DETERMINANTS OF WOMEN'S PARTICIPATION IN NAMIBIA'S LABOUR FORCE: A MULTINOMIAL ANALYSIS OF THE 2018 NAMIBIA LABOUR FORCE SURVEY

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN APPLIED STATISTICS AND DEMOGRAPHY

OF

THE UNIVERSITY OF NAMIBIA

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OCTOBER 2023

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ABSTRACT

Women's participation in the labour force is regarded as a sign of decreasing discrimination and a slight increase in women empowerment, among other benefits. Various studies have been conducted worldwide on identifying factors associated with women's participation in the labour force but not many studies have been conducted on this topic in recent years in Namibia besides Mufune (2013). This study performed an empirical investigation to identify determinants of women's participation in Namibia's labour force through the adoption of a quantitative cross-sectional research study using the 2018 NLFS and a multinomial logistic regression technique. Results revealed that area location, region, age group, marital status, literacy status and education level were significant determinants of employed women's participation in the labour force in Namibia, while area location, age group, and literacy status were significant determinants of unemployed women's participation. Compared to the odds of economic inactiveness, women from Hardap (OR=0.697, p<0.001, 95%CI: 0.667-0.729) and Kavango East (OR=0.921, p<0.001, 95%CI: 0.885-0.959) regions, relative to those from Zambezi region, had low odds of employment. Women who were less than 20 years old (OR=0.106, p<0.001, 95%CI: 0.102-0.109), relative to those aged 60 years and above, had low odds of employment. Married women (OR=0.711, p<0.001, 95%CI: 0.666-0.759), relative to separated women, had low odds of employment. Moreover, women with no education (OR=0.200, p<0.001, 95%CI: 0.186-0.216), those with primary education (OR=0.254, p<0.001, 95%CI: 0.236-0.273), junior secondary education (OR=0.288, p<0.001, 95%CI: 0.268-0.309), senior secondary education (OR=0.338, p<0.001, 95%CI: 0.315-0.363) and technical/vocational certificate/diploma (OR=0.262, p<0.001, 95%CI: 0.240-0.286), relative to those with postgraduate

certificate/diploma/degree, had low odds of employment. However, literate women (OR=1.636, p<0.001, 95%CI: 1.594-1.679), relative to illiterate women, had high odds of employment compared to the odds of economic inactiveness.

Furthermore, women who were from the Erongo (OR=1.132, p<0.001, 95%CI: 1.085-1.182), Kunene (OR=1.572, p<0.001, 95%CI: 1.499-1.648), Omaheke (OR=1.456, p<0.001, 95%CI: 1.384-1.531), Oshana (OR=1.098, p<0.001, 95%CI: 1.054-1.143), Oshikoto (OR=1.136, p<0.001, 95%CI: 1.091-1.182) and Otjozondjupa (OR=1.631, p<0.001, 95%CI: 1.562-1.703) regions, relative to those from Zambezi region, had high odds of unemployment as compared to the odds of economic inactiveness. Likewise women aged 20-29 years (OR=47.014, p<0.001, 95%CI: 44.570-49.593), 30-39 years (OR=66.831, p<0.001, 95%CI: 63.295-70.564), 40-49 years (OR=38.702, p<0.001, 95%CI: 36.648-40.871) and 50-59 years (OR=11.415, p<0.001, 95%CI: 10.799-12.065), relative to those aged 60 years and above, had high odds of unemployment. Women in consensual union (OR=2.124, p<0.001, 95%CI: 1.931-2.337), relative to those who were separated, had high odds of unemployment, while those residing in urban areas (OR=0.869, p<0.001, 95%CI: 0.853-0.885), relative to those from rural areas, had low odds of unemployment. It is therefore recommended that the Namibian government as well as policy makers and implementers reinforce policies and legislative frameworks in place to (further) empower women and enhance their participation in the labour force and in return, reap the benefits of economic and social development.

