTML	Hypertext Markup Language
IT	Information Technology
LRP	Land Redistribution Programme
LRAD	Land Redistribution for Agricultural Development
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
RDP	Reconstruction and Development Program
RUDI	Rural Distribution Network
SMEs	Small and Medium-Sized Enterprises
TAM	Technology Acceptance Model
UCD	User-Centered Design
UTAUT	Unified Theory of Acceptance and Use of Technology
UTA	User Acceptance Testing
UI	User Interface
UX	User Experience
Wi-Fi	Wireless Fidelity

Chapter 1: Introduction & Contextual Background

1.1 Background

The emergence of e-commerce platforms has had a profound impact on the agricultural industry. Agricultural e-commerce platforms are digital tools that serve as virtual marketplaces for buying and selling agricultural products and services (Zeng et al., 2019; Emeana et al., 2020). They have revolutionized the purchasing process for consumers, offering the convenience of shopping at any time and from any location, without the constraints of traditional physical stores. Furthermore, these platforms foster direct connections between farmers, suppliers, consumers, and other important participants in the agricultural value chain. This has allowed farmers to gain direct access to the market, reduce their reliance on intermediaries, and improve their ability to obtain better product prices (Sahu et al., 2024). Agricultural e-commerce platforms have enabled businesses to increase their sales and enter global markets, empowering them to grow and remain viable (Guo et al., 2021). For instance, farmers who participated in e-commerce saw an average income increase of 30% in the Shandong and Shaanxi provinces of China (Su et al., 2021). Similarly, in Kenya, the introduction of 'M-farm,' an agricultural e-commerce platform, facilitated real-time access to market prices, direct sales to buyers, and significantly alleviated the exploitation of rural farmers by middlemen, resulting in a 50% increase in farmers' income (Baumüller, 2015). These success stories illustrate the potential of e-commerce platforms in enhancing operational efficiency and uplifting the economic status of farmers in the industry.

E-commerce platforms can empower female farmers in rural areas and enhance their contribution to agriculture. Women in farming have been known to be profound contributors to food production, job creation, workforce, and food security in the sector (Onyalo, 2019). However, they often face challenges such as limited access to credit and financial services, insecure land rights, discrimination, and fewer educational and job opportunities, hindering their full potential (Doss, 2018; Onyalo, 2019). These findings are further corroborated by Glazebrook (2020) highlighting that female farmers face significant hurdles in accessing essential agricultural inputs, land, and services compared to their male counterparts. Bridging this gender gap could potentially increase agricultural productivity by 20-30% in developing countries (Doss, 2018). Ghouse (2021), also echoed comparable ideas, stating that women in rural areas form much of the poor population,

facing low literacy rates and limited access to economic resources, which directly impacts their productivity compared to men. To address these challenges, the South African government has implemented various programs, such as the Land Redistribution Programme (LRP), aimed at providing land for productive use and ensuring equal access to economic resources for all citizens (Manakane & Odeku, 2022; Mongwe, 2022). Despite these efforts, many women still struggle to establish successful farms due to limited access to markets, information, technological advancements, resources, and the burden of the second shift at home (Zantsi et al., 2021; Agarwal, 2022). Hence, there is a need for innovative tools tailored to the unique challenges faced by women in rural areas to foster genuine economic empowerment for female farmers in rural settings.

Agricultural E-commerce platforms have the potential to have a significant impact on promoting inclusive growth and sustainable rural development in South Africa. They can help improve access to markets, ensure fair pricing, and establish direct connections between buyers and sellers (Zeng et al., 2019). By operating 24/7, these platforms can empower women to sell their products from home, freeing them from traditional market limitations and household responsibilities (Baumüller, 2015; Emeana et al., 2020; Su et al., 2021). Through these tools, female farmers can expand their market reach and overcome geographical barriers, ultimately helping to reduce gender disparities and contribute to achieving sustainable development goals (SDGs) such as SDG 1 (No Poverty) and SDG 5 (Gender Equality) (Zeng et al., 2019; Patel, 2023). This is vital to ensure rural women are not left behind in the digital transformation (Odera & Mulusa, 2020; Patel, 2023). Drawing on success stories from countries like India and China, agricultural e-commerce platforms can significantly enhance the lives and economic well-being of rural women in South Africa (Su et al., 2021; Sahu et al., 2024). Therefore, it is crucial to explore and understand how these platforms can be embraced and utilized to generate a genuine economic impact for women in rural areas.

1.2 Problem Statement

Agriculture e-commerce technologies can be very beneficial for female farmers in rural areas. These platforms can help agriculturalists by enhancing market access, reducing reliance on intermediaries, increasing sales, providing access to modern technologies, and ultimately leading to genuine economic independence (Su et al., 2021; Sahu et al., 2024). Despite their potential benefits, current e-commerce platforms remain underutilized by rural farmers, particularly

women. The acceptance of these solutions is often hindered by a myriad of factors such as lack of relevance to users' needs, language barriers, infrastructure issues, digital illiteracy, economic barriers, and sociocultural constraints (Theis et al., 2018; Chatterjee et al., 2020). There is limited research on user acceptance of e-commerce platforms among women in underserved rural areas, as most studies focus on the general population. Women in these communities often encounter barriers to accessing digital solutions designed to empower them. However, limited studies are exploring strategies to improve user acceptance in this demographic (Yu & Cui, 2019; Karine, 2021). This highlights the need for further research to investigate user acceptance of agricultural e-commerce among women. Understanding user acceptance can help identify obstacles and develop strategies for digital inclusion, which is an area that remains understudied in rural settings. Existing literature often falls short of addressing the specific needs and challenges of female farmers in rural areas, overlooking factors such as language, design, and preferences that resonate with this demographic, thus leaving these women underserved (Sultana et al., 2018; Theis et al., 2018; Rola-Rubzen et al., 2020). Understanding the factors that influence user acceptance among women in rural areas, such as perceived ease of use, usefulness, and social context, is crucial to the effective use and successful adoption of these platforms (Theis et al., 2018; Rola-Rubzen et al., 2020).

1.3 Research Objectives

The main aim of this study is to evaluate the user acceptance of an agricultural e-commerce platform designed to support female farmers in rural settings. The study seeks to collect user feedback on the platform's ease of use, perceived usefulness, attitudes toward usage, and intention to continue using the application. Hence, the following research objectives were formulated:

- To assess the users' perception of the agricultural e-commerce platform. (This objective was added to gather participants' perceptions on the perceived usefulness (PU) of the platform, perceived ease of use (PEOU), user attitude toward using (ATU) the platform, and behavioral intention (BI) to continue using the platform).
- To examine the challenges that hinder the user acceptance of the Application in rural areas. (This objective was added to gain insights into the challenges that hinder user acceptance of the App among female farmers in rural settings).

- To devise strategies for improving user acceptance of the agricultural e-commerce platforms in rural areas. (This objective aims to gather feedback on how to increase the user acceptance of e-commerce from participants, taking a bottom-up approach to problem-solving).

1.4 Research Questions

The main research question of this study is: What is the extent of user acceptance of the agricultural platform developed to support female farmers from rural areas? The following sub-questions were developed to address the research objectives:

- What is the user's perception of the agricultural e-commerce platform?
- What challenges hinder the user acceptance of the application among female farmers in rural areas?
- What strategic solutions can improve user acceptance of agricultural e-commerce platforms among women in rural areas?

1.5 Research Methods Overview

The study utilized a convergent parallel mixed-method approach, incorporating both qualitative and quantitative methods. The research focused on Jeppes Reef, a small rural community renowned for its agricultural activities, which served as the study area. The targeted population included female farmers from Jeppes Reef as well as user acceptance specialists. The study utilized snowball and convenience sampling methods to identify and recruit 25 female farmers. Within the sample of 25 female farmers, five participants were further selected for in-depth interviews using simple random sampling. This method was chosen to ensure fairness in the selection process and reduce bias. Furthermore, purposive sampling was used to include 5 user acceptance specialists in the sample. This sampling technique was chosen because it allowed the researcher to select participants with expertise and experience in user acceptance purposefully. Surveys (n = 25) and interviews (n = 10) were conducted to assess user acceptance of the platform, with questions based on the Technology Acceptance Model constructs, including perceived usefulness, perceived ease of use, attitude toward use, and behavioral intention to continue using the platform. Inferential statistics, Descriptive statistics, and thematic analysis (Braun and Clarke's six-phase method) were used to analyze and interpret the findings, with legal considerations maintained throughout the research.

1.6 Significance of the Study

The study provides valuable insights that could be useful to various stakeholders, including software developers, governments, policymakers, academics, and organizations interested in establishing agricultural e-commerce platforms to support female farmers in rural areas. It offers a detailed guide for software developers to design and develop applications tailored to the needs of the intended users, thus ensuring wider user acceptance. Furthermore, it offers guidelines for collaboration between the third sector, private, and public sectors to make such platforms successful in rural settings. The study also provides useful information for policymakers on including technology in land and agricultural policies to empower women and make these policies more effective. Apart from this, the research contributes to the current body of knowledge on the TAM, offering detailed guidance on its application in various contexts, including gender-based and rural-specific contexts, to measure user acceptance. Overall, the research provides comprehensive guidelines for creating an agricultural e-commerce platform. It presents strategies for inter-sector collaboration to promote a genuine economic empowerment for women, making it valuable for academics and industry professionals in the field of information systems (IS).

1.7 Scope of the Study

The study's scope encompasses the specific type of technology, targeted beneficiaries, and geographic focus. The thesis exclusively focuses on agricultural e-commerce platforms, rather than general e-commerce applications. The research also places focus on women from rural settings, a group that constitutes part of the vulnerable population that could benefit from these platforms. Although the study's primary aim was to assess user acceptance in rural settings, data collection focused on a single rural area, the Jeppes Reef community, hoping to generate replicable data.

1.8 Thesis Outline

This mini dissertation is divided into eight Chapters. Chapter One presents an overview and context of the study, emphasizing the significant impact of e-commerce platforms in agriculture and their ability to empower female farmers in rural areas. Chapter Two delves into relevant literature on agriculture, women in rural areas, and agricultural technologies. Chapter Three elaborates on the theoretical framework used in the study and justifies it among alternative frameworks. Chapter Four provides a detailed explanation of the research design and

methodology, including data collection techniques, sampling methods, and the ethical considerations applied. Chapter Five presents a detailed description of the agricultural e-commerce platform. The Sixth Chapter presents the results and interpretation of the findings obtained from the evaluation of the application. Chapter Seven presents the discussions, while Chapter Eight offers a summary, concluding remarks, and recommendations based on the findings of this study.

Chapter 2: Literature Review

2.1. Introduction

The introduction of technology brings numerous opportunities to diverse industries, and the agricultural sector is no exception. The integration of digital solutions in agriculture has led to the emergence of e-commerce platforms, creating new avenues such as improved market access, enhanced value chains, and increased operational efficiency (Zeng et al., 2019; Llanes, 2020). However, the benefits of these platforms are not equally distributed, particularly for women in rural settings (Yu & Cui, 2019; Ma et al., 2023). Rural refers to settings that are situated outside of urban centers. These areas are typically marked by low population density, sparsely distributed housing, and a heavy reliance on agriculture or natural resource-based livelihoods (Bennett et al., 2019). Hence, this Chapter delves deep into the specific context of women and the challenges they face as female farmers residing in these settings. It explores previous studies on the user acceptance of digital platforms and their weaknesses, highlighting gaps in literature this study attempts to fill.

This Chapter consists of eight themes. Section 2.2 explores the user acceptance of new technologies. Section 2.3 delves into e-commerce platforms, discussing popular categories and their benefits. Section 2.4 focuses on e-commerce platforms in the agricultural sector. Section 2.5 presents an overview of rural areas, and Section 2.6 explores the challenges and lived experiences of women in these settings. Section 2.7 investigates user acceptance of e-commerce platforms by women, including research gaps, and finally, Section 2.8 provides a summary of the Chapter.

2.2. The User Acceptance of Technology

The concept of "user acceptance" has become increasingly important due to the prevalence of failed software projects. User acceptance refers to how individuals perceive, embrace, and are willing to integrate a particular technology into their lives (Sharma et al., 2020). This is a crucial factor in the success of new technologies, as even the most beneficial systems can fail if users are not willing to adopt them. Despite its significance, the concept of user acceptance has been surrounded by several myths and misconceptions. One common misconception is that user acceptance is primarily about the excellence and functionality of the technology. While these aspects are important, Chhibber et al. (2024) clarify this by highlighting external factors such as

digital illiteracy, and sociocultural barriers that influence the user acceptance of new digital solutions. Therefore, it is important to take a holistic approach and consider both technological characteristics and external factors in understanding the user acceptance of new IT solutions.

Another misconception is that user acceptance is uniform across different groups, which leads to the belief that if one group accepts a technology, the same will hold true for all groups. However, user acceptance varies widely across different demographics based on preferences and local context, necessitating the development of IT solutions tailored to specific settings (Sultana et al., 2018). Furthermore, there is a myth that user acceptance is a one-time event rather than an ongoing process (Oudshoorn & Pinch, 2015). In reality, user attitudes and perceptions toward technology are dynamic and can change over time, necessitating continuous user feedback, and iterative improvements to maintain the user base (Sultana et al., 2018; Bate & Robert, 2023). Therefore, this Section provides information about factors affecting the user acceptance of new technologies.

2.2.1 Factors Affecting User Acceptance

Table 2.1 shows a comprehensive overview of the various factors that affect the user acceptance of new digital solutions. These factors significantly determine whether users are open or resistant to adopting and using a new technology. Understanding and addressing these elements is crucial for identifying potential hurdles to technology adoption and devising effective strategies to promote user acceptance. The factors may be classified into perceived usefulness, perceived ease of use, facilitating conditions, social influences, demographic characteristics, psychological aspects, user interface (UI), and user experience (UX), as discussed in detail below:

- **Perceived Usefulness**

Perceived usefulness has a significant influence on the user acceptance of technologies. The perceived usefulness refers to the extent to which users believe that the technology will improve their performance and make their tasks easier (Davis, Granić & Marangunić, 2024). When users recognize the benefits and usefulness of a technology, they are more likely to adopt it. For instance, Trello, a widely used software development tool, has garnered extensive user acceptance due to the platform`s perceived usefulness in aiding employees to manage tasks and enhance overall efficiency (Alobidyeen, 2022). Similarly, educational technologies such as Udemy and Coursera have seen positive user acceptance since consumers view them as valuable sources of information and skills (Nurhudatiana & Caesarion, 2020). On the other hand, if users fail to see the value of a

technology, they may be hesitant to use it. Thus, users should be educated about new digital solutions to ensure they understand their benefits, ultimately leading to broader user adoption.

❖ Perceived Ease of Use

Perceived Ease of Use (PEOU) plays a pivotal role in shaping user acceptance. PEOU refers to users' beliefs about how easy and straightforward a specific system is to use (Davis, Granić & Marangunić, 2024). If users encounter difficulties and perceive the system as hard to use, they are unlikely to embrace it. For example, Yahoo lost many users to other search engines due to complaints about the platform`s cluttered and confusing user interface, difficult navigation, excessive advertising, erratic performance issues, and inconsistent design (Wijaya & Pattipeilohy, 2023). This makes improving the platform's usability essential for enhancing user adoption.

❖ Demographic Characteristics

It is essential to grasp the demographic characteristics of users for analyzing and enhancing user acceptance. These attributes include gender, age, education, household size, race, religion, ethnicity, income, marital status, language, and employment information (Simsekoglu, 2018; Sohn & Kwon, 2020; Amirnazmiafshar et al., 2022). User demographics reveal diverse needs and challenges among various user groups, which can affect their engagement and adoption of new technologies (Palau-Saumell et al., 2019). For instance, different age brackets display distinct patterns in their interaction with and acceptance of technologies (Palau-Saumell et al., 2019). Young users, aged 18 to 35, are generally more tech-savvy and receptive to new technologies. In contrast, older generations, aged 50 to 65 and above, are often more selective or hesitant about embracing new technologies (Palau-Saumell et al., 2019; Mannheim, et al., 2023). In addition, various age groups have varied preferences, with younger individuals typically seeking more interactive and engaging interfaces, while older generations require simpler and more user-friendly interfaces, particularly concerning accessibility issues (Palau-Saumell et al., 2019; Mannheim, et al., 2023). The same situation applies to gender, men are more inclined to adopt technology compared to women but may face usability issues that hinder their sustained use of the technology (Palau-Saumell et al., 2019). This indicates the importance of understanding the demographic characteristics to properly address the challenges and preferences of the target population.

❖ Social Factors

The acceptance of new digital technologies or innovative ideas is significantly affected by social factors. Peer influence, social media, family, and community involvement all play a crucial role in shaping widespread user acceptance (Daka & Phiri, 2019; Sohn & Kwon, 2020). For example, the sharing and recommending of new technologies on popular social media platforms can exert considerable social pressure and contribute to gaining a wider user acceptance base. This demonstrates the substantial impact of social factors on the widespread acceptance of technologies.

❖ Facilitating Conditions

Implementing new digital solutions and gaining user acceptance requires several important facilitating conditions (Sohn & Kwon, 2020). These conditions encompass various factors, including the availability of a reliable internet connection, access to essential data, and the possession of smart devices that allow for seamless interaction with the new digital solution (Asastani et al., 2018; Ammenwerth, 2019). Moreover, the provision of facilitating resources such as training and technical support plays a significant role in helping users embrace and utilize the solution (Asastani et al., 2018; Ammenwerth, 2019). This makes it crucial to consider these facilitating conditions when introducing new technology to a population to ensure inclusivity.

❖ User Interface/ User Experience.

The user interface and user experience are crucial factors that determine the user acceptance of digital solutions. Sudirjo et al. (2024) affirm that an intuitive and user-friendly interface enhances user acceptance by making it easier for users to interact with the application (Miya & Govender, 2022). Furthermore, incorporating accessibility features for users with disabilities can greatly improve the usability of the application for individuals with special needs, allowing them to participate more fully. A positive user experience also contributes to higher user satisfaction and broader acceptance of the application (Sudirjo et al., 2024; Miya & Govender, 2022). Hence, it is essential to invest in designing and optimizing the UI/UX of a platform to ensure wider acceptance.

❖ Psychological Aspects.

Psychological aspects such as trust and security are significant factors that influence people's willingness to adopt new technologies (Roberts et al., 2021). Users often have concerns about the privacy and security of their data when it comes to adopting new technologies. In addition, their previous experiences and attitudes toward a particular technology also influence their decision to

adopt it (Roberts et al., 2021). This makes it essential to prioritize building trust and implementing strong security measures on new digital solutions, to gain broader user acceptance among users.

Table 2. 1: Summary of Factors Affecting User Acceptance of New Technologies

Influencing Factors	Categories	
Perceived Usefulness	- Benefits of the technology (Davis, Granić & Marangunić, 2024).	
Perceived Ease of Use	- User-friendly interface (Wijaya & Pattipeilohy, 2023).	
Demographics Characteristics	- Age - Gender - Employment - Ethnicity - Language	- Education - Marital Status - Religion - Household size (Palau-Saumell et al., 2019; Mannheim, et al., 2023).
Facilitating Conditions	- Access to smart devices - Costs of data - Technical support	- Digital literacy & Training - Reliable internet connection (Asastani et al., 2018; Ammenwerth, 2019).
Social factors	- Peer influence - Family influence - Social media - Traditions & cultural beliefs	- Community support - Public perceptions - Word of Mouth - Social Norms (Daka & Phiri, 2019; Sohn & Kwon, 2020).
Psychological factors	- Trust and security - Prior experience with tech (Roberts et al., 2021).	- Anxiety about technology - Personal Innovativeness (Roberts et al., 2021).

2.2.2 Barriers & Strategies to Acceptance

The factors that affect user acceptance provide a solid basis for identifying potential barriers that may lead to low user acceptance of technologies. Moreover, these factors can be utilized to develop high-level strategies to improve user acceptance. Table 2.2 provides an overview of common barriers and solutions to achieving acceptance, derived from the factors that affect user acceptance.

Table 2. 2: Common Barriers & Strategies to User Acceptance

Common Barriers	Strategies & Solutions
Technical challenges with the software. This includes difficult user interface & overall performance of the system.	Improve system reliability, performance & user interface.

Lack of responsiveness to user needs, deeming the system as useless.	Ensure the system is responsive to user needs
Lack of trust & Security Concerns	Improve security & conduct awareness campaigns.
High Costs	Implement strategies to improve access to the system for users who cannot afford it.
Social resistance	Build community trusts
Digital illiteracy	Offer user training & strategies for digital literacy

Overall, it is essential to thoroughly consider both internal and external factors that can shape how users perceive and embrace new technologies. External influences, such as facilitating conditions, social factors, cultural aspects, and demographic considerations, all play a significant role in shaping user acceptance (Table 2.1). At the same time, internal factors such as the UX, UI, and functionalities of the technology need to be carefully designed to meet the specific needs and preferences of users. It is equally vital to ensure that users understand the benefits of the technology so they can recognize its value and usefulness to enhance user acceptance (Table 2.1). Therefore, gathering user feedback and involving them in the evaluation process of technologies can help identify context-specific barriers to adoption and strategies to boost user acceptance (Table 2.2).

A rapidly expanding area of interest is the development and widespread user adoption of advanced e-commerce platforms. These platforms play a crucial role in boosting business profitability, shaping user experiences in online shopping, and driving economic and social advancement (Turban et al., 2018). Exploring how users perceive and embrace e-commerce platforms can provide valuable insights into the factors that influence their use (Verkijika, 2018). Therefore, research on user acceptance of e-commerce platforms is critical for gaining a deeper understanding of the elements that encourage widespread adoption and effective use of these platforms.

2.3. E-Commerce Platforms: The Death of Brick-and-Mortar Stores.

The rise of e-commerce platforms has sparked debates in academic circles. Various studies have presented differing viewpoints on the use of these platforms, stirring discussions on whether their advantages outweigh the disadvantages. Mahmood (2023) expressed concerns about the impact of these platforms, labeling them as the "Death of Brick-and-Mortar Stores" and suggesting that e-

commerce platforms pose a threat to the existence of physical stores, potentially leading to substantial job losses. In contrast, Costa & Castro (2021) contend that these platforms offer significant benefits, such as expanded market reach, improved delivery systems, increased sales, and unparalleled convenience for customers. Rather than being viewed as a competitive force, these platforms should be seen as a source of empowerment that complements physical stores. Thus, this Section delves deeper into e-commerce applications, exploring their common features, different categories, and the potential benefits they could bring to overall business operations.

E-commerce platforms are digital platforms that have transformed the world of online commerce. These platforms are IT solutions that empower businesses to create, operate, and manage online marketplaces (Taher, 2021). They typically feature common functionalities such as catalog, shopping cart, checkout capabilities, payment systems, order, and profile management (Figure 2.1)

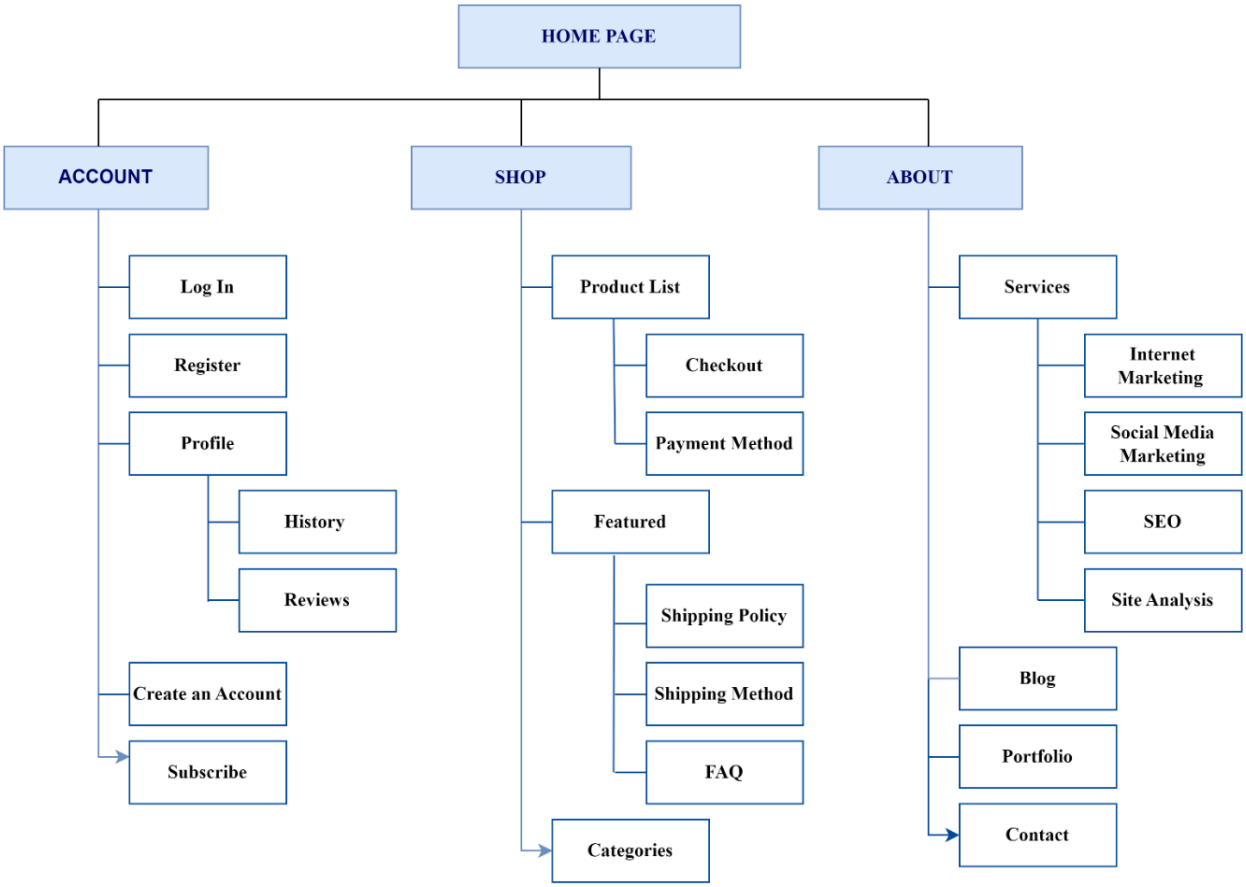


Figure 2. 1: The Structure of E-Commerce Platforms

2.3.1 Categories of E-Commerce Platforms

E-commerce platforms have become increasingly popular in the modern era. These platforms include prominent e-commerce platforms such as Amazon, eBay, and Alibaba, which make it easy to buy and sell goods and services online (Rukanova et al., 2021). E-commerce platforms can be classified based on different criteria, such as business model, target audience, functionality, and technology stack. Some platforms specialize in selling specific products or services, while others focus on a particular geographic region or demographic. Table 2.3 shows an overview of some of the different categories of E-commerce platforms that have gained popularity over the years:

Table 2. 3: The Categories of E-commerce Platforms

Category	Description
Business to Consumer (B2C)	E-commerce involves transactions between businesses and individual consumers (Taher, 2021).
Consumer to Consumer (C2C)	E-commerce involves transactions between individual consumers (Taher, 2021).
Consumer to Business (C2B)	This involves transactions where consumers sell their products or services to businesses, common in the freelance industry, where individuals offer their services to businesses on a project-by-project basis (Beyari, 2021).
B2B (Business-to-Business)	E-commerce involves transactions between two businesses. For instance, manufacturers sell their products to wholesalers (Beyari, 2021).
B2G (Business-to-Government)	Businesses that offer goods and services to the government (Taher, 2021).
G2B (Government-to-Business)	E-commerce platforms that the government uses to sell goods and services to businesses. For instance, auctions and tenders (Pinem et al., 2018).
G2C (Government-to-Consumer)	Government e-commerce platforms that provide goods and services to consumers. For instance, online tax filing.
Subscription-based E-commerce	E-commerce platforms that offer goods and services for a recurring fee on subscription. For instance, popular streaming sites such as Netflix (Gladilina et al., 2023).

