AN ASSESSMENT OF THE EFFECTS OF THE GENDER GAP ON ACCESSING FINANCE IN NAMIBIA

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Abstract

This study focused on assessing the effects of the gender gap on accessing finance in Namibia. Cross-sectional data for the fourth financial Inclusion Survey of 2017 was used. The study used econometrics techniques of t-tests, Pearson Chi-square tests, and the probit model to examine the effects of the gender gap on access to finance. The t-test results revealed that for the transaction and payment services (TPS) Model, males' mean proportion of accessing finance was higher than females. Further, it was revealed that accessing finance through savings facilities (SF) was skewed towards males. The t-test results for credit access (CA) indicated a slightly higher mean proportion of finance access for females compared to males. Finally, the results of the t-test suggested that the mean of accessing finance through the formal financial product (FFO) for males was higher than that for females. Meanwhile, the probit results revealed a significant negative effect of gender disparity on access to finance through TPS and FFO towards males. However, for the models of SF and CA, a significant positive effect of gender disparity on access to finance was found for females. Meanwhile, when exploring the effect of gender disparity on access to finance across Namibian regions, it was found that for TPS, access to finance was lower amongst females across all the regions. For SF, it was found that there was a gender gap in access to finance across regions, with males having higher access to finance in most regions. Further, for CA it was discovered that with a few exceptions, men generally had higher access to finance than women across all regions. Finally, regarding FFO, it was revealed that access to finance was lower amongst females across all the regions. With this, it is recommended that with the gender gap in accessing finance, policymakers should implement policies that aim to reduce this gap. For instance, they can introduce gender-specific financial products, increase financial literacy among women, and provide financial support to women-owned businesses, specifically through TPS and FFO.

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Dedication

I dedicate this thesis to my Family, My loving Husband (Jason Hashoshange), my three daughters (Annette, Aili and Hellen), my parents, and my siblings. Thanks for the words of encouragement and for never leaving my side.

Declaration

I, Albertina Tuwilika Hashoshange, hereby declares that this study is my own work and is a true reflection of my research and that this work or any part thereof has not been submitted for a degree at any other institution.

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Name of Student	Signature	Date

CHAPTER ONE: INTRODUCTION

1.1. BACKGROUND OF THE STUDY

The gender gap in access to finance is defined as the disparity between women's and men's access to the opportunities and services offered by the financial sector (Morsey & Youssef, 2017). Financial inclusion is gaining prominence as a crucial instrument for reducing socioeconomic disparities characterised by the isolation of individuals and communities from formal financial services, such as affordable and accessible credit (Asa & Nautwima, 2022). IFC (2022), using the most recent Global Findex report from the World Bank Group, reported that more than one billion women still do not use or have access to the financial system worldwide.

Globally, there is a $300 billion financing deficit for formal, women-owned small businesses, and more than 70 percent of women-owned small and medium-sized businesses have inadequate or no access to financial services. In developing economies, male cell phone owners outnumber females by 200 million (IFC, 2022).

Without mobile technology, millions of women are further excluded from convenient, secure digital payment systems (IFC, 2022). Adesina (2019) revealed at the Global Gender Summit held in Rwanda in 2019 that the continent of Africa has a US$ 42 billion financing disparity between men and women, leaving 70% of women financially excluded. Even though women are bankable and make up the majority of African producers, they confront a nearly US$ 16 billion financing imbalance (Adesina, 2019). Adesina added that 90% of women repay their loans, but there is a deficit of nearly $1.5 trillion in financing for women-led small and medium-sized enterprises worldwide.

According to the Namibia Statistics Agency's (2017) financial inclusion survey report, 65.4% of the eligible male population in Namibia has a bank account, while the rate for the female population is higher at 70%. The male population has a higher rate of financial exclusion, at 23.9%, compared to the female population, which has a rate of exclusion of 20.2%. Nghinomenwa and Shikongo (2020) report that Agribank of Namibia, in a strategic report for 2010 to 2018, observes that the bank disbursed loans related to gender, age, and groups from 2010 to 2018, and females lagged in terms of loan recipients, since 2010.

It is important to note that while the national data does present interesting figures on financial inclusion, this study delved deeper into specific aspects of accessing finance. The researcher conducted rigorous statistical tests to analyse the gender gap in various dimensions of finance access, aiming to provide a more comprehensive understanding of the disparities. The differences the study observed could be attributed to regional variations, educational levels, and other contextual factors that might not be fully captured by the national data. Therefore, the study’s findings contribute valuable insights to the ongoing discourse on gender and finance, offering a nuanced perspective that complements the broader national statistics.

During the previous nine years, male borrowers accounted for more than 55 percent of the bank's loans, except in 2018 when group loans increased, and male borrowers declined to 51.5%. In essence, the report revealed that female borrowers accounted for less than 26% of all issued loans, except in 2015 and 2017, when they accounted for 28.4% and 30.5%, respectively. This report indicated that women were not only lagging behind men in terms of the number of loans they took out but also in terms of the value of loans extended to them (Nghinomenwa & Shikongo, 2020). In addition, according to Agribank Namibia's strategic report, the bank has issued 8,770 loans since 2010, with 5,390 going to men, 1,820 to women, and 1,970 to groups.

In light of the foregoing, Namibia confronts socioeconomic inequality, in which the impoverished in developing countries, like everyone else, lack access to a variety of convenient, flexible and affordable financial services. Again, the issue of excessive fees that has characterised the Namibian financial system was identified as one of the contributing factors to the exclusion of the majority of the population from the formal financial system (NSA, 2017; World Bank, 2016).

Authors including, Becker-Blease and Sohl (2017); Blanchard *et al.* (2017); Bertoni *et al.* (2016) and Blake (2016) concur that the majority of research on access to credit has focused on the information costs associated with lending to both men and women in business. Again, Becker-Lease and Sohl (2017) and Bertoni *et al.* (2016) state that competition has affected each gender group. The accessibility of credit for businesses, both owned by men and women, was influenced by the dynamic shifts within the financial markets. The majority of research on access to finance was conducted in developed nations with highly developed financial systems (Blanchard *et al.,* 2017). The same cannot be said for developing nations and their struggling financial systems, which have been subjected to major upheavals as a result of technology and globalisation ramming their way into these stumbling financial systems (Aldrich *et al.,* 2012).

Recent research has focused on the role of racial, ethnic and gender disparities in credit access for enterprises owned by both men and women, and significant racial, ethnic and gender disparities were evident in loan approval in the majority of developed financial systems (Blanchard *et al.,* 2017). The lack of access, for instance, would make it difficult for women to earn and save money, expand their enterprises and lift their families out of destitution.

Consequently, they would continue to be excluded from the formal economy (IFC, 2022). Hence, numerous measures have been implemented; for instance, the World Bank Group has begun investing in women's economic participation, not only because it significantly impacts development, but also because it is excellent business logic for companies and economies. It has made achieving universal access to finance by the year 2020 a top priority, making concerted effort to expand women's access to finance, financial knowledge and risk-mitigating products, such as insurance.

In addition, the IFC has placed women's participation in the private sector at the centre of its operations by implementing programs such as Banking on Women, Improved Work, She Works, and Women on Boards. It is strengthening the capacity of women entrepreneurs to expand their businesses, enhancing their employment opportunities and working conditions and amplifying women's perspectives as business leaders through these initiatives.

Both the 2007 and 2017 Namibia Financial Inclusion Surveys (NFIS) were funded by the Namibian Government to assess the acceptability and utilisation of financial products by women and men of the eligible age of 16 years (NSA, 2007, 2011, and 2017). This was also done to enhance women's access to finance in the country through the United Nations and African Union's Millennium Development Goals (MDGs) for gender equality and equity.

Namibia is an African nation and part of the global community; the gender disparity in its women's access to financial resources is a factor in achieving these MDGs (Sawada & Otsuka, 2016). Except for NFIS surveys, only a small number of studies have been conducted in Namibia, primarily on SME financing and access to capital (Fletschner, 2018). Outside the scope of NFIS surveys, there is limited research on the effect of gender disparity on access to financial services in Namibia. Therefore, a study on the effect of gender on access to finance study needed to be conducted to evaluate the extent to which these factors have contributed to the marginalisation of women in Namibia's financial system and to provide authorities with adoptable solutions for redressing this situation.

1.2. PROBLEM STATEMENT

In Namibia, the financial sector plays a vital role in the economy by creating jobs and making a substantial contribution to gross domestic product (GDP); consequently, the inability of women to access finance is detrimental to economic development (NFSS, 2011). According to the demographic characteristics of the eligible population, the eligible population increased from 1,245,997 in 2011 to 1,459,977 in 2017 (reported). According to NFIS (2017), 52.5% of the eligible population continues to be female.

Despite being the majority of the eligible population, women in Namibia continue to endure structural discrimination in accessing financial resources (NFIS, 2017). The structure of the financial system favours urban residents over those in rural areas, where the majority of women reside (NFIS, 2011). This structural, institutional and policy fragmentation in addressing the gender disparity on access to finance has resulted in the sluggish growth of Namibia's GDP (World Bank, 20016) given that women lead the majority of SMEs.

As 75% of institutions are owned by foreign investors, the system fails to resolve the sluggish growth in the number of financial institutions that are locally designed to meet the unique requirements of the local population (NFIS, 2017 and World Bank, 2016). According to Hasheela (2013) there is little or obsolete data on the gender disparity on access to finance in Namibia, making it difficult to measure the country's progress. In Namibia, despite efforts to address financial inclusion, little research (other than that conducted by Fin Mark Trust) is available on the extent of financial inclusion and the efficacy of fiscal policy in addressing financial inclusion. In light of the aforementioned, the researcher was motivated to investigate the effect of the gender gap on accessing financial resources so as to fill the void in the literature within the unique Namibian context and to close the gender gap in accessing financial resources in Namibia.

1.3. RESEARCH OBJECTIVES

The main objective of this study was to examine the effect of gender differences on access to finance using Namibia as a case study. This study examined three objectives:

- To determine the gender gap in access to finance in Namibia;
- To examine the effect of gender disparity on access to finance in Namibia;
- To determine the underlying factors of gender disparity on access to finance in Namibia; and
- To explore whether the gender gap in accessing finance varies across regions.

1.4. RESEARCH HYPOTHESES

H_1: There is a gender gap in access to finance in Namibia;

H_2: Educational attainment positively affects the gender gap in access to finance in Namibia;

H_3: Income variation positively affects the gender gap in access to finance in Namibia;

H_4: Age positively affects the gender gap in access to finance in Namibia; and

H_5: The gender gap in access to finance could vary across regions in Namibia.

1.5. SIGNIFICANCE OF THE STUDY

This study is of critical significance as it establishes whether there is a gender gap in access to finance in Namibia. It also examines factors driving the gender gap in accessing finance in Namibia.

As Machokoto *et al.* (2022) identified in their cross-country analysis paper, there is a need for country-case-based studies and context-tailored policies. This research is thus important because it helped provide preliminary evidence to policymakers for them to be able to suggest policies that can minimise the gender gap in accessing finance in Namibia. Also, this research could be used as a reference point for academia as it is preliminary evidence that could motivate research in the same area. In addition, practitioners, and society, in general, benefit if all the issues regarding the gender gap in accessing finance are addressed.

Globally, this initiative aims to contribute towards achieving multiple Sustainable Development Goals (SDGs) that prioritise and promote gender equality. There are several SDGs with the objective of gender equality, including Goal 5: Gender Equality. Typically, it sheds light on both the general women population and authorities on how to collectively extend lasting solutions to this effect to allow and encourage women to have an extensive, functional and balanced role in the nation's political, social, economic, and cultural activity to contribute effectively to development finance and SDGs at large.

1.6. LIMITATIONS OF THE STUDY

The NFIS 2017 survey was only carried out for Namibia. As such, this information cannot be generalised to other countries. This study used secondary data, which is readily available to the public. However, this is known to be prone to management bias, and this meant that they might not have been appropriately managed to fit the analysis (Dong, 2021; Wooldridge, 2020). To avoid this, the researcher ensured that the secondary data used for analysis was management bias free by directly requesting the data from the NSA. This enabled data management bias-freedom as NSA provided the aggregated information. The study did not represent the whole population because the survey was based on a sample. Finally, it was important to understand how changing the units of measurement of the dependent and/or independent variables affects empirical technique estimates and to know how to incorporate popular functional forms used in development finance/economics into the empirical estimation technique. For the latter, the researcher ensured that variables, for instance, access to finance and gender, were measured in ordinal information.

1.7. DELIMITATIONS OF THE STUDY

Information on the gender gap in access to finance, specific to Namibia is rarely available, except for the reports of the World Bank (2016); NFIS (2017); NFIS (2011), and NFSC (2007). Therefore, the researcher used secondary data as collected by the Namibia Statistics Agency. The jurisdiction of the research study was the Namibian population.

1.8. SCHEME OF THE STUDY

Here is how the rest of the study is organised. The literature review, both theoretical and empirical, is done in chapter two; the research methodology is done in chapter three; the results and discussions are in chapter four; and conclusions and recommendations are presented in chapter five.

1.9. SUMMARY

In this chapter, the researcher looked at the background of the study, research problem, objectives, hypotheses, the significance of the research, limitations, and delimitations of the study. The second chapter, which reviews the literature, is presented next.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

This section reviews major theoretical and empirical perspectives on the gender gap and access to finance.

2.2.THEORETICAL LITERATURE REVIEW

Theories serve as integrated systems that offer critical assumptions. Their purpose is to shed light on specific phenomena, ultimately adding to our existing knowledge (Yin, 2011). In this study, the gender divide in accessing finance is explored through various theoretical lenses.

2.2.1. Feminist Theory

Developed by Wollstonecraft (1794), this theory focuses on pro-women development mechanisms. It examines the strategies and tools designed to promote women's financial inclusion.

2.2.2. Agency Theory

This theory first proposed by Ross and Mitnick (1979), highlights the conflicts that might arise between financial institutions and their stakeholders. It provides insights into the costs associated with meeting stakeholder objectives.

2.2.3. Taste-based Discrimination

First propose by Becker (1957), taste-based discrimination looks at biases and prejudices, especially in financial decision-making. It delves into how personal biases might affect the lending process, especially towards women.

2.2.4. Economic Theory

The economic theory as emphasised by Levy et al. (2000), is incorporated to understand the broader developmental goals of Namibia. It gives insights into the country's econometrics and financial landscape.

In the subsequent sections, each of these theoretical perspectives are detailed, providing the backbone for the research investigation.

2.2.1. Theory of Agency

Proposed by Ross and Mitnick (1979), highlights that due to the agency problem, asymmetric information problems, and credit rationing practices of financial institutions, particularly small and medium-sized enterprises (SMEs) owned by women are substantially denied access to external financing (Asiedu *et al.,* 2013). According to Shoopala (2015) and Cofie (2012), the agency theory provides essential insights into the issues of ownership and credit rationing. Therefore, the agency theory revolves around the relationship between principals (e.g., shareholders or owners) and agents (e.g., managers or executives). In this theory, the agent is expected to act in the best interest of the principal. However, because of differing objectives and information gaps, conflicts can arise between the two parties. Information asymmetries, moral hazards, and adverse selection issues are likely to arise in contractual arrangements between firms and external finance providers (Cofie, 2012).

Information Asymmetries occurs when one party has more or better information than the other. For instance, a woman entrepreneur might know the potential of her business, but a bank might not have enough information to assess it. This asymmetry can lead to cautious lending practices (Cofie, 2012).

Meanwhile, moral Hazards relates to the risk that a party might not act in the best interest of another due to a lack of oversight or misaligned incentives (Cofie, 2012). For example, once a woman receives a loan, the bank cannot fully control how she uses it. If she takes undue risks because she bears less of the financial consequences, this poses a moral hazard.

In addition, Cofie (2012) highlights that adverse Selection, entails that before a transaction occurs, one party may have information that the other does not, leading the latter to make decisions based on incomplete or skewed information. For instance, banks might feel that lending to women entrepreneurs is riskier due to societal biases or lack of visibility of successful women-led enterprises. This can result in deserving women entrepreneurs being denied loans.

Regarding women's access to finance, these issues can manifest in various ways. Information asymmetries might lead financial institutions to perceive women as riskier borrowers. Moral hazards can be exacerbated if there is a belief that women might not utilise funds optimally. Adverse selection can result in fewer financial opportunities for women due to preconceived notions or biases. These challenges highlight the importance of bridging the gender gap and creating a more inclusive financial environment in Namibia.

In essence, there is a possibility that these issues are more severe and associated costs are much higher for female-owned SMEs than for large businesses. Consequently, the theory proposes that a lack of information regarding access to finance continues to be a significant cause of the gender disparity on access to finance in Namibia. The agency theory has important impacts on the relationship between shareholders and creditors.

Furthermore, the agency theory suggests that a substantial number of businesses owned by both men and women could utilise funds productively if they were available. Women are unable to utilise the formal financial system due to the incapacity of most women-owned enterprises to satisfy the stringent requirements of financial institutions. It is important to clarify that the withholding of information such as education and knowledge of specific financial products and services is not necessarily a deliberate act targeting women. Rather, societal structures, cultural norms, and traditional roles can inadvertently lead to limited exposure or accessibility for women to certain information. For example, if financial literacy programs are predominantly offered in male-dominated environments or are scheduled at times inconvenient for women due to their household responsibilities, it may result in fewer women having access to these resources. It is such systemic and unintentional barriers that can result in an uneven distribution of knowledge, which in turn affects women's access to financial services; thus, the theory fosters information asymmetry, which is one of the primary causes of the gender gap in access to finance in Namibia.

According to Agribank of Namibia's strategic report, women lagged behind men in financing for all business categories, indicating a gender disparity based on women's dearth of collateral when the lender's institutional structure is considered (Nghinomenwa & Shikongo, 2020).

In addition, Asiedu *et al.* (2013) confirms that female-owned businesses in Sub-Saharan Africa are more likely to be financially constrained than male-owned businesses due to their perceived riskiness. In this context, the theory generates contradictory strands of thought; shareholders expect a return on their capital investments. Managers, on the other hand, are hesitant to engage in hazardous enterprises.

2.2.2. Economic Theory

As emphasised by Levy et al. (2000), the theory of economics posits that investors and consumers are rational, highly efficient mechanisms that make the best decisions for themselves. However, hypothetical evaluations demonstrate that behaviour is significantly more complex than the behaviour presumed by the majority of economic theories. Consequently, many economists and psychologists are interested in the actual economic behaviour instead of the normative predictive behaviour advocated by numerous models. The economic theory advocates for completely evolved economies in which both lenders and borrowers are free to exercise their respective rights without interference from the other.

In developing countries like Namibia, the issue of gender inequality can be magnified due to gaps in access to finance. Economic theory highlights a phenomenon known as 'information asymmetry', which is when one party has more or better information than the other. In the context of finance:

Lenders (like banks) might not have complete information about potential borrowers, their creditworthiness, or the feasibility of their business plans. This can lead to cautious lending practices, especially towards groups perceived as 'risky', which sometimes includes women due to societal biases.

Borrowers (potential clients, including women) might lack adequate knowledge about the available financial products, their rights as borrowers, or how to present a compelling case for a loan. This can lead to them not applying for finance or not getting the best possible terms.

In such a scenario, women, who might already be at a disadvantage due to societal and cultural norms, can find it even harder to access financial services. This not only affects their economic empowerment but also widens the gender inequality gap. According to Asiedu *et al.* (2013) and Nkurunziza (2010), financial institutions are free to disclose information that directly affects the selection of financial products offered. Consequently, borrowers in developing nations may find gaining access to such information difficult. However, there is no distinct characterisation of investors' irrationality in the literature. In this context, Asiedu *et al.* (2013) recommend that lenders develop a system for identifying risky assets (women-owned businesses).

Similarly, Tabi and Fomba (2013) perceived that women-owned businesses in Namibia would be marginalised because they appear to be hazardous investments; thus, access to financial products for women in Namibia remains in the economic theory's perspective. As alluded to in economic theory, investors are rational; however, this rationality would lead to lenders establishing systematic barriers to restrict riskier borrowers' access to certain financial products, thereby fostering a gender disparity on access to finance. This restriction contributes to the continued lack of development and investment in small and medium-sized enterprises (SMEs), particularly those owned by women in Namibia; therefore, a study into the gender gap in access to finance in Namibia would inform both the general women population and authorities on how to collectively propose long-lasting solutions to this problem, to enable women to effectively contribute to GDP and MDGs in general (World Bank, 2016).

2.2.3. Feminist Theory

As proposed first by Wollstonecraft (1794), the feminism asserts that sex is an essential and irreducible axis of social organisation that subordinates women to males. Thus, feminism is primarily preoccupied with sex as the organising principle of social life, which is profoundly permeated by power relations. This structural subordination of women has been labelled patriarchy by feminists, a term with connotations of male-headed families, dominance, and superiority (Barker, 2008).

In addition, research employing social feminist theory (SFT) indicates that, due to culturally embedded experiential differences between men and women, the experience and knowledge of women 'entrepreneurs' are gendered but may be equally conducive to successful and entrepreneurial behaviour (Calas *et al.,* 2009; and Fischer *et al.,* 1993). One of the main feminist schools of thought (Carter & Weeks, 2002) holds that the origins of gender differences lie in the socialisation process (DeTienne & Chandler, 2007; and Johnsen & McMahon, 2005). Men and women are conditioned to view the world in profoundly different ways, according to SFT, because they undergo distinct socialisation processes throughout their lives (Orser *et al.,* 2011). This perspective of the SFT again socially marginalises women in Namibia, as the cultural norms and values of Namibian society restrict women's access to customised financial products.