Keywords: Namibia, women, labour force participation, employment, unemployment, economic inactiveness

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LIST OF ABBREVIATIONS AND ACRONYMS

CI	Confidence Interval
COVID-19	Coronavirus disease 2019
DEC	Decentralized Ethics Committee
ILO	International Labour Organization
LFP	Labour Force Participation
LL	Log Likelihood
NHIES	Namibia Household Income and Expenditure Survey
NLFS	Namibia Labour Force Survey
NSA	Namibia Statistics Agency
OR	Odds Ratio
PSUs	Primary Sampling Units
SNA	System of National Accounts
SPSS	Statistical Package for Social Sciences
STIs	Sexually Transmitted Infections
UNAM	University of Namibia
US	United States

ACKNOWLEDGEMENT

First and foremost, I would like to sing praises to the Almighty God, *Mpambiitshita Kalunga ka Nangombe*, for granting me the wisdom, knowledge, understanding and perseverance until the completion stage of this research study. In addition, I would like to thank the University of Namibia (UNAM) for granting me this opportunity to further my studies.

My sincerest gratitude goes to my supervisor, Dr. Opeoluwa Oyedele, for being an inspiration to me and for always steering me in the right direction by providing guidance during this research study. Her constant reassurance and constructive criticism have brought forth wonderful results and thus, I remain eternally grateful to her.

I would also like to thank the Namibia Statistics Agency for availing the 2018 Namibia Labour Force Survey data used in this research study, without which, this research study would not have been possible. To my Master of Science in Applied Statistics and Demography classmates, thank you for your assistance and words of encouragement, the late nights have eventually paid off.

Finally, to my dear family, thank you for your support, encouragement and motivation. Your sacrifices have brought us to this stage. This is for us, let us celebrate!

DEDICATION

I dedicate this thesis to my parents for instilling in me the importance of education. I also dedicate this work to my beloved husband and precious children for being my strong support system, for believing in me and for their unwavering encouragement towards achieving this goal.

DECLARATION

I, Fenny Mukwiilongo Amulungu, hereby declare that this thesis is a true reflection of my research, produced in completion of the Master of Science in Applied Statistics and Demography at the University of Namibia, and has not been submitted for any degree at any other institution. This thesis, and any part thereof, may not be reproduced, stored in any retrieval system, or transmitted in any form, or by any means (e.g. electronic, mechanical, photocopying, recording or otherwise) without the prior consent of the author, or the University of Namibia in that behalf.

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FMAmulungu — October 2023

Signature **Date**

CHAPTER 1: INTRODUCTION

1.1. Orientation to the study

The participation of women in the labour market is one of the areas that receive great interest from researchers in various countries globally, while the integration of women in the labour force is understood by many to be a driving force of sustainable human development (Kayirere, 2018). Klasen and Pieters (2012) stated that women's participation in the labour force can be viewed as a signal of decreasing discrimination and a slight increase in women empowerment, among the economic benefits it carries. The Namibia Statistics Agency [NSA] (2019) defined labour force as consisting of all persons of either sex who provide the labour supply to produce economic goods and services as defined by the United Nations System of National Accounts (SNA) and balances during a specified time-reference period.

Generally, Labour Force Participation (LFP) of the working age population is divided into two major categories, namely, the economically active population and the economically inactive population. The economically active population further splits into the employed population and the unemployed population (NSA, 2019). The employed population refers to all persons of working age who were in paid employment or were self-employed during a specified period. The unemployed population refers to all persons of working age who were without work or did not participate in paid work or self-employment during a specified period but were available for paid work or self-employment (NSA, 2019). On the other hand, the economically inactive population

comprises of all persons of working age who were not employed and were not available for work because of various reasons such as being full-time learners or students, homemakers, illnesses, disabilities or on early retirement, among others (NSA, 2019).

According to the International Labour Organization [ILO] (2018), the overall global LFP rate was estimated to be about 61.8% in 2018, with a 75.0% rate for men and a 48.5% rate for women, revealing a gender gap of 26.5%. In the United States of America, the women's LFP rate was 57.4% in 2019 with an unemployment rate of 3.6%, while 42.6% of women were economically inactive (US Bureau of Labour Statistics, 2021). The report further estimated the variance according to race and ethnicity among the economically active, with Hispanics, Latinos and Black African American women having a higher unemployment rate as compared to the Asian and White women. China, on the other hand, had a 63.9% women LFP rate in 2013, with more women who were employed likely to engage in low productivity agriculture and services (Dasgupta, Matsumoto & Xia, 2015). Looking at the women LFP rate in Morocco in 2018, it was estimated to be about 21.2% with a significant 78.4% of women being economically inactive (Lopez-Acevedo, Devoto, Morales & Rodrigues, 2021). Their report further added that increasing women's participation in the labour force would likely improve the productive capacity of the country.