2.3.2. Benefits of E-Commerce Platforms

E-commerce platforms offer a plethora of benefits for both businesses and consumers (Figure 2.2). They have revolutionized how consumers engage with businesses, providing unparalleled convenience, efficiency, and access to the global market, all from the comfort of their homes (Tran, 2021). Moreover, the surge in globalization, internet penetration, and digital technology has

fostered an exceptionally conducive environment for the exponential growth of e-commerce platforms, establishing them as the dominant form of commerce. Their impact on enterprise operations cannot be overstated, and the specific advantages they offer are further explored below:

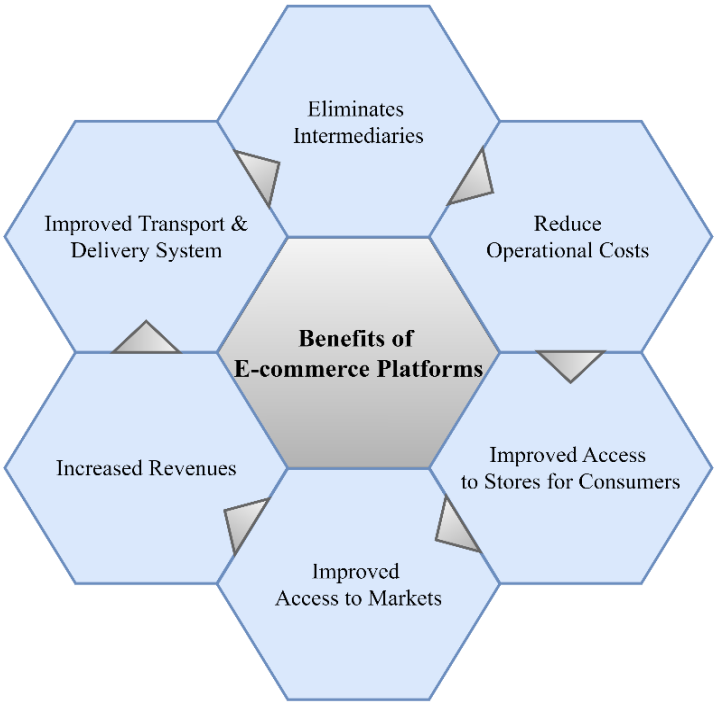


Figure 2. 2: The Benefits of E-commerce Applications.

- **Access to Markets:** E-commerce platforms offer businesses the opportunity to reach a global audience, enabling enterprises to transcend geographical limitations and reach customers worldwide. Similarly, consumers can take advantage of this global reach to access international markets, compare prices, and find better deals (Jain, & Arya, 2021; Tran, 2021).
- **Reduces Costs**: Using e-commerce platforms helps minimize or eliminate various fixed costs typically associated with operating and maintaining physical stores (Rukanova et al., 2021).
- **Transport & Delivery System:** E-commerce platforms provide customers and Businesses with a transport and delivery system that offers the convenience of swift and efficient delivery.
- **Improved access to Stores:** E-commerce platforms have improved access to stores giving customers the ability to shop 24 hours a day, 7 days a week (Rukanova et al., 2021).
- **Eliminate Intermediaries:** E-commerce facilitates direct communication between customers and businesses, eliminating the need for intermediaries.

Overall, e-commerce platforms have experienced widespread adoption across a diverse range of industries. This includes sectors such as retail, manufacturing, food and beverage, automation, education, finance, beauty and personal care, real estate, and tourism. This trend has also permeated the healthcare industry, with a notable increase in popularity for both business-to-consumer (B2C) sales and subscription-based services. These platforms offer an extensive array of products and services, ranging from fitness items to pharmaceuticals and equipment. Notable players in this arena include Healthline and MyFitnessPal (Griffin, 2023). Moreover, the digital media and entertainment sector has leveraged e-commerce, frequently utilizing subscription-based models to provide continuous access to digital content (Beyari, 2021). The agricultural industry is swiftly integrating e-commerce platforms into its operations as well (Sahu et al., 2024), highlighting the pervasive adoption of e-commerce across a wide spectrum of industries.

2.4. Agricultural E-commerce: A Viable Solution or Just a Marketing Hype?

The emergence of agricultural e-commerce has significantly transformed the agricultural industry. These platforms are specialized software platforms that cater to the online buying and selling of agricultural products and services. They encompass a wide range of services including purchases of crops, livestock, seeds, fertilizers, pesticides, and machinery. Key features of agricultural e-commerce platforms comprise extensive product catalogs displaying available items and services, complete with detailed descriptions and pricing information (Huang et al., 2020). In addition, they facilitate online ordering and payment systems, efficient delivery methods, order tracking, customer reviews, and ratings, as well as customer support (Huang et al., 2020). These features are vital for the successful operation and user experience of any agricultural e-commerce platform.

2.4.1. Successful Factors of Agriculture E-commerce Platforms

Agricultural platforms have proven to be highly beneficial for enterprises in the agricultural sector. They provide the convenience of accessing a range of agricultural resources and information on a single centralized platform (Jain, & Arya, 2021; Tran, 2021). Moreover, the development of efficient transport and delivery systems has been a significant benefit, enabling businesses to transport their products more easily and cost-effectively (Jain, & Arya, 2021; Tran, 2021). However, there is evidence of failed agricultural e-commerce ventures, attributed to reasons such as poor user experience, weak value proposition, operational inefficiencies, ineffective marketing,

and logistical challenges. Despite the potential benefits, it is crucial to explore the success factors that contribute to the viability of agricultural e-commerce platforms, as illustrated in Figure 2.3:

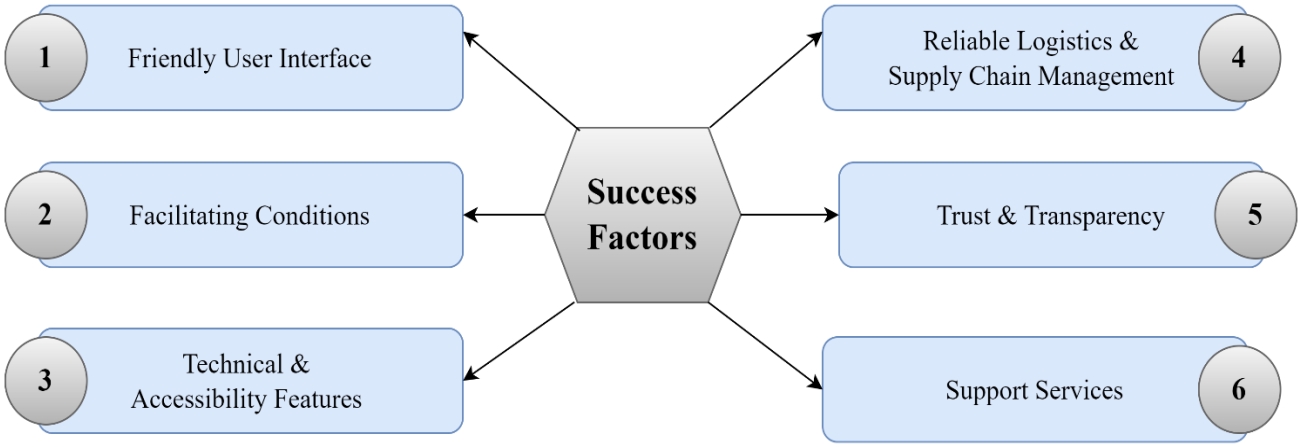


Figure 2. 3: Summary of Agricultural Ecommerce Successful Factors

- **Facilitating Conditions**: It is crucial to take into account the facilitating conditions that enable users to engage with applications effectively. This involves ensuring access to smart devices, internet connectivity, and providing digital literacy and training (Han, Xiong & Zhao, 2022).
- **User-Friendly Interface:** A user-friendly interface is crucial for the acceptance of a platform. Even if a platform has numerous benefits, if the user interface is complex and difficult to navigate, it may not be well-received by users (Wijaya & Pattipeilohy, 2023).
- **Trust and Transparency:** Software platforms need trust and transparency to gain wider user acceptance (Roberts et al., 2021). Trust issues often arise with online payment systems, so it's important to include elements like user testimonials, rating systems, and certification to foster trust. This transparency is crucial for building user confidence in software platforms.
- **Reliable Logistics and Supply Chain Management**: E-commerce platforms must ensure that they have a dependable transportation and delivery infrastructure in place to guarantee fast and efficient delivery of products and services to their customers (Morepje et al., 2024).
- **Support Services:** Agriculture e-commerce platforms can be challenging for first-time users, especially for suppliers managing catalogs, marketing, and distribution services on the system. Thus, there should be support that offers assistance to users (Morepje et al., 2024). This support can be in the form of tutorials, chatbots, and help desks.

❖ **Accessibility Functionalities:** Incorporating accessibility functionalities is crucial to assist people with disabilities in using the technology with ease and fostering inclusion while increasing user acceptance (Barbosa et al., 2023).

2.4.2. Challenges in Agricultural E-Commerce Platforms

The agricultural sector faces various challenges that impede the success of agricultural e-commerce platforms (Figure 2. 4). The nature of the industry presents limitations on the scope of services that can be provided. Chatterjee (2019) highlighted the obstacles associated with selling and marketing livestock products on agricultural e-commerce platforms, particularly in areas such as distribution and transportation. Similarly, Pugara & Pradana (2022) expressed concerns about e-commerce for agricultural products due to the perishable nature of these goods, which presents challenges in production, distribution, and transportation. This has made it difficult for small and medium enterprises (SMEs), particularly those in rural areas, to engage in e-commerce, leading to popular e-commerce platforms focusing more on providing information and resources rather than raw agricultural products (Pugara & Pradana, 2022). Thus, this Segment explores the potential challenges to ensure effective sustainable solutions for SMEs in the agricultural industry.

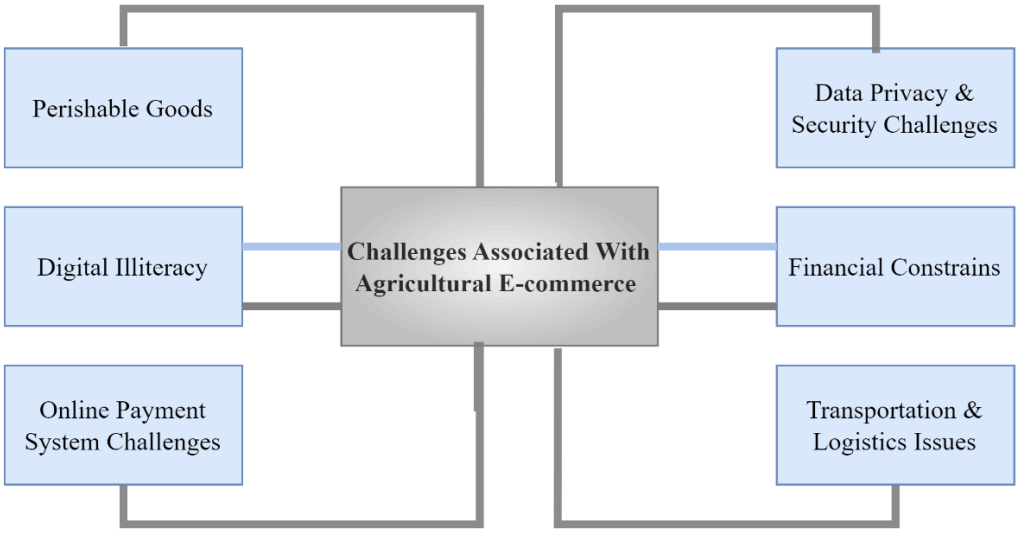


Figure 2. 5: An Overview of the Challenges Associated with Agricultural E-commerce Applications.

a) **Perishable Goods**: Agriculture involves handling perishable items such as dairy, fruits, and vegetables, which are commonly sold on agricultural e-commerce platforms. However, managing storage, packaging, and transportation can be very challenging, particularly for

farmers in remote areas. The risk of spoilage is high, necessitating a quick turnaround from harvest to delivery to uphold good service quality on such platforms (Banerjee et al., 2019).

b) **Transportation & Logistics:** The transportation and delivery framework integrated into e-commerce platforms could raise costs, particularly in rural areas facing infrastructure challenges. Furthermore, it is crucial to have an effective transportation and logistics system due to the perishable nature of agricultural products. This becomes challenging in rural areas with infrastructure issues that can cause delays in delivering goods to their intended destinations. These challenges can impact the overall success of agriculture platforms (Pugara & Pradana, 2022).

c) **Digital Illiteracy:** Successful use of e-commerce requires users to have digital knowledge and skills to operate e-commerce. This might be a problem, especially in rural areas with high levels of educational and digital illiteracy in rural areas (Figure 2. 6).

d) **Online payment system:** Establishing a reliable and secure online payment system might be challenging, especially in rural areas with limited banking systems and high concerns about secure payments and fraud (Altarturi et al., 2023).

e) **Financial constraints:** Providing enough capital to ensure farmers have the necessary funds to run, maintain, and provide quality services on the platform is also a pressing challenge.

Overall, there are a myriad of benefits that e-commerce platforms offer to the agricultural sector. These advantages include enhanced access to markets, improved marketing, fair pricing mechanisms, improved transportation delivery systems, and increased accessibility to online stores. Although there are challenges that impede the successful implementation of such platforms, the overall advantages outweigh the difficulties, highlighting the necessity for further research in this area. Moreover, the potential of e-commerce platforms extends beyond mere economic gains for businesses as they also yield significant socio-economic benefits for marginalized groups. Notably, women from rural areas, who are active participants in the agricultural sector, stand to gain substantially from e-commerce platforms. Therefore, it is imperative to conduct more studies focusing on these platforms and their integration in rural settings, particularly to empower rural women who are constantly subject to diverse forms of gendered discrimination in rural areas.

2.5. Rural Settings: A Comprehensive Overview

The contrast between rural and urban areas is evident in several key aspects. Rural regions are distinguished by their low population density, widely scattered housing, and strong reliance on natural resources for livelihoods (Bennett et al., 2019). In contrast, urban areas are marked by high population density, economic activities centered around industry and services, and advanced infrastructure compared to rural regions (Wei et al., 2018). The significant disparities between these two types of areas encompass population density, economic pursuits, and social dynamics. Therefore, this Section delves deeper into the distinctive characteristics, challenges, and opportunities present in rural communities as highlighted in Figure 2.5.

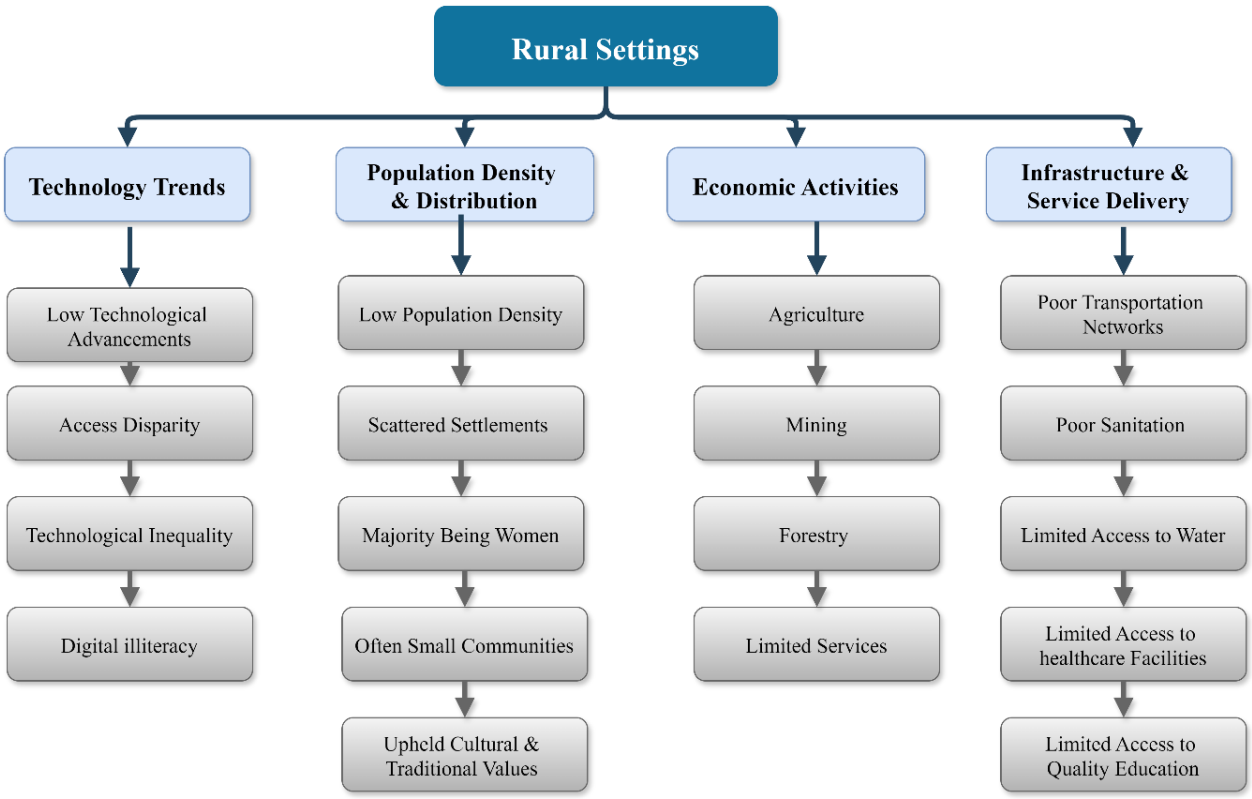


Figure 2. 7: A Comprehensive Overview of Rural Settings

2.5.1. Population Density & Distribution

The rural areas are characterized by low population density and typically consist of small communities and scattered settlements rather than densely populated neighborhoods. Moreover, women constitute much of the population residing in these areas (Bennett et al., 2019). These communities often have strong communal ties and intact social norms (Bennett et al., 2019).

2.5.2. Economic Activities

The economy of rural areas is heavily reliant on natural resources such as mining, forestry, agriculture, and fishing. Rural communities are home to a significant portion of mining activities, including gold, diamonds, coal, and other resources (Flora, 2018). Moreover, rural areas boast ample space for subsistence and commercial farming of crops, livestock, and other agricultural products (Flora, 2018; Patil & Babus, 2018). While these natural resource-based activities dominate the rural economy, there is also a growing body of literature that recognizes other economic activities in rural areas, including transportation services, healthcare, education, and electricity (Asher & Novosad, 2020; Yu et al., 2024). However, these non-natural resource-based economic activities are generally less prevalent in rural areas compared to urban settings.

2.5.3. Infrastructure & Service Delivery

Rural areas frequently suffer from inadequate infrastructure and service delivery. They often have limited road networks, with some roads being poorly constructed or poorly maintained (Shamdasani, 2021). In addition, rural areas often face challenges in accessing necessities such as water, healthcare, education, sanitation, and electricity (Hambly & Rajabiun, 2021).

2.5.4. Technological Trends

There is a substantial digital divide that exists between urban and rural areas. Rural communities often lag behind in digital transformation, lacking access to affordable technologies that would enable them to engage with and benefit from new digital advancements (Rotz et al., 2019; Lembani et al., 2020). Studies have demonstrated that rural populations have not fully reaped the benefits of technological progress, further exacerbating the disparity in access to and utilization of technology between urban and rural areas (Rotz et al., 2019; Lembani et al., 2020).

Overall, the disparities between urban and rural areas are quite distinct. Economic activities in rural regions are primarily centered around natural resources, with minimal service-based activities, while urban areas rely more heavily on industry and services. In addition, rural areas encounter various infrastructure and service delivery challenges, leaving a significant portion of the population lacking essential amenities such as water and sanitation, electricity, education, and proper healthcare facilities. Moreover, these communities often struggle to attract investment due to inadequacies in necessities such as proper roads and transportation, leading to isolation. Technological advancements are also limited, contributing to a clear digital divide between rural

and suburban areas. These differences emphasize the contrasting realities faced by women in rural areas compared to their urban counterparts. As a result, interventions aimed at empowering women in rural areas must consider the surrounding resources, livelihood activities, and challenges unique to these settings, requiring a divergence from approaches tailored for urban women.

2.6. Women Residing in Rural Settings

Literature provides consistent profiles of women living in rural areas. Most women have little to no formal education, often limited to primary or secondary educational levels (Keats, 2018). They make up most of the rural population as their husbands typically migrate to urban areas for employment. These women are actively involved in primary economic activities such as crop farming, livestock rearing, and marketing in the agricultural sector (Onyalo, 2019). Their secondary economic activities may include handicrafts, weaving, and other small-scale entrepreneurship. In addition to their economic activities, they are responsible for the second shift at home, which includes household duties such as caring for their husbands, children, and sometimes elderly or extended family members (Folbre, 2019). Despite their efforts, these women face various challenges that hinder their full social and economic development in rural settings.

2.6.1. Social Constraints

Studies indicate that women in rural areas face significant social constraints limiting their social development. Sultana (2018) argues that women in rural areas face fewer educational opportunities compared to males limiting their chances of social mobility. This viewpoint is further corroborated by Panda (2018), who highlights that many young girls and women in rural areas lack access to basic education compared to their urban counterparts trapping them in vicious cycles of poverty. International agreements such as Sustainable Development Goals 4 and 5 aim to address these disparities and empower young girls and women by promoting gender equality (Baffoe et al., 2021). Despite this progress, the illiteracy rate among women remains high, with many pursuing basic education rather than tertiary education. Hence, there is a pressing need for targeted development strategies to ensure that women in rural areas are not left behind.

Healthcare issues are prevalent among women in rural settings. These women experience high rates of childbirth and child mortality due to inadequate access to healthcare facilities and a lack of contraceptives (Keats, 2018; Silumbwe et al., 2018). In addition, they often encounter obstacles

in exercising their rights to birth control due to prevailing patriarchal norms that discriminate against them (Marston, 2018; Sanders & Jenkins, 2022). This leaves women grappling to provide for their families, resulting in longer hours of reproductive labor instead of productive labor.

2.6.2. Cultural Constraints

Cultural limitations further hinder the progress of women in society. These obstacles manifest in the form of patriarchal systems, inheritance laws, and cultural norms related to marriage. In many rural areas, patriarchal systems still prevail, granting men decision-making power over productive resources, households, and the community, while women have limited influence (Akinola, 2018). Moreover, customary laws in these settings often favor men in inheriting property and productive resources, leaving women vulnerable to poverty (Akinola, 2018). Cultural norms and marriage practices, such as early and arranged marriages, often restrict young women's access to education and employment opportunities, as they are expected to prioritize childbearing and reproductive responsibilities (Baffoe et al., 2021). Hence, it is essential to develop solutions tailored to address the needs of this population to ensure that women benefit from such interventions.

2.6.3. Economic Constraints

Women often face significant constraints in accessing economic resources compared to men. These challenges include restricted access to land, credit facilities, agricultural inputs, and job opportunities (Chigbu, 2019). In response to these issues, programs such as the Land Redistribution Programme (LRP) and the Reconstruction and Development Program (RDP) were implemented as tools of empowerment in South Africa. Although these initiatives have contributed to advancements for rural women by assisting them in establishing businesses, female farmers in rural settings continue to encounter diverse challenges that impede their genuine economic empowerment (Chigbu, 2019; Dlamini, 2021). These challenges are discussed in detail below:

- **Lack of Access to Markets**

women involved in agriculture and produce sales often face significant difficulties in finding buyers for their produce due to limited market access. These challenges are compounded for rural women who typically operate in remote areas that are difficult for potential buyers to reach (Doss, 2018). Furthermore, many of these areas lack basic infrastructure, which further hinders their ability to effectively engage with larger markets (Doss, 2018). This significantly limits the financial independence of rural women in terms of their ability to sell agricultural products.

- **Lack Of Credit & Agricultural Inputs**

Rural women often lack access to credit and agricultural inputs (Doss, 2018). This lack of access has resulted in women being unable to fully participate in agricultural activities, generate income, or exercise economic autonomy after land acquisition. Moreover, women often fail to get credit from the Department of Land Reform due to their inability to meet the minimum requirements of the funds, such as attending mentorship programs. This is especially true when they must compete with their male counterparts. Thus, effective policies, programs, and other interventions to address the economic challenges faced by women in the aftermath of land acquisition are crucial.

- **Digital Divide**

Research shows that people residing in rural often lack access to digital tools (Sinha, 2018; Kerras et al., 2022). This makes women in agriculture also face significant challenges in marketing and selling their produce, which further complicates the task of expanding their businesses and increasing their income. To overcome these challenges, it is crucial to bridge the digital divide and provide women in agriculture with access to education and digital tools. Ultimately, bridging the digital divide and providing women in agriculture with access to education and digital tools is essential to ensuring the success of female farmers in the sector (Sinha, 2018; Kerras et al., 2022).