As a result, women's objectives and decisions are influenced by how they perceive their role and place within the larger social context, which is a result of the gendered expectations placed upon them and the analytical frameworks women develop for themselves (Jennings & Brush, 2013).

Feminist theory suggests that the gender difference in access to finance may exist because women are culturally conditioned to view resource utilisation and business development from a different perspective than men. This view exploits the existing gender disparity in access to financial resources, as women may be reluctant to accept the challenge posed by males. The contributions of the agency theory highlight the gender gap by the risk aversion of managers willing to award financial products to culturally perceived risk businesses, such as those owned by women; therefore, financial institutions would develop systematic measures to restrict such practices.

Lastly, according to the economic theory, the gender disparity on access to finance may be attributed to the economy's inability to provide equal development opportunities to women and men.

2.2.4. Taste-based discrimination model

Becker created this hypothesis (1957). According to this model, the market participant is willing to forego a portion of the profit to avoid contracting the disfavoured member of the discriminated group due to bias or prejudice. Taste-based discrimination stems from preferences and cultural beliefs about gender that may influence loan application decisions. Taste-based discrimination occurs when those responsible for authorising loans detest female borrowers (due to prejudices) and prefer not to associate with them, even though it may be to their detriment in terms of decreased productivity or diminished income to gratify such preferences.

This would result in female debtors being offered less credit, experiencing a higher rate of denial, and confronting higher interest rates in situations identical to those of male borrowers.

2.3. EMPIRICAL LITERATURE

The subsequent subsection delves into the empirical literature that has critically evaluated and tested the propositions laid out by the theories discussed earlier. By examining real-world data and findings, the study aims to determine how these theories hold up in practical scenarios. This examination provides insights into which assertions have garnered substantial empirical support and which ones remain contentious. The study explores these empirical studies to understand the nuances and complexities surrounding the gender gap in access to finance.

Machokoto *et al.* (2022) conducted a cross-country analysis of the finance-gender gap from 2006 to 2019 using probit modelling. The authors conducted a country-by-country analysis to better comprehend which countries are responsible for the controversial gender disparity in finance. The results indicate that the gender disparity in finance is only significant in eighteen of the one hundred eighteen sampled nations, five of which are in Sub-Saharan Africa (SSA). This empirical evidence suggests that the finance-gender divide is heterogeneous and localised to a small number of countries, which are potential targets for future in-country case-based studies and context-specific pro-gender policies.

Using data from the Global Financial Inclusion (GFI) survey by the World Bank, Shabir and Ali (2022) investigated financial inclusion in Saudi Arabia, analysing ownership and usage patterns of financial products through a gendered lens. While their statistical methods, such as the chi-square test and marginal effects, provided clear numerical distinctions between male and female respondents, it's essential to scrutinise these findings within Saudi Arabia's unique socio-cultural and political backdrop.

In their findings, a glaring disparity emerges, about 82% of male respondents reported having a bank account compared to just 60% of females. This difference is not merely numerical. Saudi Arabia's deeply patriarchal structure has historically imposed various limitations on women, from mobility restrictions to guardianship systems. Although there have been significant reforms recently, the societal view of women primarily as homemakers and dependents has had long-standing ramifications on their economic autonomy.

The study further indicated that males were 10% and 13% more likely than females to own and use financial products, respectively. However, it's not just gender in isolation that contributes to this discrepancy. Other factors, such as the respondent's age, education level, occupation, and income, play a pivotal role. But one must ask: why do these discrepancies exist? Saudi Arabia's traditionally conservative stance on women's roles has often meant limited access to higher education, restricted participation in the workforce, and generally fewer opportunities for economic empowerment. This context offers some explanation as to why fewer women might have bank accounts or use financial products.

While Shabir and Ali's (2022) study presents an empirical snapshot of the current financial inclusion situation in Saudi Arabia, it is crucial to interpret these findings with an understanding of the broader societal dynamics at play. To genuinely bridge the financial inclusion gap, Saudi Arabia, like many other countries, will need to address not just the symptoms but the underlying socio-cultural norms that perpetuate gender disparities.

Using financial data from the World Bank's Global Financial Development Index for 34 sub-Saharan African countries for the years 2011, 2014, and 2017, Zawaira et al. (2021) employed the OLS technique to examine the relationship between financial inclusion and gender inequality in sub-Saharan Africa. In contrast to formal financial sources, most individuals in sub-Saharan Africa rely on informal sources of finance, such as deposits at a savings club and borrowing from family and acquaintances. In addition, women are more likely than males to utilise informal sources, an issue that must be addressed at the policy level. While Zawaira et al. (2021) point out the prevalence, it is essential to understand this in a broader socio-economic and historical context.

Informal finance mechanisms, contrary to some viewpoints, may offer several advantages. For example, a study by Collins et al. (2009) in their book "Portfolios of the Poor" highlighted how informal financial tools could be flexible, accessible, and tailored to the users' needs. In regions where formal financial institutions have yet to penetrate deeply, or where they might be perceived as elitist or inaccessible due to past colonial histories, informal mechanisms fill an essential void.

Furthermore, women's preference for informal systems might also stem from the inherent flexibility these systems offer. According to Johnson (2004), informal finance mechanisms, like Rotating Savings and Credit Associations (ROSCAs), are deeply rooted in communal trust and understanding. For women, who might be juggling household responsibilities with entrepreneurial pursuits, this flexibility and understanding can be invaluable.

However, while the informal sector has its strengths, the overarching goal for sustainable development should indeed be formal financial inclusion. But to argue, as some have, that informal finance is "problematic" simplifies a complex issue. Both systems have roles to play, and perhaps the solution lies not in supplanting one with the other but in finding innovative ways for them to coexist and complement each other. This might involve formal institutions learning from and collaborating with their informal counterparts, leveraging their community trust and flexibility.

As for the access to finance being central to gender equality, the dichotomy isn't just between formal and informal finance. Studies, such as those by Burgess and Pande (2005), have shown that even within formal finance, there are vast disparities in terms of how men and women are treated, with women often being offered less favourable terms. Hence, the push shouldn't be just for formal financial inclusion but for equitable formal financial inclusion.

In essence, while the formalisation of financial systems is a laudable goal, it's essential to recognise and respect the value that informal systems bring, especially in historically marginalised or underserved communities. The future of financial inclusion in places like sub-Saharan Africa might be a hybrid model, where the strengths of both systems are leveraged for the benefit of all.

Singh and Dash (2021) delved deeply into the gendered economics surrounding women entrepreneurs' access to credit. Their extensive review, encompassing around 125 articles, aimed to shed light on the intricacies of financial accessibility for women-owned businesses. Their exploration spanned a myriad of issues: the realities of gender discrimination, entrenched gender biases, and the variances in terms and conditions women entrepreneurs encounter when seeking credit, a linchpin for business success.

One of the pivotal revelations from this study is the additional layer of challenges faced by women entrepreneurs. While they grapple with challenges like male entrepreneurs, their gender often brings about distinct hurdles. Among these, the dearth of financial services, the reluctance of banks to lend due to perceived risks associated with female entrepreneurs stands out. Further, the term “dearth of financial services” does not imply an absence of such services. Rather, it underscores how women entrepreneurs, even in environments flush with financial offerings, often find themselves excluded or discriminated against. This can be attributed to deeply ingrained biases, lack of tailored products for women-owned businesses, or even procedural complexities that disproportionately affect women, such as stringent collateral requirements which many women might find challenging to meet due to socio-economic constraints.

Interestingly, in stark contrast to these obstacles, the study also highlighted an important fact: when assessed in terms of creditworthiness, women-owned enterprises often outperformed their male-owned counterparts. This suggests a paradox where women, despite proving their financial reliability, still find it tougher to access requisite financial services.

Lee *et al.* (2021) estimates the intention-to-treat (ITT) effects of narrowing the gender divide in mobile banking in Bangladesh using an ANCOVA specification. The researchers discovered substantial differences in income and education between female and male migrants. In addition, it was discovered that a training program had comparably large, positive effects on female migrant mobile banking usage (a 51-percentage point increase) and male migrant mobile banking usage (a 46-percentage point increase), significantly narrowing the gender disparity.

Men increased digital remittances eleven times more than women did. In addition, the evidence suggests an increase of 11 percentage points in female adoption and only one percentage point in male adoption, although statistical power for this comparison is low, and estimates are imprecise.

De Andres *et al.* (2021) uses a sample of more than 80,000 Spanish companies founded by a solitary entrepreneur between 2004 and 2014 to differentiate between male and female entrepreneurs' demand for credit, credit approval ratio, and credit performance. The authors discovered that female entrepreneurs are less prone to request a loan when starting a business. In the founding year, the likelihood of a female entrepreneur receiving credit is considerably lower than that of a male entrepreneur in the same industry. Once a company has established a track record of profits and losses, this restriction on credit access gradually dissipates. In addition, they observe that women-led businesses that receive a loan in their founding year are less likely to default than men-led businesses. This superior performance dissipates in subsequent years, along with lower credit access.

Using fixed effect modelling, Seema *et al.* (2021) examines the effect of female ownership on access to finance in a large cohort of developing countries. It was discovered that female proprietors encounter greater credit constraints than their male counterparts; however, these constraints are less severe for women-owned firms with experienced senior management. Furthermore, it was demonstrated that when a country's institutional and policy environment is improved, women-owned businesses encounter fewer credit constraints.

Using the 2017 Global Findex database of the World Bank, Hundie *et al.* (2021) conducted a decomposition analysis to examine the magnitude and determinants of the gender disparity in financial inclusion in Ethiopia. Using the Fairlie decomposition technique, the authors discover statistically significant gender gaps in all the studied indicators of financial inclusion in Ethiopia. The result indicates that the gender disparity in financial inclusion is greatest in formal saving, followed by formal account holding. Males were 16.5%, 16.6%, 8.9%, 8.4% and 5.8% more likely to have a formal account, formal savings, borrowing, emergency fund option and debit card, respectively, than females. The authors further decompose these disparities using the Daymont and Andrisani method, revealing that differences in coefficients between males and females account for 57.7% of formal savings, 43.3% of formal account holding, and 110.9% of borrowing from formal financial institutions.

About 54.2% of the total gender gap in the ability to raise emergency funds can be attributed to differences in characteristics/predictors between the sexes, whereas the gender gap in debit card ownership can be explained by the interaction between differences in characteristics and coefficients. Age, employment, and education have a greater influence on financial inclusion than affluence. In addition, differences in coefficients, productivity, and male advantage and female disadvantage exacerbate the gender disparity in financial inclusion in Ethiopia. It is crucial to integrate gender into economic activities to increase females' income, employment opportunities, and educational attainment to close the gender divide in financial inclusion.

Using FinScope 2017 data and Fairlie's decomposition method, Ndoya and Tsala (2021) examine the determinants of the gender disparity in financial inclusion in Cameroon. The results of the decomposition indicate that males have greater access to and use financial products and services than women. The results also indicate that income accounts for more than fifty percent of the gender disparity in access to financial products and services. With an average contribution of more than 35%, education contributes the most to the gender disparity in the use of financial products and services. Based on these findings, policymakers in Cameroon must work toward equalising men's and women's access to education to promote greater economic participation of women and more inclusive development.

Mukong *et al.* (2020) performed a decomposition of the gender disparity in financial inclusion using Namibian data from the 2017 NFIS. In essence, they investigated the causes of the gender disparity in financial inclusion in Namibia, where more women than males are financially included. The authors used the probit model to determine the determinants of financial inclusion and the Fairlie decomposition to assess the contribution of these factors to the gender disparity in financial inclusion. While initial results might suggest that the gender disparity in financial inclusion is minimal or inconsequential, a deeper dive reveals significant underlying factors. Specifically, individual characteristics such as financial literacy, educational attainment, and proximity to financial institutions play a pivotal role in shaping this disparity. These factors were identified as leading contributors to the differences observed between genders in financial inclusion, highlighting the importance of addressing these areas to bridge the gender gap effectively.

Ohiomu and Ogbeide-Osaretin (2020) examined the relationship between financial inclusion and gender inequality in sub-Saharan Africa. The study utilised the generalised method of moments (GMM) estimation on panel data about several sub-Saharan African nations. The investigation revealed that financial inclusion significantly decreased gender inequality. Access to financial inclusion was discovered to reduce gender inequality more than usage. It was discovered that female education levels have a substantial but negative effect on gender inequality. This study recommends increasing the number of commercial bank branches to increase the availability of financial services. To enhance financial literacy, the government should increase its expenditures, which should be directed towards financial development and higher levels of education for women. Le and Stefańczyk (2018) utilised the zero-inflated negative binomial regression model for count panel data of small and medium enterprises in Vietnam to determine if there is gender discrimination in access to credit. According to the findings, women-led businesses are 34% more likely to be denied a loan than men-led businesses. Depending on the industry and macroeconomic policy, the situation is graver. For instance, the likelihood that loans will be denied to women-led businesses is 67% higher in male-intensive industries and 71% higher during periods of restrictive monetary policy. In addition, the likelihood of formal loan rejection is determined by the firm's size and location.

Tran *et al.* (2018) conducted a study from 2013–2014 in Vietnam using household-level data, logistic regression, and the Mann-Whitney test. They sought to determine whether there was gender disparity in access to financial resources. The study found that male-headed households are more likely to incur debt and have more debt than their female-headed counterparts.

Using OLS, Aslan *et al.* (2017) examine the relationship between gender inequality in financial inclusion and income inequality. Using a dataset comprising 146 000 individuals from over 140 countries, the researchers first develop novel, synthetic indices of the intensity of financial inclusion at the individual and national levels. Second, they determine the distribution of individual financial access "scores" across nations to document a "Kuznets" curve in financial inclusion. Thirdly, cross-country regressions corroborate that the measure of inequality in financial access is substantially related to income inequality, in addition to other previously identified factors.

Using the Probit method, Pham and Talavera (2017) examined the relationship between gender, social capital, and access to finance of micro, small, and medium enterprises in Vietnam's manufacturing sector. The Pham and Talavera dataset is from 2011, 2013, and 2015. The estimates do not provide evidence of discrimination in the formal lending market against female-owned businesses. In particular, female entrepreneurs are likelier to obtain a loan and pay lower interest rates than male entrepreneurs. Additionally, the preference for informal loans over formal loans is unlikely to result in discrimination in formal credit markets, as entrepreneurs tend to obtain informal loans before applying for formal loans.

The variation in findings between Le and Stefaczyk (2018) and Pham and Talavera (2017) can be attributed to several factors. Firstly, the methodologies employed in each study are distinct. While Le and Stefaczyk utilised the zero-inflated negative binomial regression model focusing on count panel data, Pham and Talavera adopted the Probit method, possibly leading to differential outcomes due to the nuances of these techniques. Secondly, the scope and focus of each study differ. Le and Stefaczyk's research concentrated on the broader spectrum of small and medium enterprises in Vietnam, encompassing various sectors, whereas Pham and Talavera confined their investigation to the manufacturing sector, which could inherently have different dynamics concerning gender and access to credit. The datasets and time frames also vary. While Pham and Talavera sourced their data from 2011, 2013, and 2015, it's unclear from the provided information when Le and Stefaczyk's data was gathered. Economic landscapes, policies, and social perceptions can evolve over time, leading to shifting outcomes. Lastly, it is worth noting that societal norms, governmental policies, or banking practices might have experienced transformations between the periods these two studies were conducted. Such changes could account for the disparities observed.

While both studies offer valuable insights, the differences in methodologies, scope, data periods, and potentially evolving contextual factors might account for the contrasting conclusions regarding gender discrimination in access to credit in Vietnam.

Morsey and Youssef (2017) sought to comprehend the underlying causes of gender disparities in accessing the various services offered by the financial sector, focusing on the banking system's structure and women's socioeconomic participation. The authors created a database that combines information from bank-level data with other variables to investigate the relationship between banking system ownership structure and concentration, the regulatory framework, and other socio-economic variables that reflect women's participation in the labour market and gender disparities in access to property across countries. The authors also analysed the relationship between these variables and overall access to financial resources. Women are more likely to be excluded from the formal financial sector in countries where: (i) laws and norms discriminate against women; (ii) women have reduced labour market participation; and (iii) state-owned institutions have a large market share.

Moro *et al.* (2017) investigated the relationship between gender and credit constraints using a sample of European small and medium enterprises and fixed effects probit regression. Although the authors found no evidence that financial institutions are discriminatory against female managers, firms led by women are less likely to apply for loans out of fear of rejection. As a result, women-led businesses receive less bank financing.

The study by Mndolwa and Alhassan (2020) employed a nationally representative sample of individuals from the 2013 FinScope survey to empirically investigate the determinants of gender disparities in Tanzania's financial inclusion. Using logit regression, the study investigates whether gender influences financial inclusion. The study then evaluates the relationship between individual characteristics and the gender-based adoption of financial services and products. The results indicate that gender disparities in financial inclusion are prevalent only in the adoption of formal savings and formal credit, but not in the access to formal financial accounts and mobile money accounts. Being a woman decreases the likelihood of saving by 17%, while it increases the likelihood of borrowing by 2% at a formal financial institution. In Tanzania, gender disparities in financial inclusion are attributable to women being impoverished, less educated, less employed, and more reliant than men. More women than men lack formal education, which reduces their likelihood of having access to formal financial accounts by 58.4%. Employment is the most important factor in boosting women's financial inclusion by 25%, but fewer women are formally employed. While women have a higher propensity to save than men, they lack the autonomy to make financial decisions, have lower levels of financial and digital literacy, and own fewer mobile phones, making it more difficult for them to access mobile money accounts.

Wellalage and Locke (2017) used an IV-Probit model to determine whether women-led enterprises are credit constrained in five South Asian countries and concluded that women-led enterprises are 3% less likely than male-led enterprises to be credit constrained.

Aristei and Gallo (2016) utilised the Logit method to identify the determinants of loan demand and credit constraints and the Blinder-Oaxaca decomposition to identify gender differences in credit access. As a result, they discovered that differences in credit constraints vary considerably depending on the definition of gender and that estimated disparities grow as more precise measures of female participation are employed. In addition, the decomposition results corroborate the gender discrimination hypothesis.

Using a Probit model, Ha *et al.* (2016) conducted a study in Vietnam in 2011 and discovered that discrimination does not constrain women's access to finance. Abdu *et al.* (2015) use the binary probit technique of OLS and the Fairlie decomposition technique to analyse the determinants of financial inclusion and its gender disparity in Nigeria utilising The Global Findex 2011 dataset. Young age, higher education, and high income increase the likelihood of households being financially included, whereas ancient age, female gender, and low income decrease the likelihood of households being financially included. The results of the decomposition corroborate the existence of a gender difference in financial inclusion in favour of male households, to which education (especially secondary education) and income quintiles 2 and 5 substantially contribute to explaining the gap. Focusing on these important determinants of financial inclusion during the formulation and design of policies would be beneficial for enhancing financial inclusion in Nigeria.

Stefani and Vacca (2015) discovered that, depending on the country, women-led businesses request less credit and are hesitant to file for credit out of fear of rejection in Germany, France, Italy, and Spain. The authors utilised multinomial logistic regression.

Presbitero *et al.* (2014) used a Probit model concentrating on four Caribbean countries to determine SMEs' access to finance and discovered that women-led businesses appear to apply for formal loans more frequently and, consequently, are rejected more often. Hensen and Rand (2014) estimated gender differences in firm access to credit using a fixed effect framework and the logit technique for firm-level data from 16 Sub-Saharan African countries. Using data on formal financial access, the authors discovered no gender difference. Using direct data on credit constraints, male-owned small businesses appeared to be disadvantaged. In addition, the authors demonstrated a substantial size gradient in the gender disparity for the two measures in which significant gender differences were observed.

In addition, Hensen and Rand (2014) examined credit constraint differences between male and female manufacturing entrepreneurs in 16 sub-Saharan African nations by employing a fixed effect logit regression technique. They discovered that small businesses owned by women are less likely to be credit constrained than those owned by men, while the opposite is true for medium-sized businesses. A generalised Oaxaca–Blinder decomposition revealed that the disparity is primarily attributable to a pure gender effect. As a result, the authors argued that the finding is primarily attributable to female favouritism in loans to micro and small firms, given that the disparity is reversed for medium-sized businesses, and they found no indication of superior female entrepreneurial performance in observable indicators.

Aterido *et al.* (2013) used a probit regression with a sample of 37 African countries representing a total of 11,382 formal firms from 2005 to 2009 to determine if there is a gender disparity in the use of financial services by businesses and individuals in Sub-Saharan Africa. They demonstrate the existence of an absolute gender disparity, as men use financial services more frequently than women. However, the gender disparity dissipates when important observable characteristics of enterprises or individuals are considered.

In the case of enterprises, findings are explained by differences in key characteristics and a possible selection bias – female-owned businesses are smaller, younger, and less likely to be run by sole proprietors than those owned by men; they are also more likely to innovate and more prevalent in industries that rely less on access to external financing. In the case of individuals, the lower use of formal financial services by women can be explained by gender differences in other dimensions related to the use of financial services, including their lower level of income and education, as well as their domestic and employment status.

Analysing the reasons for not enrolling or not having a bank account reveals that traditional bank barriers, such as higher interest rates, and lack of formal income or employment, are more restrictive for women than men. This suggests that, given their observable characteristics, neither females' demand is inherently lower nor is there discrimination based on preference. Using OLS regression with fixed effects, Brana (2013) conducted a study to determine if there was gender discrimination in access to

SME financing in France and found that there was no discrimination based on gender among French SMEs.