In Sub-Saharan Africa region, the women LFP rate in 2018 stood at 64.7% (ILO, 2018) with 35.3% being economically inactive. Rwanda had 46.4% of economically active women in 2017 with a higher percent of these women found in the urban areas (Kayirere, 2018). In addition, women with tertiary education were observed to be more

economically active than those with no education in Rwanda. In Southern Africa, the Zimbabwe National Statistics Agency (2020) revealed that 34.4% of women in Zimbabwe were economically active in 2019 with urban women more likely to participate in the labour force, and a higher economically inactive rate of 65.6% among women. In Zambia, about 27.3% of women were estimated to be economically active among which only 39.8% of the total were employed (Zambia Statistics Agency, 2020). Moreover, a study by the Department of Women (2015) in South Africa revealed that in 2015 women were significantly less likely to be economically active in South Africa than their male counterparts. This was revealed by the LFP rates of 51.9% for women and 65.0% for men in South Africa in that year. However, the same report revealed that women's participation was positively correlated with their education levels, and those in urban areas were observed to have a higher LFP rate.

As per the NSA (2019) labour force framework, the LFP status in Namibia is divided into three categories, namely; the employed, the unemployed and the economically inactive. With an estimated population size of around 2,413,643 people in 2018, about 1,531,967 people were of working age (aged 15 years and above) out of which 803,250 were women (NSA, 2019). Of the working age population, 1,090,153 people (71.2%) were in the potential labour force with women making up 50.9% of the total labour force. However, the LFP rate for men in the country was observed to be about 73.5% while among women it was estimated to be about 69.1% (among which 65.7% were employed and 34.3% were unemployed) (NSA, 2019). Among the women of working age, 30.9% were reported to be economically inactive. Conversely, in 2016, about

66.6% of women were economically active, of which 61.7% were employed and 38.3% were unemployed, while 33.4% were economically inactive (NSA, 2017). In comparison, in 2014, Namibia had a women LFP rate of 66.9% (among which 68.3% were employed and 31.7% were unemployed); while about 33.1% were economically inactive (NSA, 2015). With these highlighted LFP rates, identifying factors that contribute to women's participation in Namibia's labour force is warranted. Also, since women's engagement in the labour force can be influenced by many factors such as education, social status, fertility, spousal LFP status as well as cultural and societal norms among others, understanding the complex nature of this participation is crucial in driving the economic growth of a country (Chaudhary and Verick, 2014).

1.2. Statement of the problem

Although various studies have been conducted worldwide focusing on identifying factors that are associated with the participation of women in the labour force, not many studies have been conducted on this topic in recent years in Namibia besides Mufune (2013). Mufune (2013) used the 2009/10 Namibia Households Income and Expenditure Survey (NHIES) to identify factors that may distinctively contribute to employment outcomes for women. Also, none of these very few studies done in Namibia have been conducted using the national labour force surveys to the knowledge of the author of this thesis. Instead, the NHIES was used for the only known recent empirical women participation in labour force study done in Namibia by Mufune (2013).

Moreover, the NHIES provides information on the income and expenditure patterns of households in the country and not necessarily information on the crucial indicators required in assessing the labour market situation in the country which the Namibia Labour Force Surveys (NLFSs) specifically do. These household based national surveys provide crucial socio-economic indicators required in assessing the labour market situation in Namibia and have been implemented by the Ministry of Labour and Social Welfare from 1997 to 2008 and then by the Namibia Statistics Agency since 2012. It was therefore of profound interest to examine the true nature of women's participation in Namibia's labour force as well as its contributing factors using a national labour force survey instead of a households' income and expenditure survey.

Hence, using the 2018 NLFS, which is the latest national labour force survey in Namibia, this study aimed at performing an empirical investigation to identify the determinants of women's participation in Namibia's labour force. The identified determinants from this study can further be considered as useful insights in the formulation of plans and strategies to further enhance the participation of women in the labour force of Namibia. In addition, the study will add value to the body of scientific knowledge on women's participation in the labour market in Namibia and globally.

1.3. Objectives of the study

The main objective of this study was to identify and examine the determinants of women's participation in Namibia's labour force. This was achieved by:

(a) Exploring associations between women's participation in Namibia's labour force and their socio-economic and socio-demographic characteristics,

(b) Examining effects of women's socio-economic and socio-demographic characteristics on their participation in Namibia's labour force.