Overall, Land redistribution programs have been implemented in most parts of the world to address economic disparities, especially among rural women. However, simply transferring land titles to these women is not enough to ensure that they can fully capitalize on their land holdings. To enable them to become successful economic agents, it is crucial to equip women with the necessary tools, knowledge, and opportunities. Technology-driven initiatives can be customized to the specific needs and challenges that female farmers in rural areas face, with the potential to amplify the impact of land ownership and help these women realize their economic potential. Despite these benefits, previous research on LRP has primarily focused on the impact of land redistribution programs alone, with limited attention given to the potential of technology to address the economic struggles rural women in this context face (see Figure 2.6). Therefore, it is critical to explore and implement tailored technological interventions such as e-commerce applications, that can help rural women overcome economic barriers and become successful in their economic endeavors.

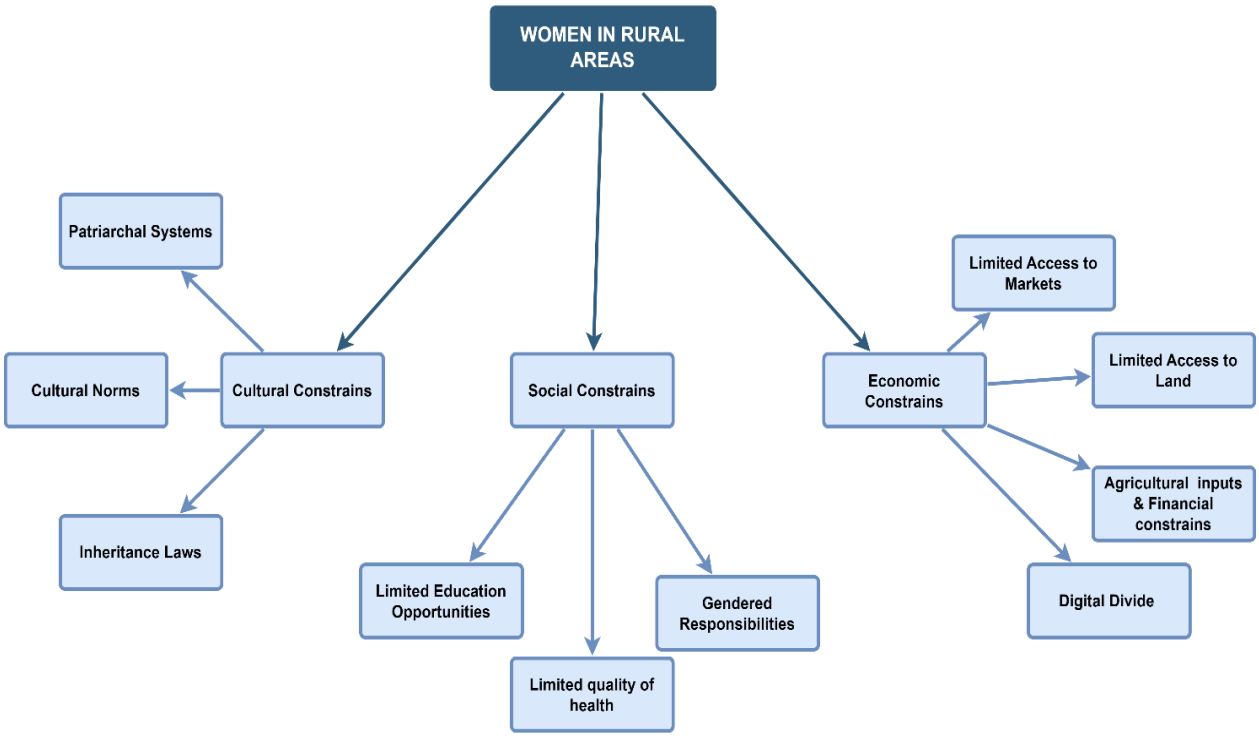


Figure 2. 8: Challenges Women Face in Rural Settings

2.7. Technology Acceptance in Rural Settings: Lessons from Case Studies

Technological advancements offer numerous opportunities for advancing the social and economic empowerment of women in rural areas. It offers online access to high-quality education, e-commerce services, employment prospects, and healthcare resources (Golmohammadı, 2018; Upadhyaya, 2024). Despite these opportunities, women in rural areas face several challenges that impede their access and ability to benefit from these technologies (Theis et al., 2018; Chatterjee et al., 2020). This Section delves into the acceptance of technology by users in rural settings. It explores case studies from literature that explored the acceptance of technologies, such as e-commerce platforms, while also identifying patterns and barriers that hinder their adoption in rural settings. Furthermore, the Section examines the shortcomings of established agricultural platforms to identify areas for improvement and promote broader user acceptance in rural areas, especially among women.

2.7.1. The User Acceptance of E-Commerce Platforms.

Adopting technology in rural areas can be challenging due to various factors. Rush, et al. (2022) researched the user acceptance of a telehealth platform designed to improve healthcare services

and efficiency for the elderly in rural areas. The study found mixed results regarding the overall acceptance of the application, with a significant number of participants pointing out challenges using the platform and expressing concerns about the usefulness of the application. The research findings emphasized the need to consider both demographic information and technological simplicity when designing and implementing digital solutions (Rush et al., 2022). Similarly, Hossain et al., (2019) investigated the user acceptance of an e-health platform in rural areas and found several factors that affected the user acceptance of the application. This included factors such as social reference, access to smartphones, attitude towards the system, and monthly expenditure. The study's findings emphasized the significance of considering external factors that may impede user acceptance, rather than solely focusing on the technology's functionality (Hossain et al., 2019). These studies indicate that designing and implementing technology solutions in rural areas requires different approaches compared to urban areas, highlighting the need to consider the specific facilitating conditions, user challenges, needs, and preferences that are unique for different demographic settings (Hossain et al., 2019; Rush et al., 2022).

Sachitra & Ellawala (2021) explored the implementation of a B2B e-marketplace for the agriculture sector. This platform is essentially an e-commerce platform designed to assist farmers in rural areas in overcoming supply chain challenges. The findings revealed that farmers have shown interest in adopting the platform and understood the benefits of the system. However, barriers such as transportation, stable internet connection, funding to establish the platform, and digital illiteracy were identified as major obstacles hindering widespread adoption of the application (Sachitra & Ellawala, 2021). This further emphasizes the need to address external factors that might hinder users from interacting and engaging with platforms in rural areas.

2.7.2. User Acceptance of E-Commerce Platforms Amongst Rural Women

There are varying levels of acceptance of e-commerce platforms among women in rural areas, with both successful and failed cases. In India, rural women witnessed the inception and growth of the Rural Distribution Network (RUDI) platform (Sinha, 2018). The RUDI platform is a basic e-commerce platform that aims to facilitate the buying and selling of agricultural products by women in rural who are farmers themselves. The platform was designed to empower women to earn a livelihood by enabling them to sell their products directly to customers. However, the platform had moderate acceptance among its intended users initially. One of the main challenges the

platform faced was logistics issues. This challenge led to delays in product delivery. In addition, the platform required a lot of user training so that the users could get used to it (Sinha, 2018). Despite these challenges, the RUDI platform has continued to grow and has become an asset for rural women farmers in India fostering social and economic development in rural communities.

McKenzie & Mura (2020) wrote about a mobile information access platform aimed to empower women traders in the East African region. The study documented the development of a mobile application called 'Sauti East Africa' that was specifically designed for cross-border traders, predominantly women. The findings of the study indicate that the platform was highly accepted by users due to its user relevance (McKenzie & Mura, 2020). The direct user relevance of the platform was one of the key factors responsible for its success. Overall, the study highlights the importance of considering the needs of the target audience while developing technology solutions.

Zhang (2024) examined the development of e-commerce hubs in Alibaba's Taobao village. The platform aims to support rural villages in setting up online markets in 2017. The initiative was successful overall, but user acceptance varied among rural women (Zhou, Li & Wang, 2018; Zhang, 2024). Those with moderate to high digital literacy and entrepreneurial support had a higher user acceptance rate compared to those with low to no digital literacy (Pei, Chen & Li, 2024; Zhang, 2024). It was also noted that high levels of infrastructure and training led to higher acceptance among women. This suggests that digital literacy and support may play a significant role in determining the success of such technology initiatives among women in rural areas.

2.7.3. E-Commerce Acceptance Among South African Rural Women

Research on the user acceptance of e-commerce platforms by rural women in South Africa is scarce. However, research indicates that mobile phones play a significant role in facilitating rudimentary e-commerce activities in South Africa (Ramsern & Baxodirovna, 2023). Social media platforms such as WhatsApp and Facebook are used to market products and communicate with customers. Table 2.4 shows the gaps in current e-commerce platforms that should be addressed.

Table 2. 4: Summary of the current gaps in existing E-commerce Platforms

Factors	Gaps & Limitations

Accessibility Features	-	Studies on General agriculture e-commerce platforms are constructed in foreign languages, which limits accessibility for local native speakers in rural areas (Cao et al., 2018).
Technical Features	-	Current platforms are not user-friendly for individuals with limited digital literacy and technological skills (Cao et al., 2018).
Facilitating Conditions	-	Offline availability is a significant issue, as these platforms overlook the challenges of users in rural settings.
Contextual Relevance	-	There are insufficient studies that are contextually relevant to rural settings. General e-commerce platforms do not cater to the unique local tastes and consumer behavior of users in rural areas, and they may not be responsive to their specific needs and preferences (Cao et al., 2018). - Cultural differences in various contexts also necessitate the development of platforms that are based on unique cultural contexts, which is not common in rural settings.
Application Evaluation	-	Most studies focus on the development of e-commerce solutions, implementing them through a top-down approach with a Lack of Application evaluation, which often leads to ineffective technology solutions.

Overall, women in rural areas face numerous cultural and socio-economic challenges that hinder their development. Technology offers new avenues to address the obstacles these women face and offer opportunities for personal development. However, women face several technical and external barriers that hinder the adoption of technology. These challenges include poor infrastructure, limited access to smart devices, economic barriers, digital illiteracy, cultural norms, privacy and safety concerns, the lack of local language content, and overwhelming digital content. Hence, Further studies are required to evaluate the acceptance of platforms among rural women, identify barriers to adoption, and identify solutions to promote their acceptance among users.

2.8. Summary

Overall, this Chapter has addressed the difficulties experienced by women in rural areas. Despite playing a vital role in agriculture, women face challenges such as limited access to markets, credit, agricultural resources, and exclusion from digital technologies. While some studies have investigated the potential impact of online agricultural platforms in empowering women, further research is needed to understand how these digital interventions are received by rural women. The

Chapter also highlighted the importance of developing technologies tailored to the needs of female farmers. The following Chapter discusses the Technology Acceptance Model as a valuable framework for predicting how these innovations will be adopted among the intended users.

Chapter 3: Theoretical Framework

3.1. Introduction

Integrating theoretical frameworks in research plays a crucial role in ensuring the integrity and significance of the study. Theoretical frameworks serve as the foundation for establishing and guiding the research methodology (Collins et al., 2018). They are useful in selecting appropriate data collection techniques and research instruments, ensuring that the methodology aligns with the theoretical assumptions underpinning the research. Moreover, a strong theoretical foundation adds credibility to the study, signifying that it is rooted in sound theoretical principles (Collins et al., 2018). Hence, this Chapter delves into the theoretical foundations that form the basis of the argument in this study. This Chapter presents four Sections. Section 3.2 contains information on the Technology Acceptance Model. Section 3.3 provides details on alternative theoretical frameworks that could be relevant to this study. Section 3.4 justifies the use of TAM over other options. Finally, Section 3.5 presents a summary of the entire chapter highlighting key insights.

3.2. Technology Acceptance Model (TAM)

TAM is a well-known framework used to predict the user acceptance of new technologies. It was developed by Fred Davis in 1986 (Davis, 1989; Bryan & Tranos, 2021). This framework consists of five key constructs: perceived usefulness (PU), perceived ease of use (PEOU), attitudes toward using (ATU), behavioral intentions (BI), and external factors as illustrated in Figure 3.1.

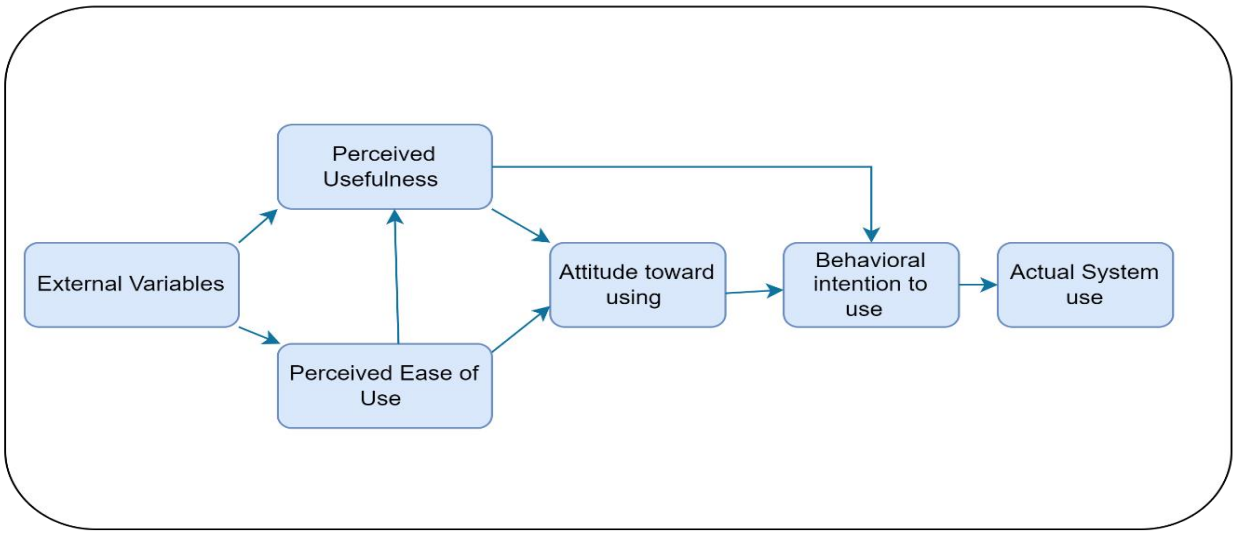


Figure 3. 1:Technology Acceptance Model

The technology acceptance model has evolved over the years. TAM 1, which is the foundational model, states that PU and PEOU can be used to predict technological adoption. These two factors influence attitudes toward a system and the behavioral intention, ultimately leading to actual use of the system (Davis, 1989). In 2000, Venkatesh and Davis introduced TAM 2, which extended TAM 1 by incorporating social and cognitive influences, including social processes, cognitive processes, and user experiences (Venkatesh & Davis, 2000). Later, in 2008, Bala and Davis developed TAM 3, which added determinants of PU and PEOU to TAM 2 (Venkatesh & Bala, 2008). Although TAM 1 is limited in its consideration of social and cognitive influences, this study chose this framework because it has been validated in numerous studies. Moreover, TAM 2 removes constructs such as ATU, which are deemed important in this study. Therefore, TAM remains suitable, offering a simple and uncomplicated framework that can be implemented within the time constraints of this study. The constructs of the model are explained below:

- Perceived Ease of Use (PEOU): This refers to how easy users find it to interact with a system, free of effort.
- Perceived Usefulness (PU): The degree to which users believe a particular technology will be beneficial to them, enhancing their efficiency or helping them achieve their goals.
- Attitude Toward Using (ATU): The positive or negative user's attitude toward using the new technology.
- Behavioral Intention (BI): The intention of the user to continue using the new technology in the future.
- External Factors: External factors include social factors, cultural factors, facilitating conditions, system characteristics, and organizational factors that can influence the user acceptance of new technologies.

3.3. Alternative Theoretical Frameworks

Various alternative theories have been used to guide research on user acceptance of technology applications. These include the Unified Theory of Acceptance and Use of Technology (UTAUT), the Digital Inclusion Framework, and the Diffusion of Innovations Theory (Marikyan & Papagiannidis, 2021; García-Avilés, 2020). Each of these frameworks provides valuable insights into the factors that shape how people embrace and use new technologies as explained below:

3.3.1 Unified Theory of Acceptance and Use of Technology: The UTAUT was developed by Venkatesh in 2003 (Chakraborty & Al Rashdi, 2018). It is a well-established model that aims to explain the factors influencing technology acceptance and usage. This theoretical framework integrates components from various earlier models, such as the TAM, Social Cognitive Theory (SCT), and the Theory of Planned Behavior (TPB) (Marikyan & Papagiannidis, 2021). The key constructs of this model include performance expectancy, which refers to users' belief in the technology's ability to enhance their performance, effort expectancy, which pertains to the ease of use, social influence, which signifies the importance of others' opinions on using the system, and facilitating conditions, which relates to users' belief in the availability of resources to support the use of the technology (Marikyan & Papagiannidis, 2021). This theory may be relevant to this study as it provides a framework for assessing the user acceptance of new technologies. Furthermore, it identifies factors that can either facilitate or impede their engagement with technology.

3.3.2. Digital Inclusion: The digital inclusion framework aims to create equal opportunities for individuals from marginalized communities to have access to and proficiently utilize digital technologies (Sharp, 2022). Its key components revolve around access, skills, motivation, and trust, emphasizing the need for confidence in the security and reliability of digital services. This framework is especially pertinent in addressing issues related to access, skills, and trust to ensure the acceptance of technology among rural populations living in poverty (Sharp, 2022).

3.3.3 The Diffusion of Innovations Theory: The Diffusion of Innovations theory was developed by sociologist Everett Rogers in 1962 (García-Avilés, 2020). This theory seeks to explain the process through which new ideas and technologies are adopted and spread through cultures. The key elements of this theory include the innovation itself (the new technology being adopted), communication channels (the means through which information about the new technology is spread), the time it takes for adoption to occur, and the social systems through which the new technology spreads (García-Avilés, 2020). This theory provides insights into the adoption of innovations among users and the patterns through which they diffuse across societies.

3.4. Justification of Using TAM

TAM has been widely used by researchers to examine user acceptance for many years. Despite criticism for its simplified focus on perceived usefulness and perceived ease of use, this framework

was selected for its simplicity and ease of application in measuring user acceptance (Chuttur, 2019). On the other hand, the Diffusion of Innovations theory focuses on the widespread adoption of innovations in society over time, which may present challenges in this study due to potential time and financial constraints (García-Avilés, 2020). This study aims to conduct a one-time user acceptance analysis of an e-commerce application, making TAM a more feasible option for measuring user acceptance of this application compared to the Diffusion of Innovations theory.

Another alternative, the UTAUT model, encompasses a wide spectrum of factors influencing user acceptance of technology. However, critics argue that the broader range of constructs covered in the framework can make the model more complicated to implement compared to simplified theories like TAM, thus making TAM a more appealing choice for this study (See Table 3.1).

Table 3. 1: Summary of Theoretical Frameworks

Framework	Strength	Limitations & Justification
- **Diffusion of innovations**	- Provides deep insights into the adoption of innovations in society over time.	- Studying user acceptance over time poses challenges for this study given the potential time and financial constraints, Making TAM a more favorable option for carrying a once-off user acceptance evaluation.
- **UTAUT**	- Combines elements from multiple models providing a comprehensive framework for studying user acceptance	- The framework then becomes too broad and possibly over-complicated for application. Whereas TAM provides a simple and implementable blue-print for evaluating user acceptance.
- **Digital Inclusion**	- Places focus on ensuring equitable access and use of digital tools for all.	- The theory often places too much emphasis on broader factors such as policy and infrastructure to address user acceptance and might overlook individual aspects. However, this study also seeks to make efforts toward ensuring equitable access and use of digital tools for women in rural areas, gain more insight into challenges that hinder adoption, and gather feedback to improve acceptance, making this model possibly complementary to TAM.

- **TAM**	- Has been widely used and validated in academia. - Offers simple guidelines for measuring user acceptance.	- Suitable and chosen for this study because of its simplicity, providing a clear construct for assessing user acceptance of new technologies within a short space of time. - The theory has been validated in many studies.

3.5. Summary

Overall, the Technology Acceptance Model (TAM) serves as the theoretical foundation in this study. This model enables the assessment of user acceptance through simple key constructs such as Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Use (ATU), and Behavioral Intention (BI). TAM offers a straightforward framework for testing user acceptance with potential users. While the study acknowledges other comprehensive frameworks like extended versions of TAM which is the UTAUT, their broad constructs might not be feasible for measuring user acceptance within the study's time constraints. Furthermore, TAM's simplicity provides an advantage, making it an appropriate model to guide this study's research methodology.

Chapter 4: Research Methods

4.1. Introduction

This Chapter presents the research design, and the methodology used in this study. The primary aim of the study was to assess the user acceptance of an agricultural platform designed to empower female farmers in rural areas. The Technology Acceptance Model was selected as the theoretical framework to guide the methodological design due to its relevance in defining key constructs such as Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Actual Use (ATU), Behavioral Intention (BI), and external factors that play a crucial role in evaluating and understanding the acceptance of new technologies. To accomplish this, a mixed methods approach, involving both qualitative and quantitative methods, was employed to gather both statistical and in-depth insights into the user acceptance of the agricultural e-commerce platform from the participants.

This Chapter covers twelve Sections. Section 4.2 offers an overview of the methods, while Section 4.3 delves into the research design. Section 4.4 provides a detailed description of the study area selected for data collection, and Section 4.5 outlines the target population. Section 4.6 covers the sampling techniques, while Section 4.7 discusses user training. A pilot study is presented in Section 4.8, and Section 4.9 delves into the data collection instruments and methods. Section 4.10 covers data analysis and techniques, and Section 4.11 focuses on data reliability and rigor techniques. Finally, Section 4.12 addresses ethical considerations, followed by a summary of the Chapter.

4.2. Research Methods & Design Overview

. The study utilized a convergent parallel mixed-method approach, incorporating both qualitative and quantitative methods. The targeted population included female farmers from Jeppes Reef as well as user acceptance specialists. The study utilized snowball and convenience sampling techniques (n=25 female farmers), and purposive sampling (n=5 user acceptance specialists) to recruit 30 participants. Within the sample of 25 female farmers, 5 participants were further selected for interviews using simple random sampling. The data collection instruments included surveys (n=20) and interviews (n=10) to assess the user's platform acceptance, with questions based on the TAM constructs. Inferential statistics (ANOVA), Descriptive statistics, and thematic analysis (Braun and Clarke’s six-phase method) were used to analyze and interpret the findings. A sample representative, Cronbach's Alpha, and a pilot study were used to ensure the quantitative validity &

rigor of the findings (Figure 4.1). While tools such as user training, interview pilot study, thick description, and direct quotes were used to ensure the qualitative rigor and credibility of the qualitative findings. The methods & justification are detailed below:

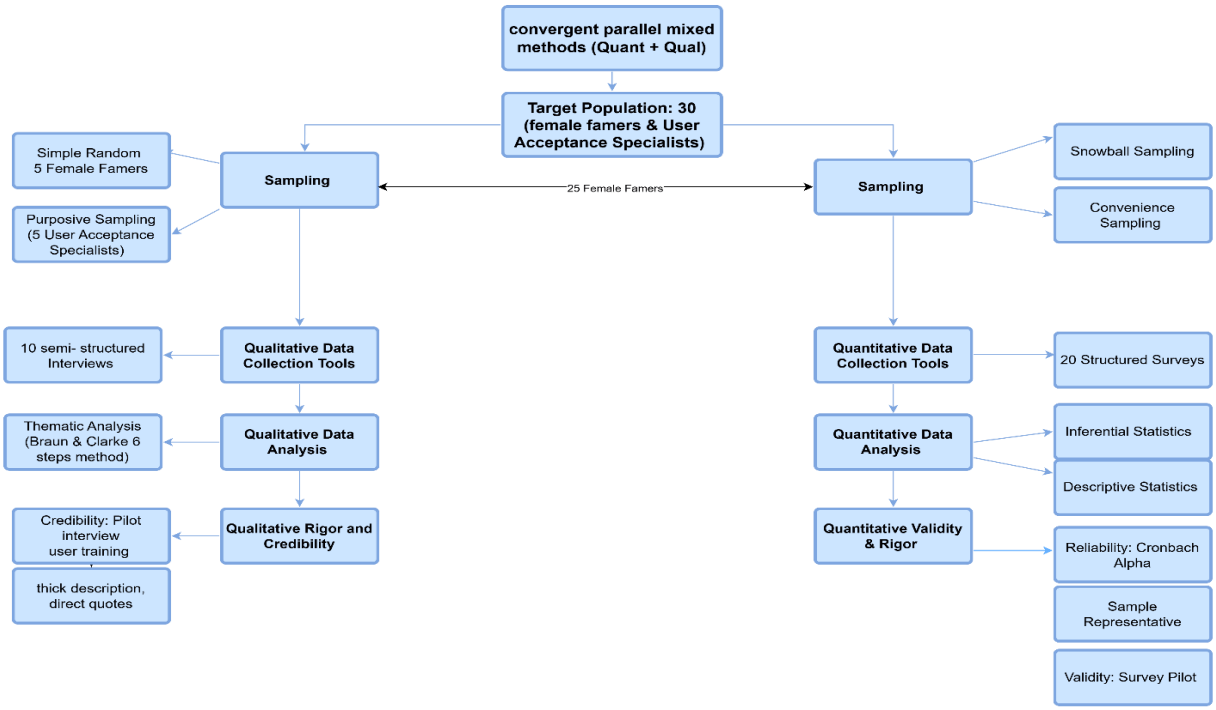


Figure 4. 1: Summary of Research Design and Methodology.

4.3. Research Design

This study adopted a convergent parallel design combining both quantitative and qualitative methods. The data was collected concurrently, analyzed separately, and then integrated in the interpretation of the results. This allowed the researcher to not only identify patterns (in the survey) but also gain insights into the reasons why those patterns occurred (through interviews). The researcher chose this approach to triangulate the findings and enhance validity. Furthermore, this study employed an exploratory research design, which is suitable for studies seeking to gain a broader understanding of a situation, phenomenon, or community (Mbaka & Isiramen, 2021. Similarly, one of the objectives of the study was to gain a comprehensive understanding of the user`s perceptions related to PU, PEOU, ATU, and BI, and to understand the challenges of low user acceptance in rural areas among women. The study further intended to develop strategies to overcome these challenges through a bottom-up approach. Therefore, the explorative research design and the convergent parallel design were used in this study.