Using Kenya as a case study, Dupas and Robinson (2013) used a treatment effect model to determine if limited access to formal savings services hinders business growth in impoverished countries. They discovered that despite the high withdrawal fees, a significant proportion of market women utilised the accounts, were able to save more, and increased their productive investments and private spending. The researchers discovered no effect on bicycle transport drivers. Thus, the results indicated that market women face significant obstacles to savings and investment.

Demirguc-Kunt *et al.* (2013) documented and analysed gender differences in the utilisation of financial services utilising individual-level data from 98 developing nations and the fixed effect technique. The 2011 data from the Global Financial Inclusion (Global Findex) database reveal significant gender disparities in account ownership and usage of savings and credit products. Even after controlling for a variety of individual characteristics, such as income, education, employment status, rural residency, and age, there is a significant correlation between gender and financial service utilisation. This study also finds that legal discrimination against women and gender norms may explain a portion of the international variation in women's access to finance. In countries where women face legal restrictions on their ability to work, lead a household, choose where to reside, and inherit, women are less likely to own a bank account, as well as save and borrow, compared to men. After controlling for other individual and country characteristics, the results confirm that manifestations of gender norms, such as the level of violence against women and the incidence of early marriage for women, contribute to explaining the difference in the use of financial services between men and women.

Using probit modelling, Allen *et al.* (2012) attempt to comprehend the individual and national characteristics associated with the use of formal accounts and which policies are effective for those most likely to be excluded: the impoverished and rural residents. Using data from 123 countries and over 124,000 individuals, the authors discover that greater account ownership and use are associated with a more favourable environment for accessing financial services, such as lower account costs and greater proximity to financial intermediaries.

Among those most likely to be excluded, inclusion-promoting policies, such as requiring banks to offer basic or low-fee accounts, exempting some depositors from onerous documentation requirements, allowing correspondent banking, and using bank accounts to make government payments, are particularly effective. Finally, the authors examine the factors associated with perceived barriers to account ownership among financially excluded people and find that these individuals report fewer barriers in countries with lower account costs and greater financial service provider penetration. In general, the findings suggest that policies to reduce barriers to financial inclusion may increase the number of eligible account holders and encourage existing account holders to use their accounts more frequently and for savings.

2.4. WHAT DISTINGUISHES THIS STUDY FROM THE EMPIRICAL LITERATURE?

Financial gender gaps remain an intricate puzzle in economic research, with varying findings across regions and methodologies. A nuanced overview of the provided literature signals both disparities and commonalities in findings about gender and financial inclusion.

Regional Discrepancies

The African context, as illustrated by studies such as those by Machokoto et al. (2022), Zawaira et al. (2021), and Hundie et al. (2021), underscores the presence of a gender disparity in finance. However, the situation in Asia, particularly Vietnam, as described by Tran et al. (2018) and Pham and Talavera (2017), is more polarised. While the former suggests a bias against women-led businesses, the latter offers a contrasting view. Such disparities can be attributed to socio-cultural norms, institutional practices, and economic structures of individual nations. It prompts the question: How are countries within the same region reaching different conclusions?

Methodological Variances

The various methods used – from Probit models, OLS techniques, to ANCOVA specifications – might influence the conclusions drawn. For instance, the OLS technique used by Zawaira et al. (2021) might provide different results from the Probit models used by Machokoto et al. (2022), leading to potentially divergent conclusions about gender disparities.

Focus on Overall Gender Differences Vs. Specific Financial Gender Gaps

Some studies, like Aterido et al. (2013), look broadly at gender differences in financial service utilisation, while others focus specifically on financial gender gaps, such as the one by Machokoto et al. (2022). These different lenses may highlight various aspects of gender disparity, with the former potentially providing a holistic view, and the latter diving deep into specific finance-related gaps.

Empirical Findings Vs. Namibian Context

Relating these global findings to the Namibian setting, a key question arises: Does the Namibian scenario mirror any of these studies? Given Namibia's unique socio-cultural and economic landscape, are there similar institutional or systemic barriers that women face? Comparing these findings with primary data or existing studies from Namibia might reveal parallels or deviations, helping shape the course of this research further.

Therefore, while the literature provides a comprehensive overview of gender disparities in financial inclusion, the contrasting findings underscore the complexity of this issue. What remains crucial is delving deeper into understanding the 'why' behind these findings. Why do some countries exhibit no gender disparities, while others do? How do socio-cultural norms, economic structures, and policies shape these outcomes? And most importantly, how can these global insights inform and enrich our understanding of the Namibian context?

Overall, all empirical literature except one is a case for Namibia (as far as the author is aware), and as Machokoto *et al.* (2022) stated, "there is a need for country case-based studies," this study is required to make a Namibian specific instance.

2.5. SUMMARY

In this chapter, the researcher looked at the literature review, specifically the theoretical and empirical aspects and perspectives of the gender gap and access to finance. The subsequent chapter, which is number three is about research methodology.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. THEORETICAL FRAMEWORK

Becker (1957)'s model of taste-based discrimination has served as the theoretical foundation for this investigation. According to this model, the market participant is willing to forego a portion of the profit to avoid contracting the disfavoured member of the discriminated group due to bias or prejudice. Taste-based discrimination stems from preferences and cultural beliefs about gender that may influence loan application decisions. Taste-based discrimination occurs when those responsible for authorising loans detest female borrowers (due to prejudices) and prefer not to associate with them, even though it may be to their detriment in terms of decreased productivity or diminished income to gratify such preferences. This would result in female debtors being offered less credit, experiencing a higher rate of denial, and confronting higher interest rates in situations identical to those of male borrowers.

Therefore, the choice of Becker (1957)'s model of taste-based discrimination as the theoretical foundation for this investigation was motivated by several factors:

Prevalence of Gender Biases - In many societies, including some sections of Namibia, deep-rooted cultural and societal biases against women persist. This model directly addresses these biases and prejudices in market transactions, making it particularly relevant to our study's context.

Specificity to Financial Transactions - The act of lending and borrowing is deeply intertwined with trust, perceived risk, and personal biases. Becker's model aptly captures the essence of how biases might lead to suboptimal financial decisions, such as denying loans to deserving female candidates or offering them unfavourable terms.

Broad Application - While the model was initially developed to understand racial discrimination in labour markets, its fundamental principles are applicable to any form of discrimination in market transactions, including gender-based discrimination in access to finance.

Empirical Validations - Numerous studies have utilised Becker's taste-based discrimination model to explore various forms of discrimination in different sectors. Its applicability and the insights have generated in other contexts suggested that it would provide valuable perspectives in understanding gender discrimination in the financial sector of Namibia.

Highlighting Irrational Choices: One of the critical insights of the model is that discrimination can lead market participants to make choices that are not economically optimal. This perspective is instrumental in understanding why financial institutions might act against their economic interests by not lending to women or offering them unfavourable terms.

By using Becker's model, this investigation aims to delve deeper into understanding the nuances of gender-based discrimination in financial transactions in Namibia, unearthing the underlying biases and their implications for women's access to finance.

3.2. RESEARCH DESIGN

A post-positivist research paradigm was adopted for this investigation. The underlying principle of this study, which examines the relationship between government expenditures and economic development, justifies the choice of the post-positivist research paradigm. The positivist paradigm is founded on Auguste Comte's (1736–1857) rational notion to test a priori hypotheses that are frequently articulated quantitatively, where functional relationships can be derived between causal and explanatory factors (independent variables) and outcomes (dependent variables). According to Burns (2000), the post-positivist paradigm is typically validated through the application of four criteria: internal validity, external validity, reliability, and objectivity.

It seeks to offer explanations and forecasts based on measurable outcomes (Kivunja & Kuyini, 2017). This investigation utilised a cause-and-effect methodology. When a researcher asserts a causal effect, he or she has concluded that the value of cases on the dependent variable differs from what it would have been in the absence of variation in the independent variable (Bachman, 2006). Consequently, the design assisted the researcher in achieving the study's objectives, given that *ceteris paribus*, the research's hypothesis that variations in gender differences could affect access to finance was supported.

3.3. RESEARCH METHOD

The study employs a quantitative research approach to objectively examine the relationship between access to finance and its determining factors. Quantitative research is utilised in studies with measurable and countable attributes. The strategy entails the generation of quantitative data that can be subjected to formal and rigorous quantitative analysis (Kothari, 2004). To derive analysis, this investigation was guided by a quantitative methodology. In essence, it involves locating evidence to either support or refute a hypothesis containing measurable concepts. The primary purpose of the research was to test the developed hypothesis using a quantitative approach. The study determined that the approach was suitable for examining the relationship between the variables.

3.4. POPULATION

The NFIS 2017 target population, from which this study's population is drawn, consists of 1,457,919 eligible adults (above 16 years). Therefore, the study's population consisted of 1,457,919 adult males and females (above 16 years). Since this was a national investigation, the researcher utilised the 2017 NFIS population. Adopting NFIS, 2017 was justified because it is a nationally representative data set.

3.5. SAMPLING AND SAMPLE SELECTION

It is pivotal to clarify at the outset that this study did not conduct a new survey but instead relied on secondary data available on the NSA's website. Consequently, the decisions pertaining to sampling and sample design were predetermined by the initial data collection processes. The benefit of using this secondary data lies in its ready availability, cost-effectiveness, and its vast coverage spanning all 14 regions, making it a comprehensive source for analysis. However, a limitation is that as researchers, the researcher had no control or influence over the sampling methodology, sample design, or the age categorisation used.

The original survey sought to include individuals aged 16 years and older, considering that this is the minimum legal age in Namibia to own formal financial products. A stratified sampling technique was adopted in three stages. The first stage units were constituencies, followed by households in the second stage, and finally, eligible individuals residing in these households for at least six months before the survey in the third stage. This resulted in a sample of 1,383 households being drawn from 151 districts that spanned all 14 regions.

Utilising this secondary data was deemed justifiable given the characteristics of the target population and the imperative to capture the relevant age categories. Though the constraints of secondary data, such as lack of control over sampling, are acknowledged, the expansive geographical coverage and granularity of the data offer a robust foundation for the current research analysis.

3.6. DATA AND DATA SOURCES

This study utilised data from the fourth Namibia financial inclusion survey (NFIS) of 2017, conducted in 2016–17. The data were collected at a particular juncture in time; therefore, it is cross-sectional. A cross-sectional data set, according to Wooldridge (2020), is a sample of individuals, households, firms, cities, states, countries, or a variety of other entities surveyed at a specified juncture in time. Occasionally, not all units' data corresponds to the same period. During the course of a year, multiple families may be surveyed during separate periods. In a cross-sectional analysis, the researcher disregards minor differences in data collection timing. If households were surveyed during various periods of the same year, the resulting data set is still considered cross-sectional. The FIS 2017 is relevant to Wooldridge's claim because it is a household survey that collects detailed information at the individual and household levels.

The data on the NFIS was acquired from the Namibia Statistics Agency (NSA). The NFIS is a nationally representative household survey that collects individual and household-level data in detail. The data includes comprehensive information on a variety of sociodemographic and economic characteristics of individuals and households, such as age and gender, educational attainment, household size, household income, household consumption expenditures, and access to financial services such as credit, savings accounts, bank accounts, and insurance facilities.

3.7. DATA ACQUISITION METHODS

The researcher examined the Namibia Financial Inclusion Survey (NFIS) reports component of the NSA's website, the designated data source. The pertinent report was downloaded, and data was then managed by the variables' proxies. Proxies were selected based on previous authors' research on the topic.

3.8. DATA ANALYSIS

3.8.1. Chosen Variables and Expected Signs

Following Zawaira *et al.* (2021) and Mndolwa (2020), Allen *et al.* (2012), the researcher set as a proxy, access to finance (ATF) as the dependent variable with Transaction and Payment Services (TPS), Savings facilities (SF), credit access (CA), formal financial product (FFO). Variables such as gender (GR), age (AE), highest education attained (HEA), FFO, Region (RN), and Income (IE) were the independent variables. Other authors such as Fanta and Mutsonziwa (2016) and Demirgüç-Kunt and Klapper (2012), used the variables. Variables such as gender (GR), age (AE), highest education attained (HEA), urban and rural (UNRL), and Income (IE) will be the independent variables. Iddrisu and Michael (2021), Churchill and Marisetty (2020), and Danquah *et al.* (2017) used the variables in their studies. To the extent that it is harder for women to have ATF, the researcher expected this variable to have a negative relationship. The researcher expected the use of ATF first to increase and then decline with age, so to capture this, the researcher included age squared (Allen *et al.*, 2012). For UNRL, in general, the presence of financial institutions is more limited in rural areas, so it was expected for this variable to have a negative impact on rural areas and a positive impact for urban areas (Allen *et al.*, 2012).

Transaction and Payment Services (TPS)

TPS refers to the ability of individuals to make transactions and payments, including electronic transfers, withdrawals, and deposits. These are fundamental services that facilitate day-to-day financial operations. This can be measured by the number of transactions an individual makes in each period, the variety of transaction methods available, or the ease and frequency with which they use these services (Zawaira et al., 2021; Mndolwa, 2020; Allen et al., 2012).

Savings Facilities (SF)

SF relates to the provision and usage of savings accounts or other saving mechanisms that help individuals store their money securely and earn potential returns. The presence or absence of a savings account, the average balance maintained, and the frequency of transactions can be indicators of access and usage of savings facilities (Zawaira et al., 2021; Mndolwa, 2020; Allen et al., 2012).

Credit Access (CA)

CA denotes the ability of individuals to borrow money, either through formal loans, credit cards, or other lending mechanisms. This can be quantified by the number of approved loans an individual has, the total credit available, or the frequency of their loan applications (Zawaira et al., 2021; Mndolwa, 2020; Allen et al., 2012).

Formal Financial Product (FFO)

FFO refers to any standardised financial product or service offered by formal financial institutions. This includes everything from insurance policies to investment products. It is measured as the number of formal financial products an individual holds, or the diversity of these products can be an indicator of their access to such financial tools (Zawaira et al., 2021; Mndolwa, 2020; Allen et al., 2012).

The researcher tested the significance of GR on ATF and argues that a balanced GR should increase ATF since equal treatment for both males and females would mean everyone got a fair share of the opportunities available or presented. Higher (lower) AE should increase (reduce) ATF as a larger segment of the population is either too young or above retirement age, which impedes their access to financial services (Iddrisu & Michael, 2021; Allen *et al.* 2012). Higher HEA and (IE) should reduce (increase) ATF as educated people are likely to be employed to earn an income and hold higher positions that may pay considerably well to have access to financial services.

3.8.2. Descriptions of The Chosen Variables

Transaction and Payment Services (TPS):

TPS refers to the ability of individuals to make transactions and payments, including electronic transfers, withdrawals, and deposits. These are fundamental services that facilitate day-to-day financial operations. This can be measured by the number of transactions an individual makes in a given period, the variety of transaction methods available to them, or the ease and frequency with which they use these services.

Savings Facilities (SF): SF relates to the provision and usage of savings accounts or other saving mechanisms that help individuals store their money securely and earn potential returns. The presence or absence of a savings account, the average balance maintained, and the frequency of transactions can be indicators of access and usage of savings facilities.

Credit Access (CA): CA denotes the ability of individuals to borrow money, either through formal loans, credit cards, or other lending mechanisms. This can be quantified by the number of approved loans an individual has, the total credit available to them, or the frequency of their loan applications.

Formal Financial Product (FFO): FFO refers to any standardised financial product or service offered by formal financial institutions. This includes everything from insurance policies to investment products. It is measured as the number of formal financial products an individual holds or the diversity of these products can be an indicator of their access to such financial tools.

Gender (GR): is a dummy variable equal to one if the respondent is male and zero otherwise.

This was the main variable of interest since the study was on the gender gap in access to finance in Namibia.

Age (AE): this is a continuous variable representing the number of years of each respondent. To control for non-linear relationships between Age and access to finance, "Age" is represented by two measures, one with the number of years (Age) and the second is its square (Age^2) (Mndolwa 2017, Abdu *et al.*, 2015; Allen *et al.*, 2012).

Income (ie): This refers to the amount of money earned by respondents, divided into two categories, the category of those earning 150 NAD to 2000 NAD and the second category of those earning 2001 NAD to 1700000 NAD. The researcher used two dummy variables to analyse disparities in access to finance at different income levels. A dummy variable 150-2000NAD is equal to one if the individual's monthly earnings fall between 150 NAD and 2000 NAD and zero otherwise, and the same applies to other income groups.

Education attained (HEA): Nine dummy variables were used (Kindergarten, Adult literacy, Primary education, Secondary Education, Tertiary Vocational, Tertiary Education, Other, "Do not know", and "Never Attended school"). For example, Kindergarten equals one if the individual has gone through kindergarten and zero otherwise; Adult Literacy equals one if the individual has gone through adult education and zero otherwise; Primary Education equals one if an individual has primary school education and zero otherwise. However, due to the situation very common in econometric analysis, dummy variable trap, the researcher only included the dummy variable of higher education attainment (tertiary education).

TPS is an ordinal variable ordered as: 1 for "*Never had"*, 2 for "*Used to have"*, and 3 *Currently have*.

SF is an ordinal variable ordered as: 1 for "*Never had"*, 2 for "*Used to have"*, and 3 *Currently have*.

CA is an ordinal variable ordered as: 1 for "*Never had"*, 2 for "*Used to have"*, and 3 *Currently have*.

The variable FFO is a dummy variable with one for yes and zero for no.

The variable marital status (MAS) is represented by eight dummy variables (Never Married, Married with Certificate, Traditionally Married, Consensually Married, Separated, Divorced, Widowed, and Do not know). Essentially, never married equals zero and one otherwise. However, due to the situation very common in econometric analysis, dummy variable trap, the researcher only included the dummy variable of married (tertiary education).

UNRL has a dummy variable, 'Rural,' which takes the value 1 if the respondent lives in a rural area and 0 if they live in an urban area. A rural area is defined as a town or village with fewer than 50,000 inhabitants.

The variable 'region', RG, is represented using 13 dummy variables out of the 14 regions: Karas, Erongo, Hardap, Kavango West, Kavango East, Khomas, Kunene, Ohangwena, Omaheke, Omusati, Oshana, Oshikoto, and Otjozondjupa. For example, the dummy variable 'Karas' takes the value of one for an individual from the Karas region and zero otherwise. The same assertion is maintained for all the other regional dummies. Zambezi serves as the reference category and is excluded from the dummies; thus, when all other regional dummies are zero, it indicates an individual from the Zambezi region. The researcher used !Karas a base region to avoid so many comparison for all the 14 Namibia regions and this could have taken up much content in the thesis.

3.8.3. Empirical Model specification

Following Machokoto *et al.* (2022); Abdu *et al.* (2015), Aterido *et al.* (2013), and Allen *et al.* (2012) with significant modifications to suit the objectives of the study, the researcher empirically analysed the data using the Probit regression of the Ordinary Least Squares (OLS) technique regression. OLS is a method for estimating the coefficients of linear regression equations that characterise the relationship between one or more quantitatively independent variables and a dependent variable (simple or multiple linear regression). The fundamental model is detailed below:

$$\mathbf{Y_i} = \mathrm{a} + \beta X_{\mathbf{i}} + \mathbf{u_i} \ldots\ldots\ldots (\mathbf{1})$$

Where Y_i = 1 if the individual has access to finance and Y_i= 0 if the individual has no access to finance. Equation (1.) represents a model with a binary choice involving the estimation of the probability of an individual adult in Namibia having access to finance (Y_i) given a set of factors (X_i) that are exogenous to the individual.

Equation 3. a is expanded to (2) and (3)

$$\mathbf{P}(\mathbf{Y_i} = \mathbf{1}) = \mathbf{F}\ (\beta_{\mathbf{i}}\mathrm{X}_{\mathbf{i}} \ldots\ldots\ldots (\mathbf{2.})\quad \mathbf{P}(\mathbf{Y_i} = \mathbf{0}) = \mathbf{1} - \mathbf{F}\ (\beta_{\mathbf{i}}\mathrm{X}_{\mathbf{i}}) \ldots\ldots\ldots (\mathbf{3.})$$

Where Y_i = is the observed response of i^{th} individual adult who either has access to finance or not; *Yi* = 1. If the researcher let Y_i represent the financial status of an individual, then Yi=1 indicates that the individual has access to finance (ATF), while Y_i=0 signifies that the individual does not have such access. Furthermore, X_i represents a set of independent variables corresponding to the i^{th} individual. These variables influence the probability P of an individual being financially included. F is a function that may take on a normal, logistic, or probability function. As explained by Greene (2003, p. 667), the logit model uses the cumulative logistic function to estimate the probability as shown in (4) and (5) below:

$$\mathbf{P}(\mathbf{Y}=\mathbf{1}) = \frac{e^{u}}{1+e^{u}} \ldots\ldots\ldots (4)\ ; \quad \mathbf{P}(\mathbf{Y}=\mathbf{0}) = \mathbf{1} - \frac{e^{u}}{1+e^{u}} \ldots\ldots\ldots (\mathbf{5})$$

Where $u=\beta i\ X$. Greene (2003) shows that the probability model is a regression of conditional expectations of Y on X are as follows:

$$\boldsymbol{E}[\boldsymbol{y}|\boldsymbol{x}] = \mathbf{0}[\mathbf{1} - \mathbf{F}(\beta X)] + \mathbf{1}[\mathbf{F}(\beta X)] = \boldsymbol{F}(\beta_{\mathbf{i}} X_{\mathbf{i}}) \ldots\ldots\ldots (\mathbf{6})$$

Since the model is non-linear, the parameters are not the marginal effects of the estimation; therefore, the magnitude of coefficients from the output of a PROBIT regression cannot be interpreted in the same manner as a linear regression. Instead, marginal effects of the regressors, that is the amount by which the conditional probability of the outcome variable changes when the value of the regressor changes while holding the values of all other regressors constant, will provide the appropriate interpretation. This entails differentiating equation (3.f) with respect to (Xij), yielding equation (7) below.

$$\frac{zP_i}{zP_{ij}} = \left|\frac{y^{\beta' X}}{(1+y^{\beta' X})^2}\right| \beta = F(\beta' X)[1 - F(\beta' X)]\beta \ldots\ldots\ \ldots (7)$$

This study used probit over other models, such as the logit model, because most of the proxies of ATF, for example, using an TPS is a binary variable, hence requiring using a selection model defining probit selection specification (Allen *et al.*, 2012). The probit model for this study's estimation in the OLS framework is specified as follows:

$$LOG\left[\frac{\mathrm{Prob}(ATF_i)}{1-Prob(ATF)_i}\right] = \mathbf{a_0} + \mathbf{a_1 GR_i} + \mathbf{a_2 AE_i} + \mathbf{a_3 HEA_i} + \mathbf{a_4 FFO_i} + \mathbf{a_5 RN_i} + \mathbf{a_6 IE_i} +$$

$$\mathbf{a_7 UNRL_i} + \mathbf{u_i} \ldots\ldots\ldots (8),$$

Where $\mathrm{Prob}(ATF_i)$ is the probability of household will have access to finance while $1 - Prob(ATF)_i$ is the probability of household does not have access to finance.