1.4. Significance of the study

The results of this study can be used to effectively plan and develop policies geared towards women empowerment in Namibia, especially when it comes to their participation in the labour force. Findings from this study can also be useful to the female population in understanding the factors associated with women's participation in the labour force, thereby helping them make informed decisions. The study findings can also add value to the body of scientific knowledge on women LFP in Namibia as not many studies have been conducted on this topic in recent years in the country besides Mufune (2013). Lastly, the insights from this study could lay a foundation for further research on the participation of women in the labour force.

1.5. Limitations of the study

This study made use of data collected during the 2018 NLFS which is the latest of its kind in the country. As a result, it might not necessarily reflect the true and current realities especially considering the impact of the COVID-19 pandemic that affected the LFP of many women and men in the country. In addition, the 2018 NLFS data used was obtained from a sample study conducted in private households which, although caution

has been established to ensure generalization to all industries, the results might not have been fully representative due to the NLFS not being industrially stratified. Furthermore, a sample of 10,296 households was used in the NLFS 2018 as compared to 12,480 households in NLFS 2016 due to financial constraints.

1.6. Delimitations of the study

The focus of this study was on women's participation in Namibia's labour force in 2018 and thus may not necessarily reflect the status quo.

CHAPTER 2: LITERATURE REVIEW

Several research studies have been conducted on women's participation in the labour force. These studies suggested numerous contributing socio-economic and cultural background factors such as fertility, marital status, education level, race/ethnicity, spousal employment status, access to childcare and area location, among many others, especially in Africa.

Idowu and Owoeye (2019) stated that socio-economic and cultural backgrounds were responsible for the slow increase in women's participation in the labour force in Africa. Their report further indicated factors such as gender norms, restrictive cultural practices, religious values and norms, discrimination against women as well as reproductive functions, influencing the participation of women in the labour force. Besides, Gasparini, Marchionni, Badaracco and Serrano (2015) alluded that women's participation in the labor force can be influenced by decisions determined by their preferences and by the available opportunities that are immensely reliant on personal and family factors like education, age, marital status as well as the number of children a woman has. In addition, a study report by Thevenon (2013) indicated that government policies such as child-related leave entitlements, child care services, diversity of family policy patterns and effects of transfers through the tax and benefits systems that offer a sense of work-life balance for parents, can determine the rate at which women participate in the labour force.

The benefits arising from women LFP, as indicated by Lopez-Acevedo et al. (2021), are subtler but when women participate in the workforce, they gain a voice in society leading to more investments especially in areas of education and health. Echoing similar sentiments, Junaid, Sultana, Jabeen and Ali (2019) stressed that, increasing women's likelihoods in public works and other progressive areas can bring about significant impact on economic development. Still, Lopez-Acevedo et al. (2021) further added that although a higher participation of women in the workforce may indicate greater welfare, it may not always mean that the working conditions for the employed women are ideal. This is especially because evidence from developing countries most often reveals that several women are in low-paid employment or unfavorable working conditions out of need.

In Namibia, Mufune (2013) concluded that women were increasingly entering the labour force as a result of post-independence policies that emphasize greater gender equality; however, they were still lagging behind men in many aspects of LFP.

2.1. Women and Employment

The US Bureau of Labour Statistics (2021) revealed race and ethnicity as factors influencing women employment, with Asian and White women having a high chance of working in high paying management, professional, and related occupations while Black and Hispanic women were more likely to work in low paying service occupations. According to Akhtar, Masud and Rana (2020), household income, household financial status, family type and family size significantly influence a woman's participation in the

labour force. Their report further stated that women who lived in joint families were more likely to engage in economic activities as compared to those who lived in nuclear families, and those from households with low levels of income were more likely to participate in the labour market.

Furthermore, a study by Forgha and Mbella (2016) in Cameroon used a Generalized Method of Moments technique and revealed that an increase in fertility rate reduced women's participation in the labour force as these women were more focused on taking care of their children. For this reason, their study recommended a reduction in the fertility rates in an effort to improve women's participation in the labour force of the country, which could be done through improving awareness creation on family planning and providing excellent family planning services to women.