4.4. Study Area

Jeppes Reef is a small rural community located in the Nkomazi Local Municipality within the Ehlanzeni District of Mpumalanga Province. It can be found at the coordinates of 25.7182° South, 31.4723° East. The village is strategically positioned near the Swati borders, serving as an important transit point between South Africa and the Kingdom of Eswatini (Figure 4.2). Jeppes Reef is home to primarily Swati people and plays a significant role in facilitating travel and trade between the two countries (Chawan, & Mohammad, 2022; Thwala, 2010). Due to its border location, Jeppes Reef thrives on economic activities, particularly trade and commerce, and serves as a hub for various services such as transportation, small-scale retailing, tourism, and agricultural production (Chawan, & Mohammad, 2022; Thwala, 2010). The women in the community are actively involved in small-scale farming and play a significant role in selling agricultural products as vendors on the busy streets of Jeppes Reef. However, they also face challenges, including limited access to markets, transportation issues, and a lack of technological resources, which hinder their efforts to establish successful farms. Moreover, they often fall victim to middlemen who exploit their lack of access by purchasing their goods at significantly lower prices, worsening the struggle for economic sovereignty. As a result, an agricultural e-commerce platform designed to meet the specific needs of these women was developed to catalyze economic empowerment.

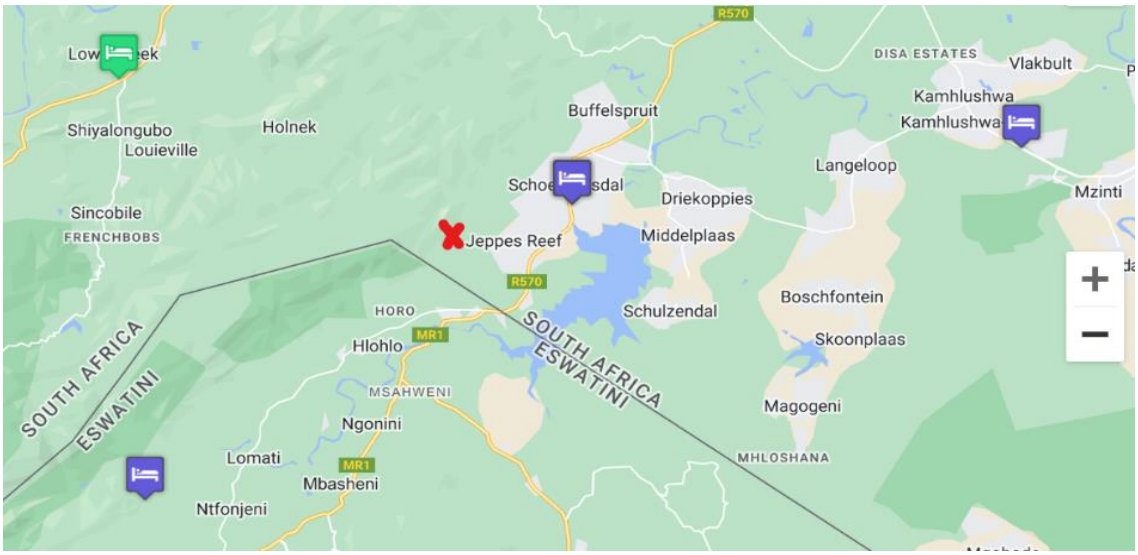


Figure 4. 2: Jeppes Local Community

The area presents an interesting opportunity for studying the acceptance of agricultural e-commerce among rural women due to several factors. Firstly, the local economy is heavily reliant on agriculture, and most of the women are involved in farming, primarily using traditional methods

to sell their products. Introducing e-commerce could potentially empower these women to sell their goods without being constrained by the limitations of physical stores and traditional markets. Secondly, the region's proximity to the border results in significant cross-border trade, where e-commerce platforms could facilitate increased sales across borders, expand access to markets beyond the local area, and create new income opportunities for women. Considering that there are currently no established e-commerce platforms in the area, it presents an ideal opportunity to bridge the digital divide and study the user acceptance of the agricultural e-commerce platform.

4.5. Target Population

The study targeted a specific population that included female farmers and user acceptance specialists to evaluate the agricultural e-commerce platform. The inclusion of female farmers aimed to gather insights into their unique needs, preferences, and challenges in adopting the application, as the intended primary users of the application. This feedback was necessary to ensure that the platform addresses the real-world challenges they face and is responsive to the local context. In addition, user acceptance specialists were included to provide their professional expertise and offer insights and strategies to enhance the application's overall user acceptance. Overall, this diverse mix of participants enabled a comprehensive evaluation of the platform from both end-user and professional perspectives, leading to valuable insights for the study.

4.6. Sampling Procedure

A combination of probability and non-probability sampling techniques was used to select 30 participants for the study. This specific number of participants was chosen based on recommendations from various publications, which suggested that a minimum of 30 participants is needed for reliable findings, high-quality data collection, capturing diverse perspectives, achieving data saturation, manageability, and adhering to standard practices (Fusch & Ness, 2015; Manyara et al., 2024). Moreover, the study utilized snowball and convenience sampling methods to identify and recruit 25 female farmers. Snowball sampling was selected due to the challenges in reaching female farmers in rural areas, thus relying on established networks to identify and connect with potential participants (Parker et al., 2019). Convenience sampling was included to expedite the recruitment of willing participants for the study, as suggested by Emerson (2015). While these techniques improved access to participants, they have been criticized for limited generalizability,

selection bias, and lack of representation of a larger population (Parker et al., 2019). To address these limitations, the referrals were capped after two waves, with each participant recommending a maximum of two people only to reduce bias and homogeneity in the sample. Table 4.1 provides an overview of the sampling techniques and methods used in this study.

Table 4. 1: Summary of the Sampling Procedure

Sampling Method Overview		
Sample Size	30 Participants (25 female farmers and 5 user acceptance specialists)	
Technique	**Sampling criteria**	**Sampling Method**
Convenience	- Female farmers - availability and willingness to participate in the study.	The researcher approached local markets selling agricultural products and local farmlands to recruit female farmers to take part in the study.
Snowball	- Female farmer - Recommended by other farmers	The researcher asked the initial participants to recommend other female farmers they knew and added those willing to participate to the sample.
Simple Random	- Female Participants - Within the 25 sample of female farmers.	To execute this, the researcher used a simple jar method - the names of all participants were written on 25 pieces of paper, folded, and inserted into a jar, and then five names were randomly picked for in-depth interviews from the 25 female farmers who were already recruited.
Purposive	- Specialization in the field of user acceptance - Number of experiences in the field (1 and above).	The researcher used Linked In, a social media platform for industry professionals to search and approach 5 user acceptant experts to be participants in the study.

Within the sample of 25 female farmers, 5 participants were further selected for in-depth research using simple random sampling. This method was chosen to ensure fairness in the selection process and reduce bias (Ferri-García et al., 2021). To execute this, the researcher employed a simple jar method, where the names of all participants were written on 25 small pieces of papers, folded, inserted in a jar, and randomly picked to select the 5 participants for in-depth interviews. The researcher administered the structured survey to the remaining 20 participants of female farmers gathered through snowball and convenience sampling. Furthermore, purposive sampling was used

to include 5 user acceptance specialists in the sample. This sampling technique was chosen because it allowed the researcher to purposefully select participants with expertise and experience in user acceptance, ensuring that they could offer valuable insights into the study as recommended by Andrade (2021). Overall, the study's sample included 20 female farmer participants for collecting quantitative data, as well as 5 female farmers and 5 user acceptance specialists to gather qualitative insights on the platform`s user acceptance

4.7. User Training

The training process was initiated after the participants were identified. Scherzinger (2021) recommended user training when introducing a technology to enhance confidence, reduce anxiety, confusion, and misinterpretation of the system's evaluation. This was adopted in this study to support the credibility of qualitative insights and the validity of quantitative measures. The training aimed to raise awareness about the platform, highlight the benefits, and teach the participants how to operate the application. Training materials were translated into the local Siswati language to ensure understanding and engagement from all individuals, irrespective of their illiteracy levels. The training sessions span six days and include practical demonstrations of various tasks such as creating invoices, managing inventory, adding products to the catalog, and sending product information via email (Table 4.2). These sessions were conducted in person through a series of meetings. Thus, refreshments were provided to ensure the comfort of the participants throughout the training and data collection processes due to the considerable commitment involved.

Table 4. 2: Summary of Outline for User Training Sessions

Training Topic	Key Activities	
Day 1: Introduction & Profile Management	- Welcome & Introduction - Presentation of the Project Overview - Distribution & signing of the Consent Form	- User Registration, - Creating user profiles, - Editing & Updating profile.
Refreshment Break		
Catalog Management	- Introduction to catalog features - Demonstration by the researcher	- Practical catalog management (set up, add, remove & publish catalog) by users.

	Day 2: Inventory Management	- Introduction to inventory features - A practical demonstration by the researcher.	- Inventory management (set up, updates & alerts) by participants
	Refreshment Break		
	Distribution & Logistics	- An Introduction to Distribution Features, - Distribution considerations such as quantity of products, distance, and type of transportation by distributor.	- A practical demonstration by the researcher. - Practical distribution by participants
	Day 3: Business Case	- Introduction to Business Case Features. - Drafting a business plan.	- financial planning. - Practical examples
	Day 4: Email Marketing	- Introduction to email marketing - Email marketing features	- Creating an email. - Practical demonstration
	Day 5: Invoicing	- Introduction to invoicing.	- Practical demonstration
	Day 6: Q& A	- Recap all functionalities	- Q & A sessions.

4.8. Pilot Study

The researcher conducted a pilot study involving six participants to evaluate the instruments and procedures used. This approach was incorporated in this study to refine the data collection instruments, enabling the researcher to enhance the clarity, relevance, validity, and reliability of the questions, as well as the length of the instruments (survey and interview questions). This evaluation was based on feedback from participants and insights gathered from relevant publications (Ismail et al., 2018; Malmqvist et al., 2019). The participants included 4 female farmers and 2 user acceptance specialists. The researcher administered a survey and conducted brief interviews using the developed instruments. The findings from the preliminary study allowed the researcher to make conclusions and identify potential enhancements for the study's instruments and methodology.

4.9. Data Collection Instruments

The study utilized a combination of interviews and surveys to gather data from the participants. The survey included a mixture of closed-ended and open-ended questions, aimed at evaluating user acceptance across five themes derived from TAM: Perceived Usefulness, Perceived Ease of Use, Behavioral Intention to Use, Attitude Toward Using, and External variables identified from literature (Bryan & Tranos, 2021). Similarly, the interviews consisted of open-ended questions structured around the same five themes to evaluate user acceptance of the agricultural platform. In addition, the interviews sought to gain further insights into the barriers to user acceptance in rural areas and develop strategies to improve the application and overall user acceptance. The questions formulated using the TAM model for the survey and the interviews can be found in Appendix A, Appendix B, and Appendix C.

- Interviews: The interviews were conducted in person with the participants.
- Survey: administered online via WhatsApp after user training sessions for convenience. The researcher drafted the questions in the native language using Google Forms and distributed the link to female participants. The researcher was present to assist participants facing challenges.

Table 4. 3: Summary of the Data Collection Instruments and Methods

Data Collection Instruments & Methods		
Instruments	**Method**	**Justification**
Survey	- Open-end & Closed-ended questions - Drafted in the native language	- Easy data collection on a large number of participants. - Allowed for both in-depth data collection and statistical data.
	- Created via Google Forms - Administered via WhatsApp using a link - After user training	- Faster data collection, and automated presentation of findings. - Easy accessibility of participants
Interviews	- Open-ended questions - Female farmers: interviews were administered in person. - User acceptance - specialists: Interviews were administered telephonically	- Obtained in-depth data about the platform. - In-person interviews allowed the interviews for participants without digital devices. - Convenience: Telephonic interviews allowed easy access to specialists and reduced travel costs.

These instruments were chosen because they provided several benefits. The survey allowed the researcher to collect statistical data on perceived usefulness, ease of use, behavioral intention to use, and attitude toward using over a wider population within a short space of time. The interviews were selected to complement the survey and provide detailed qualitative insights that can explain the results of the survey. This instrument was very useful in gaining insights into participants` perceptions and feelings revealing data that could have been missed in the survey alone.

4.10. Data Analysis

The study used inferential statistics, descriptive statistics, and thematic analysis to analyze the study findings.. Descriptive statistics were used to analyze and interpret participants' responses across all the PU, PEOU, ATU, and BI constructs gathered from the survey (Mishra et al., 2019). Thereafter, inferential statistics (ANOVA) were used to determine the significance of differences in usability perceptions across different demographic groups on R software. Statistical data was observed and compared in categories such as age and level of education, and type of farming activity. These analysis techniques enabled the researcher to summarize and describe the characteristics of the sample and draw generalizable results to a broader population.

Thematic analysis was chosen as the method to thoroughly scrutinize the qualitative data gathered in the study. This method was selected for its suitability in analyzing qualitative data and allowing for the identification and interpretation of patterns, topics, and meanings within the qualitative information (Christou, 2022). The researcher performed manual thematic analysis as the Braun & Clarke method recommended. This included familiarizing with the data, generating the initial codes, searching for key themes, reviewing the themes, defining and naming each theme, and then reporting based on those themes. The researcher classified the data into differences, themes, and sub-themes aligned with the research objectives. This approach facilitated the presentation of the data in an understandable and interpretable form, enabling the identification of trends, patterns, and their relation to the research aim. Ultimately, the qualitative findings were presented in a textual format, offering a comprehensive and detailed account of the study's outcomes. To sum up, inferential, descriptive statistics and thematic analyses were useful in the interpretation and analysis of the quantitative and qualitative findings obtained in this study.

4.11. Data Validity & Rigor

The study utilized various techniques to enhance the validity, and rigor of the findings. Firstly, the reliability of the findings was assessed through Cronbach's Alpha to ensure internal consistency. The test was calculated for a group of five survey questions that were more coding compatible, and reflected the core user acceptance, such as general attitude toward using technology, Attitude using the platform, Ease of navigating the app, perceived ease of use, and Willingness to use the app again. Each question was recorded on a numeric scale such as negative/reluctant =1, neutral/moderate = 2, positive/enthusiastic =3. Yes or No questions were also recoded to Yes= 1, and, No=2. However, questions that were already on a scale, such as the ease of navigation question, which was in a 1–5 Likert scale, were retained in their current form. This allowed all five responses to be treated consistently in Cronbach's Alpha test using the psych package in the R software.

Secondly, a sample representative test was conducted to ensure external validity and generalizability of the quantitative findings. The researcher conducted a sample representative test assessing whether the selected sample of 20 survey participants was statistically representative of the estimated number of 222 female farmers in the local area (Sisipo, Isaac & Ogujiuba, 2021). A Margin of Error (MOE) was conducted using the Finite Population Correction (FPC) on R software with an assumption of an estimated proportion of 50% (p=0.5) to maximize the margin and ensure cautious interpretation. The test was run at 90% and 95% levels to assess the level of certainty in generalizing the results drawn from this study to the entire population. A FPC confidence level of 95% is standard in most academic and scientific research, indicating a high level of certainty; a 90% confidence level is still statistically acceptable and often used in exploratory or pilot studies. A lower margin of error is preferred, but <20% is acceptable for pilot studies. Overall, this technique was adopted to ensure that the study's findings were generalizable to the larger population, strengthening the external validity of the study and guarding against sampling biases.

The credibility of the study was ensured through a pilot study, user training, and a combination of trustworthy strategies. A pilot study was conducted to test the qualitative data collection tools, refine the interview questions, and ensure that the questions were clear and aligned with study objectives. The user's training ensured consistency in interview administration and avoided imposing interpretations on participants. Strategies like applying quotes and thick descriptions

were used in the findings. Likewise, the pilot study was conducted to refine the quantitative data collection instruments and, ensure that all survey questions were answered effectively, including checking if the questions were not overly lengthy or time-consuming. User training was used to enhance the understanding of the application among users and ensured consistency by standardizing participants' experience with the platform, reducing confusion, and enhancing reliability.

The study applied methodological triangulation to strengthen the validity of the findings and reduce bias. methodological triangulation refers to the use of multiple research methods to study or investigate the same phenomenon to enhance the validity and credibility of the results (Likwa & Mweenda, 2019). In this study, quantitative methods surveys were used to identify patterns and trends, while qualitative methods were used for a in-depth study, exploring the lived experience, motivations, and perceptions of the participants. This allowed the cross-validation of results, reducing reliance on a single method and limitations that were inherent to individual techniques.

4.12. Ethical Considerations

The research took several ethical considerations into account. It obtained approval from the University of Cape Town Science Research Ethics Committee and legal authorities in the study area as indicated in Table 4.4. Municipal approval was acquired to approach and communicate with participants from the Jeppes community (Table 4.4). Informed consent was emphasized throughout the study, with special consideration given to rural women to ensure they were well-informed before joining the project. Language barriers, power dynamics, and cultural factors were carefully addressed, including translating consent forms and data collection instruments into Siswati and English. In addition, the participants' identities were kept confidential for safety.

Table 4. 4: Ethical Research Documentation

University of Cape Town Science Research Ethics Committee Approval	**Appendix F**	✓
Researcher Letter Requesting Permission to Collect Data	**Appendix D**	✓
Local Municipal Approval to Conduct User Acceptance	**Appendix E**	✓
A Consent form Administered to Participants.	**Appendix G**	✓

4.13. Summary

The researcher employed a mixed-method approach that incorporated both quantitative and qualitative methods to assess the user acceptance of the agricultural e-commerce platform. The target population for the study encompassed female farmers and user acceptance specialists. Sample selection involved the use of various sampling methods including snowball, convenience, and simple random sampling to identify 25 female farmers, and 5 user acceptance specialists who could provide valuable insights for the study. Data collection methods involved interviews and surveys administered after user training and a pilot study. Following data collection, the researcher conducted both statistical and thematic analysis to interpret the findings. Overall, this Chapter provided detailed methods for assessing the user acceptance of the agricultural e-commerce platform. Hence, the succeeding Chapter provides a comprehensive overview of the e-commerce platform, exploring the design and functionality of the agricultural system evaluated in this study.

Chapter 5: Agricultural E-Commerce Platform

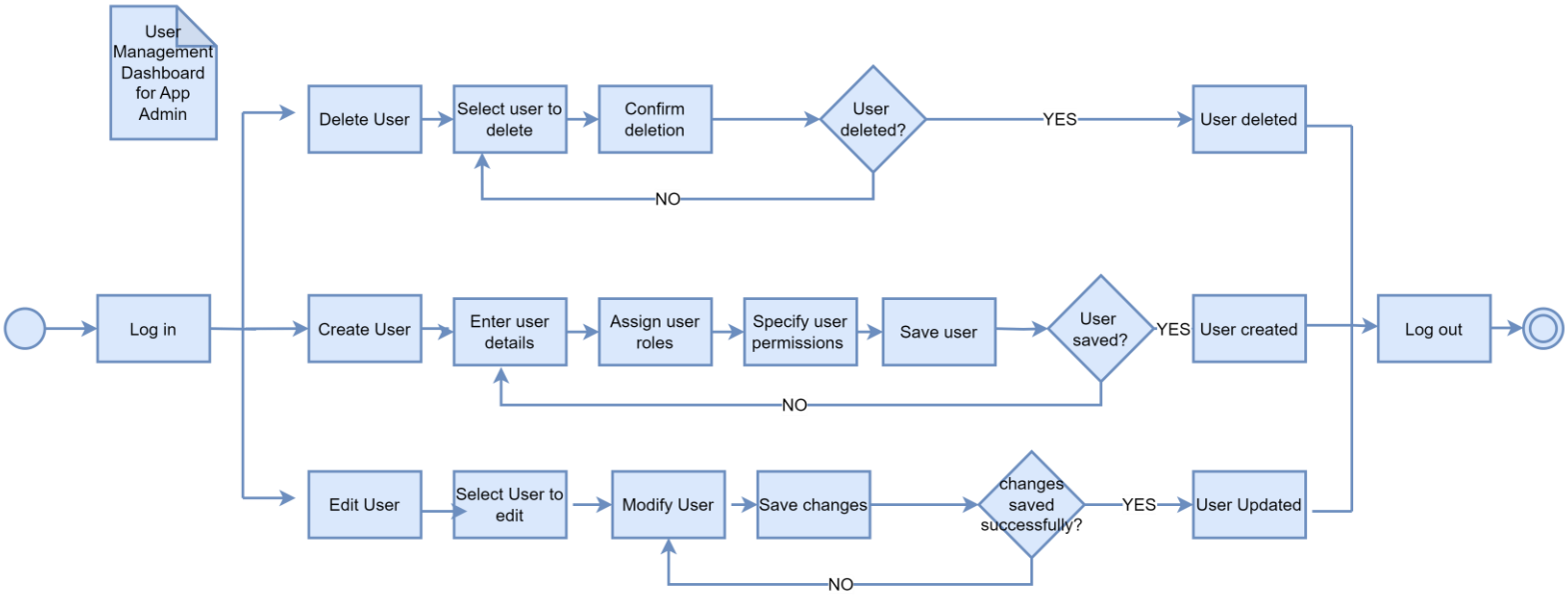
5.1 Introduction

This Chapter provides a comprehensive description of the Agricultura e-commerce platform. The platform was specifically designed to empower female farmers in rural areas who have often been left behind by the digital revolution and have not been able to fully benefit from technology. The main goal of the platform was to give these farmers access to markets, enabling them to overcome geographical limitations and reach customers beyond their local area. This promotes economic independence, getting rid of middlemen who take advantage of their limited access to markets by purchasing their products and services at low prices. It allows women farmers to sell directly to consumers, thereby changing the narrative of female farmers in rural areas fostering social and economic development. Thus, this Section gives a detailed explanation of this digital solution.

This Chapter is organized into four Sections. Section 5.2 provides a detailed description of the platform's design. Section 5.3 covers the user interface and aesthetics of the platform, while Section 5.4 delves into information about the application's front end. Section 5.5 provides insights into the back end of the application. Section 5.6 presents descriptions of the core functionalities and users of the agricultural platform, and finally, Section 5.7 offers a summary of the Chapter.

5.2 System Design & Architecture

The application has been designed to facilitate seamless interactions among four user types: the admin, customer, supplier, and customers. Each user has unique roles that are crucial for the smooth functioning of the entire application. The admin is empowered to create, edit, update, and delete user profiles within the application (Figure 5.1). In addition, the admin has the authority to assign user roles and grant user permissions to access specific sections of the application. Overall, the admin of the application provides each user with a personalized experience within the system. Figure 5.1 shows a comprehensive description of the process and activities of the admin.



Figures 5. 1: Activity Diagram for the Admin.

The system was designed with a customer section that allows customers to register, create a profile, browse, and purchase from suppliers (Figure 5.2). Customers can also receive order confirmation alerts, check the status of their orders, and subscribe to receive promotions. Figure 5.2 provides a simplified overview of the processes and activities of the customer in the application

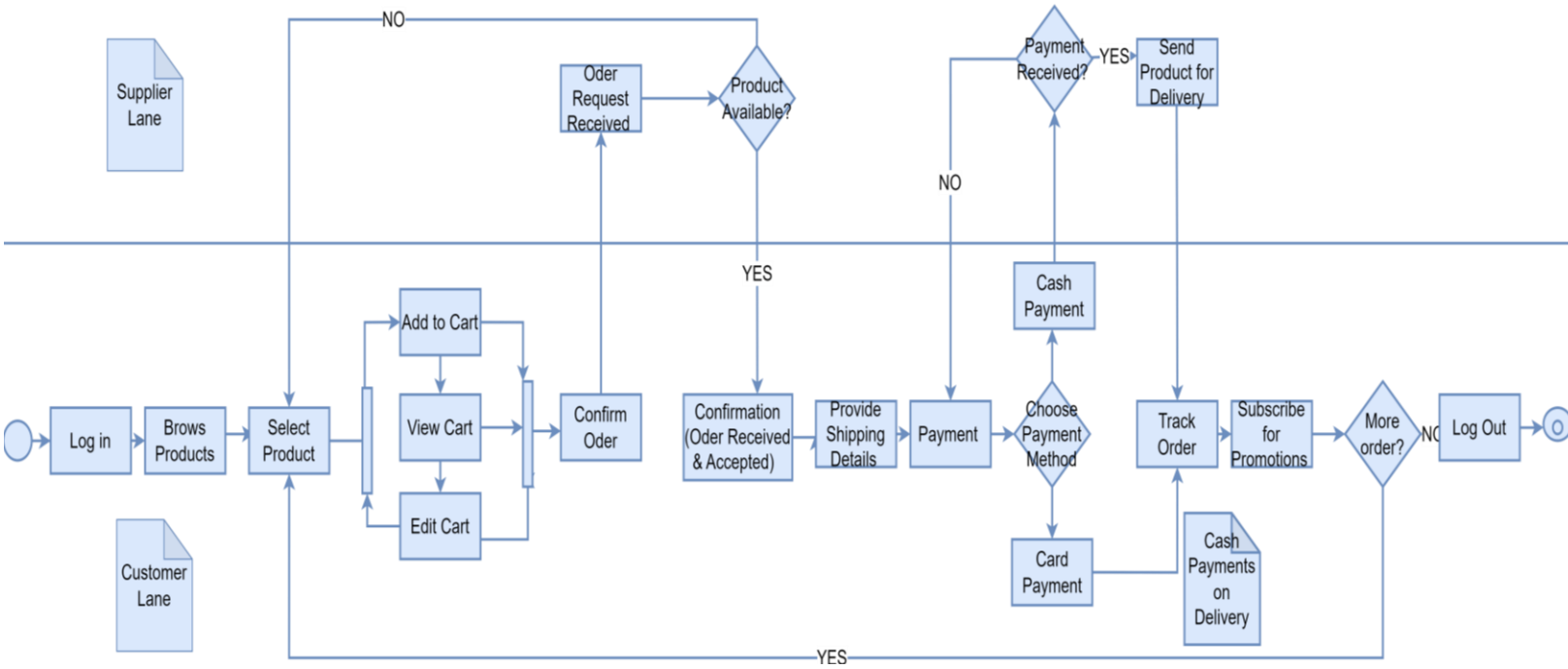


Figure 5. 2: Activity Diagram for the Customer

The application was also designed to feature sections for the distributor. This section allows distributors to register and create a profile (Figure 5.3). The system is also designed to allow distributors to fill out a form to provide their details such as location, and type of transport which will be useful for suppliers when choosing suitable transport for their products.