In equation 1. scenario a_1, for example, is the change in ATF relative to a one-unit change when the gender is female, ceteris paribus (holding all other independent variables constant). The subscript i shows household and $\mathbf{u_i}$ is the error term that will capture the unobserved items in the variables.

3.8.3.1. Accounting for Heteroscedasticity

Cribari-Neto and Lima (2014) found that linear regressions fitted to cross-sectional data frequently exhibit heteroskedasticity or non-constant error variances. According to Guggisberg (2018), heteroskedasticity has more severe ramifications for non-linear models (such as logit and probit models): the maximum likelihood estimates of the parameters will be biased (in an undetermined direction) and inconsistent (unless the likelihood function is modified to take into account the precise form of heteroskedasticity correctly).

White (1980)'s heteroskedasticity-robustness test is a prevalent modelling strategy, which entails estimating the regression parameters using ordinary least squares and then conducting hypothesis testing inference with heteroskedastic standard errors. Asymptotically, these tests have the correct magnitude irrespective of whether the error variances are constant (Cribari-Neto & Lima, 2014).

3.8.4. The T-tests

To determine the gender gap in access to finance in Namibia, a t-test was conducted. A t-test is a statistical hypothesis test that is used to compare the means of two groups or samples to determine if they are significantly different from each other. It is called a t-test because it uses a t-statistic, which measures the difference between the means of the two groups relative to the variation within each group (Gosset, 1908). The t-test assumes that the data are normally distributed and that the variances of the two groups are equal. It is commonly used in scientific research to determine if the results of an experiment are statistically significant (Gosset, 1908).

The decision criteria for a t-test depend on the level of significance (alpha) and the degrees of freedom associated with the t-distribution. Typically, a significance level of 0.05 (5%) is used, meaning there is a 5% chance of rejecting the null hypothesis when it is actually true (Gosset, 1908). The degree of freedom is determined by the sample size of the two groups being compared.

To conduct a t-test, the following decision criteria are used:

1. Calculate the t-statistic using the formula for the appropriate t-test.
2. Find the critical value of t from a t-distribution table using the degrees of freedom and the chosen significance level (alpha) (Gosset, 1908).
3. Compare the calculated t-statistic to the critical value of t. If the calculated t-statistic is greater than the critical value of t, then reject the null hypothesis; if it is less than the critical value of t, then fail to reject the null hypothesis (Gosset, 1908).
4. Calculate the p-value associated with the t-statistic using a t-distribution table or calculator. If the p-value is less than the chosen significance level (alpha), then reject the null hypothesis; if it is greater than the chosen significance level, then fail to reject the null hypothesis (Gosset, 1908).

In summary, the decision criteria for a t-test involves comparing the calculated t-statistic to the critical value of t and/or comparing the p-value to the chosen significance level (alpha) to determine whether to reject or fail to reject the null hypothesis.

3.8.5. The Pearson Chi-square test

To explore whether the gender gap in accessing finance varies across regions, the study conducted the Pearson Chi-square test. The Pearson chi-square test is a statistical test used to determine the association or independence between two categorical variables. It is commonly used in econometrics and statistics to test the goodness of fit of a model or to compare observed data with expected values. The test compares a variable's observed frequency distribution with its expected frequency distribution under a specific hypothesis. The test statistic is calculated as the sum of the squared differences between the observed and expected frequencies divided by the expected frequencies (Pearson, 1916). The resulting statistic follows a chi-square distribution with degrees of freedom equal to the number of categories minus one. The decision to accept or reject the null hypothesis is based on comparing the calculated value of the test statistic with the critical value from the chi-square distribution at a given level of significance. Suppose the calculated value of the test statistic exceeds the critical value. In that case, the null hypothesis is rejected, indicating that the observed data is inconsistent with the expected values under the null hypothesis (Pearson, 1916).

The PROBIT, t-tests and the Pearson Chi-square test were conducted using the Econometric tool Stata 17.1 Special Edition package.

3.9. RESEARCH ETHICS

The research was conducted in line with the ethical procedures, which are as follows:

- Data accuracy and integrity: The researcher verified the accuracy and integrity of the data used in the study and ensured that it was obtained from a reputable source, Namibia Statistics Agency (NSA).
- Fair use: The researcher ensured that the data used in the study was used for a legitimate research purpose and that the empirical models did not use more or less data than was necessary for the study.
- Transparency: The researcher clearly indicated the sources and characteristics of the secondary data used in the study.

CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.1.INTRODUCTION

Results and discussions reveal what the researcher found from the investigations and analyses. This chapter also aims to highlight how the study was conducted and how could have contribute to new knowledge in the findings.

4.2.DESCRIPTIVE STATISTICS

The descriptive statistics in *Table 1* provide information about the gender gap in access to finance in Namibia across various financial services and demographic variables.

Transaction and Payment Services: The mean proportion of accessing finance through transaction and payment services is 1.81. The standard deviation of 0.46 suggests relatively low variability in accessing finance through these services.

Savings Facilities: The mean proportion of accessing finance through savings facilities stands at 1.53. This is notably lower than the 1.81 mean proportion observed for transaction and payment services (TPS). This disparity suggests that while a significant portion of the population engages in transactional activities, there is a lesser inclination or perhaps fewer opportunities towards savings, underscoring a potential gap in financial behaviour or available financial tools for savings in Namibia.

Credit Access: The mean proportion of accessing finance through credit access is 1.93, which is the highest among the financial services. The standard deviation of 0.29 is relatively low, indicating low variability in access to credit.

Formal Financial Product: The mean proportion of accessing finance through formal financial products is 0.25, the lowest among the financial services. The standard deviation of 0.43 indicates moderate variability in accessing finance through formal financial products.

Gender: The mean of 0.45 suggests that both males and females may have some level of access to finance across all the financial services. However, the standard deviation of 0.50 is relatively high, indicating wide variability in access to finance between genders.

Marital Status: The mean of 0.35 suggests that marital status has some level of effect on access to finance. The standard deviation of 0.48 indicates a moderate variability in access to finance across the marital status.

Highest Education Attained: The mean value of 0.10 in the dataset represents the proportion of the sample that has attained the highest level of education. This value on its own doesn't directly convey the impact of education on financial access. A more detailed analysis, examining correlations or causal relationships, would be needed to accurately assess the influence of educational attainment on access to finance." The standard deviation of 0.30 indicates low variability in access to finance across education levels.

Urban or Rural: The mean of 0.47 indicates that both urban and rural populations have some level of access to finance. The standard deviation of 0.50 suggests wide variability in access to finance between urban and rural populations.

Region: The mean of 7.63 suggests that, on average, access to finance in levels of 7.63 across regions. The standard deviation of 3.86 indicates high variability in access to finance across regions.

Overall, the descriptive statistics provide a picture of the gender gap in access to finance in Namibia for further analysis. While the mean proportion of accessing finance is relatively high across all financial services, there is wide variability in access between genders, regions, and urban and rural populations. In addition, the statistics suggest that marital status and education have minimal effects on access to finance.

Table 1: Descriptive statistics on the gender gap in access to finance in Namibia

	Transaction and Payment Services	Savings Facilities	Credit Access	Formal Financial Product	GENDER	Marital Status	Highest Education Attained	Urban or Rural	Region
Mean	1.81	1.53	1.93	0.25	0.45	0.35	0.10	0.47	7.63
Standard Deviation	0.46	0.63	0.29	0.43	0.50	0.48	0.30	050	3.86
Observation	1383	1383	1383	1383	1383	1383	1383	1383	1383

4.3.FREQUENCIES

4.3.1. Transaction and Payment Services

Table 2: Frequency- Transaction and Payment Services

TPS	Percent
Currently have	21.91
Never had	75.20
Used to have	2.89
Total	100.00

Source: Author with data from Stata

The frequency of the "Transaction and Payment Services Account" variable shown in Table *2* refers to the percentage of individuals in the sample who fall into each of the categories "Currently have," "Never had," and "Used to have" regarding a transaction and payment services account.

- 21.91% of the individuals in the sample currently have a transaction and payment services account.
- 75.20% of the individuals in the sample have never had a transaction and payment services account.

About 2.89% of the individuals in the sample used to have a transaction and payment services account but no longer do. This means that the percentage of individuals that currently have a transaction and payment services account is smaller than those who never had it; this might indicate low access or usage of such services among the population. Additionally, the percentage of individuals that used to have it is also small; this might indicate a low retention rate.

4.3.2. Savings facilities (SF)

Table 3: Frequency- Saving's facilities (SF)

SF	**Percent**
Currently have	54.09
Never had	38.68
Used to have	7.23
Total	100.00

The frequency of the variable "Saving facility at the Bank", shown in *Table 3* refers to the percentage of individuals in the sample who fall into each of the categories "Currently have," "Never had," and "Used to have" regarding a saving facility at the bank.

- 54.1% of the individuals in the sample currently have a savings facility at the bank. This suggests that most of the individuals in the sample have access to a savings facility at the bank.
- 38.7% of the individuals in the sample have never had a saving facility at the bank. This suggests that a significant portion of the individuals in the sample do not have access to a savings facility at the bank.
- 7.2% of the individuals in the sample used to have a saving facility at the bank but no longer do likely due to the loss of incomes. This suggests that a small portion of the individuals in the sample had access to a savings facility at the bank but no longer do.

This means that the percentage of individuals that currently have a savings facility at the bank is higher than those who never had it; this might indicate better access or usage of such service among the population. Additionally, the percentage of individuals that used to have it is relatively small; this might indicate a relatively high retention rate of the bank account.

4.3.3. Credit Access (CA)

Table 4: Frequency - Credit Access (CA)

CA	**Percent**
Currently have	7.88
Never had	91.25

Used to have	0.87
Total	100.00

The frequency of the variable "credit access", shown in **Table 4**, refers to the percentage of individuals in the sample who fall into each of the categories "Currently have," "Never had," and "Used to have" regarding credit access.

- 7.9% of the individuals in the sample currently have credit access. This suggests that a very small portion of the individuals in the sample have access to credit.
- 91.3% of the individuals in the sample have never had credit access. This suggests that a large majority of the individuals in the sample do not have access to credit.
- 0.9% of the individuals in the sample used to have credit access but no longer do. This suggests that a very small portion of the individuals in the sample had access to credit but no longer do.

This means that the percentage of individuals that currently have credit access is very small compared to those who never had it; this might indicate limited access or usage of credit among the population. Additionally, the percentage of individuals that used to have it is also small; this might indicate a low retention rate of credit access.

4.3.4. Formal Financial Product (FFO)

Table 5: Frequency - Formal Financial Product (FFO)

FFO	**Percent**
No	75.20
Yes	24.80
Total	100.00

The frequency of the "Obtained Formal Financial Product" variable, shown in *Table 5*, refers to the percentage of individuals in the sample who have or have not obtained a formal financial product.

- 75.2% of the individuals in the sample have not obtained a formal financial product. This suggests that a large majority of the individuals in the sample do not have access to or do not use formal financial products.
- 24.8% of the individuals in the sample have obtained a formal financial product. This suggests that a relatively small portion of the individuals in the sample have access to and use formal financial products.

This means that the percentage of individuals that have obtained a formal financial product is relatively small compared to those who haven't; this might indicate limited access to or usage of formal financial products among the population.

4.3.5. Gender (GR)

Table 6: Frequency - Gender (GR)

GR	Percent
Female	54.59
Male	45.41
Total	100.00

The frequency of the variable "Gender" in *Table 6* refers to the percentage of individuals in the sample who are either female or male.

- 54.59% of the individuals in the sample are female. This suggests that most of the individuals in the sample are female.

- 45.41% of the individuals in the sample are male. This suggests that a relatively small portion of the individuals in the sample are male.

This means that the percentage of females is higher than the percentage of males; this might indicate a higher representation of females in the sample. This could also be important to consider if the research question is related to Gender and finance.

4.3.6. Highest Education Attained (HEA)

Table 7: Frequency - Highest Education Attained (HEA)

HEA	**Percent**
Adult Literacy	0.87
Do not know	0.65
Never Attended school	11.42
Other	0.29
Primary Education	24.01
Secondary Education	52.57
Tertiary Education	8.75
Tertiary Vocational	1.45
Total	100.00

The frequency of the variable "Highest Education Attained", shown in *Table 7*, refers to the percentage of individuals in the sample who have attained a certain level of education.

This means that the majority of individuals in the sample have attained secondary education (52.6%), followed by primary education (24.0%). A relatively small percentage have attained tertiary education (8.8%) and tertiary vocational education (1.5%). Additionally, a large percentage of the individuals in the sample have never attended school (11.4%) or do not know their highest level of education (0.7%). This information about the highest level of education of the sample population could be important for the research question, as education level is often associated with access to financial services and products.

4.3.7. Marital Status (MAS)

Table 8: Frequency - Marital Status (MAS)

MAS	Percent
Consensually Married	8.60
Divorced	1.81
Married with Certificate	18.66
Never Married	56.04
Separated	1.52
Traditionally Married	7.45
Widowed	5.93
Total	100.00

The frequency of the variable "Marital Status" in *Table 8* refers to the percentage of individuals in the sample who are currently in a certain marital status.

Marital status can play a significant role in determining an individual's access to financial services. An analysis of how the various marital statuses listed might influence financial access is as follows:

Never Married (56.0%):

Individuals who have never been married might be younger and, thus, might have had less time to establish a strong credit history. They may also have a single income, potentially limiting their ability to access larger credit amounts.

Married with Certificates (18.7%):

Being legally married can often facilitate joint financial endeavours, such as securing a home loan. Such couples might also benefit from combined incomes and shared financial responsibilities, potentially leading to better creditworthiness.

Consensually Married (8.6%):

Though consensually married couples might also share financial responsibilities, they might not enjoy the same legal recognition and protections as those with a marriage certificate. This could influence their ability to access joint financial products or services.

Traditionally Married (7.5%):

Traditional marriages, while culturally recognised, may or may not have legal standing. The perception of stability, societal recognition, or even the ability to use combined resources might influence access to finance.

Widowed (5.9%):

Widowed individuals might face challenges if their financial identity was previously intertwined with their spouse's. They might have to establish their creditworthiness as individuals or navigate potential barriers if they were not the primary financial decision-makers during their marriage.

Divorced (1.81%):

Divorced individuals might face financial complications arising from the dissolution of the marriage. Debt obligations, alimony, or asset divisions might impact their credit history and access to future financial services.

Separated (1.5%):

Separation, especially if not legally formalised, might introduce uncertainties in financial responsibilities. Lenders might perceive this as a risk, affecting these individuals' access to financial services.

Considering these potential implications, it becomes evident that marital status can influence an individual's financial standing in various ways, either facilitating or impeding their access to financial services. Further empirical analysis can solidify the extent and direction of these associations in the context of Namibia.

4.3.8. Type of area- Urban or Rural (UNRL)

Table 9: Frequency - Type of area- Urban or Rural (UNRL)

Unrl	Percent
Rural	52.57
Urban	47.43
Total	100.00

The frequency of the variable "Where participants are from" in *Table 9* refers to the percentage of individuals in the sample living in a certain area.

- 52.57% of the individuals in the sample are from rural areas.
- 47.43% of the individuals in the sample are from urban areas.

This means that a majority of individuals in the sample are from rural areas (52.6%) while fewer individuals in the sample are from urban areas (47.4%). The predominance of rural respondents in the sample, accounting for 52.6%, underscores the nuances of financial behaviour within Namibia's rural landscape. While this offers invaluable insights into the financial accessibility and challenges specific to rural settings, it may also mean that the findings lean more toward the realities of these areas. Such a rural-heavy representation might highlight disparities in financial access between rural and urban areas, especially if rural regions have fewer financial infrastructures. Consequently, while the study sheds light on the broader financial behaviours in Namibia, it emphasises the need for tailored interventions for rural financial inclusivity and points towards the potential for complementary research focused on urban financial dynamics. This information about the area of residence of the sample population could be important for the research question, as access to financial services and products may vary depending on whether the individuals are from urban or rural areas.

Rural areas may have less access to financial institutions and products compared to urban areas, which could result in a greater gender gap in access to finance for individuals living in rural areas. For example, women living in rural areas may have less access to credit, savings, and other financial products than men living in rural areas. This gap may be even greater compared to women and men living in urban areas.

Additionally, it could be that rural women have different financial needs and preferences than rural men, urban women, or urban men. This could be due to their different roles and responsibilities in society and their different level of economic activities.

It is also important to note that the percentage of individuals living in rural areas (52.57%) and urban areas (47.43%) in the sample population is relatively close, and it could suggest that the sample is representative of the population; this would make the results more generalisable and trustworthy.

4.4. T-TEST OF MEAN DIFFERENCES BY AREA, URBAN AND RURAL

Table 10: T-test of mean differences by area, urban and rural

Group	SF	CA	TPS	FFO
Urban	.5488308	.9683631	.8762036	.1953232
Rural	.3597561	.8689024	.6753049	.3064024
Combined	.4591468	.9211858	.7809111	.2480116
Diff	.1890747	.0994607	.2008987	-.1110792
	Pr(|T| > |t|) = 0.0000	Pr(|T| > |t|) = 0.0000	Pr(|T| > |t|) = 0.0000	Pr(|T| > |t|) = 0.0000

The results of the t-test provided in *Table 10* compare the mean access to Savings Facilities (SF), CA, TPS, and FFO between urban and rural areas.

In *Table 10*, the t-test results display the differences in mean access to Savings Facilities (SF) between urban and rural areas. For the urban group, the mean access to SF is 0.5488308, while it's 0.3597561 for the rural group, reflecting a difference of 0.1890747 (urban-rural). This difference is statistically significant with a p-value of 0.0000, indicating that access to Savings Facilities varies significantly between urban and rural residents.

Since the researcher was interested in whether there is a significant difference in mean access to finance, for instance, SF, between urban and rural areas, the study focused on the two-tailed test (Pr (|T| > |t|) = 0.0000) results. The p-value for this test is less than the significance level of 0.05, which indicates that we can reject the null hypothesis in favour of the alternative hypothesis. This means that there is a statistically significant difference in mean access to SF between urban and rural areas.

Therefore, the results of the t-test suggest that there is a significant difference in access to SF, CA, TPS, and FO between urban and rural areas. Specifically, individuals in urban areas have higher access to SF, CA, and TPS than those in rural areas, as indicated by the positive difference in means (.1890747, .0994607, and .2008987).

4.5.MEAN ACCESS TO FINANCE BY REGION

Table 11: Mean Access to Finance by Region

Region	Mean Access to TPS	Mean Access to SF	Mean Access to CA	Mean Access to FFO
!Karas	1.7576	1.3485	1.9394	1.0909
Erongo	1.6504	1.3171	1.8862	1.3983
Hardap	1.9867	1.6533	1.9867	1.2800
Kavango East	1.9067	1.7600	1.9733	1.0400
Kavango West	1.9216	1.7843	1.9804	1.1176
Khomas	1.6438	1.5279	1.7983	1.3734
Kunene	1.9464	1.6607	1.9107	1.1250
Ohangwena	1.9160	1.3359	1.9694	1.5420
Omaheke	2.0000	2.0000	1.9818	1.0182
Omusati	1.8800	1.5520	1.9680	1.0400
Oshana	1.6916	1.4860	1.9532	1.0654
Oshikoto	1.6667	1.4343	1.9899	1.4444
Otjozondjupa	1.8839	1.4286	1.9732	1.1250
Zambezi	1.9867	1.7467	1.9333	1.2933

Table 11 shows the mean access to different financial services for various regions. The financial services include Transaction and Payment Services (TPS), Savings facilities (SF), Credit access (CA), and Formal financial products (FFO). To interpret the table, the researcher compared the mean access values for each financial service across the regions. Higher mean values indicate better access to the respective financial service for a region, while lower values indicate limited access.