2.2. Women and Unemployment

According to Mwinga (2012), unemployment among women in Namibia can be relatively linked to the growth in women's LFP rate over time, further adding that "*as more and more women enter the labour market and finding no job opportunities, many of them enter the army of unemployed Namibians*" (p.43). Diraditsile and Ontetse (2017) through their study report on women in Mahalapye, Botswana, stated that inadequate employment opportunities may force women to engage in alcohol abuse and commercial sex work as a means of survival which may lead to them contracting sexually transmitted infections (STIs). Furthermore, due to the high unemployment rate being

experienced in the country, some women may turn to illegal activities, such as crime, when they cannot earn an income in a legal way (Diraditsile & Ontetse, 2017).

2.3. Women and Economic Inactiveness

A study by Abaz and Hadzic (2020) based on Bosnia and Herzegovina used a log-log regression analysis technique and revealed that economic inactivity among women increases with age and that those less educated and living in rural areas were more likely to be economically inactive. They further found that the economic inactiveness decreases as the level of education among women increases. Matuszewska-Janica (2018) indicated that one of the main reasons for economic inactiveness among young women is education which delays their labour market entry. She further added that prime-aged women opting to supplement their education in an effort to enhance their competitiveness in the labour market cause their temporary withdrawal from participating in the labour market. Additionally, a study by Gasparini et al. (2015) indicated that women's participation in the labour force can be influenced by their marital status, especially with regard to the presence of a male partner as a breadwinner in the household. Their report indicated that women living with an employed male partner are considerably less presumably to partake in labor market activities, adding that the presence of children, plus their ages, ascertained these decisions. A study by Matuszewska-Janica (2018) concurred with this statement, stating that women were highly probable to reduce their participation for the sake of family and household duties.

2.4. Linkage between women's participation in the labour force and poverty

According to Mulugeta (2021), insufficient employment of women contributes to poverty in households and to a fall in promoting economic growth. Correspondingly, Roopnarine and Ramrattan (2011) reasoned that increasing women's participation in the labour force helps in alleviating poverty and in stimulating the growth of the economy, both short-term through higher consumption expenditures, and long term through higher savings. However, a study by Liu (2019) that deliberated on in-work poverty for women in China, concluded that the common job types that women in China were engaged in were low-paid works such as care workers, sanitation workers, textile workers and family service personnel. Liu (2019) further concluded that these were the popular but not the well-paid jobs among women in China.

2.5. Empirical evidence

A study conducted by Kayirere (2018) to investigate the main determinants influencing female labour participation in Rwanda employed both binary and multinomial logit models. It concluded that a higher education level improved the likelihood of a woman's participation in labour force. Furthermore, the study exposed that an increase in age reduces the chance of LFP. Likewise, Mulugeta (2021) used a logistic regression technique to identify factors affecting women LFP in Debre Birhan town in Ethiopia and to examine its effects in reducing household poverty. The study concluded that women's age, education level, exposure to mass media, access to credit services and marital status were directly related to their participation in the labour force. However, husband

income, household poverty status, pregnancy, presence of a child under 5 years of age and family size were inversely related to a woman's participation in the labour force.

Iftekhar (2021) further used a probit modelling technique to determine associated factors of female LFP in Pakistan and concluded that living in rural areas reduced the participation, although this was not seen to be the case when location was analyzed in relation to education level. Similarly, Roopnarine and Ramrattan (2011) used a probit modelling technique to explain the nature of the relationship between several socio-demographic factors and "female participation" which had two categories: either a female "participates" or "does not participate" in labour force. Their study revealed that single women in Trinidad and Tobago had a positive relationship with participation in the labour force; adding that women with children were less likely to participate in the labour force and women as head of households were more likely to participate in the labour force as compared to those who were not head of households (Roopnarine & Ramratttan, 2011). Using a backward logistic regression technique to identify factors that influence the LFP of women as per the NHIES, Mufune (2013) revealed that age, education level and place of residence were the factors influencing women's labor force participation rates in Namibia. He thus concluded that increasing the education levels for women could prove valuable in increasing their employment and LFP rates.

2.6. Conceptual Framework

According to the existing body of literature worldwide, there are substantial variations in women's participation in the labour force across countries. Verick (2018) stated that

these variations can be attributed to various socio-economic and socio-demographic factors such as dissimilarities in economic growth of countries, cultural and social norms, education levels, fertility rates, access to childcare as well as other supportive services. Figure 1 shows the conceptual framework for factors associated with women's participation in labour force and was derived by assimilating various factors obtained from literature as observed from similar studies by other researchers.