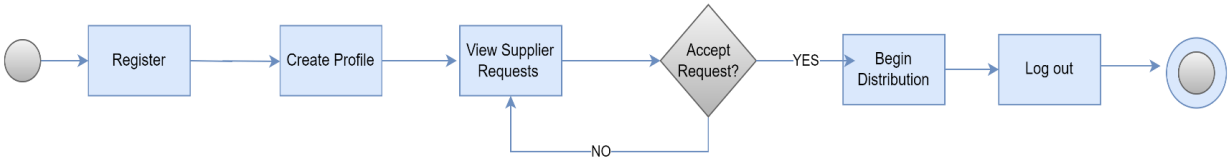


Figure 5. 3: Activity Diagram for the Distributor

The supplier side was developed to provide suppliers with the tools they need to run successful farm businesses. It includes features such as an inventory system, marketing tools, and forecasting capabilities. Suppliers can register and create a profile, upload and manage their product catalogs, as well as manage their inventory and customer orders. In addition, they can view sales data on a dashboard, connect with different distributors, send promotions to customers, and forecast future sales trends. This collaborative effort ensures the proper functioning of the system (Table 5.1).

Table 5. 1: Summary of the Agricultural E-commerce Functionalities and Users

Users	**Functionality**
Admin	- Can create, edit, update, and delete user roles. - Can grant permissions to different users.
Customer	- Can register and create a profile as a customer. - Can browse and purchase from suppliers. - Can receive order confirmation alerts and check the status of their orders. - Can subscribe to receive promotions and alerts.
Supplier	- Can register and create a profile as a supplier. - Can upload and create catalogs. - Can upload and manage their inventory list. - Can manage customer orders and change order statuses. - Can view sales data via a dashboard. - Can view different distributors. - Can send promotions to customers. - Can forecast future sales data.
Distributor	- Can register and create a profile as a distributor. - Can fill out a form to provide their details.

5.3 Platform Interface

The application design prioritized the user interface (UI) and user experience (UX) of the system. Software tools such as Figma, Draw.io, and Canva were used to design the e-commerce platform. Design principles such as simplicity, consistency, intuitiveness, and responsiveness were carefully considered to create a user-centered design. For instance, the platform was designed to be accessible in both Siswati and English languages, visible on the home page in Figure 5.4 and Figure 5.5. The Siswati language was included to make the platform resonate with the targeted users while maintaining English as the standard medium of communication in South Africa. Moreover, intuitive icons and easy navigation were implemented to enhance user-friendliness, particularly for first-time users. The application was also designed with a responsive layout allowing it to adapt to various screen sizes such as mobile and desktop screens. In addition, attractive colors and relevant agricultural imagery were incorporated to enhance the overall user interface of the system. The application's loading time was also optimized to reduce friction and improve user experience.

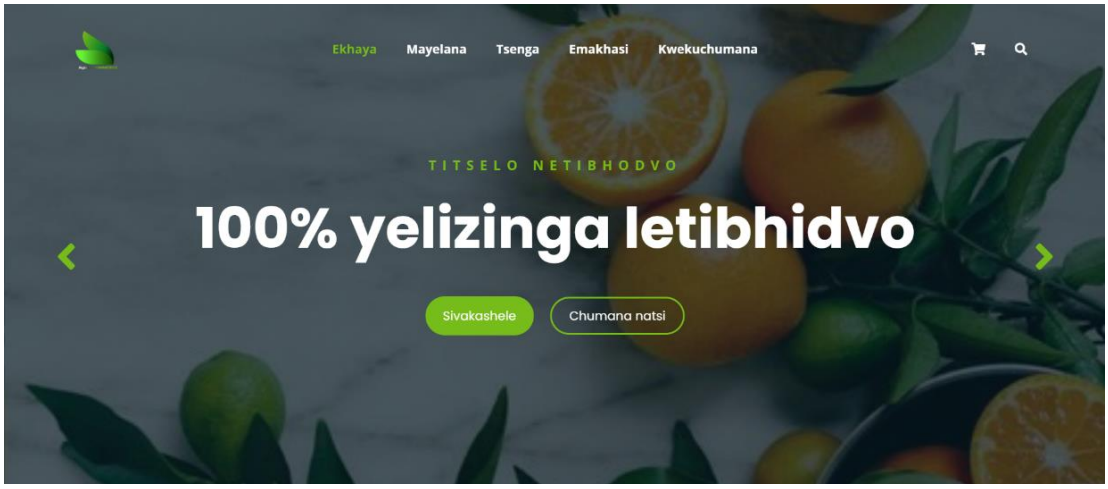


Figure 5. 4: Website built in the Siswati native language

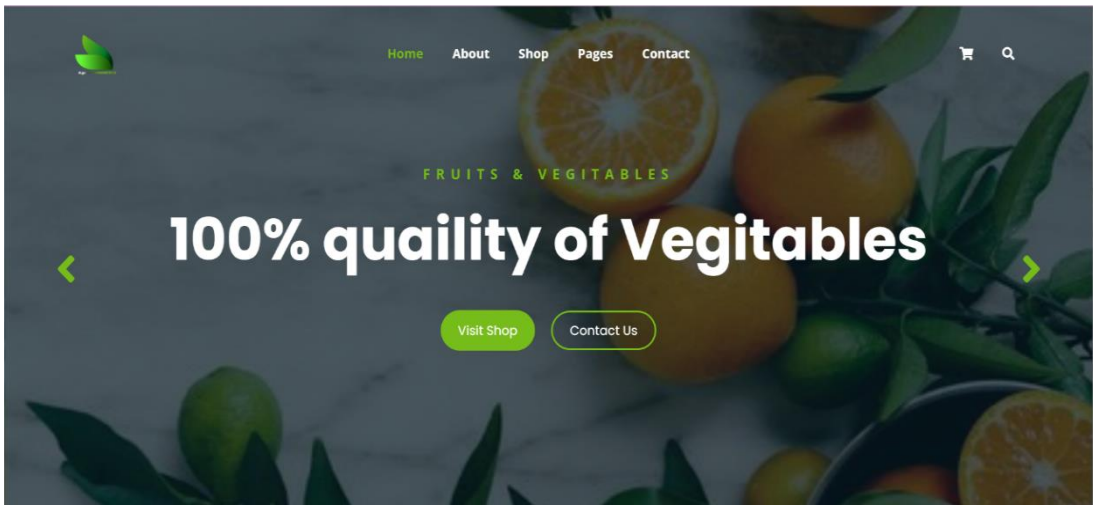


Figure 5. 5: Website built in English.

5.4 Front-end of the Platform

The front-end of the application was developed using a variety of tools and technologies to ensure a seamless UX/UI. Canva was instrumental in creating distinctive branding for the application, which included designing a captivating logo positioned at the top left corner of the platform to leave a professional (Figure 5.5). Hypertext Markup Language (HTML) was used for the structural layout and content presentation of the e-commerce platform web pages. This allowed the application to be organized into pages with headers, body content, and footers making all the essential information readily accessible to users. In addition, Cascading Style Sheets (CSS) played a pivotal role in enhancing the visual appeal of web pages by implementing diverse font sizes, color schemes, and visual representations, ensuring an aesthetically pleasing and cohesive platform. The front end was developed using Visual Studio Code as an integrated development environment, enabling efficient coding and seamless integration of different front-end elements.

5.5 Back-end of the Platform

The backend of the application focused on the core functionality and efficient data management of the e-commerce. My Structured Query Language (SQL), popularly known as mySQL was used to develop and maintain the database of the current version of the application. This allows effective data storage, retrieving, and managing data within the e-commerce application. Moreover, Python programming language and Django were used to develop this segment of the application through Visual Studio Code as the primary development environment. Furthermore, the integration of Application Programming Interfaces (APIs) facilitated seamless communication between different

components of the application and the backend. The cohesive synergy of mySQL, Python, Django, and APIs collectively contributed to the development of the backend of the system ensuring the smooth and effective functionality of the entire e-commerce platform (Table 5.2).

Table 5. 2: Summary of Front-End and Backend Software Tools

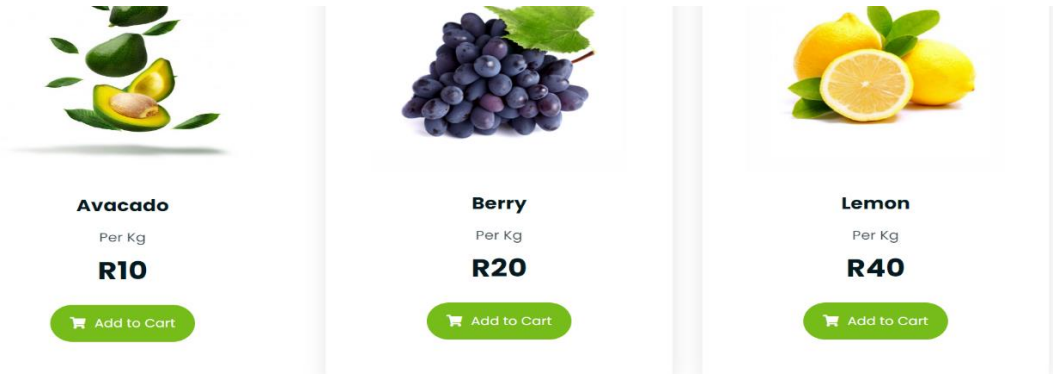
The Front-end of the Application	The Back-end of the Application
Cascading Style Sheets	Python programming language
Hypertext Markup Language	Visual Studio Code
Visual Studio Code	Django
Figma, and Canva, for visuals	MySQL for database

5.6 Application Functionality

The Agricultura e-commerce platform was developed to cater to specific user groups, with dedicated sections for each type of user. The application serves various user roles, including admin, customer, distributor, and supplier as depicted in the design of the system. The platform features specialized pages customized for each user category, offering a wide array of functionalities (Table 5.1). This segment provides an overview of the users and the platform's functionalities.

5.6.1. Customer Section

The e-commerce platform has nine unique pages available for the customer. This includes the home page, about page, contact page, cart page, checkout page, order history page, and invoicing page. In Figure 5.6, the customer can explore the range of products available, which includes a diverse selection of fruits and vegetables in the form of a catalog. Furthermore, customers are provided with the option to select and purchase either organic or conventionally grown produce.



Figures 5. 6: Customer Product Page

Figure 5.7 shows the Cart page in the customer section. This page allows customers to adjust the quantity of products they wish to purchase. They can increase or decrease the quantities as desired. Moreover, customers have the ability to clear the cart entirely if they decide not to proceed with the purchase. Once the customers are satisfied with the items in their cart and are ready to make a purchase, they can proceed to the checkout and are automatically redirected to the next process.

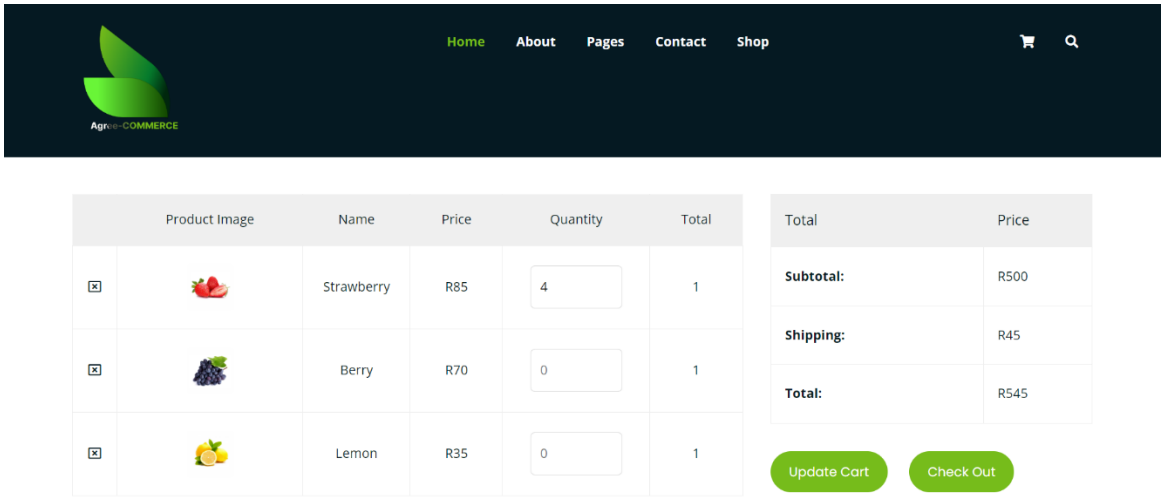


Figure 5. 7: Customer Cart Page.

Figure 5.8 illustrates the customer's invoicing page. Once the checkout process is completed, customers will be directed to the invoicing page. This is where they finalize their orders, enter delivery and payment details, and view order history and status. They can also subscribe to receive the latest promotions from suppliers on the marketing page (Figure 5.8).

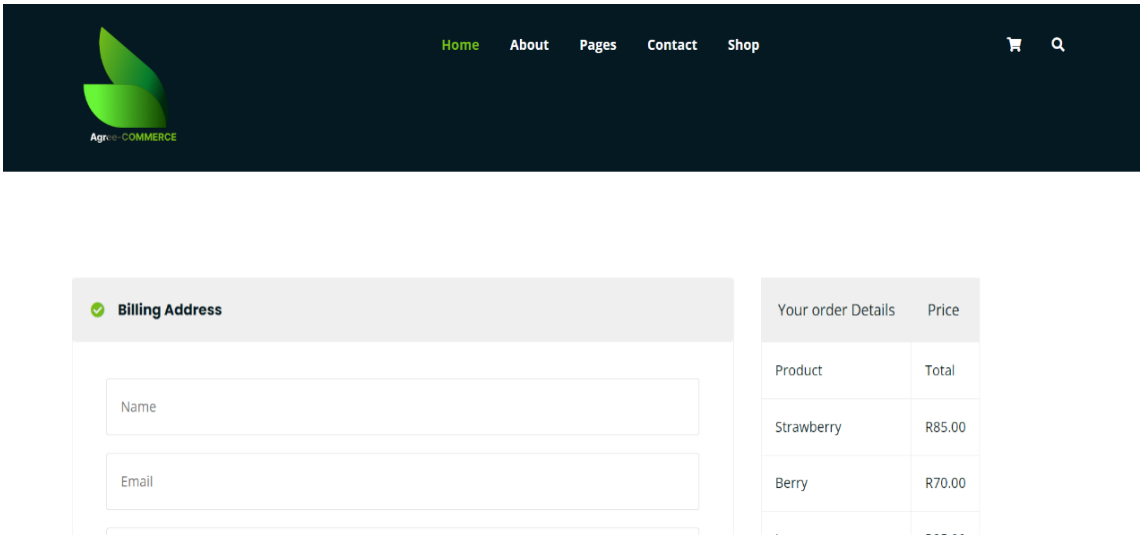


Figure 5. 8: Customer's Invoicing Page.

5.6.2. Supplier Section

The supplier's platform is composed of twelve pages as illustrated in Figure 5.9. This includes the home page, business plan, marketing page, contacts page, profile page, and management page, which encompasses subpages such as inventory management, catalog, order management, distributors, analytics, and forecasting. Suppliers must first register, create a profile, and then log in to the platform. Upon logging in, they will be presented with these tabs, as explained below:

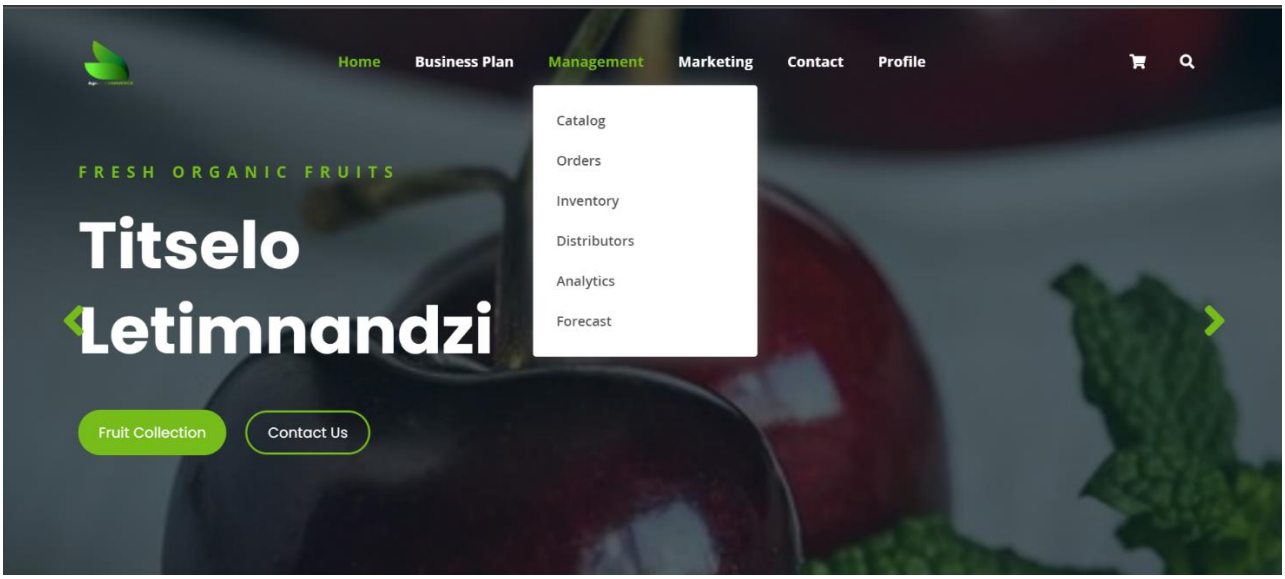


Figure 5. 9: The Supplier Home Page

The Catalog page allows suppliers to manage their product catalogs, create new catalogs, or upload existing ones to showcase their products. Once submitted, the catalog details are published to all

users. In addition, the application provides a simplified inventory system, enabling suppliers to add, review, update stock levels, and remove items from their inventory (Figure 5.10).

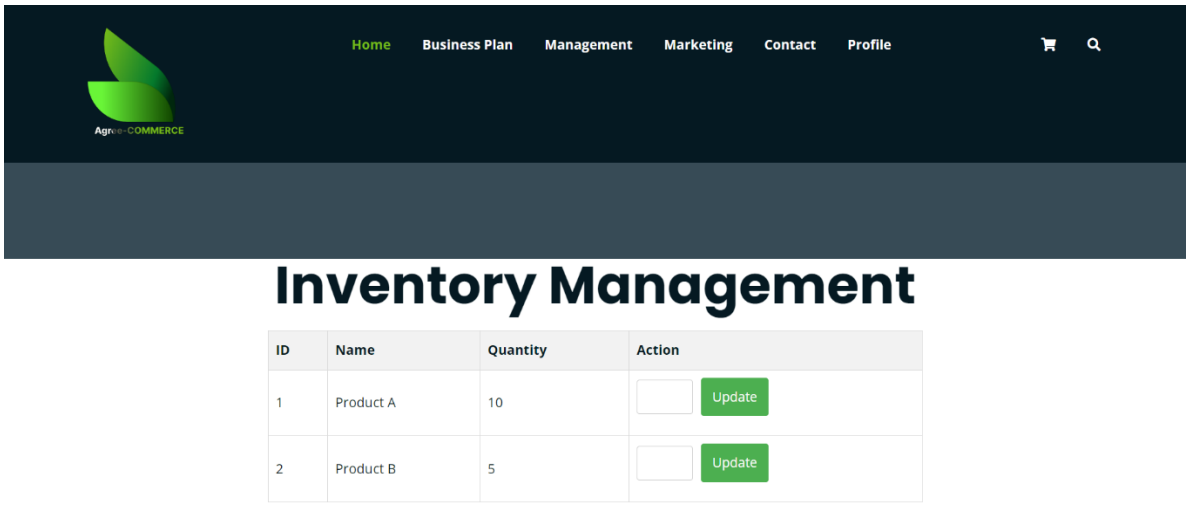


Figure 5. 10: Supplier Inventory System

The application further includes an Order Management system for suppliers, allowing them to view and manage orders, review proof of payment, and update order statuses. It also provides an Analytics page with product statistics and a forecast page for future performance insights. In addition, there's a customizable business plan template for female farmers to profile their businesses and a marketing tool for sending promotional emails as illustrated in Figure 5.11.

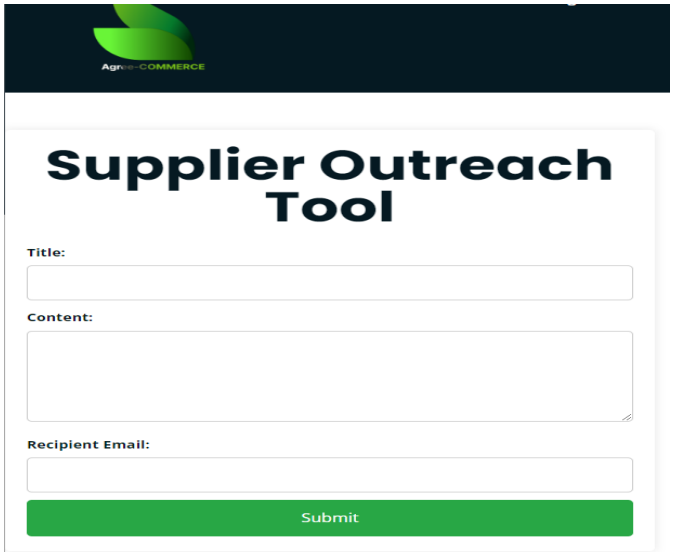


Figure 5. 11: Supplier Outreach Tool.

5.6.3 Distributor Section

The application provides a platform for distributors to log in and create their profiles. Within the distributor section, distributors complete a form capturing details such as the type of vehicle, load capacity, location, and a general price list. Furthermore, distributors can receive notifications to provide distribution services for various suppliers who utilize the platform.

5.6.4 Admin Section

The administrator of the application can perform various user management tasks. This includes creating, editing, updating, and deleting user roles. In addition, the administrator can grant specific permissions to different users based on their roles and responsibilities within the application.

5.7. Summary

This Chapter presented a comprehensive overview of the agricultural platform. The primary goal of this application was to support female farmers in the agricultural sector, facilitating their access to border markets and enabling them to increase their income. The Chapter offered an in-depth analysis of the application's design, highlighting its user-friendly interface and the careful consideration given to functionality to ensure its usefulness to the specific audience. However, the success of the application in achieving its intended objective of economic empowerment is contingent upon the user acceptance from the intended users. Despite the potential benefits, the application may encounter resistance when implemented in rural settings, which could lead to its failure. As a result, the following Chapter explores the findings of the research regarding users' perceptions of the agricultural e-commerce platform, barriers to adoption, and proposed solutions.

Chapter 6: Findings

6.1. Introduction

This Section provides the analysis, interpretation, and presentation of findings from Jeppes Reef. The study aimed to evaluate the user acceptance of a developed agricultural e-commerce platform designed to support female farmers in the local community of Jeppes Reef. Therefore, this Chapter presents user perceptions of the platform, barriers to adoption, and strategies to improve user acceptance. The Chapter is structured into Five Sections. Section 6.2. commences with a comprehensive summary of the key participants involved in the study. Section 6.3. provides general information about the participants. Section 6.4. provides a detailed overview of the perceptions of the users on the application. Section 6.5. presents detailed insights into the technical and external challenges that hinder user acceptance. Section 6.6 provides in-depth strategies on how to improve user acceptance in rural settings, while Section 6.7 provides the Chapter summary.

6.2. Summary of Participants

This section provides an overview of the demographic characteristics of 20 participants from whom quantitative data were collected. These participants were exclusively female farmers from the Jeppes Reef local community, who willingly consented to participate in the study. The demographics mirror the general population of Jeppes Reef, with most of the participants belonging to the Swati-speaking tribe. In addition, there is a high illiteracy rate, with a significant portion of the population having no formal education, and high unemployment rates.

Table 6. 1: A Summary of the Demographic Characteristics of the Survey Participants.

Demographic	Category	Frequency	Percentage
Age	18-24	4	20%
	24-34	8	40%
	35-44	5	25%
	45-54	2	10%
	55-64	1	5%
	65 or older	0	0%
Language	Swati	19	95%
	Tsonga	1	5%
Education	No education	10	50%
	Primary	1	5%
	Secondary	2	10%

	Tertiary	7	35%
Employment status	Unemployed	8	40%
	Self-employed	2	10%
	Employed full-time.	2	10%
	Employed part-time.	1	5%
	Student	7	35%
	Other	0	0%

Table 6.2 presents an overview of the ten participants who provided qualitative data through open-ended interviews. This group consisted of five female farmers from the Jeppes community who took part in an in-depth user acceptance evaluation of the application. The remaining five participants were user acceptance specialists, including two technology acceptance researchers. The first researcher (Expert 2) had over seven years of experience, while the second researcher (Expert 3) had four years of experience. Moreover, the experts included one User Experience/User Interface (UX/UI) researcher with five years of experience, one Human-Computer Interaction specialist, and a User Acceptance Tester (UAT) with two and three years of experience, respectively. These specialists provided valuable insights related to user acceptance.

Table 6. 2: A Summary of the Interviewed Respondents

Number of participants	Caliber of respondent	Code
P1	Female Famer	Famer X
P2	Female Famer	Famer Y
P3	Female Famer	Famer Z
P4	Female Famer	Famer P
P5	Female Famer	Famer C
P6	UX/UI Researcher	Expert 1
P7	Technology Acceptance Researcher	Expert 2
P8	Technology Acceptance Researcher	Expert 3
P9	User Acceptance Tester (UAT)	Expert 4
P10	Human-Computer-interaction Specialist	Expert 5

6.3 Data Instrument validity & Rigor

This section presents the findings on the validity, reliability, and credibility of the instruments adopted in this study. The Cronbach's Alpha test was conducted to assess the internal consistency of the survey, ensuring the reliability of the data collection instrument. Furthermore, a sample representative test was conducted to ensure that the findings are generalizable, and that bias is reduced. The validity of the survey was ensured through a pilot survey assessing the clarity and relevance of the questionnaire. The credibility of the study was ensured through user training and pilot interviews, followed by a thematic analysis. Detailed results are explored below:

6.3.1. Test 1: Sample Representativeness

The representativeness test was conducted to determine whether the sample of the 20 survey respondents was statistically representative of the total target population of an estimated 222 female farmers. The findings revealed that at 95% confidence, the margin of error is ±20.95%, while at 90% confidence, the margin of error is ±17.58%. These results are considered acceptable for exploratory studies with a small sample. Although the margin of 95% slightly exceeds the ideal <20% threshold, it is still considered usable for concluding the early phases of a study such as this one. Overall, the calculated margin of error confirmed that the findings from the survey of 20 respondents can be considered statistically meaningful, are within a reasonable confidence level, and can be used for further analysis, making it representative to explore broader trends.