Mean Access to TPS:

The Omaheke region has the highest mean access to TPS at 2.0000 and the Khomas region has the lowest mean access to TPS at 1.6438. In the analysis, the data indicated that the Omaheke region has the highest mean access to TPS at 2.0000, while the Khomas region, which houses the capital, exhibits the lowest mean access at 1.6438. At first glance, this outcome appears counter-intuitive given the expected infrastructure and financial service benefits commonly associated with capital regions. There could be several reasons for this unexpected finding: The data could be influenced by factors such as response bias, non-response errors, or any other shortcomings associated with secondary data collection that could potentially skew results. In addition, it is essential to define what "access to transaction and payment services" entails. If TPS involves services that are more commonly used in rural or less urbanised areas like Havanna in Windhoek (in essence, over two thirds of the Khomas region residents are from less urbanised areas Havanna informal settlement included, the results could be understood in that context. In addition, there could be external elements at play, such as local policies, cultural preferences for certain financial services, or recent changes in the financial landscape of the region. Finally, the sample from the Khomas region might not be fully representative of the actual population, leading to potential disparities in the findings.

Mean Access to SF:

In Table 11, the Omaheke region has the highest mean access to SF at 2.0000 with !Karas region has the lowest mean access to SF at 1.3485.

Mean Access to CA:

The Oshikoto region has the highest mean access to CA at 1.9899. The Erongo region has the lowest mean access to CA at 1.8862.

Mean Access to FFO

The Ohangwena region has the highest mean access to FFO at 1.5420. The Omaheke region has the lowest mean access to FFO at 1.0182.

Therefore, these observations help identify regions with better access to financial services and those that may require interventions or policy changes to improve access to these services.

In analysing the regional disparities in financial access, several important implications emerge. The Oshikoto region, with the highest mean access to CA at 1.9899, suggests a more developed credit landscape compared to the Erongo region, which lags at 1.8862. This discrepancy might hint at differing economic conditions, availability of credit institutions, or consumer trust in financial systems between the two regions.

Similarly, when observing access to FFO, the Ohangwena region leads at 1.5420, while the Omaheke region's low score of 1.0182 can be concerning. It might indicate lesser financial inclusivity, potentially due to infrastructural challenges, lesser awareness, or differing regional priorities.

4.6.DIFFERENCES IN GENDER GAP IN ACCESS TO FINANCE

Table 12: T-Tests for Differences in Gender Gap in Access to Finance

	TPS		**SF**		**CA**		**FFO**	
	Mean		**Mean**		**Mean**		**Mean**	
Male	.8012		.4812		.9223		.2723	
Female	.7624		.4425		.9223		.2225	
Difference	.0400		-.0400		-.0000		.0400	
t-Statistics	1.7511		-4.3724		-2.0923		1.8534	
P-value	0.08**		0.00***		0.02***		0.07**	

4.6.1. Transaction and Payment Services

Based on the analysed data in *Table 12*, the mean proportion of accessing finance for males is 0.80 with a standard error of 0.01, while the mean proportion for females is 0.76 with a standard error of 0.02. The combined mean proportion of accessing finance is 0.78 with a standard error of 0.01. The difference in the mean proportion of accessing finance between males and females is 0.04. For the two-tailed test with H_a : diff ≠ 0, the p-value is 0.08, which is marginally significant at the 10% level but not at the conventional 5% level. Thus, while there's some evidence to suggest a difference in accessing finance between males and females for TPS, the evidence is not strong enough to reject the null hypothesis at the 5% significance level.

The differences in accessing finance between males and females could be due to gender bias or discrimination, which could manifest in various ways, such as differences in financial literacy, cultural norms, or institutional barriers (Morsey, 2020; Asiedu *et al.*, 2013). In the current researcher's view, women in Namibia may have fewer opportunities for education and financial training compared to men. Lower levels of financial literacy could restrict women's ability to understand and navigate financial products and services, leading to disparities in accessing finance (Asiedu *et al.,* 2013).

4.6.2. Savings facilities (SF)

Based on the results of the t-test in **Table 12**, we can conclude that accessing finance through savings facilities (SF) differs significantly across gender. Traditional gender roles and societal expectations in Namibia might limit, for instance, women's financial independence or discourage them from participating in economic activities. In some communities, women may be expected to focus on household duties and childcare, which could restrict their access to financial resources and decision-making opportunities (Bank of Namibia, 2019). The p-value for the two-tailed test is 0.00, which is less than the significance level of 0.05. Therefore, we reject the null hypothesis that males and females have no significant difference in accessing finance through savings facilities. The differences in accessing finance could also be related to income disparities between males and females, with males generally having higher income levels and more financial resources than females. Differences in financial behaviour and attitudes between males and females could also explain the results. For example, males might be more risk-tolerant or more likely to seek out financial products and services than females (Morsey, 2020).

4.6.3. Credit Access (CA)

Based on the results of the t-test in **Table 12**, the mean of accessing finance through credit access (CA) is slightly higher for females compared to males (0.92 vs. 0.92), but the difference is very small (diff=-.001). The t-test results show that the p-value for a two-tailed test is 0.02, indicating enough evidence to reject the null hypothesis that there is a difference in accessing finance through CA between males and females. Differences in access to financial education could play a role in the differences in accessing finance between males and females. Males might have more opportunities to receive financial education, leading to better financial decision-making and higher access to financial products and services (Presbitero *et al.*, 2014).

4.6.4. Formal Financial Product (FFO)

The results of the t-test in **Table 12** suggest a significant difference between the mean of accessing finance through FFO between males and females. The mean of accessing finance through FFO for males is 0.27; for females, the mean is 0.22. The difference between the two means is 0.04, which is statistically significant with a p-value of 0.007 for the two-tailed test, which indicates that the difference is significant only in the direction of males having higher access to finance through FFO than females. Therefore, we can conclude that there is a statistically significant difference between males and females in accessing finance through FFO, with males having higher access. The availability and accessibility of financial products and services in different areas or for different demographics could also affect the results. Asiedu *et al.* (2013) stated that certain financial products may be more accessible or tailored to males than females in some areas or contexts.

4.7. PROBIT MODELS EXAMINING THE EFFECT OF GENDER DISPARITY ON ACCESS TO FINANCE AND THE UNDERLYING FACTORS OF GENDER DISPARITY ON ACCESS TO FINANCE IN NAMIBIA

4.7.1. The effect of gender disparity on access to finance and the underlying factors of gender disparity on access to finance in Namibia (*Table 13)*

Table 13: The effect of gender disparity on access to finance and the underlying factors of gender disparity on access to finance in Namibia

Variable	Transaction & Payment Services (TPS)	Savings Facility (SF)	Credit Access (CA)	Formal Financial Product (FFO)
Gender	[-0.136] (0.084) {0.005***}	[0.064] (0.075) {0.004***}	[0.100] (0.114) {0.003***}	[-0.101] (0.086) {0.002***}
Urban/rural	[0.423] (0.105) {0.000***}	[0.459] (0.091) {0.000***}	[0.272] (0.146) {0.063**}	[0.261] (0.106) {0.014**}
Education	0.888 0.130 0.000***	[0.728] (0.155) {0.000***}	[1.027] (0.143) {0.000***}	[1.138] (0.137) {0.000***}
Marital Status	[-0.144] (0.04) {0.125}	[-0.134] (0.082) {0.078**}	[-0.233] (0.125) {0.061**}	[0.111] (0.091) {0.221}
REGION				
Erongo	[-0.138] (0.207) {0.504}	[-0.024] (0.210) {0.910}	[-0.048] (0.285) {0.867}	[0.999] (0.249) {0.000***}
Hardap	[1.177] (0.318) {0.000***}	[0.818] (0.226) {0.000***}	[0.996] (0.439) {0.023**}	[0.828] (0.268) {0.002***}

Variable	**Transaction & Payment Services (TPS)**	**Savings Facility (SF)**	**Credit Access (CA)**	**Formal Financial Product (FFO)**
Kavango East	[0.554] (0.270) {0.040}	[0.950] (0.227) {0.000***}	[0.407] (0.387) {0.294}	[-0.411] (0.366) {0.262}
Kavango West	[0.542] (0.298) {0.069}	[0.894] (0.252) {0.000***}	[0.929] (0.493) {0.062**}	[0.061] (0.310) {0.843}
Khomas	[-0.148] (0.195) {0.447}	[0.440] (0.191) {0.021**}	[-0.379] (0.264) {0.152}	[0.813] (0.241) {0.001***}
Kunene	[0.980] (0.354) {0.006***}	[0.735] (0.239) {0.002***}	[-0.037] (0.354) {0.916}	[0.127] (0.314) {0.685}
Ohangwena	[0.434] (0.232) {0.062**}	[-0.218] (0.204) {0.283}	[0.315] (0.326) {0.334}	[1.542] (0.245) {0.000***}
Omaheke	[1.485] (0.411) {0.000***}	[1.736] (0.294) {0.000***}	[0.746] (0.446) {0.094**}	[-0.791] (0.425) {0.062**}
Omusati	[0.293] (0.222) {0.315}	[0.331] (0.200) {0.099**}	[0.563] (0.333) {0.090**}	[-0.517] (0.293) {0.078**}
Oshana	[-0.147] (0.214) {0.491}	[0.407] (0.207) {0.049**}	[0.585] (0.321) {0.069**}	[-0.423] (0.301) {0.159}
Oshikoto	[-0.453] (0.215) {0.315}	[0.022] (0.211) {0.915}	[0.676] (0.350) {0.054**}	[1.283] (0.253) {0.000***}
Otjozondjupa	[0.393] (0.225) {0.082}	[0.054] (0.205) {0.792}	[0.504] (0.347) {0.146}	[0.161] (0.273) {0.555}
Zambezi	[1.104] (0.297) {0.000***}	[0.709] (0.224) {0.002***}	[0.250] (0.347) {0.471}	[0.758] (0.271) {0.005***}
Age	[0.003] (0.003) {0.336}	[-0.003] (0.002) {0.131}	[-0.006] (0.002) {0.027**}	[0.005] (0.003) {0.031**}

Variable	**Transaction & Payment Services (TPS)**	**Savings Facility (SF)**	**Credit Access (CA)**	**Formal Financial Product (FFO)**
Income	[-9.6e] (8.93e-07) {0.914}	[-4.4e-06] (5.1e-06) {0.387}	[-4.6e-07] (8.5e-07) {0.590}	[-1.8e-08] (8.0e-07) {0.981}
	Obs.=1383; Loglikelihood= -595.3286; Pseudo R^2=0.1812	Obs.=1383; Loglikelihood= -831.0913; PsudoR^2=0.1288	Obs.=1383; Loglikelihood= -301.1020; PsudoR^2=0.2108	Obs.=1383; Loglikelihood= -596.2863; Pseudo R^2=0.2303

Coefficients or margins, Robust standard errors, and probability value are [], (), and {}, respectively. *** 1%, **5% and *** 10%

4.7.1.1. The model of Transaction and Payment Services (TPS)

Starting from the Transaction and Payment Services (TPS) model, the estimates reported in *Table 13* for the variable Gender is significant at the 5% level. Gender (GR): is a dummy variable equal to one if the respondent is male and zero otherwise. This was the main variable of interest since the study was on the gender gap in access to finance in Namibia. This finding indicates a clear lack of female involvement in accessing finance through Transaction and Payment Services (TPS). In this case, the sign of the coefficient is negative, implying that women are less likely than men to access finance through Transaction and Payment Services (TPS). To explain the results, firstly, it could be because women have limited awareness of the availability and benefits of TPS. This can be attributed to social and cultural factors that limit women's access to education and economic opportunities, making it difficult for them to benefit from financial inclusion initiatives; secondly, it could be due to the existence of gender-based discrimination and biases in the financial sector (Hundie *et al.* 2021); finally, it is due to the lack of gender-sensitive policies and programmes that aim to promote women's financial inclusion through TPS. This finding is similar to that of Hundie *et al.* (2021), whose methodology is similar to this study.

The coefficient in urban/rural is statistically significant at a 5% level of significance, indicating that living in a metropolitan area increases the likelihood of accessing finance through Transaction and Payment Services (TPS) compared to living in a rural area. This could be due to several reasons, including limited access to financial institutions, lack of infrastructure, and lower levels of financial literacy in rural areas. Conversely, individuals in urban areas may have greater access to banking and financial services and greater familiarity with digital and mobile technologies that facilitate the use of TPS. Additionally, urban areas often have higher levels of economic activities and greater demand for financial services, which may make it more financially viable for TPS providers to operate in those areas.

The coefficient on “education” is statistically significant at 5% level and positive, indicating that having attained an education, for example a tertiary education increases the likelihood of accessing finance through Transaction and Payment Services compared to not having attained an education. This is because people with levels of education are more likely to be employed in formal sector jobs with access to financial services or may have a better understanding of financial pro5ducts and services, including TPS (Mukong *et al*., 2020). Additionally, education is often correlated with income, and higher income levels may enable people to afford and utilise TPS more frequently.

The coefficient on “marital status” is statistically significant at a 5% level and negative, indicating that regardless of the marital status of the participant decreases the likelihood of accessing finance through Transaction and Payment Services. This result could be due to several factors. For example, married individuals may have less need to access finance through TPS because they may have joint bank accounts or access to other financial services through their spouse. In addition, married individuals may have other sources of financial support, such as shared assets or familial support, which reduce their need to rely on TPS for financial transactions (Morsey, 2020; Asiedu *et al.,* 2015).

Also, being married is associated with certain demographic characteristics, such as age or income, which are also associated with access to TPS (Alesina, Giuliano, & Nunn, 2013). For example, if married individuals tend to be older and have higher incomes, these factors may increase their access to TPS, but the effect is masked by the negative coefficient on "Married".

Furthermore, several region variables have statistically significant coefficients and probability values, indicating that individuals living in certain regions are more likely to access TPS than those in other regions. Specifically, individuals living in the regions of Hardap, Kavango East, Kunene, Omaheke, and Zambezi are more likely to access TPS, while those living in the regions of Erongo, Khomas, Omusati, Oshana, Oshikoto, and Otjozondjupa are less likely to access TPS. The likelihood of access to TPS in the latter regions can be supported by the higher mean access to TPS, which were 1.9867, 1.9067, 1.9464, 2.0000, and 1.9867, respectively. For regions such as Hardap, this could be related to the fact that the individuals in the region have taken advantage of the recent development by Namibia banks during the period of constructing the Neckteral Dam project as the banks tried to bring services closer to the people in the region to capitalise on the project.

For the region of Omaheke, this could be related to recent development the regions of Omaheke and Zambezi has been experiencing such as all the Namibia banks being represented in towns such as Gobabis and the Trans-Kalahari route. When most banks are represented, this means that individuals can visit the banks while having a broad range of options to choose from in terms of financial banking.

Regions like Oshikoto could have been less likely to access finance due to the drought experienced in the country at the time of the NFIS 2017 which affected most regions. This meant that most individuals lost their sources of income such as selling livestock or selling mahangu harvests. With this, their TPSs were likely to be inactive, which could have become -intensive for the banks to maintain or keep TPSs active. Most likely, it could be that banks also found these two regions unattractive as clients lost their sources of income due to drought.

Only age does not have a statistically significant effect on Transaction and Payment Services among control variables, as the coefficient estimate (0.003) is not statistically significant at the 5% level ($p = 0.336$). The coefficient estimates for income (-9.63e-08) is also not statistically significant ($p = 0.914$), suggesting that income does not significantly affect Transaction and Payment Services and could be explained in the fact that there are some income earners, for instance those that earn less who may not be able to keep their bank accounts active and thus limiting them to make transactions and payments like point of sale purchases.

4.7.1.2.The model of Saving Facilities

Moving on to the model of Savings facilities (SF), the estimates reported in *Table 13* for the variable gender is still significant, entailing female involvement in accessing finance through Savings facilities. In this case, the sign of the coefficient is positive, implying that women are more likely than men to access finance through Savings facilities (SF). Authors like Hundie *et al.* (2021) and Mndolwa (2017) gave a similar judgment and mentioned that it is unclear whether women can save as the results are insignificant.

The coefficient of urban is statistically significant at a 5% level, indicating that living in an urban area increases the likelihood of accessing finance through Savings facilities compared to living in a rural area. This is because urban areas often have better access to financial institutions and services, such as banks, making it easier for people to access savings facilities. This result agrees with the results of Ndoya and Tsala (2021) when they settled that urban areas tend to have more job opportunities and higher average incomes, which can also increase the likelihood of accessing savings facilities. In essence, it is supported by the difference in means of urban and rural of 0.1890747. Essentially, the higher mean access to SF for the urban group of 0.5488308 supports the significance.

The coefficient on "education" is statistically significant and positive, indicating that having attained an education or more increases the likelihood of accessing finance through Savings Facilities compared to not having attained a tertiary education. This result is consistent with the idea that higher education is associated with higher levels of financial literacy, which in turn could lead to a greater understanding of the benefits of using savings facilities (Mukong *et al.*, 2020). Additionally, individuals with higher levels of education may have greater access to information and resources, which could help them better navigate the financial system and take advantage of savings facilities. Finally, it could be that individuals with higher levels of education are more likely to have higher-paying jobs or other sources of income, which could make them more attractive to financial institutions and increase their access to savings facilities.

The coefficient on “marital status” is statistically significant and negative, indicating that regardless of the marital status of the participant decreases the likelihood of accessing finance through Savings facilities compared to not being married. There could be various reasons for this result. For example, married individuals may be more likely to rely on joint bank accounts or other shared financial resources with their spouse rather than seeking out individual savings facilities. Additionally, married individuals may have different financial priorities or goals than unmarried individuals, which could influence their use of Savings facilities. It is also possible that other factors, such as income or age, influence both marital status and the use of Savings facilities, leading to the observed correlation.

In addition, several Region variables have statistically significant coefficients and probability values, indicating that individuals living in certain regions are more likely to access Savings facilities than those in other regions. Specifically, individuals living in the regions of Hardap, Kavango East, Kavango West, Khomas, Kunene, Omaheke, and Zambezi are more likely to access Savings facilities, while those living in the regions of Erongo, Ohangwena, Omusati, Oshikoto, Otjozondjupa are less likely to access Savings facilities.

Age does not affect Savings facilities statistically among the control variables, as the coefficient estimate (0.003) is not statistically significant ($p = 0.131$). In addition, the coefficient estimates for income (-4.37e-06) are also not statistically significant ($p = 0.387$), suggesting that income does not significantly affect Savings facilities.

In understanding why age and income may not significantly influence access to Savings facilities, several factors should be considered. Firstly, access to savings facilities might be a basic need that transcends age. For instance, both young adults and the elderly might see the importance of savings equally, and therefore, age does not differentiate their likelihood to access these facilities. On the other hand, when it comes to income, it is possible that the range of incomes within the sample isn't broad enough to show significant variations in access to Savings facilities. Alternatively, banks and financial institutions may offer basic savings facilities to individuals regardless of their income levels, considering them as essential services. This could mean that both low and high-income individuals have similar access, making income a non-determining factor in this context. It is also worth considering cultural or societal factors where saving might be a deeply ingrained habit irrespective of one's age or income. Future research might delve deeper into these nuances to uncover more specific reasons for these findings.

4.7.1.3. The model of Credit Access (CA)

With the model of Credit Access (CA), results for the main variable, Gender, remain the same. However, in this case, we observe that male involvement in access to finance is positively associated with the likelihood of having access to credit and significant. Essentially, the presence of men in access to finance through credit access does have a statistically significant effect on the probability of credit access, even more so when the coefficient on gender is positive. This means that men have a higher probability of accessing credit than women.

One possibility is that other factors, such as creditworthiness, income, and collateral, are more important in determining credit access. Another possibility (since the results show that men have a higher probability of accessing credit than women.) is that cultural or social barriers prevent women from accessing credit, such as discrimination, lack of knowledge or confidence in financial matters, or limited mobility. Authors such as Mndolwa (2017), Wellalage and Locke (2017), Ha et al. (2016), Stefani and Vacca (2015), and Hensen and Rand (2014) found similar results when they found that individuals who were female had decelerated chances of being given a credit facility than men did. Factors such as gender discrimination in Namibia has been significantly progressed, with a strong legal framework and policies promoting gender equality, compared to countries like South Africa, which face ongoing issues with gender-based violence, workplace discrimination, and wage disparities between men and women (Mukong *et al.*, 2020).

Meanwhile, on financial literacy levels, Namibia has strived to improve financial literacy through initiatives like the Financial Literacy Initiative (FLI), which aims to educate citizens about financial matters an effort that is in line with the effort of South Africa which also has financial education programs, such as the National Consumer Financial Education Committee, which work to improve financial literacy (World Bank 2020).

Interestingly, the coefficients of variables urban, higher education attained, and married are still statistically significant positive for urban, higher education attained, and negative for married. For urban, this indicates that living in an urban area increases the likelihood of accessing finance through credit access compared to living in a rural area. This could be due to the concentration of financial institutions and services in urban areas and the higher level of economic activity and income in these areas, making them more attractive to financial institutions. De Andres *et al.* (2021) and Seema *et al.* (2021) gave results that agree with this study's results. Specifically, Seema *et al.* (2021) said that Individuals in urban areas might also have greater access to information and technology, facilitating access to credit and financial services. This disagreement is caused by the variance in methodologies used in the current study and the mentioned past studies. The current used more robust methodological techniques such as robust standard errors. In contrast, the mentioned past studies used basic logit models only.