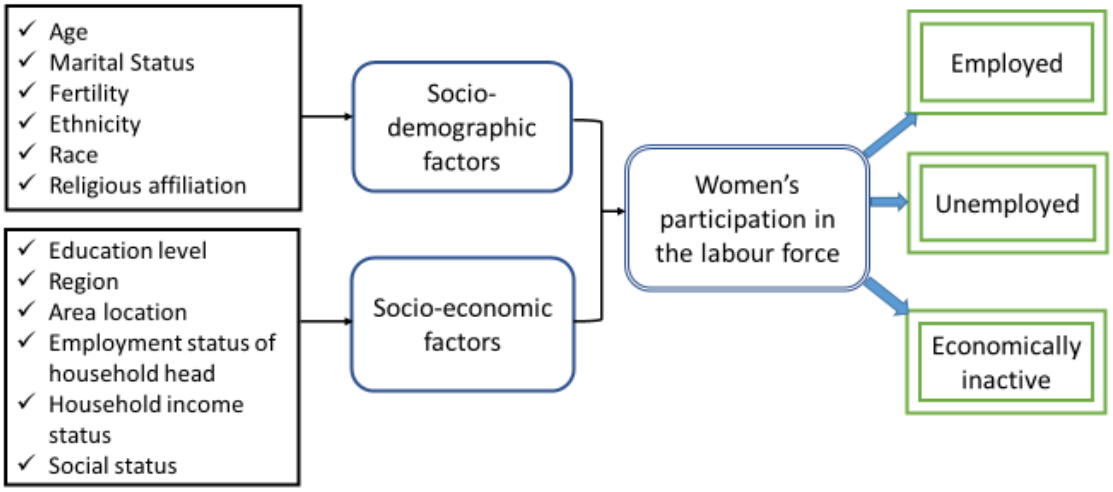

Figure 1: Conceptual framework for women's participation in labour force

2.7. Research gap

Although very few studies have been conducted on identifying factors that are associated with the participation of women in the labour force in Namibia, none of these studies has been conducted using the national labour force surveys. To the knowledge of the author of this thesis, the only known recent empirical study on women's participation in the labour force done in Namibia was a study by Mufune (2013) using the NHIES, a national household-based survey that provided information on the income

and expenditure patterns of households in the country. Mufune (2013) used the 2009/10 NHIES to identify factors that may distinctively contribute to employment outcomes for women.

While Mufune (2013) used the third NHIES for his empirical study, the latest of its kind in 2013, no other empirical studies were further done using the fourth and current NHIES (i.e., 2015/16 NHIES). In addition, none of the studies conducted on this topic made use of the NLFS, including Mufune (2013). Thus, using the 2018 NLFS, the latest national household survey of its kind in Namibia, this study aimed at performing an empirical investigation to identify the determinants of women's participation in Namibia's labour force. This research study will be the first of its kind to use the NLFS as previous related studies only used the NHIES. The identified determinants from this study can further be considered as useful insights in the formulation of plans and strategies to further enhance the participation of women in the labour force of Namibia, while adding value to the body of scientific knowledge on women's participation in the labour market in Namibia and globally.

2.8. Chapter summary

In short, from several researches conducted on women's participation in the labour forces across the world, various socio-economic and socio-demographic factors have been observed to have an influence on a woman's decision to participate in the labour force. These factors included (but not limited to) a woman's age, marital status, education level, place of residence, restrictive cultural beliefs, religious beliefs,

race/ethnicity, spousal employment status, access to childcare, area location and their fertility. In addition, other non-proximate variations such as dissimilarities in economic growth of a country, cultural and social norms, exposure to mass media, access to credit services and other supportive services were also observed to influence a woman's decision in participating in the labour force. Similarly, numerous literatures reviewed from different countries employed varied methods and techniques to illustrate the empirical relationship between women's participation in the labour force and several socio-demographic and socio-economic characteristics. These included the binary and multinomial logit models, probit modelling and backward logistic regression techniques.