6.3.2. Test 2: internal consistency

The purpose of the Cronbach's Alpha test was to evaluate whether the survey demonstrates internal consistency. The test results revealed a Cronbach's Alpha (raw) of 0.71, which indicated an acceptable internal consistency, an Average inter-item correlation of 0.31, which suggests a moderate relationship among items, and a Confidence interval (95%) of 0.45–0.87, which reflects robustness given the small sample size. The usability scale, composed of five related survey items, demonstrates acceptable internal consistency with a Cronbach's Alpha of 0.71. This confirms that the selected questions are appropriate to use as a composite score for user acceptance.

6.4. General Information

This Section contains the feedback obtained from female farmers who took part in this study..This includes general details about the main agricultural practices of the female farmers, their openness to embracing technology, their experience with e-commerce, and their access to smart devices.

6.4.1. The Distribution of Agricultural Activities Among Female Famers

Female farmers play an active role in a wide range of agricultural activities in rural areas. They possess valuable expertise in various aspects of agriculture, from crop cultivation to animal husbandry, which not only sustains their livelihoods but also benefits their communities. For instance, 35% of the survey respondents engaged in crop farming, 15% in horticulture, 10% in poultry farming, 25% in mixed farming, and another 15% in livestock breeding, as depicted in Figure 6.1. These survey findings were further substantiated through open-ended interviews with five female farmers. Farmer 1, Farmer 3, and Farmer 4 engaged in cultivating garden vegetables such as peppers, tomatoes, onions, and cabbages, which they sell in local street markets. Farmer 2 engaged in mixed farming, focusing on growing garden vegetables and breeding pigs for sale. In addition, some women participate in aquafarming, with a few focusing solely on fish farming.

> *I specialize in fish farming, and I have found that focusing on this particular niche has been successful for me. Many farmers are producing the same crops, leading to intense competition and driving down prices in the local market. That is why I have opted to cultivate a more unique and rarer product instead (Farmer 5).*

These findings indicate a clear opportunity for female farmers in rural areas to benefit from agricultural e-commerce platforms that can provide access to new markets beyond the local vicinity. These potential benefits could incentivize the adoption of technologies and enhance the profitability of their farming businesses. Furthermore, the diverse range of agricultural economic activities emphasizes the necessity for an e-commerce platform that can accommodate their unique services, offering flexible categorization to meet their varied needs. Thus, agricultural e-commerce platforms could play a significant role in driving the economic empowerment of female farmers in rural areas, necessitating the adoption of these technologies among women.

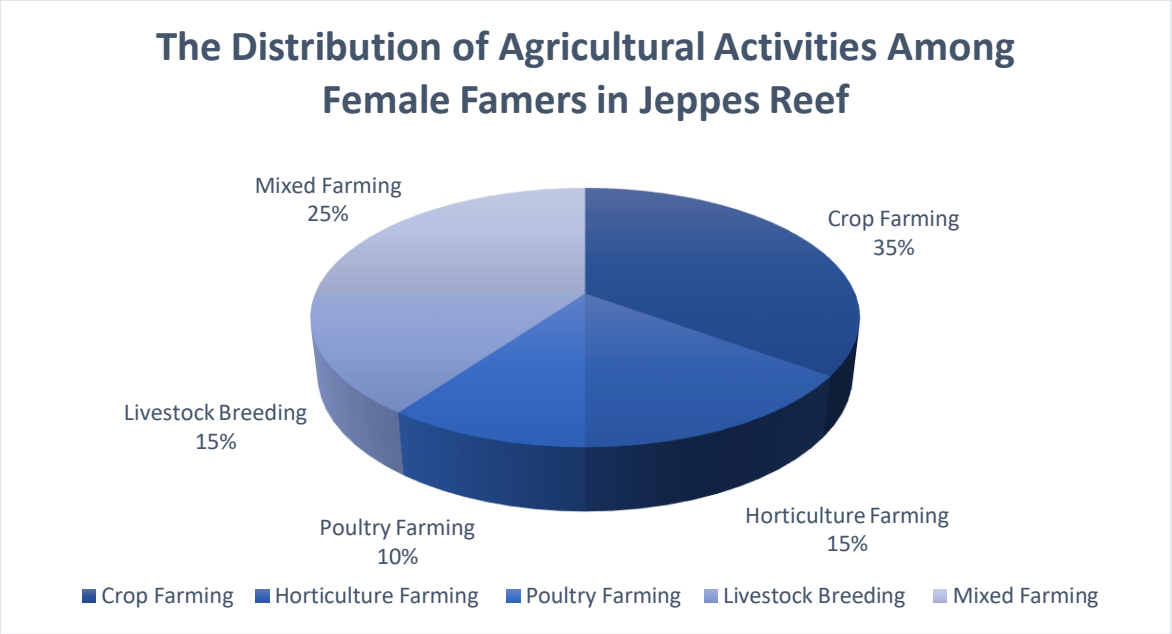


Figure 6. 1: The Distribution of Agricultural Activities Among Female Famers in Jeppes Reef.

Overall, women residing in rural settings who work in agriculture bring a wealth of experience to the field. Many of these women have dedicated numerous years to farming, demonstrating a strong commitment and knowledge of the industry. For example, Farmers 1, 3, and 4 have accumulated over a decade of experience, while Farmer 2 has more than 4 years of experience in cultivating and selling agricultural products. By providing them with the necessary digital tools and resources, these women could greatly impact the agricultural sector. However, female farmers in rural communities have to be open to adopting these new technologies to benefit from them.

6.4.2 General Willingness to Adopt Technology

Technological advancements have the potential to significantly empower female farmers in rural areas. Technology can be a catalyst to assist women in expanding their farming businesses, thereby enhancing efficiency and profitability. However, some women may be reluctant to embrace technology despite the benefits it offers. For instance, the survey assessed participants' willingness to adopt new technologies and revealed that 50% were very eager, 25% were neutral, and 25% were not willing to engage with new technologies at all. Overall, the results revealed a strong inclination towards accepting new technologies, nonetheless, there is a significant portion that is

either reluctant or neutral, suggesting the need for further efforts to address their concerns and raise awareness to gain wider spread acceptance of the applications (Figure 6.5).

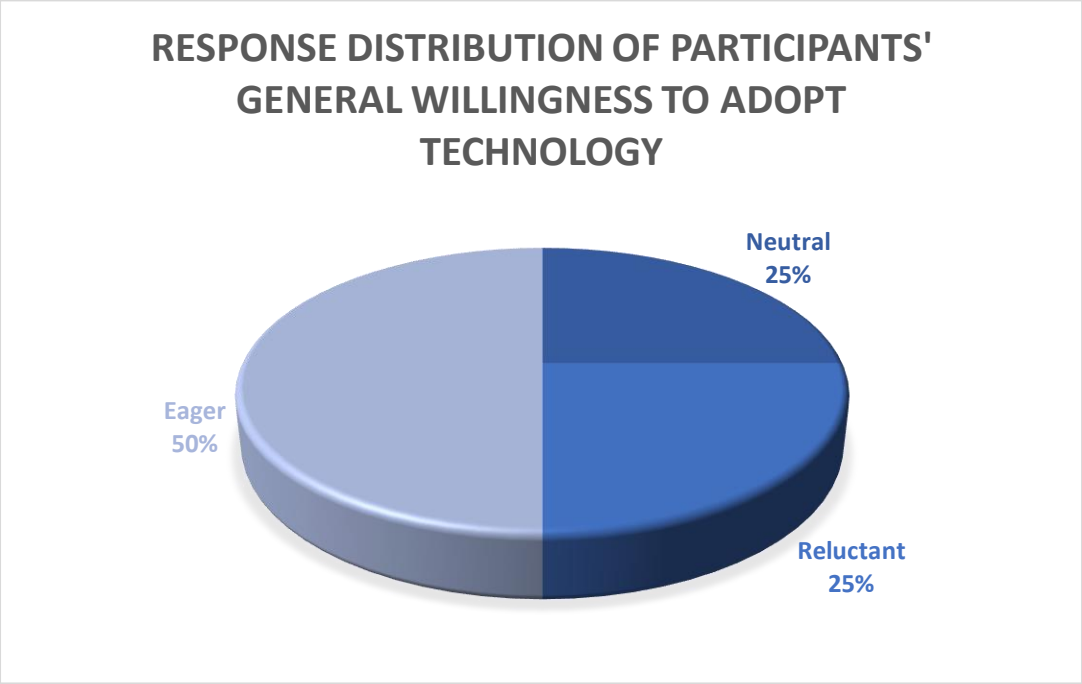


Figure 6. 2: Response distribution of participants' general willingness to adopt technology

6.4.3. Experience With E-Commerce Platforms.

The widespread adoption of e-commerce platforms among women in rural areas is still limited. The researcher collected participants' perspectives and experiences with using e-commerce platforms. The goal was to understand the participants' previous experiences with e-commerce platforms and their attitudes toward them. The findings showed a variety of experiences among the participants. Some had only heard about e-commerce platforms, while others had seen family members use them but had not used the platforms themselves. There were also regular users among the participants. For example, Farmer 5 and Farmer 2 were familiar with e-commerce platforms like SHEIN, Takealot, and Zando but had not used agricultural e-commerce platforms. On the contrary, Farmer 4 had no direct experience with e-commerce but was aware of others making online purchases, and Farmer 3 had downloaded a Takealot app but had not completed any online purchases. These findings indicate that although most people are aware of e-commerce platforms, there is still a need to engage and persuade a smaller group of participants to participate in e-

commerce and raise awareness of agricultural e-commerce to enable them to conduct their business through digital devices.

6.4.4. Access to Smart Devices

The lack of access to digital devices can discourage and hinder women from adopting new technologies. Rural women often face the challenge of not being able to access technological resources that could help them be productive and improve sales, unlike their urban counterparts who are able to take advantage of such resources. To elaborate, the survey asked respondents about their access to smart devices to gauge their ability to engage with the agriculture platform. The survey revealed that 70% of the respondents answered "yes," while 30% responded with "no." These results indicate that most of the population has access to smart devices, showing great potential for expanding the user base for the agriculture e-commerce platform. However, it a minority of respondents did not have access to smart devices, indicating a digital divide that hinders their participation in e-commerce solutions. This highlights the need for inclusive strategies to ensure that groups without access can also participate and broaden the user base.

6.5. User Perceptions on the Agricultural E-commerce Platform

This section presents the responses collected from a survey questionnaire administered and interviews. The questions were designed to assess the platform across four different themes derived from TAM. These themes include PU, PEOU, BI, and ATU as elaborated below:

6.5.1. Perceived Ease of Use

The developed agriculture e-commerce application provided a positive user experience and was perceived as easy to use. The participants were asked to rate the ease of use of the application on a scale of 1 to 5, with 5 being extremely easy and 1 being extremely difficult. This assessment aimed to understand the perceived ease of use of the platform and determine if the application was considered user-friendly and easy to navigate. Figure 6.2 shows that 5% found it difficult, 15% found it moderate, 20% rated it easy, and a significant 60% rated it as 5, indicating it was "extremely easy" to use, (Figure 6.2). The results indicate that most participants found the application very easy to use, suggesting a good user experience and a high potential for user acceptance. However, a notable portion found it difficult or moderate, indicating unresolved issues that need to be addressed to enhance the usability, and obtain broader user acceptance.

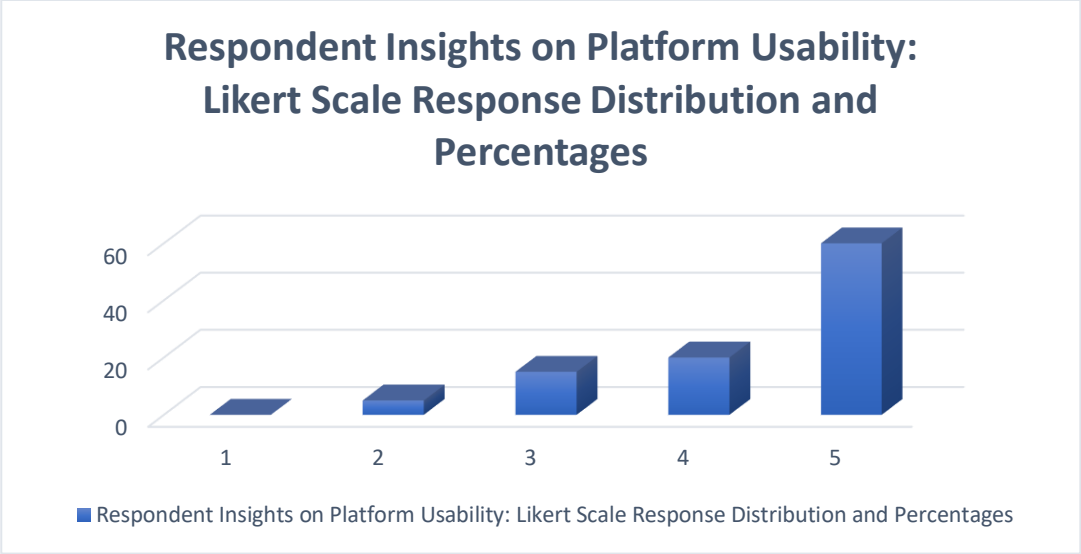


Figure 6. 3: Respondent Insights on Platform Usability: Likert Scale Response Distribution and Percentages.

The study further validated the ease of use through follow-up questions. The participants were asked about their experience using and accomplishing tasks within the app. The aim was to gain a deeper understanding of the app's user-friendliness. The results showed that 65% of the participants found it easy to navigate and complete tasks, 30% had a neutral response, and 5% reported that it was very difficult, as illustrated in Figure 6.3. These findings indicate a generally positive reception of the application. However, the results also suggest that although most participants could use the app, with 30% finding it moderately easy and 5% finding it difficult, suggesting there is still room for improvement to achieve 100% user acceptance.

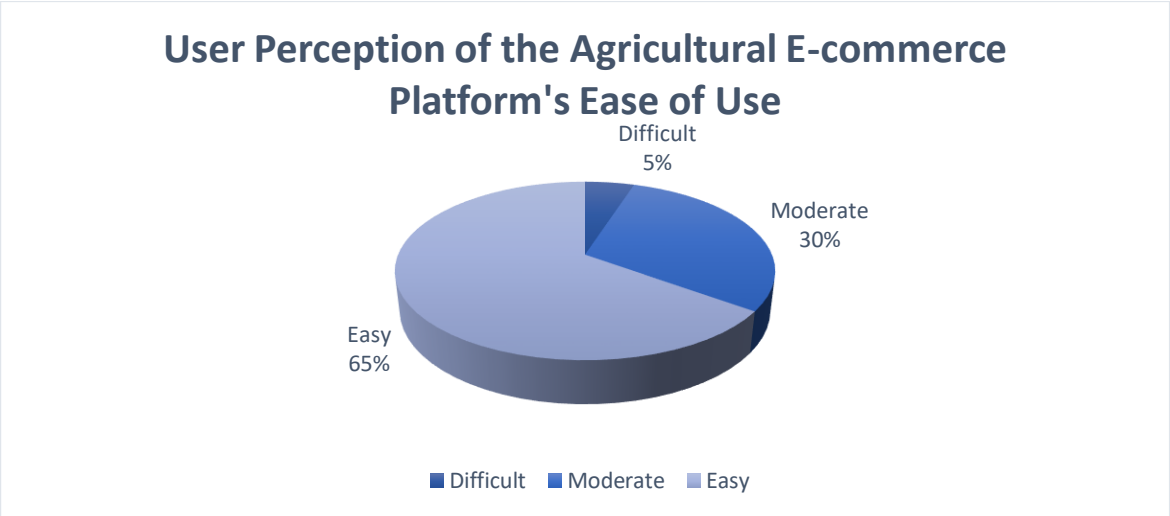


Figure 6. 4: The User Perception of the Agricultural E-commerce Platform's Ease of Use.

The interviews further provided a detailed account of the PEOU of the application obtained from the survey. The interviewer requested the participants to share their experience with the e-commerce platform regarding ease of use. This aimed to evaluate the platform's usability and user-friendliness and to gain more understanding of the survey results. The responses varied; some found it quite easy to use. For example, Farmer 5 found the platform extremely easy to use.

> *I found the application easy to use; it was similar to other applications I've already used, like a menu and a cart. Overall, I was able to update inventory, create a business plan, and perform other tasks without needing any training* (Farmer 5).

Farmer 3 had a slightly different experience, *I initially found the application a bit tricky, but eventually managed to navigate it* (Farmer 3). Another participant expressed mixed feelings, mentioning that while some features were self-explanatory, others required explanation and were difficult to navigate. Moreover, Farmer 4 found the application very difficult to understand, even after receiving training. Overall, the majority of users accepted the application positively, with most getting used to it. However, a few encountered challenges, indicating the need for further improvement in the platform's usability to achieve wider user acceptance.

The statistical results from the ANOVA test indicate a statistically significant difference in app usability scores between age groups. This suggests that age may influence how the app is perceived or used. For instance, older or younger participants may find it more or less user-friendly. However, there is no statistically significant difference in usability scores based on farming activity type (e.g., fruits, vegetables, poultry) and the level of education. While this could be revisited with a larger sample, current results suggest that farming type and literacy levels do not strongly shape the user experience of the system. Table 6.3 indicates a summary of the ANOVA findings.

Table 6.3: Summary of the ANOVA test

Statistic	Age groups	Level of education	Type of farming activity
p-value	0.022	0.333	0.467
Interpretation	Significant difference between age groups	Not significant	Not significant

F(4,15)	3.939	1.226	0.89

To sum up, the findings from both the survey and interviews indicate that participants found the agriculture e-commerce application to be user-friendly. This can be attributed to the simple interface and the use of familiar features commonly found in other e-commerce platforms. User training was also found to improve the perceived ease of use. However, digital illiteracy was identified as a contributing factor for those who encountered challenges. Some users reported difficulties with navigation and perceived the application as being difficult to use.

6.5.2. Perceived Usefulness

Participants found the application very useful in helping them run their businesses. The survey participants were asked to share their thoughts on the potential benefits of using the e-commerce platform for their farming business. This open-ended question aimed to assess the perceived usefulness of the platform and gain insights into the economic advantages that the participants believed they could derive from its use. The most frequently mentioned responses were categorized into 5 themes: Income and sales, transport and delivery, price transparency, access to markets, and time-saving. Some similar responses were noted from different respondents in the survey, as indicated in Table 6.3. The survey results revealed that 10% of the responses (2 participants) highlighted the platform's fair and transparent pricing opportunities. Moreover, 70% (14 participants) mentioned improved access to markets, 15% (3 participants) cited time-saving at the market, 20% (4 participants) indicated that the platform would facilitate online commerce, 15% (3 participants) mentioned transportation and delivery system benefits, and another 15% (3 participants) noted that it would increase their income. Finally, 10% (2 participants) did not provide specific input. These results indicate a significant user base that recognizes the platform`s value, suggesting potential for increased usage of the final application.

Table 6. 3: Perceived benefits of the e-commerce application

Category	Frequency	Perceived benefits
Prices Transparency	2(10%)	- The application enables efficient comparison of prices and provides insights into competitors' pricing.

Access to markets	8(40%)	-The application facilitates wider market reach.
Time	3(15%)	-Time is saved in the marketplace using the application.
Commerce	4(20%)	- The application serves as a medium for buying and selling.
Transport and delivery	3(15%)	- It enables selling to a wider location without concerns about transport and delivery.
Income and sales	3 (15%)	- The platform has the potential to increase income.
No response	2(10%)	- (the survey had no response)

These perceived benefits from the survey were further validated and confirmed in the interviews. For instance, Farmer 4 expressed that the application could help in reaching a wider market. Farmer 2 added that the application would contribute to increased sales, and Farmer 5 mentioned that the application would assist in marketing her goods and expanding her customer base. However, some of the participants expressed skepticism about security issues in software applications (Farmer 1). In addition, there were usability issues despite acknowledgments of the benefits of the application, especially for the elderly generations.

> *The app might be useful, but it is very difficult for me to use. I would need my grandchildren to help me sell* (Farmer 4).

Overall, the results reveal that there is a significant user base that recognizes the value of the platform, indicating the potential for increased adoption and usage of the final application. However, a minority of the participants expressed some unease with the application. One participant mentioned challenges in using the application despite recognizing its usefulness, while another had security concerns. This suggests the need to provide further information and education to the participants about the system, clarify any misconceptions and speculations, and improve the usability, especially for the elderly. Despite this, most of the participants confirmed the survey results indicating a high PU among users of the e-commerce application.

Through the interviews, the study was able to uncover more insights into the reasons why these participants might find this application useful. For instance, the findings revealed that women

farmers encountered a wide range of obstacles in their line of work, including difficulties with transportation, high costs of fertilizers, limited access to markets, and a lack of equipment, all of which were impeding their economic success in their respective businesses.

> *The most stressful thing is arranging transport to deliver our products on time. We often end up with spoiled food while waiting for transportation"* (Farmer 1).

Farmer 4 offered another compelling response:

> *I primarily sell cut watermelon and other crops. Unfortunately, they end up spoilt in the sun while I wait for customers to pass by and make a purchase. I end up selling at a loss due to the damage caused by the heat of the sun" (*Farmer 4).

The results indicate that female farmers face various barriers that hinder their financial stability. This suggests an opportunity to create a customized solution that addresses their specific challenges and offers advantages to the users. Therefore, the existing e-commerce platform is valuable in addressing their challenges and has a significant user base or acceptance.

6.5.3. Attitude Toward Using

Female farmers had a positive attitude toward using the application. The participants were asked about their opinions on using the agricultural platform. This was done to assess the participants' attitudes toward using the platform and to determine the likelihood of the app being accepted. The results revealed that 65% of the respondents were enthusiastic about using the agricultural platform, 25% were neutral, and 10% were hesitant, as depicted in Figure 6.4. The findings showed that most of the intended users were in favor of the application, indicating that it met the needs of most users and resonated with them. They would likely recommend the application to other farmers, potentially expanding its user base. However, there is a minority that either felt neutral or had reservations about using the platform, suggesting that there is still room for improvement to win them over. Overall, the results indicate a strong acceptance of the application, showing a positive attitude toward it, while there is still an opportunity to enhance the application further to address any concerns and sway the minority to become eager users.

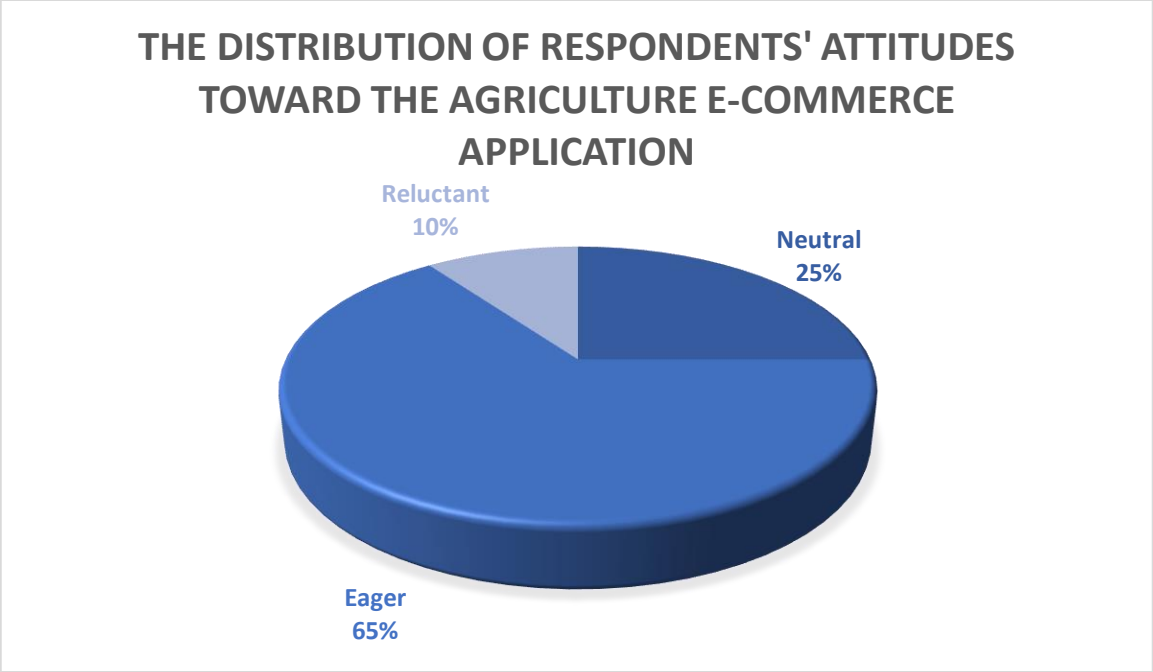


Figure 6. 5: The Distribution of Respondents' Attitudes Toward the Agriculture E-Commerce Application.

6.5.4. Behavioral Intention to Use

The developed agriculture e-commerce showed a high level of behavioral intention to use among the participants. The participants expressed a strong interest in continuing to use the application, especially if the suggested improvements and enhancements were implemented. For instance, the participants were asked about the features they would like to see added to the platform to understand what would motivate them to continue using it. The researcher received 19 responses out of the 20 that were administered to the participants. Table 6.4 revealed several desired features grouped into 3 themes: accessibility, functionalities, and usability. Regarding accessibility, participants suggested adding other South African native languages in addition to the current offerings in Siswati and English, as well as increasing font size for individuals with visual impairments. In terms of functionalities, participants expressed interest in integrating WhatsApp for marketing instead of relying on emails, implementing a rating system, providing tutorial videos on using the application, improving the cart system, and incorporating additional farming categories like poultry, livestock, and fish farming. In addition, respondents highlighted the need for a more user-friendly interface for elderly users, although the survey did not provide specific details on how to address this concern. The results indicate that most of the users were eager to

see the application improve to meet their unique needs, suggesting that broader user acceptance may result from implementing these suggestions as indicated in Table 6.4.