The "education attained," indicates that having attained an education increases the likelihood of accessing finance through credit access compared to not having attained an education. This could be because individuals with higher levels of education are generally more economically empowered, have higher income levels, and are better equipped to navigate the financial system and meet the requirements for accessing credit.

In addition, "marital status", indicates that regardless of the marital status of the participant decreases the likelihood of accessing finance through credit access compared to not being married. This may be due to several factors, such as the fact that, for instance, married individuals are more likely to have shared financial obligations and commitments, making it more difficult to obtain credit. In theory, this finding can be related to agency theory in the context of shared financial obligations and commitments when one partner has a poor credit record that impacts the joint decisions.

Married individuals may have joint financial decisions, which could lead to conflicts of interest between the two partners. The agency theory focuses on the relationship between principals and agents, and how conflicting interests can affect decision-making. In this case, the married couple can be seen as agents with potentially diverging interests, which could influence their access to credit or financial decisions. In economic theory, married individuals may have a different set of preferences and constraints compared to unmarried individuals, which could influence their demand for credit. For instance, married couples might prioritise shared financial goals or be more risk-averse, leading to reduced demand for credit compared to unmarried individuals. Further, in the feminist theory married women might face unique challenges, such as gender-based discrimination or societal expectations, which could limit their access to credit.

Furthermore, traditional gender roles and unequal power dynamics within marriage could lead to women having less control over financial decisions. Finally, regarding the taste-based Discrimination Theory, financial institutions might perceive married individuals as less risky due to stereotypes or assumptions about their financial stability or responsibility.

Meanwhile, several Region variables have statistically significant coefficients and probability values, indicating that individuals living in certain regions are more likely to access credit than those in other regions. Specifically, individuals living in the regions of Hardap, Kavango West, Omaheke, Omusati, Oshana, and Oshikoto are more likely to access credit, while those living in the regions of Erongo, Kavango East, Khomas, Kunene, Ohangwena, Otjozondjupa, and Zambezi are less likely to access credit. Explanations can be provided as to why regions that are historically believed to be less attractive in economic terms/benefits are booming due to new economic potential discoveries. In this study, they are Erongo and Hardap. There is so much to be said for the regions of Erongo and Hardap to determine the likelihood of credit access by individuals positively, but the obvious one is the uptake of green scheme projects in the region, which may have lured financial institutions such as banks to extend credit to the individuals from the region who had viable and bankable agricultural projects.

4.7.1.4.The Model of Formal Financial Product

Finally, for the model of "Formal Financial Product" (FFO), results for the main variable, Gender change on the sign of the coefficient. In this case, the study observes that it means compared with women, men have a negative probability of accessing formal financial products. (Their chances of obtaining an FFO are likely to decrease than those of women). Essentially, the absence of men in the access to finance through formal financial products does have a statistically significant effect on the probability of formal financial products, even if the coefficient on males changes to positive.

One possible explanation for this result is that men may also face certain socio-economic and cultural barriers that limit their access to formal financial products. For instance, men who go look after animals as herders may have less access to information about financial products, less education and financial literacy, and less control over household finances compared to women. According to Moro et al. (2017), this may limit their ability to access and use formal financial products, even if they are available. In addition, men like women might face discriminatory lending practices, such as higher interest rates, stricter eligibility criteria, and lower loan amounts, making it difficult to access finance through formal financial products (Morsey, 2020).

The researcher agrees with Pham and Talavera (2017) who dismissed the notion of women being discriminated against to obtain formal financial products. To explain this, the researcher likens it to the theory of agency, that only males were made aware of formal products at financial institutions mainly because women are usually made housewives to carry out household chores and may not be getting opportunities such as those of networking where information is shared.

Interestingly, the coefficients on urban and higher education attained are still statistically significant and positive. For urban, this indicates that living in an urban area increases the likelihood of accessing finance through formal financial products compared to living in a rural area. Firstly, living in an urban area often means that individuals can access more formal financial institutions such as banks and microfinance institutions. This could increase the likelihood of individuals in urban areas accessing formal financial products (Ha *et al.,* 2016).

The “education attained” indicates that having attained an education increases the likelihood of accessing finance through formal financial products compared to not having attained an education. Secondly, education attainment is often associated with higher income and better job opportunities. This could mean that individuals with an education are more likely to have the financial stability and resources to be able to access formal financial products. In support of this result, Wellalage and Locke (2017) found that individuals with education may also have better financial literacy, which could increase their ability to understand and navigate the formal financial system.

Meanwhile, several region variables have statistically significant coefficients and probability values, indicating that individuals living in certain regions have a higher likelihood of accessing formal financial products compared with those in the base region. Specifically, individuals living in Erongo, Hardap, Khomas, Ohangwena, Omaheke, Omusati, Oshikoto, and Zambezi regions are more likely to obtain a formal financial product. In contrast, those living in the regions of Kavango East, Kavango West, Kunene, Oshana, and Otjozondjupa are less likely to obtain a formal financial product. A region like Khomas has so much to be likened to access to finance through CA because it is home to the capital of Namibia, Windhoek, where most financial institutions have head offices and branches for individuals to visit at their convenience. As such, head offices and broad branches' proximity have a role to play. Among the control variables, age does have a statistically significant effect on access to finance through formal financial products, as the coefficient estimate (0.005) is statistically significant ($p = 0.031$). However, the coefficient estimates for income (-1.88e-08) is not statistically significant ($p = 0.981$), suggesting that income does not significantly affect access to finance through the formal financial product.

4.8.DIAGNOSTIC TESTS

4.8.1. Transaction and Payment Services

4.8.1.1.Goodness of fit of the Probit Model

4.8.1.1.1. Hosmer-Lemeshow chi2 test

Table 14: Goodness of fit of the TPS Probit Model - Hosmer-Lemeshow Chi-Square Test

Probit model for TPS, goodness-of-fit test
(Table collapsed on quantiles of estimated probabilities)
number of observations = 1383
number of groups = 10
Hosmer-Lemeshow chi2(8) = 8.35
Prob > chi2 = 0.4000

The results of the Hosmer-Lemeshow chi-square test as presented in *Table 14* indicate that the p-value of 0.4000 is higher than the Hosmer-Lemeshow Chi-square. This suggests that the probit model is appropriate for the analysis.

4.8.1.1.2. Pearson Chi-Square Test

Table 15: Goodness of fit of the TPS Probit Model - Pearson Chi-Square Test

Probit model for TPS, goodness-of-fit test
number of observations = 1383
number of covariate patterns = 1369
Pearson chi2(1338) = 1267.51
Prob > chi2 = 0.9153

The results of the Pearson Chi-square test in *Table 15* show a p-value of 0.9153 which is greater than the 5 percent threshold, thereby confirming the model's goodness of fit. This also suggests that the probit model is appropriate for the analysis.

4.8.1.2.Classification and Specificity of the Probit Model

Table 16: Classification and specificity of the TPS Probit model

Sensitivity		**Pr (+ D)**	**96.36%**	
Specificity		Pr(-~D)	24.75%	
Positive predictive value		Pr (D +)	81.90%	
Negative predictive value		Pr (~D -)	65.79%	
False + rate for true ~D		Pr(+~D)	75.25%	
False - rate for true D		Pr (- D)	3.64%	
False + rate for classified	+	Pr (~D +)	18.10%	
False - rate for classified	-	Pr (D -)	34.21%	
Correctly classified				80.57%

Table 16 demonstrates that the probit model used in the study satisfies the specificity required to the extent of 24.75 percent, and it also satisfies the classification requirement by 80.57 percent. As a result, the specification of the study's model can be considered credible and can be used as a reference for advancing modelling techniques in future research.

4.8.1.3.AIC and BIC

Table 17: AIC and BIC of the TPS Model

Model	**Obs**	**ll (null)**	**ll (model)**	**Df**	**AIC**	**BIC**

TPS	1,383	-724.8817	-576.393	31	1214.786	-724.8817

The study's probit regression model is considered appropriate for the analysis as demonstrated by the results of using the AIC and BIC methods (presented in *Table 17*). The lowest value of -724.88 was obtained compared to the AIC, further indicating the model's fit for the study's purpose.

4.8.2. Savings facilities (SF)

4.8.2.1.Goodness of fit of the SF Probit Model

4.8.2.1.1. Hosmer-Lemeshow chi2 test

Table 18: SF Probit Model Hosmer-Lemeshow chi^2 test

Probit model for SF, goodness-of-fit test
(Table collapsed on quantiles of estimated probabilities)
number of observations = 1383
number of groups = 10
Hosmer-Lemeshow chi2(8) = 8.98
Prob > chi2 = 0.3444

The results of the Hosmer-Lemeshow chi-square test, as presented in *Table 18*, indicate that the p-value of 0.3444 is higher than the Hosmer-Lemeshow Chi-square. This suggests that the probit model is appropriate for the analysis.

4.8.2.1.2. Pearson Chi-Square Test

Table 19 SF Probit Model Pearson Chi-Square Test

Probit model for TPS, goodness-of-fit test

number of observations =	**1383**
number of covariate patterns =	**1378**
Pearson chi2(1346) =	**1394.21**
Prob > chi2 =	**0.1759**

The results of the Pearson Chi-square test in *Table 19* show a p-value of 0.1759 which is greater than the 5 percent threshold, thereby confirming the goodness of fit of the model. This suggests also that the probit model is appropriate for the analysis.

4.8.2.2. Classification and Specificity of the Probit Model

Table 20: Classification and specificity of the SF Probit model

Sensitivity		**Pr (+ D)**	**61.42%**	
Specificity		Pr(-~D)	77.01%	
Positive predictive value		Pr (D +)	69.40%	
Negative predictive value		Pr (~D -)	70.16%	
False + rate for true ~D		Pr(+~D)	22.99%	
False - rate for true D		Pr (- D)	38.58%	
False + rate for classified	+	Pr (~D +)	30.60%	
False - rate for classified	-	Pr (D -)	29.84%	
Correctly classified				69.85%

The results from *Table 20* indicate that the probit model in the study satisfies the requirement of specificity to a high extent (77.01%) and meets the classification requirement with a reasonable degree of accuracy (69.85%). This suggests that the model specification can be considered credible and valuable for developing future research modelling techniques.

4.8.2.3.AIC and BIC

Table 21: AIC and BIC of the SF Probit model

Model	Obs	ll(null)	ll(model)	Df	AIC	BIC
SF	1,383	-954.001	-784.6912	32	1633.382	1800.807

The study's probit model has been deemed fit for its intended purpose based on the results obtained from using the AIC and BIC models in *Table 21* The lowest value in the AIC and BIC models is found in the BIC, with a value of 1633.382, which supports the validity of the study's model for future research and modelling technique development.

4.8.3. Credit Access (CA)

4.8.3.1. Goodness of fit of the CA Probit Model

4.8.3.1.1. Hosmer-Lemeshow chi^2 test

Table 22: CA Probit Hosmer-Lemeshow chi^2 test

Probit model for CA, goodness-of-fit test
(Table collapsed on quantiles of estimated probabilities)
number of observations = 1383
number of groups = 10
Hosmer-Lemeshow chi2(8) = 11.62
Prob > chi2 = 0.1692

The results of the Hosmer-Lemeshow chi-square test, as presented in *Table 22*, indicate that the p-value of 0.1692 is higher than the Hosmer-Lemeshow Chi-square. This suggests that the probit model is appropriate for the analysis.

4.8.3.1.2. Pearson Chi-Square Test

Table 23: CA Probit Model Pearson Chi-Square Test

Probit model for TPS, goodness-of-fit test
number of observations = 1383
number of covariate patterns = 1336
Pearson chi2(1307) = 890.44
Prob > chi2 = 1.0000

The results of the Pearson Chi-square test in *Table 23* show a p-value of 0.1759 which is greater than the 5 percent threshold, thereby confirming the model's goodness of fit. This suggests also that the probit model is appropriate for the analysis.

4.8.3.2. Classification and specificity of the CA Probit model

Table 24: Classification and specificity of the CA Probit model

Sensitivity		**Pr (+ D)**	**98.70%**	
Specificity		Pr(-~D)	14.68%	
Positive predictive value		Pr (D +)	92.90%	
Negative predictive value		Pr (~D -)	50.00%	
False + rate for true ~D		Pr(+~D)	85.32%	
False - rate for true D		Pr (- D)	1.30%	
False + rate for classified	+	Pr (~D +)	7.10%	
False - rate for classified	-	Pr (D -)	50.00%	
Correctly classified				91.87%

Table 24 indicates that the probit model used in the study meets the specificity requirement with a 14.68% success rate and meets the classification requirement with a 91.87% success rate. These results suggest that how the study's model is specified can be considered a credible approach for developing modelling techniques in future research.

4.8.3.3. AIC and BIC

Table 25: AIC and BIC of the CA Probit model

Model	Obs	ll(null)	ll(model)	Df	AIC	BIC
CA	1,341	-378.0156	-277.7759	29	613.5518	764.3857

The fitness of the study's probit model for its intended purpose has been confirmed by the results obtained from the AIC and BIC models, as shown in *Table 25*. This is demonstrated by the lowest value of 613.55, compared to the BIC value. This suggests that the probit model specification can be taken seriously for future research and modelling technique development.

4.8.4. Formal Financial Product (FFO)

4.8.4.1.Goodness of Fit of the FFO Probit Model

4.8.4.1.1. Hosmer-Lemeshow chi2 test

Table 26: FFO Probit Model Hosmer-Lemeshow chi^2 test

Probit model for FFO, goodness-of-fit test
(Table collapsed on quantiles of estimated probabilities)
number of observations = 1383
number of groups = 10
Hosmer-Lemeshow chi2(8) = 7.17
Prob > chi2 = 0.5184

The results of the Hosmer-Lemeshow chi-square test, as presented in *Table 26*, indicates that the p-value of 0.5184 is higher than the Hosmer-Lemeshow Chi-square. This suggests that the probit model is appropriate for the analysis.

4.8.4.1.2. Pearson Chi-Square Test

Table 27: FFO Probit Model Pearson Chi-Square Test

Probit model for FFO, goodness-of-fit test

number of observations = 1383
number of covariate patterns = 1369
Pearson chi2(1338) = 1168.83
Prob > chi^2 = 0.9997

The results of the Pearson Chi-square test in *Table 27* shows a p-value of 0.9997 which is greater than the 5 percent threshold, thereby confirming the model's goodness of fit. This also suggests that the probit model is appropriate for the analysis.

4.8.4.2.Classification and Specificity of the FFO Probit Model

Table 28: Classification and Specificity of the FFO Probit Model

Sensitivity		Pr (+ D)	43.44%	
Specificity		Pr(-~D)	91.66%	
Positive predictive value		Pr (D +)	63.40%	
Negative predictive value		Pr (~D -)	82.97%	
False + rate for true ~D		Pr(+~D)	8.34%	
False - rate for true D		Pr (- D)	56.56%	
False + rate for classified	+	Pr (~D +)	36.60%	
False - rate for classified	-	Pr (D -)	17.03%	
Correctly classified				79.62%

The results of *Table 28* suggests that the probit model in the study is valid and can be used as a benchmark for future research. This is because the model has met the specificity requirement by 91.66 percent and the classification requirement by 79.62 percent. The high scores indicate that the model is well-specified and can be used as a reference for developing similar models in the future.

4.8.4.3.AIC and BIC

Table 29: AIC and BIC of the FFO Probit model

Model	Obs	ll(null)	ll(model)	Df	AIC	BIC
FFO	1,383	-772.0987	-559.9509	31	1181.902	1343.892

The results of the AIC and BIC models (as shown in *Table 29*) indicates that the study's probit model is fit for purpose, as it has the lowest value of 1181.902 compared to the BIC value. Additionally, **Table 29** shows that the study's probit model meets the specificity requirement by 91.66 percent and the classification requirement by 79.62 percent, which supports the notion that the way the model is specified can be taken seriously for future research and modelling technique development.

4.9. THE GENDER GAP DIFFERENCE IN ACCESSING FINANCE ACROSS REGIONS IN NAMIBIA

Table 30: The gender gap difference in accessing finance across regions in Namibia.

	TPS		SF		CA		FFO	
	Male	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Khomas	74.25	25.75	82.83	17.17	62.23	37.77	80.69	19.31
Ohangwena	76.34	23.66	90.34	9.16	74.81	25.19	84.73	15.27
Omusati	62.40	37.60	76.80	9.63	58.40	41.12	99.20	0.80
Erongo	66.67	33.33	87.80	12.20	50.41	49.59	78.86	21.14
Otjozondjupa	52.68	47.32	78.57	21.43	46.43	53.57	94.64	5.36

	TPS		**SF**		**CA**		**FFO**	
	Male	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Oshana	73.83	26.17	75.70	24.30	58.88	41.12	99.07	0.93
Oshikoto	76.77	23.17	82.83	17.17	65.66	34.34	89.90	10.10
Hardap	36	64	57.33	42.67	36	64	80	20
Kavango East	52	48	64	36	48	52	98.67	1.33
Kavango West	58.82	41.18	72.55	27.45	54.90	45.10	92.16	7.84
Zambezi	77.33	22.67	84	16	77.33	22.67	94.67	5.33
Karas	65.15	34.85	78.79	21.21	53.03	46.97	95.45	4.55
Kunene	64.29	35.71	78.57	21.43	64.29	35.71	92.86	7.14
Omaheke	47.27	52.73	50.91	49.09	47.27	52.73	98.18	1.82
	Pearson $Chi^2(13)$ =81.02; Pr=0.00***		Pearson $Chi^2(13)$ =78.26; Pr=0.00***		Pearson $Chi^2(13)$ =62.31; Pr=0.00***		Pearson $Chi^2(13)$ =89.50; Pr=0.00***	

T-test for the difference by Gender

	TPS	SF	CA	FFO
	Mean	Mean	Mean	Mean
Male	.8012	.4812	.9223	.2723
Female	.7624	.4425	.9223	.2225
Difference	.0400	-.0400	-.0000	.0400
t-Statistics	1.7511	-4.3724	-2.0923	1.8534
P-value	0.08**	0.00***	0.02***	0.07**

4.9.1. Transaction and Payment Services

Based on the Pearson Chi^2 test results in *Table 30*, there are significant gender differences in access to finance across regions, as indicated by the Pearson Chi^2 test result of 0.000. The table shows the percentage of males and females with access to finance in each region.

In most regions, a higher percentage of males have access to finance compared to females. For example, in Khomas, 74.25% of males have access to finance compared to only 25.75% of females. This pattern is consistent across most of the regions. However, in Hardap and Omaheke, a higher percentage of females have access to finance than males. These gender differences in access to finance across regions could indicate underlying economic and social factors that need to be addressed to promote greater financial inclusion and gender equity.

We find that for the model of TPS, in *Table 30*, access to finance is lower amongst females across all the regions. This gender gap difference is confirmed through the paired t-test, which is statistically significant at the 10% level of significance.

4.9.2. Savings facilities (SF)

For the model of SF, in *Table 30,* access to finance is lower amongst females across all the regions. This gender gap difference is confirmed through the Pearson Chi^2 test result, which is statistically significant.

Based on the results. The table shows the percentage of males and females with access to finance in different country regions. The Pearson Chi^2 test result is 78.23 with a p-value of 0.00, which indicates a significant association between Gender and access to finance across regions.

Looking at the data, we can see that in most regions, the percentage of males with access to finance is higher than that of females. For example, in the Khomas region, 82.83% of males have access to finance compared to only 17.17% of females. Similarly, in Ohangwena, Omusati, Erongo, Otjozondjupa, Oshana, Oshikoto, and Kavango East regions, the percentage of males with access to finance is higher than that of females. This gender gap difference is confirmed through the paired t-test, which is statistically significant at the 5 percent level.

On the other hand, in some regions, the percentage of females with access to finance is higher than that of males. For example, 21.43% of females in the Kunene region have access to finance compared to only 78.57% of males. Similarly, in Omaheke and Kavango West regions, the percentage of females with access to finance is higher than that of males.

4.9.3. Credit Access (CA)

For the CA model, in *Table 30*, access to finance is lower amongst females across all the regions. This gender gap difference is confirmed through the Pearson Chi^2 test result, which is statistically significant.

The data shows that men generally have higher access to finance than women across all regions, with a few exceptions. For example, in the Hardap region, women have a higher access to finance than men (64% vs 36%), and in the Zambezi region, men have a higher access to finance than women (77.33% vs 22.67%).

To determine if these gender gaps are statistically significant, a chi-squared test was conducted, resulting in a Pearson chi2 value of 62.31 and a significance level of 0.000. This indicates that the gender gaps in access to finance across regions are statistically significant and are not due to chance alone. The significant gender gaps in access to finance across regions suggest that some barriers or challenges prevent women from accessing finance to the same extent as men. These barriers could include discriminatory practices, lack of access to financial education or information, and limited availability of financial services in certain areas. This gender gap difference is confirmed through the paired t-test which is statistically significant at the 5 percent level.

4.9.4. Formal Financial Product (FFO)

Finally, for the model of FFO, in *Table 30,* access to finance is lower amongst females across all the regions. This gender gap difference is confirmed through the Pearson Chi^2 test result, which is statistically significant. Essentially, the Pearson chi^2 test shows a statistically significant relationship between Gender and access to finance across the different regions in Namibia.

As per the results in *Table 30*, males have higher access to finance than females across all regions, except for Kunene, where both genders have relatively low access. The largest gender gaps in access to finance are seen in Ohangwena, Oshikoto, and Hardap, where the percentage of females with access to finance is less than half of the percentage of males with access.

The regions with the highest overall access to finance are Omusati, Oshana, and Kavango East, while the regions with the lowest overall access are Kunene, Hardap, and Zambezi.