Moreover, previous related studies done in Namibia did not use the NLFSs, but rather made use of the NHIES which provides information on the income and expenditure patterns of households in the country and not necessarily information on the crucial indicators required in assessing the labour market situation in the country that the NLFSs specifically do. Thus, this current study will be the first of its kind to use the NLFS to perform an empirical investigation of women's participation in Namibia's labour force by fitting a multinomial logistic model to identify its determinants, which are therefore required to understand the factors associated with the participation of women in the labour force in the country.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. Research design

This study was a quantitative cross-sectional research design. Secondary data obtained from the latest NLFS conducted by NSA in 2018 was used. The NLFS was conducted as a quantitative survey and the variables were collected at a given point in time across a sample population. The NLFS is conducted yearly when possible, with the purpose of producing crucial socio-economic indicators required in assessing the labour market situation in Namibia (NSA, 2019).

In this study, the prevalence of women's participation in the labour force in Namibia was also explored, using the LFP rate of women obtained from the 2012, 2013, 2014, 2016 and 2018 NLFSs. For 2015, the NLFS was not conducted due to the implementation of the 2015/16 NHIES whereas for 2017, it was mainly due to the unavailability of funds for the project. The 2018 NLFS report and previous NLFS reports are freely available online at www.nsa.org.na.

3.2. Study population

The study population was all females of working age (15 years and above) in households in Namibia in 2018, estimated to be about 803,250 females.

3.3. Sampling procedures

This study used secondary data from the 2018 NLFS which was obtained from the NSA. To ensure equitable distribution of the sample, the sample design employed in the 2018 NLFS was a two-stage stratified cluster sampling, using Primary Sampling Units (PSUs) in the first stage and households in the second stage as detailed in the 2018 NLFS report freely available online.

3.4. Research Instruments

There were no research instruments required to collect data as the study used secondary data from the 2018 NLFS.

3.5. Data collection methods/procedures

Permission to use the secondary data from the 2018 NLFS for this research study was granted by NSA after ethical clearance certificate (*see Appendix A*) and research permission letter (*see Appendix B*) to conduct this research study were obtained from the University of Namibia's (UNAM) Decentralized Ethics Committee (DEC).

3.6. Data Analysis

The data analysis for this study was divided into two parts, namely, the descriptive analysis and the multinomial logistic regression analysis. The Statistical Package for Social Sciences (SPSS) software (version 20) and the R-software (version 4.1.2) were used to perform the data analysis of this study. The 2018 NLFS also collected

information on the LFP status of all interviewed persons of working age. For this study, the LFP status of women was the response variable and was defined as per the NSA (2019) labour force framework categories (employed, unemployed and economically inactive). The NLFS also collected information on the socio-demographic and socio-economic indicators of which some were used as the predictor variables for the study. Table 1 shows the full list of predictor variables and the response variable used in this study as well as a brief description of each variable.

Table 1: Description of the study's response and predictor variables

Variable name	**Variable description**
Labour Force Participation (LFP) status	The labour force participation status of a woman, defined as per the NSA (2019) labour force framework (employed, unemployed and economically inactive). i) The employed women population refers to all women of working age who were in paid employment or were self-employed during a specified period. ii) The unemployed women population refers to all women of working age who were without work or did not participate in paid work or self-employment during a specified period but were available for paid work or self-employment. iii) The economically inactive women population comprises of all women of working age who were not employed and were not available for work during a specified period, because of various reasons such as being full-time learners or students, homemakers, illnesses, disabilities or on early retirement, among others (NSA,

	2019).
Area location	The location of the area where a woman resides (urban or rural).
Region	The administrative regions in Namibia (!Karas, Erongo, Hardap, Kavango East, Kavango West, Khomas, Kunene, Ohangwena, Omaheke, Omusati, Oshana, Oshikoto, Otjozondjupa and Zambezi).
Age group (in years)	The age group under which a woman's age fell at her last birthday (<20, 20-29, 30-39, 40-49, 50-59 and 60+).
Marital status	The marital status of a woman (Never married, Married, in Consensual Union, Widowed, Divorced or Separated).
Literacy status	The ability of a woman to read and write in any language with understanding (literate or illiterate).
Education level	The highest educational attainment of a woman (None, Primary, Junior Secondary, Senior Secondary, Technical/vocational certificate/Diploma, Completed year 1 or 2 or 3, University Certificate/Diploma/Degree, Postgraduate Certificate/Diploma/Degree).