Table 6. 4: Summary of the proposed additional Functionalities.

Category	Suggested Additional Features.
Accessibility	- Add other native languages to the application. - Enlarge the words on the screen for those with eyesight issues.
Functionality	- Allow marketing to be conducted via WhatsApp, as it is the most commonly used communication application in our local areas, instead of email. - Include a video tutorial on the website to explain the application's purpose and functionality. - Have a section that enables all other farmers to connect and network. - Consider adding fish farming or aquafarming to the app. - Implement a rating system for suppliers or products. - Add a section for selling poultry. - Incorporate a section for livestock; the app caters to fruits and vegetables only. - Include types of peanuts mostly grown in the area. - Add cooking recipes
Usability	- More user-friendly for the elderly generation (the survey did not mention how). - Simplify the application; it's too complicated for first-time users.

Female farmers showed a willingness to continue using the platform upon completion of the study. To elaborate, the researcher asked about their willingness to continue using the platform upon completion of the study. This question aimed to assess their intention to incorporate the application into their daily lives once the suggested features were implemented in the application. The findings revealed that 95% of the participants indicated a positive response, with 5% expressing a negative stance, and 0% remaining undecided. These results suggest a strong intention among most participants to utilize the platform in the future, indicating a potentially large user acceptance rate of the final application. Similarly, most of the experts expressed positivity towards the application. For instance, Expert 4 mentioned that the platform was a commendable initiative with a distinct niche, and if marketed effectively, it had the potential to become a substantial initiative. Expert 1 also shared positive feedback, noting that the platform was visually appealing and represented a

promising start. However, there were internal and external barriers that hindered the full acceptance of the e-commerce application.

6.6. Barriers to User Acceptance

There are several technical and non-technical challenges that hinder the user acceptance of the developed agriculture e-commerce. This includes challenges such as a lack of smartphones, cost of data issues, difficulties in using the application, lack of inclusivity, and insufficient digital technical support. For example, Farmer 4, mentioned that she did not have a smart device at home to access and engage with the application, she further described the application as very complicated, expressing the need for constant assistance even after undergoing user training.

> *I understand the need for the application, but the cost of data is very high, and it seems that we would need to be online to use it. Sometimes, internet connectivity is a problem, especially in rainy weather. It would be a waste of money to spend on data only to have a weak signal and be unable to use it before it expires (Farmer 1).*

Similarly, Farmer 3, highlighted the same issues emphasizing the high cost of data required to access the application. In her own words, she expressed concerns about the expense of data and the challenges of internet connectivity, especially during inclement weather. Famer 3 expressed skepticism about getting customers to use the application, citing the resistance of people in the area to adopting new methods of purchasing. These responses highlighted the various external challenges that needed to be addressed for the application's full acceptance. It was evident that data and internet connectivity could be significant obstacles, suggesting the need to consider making the application available offline. Moreover, involving other stakeholders to assist with infrastructure and marketing was deemed crucial to obtaining wider user acceptance.

6.7. Strategies to Improve User Acceptance

This Section presents the findings from a survey and interviews regarding strategies to improve user acceptance. It encompasses general information such as factors that influence user acceptance, strategies to improve the application, and user acceptance of the app.

6.7.1. Influencing Factors.

There are several factors that influence technology acceptance. The user acceptance experts were tasked with identifying the various factors that influence user acceptance. This inquiry aimed to

gather additional data to help researchers comprehend the crucial considerations for attracting a broader user base. The experts provided a range of responses, emphasizing the significance of factors such as internet access, user-friendliness, availability of data connections, access to power for gadgets, network connectivity, an easy-to-use interface, language, and user training or assistance. Moreover, they highlighted the impact of technology, changes in market needs and expectations, the evolving business environment, as well as digital literacy skills and levels.

> *Some of the factors that contribute to a positive user experience include user-friendliness, reliable access to data connections, availability of power sources for gadgets, and seamless access to network connectivity (Expert 1).*

It's evident from the results that there is a strong need to consider external factors to improve user acceptance of the application. While making the application user-friendly is important, factors such as lack of access to phones, internet connections, and digital illiteracy could be major obstacles hindering wider user acceptance of the e-commerce platform.

6.7.2 Suggestions to Improve the Application

The developed e-commerce application had a few areas of improvement. Most experts expressed satisfaction with the current app, stating that the available features adequately addressed the scope for improvement. However, Expert 4 suggested the implementation of voice prompts accompanied by pictures and arrows on navigation buttons to assist users with lower literacy levels. In addition, incorporating more local images to enhance user identification with the app was recommended:

> *To increase user engagement with the app, incorporate more local images and involve women in the decision-making process regarding app features. This can be achieved through regular surveys to gather feedback on user preferences and any challenges they may face. Also, conduct surveys in different languages to ensure inclusivity (Expert 5).*

Furthermore, Expert 5 proposed involving women in the decision-making process regarding app features, suggesting continuous surveys to gather data on acceptance levels and challenges. Stressing the importance of inclusivity, the expert recommended conducting surveys in various languages to ensure representation and promote participation. In addition, the experts were asked to brainstorm ways to make the e-commerce platform more accessible and user-friendly for women in rural areas with varying levels of digital literacy and access to technology. A total of five responses were collected. Expert 1 suggested making the platform work offline and including

more local language options to address communication barriers. Expert 4 recommended incorporating voice prompts to assist those who cannot read. Experts 2, 3, and 5 provided a similar response, stressing the importance of a user-friendly interface. This indicates that there is still room for improvement in making the application more user-friendly and better suited for the intended users of the application to gain wider user acceptance.

6.7.3. Expert-Based Strategies to Improve User Acceptance.

User acceptance experts proposed several strategies to improve user acceptance among women in rural areas. To elaborate, Expert 4 suggested incentivizing customers with discounts on the app. For instance, customers could receive a 50% discount for making purchases through the application. Expert 4 further recommended providing ongoing education and training about the app, even after its release. The participant suggested having agents who could train and demonstrate the app's benefits to users. Building on these suggestions, Expert 2 emphasized the importance of involving more stakeholders.

> *Involve more stakeholders, try to get more suppliers to access the app, and interact with the farmers through it. Also, try to get some of their customers on board with the app, although I'm not sure how to do that. The goal is to make the app accessible to more than just rural farmers (Expert 2).*

He proposed engaging suppliers to connect with farmers through the application and encouraging some of their customers to use the app beyond just rural farmers. Finally, Expert 5 made several recommendations regarding the overall platform, such as updating content, adding new features, offering multilingual support, and improving the user interface. This indicates that the application is poised to gain wider acceptance among female farmers once the suggestions are implemented.

6.7.4. User-Based Strategies to Improve User Acceptance.

The participants shared several recommendations on how to improve user acceptance. For instance, Farmer 1 emphasized the need for more training sessions and tutorials for using the application effectively, while Farmer 2 preferred in-person technical support or a WhatsApp group. Another participant, Farmer 5, suggested providing financial assistance to obtain digital tools for downloading and using the application, as well as creating a peer group to facilitate mutual learning. In contrast, Farmer 4 made a surprising comment:

> *It would be more efficient to coordinate groups of individuals to visit our location and purchase our products in large quantities for resale to major corporations such as TSB. This way, we can avoid the challenges of actively seeking out individual customers (*Farmer 4).

Farmer 4 suggested that the community receives help in selling their products to nearby huge retailers such as the Transvaal Suiker Beperk (TSB) and Umbaba, so the villagers don't have to struggle to find buyers, rather than promoting the use of the e-commerce platform. The results show that most participants provided constructive feedback, demonstrating a willingness to improve and engage with the application, promising broader user acceptance once accessibility and usability issues are addressed. Overall, the participants provided insightful strategies to improve the application, and the user acceptance of the system as summarized in Table 3.2.

Table 3. 2: Summary of Strategies to Improve the Application & User Acceptance

User-based Strategies	**Expert-based Strategies**
Strategies to Improve User Acceptance	
Provision of technical support (Preferably via frequently used platforms such as WhatsApp).	Testing the application with the intended users of the entire system. This includes Female farmers (Suppliers), Customers (buyers), Distributors, and Admins of the platforms.
Digital literacy & User training	Stakeholder engagement & collaboration with the private sector for affordable data.
Financial assistance in acquiring digital devices	Digital literacy & user training
Mutual learning strategies	Discounts & rewards for customers to encourage participation in the application.
Mobilizing buyers for the farmers	Multilingual support
Strategies to Improve the Agricultural E-commerce Application	
Add other native languages to the application.	Consider accessibility features

Enlarge the words for those with eyesight issues.	Add more local images to improve relatability.
Marketing conducted via WhatsApp instead of email.	Improve lingual inclusivity
Include a video tutorial on the website to explain the application's purpose and functionality.	Improve offline functionalities of the system
A section that enables all other farmers to connect and network.	Consider more flexible methods of payment
Implement a rating system for suppliers or products.	Continuous user feedback
Add cooking recipes	Consider women in decision-making (design, development, and implementation of the application).
Add a section for selling poultry, livestock & aqua products	Continues Improvements
More user-friendly for the elderly generation.	User-friendly interface

6.8. Summary

This Chapter presented an overview of the study findings. The Chapter discussed the demographic characteristics of the survey participants and interviewees who were involved in assessing agricultural applications. The findings showed that the platform was generally well received, with most participants finding it easy to use and very useful for their businesses. The findings revealed a positive attitude toward using the application and an intention to continue using it once the suggested functionalities were implemented. Furthermore, the findings shed light on the challenges that hinder acceptance, such as lack of stable internet, access to smart devices, and issues with stable internet connections, among others. The Chapter also presented constructive strategies to improve the acceptance of the application and provided valuable insights for policymakers and developers. These insights will be discussed further in the next Chapter.

Chapter 7: Discussions

7.1. Introduction

This Chapter discusses the results, summarizing the most prominent, conflicting, and recurring themes. It delves deeper into the findings worth mentioning and explores the similarities and discrepancies between the results of this study and existing literature. In addition, the Chapter addresses the study's practical implications for software developers, governments, organizations, and policymakers interested in implementing agricultural e-commerce platforms. It offers insights for developing such applications to ensure broader user acceptance and promote genuine economic empowerment for women residing in rural areas who are constantly at the forefront of agriculture.

The Chapter is divided into five Sections. Section 7.2 discusses the user perception of the evaluated platform's Perceived Usefulness, Ease of Use, Behavioral Intention, and Attitude Toward Using. Section 7.3 covers barriers to acceptance, while Section 7.4 offers strategies for improving user acceptance among women in rural areas. In addition, Section 7.5 provides practical implications based on the findings, and Section 7.6 summarizes the key insights gained in the Chapter.

7.2. Analysis of the User Perceptions

Research indicates that e-commerce provides substantial economic and social advantages for farmers. These platforms empower farmers by improving market access, cutting operational costs, and boosting sales revenue. Consequently, this Section presents an assessment of user acceptance, considering factors such as perceived ease of use, usefulness, attitude towards usage, and intention to continue using the agricultural e-commerce platform among female farmers in rural areas.

7.2.1. Perceived Ease of Use (PEOU)

The study`s findings revealed that most participants found the e-commerce platform user-friendly. To elaborate, 65% of the participants stated that they found it easy to navigate and complete tasks, 30% had a neutral response, and only 5% found it very difficult (Figure 6.3). The interviews conducted as part of the study also revealed that most participants found the application easy to use due to factors such as user training, an intuitive user interface, technical assistance, and the incorporation of familiar features on the e-commerce application. These factors are important for the widespread adoption of the application, as perceived ease of use directly impacts the

acceptance of new technologies (Davis, Granić & Marangunić, 2024). However, the findings from this study contradicted existing literature, which suggests that women from rural settings experience frustration, alienation, and annoyance when using new technology (Lupton & Maslen, 2019; Agarwal, 2022). This indicates that aspects such as a simple user interface, technical assistance, and user training could reinforce PEOU and ultimately improve user acceptance.

7.2.2. Perceived Usefulness.

The study revealed that intended users of the agriculture platform perceived numerous benefits of the system. This included increased market access, sales, transportation, and price transparency. This was beneficial for female farmers residing in rural and isolated geographical areas, as it helped them overcome challenges such as limited market access and exploitation from middlemen. These findings align with those of prominent researchers such as Rukanova et al. (2021) and Taher (2021) in their studies on e-commerce platforms. Overall, the findings indicate that the participants found the application valuable because it effectively catered to the users' needs and challenges.

7.2.3. Attitude Toward Using

The survey findings revealed that the platform received positive feedback from the participants. For example, 65% of respondents expressed enthusiasm about using the platform, while 25% were neutral, and only 10% were hesitant (Figure 6.4). The interview results further explained that a positive social influence, combined with community buy-in through social media platforms mostly, contributed to improved user acceptance. According to Bryan & Tranos (2021), positive Perceived Usefulness, and Perceived Ease of Use further improved attitudes toward using the application. This positive reception contradicted arguments suggesting that women from rural settings had a negative stance toward technology (Lupton & Maslen, 2019). Overall, this indicates that a combination of ease of use, perceived usefulness, social influence, and community buy-in influences positive attitudes among users and ultimately leads to wider user acceptance.

7.2.4. Behavioral Intention to Use.

The study found that most participants were willing to continue using the platform. For instance, only 5% of the respondents expressed a negative view of the platform, while 95% indicated their willingness to continue using it after their suggestions were implemented. The findings also revealed that most participants found the application useful because it improved access to markets, transportation, and delivery systems, increased their income, and saved time at the market. These

results emphasize the importance of considering user preferences in platforms, as it leads to higher user acceptance. Several studies support these findings suggesting that the user acceptance of technologies for women in rural areas tends to be high when they are made responsive to their needs and preferences in mind (Cao et al., 2018; Sultana et al., 2018; Theis et al., 2018; Figueroa et al., 2021; Ahmed, 2022;). Therefore, there is a growing need for women-centered technologies to address their unique challenges and bridge the gender gap in access to technology.

Table 7. 1: Factors Affecting the User Acceptance of the Agricultural E-commerce Platform

	User Acceptance	
Constructs	**High user acceptance**	**Low user acceptance**
Perceived Usefulness	- Application relevant to the local context - The application addresses user challenges.	- The system is irrelevant to the local context. - Does not offer local services. - Not responsive to user needs and challenges.
Perceived Ease of Use	- Simple navigation on the application - Intuitive user interface - User training - Technical assistance - Use of familiar features	- Complex navigation - Complicated user interface - Lack of user training - Lack of technical assistance - Use of uncommon e-commerce features
Attitude Toward Using	- User-friendly application - Social acceptance - Community-by-in	- Complicated application - Community resistance
Behavioral Intention	- Positive User experience - Strong perceived usefulness of the application	- Frustrating user experience - Low perceived value or benefits of the system

Overall, the participants provided positive feedback about the e-commerce platform. The results revealed that women in rural areas recognized the benefits of using e-commerce platforms to support their farming businesses, acknowledging the advantages these tools could offer. Most participants found the application very user-friendly, with a small portion expressing frustration. The majority had a positive attitude toward the application and, following the implementation of their suggestions, almost all participants were willing to use the platform. While the application initially received widespread acceptance, some challenges hindered full user acceptance.

7.3. Challenges to User Acceptance.

The study found numerous challenges hindering the acceptance of technology among women in rural areas. These challenges include limited access to smart devices, high data costs, application usability issues, lack of inclusivity, and inadequate digital support (Figure 7.2). For example, the survey revealed that 70% of respondents had smartphones while 30% did not. This aligns with a previous study by Chavoshi & Hamidi (2019) which focused on the barriers to mobile learning adoption, indicating that factors such as a combination of pedagogical, technological, social, and individual issues directly impact the acceptance of IT solutions in developing regions. The results of this study also highlighted that a difficult PEOU of the platform was a major challenge to user acceptance, especially for the elderly and those with disabilities. Furthermore, platforms perceived as easy to use are more likely to be accepted, while complex technologies with poor usability and lack of consideration for local context experience lower user acceptance. These findings are consistent with research by Sudirjo et al. (2024) which emphasized the importance of user-friendly technology in improving acceptance. Overall, the study highlights the significance of both technological and external conditions when implementing digital solutions in rural areas.

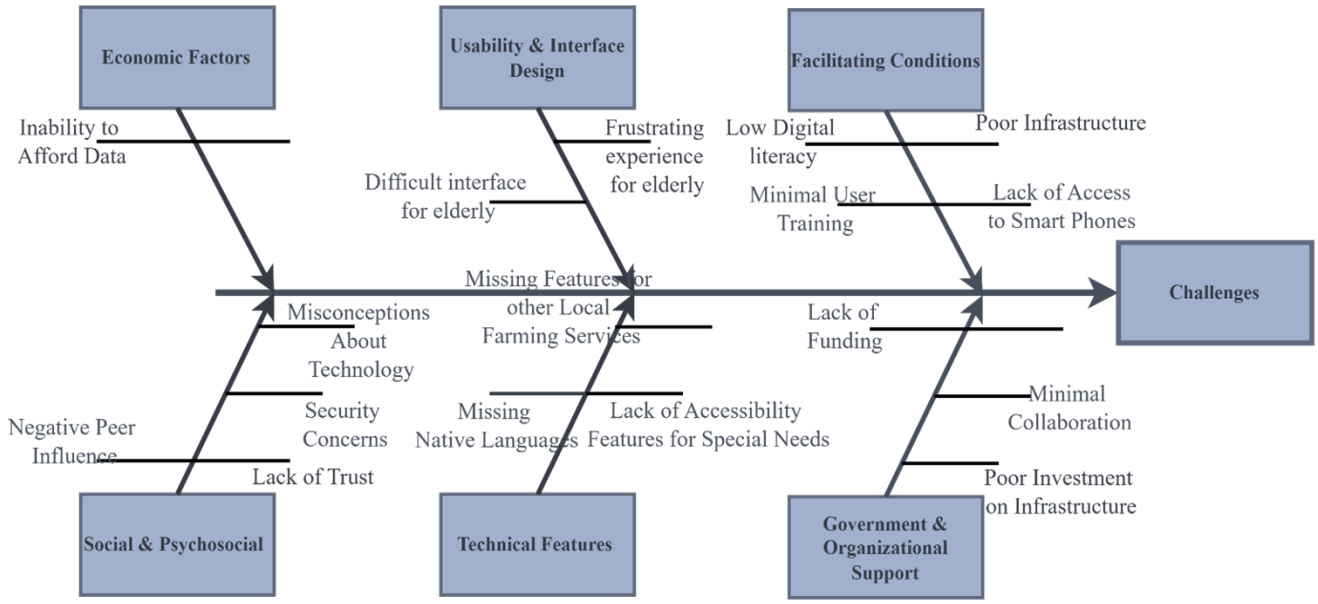


Figure 7. 1: Summary of Challenges that Hinder User Acceptance.

7.4. Strategies to Improve User Acceptance.

The participants in the study shared several recurring recommendations for improving user acceptance. The most frequently mentioned recommendation was the inclusion of training sessions and tutorials for using the application effectively, with a preference for in-person technical support or a WhatsApp group (Table 7.2). This recommendation was prominent in studies such as Beldad & Hegner (2018), emphasizing the importance of digital literacy and user training to improve user acceptance. Furthermore, the participants suggested making the platform work offline and including local language options to address communication barriers, a recommendation widely supported in various studies (Beldad & Hegner, 2018; Cao et al., 2018; Chavoshi & Hamidi, 2019).

The concept of making applications accessible to individuals with disabilities has been a widely discussed topic in academia. Multiple studies have advocated for the incorporation of features like enlarged text, screen readers for the visually impaired, and adjustable text size (Bocevska et al., 2018; Bricout et al., 2021). Bocevska et al. (2018) suggested including subtitles, transcripts, sign language support, keyboard navigation, touch gestures, simplified language, and support for individuals with seizures to enhance the accessibility of modern applications. Furthermore, the study participants emphasized the importance of integrating these features for the elderly and enhancing font size to improve accessibility (Table 7.2). These findings underscore the significance of addressing these factors to enhance the overall user experience and user acceptance

The study`s findings that stood out the most include adding more local language options for the local users and incorporating local images into the application to better align with the local context (Table 7.1). Expert 5 also suggested involving women in the decision-making process for app features, recommending continuous surveys to gather data on acceptance levels and challenges. This aligns with studies emphasizing the importance of having a local application that reflects the preferences of the local context for wider user acceptance, as highlighted by Cao et al. (2018).

Table 7. 2: Summary of strategies to Improve User Acceptance

Novel Strategies	Recurring Strategies
- Responsive to the local context (Addition of local images and more local languages)	- Addition of Accessibility features for people with disabilities

- User evaluation (involving women in decision-making)	- User-friendly interface
- Constant user feedback and iterative improvement on the application.	- User training and digital literacy
- Incentives to encourage customer engagement (discounts on e-commerce).	- Stakeholder involvement (private sector, NGOs)
- User support services	- Make offline features available.
	- Digital Literacy and User Training

7.5. Practical & Theoretical Implications

The study's findings provide valuable insights into the user acceptance of an agricultural e-commerce platform. The study examined user perceptions guided by the TAM constructs of PU, PEOU, ATU, and BI. In addition, the findings highlighted various challenges that hinder user acceptance, including technological issues such as difficulty with the user interface, lack of accessibility features for people with disabilities, and external factors such as digital illiteracy, limited access to smart devices, poor infrastructure, and lack of responsiveness to local contexts. The participants also proposed several strategies to address these challenges and suggested ways to improve user acceptance. As a result, this Section presents the practical implications of these findings for developers, governments, and policymakers considering the implementation of agricultural e-commerce platforms to empower female farmers economically in rural settings.

7.5.1. Application Design Implications & Recommendations

The research produced notable achievements, demonstrating high levels of Perceived Ease of Use, Perceived Usefulness, Attitude Toward Use, and Behavioral Intention in the context of the evaluated agricultural e-commerce. The findings highlighted that factors such as ease of use, perceived usefulness, social influence, and community buy-in play a significant role in shaping positive attitudes among users and fostering broader user acceptance. As a result, the following Section outlines several guidelines for developers to incorporate into the design of agricultural e-commerce platforms (Table 7.3). These guidelines emphasize the importance of conducting a needs assessment, prototyping, usability testing, creating a user-friendly interface, and optimizing the onboarding experience to achieve similar results to this study and obtain wider user acceptance.

Table 7. 3: Implications on the Design of E-commerce Platforms

Design of E-e-commerce		
Strategy	**Description**	**Expected Outcome**
Conduct a Needs Assessment	An analysis of the specific needs, challenges, and preferences of the users.	Application design that is informed by the functional requirements of the intended users, responsive to user needs, and challenges. This leads to high perceived usefulness and wider user acceptance among women.
Prototyping	A simplified version or design of the application.	Developers & other stakeholders will have a visual representation of the application in its final form before it is developed.
Conduct Usability Testing	Collecting user feedback on the prototype.	This helps obtain user feedback on the application's design and functionality before developing the actual system, improving PU and PEOU based on user feedback. Involving users in the early stages increases user buy-in and community engagement, boosting ATU and, ultimately user acceptance.
User-Friendly Interface	An easy and intuitive user interface including large fonts, icons, and common features with easy navigation.	Reduces frustration while using the application and increases PEOU and overall user acceptance.
Onboarding Experience	Onboarding features that guide first-time users on the application.	Reduces frustration and confusion on the application, improving PEOU and user acceptance.

7.5.2. Application Functionality Implications

This section provides a detailed guideline for software developers seeking to develop agricultural e-commerce platforms for women residing in rural settings as a means of economic empowerment. The study has provided valuable insights, including factors that lead to high perceived usefulness of the e-commerce platform and the reasons why participants found the application useful. Therefore, this Section presents implications for these findings, guiding developers working on agriculture e-commerce applications for female farmers in rural settings, as presented in Table 7.3.

Table 7. 4: Implications for the development of agricultural E-commerce Platforms

E-commerce Application

Strategies	Descriptions	Expected Outcomes
Localization and Contextualization-	Application tailored for local services and farming practices.	Application that facilitates the purchasing of goods and services relevant to the local context. For instance, Jeppes Reef focused on fruits, vegetables, poultry, livestock, and a few aquatic farming. Hence, provisions for tea or spice farming might be services the women are not willing to offer
Cultural Responsiveness	An application that reflects local customs and traditions.	An application with high relatability and acceptance to users.
Adaptive Solution	An e-commerce application tailored to local limitations such as transport and infrastructure issues.	This will improve access to markets and make distribution efficient, benefiting women and increasing user acceptance.
Gender-sensitive Features	Features that address gender-specific barriers such as security.	This will encourage female participation in the platform. Thereby increasing user acceptance.
Accessibility features	Features that allow people with disability to interact with the App	This increases the ability of all types of users to interact and engage with applications improving wider user acceptance.
Localized Payment Systems	Preferred methods of payment that are common in rural settings.	Increase payment convenience for women with banks and without bank accounts. For instance, systems like cash payments may be preferred to an online payment system.
Multilingual Support	Inclusion of diverse local languages.	Improves relatability and easy engagement with the application and Perceived Ease of Use (PEOU).
Digital Literacy	User training on the application to improve digital skills.	Increase competence in using the applications among women.
Incentives and Rewards	Include incentives and discounts	Encourages participation in the application and improves user acceptance.

7.5.3. Institutional & Policy Implications

This Section provides insights for governments, policymakers, and organizations interested in implementing agriculture e-commerce platforms. The study's findings suggest that user acceptance of applications depends not only on technological excellence, but also on external factors such as digital literacy, adequate infrastructure, and unlimited access to smart devices, which can hinder

users from engaging with IT solutions meant to enhance their economic empowerment (Figure 7.3). Thus, this Section offers implications and actionable strategies based on the study's results.