Overall, the data suggests a significant gender gap in access to finance in Namibia, with females being significantly disadvantaged in terms of financial inclusion.

In the Khomas region, 80.69% of men have access to finance compared to only 19.31% of women. In Ohangwena, 84.73% of men have access to finance compared to only 15.27% of women. In Omusati, a significantly higher percentage of men (99.20%) have access to finance than women (0.80%). Similarly, in Oshana, 99.07% of men have access to finance compared to only 0.93% of women. Finally, in Hardap, 80% of men have access to finance compared to 20% of women.

In the Erongo region, 78.86% of men have access to finance compared to 21.14% of women. In Otjozondjupa, 94.64% of men have access to finance compared to 5.36% of women. In Oshikoto, 89.90% of men have access to finance compared to 10.10% of women.

In the Kavango East region, 98.67% of men have access to finance compared to only 1.33% of women. In Zambezi, 94.67% of men have access to finance compared to 5.33% of women. In the Karas region, 95.45% of men have access to finance compared to 4.55% of women. In Kunene, 92.86% of men have access to finance compared to 7.14% of women. In Omaheke, 98.18% of men have access to finance compared to 1.82% of women. Finally, in Kavango West, 92.16% of men have access to finance compared to 7.84% of women.

The Pearson Chi^2 test indicates that there is a statistically significant difference in access to finance between men and women across all regions (Pr=0.000). This gender gap difference is confirmed through the paired t-test which is statistically significant at the 10% level of significance.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1.INTRODUCTION

The researcher looked at the empirical results and discussions of the study in the previous chapter. This chapter presents the conclusions and recommendations in line with the findings of the study from the foregoing chapter.

5.2.CONCLUSIONS

The researcher focused on assessing the effects of the gender gap on accessing finance in Namibia. Cross-sectional data from the Namibia Statistics Agency for the fourth Financial Inclusion Survey of 2017 was used. The study applied several techniques to examine the effect of the gender gap on access to finance.

The t-test results revealed that for the Transaction and payment services (TPS) Model, the mean proportion of accessing finance for males is higher than the mean proportion for females, thus indicating a gender gap in access to finance. The difference was further confirmed by a p-value less than the significance level of 5%. Therefore, the study rejected the null hypothesis and concluded that there is a significant difference in accessing finance between males and females for TPS. Further, it is concluded that accessing finance through savings facilities (SF) differs significantly across gender, and it is skewed towards males. In addition, the t-test on credit access indicated that the mean of accessing finance through credit access (CA) was slightly higher for females compared to males. The t-tests results showed that the p-value was less than the significance level, indicating a difference in accessing finance through CA between males and females. Finally, the results of the t-test suggested that the mean of accessing finance through the formal financial product

(FFO) for males was higher than that of females indicating the gender gap was skewed towards males, which was further confirmed by the p-value lower than the significance level.

When examining the effect of gender disparity on access to finance and the underlying factors of gender disparity on access to finance in Namibia, the probit results revealed that for the models of Transaction and Payment Services (TPS) and Formal Financial Product (FFO), the results of gender were significant entailing a clear existence of male involvement in accessing finance through TPS and FFO. In this case, the signs of the coefficients were negative, implying that men were less likely than women to access finance through TPS and FFO. Hence, this revealed a significant negative effect of gender disparity on access to finance through TPS and FFO.

However, for the savings facilities (SF) and Credit Access (CA) models, a significant positive effect of gender disparity on access to finance was found. Essentially, the probit results of gender were significant, entailing a clear existence of female involvement in accessing finance through SF and CA. In this case, the signs of the coefficients were positive, implying that men were more likely than women to access finance through SF and CA. Therefore, there is evidence of both negative and positive effects of gender disparity on access to finance in Namibia. In addition, the probit models of TPS, SF, CA and FFO revealed that the underlying factors of gender disparity on access to finance in Namibia were region, marital status (married), higher education attained (tertiary or more) and age.

Finally, when exploring the gender disparity on access to finance in Namibia across Namibian regions, it was found that for Transaction and Payment Services, access to finance was lower amongst females across all the regions. For Savings facilities (SF), it was found that there is a gender gap in access to finance across regions, with males having higher access to finance in most regions. However, there were some regions where females had higher financial access than males. Further, regarding Credit Access (CA), it was discovered that men generally had higher access to finance than women across all regions, with a few exceptions. For example, in the Hardap region, women had a higher access to finance than men, and in the Zambezi region, men had a higher access to finance than women. Finally, for Formal Financial Product (FFO), it was revealed that access to finance was lower amongst females across all the regions. Essentially, it was found that there is a gender gap in access to finance across regions, with males having higher access to finance in most regions through FFO.

5.3. RECOMMENDATIONS

Based on the findings, the following policy recommendations can be made:

- Address the gender gap in accessing finance: The study has revealed a clear gender gap in accessing finance in Namibia. Therefore, policymakers should implement policies that aim to reduce this gap. For instance, they can introduce gender-specific financial products, increase financial literacy among women, and provide financial support to women-owned businesses, specifically through TPS and FFO.
- Address regional disparities: The study has revealed significant regional disparities in access to finance, with some regions having higher access to finance for women than others. Therefore, policymakers should implement policies that aim to reduce these regional disparities. For instance, they can support underdeveloped regions financially and increase financial literacy in these areas.

- Address underlying factors: The study has revealed that certain underlying factors contribute to gender disparities in access to finance. Policymakers should implement policies that aim to address these underlying factors. For instance, they can financially support women with higher educational attainment and implement policies that aim to promote gender equality in marriage.
- Increase female access to finance through CA: Although the findings suggest that females have slightly higher access to finance through CA, it is still lower than males. Therefore, policies should be implemented to increase female access to finance through CA, such as providing targeted credit programs for women entrepreneurs.
- Increase access to finance through SF: The findings suggest a significant positive effect of gender disparity on access to finance through SF. Therefore, policies to increase access to SF should be implemented, especially in regions where females have lower access to finance than males.

5.4.WHAT IS THERE FOR FUTURE RESEARCH?

- Investigate the factors that contribute to the gender gap on access to finance: Future research should explore the underlying reasons why females have lower access to finance through TPS and FFO than males. In addition, the study should also explore social and cultural factors that may contribute to this gender gap.
- Explore the impact of targeted credit programs for women entrepreneurs: Future research should investigate the impact of targeted credit programs for women entrepreneurs on female access to finance through CA.

- Investigate why women have higher access to finance through SF and CA: Although the findings suggest that females have higher access to finance through SF and CA, the reasons for this trend are not explored. Future research should investigate why women have higher access to finance through SF and CA and determine whether these factors can be replicated to increase female access to finance through other channels.

- Explore the impact of Gender on financial literacy and financial inclusion: Future research should investigate the impact of Gender on financial literacy and financial inclusion in Namibia. The research should explore whether females have lower levels of financial literacy and financial inclusion and how this impacts their access to finance.

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APPENDICES

Appendix A: Descriptive Statistics

```
. summarize tps1 sf1 ca1  ffo2 gr2 mas1_married hea1_Tertiary unrl2 rn1,

                            TPS
-------------------------------------------------------------
      Percentiles      Smallest
 1%            1              1
 5%            1              1
10%            1              1       Obs               1,383
25%            2              1       Sum of Wgt.       1,383

50%            2                      Mean           1.809834
                        Largest       Std. Dev.      .4604364
75%            2              3
90%            2              3       Variance       .2120016
95%            2              3       Skewness      -.6402593
99%            3              3       Kurtosis       3.414654

                            SF
-------------------------------------------------------------
      Percentiles      Smallest
 1%            1              1
 5%            1              1
10%            1              1       Obs               1,383
25%            1              1       Sum of Wgt.       1,383

50%            1                      Mean           1.531453
                        Largest       Std. Dev.      .6276214
75%            2              3
90%            2              3       Variance       .3939087
95%            3              3       Skewness       .7596839
99%            3              3       Kurtosis       2.569332

                            CA
-------------------------------------------------------------
      Percentiles      Smallest
 1%            1              1
 5%            1              1
10%            2              1       Obs               1,383
25%            2              1       Sum of Wgt.       1,383

50%            2                      Mean           1.929863
                        Largest       Std. Dev.      .2874569
75%            2              3
90%            2              3       Variance       .0826315
95%            2              3       Skewness      -2.209204
99%            2              3       Kurtosis       10.31429

                           ffo2
-------------------------------------------------------------
      Percentiles      Smallest
 1%            0              0
 5%            0              0
10%            0              0       Obs               1,383
25%            0              0       Sum of Wgt.       1,383

50%            0                      Mean           .2480116
                        Largest       Std. Dev.      .4320148
75%            0              1
90%            1              1       Variance       .1866368
95%            1              1       Skewness       1.166995
99%            1              1       Kurtosis       2.361878
```

gr2

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	1,383
25%	0	0	Sum of Wgt.	1,383
50%	0		Mean	.4540853
		Largest	Std. Dev.	.4980675
75%	1	1		
90%	1	1	Variance	.2480712
95%	1	1	Skewness	.184438
99%	1	1	Kurtosis	1.034017

RECODE of mas1 (MAS)

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	1,383
25%	0	0	Sum of Wgt.	1,383
50%	0		Mean	.3470716
		Largest	Std. Dev.	.476211
75%	1	1		
90%	1	1	Variance	.2267769
95%	1	1	Skewness	.6425041
99%	1	1	Kurtosis	1.412811

RECODE of hea1 (HEA)

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	1,383
25%	0	0	Sum of Wgt.	1,383
50%	0		Mean	.1019523
		Largest	Std. Dev.	.302695
75%	0	1		
90%	1	1	Variance	.0916243
95%	1	1	Skewness	2.630976
99%	1	1	Kurtosis	7.922037

unrl2

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	1,383
25%	0	0	Sum of Wgt.	1,383
50%	0		Mean	.4743312
		Largest	Std. Dev.	.4995213
75%	1	1		
90%	1	1	Variance	.2495215
95%	1	1	Skewness	.1028109
99%	1	1	Kurtosis	1.01057

RN

	Percentiles	Smallest		
1%	1	1		
5%	2	1		
10%	2	1	Obs	1,383
25%	5	1	Sum of Wgt.	1,383
50%	8		Mean	7.625452
		Largest	Std. Dev.	3.860069
75%	11	14		
90%	13	14	Variance	14.90013
95%	14	14	Skewness	-.0375957
99%	14	14	Kurtosis	1.869837

Appendix B: Probit model of TPS - Stata regression Output

```
. probit tps_na i.gr6 i.unrl1 i.hea1_Tertiary1 i.mas1_married1 i.rn1 ae ie, vce (robust)

Iteration 0:   log pseudolikelihood = -727.11562
Iteration 1:   log pseudolikelihood =  -598.9553
Iteration 2:   log pseudolikelihood = -595.37953
Iteration 3:   log pseudolikelihood = -595.32885
Iteration 4:   log pseudolikelihood = -595.32863
Iteration 5:   log pseudolikelihood = -595.32863

Probit regression                               Number of obs     =      1,383
                                                Wald chi2(19)     =     238.34
                                                Prob > chi2       =     0.0000
Log pseudolikelihood = -595.32863               Pseudo R2         =     0.1812
```

tps_na	Coef.	Robust Std. Err.	z	P>z	[95% Conf.	Interval]
gr6						
"Female"	-.1368312	.0844535	-2.83	0.005	-.302357	.0286946
unrl1						
Urban	.4225071	.1051701	-4.02	0.000	-.6286368	-.2163774
hea1_Tertiary1						
"Tertiary"	.8877386	.1303547	-6.81	0.000	-1.143229	-.632248
mas1_married1						
"Married"	-.1437979	.0938361	-1.53	0.125	-.3277132	.0401175
rn1						
Erongo	-.1381143	.2066212	-0.67	0.504	-.5430845	.2668558
Hardap	1.176587	.3181507	3.70	0.000	.5530231	1.800151
Kavango_East	.5536285	.2699437	2.05	0.040	.0245485	1.082708
Kavango_West	.5415736	.2980616	1.82	0.069	-.0426165	1.125764
Khomas	-.1481129	.1949358	-0.76	0.447	-.5301801	.2339543
Kunene	.9798676	.3539528	2.77	0.006	.2861328	1.673602
Ohangwena	.4335012	.2326572	1.86	0.062	-.0224985	.889501
Omaheke	1.485312	.4113373	3.61	0.000	.6791053	2.291518
Omusati	.2931325	.2221068	1.32	0.187	-.1421888	.7284537
Oshana	-.1472074	.2137137	-0.69	0.491	-.5660785	.2716638
Oshikoto	-.4525655	.2152063	-2.10	0.035	-.8743622	-.0307688
Otjozondjupa	.3927538	.2259437	1.74	0.082	-.0500876	.8355953
Zambezi	1.104015	.2967065	3.72	0.000	.5224812	1.685549
ae	.0026591	.0027642	0.96	0.336	-.0027587	.0080769
ie	-9.63e-08	8.93e-07	-0.11	0.914	-1.85e-06	1.65e-06
_cons	.9572627	.2162347	4.43	0.000	.5334504	1.381075

Appendix C: Probit model for SF - Stata regression Output

```
. probit sf_na i.gr6 i.unrl1 i.hea1_Tertiary1 i.mas1_married1 i.rn1 ae ie, vce (rob

Iteration 0:   log pseudolikelihood = -954.00099
Iteration 1:   log pseudolikelihood = -832.84178
Iteration 2:   log pseudolikelihood = -831.43376
Iteration 3:   log pseudolikelihood = -831.09833
Iteration 4:   log pseudolikelihood = -831.09131
Iteration 5:   log pseudolikelihood =  -831.0913

Probit regression                               Number of obs     =      1,383
                                                Wald chi2(19)     =     191.10
                                                Prob > chi2       =     0.0000
Log pseudolikelihood =  -831.0913               Pseudo R2         =     0.1288
```

sf_na	Coef.	Robust Std. Err.	z	P>z	[95% Conf.	Interval]
gr6						
"Female"	.0644544	.0749582	2.75	0.004	-.082461	.2113698
unrl1						
Urban	.4594227	.0908969	-5.05	0.000	-.6375774	-.2812681
hea1_Tertiary1						
"Tertiary"	.7277347	.154631	-4.71	0.000	-1.030806	-.4246635
mas1_married1						
"Married"	-.1438828	.081672	-1.76	0.078	-.3039569	.0161913
rn1						
Erongo	-.0236521	.2099076	-0.11	0.910	-.4350635	.3877593
Hardap	.8178291	.2255497	3.63	0.000	.3757599	1.259898
Kavango_East	.9504564	.227431	4.18	0.000	.5046997	1.396213
Kavango_West	.8936665	.2517363	3.55	0.000	.4002724	1.387061
Khomas	.4395265	.1910353	2.30	0.021	.0651041	.8139489
Kunene	.7349191	.2386192	3.08	0.002	.2672341	1.202604
Ohangwena	-.2184386	.2035891	-1.07	0.283	-.6174658	.1805887
Omaheke	1.735672	.2941164	5.90	0.000	1.159214	2.312129
Omusati	.3313727	.2007442	1.65	0.099	-.0620787	.7248241
Oshana	.4070824	.2067378	1.97	0.049	.0018838	.8122809
Oshikoto	.0224393	.2106336	0.11	0.915	-.390395	.4352735
Otjozondjupa	.0540463	.2048361	0.26	0.792	-.347425	.4555176
Zambezi	.7089385	.2244276	3.16	0.002	.2690684	1.148809
ae	-.0034354	.0022767	-1.51	0.131	-.0078978	.0010269
ie	-4.37e-06	5.05e-06	-0.87	0.387	-.0000143	5.53e-06
_cons	-.0220311	.1956202	-0.11	0.910	-.4054396	.3613774

Appendix D: Probit model for CA - Stata regression Output

```
. probit ca_na i.gr6 i.unrl1 i.hea1_Tertiary1 i.mas1_married1 i.rn1 ae ie, vce (robust)

Iteration 0:   log pseudolikelihood = -381.51932
Iteration 1:   log pseudolikelihood =  -305.7707
Iteration 2:   log pseudolikelihood = -301.15863
Iteration 3:   log pseudolikelihood =  -301.1022
Iteration 4:   log pseudolikelihood = -301.10202
Iteration 5:   log pseudolikelihood = -301.10202

Probit regression                               Number of obs     =      1,383
                                                Wald chi2(19)     =     186.20
                                                Prob > chi2       =     0.0000
Log pseudolikelihood = -301.10202               Pseudo R2         =     0.2108
```

ca_na	Coef.	Robust Std. Err.	z	P>z	[95% Conf.	Interval]
gr6						
“Female”	.1002949	.1139478	2.88	0.003	-.1230387	.3236285
unrl1						
Urban	.2723154	.1463188	-1.86	0.063	-.559095	.0144642
hea1_Tertiary1						
“Tertiary”	1.026977	.1428295	-7.19	0.000	-1.306918	-.7470363
mas1_married1						
“Married”	-.2331422	.124527	-1.87	0.061	-.4772107	.0109262
rn1						
Erongo	-.0477302	.2849764	-0.17	0.867	-.6062738	.5108133
Hardap	.9959668	.4385002	2.27	0.023	.1365223	1.855411
Kavango_East	.4067107	.3872914	1.05	0.294	-.3523666	1.165788
Kavango_West	.9193993	.4930048	1.86	0.062	-.0468723	1.885671
Khomas	-.3786516	.2643117	-1.43	0.152	-.8966929	.1393898
Kunene	-.0374119	.3542365	-0.11	0.916	-.7317027	.6568789
Ohangwena	.3149673	.3263338	0.97	0.334	-.3246352	.9545699
Omaheke	.7457103	.4455391	1.67	0.094	-.1275304	1.618951
Omusati	.5634647	.332746	1.69	0.090	-.0887054	1.215635
Oshana	.5846844	.3214091	1.82	0.069	-.0452658	1.214635
Oshikoto	.6755299	.3501888	1.93	0.054	-.0108276	1.361887
Otjozondjupa	.5044619	.347246	1.45	0.146	-.1761277	1.185052
Zambezi	.2499585	.3471423	0.72	0.471	-.4304278	.9303448
ae	-.006602	.0029949	-2.20	0.027	-.0124718	-.0007321
ie	-4.58e-07	8.51e-07	-0.54	0.590	-2.13e-06	1.21e-06
_cons	1.937779	.307581	6.30	0.000	1.334931	2.540626

Appendix E: Probit model for FFO – Stata regression Output

```
. probit ffo2 i.gr6 i.unrl1 i.hea1_Tertiary1 i.mas1_married1 i.rn1 ae ie, vce (robust)

Iteration 0:   log pseudolikelihood = -774.67371
Iteration 1:   log pseudolikelihood = -602.10245
Iteration 2:   log pseudolikelihood = -596.37395
Iteration 3:   log pseudolikelihood = -596.28664
Iteration 4:   log pseudolikelihood = -596.28632
Iteration 5:   log pseudolikelihood = -596.28632

Probit regression                               Number of obs     =      1,383
                                                Wald chi2(19)     =     295.60
                                                Prob > chi2       =     0.0000
Log pseudolikelihood = -596.28632               Pseudo R2         =     0.2303
```

ffo2	Coef.	Robust Std. Err.	z	P>z	[95% Conf.	Interval]
gr6						
"Female"	-.101273	.085959	-2.18	0.002	-.2697495	.0672035
unrl1						
Urban	.2608771	.1056444	2.47	0.014	.0538178	.4679364
hea1_Tertiary1						
"Tertiary"	1.138333	.1366862	8.33	0.000	.8704333	1.406234
mas1_married1						
"Married"	.1116238	.0912885	1.22	0.221	-.0672985	.290546
rn1						
Erongo	.9994066	.248985	4.01	0.000	.5114048	1.487408
Hardap	.8279096	.2667611	3.10	0.002	.3050675	1.350752
Kavango_East	-.4111198	.3663892	-1.12	0.262	-1.129229	.3069899
Kavango_West	.0613061	.3102961	0.20	0.843	-.5468631	.6694753
Khomas	.8131894	.2413387	3.37	0.001	.3401741	1.286205
Kunene	.1273658	.3139075	0.41	0.685	-.4878817	.7426132
Ohangwena	1.542101	.245342	6.29	0.000	1.06124	2.022963
Omaheke	-.790994	.4245992	-1.86	0.062	-1.623193	.0412053
Omusati	-.516945	.2933483	-1.76	0.078	-1.091897	.0580072
Oshana	-.4234938	.3007232	-1.41	0.159	-1.012901	.1659129
Oshikoto	1.28336	.2525706	5.08	0.000	.7883306	1.778389
Otjozondjupa	.1611651	.2730579	0.59	0.555	-.3740185	.6963487
Zambezi	.7575056	.2709901	2.80	0.005	.2263747	1.288636
ae	.0054283	.0025217	2.15	0.031	.0004858	.0103708
ie	-1.88e-08	7.95e-07	-0.02	0.981	-1.58e-06	1.54e-06
_cons	-1.790137	.2503202	-7.15	0.000	-2.280756	-1.299519

Appendix F: T-Tests

```
. ttest tps_na, by(gr6)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
"Male"	755	.7986755	.0146032	.4012558	.7700077	.8273432
"Female"	628	.7595541	.0170669	.4276949	.726039	.7930693
combined	1,383	.7809111	.0111265	.4137787	.7590845	.8027376
diff		.0391214	.0223306		-.0046843	.082927

```
    diff = mean("Male") - mean("Female")                      t =   1.7519
Ho: diff = 0                                 degrees of freedom =     1381

    Ha: diff < 0               Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.9600         Pr(|T| > |t|) = 0.0800          Pr(T > t) = 0.0400

. ttest tps_na, by(gr6) unequal

Two-sample t test with unequal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
"Male"	755	.7986755	.0146032	.4012558	.7700077	.8273432
"Female"	628	.7595541	.0170669	.4276949	.726039	.7930693
combined	1,383	.7809111	.0111265	.4137787	.7590845	.8027376
diff		.0391214	.0224618		-.0049439	.0831866

```
    diff = mean("Male") - mean("Female")                      t =   1.7417
Ho: diff = 0                     Satterthwaite's degrees of freedom =  1301.19

    Ha: diff < 0               Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.9591         Pr(|T| > |t|) = 0.0818          Pr(T > t) = 0.0409
```

```
. ttest sf_na, by(gr6)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
  "Male" |     755    .4423841    .0180876    .4969986     .406876    .4778922
"Female" |     628    .4792994     .019951    .4999695    .4401206    .5184781
---------+--------------------------------------------------------------------
combined |   1,383    .4591468    .0134048    .4985085    .4328508    .4854428
---------+--------------------------------------------------------------------
    diff |           -.0369153    .0269148               -.0897137    .0158831
------------------------------------------------------------------------------
    diff = mean("Male") - mean("Female")                          t =  -1.3716
Ho: diff = 0                                     degrees of freedom =     1381

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0852         Pr(|T| > |t|) = 0.1704          Pr(T > t) = 0.9148

. ttest sf_na, by(gr6) unequal

Two-sample t test with unequal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
  "Male" |     755    .4423841    .0180876    .4969986     .406876    .4778922
"Female" |     628    .4792994     .019951    .4999695    .4401206    .5184781
---------+--------------------------------------------------------------------
combined |   1,383    .4591468    .0134048    .4985085    .4328508    .4854428
---------+--------------------------------------------------------------------
    diff |           -.0369153    .0269296               -.0897443    .0159138
------------------------------------------------------------------------------
    diff = mean("Male") - mean("Female")                          t =  -1.3708
Ho: diff = 0                     Satterthwaite's degrees of freedom =  1332.64

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0853         Pr(|T| > |t|) = 0.1707          Pr(T > t) = 0.9147
```

```
. ttest ca_na, by(gr6)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
  "Male" |     755    .9205298      .00985    .2706505    .9011932    .9398664
"Female" |     628    .9219745    .0107113    .2684255    .9009401     .943009
---------+--------------------------------------------------------------------
combined |   1,383    .9211858    .0072481     .269546    .9069674    .9354042
---------+--------------------------------------------------------------------
    diff |           -.0014447    .0145628               -.0300124     .027123
------------------------------------------------------------------------------
    diff = mean("Male") - mean("Female")                          t =  -0.0992
Ho: diff = 0                                     degrees of freedom =     1381

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.4605         Pr(|T| > |t|) = 0.9210          Pr(T > t) = 0.5395

. ttest ca_na, by(gr6) unequal

Two-sample t test with unequal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
  "Male" |     755    .9205298      .00985    .2706505    .9011932    .9398664
"Female" |     628    .9219745    .0107113    .2684255    .9009401     .943009
---------+--------------------------------------------------------------------
combined |   1,383    .9211858    .0072481     .269546    .9069674    .9354042
---------+--------------------------------------------------------------------
    diff |           -.0014447    .0145518               -.0299915    .0271021
------------------------------------------------------------------------------
    diff = mean("Male") - mean("Female")                          t =  -0.0993
Ho: diff = 0                     Satterthwaite's degrees of freedom =  1339.35

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.4605         Pr(|T| > |t|) = 0.9209          Pr(T > t) = 0.5395
```

```
. ttest ffo2, by(gr6)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
  "Male" |     755    .2675497    .0161215    .4429749    .2359013     .299198
"Female" |     628    .2245223    .0166641       .4176    .1917982    .2572464
---------+--------------------------------------------------------------------
combined |   1,383    .2480116    .0116168    .4320148     .225223    .2708001
---------+--------------------------------------------------------------------
    diff |            .0430274    .0233119               -.0027033     .088758
------------------------------------------------------------------------------
    diff = mean("Male") - mean("Female")                          t =   1.8457
Ho: diff = 0                                     degrees of freedom =     1381

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.9674         Pr(|T| > |t|) = 0.0651          Pr(T > t) = 0.0326

. ttest ffo2, by(gr6) unequal

Two-sample t test with unequal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
  "Male" |     755    .2675497    .0161215    .4429749    .2359013     .299198
"Female" |     628    .2245223    .0166641       .4176    .1917982    .2572464
---------+--------------------------------------------------------------------
combined |   1,383    .2480116    .0116168    .4320148     .225223    .2708001
---------+--------------------------------------------------------------------
    diff |            .0430274    .0231861                -.002457    .0885117
------------------------------------------------------------------------------
    diff = mean("Male") - mean("Female")                          t =   1.8557
Ho: diff = 0                     Satterthwaite's degrees of freedom =  1359.56

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.9681         Pr(|T| > |t|) = 0.0637          Pr(T > t) = 0.0319
```

```
. ttest tps_na, by(unrl2)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
 "Rural" |     727    .8762036    .0122233    .3295759    .8522064    .9002008
 "Urban" |     656    .6753049    .0182965    .4686181    .6393781    .7112317
---------+--------------------------------------------------------------------
combined |   1,383    .7809111    .0111265    .4137787    .7590845    .8027376
---------+--------------------------------------------------------------------
    diff |            .2008987    .0216249                .1584775    .2433198
------------------------------------------------------------------------------
    diff = mean("Rural") - mean("Urban")                          t =   9.2902
Ho: diff = 0                                     degrees of freedom =     1381

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 1.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 0.0000

. ttest tps_na, by(unrl2) unequal

Two-sample t test with unequal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
 "Rural" |     727    .8762036    .0122233    .3295759    .8522064    .9002008
 "Urban" |     656    .6753049    .0182965    .4686181    .6393781    .7112317
---------+--------------------------------------------------------------------
combined |   1,383    .7809111    .0111265    .4137787    .7590845    .8027376
---------+--------------------------------------------------------------------
    diff |            .2008987    .0220039                .1577269    .2440704
------------------------------------------------------------------------------
    diff = mean("Rural") - mean("Urban")                          t =   9.1302
Ho: diff = 0                     Satterthwaite's degrees of freedom =  1161.42

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 1.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 0.0000
```

```
. ttest sf_na, by(unrl2)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
 "Rural" |     727    .5488308     .018468    .4979524    .5125737    .5850879
 "Urban" |     656    .3597561    .0187524     .480295    .3229341    .3965781
---------+--------------------------------------------------------------------
combined |   1,383    .4591468    .0134048    .4985085    .4328508    .4854428
---------+--------------------------------------------------------------------
    diff |            .1890747    .0263684                .1373482    .2408012
------------------------------------------------------------------------------
    diff = mean("Rural") - mean("Urban")                          t =   7.1705
Ho: diff = 0                                     degrees of freedom =     1381

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 1.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 0.0000

. ttest sf_na, by(unrl2) unequal

Two-sample t test with unequal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
 "Rural" |     727    .5488308     .018468    .4979524    .5125737    .5850879
 "Urban" |     656    .3597561    .0187524     .480295    .3229341    .3965781
---------+--------------------------------------------------------------------
combined |   1,383    .4591468    .0134048    .4985085    .4328508    .4854428
---------+--------------------------------------------------------------------
    diff |            .1890747    .0263196                .1374439    .2407056
------------------------------------------------------------------------------
    diff = mean("Rural") - mean("Urban")                          t =   7.1838
Ho: diff = 0                     Satterthwaite's degrees of freedom =  1374.87

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 1.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 0.0000
```

```
. ttest ca_na, by(unrl2)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
 "Rural" |     727    .9683631     .006496    .1751519    .9556099    .9811164
 "Urban" |     656    .8689024    .0131875    .3377646    .8430076    .8947973
---------+--------------------------------------------------------------------
combined |   1,383    .9211858    .0072481     .269546    .9069674    .9354042
---------+--------------------------------------------------------------------
    diff |            .0994607    .0142717                .0714641    .1274573
------------------------------------------------------------------------------
    diff = mean("Rural") - mean("Urban")                          t =   6.9691
Ho: diff = 0                                     degrees of freedom =     1381

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 1.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 0.0000

. ttest ca_na, by(unrl2) unequal

Two-sample t test with unequal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
 "Rural" |     727    .9683631     .006496    .1751519    .9556099    .9811164
 "Urban" |     656    .8689024    .0131875    .3377646    .8430076    .8947973
---------+--------------------------------------------------------------------
combined |   1,383    .9211858    .0072481     .269546    .9069674    .9354042
---------+--------------------------------------------------------------------
    diff |            .0994607    .0147006                .0706117    .1283097
------------------------------------------------------------------------------
    diff = mean("Rural") - mean("Urban")                          t =   6.7657
Ho: diff = 0                     Satterthwaite's degrees of freedom =  960.413

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 1.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 0.0000
```

```
. ttest ffo2, by(unrl2)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
 "Rural" |     727    .1953232    .0147136    .3967223    .1664369    .2242096
 "Urban" |     656    .3064024    .0180127    .4613507    .2710328    .3417721
---------+--------------------------------------------------------------------
combined |   1,383    .2480116    .0116168    .4320148     .225223    .2708001
---------+--------------------------------------------------------------------
    diff |           -.1110792      .02308                -.1563548   -.0658035
------------------------------------------------------------------------------
    diff = mean("Rural") - mean("Urban")                          t =  -4.8128
Ho: diff = 0                                     degrees of freedom =     1381

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 1.0000

. ttest ffo2, by(unrl2) unequal

Two-sample t test with unequal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
 "Rural" |     727    .1953232    .0147136    .3967223    .1664369    .2242096
 "Urban" |     656    .3064024    .0180127    .4613507    .2710328    .3417721
---------+--------------------------------------------------------------------
combined |   1,383    .2480116    .0116168    .4320148     .225223    .2708001
---------+--------------------------------------------------------------------
    diff |           -.1110792    .0232583                -.1567071   -.0654512
------------------------------------------------------------------------------
    diff = mean("Rural") - mean("Urban")                          t =  -4.7759
Ho: diff = 0                     Satterthwaite's degrees of freedom =  1298.95

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 1.0000

.
```

Appendix G: Pearson Chi-square Tests

```
. tabulate TPSGR1 rn1, cchi2 chi2 column exact miss row rowsort colsort
```

Key
frequency
chi2 contribution
row percentage
column percentage

```
Enumerating sample-space combinations:
stage 14: enumerations = 1
stage 13: enumerations = 48
stage 12: enumerations = 2113
stage 11: enumerations = 84474
stage 10:
exceeded memory limits using exact(1); try again with larger #; see help tabulate for details
```

	RN								
TPSGR1	Khomas	Ohangwena	Omusati	Erongo	Otjozondj	Oshana	Oshikoto	Hardap	Total
0	173	100	78	82	59	79	76	27	906
	2.7	2.3	0.2	0.0	2.8	1.1	1.9	10.0	27.9
	19.09	11.04	8.61	9.05	6.51	8.72	8.39	2.98	100.00
	74.25	76.34	62.40	66.67	52.68	73.83	76.77	36.00	65.51
1	60	31	47	41	53	28	23	48	477
	5.2	4.5	0.4	0.0	5.3	2.1	3.6	18.9	53.1
	12.58	6.50	9.85	8.60	11.11	5.87	4.82	10.06	100.00
	25.75	23.66	37.60	33.33	47.32	26.17	23.23	64.00	34.49
Total	233	131	125	123	112	107	99	75	1,383
	7.9	6.8	0.5	0.1	8.2	3.3	5.6	28.9	81.0
	16.85	9.47	9.04	8.89	8.10	7.74	7.16	5.42	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

	RN						
TPSGR1	Kavango_E	Zambezi	!Karas	Kunene	Omaheke	Kavango_W	Total
0	39	58	43	36	26	30	906
	2.1	1.6	0.0	0.0	2.8	0.3	27.9
	4.30	6.40	4.75	3.97	2.87	3.31	100.00
	52.00	77.33	65.15	64.29	47.27	58.82	65.51
1	36	17	23	20	29	21	477
	4.0	3.0	0.0	0.0	5.3	0.7	53.1
	7.55	3.56	4.82	4.19	6.08	4.40	100.00
	48.00	22.67	34.85	35.71	52.73	41.18	34.49
Total	75	75	66	56	55	51	1,383
	6.1	4.6	0.0	0.0	8.1	1.0	81.0
	5.42	5.42	4.77	4.05	3.98	3.69	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00

```
Pearson chi2(13) =  81.0240   Pr = 0.000
```

```
. tabulate SFGR1 rn1, cchi2 chi2 column exact miss row rowsort colsort
```

Key
frequency
chi2 contribution
row percentage
column percentage

```
Enumerating sample-space combinations:
stage 14: enumerations = 1
stage 13: enumerations = 40
stage 12: enumerations = 1403
stage 11: enumerations = 45035
stage 10:
exceeded memory limits using exact(1); try again with larger #; see help tabulate for details
```

	RN								
SFGR1	Khomas	Ohangwena	Omusati	Erongo	Otjozondj	Oshana	Oshikoto	Hardap	Total
0	193	119	96	108	88	81	82	43	1,082
	0.6	2.7	0.0	1.4	0.0	0.1	0.3	4.2	17.0
	17.84	11.00	8.87	9.98	8.13	7.49	7.58	3.97	100.00
	82.83	90.84	76.80	87.80	78.57	75.70	82.83	57.33	78.24
1	40	12	29	15	24	26	17	32	301
	2.3	9.6	0.1	5.2	0.0	0.3	1.0	15.1	61.2
	13.29	3.99	9.63	4.98	7.97	8.64	5.65	10.63	100.00
	17.17	9.16	23.20	12.20	21.43	24.30	17.17	42.67	21.76
Total	233	131	125	123	112	107	99	75	1,383
	2.9	12.2	0.2	6.6	0.0	0.4	1.2	19.2	78.3
	16.85	9.47	9.04	8.89	8.10	7.74	7.16	5.42	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

	RN						
SFGR1	Kavango_E	Zambezi	!Karas	Kunene	Omaheke	Kavango_W	Total
0	48	63	52	44	28	37	1,082
	1.9	0.3	0.0	0.0	5.2	0.2	17.0
	4.44	5.82	4.81	4.07	2.59	3.42	100.00
	64.00	84.00	78.79	78.57	50.91	72.55	78.24
1	27	12	14	12	27	14	301
	7.0	1.1	0.0	0.0	18.9	0.8	61.2
	8.97	3.99	4.65	3.99	8.97	4.65	100.00
	36.00	16.00	21.21	21.43	49.09	27.45	21.76
Total	75	75	66	56	55	51	1,383
	8.9	1.5	0.0	0.0	24.1	1.0	78.3
	5.42	5.42	4.77	4.05	3.98	3.69	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00

```
Pearson chi2(13) =  78.2556   Pr = 0.000
```

```
. tabulate CAGR1 rn1, cchi2 chi2 column exact miss row rowsort colsort
```

Key

frequency
chi2 contribution
row percentage
column percentage

```
Enumerating sample-space combinations:
stage 14: enumerations = 1
stage 13: enumerations = 48
stage 12: enumerations = 2073
stage 11: enumerations = 77359
stage 10:
exceeded memory limits using exact(1); try again with larger #; see help tabulate for details
```

	RN								
CAGR1	Khomas	Ohangwena	Omusati	Erongo	Otjozondj	Oshana	Oshikoto	Hardap	Total
0	145	98	73	62	52	63	65	27	804
	0.7	6.3	0.0	1.3	2.6	0.0	1.0	6.3	26.1
	18.03	12.19	9.08	7.71	6.47	7.84	8.08	3.36	100.00
	62.23	74.81	58.40	50.41	46.43	58.88	65.66	36.00	58.13
1	88	33	52	61	60	44	34	48	579
	0.9	8.7	0.0	1.8	3.7	0.0	1.3	8.8	36.2
	15.20	5.70	8.98	10.54	10.36	7.60	5.87	8.29	100.00
	37.77	25.19	41.60	49.59	53.57	41.12	34.34	64.00	41.87
Total	233	131	125	123	112	107	99	75	1,383
	1.6	15.0	0.0	3.0	6.3	0.0	2.3	15.1	62.3
	16.85	9.47	9.04	8.89	8.10	7.74	7.16	5.42	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

	RN						
CAGR1	Kavango_E	Zambezi	!Karas	Kunene	Omaheke	Kavango_W	Total
0	36	58	35	36	26	28	804
	1.3	4.8	0.3	0.4	1.1	0.1	26.1
	4.48	7.21	4.35	4.48	3.23	3.48	100.00
	48.00	77.33	53.03	64.29	47.27	54.90	58.13
1	39	17	31	20	29	23	579
	1.8	6.6	0.4	0.5	1.5	0.1	36.2
	6.74	2.94	5.35	3.45	5.01	3.97	100.00
	52.00	22.67	46.97	35.71	52.73	45.10	41.87
Total	75	75	66	56	55	51	1,383
	3.2	11.4	0.7	0.9	2.7	0.2	62.3
	5.42	5.42	4.77	4.05	3.98	3.69	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00

```
Pearson chi2(13) =  62.3096   Pr = 0.000
```

```
. tabulate FFOGR1 rn1, cchi2 chi2 column exact miss row rowsort colsort
```

Key
frequency
chi2 contribution
row percentage
column percentage

```
Enumerating sample-space combinations:
stage 14: enumerations = 1
stage 13: enumerations = 33
stage 12: enumerations = 911
stage 11: enumerations = 21576
stage 10: enumerations = 494071
stage 9:
exceeded memory limits using exact(1); try again with larger #; see help tabulate for details
```

	RN								
FFOGR1	Khomas	Ohangwena	Omusati	Erongo	Otjozondj	Oshana	Oshikoto	Hardap	Total
0	188	111	124	97	106	106	89	60	1,242
	2.2	0.4	1.2	1.6	0.3	1.0	0.0	0.8	9.1
	15.14	8.94	9.98	7.81	8.53	8.53	7.17	4.83	100.00
	80.69	84.73	99.20	78.86	94.64	99.07	89.90	80.00	89.80
1	45	20	1	26	6	1	10	15	141
	19.0	3.3	10.8	14.4	2.6	9.0	0.0	7.1	80.4
	31.91	14.18	0.71	18.44	4.26	0.71	7.09	10.64	100.00
	19.31	15.27	0.80	21.14	5.36	0.93	10.10	20.00	10.20
Total	233	131	125	123	112	107	99	75	1,383
	21.2	3.7	12.1	16.1	2.9	10.0	0.0	7.9	89.5
	16.85	9.47	9.04	8.89	8.10	7.74	7.16	5.42	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

	RN						
FFOGR1	Kavango_E	Zambezi	!Karas	Kunene	Omaheke	Kavango_W	Total
0	74	71	63	52	54	47	1,242
	0.7	0.2	0.2	0.1	0.4	0.0	9.1
	5.96	5.72	5.07	4.19	4.35	3.78	100.00
	98.67	94.67	95.45	92.86	98.18	92.16	89.80
1	1	4	3	4	1	4	141
	5.8	1.7	2.1	0.5	3.8	0.3	80.4
	0.71	2.84	2.13	2.84	0.71	2.84	100.00
	1.33	5.33	4.55	7.14	1.82	7.84	10.20
Total	75	75	66	56	55	51	1,383
	6.4	1.9	2.3	0.6	4.2	0.3	89.5
	5.42	5.42	4.77	4.05	3.98	3.69	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00

```
Pearson chi2(13) =  89.5019   Pr = 0.000
```

Appendix H: Language Editing Certificate

S.B

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CONTACT

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Vinetta, Swakopmund
Namibia

LANGUAGE & COPY-EDITING CERTIFICATE

28th April 2023

RE: LANGUAGE, COPYEDITING AND PROOFREADING OF ALBERTINA TUWILIKA HASHOSHANGE's THESIS FOR THE MASTER OF BUSINESS ADMINISTRATION DEGREE OF THE NAMIBIA BUSINESS SCHOOL OF THE UNIVERSITY OF NAMIBIA

This certificate serves to confirm that I copyedited and proofread **ALBERTINA TUWILIKA HASHOSHANGE's** Thesis for the **MASTER OF BUSINESS ADMINISTRATION DEGREE** entitled: **AN ASSESSMENT OF THE EFFECTS OF THE GENDER GAP ON ACCESSING FINANCE IN NAMIBIA**

I declare that I professionally copyedited and proofread the thesis and removed mistakes and errors in spelling, grammar, and punctuation. In some cases, I improved sentence construction without changing the content provided by the student. I also removed some typographical errors from the thesis and formatted the thesis so that it complies with the University of Namibia's guidelines.

I have edited many Postgraduate Diploma, and Masters' Thesis, Dissertations for students studying with universities in Namibia. I have also copy-edited company documents and publications for Non-Governmental Organisations (NGOs) around the Southern African region.

Please feel free to contact me should the need arise.
Yours Sincerely,

Mr. Shonhiwa Bakare

SKM Bakare | @shonhiwabakare | +264816495143 | Shonhiwa Bakare

APPENDIX I: SIMILARITY REPORT

Albertina Tuwilika Hashoshange-201033127-Research Project-MBAF

ORIGINALITY REPORT

15%	12%	7%	7%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

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