The findings of the study revealed that the absence of facilitating conditions significantly hindered user acceptance. Participants from the rural community of Jeppes reported challenges with high-speed internet access, electricity supply, and transportation issues. As a result, municipal governments seeking to implement such initiatives should consider investing in broadband infrastructure to ensure women have internet access and can participate in the platform. Moreover, substantial investments in transportation infrastructure, such as local roads and postal services, are necessary for the effective operation of e-commerce. These actions will ensure that women have the resources needed to successfully operate their e-commerce businesses and benefit from initiatives aimed at promoting socio-economic empowerment for female farmers in rural settings.

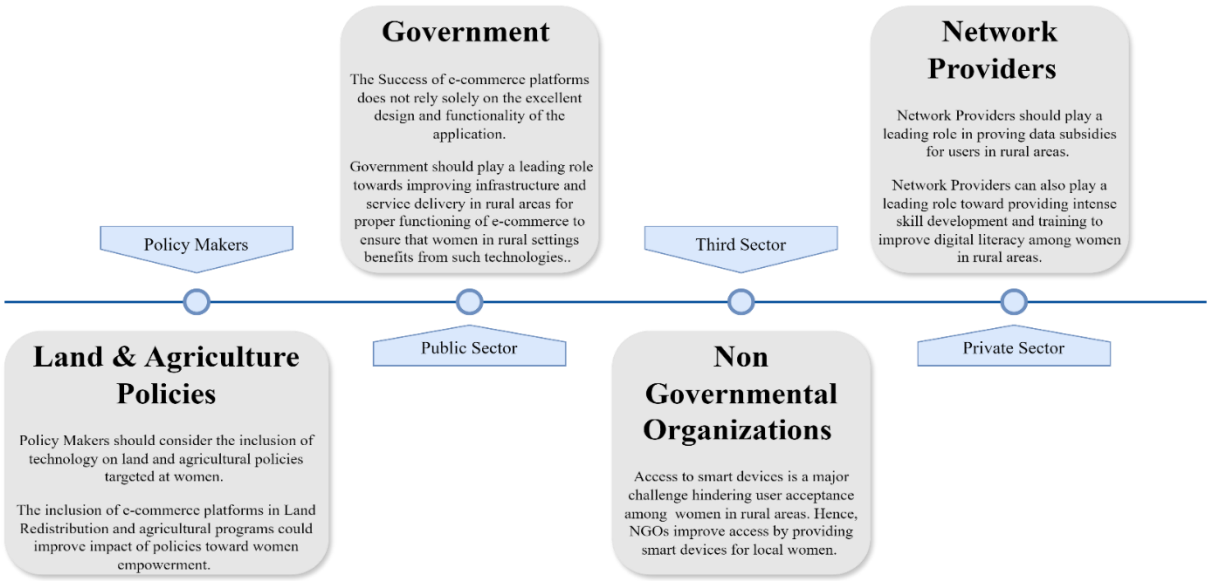


Figure 7. 2: Institutional & Policy Implications

Collaborative efforts involving policymakers, the public sector, the third sector, and the private sector are essential for enhancing the potential of e-commerce platforms in rural areas. To support rural women engaged in e-commerce businesses, private companies like Telkom and Vodacom can offer data subsidies to lower their data costs. In addition, the private sector can lead in providing digital literacy training for local women, while non-governmental organizations can supply software tools to facilitate their interaction with these platforms. Moreover, incorporating

technology into policies aimed at empowering women such as the Land Redistribution for Agricultural Development (LRAD), and the Department of Agriculture, Forestry and Fisheries (DAFF) Gender Policy could catalyze their empowerment. This would ensure that women genuinely experience economic gains and true economic empowerment through agricultural e-commerce platforms. The transfer of economic resources such as land does not automatically translate to economic independence, as women face other challenges such as access to markets. Therefore, technology such as agricultural e-commerce platforms can be a game-changer in empowering women, complementing such policies, and enabling women to experience growth through market access. Furthermore, policymakers can contribute to the development of digital training programs aimed at enhancing women's digital literacy. It is also essential to implement policies regulating data privacy, theft, fraud, and consumer protection to foster increased participation and community engagement in the e-commerce system. Overall, concludes institutions seeking to implement agriculture e-commerce applications to support female farmers in rural areas should prioritize collaboration and stakeholder engagement to ensure genuine economic empowerment and reinforce the user acceptance of the agricultural platform.

7.5.4. Theoretical Implications

The study's findings have significant implications for female farmers and theoretical research. The results show that when women perceive e-commerce applications as easy to use and beneficial for their business, it leads to higher user acceptance of the application. This, in turn, leads to increased access to markets, higher incomes, and greater economic independence. Furthermore, the study contributes to gender equality by providing guidelines for the development of gender-specific technology interventions that support the economic independence of women. The study also lays the groundwork for research into how the Technology Acceptance Model can be applied in different contexts, such as gender-based and rural-specific settings. Future studies could involve longitudinal research to explore how user acceptance of such platforms changes over time among female farmers in rural areas. Cross-cultural research could also provide valuable insights into how demographic, cultural, and economic factors influence technology acceptance among women.

Table 7. 5: Theoretical Implications of the Study

Key implications

Female Famers in Rural Settings	- Economic empowerment - Community development - Digital inclusion
Technology Acceptance Model	- Application of TAM on gender context and rural settings - Future work on longitudinal studies - Future work on cross-cultural research

7.6. Summary

This Section presented the findings on the evaluation of the agricultural e-commerce platform designed to support women from rural areas. The results show an overall positive evaluation of the platform's user acceptance among rural female farmers and user acceptance specialists who participated in the study. The platform was evaluated using TAM constructs, and the results indicated that most of the users found the application useful, easy to use, had a positive attitude toward using the application, and intended to continue using the application once the suggested features were implemented. However, the study also identified several challenges that hindered the wider adoption of the application, including technological issues such as usability problems, lack of accessibility features for disabilities, and missing features that the intended users found to be absent in the application. Moreover, the results indicate other external issues, such as the lack of accessibility to smart devices, stable internet connectivity, and high data costs. Hence, comprehensive guidelines for the design and development of an advanced agriculture e-commerce application were presented in this Section. Furthermore, the Section presented recommendations for policymakers, governments, private companies, and NGOs planning to implement similar applications for the genuine economic empowerment of women in rural settings.

Chapter 8: Conclusion

8.1 Introduction

This Chapter presents a summary of the findings, conclusions, and recommendations derived from the study. The primary aim of this research was to assess the acceptance of an agricultural e-commerce application designed to support women in rural areas. The Jeppes Reef community was selected as the study area to gather insights that could be applied to other rural communities. The findings provided valuable insights into the design and development of e-commerce platforms for women in rural areas and presented strategies to obtain widespread user acceptance. The study highlighted the crucial role of integrating and advancing technology in rural communities, with a focus on areas requiring improvements in the design and implementation of agricultural e-commerce platforms. Furthermore, the implications of our findings extend to informing the development of policies and recommendations aimed at promoting digital inclusion and economic opportunities for women, particularly female farmers in rural settings, and beneficiaries of LRP.

This Chapter presents four sections. Section 8.2 gives a summary of findings obtained from the study research objectives, covering user perceptions, barriers to adoption, and strategies to improve acceptance. Section 8.3 presents the Limitations & Suggestions for Future Work, Section 8.4 covers a summary of the Theoretical & Practical Contributions drawn from this study, section 8.5 offers final remarks from the study, and Section 8.6 presents the recommendations drawn.

8.2 Summary

The study provided evidence showing that e-commerce platforms offer significant advantages for female farmers in rural areas. These benefits include improved access to markets, fair and transparent pricing, and better marketing for agricultural goods and services. However, the study also argued that the adoption of these technologies is generally low in rural settings, particularly among women. Moreover, there has been limited research on the acceptance of these technologies among women in rural areas. Therefore, the study aimed to assess the acceptance of an agriculture e-commerce platform designed to support female farmers in rural areas and reduce the gender gap in access to technological resources. This platform was developed in the siSwati local language to

better resonate with the target users. It included features such as a distributor section to facilitate connections between suppliers and distributors, mitigating transport and delivery challenges. The application also incorporated female-focused marketing strategies to expand sales opportunities beyond the local scale, along with an inventory system, a forecasting system, a simplified payment system, and a business plan - all tailored to support female farmers in their business initiatives. The results of the study demonstrated a positive evaluation of the e-commerce platform, offering insights into user perceptions, barriers to adoption, and strategies for improving the application and overall user acceptance, as outlined in the study`s research objectives below:

8.2.1 Objective 1: To Assess the Users' Perceptions of the Agricultural E-Commerce Platform.

The research findings indicated that the e-commerce platform received favorable feedback from its target users. Most participants found the application user-friendly, citing its simple interface and the incorporation of familiar features commonly found in other IT solutions. However, a small number expressed difficulties in navigating the application due to age-related and disability-related challenges. In addition, most participants perceived various benefits of the e-commerce platform, such as improved market access, enhanced transparency, fair pricing, elimination of intermediaries, increased sales, and time savings compared to traditional physical markets. Overall, there was a positive attitude towards using the app, with users expressing a willingness to continue using it if their suggestions for additional features were implemented.

8.2.2. Objective 2: To Examine the Challenges That Hinder User Acceptance.

The findings suggest that e-commerce platforms can bring positive changes to rural communities. However, there are various obstacles to user acceptance in these areas, including challenges related to user experience for the elderly, accessibility for people with disabilities, unreliable internet access, and a lack of customization for local contexts. Economic factors, such as the affordability of data and electronic devices, also present hurdles for individuals using e-commerce applications in rural areas. Furthermore, issues like unstable internet, inconsistent electricity supply, and digital illiteracy, hinder user acceptance. In addition, social factors like family and peer influence and insufficient support from the government, private sector, and NGOs contribute to these challenges. As a result, it was crucial to develop comprehensive solutions that complement agricultural e-commerce initiatives to ensure that women are not disregarded in the digital transformation.

8.2.3. Objective 3: To Devise Strategies for Improving User Acceptance.

The research successfully compiled effective strategies to boost the adoption of e-commerce platforms by women in rural areas. These strategies include incorporating accessibility features for individuals with disabilities, designing a user-friendly interface for the elderly, and engaging stakeholders from the private sector, public sector, and third sector. Moreover, the study underscored the significance of integrating offline features and providing incentives to promote customer engagement, such as offering discounts on e-commerce purchases. It also highlighted the importance of seeking continuous user feedback, involving women in decision-making processes, and customizing the platform to reflect local contexts. These strategies were shown to have a significant increase in the overall acceptance of e-commerce platforms in rural areas.

The researcher made two assumptions regarding the e-commerce platform under study. Firstly, it was assumed that the platform was adequately gender-centric, offering a user-friendly and inclusive experience. Furthermore, the study focused on evaluating user acceptance through the lens of TAM 1, in the constructs of PEOU, PU, ATU, and BI. These assumptions guided the scope of this study, which examined the user acceptance of the agriculture e-commerce applications.

8.3. Limitations & Suggestions for Future Work

The study found several technical and methodological limitations. The evaluated application did not consider accessibility issues for individuals with disabilities, resulting in the exclusion of local participants with special needs in the evaluation of the e-commerce platform. Furthermore, the application's development only accounted for the dominant language, Siwati, without taking into consideration other native languages like Tsonga, spoken by visitors in the area. The study recommended the development of a more inclusive application that caters to a diverse user base. It also suggested evaluating a more advanced agricultural e-commerce platform that includes accessibility features and incorporates all native languages for future research. In addition, the study recognized limitations in its research methods, particularly in the sampling techniques, which included snowball and convenience sampling, which have been widely criticized for biases. To address this, the study implemented referral caps and methodological triangulation. The study adopted both qualitative (interviews) and quantitative (surveys) approaches to investigate user acceptance among rural women to cross-validate the findings obtained in this study. Moreover, the study acknowledges limitations related to the brief duration of user interaction with the agricultural

e-commerce platform. The findings mainly reflect initial impressions and early acceptance, which do not fully represent long-term user attitudes, engagement, trust, and usability perceptions. A longer period of usage could offer more acute insights into how users adapt, their sustained satisfaction, and the features that promote long-term adoption. Hence, future research should focus on longitudinal studies to examine how user acceptance evolves over time. Finally, the study identified time and financial constraints that resulted in a smaller sample size and recommends further research with a larger and more diverse sample of women from rural communities.

8.4. Theoretical & Practical Contributions

This research has offered valuable insights for various stakeholders such as software developers, governments, policymakers, and organizations interested in implementing similar platforms in the future. The study has presented a detailed guide for software developers on designing agricultural e-commerce applications tailored for women in rural areas. It has highlighted crucial design considerations, including conducting thorough needs assessments to enhance application relevance, prototyping, and integrating onboarding features to improve the initial user experience. While the primary focus of this study was to study the user acceptance of the agriculture application, it is important to acknowledge that the system was developed through a user-centered design approach. Participants were involved in the early stages of design and development, which likely influenced their perceptions during the acceptance evaluation. Therefore, the high level of user acceptance observed in the findings may be attributed to their prior engagement with the system's development, reinforcing the value of participatory design in technology built to support women. Moreover, the study has provided guidelines for localizing the application to align with local services, farming practices, cultures, and traditions. It has also addressed local limitations in transportation and internet connectivity, a payment system convenient for local women, and emphasized the incorporation of gender-based features. The research has also recognized external factors that could impact user acceptance of applications, recommending government investment in infrastructure, improved roads, and electricity to facilitate effective interaction with the application. Furthermore, the study has proposed guidelines for fruitful collaboration between the private and public sectors, with the private sector contributing to digital literacy initiatives and the public sector providing necessary software devices. The study has also stressed the inclusion of technology in initiatives such as LRAD and DAFF Gender Policy, aiming to empower women.

This would ensure that the mere transfer of economic resources is accompanied by digital tools to enable women to benefit from these resources and reinforce digital inclusion. Apart from this, the research contributes to the current body of knowledge on the Technology Acceptance Model, offering detailed guidance on its application in various contexts, including gender-based and rural-specific contexts to measure user acceptance. Overall, the study has provided comprehensive guidelines for developing an advanced, all-inclusive agricultural e-commerce platform aimed at empowering women from rural areas. It has outlined strategies for cross-sector collaboration to ensure that women truly benefit from digital solutions and economic resources available to them, ultimately fostering genuine economic empowerment for women residing in rural settings.

8.5. Final Reflection

The study emphasized the potential impact of introducing an e-commerce platform to empower female farmers. What stood out was the finding that female farmers in rural areas were enthusiastic about using agricultural e-commerce and recognized the potential benefits it could offer. However, the study also revealed that general e-commerce platforms might not adequately address the unique challenges faced by these women. Factors such as lack of relevance to the local context, complex user interfaces, digital illiteracy, and inadequate technical support were identified as barriers to user acceptance. In addition, it was notable that developing an excellent platform based solely on user needs and preferences was insufficient to enhance user acceptance. Instead, collaborative efforts among the private, third, and public sectors were deemed essential to facilitate digital inclusion in rural areas and ensure that women benefit from resources designed to empower them.

8.6. Recommendations

The study`s participants provided several strategies to improve the user acceptance of the application among women in rural settings. These suggestions provided viable solutions to some of the challenges that hinder wider user acceptance. Hence, this section provides recommendations based on the conclusions of the study, presenting solutions to some of the challenges that were not addressed by both the female farmers and the user acceptance specialists involved in the study.

- Accessibility to Smart devices: To enhance accessibility to smart devices, the study suggests allowing multiple supplier accounts in one device. This would enable more than 1 supplier

(female farmers) to utilize the same smart device to manage their online business, promoting inclusivity and engagement of the e-commerce platform. With 70% of the participants having access to smart devices, it's essential to address the challenge of sharing devices. Allowing at least three profiles to be created on a single device would facilitate inclusive growth. Privacy in different user accounts can be maintained through individual user login passwords and authentication.

- Encourage Collaboration: Furthermore, to encourage the sharing of devices, the application can provide incentives or discounts to individuals who share their smart devices with other women who do not own such devices. However, there should be a system in place to verify that one smart device is hosting different accounts belonging to different female farmers. These services would be rendered to ensure transparency and authenticity.
- Community Wi-Fi: Another recommendation is to establish community Wi-Fi spots to enhance internet accessibility for users. This would allow users to access the internet for free or at a low cost, ultimately improving the overall accessibility of the application.

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Appendix A: Survey With Female Farmers

Agricultural E-Commerce Application User Acceptance Evaluation

Thank you for participating in the User Acceptance Testing (UAT) of the agricultural e-commerce application. This application aims to support female farmers in the agricultural sector. Your feedback is critical in helping us improve the application to better support community development overall. This questionnaire will take approximately 20 minutes to complete. Your responses will be kept confidential, and your identity will remain anonymous.

Demographic Information

1. Please select your appropriate age group.
   - **a)** 18-24
   - **b)** 25-34
   - **c)** 35-44
   - **d)** 45-54
   - **e)** 55-64
   - **f)** 65 or older
2. What is your home language?

   Please type here

3. Please select your level of education
   - **a)** No Education
   - **b)** Primary level
   - **c)** Secondary level
   - **d)** Tertiary level
4. What is your employment status?
   - **a)** Unemployed
   - **b)** Self-employed
   - **c)** Employed full-time.
   - **d)** Employed part-time.
   - **e)** Student
   - **f)** Other

System Evaluation

1. General Questions

1. 1 What is your primary farming activity?

a) Crop Farming
b) Livestock Farming
c) Poultry Farming
d) Horticulture Farming.
e) Mixed Farming

1. 2. How willing are you to adopt new digital technologies?

a) Reluctant, I prefer sticking to old and familiar technologies.
b) I am neutral.
c) I am always eager to try new technologies.

1. 3. Do you have access to smart devices?

a) Yes
b) No

2. Perceived Ease of Use (PEOU)

2.1. How easy did you find the agricultural e-commerce application to use?

a) 1. Extremely difficult
b) 2. Difficult
c) 3. Moderate
d) 4. Easy
e) 5. Extremely Easy

2. 2. How easy was it to navigate the app and complete tasks?

a) Very difficult
b) Moderate
c) Very easy

3. Perceived Usefulness (PU)

3.1 From your own perspective, how would the application benefit your farming business?

Please type here

4. Attitude Toward Using (ATU)

4.1. What is your attitude toward using the application?

a) Enthusiastic

b) Neutral

c) Reluctant

5. Behavioral Intention (BI)

5.1 What features or functionalities would you like to see added or enhanced in the current Application?

Please type here

5.2 Would you like to continue using the app in the future once your adjustments have been made? Yes, or no?

Please type here

Appendix B: Female Farmers' Interviews

INTERVIEW SCHEDULED FOR KEY INFORMANTS OF THE RESEARCH PROJECT

Thank you for taking the time to participate in the interview for our research project. This study is being conducted as part of a master's degree in information technology at the University of Cape Town. Key informants are expected to provide insights regarding the user acceptance of an agricultural e-commerce application designed to support female farmers in rural areas. Please note that the information collected will be used for academic purposes only. The interview is expected to take approximately 15 minutes to complete. Your responses will be confidential, and your identity will remain anonymous. The interview questions are structured as follows:

---

a) What has been your experience as a farmer in the agricultural sector?

b) What challenges do you face that hinder your economic stability as a farmer?

c) What is your experience with e-commerce applications

d) In your opinion, how would using e-commerce platforms assist your farming business?

e) What was your overall experience using the e-commerce platform?

f) What social factors influenced your decision to use the app?

g) What challenges prevent you from fully utilizing the app?

h) What assistance do you need to effectively use the platform?

Appendix C: Expert Interviews

INTERVIEW SCHEDULED FOR KEY INFORMANTS OF THE RESEARCH PROJECT

Thank you for taking the time to participate in the interview for our research project. This study is being conducted as part of a master's degree in information technology at the University of Cape Town. Key informants are expected to provide insights regarding the user acceptance of an agricultural e-commerce application designed to support female farmers in rural areas. Please note that the information collected will be used for academic purposes only. The interview is expected to take approximately 15 minutes to complete. Your responses will be confidential, and your identity will remain anonymous. The interview questions are structured as follows:

---

a) What is your background and expertise in user acceptance of technologies?

b) What were your overall thoughts on the e-commerce platform?

c) What factors would affect the user acceptance of e-commerce platforms among women in rural settings?

d) What steps can be taken to ensure that the e-commerce platform is accessible and user-friendly for women in rural areas with varying levels of digital literacy and access to technology?

e) What features or services do you think rural women would find most valuable in the e-commerce platform?

f) How can the Agricultural application be improved?

g) What strategies can we implement to increase user acceptance among women in rural areas?

Appendix D: Gate Keeper Letter

Gauteng Province
Jewel City, Maboneng, 2094
Diamond, Fox Street, 254
09 July 2024

Mpumalanga Province
Nkomazi Local Municipality
Private Bag X101
Malelane
1320

Permission to interact with the community for data collection.

Dear Sir/ Madam

I, Natasia Mahure, am currently enrolled as a student at the University of Cape Town, pursuing a master's degree in information technology. I am involved in a research project that focuses on examining the user acceptance of an agricultural e-commerce platform designed to empower rural female farmers in the Nkomazi Local Municipality, specifically in the Jeppes Reef community. This application aims to provide increased access to markets, boost sales, and enhance delivery services. The insights gathered from this research will be shared with the local municipality, the University of Cape Town, and other stakeholders interested in the project. The data collected will be used exclusively for academic purposes. Participation in the study is voluntary, and the interview as well as the survey questions will be pertinent to the research, and the development of the application. I kindly seek permission to collect data in the area for this purpose.

Kindly accept my request.
Yours Faithfully

Signed by candidate

Name: Mahure Natasia
Contact: 0607531130
Email: mhrhlo001@myuct.ac.za

Appendix E: Community Approval Letter

Nkomazi Local Municipality
Main Office: 9 Park Street, Malelane
Mpumalanga, 1320, South Africa
Tel: +27 (13) 790 0245
Email: info@nkomazi.gov.za
Website: www.nkomazi.gov.za

Kamhlushwa Office
Address: Kamhlushwa Civic Centre,
Kamhlushwa, Mpumalanga, South Africa
Postal Code: 1331
Phone Number: +27 (13) 790 0245 / 790 0388
Email: info@nkomazi.gov.za

To Whom It May Concern,

Subject: Authorization for Data Collection

This letter serves as a formal authorization from the Nkomazi Local Municipality to grant Ms. Mahure permission to conduct data collection activities between the 10th of July and the 10th of September 2024.

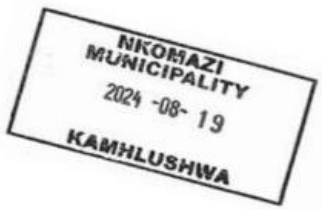
The aforementioned project has been thoroughly reviewed and approved. The local municipality acknowledges the positive contribution of the project to the community and kindly requests community members, local chiefs, and ward councilors to assist the student and provide the necessary information and support required for the project. The data collection will strictly focus on gathering information regarding the newly developed agricultural e-commerce application for the benefit of farmers.

Should community members require more information about the project, please get in touch with Ms. Mpofu at the civic center or call 076 218 9967. If you have any concerns about this development, please visit our nearby offices at Kamhlushwa Extension 2, or come to our Civic Center between 9 am and 4 pm.

Warm Regards,

Nompumelelo Mpofu

Nkomazi Municipality



Appendix F: Ethics Approval

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA · UNIVERSITEIT VAN KAAPSTAD

2024/04/10

SCI/00675/2024

RE: Research Ethics Committee Project Approval Letter

Dear Hlobisile Mahure,

Your application for ethics review of your project titled

Post-Land Redistribution: Evaluating the User Acceptance of an Agricultural E-commerce Platform for Rural Women

has been reviewed and evaluated by the

Science Research Ethics Committee.

You may proceed with your research project titled:

Post-Land Redistribution: Evaluating the User Acceptance of an Agricultural E-commerce Platform for Rural Women

Please note that should:

(i) any serious or adverse effects to participants occur and/or,

(ii) aspect(s) of your current project change and/or

(iii) any unforeseen events that might affect continued ethical acceptability of the project occur then you should immediately report this to the approving REC. You may be required to submit an amendment to this application, in order to determine whether the changed aspects increase the ethical risks of your project.

Based on the information supplied your application has been successful and is approved.

Please note the following additional conditions associated with this approval:

(i)

Regards,

Science Research Ethics Committee.

Appendix G: Consent Form

DEPARTMENT OF COMPUTER SCIENCE

UNIVERSITY OF CAPE TOWN
PRIVATE BAG X3
RONDEBOSCH 7701
SOUTH AFRICA

RESEARCHER/S: Mahure Hlobisile
TELEPHONE: +27-60-753-1130
E-MAIL: Mhrhlo001
URL: https://science.uct.ac.za/

Informed Voluntary Consent to Participate in Research Study

Project Title: The User Acceptance of an Agricultural E-commerce Platform for Women in Rural Areas.

Dear Participant,

You have been invited to take part in a research study involving female farmers and user acceptance specialists. The purpose of this study is to assess the user acceptance of an agricultural e-commerce application. Your participation is crucial, and your insights will be valuable.

Procedures: As a participant, you may be requested to attend user training sessions, complete a survey, and take part in a brief interview.
Recording: Audio recording may be used during interviews as a part of the study's findings.
Risks: There are no anticipated risks associated with your involvement in this study.

Feedback: You will receive feedback on the research outcomes in the form of a report and verbal communication from the researcher.
Disclaimer/Withdrawal: Your participation is entirely voluntary. You have the right to decline participation and can withdraw at any time without providing a reason. Should you choose to withdraw, the information you've provided will not be used without your consent. Please note that the researcher may also withdraw you from the study at any time.
Confidentiality: All data collected during this study will be kept private. You will not be identified by name or affiliation to any organization, and pseudonyms will be utilized to maintain confidentiality and anonymity.
What signing this form means: By signing this consent form, you are agreeing to take part in this research study. The study's purpose, procedures, potential risks, and benefits have been thoroughly disclosed to you. Your decision to participate or withdraw from the study will not have any negative impact on you. You are encouraged to contact me if you have any questions or require additional information at any time during the research.

Thank you for considering participation in this important study.

I agree to participate in this research (tick one box) ☐ Yes ☐ No _____ (Initials)
I agree to be audio-recorded ☐ Yes ☐ No _____ (Initials)

Signed by candidate

_____	_____	_____
Name of Participant	Signature of Participant	Date
Mahure HN		8 March 2024
_____	_____	_____
Name of Researcher	Signature of Researcher	Date