3.6.1. Descriptive Analysis

Frequency tables and cross tabulations were employed to observe the distribution of women's participation in Namibia's labour force across their socio-demographic and socio-economic characteristics. In addition, each level of the LFP status was investigated further. For instance, when it came to the employed women, an investigation aimed at

determining their occupation types, type of employer, gross monthly income and employment industries was conducted. For the unemployed women, an investigation into their length of time spent without work and method of searching for work was done. Similarly, the economically inactive women were further investigated to determine the reasons for their inactiveness.

To examine for possible association between LFP status and the socio-economic and socio-demographic characteristics of women, the Pearson's Chi-Square test for association was performed. Moore, Notz and Fligner (2013) defined Chi-Square test as an overall test for detecting associations between two categorical variables. Considering that the socio-economic and socio-demographic variables used in this study were all categorical, this test was therefore suitable. The general Pearson's chi-square test statistic is as follows:

$$\chi^{2} = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i} \qquad (1)$$

where χ^{2} is the test statistic; O_i is the observed frequencies of type i; E_i is the expected frequencies of type i, n is the number of possible outcomes of each event and, $i = 1,2,\ldots\ldots,n$ representing the number of outcomes for the events. McHugh (2013) stated that there exist numerous Pearson's chi-square test assumptions such as: only one response of a variable level can be true for a single respondent (mutually exclusive), the value of the expected frequencies in at least 80% of the cells should be at least five and no cell should have an expected frequency of less than one, while the data to be used in

calculating chi-square statistic must be drawn from a sample that is large enough (as cited in Shilongo, 2021).

3.6.2. Multinomial logistic regression

A multinomial logistic regression technique was employed to determine the factors associated with women's participation in the labor force as well as their effects. This modelling technique was appropriate for this study because of the variable of interest, LFP status, which is nominal in nature and had three categories (employed, unemployed and economically inactive) as explained in Table 1. Garson (2014) defined logistic regression as a method that is used to predict a categorical response variable based on continuous/categorical predictor variables; and to determine the size of the effect of predictor variables on the response variable, among others. Garson (2014) further indicated that logistic regression can be grouped into three categories:

(i) binary logistic regression which is used when the response variable is a true or forced dichotomy;

(ii) binomial logistic regression which is used when the response variable is a count based on a binary variable; and

(iii) multinomial logistic regression which is used when the response variable has three or more categories.

According to Bayaga (2010), Barron (2018) and El-Habil (2012), a multinomial logistic regression model is generally used when the response variable is composed of more than

two levels or categories and there is no natural ordering of categories. As mentioned by Park (2013) and Shilongo (2021), the simple model equation for logistic regression is:

$$log(p_i) = ln\left(\frac{p_i}{1-p_i}\right) = \beta_0 \ + \ \beta_1 \, x_i + e_i \qquad (2)$$

where p_i is the probability of outcome of interest, ln is the natural logarithm, x_i is the predictor variable while β_0 and β_1 are parameters of the logistic regression with e_i being the error term and $i = 1,2, \ldots\ldots, n$. On the other hand, Bayaga (2010), citing Tabachnick et.al. (2001) alluded that the multinomial logistic regression technique has numerous advantages. This is because it is more robust to violations of assumptions of multivariate normality and equal variance-covariance matrices across groups. The assumptions of this technique are that it does not assume a linear relationship between the response and predictor variables; predictor variables do not need to be interval; it does not require that the predictors be unbounded; and it does not assume normally distributed error terms. Moreover, according to Hosmer, Lemeshow and Sturdivant (2013), logit functions are required, further adding that a model is then developed assuming there are p covariates and a constant term denoted by vector x which has $p + 1$ length where $x_0 = 1$.

Shilongo (2021) stated that the multinomial logistic regression model can be written as follows, taking into account the p predictors, say, $X_1, X_2, \ldots, X_p$ and a response variable Y with K nominal categories:

$$logit\ (Y_k) = \ ln\left[\frac{P(Y=k)}{P(Y=k')}\right] = \beta_{k0} + \beta_{k1}X_1 + \beta_{k2}X_2 + \cdots + \beta_{kp}X_p + \epsilon_k \qquad (3)$$

where k is the category of interest, k' is the (chosen) reference category, $\in_k$ is the error term and $k = 1,2, \ldots, K-1$. In this study, Y is the LFP status, while $X_1, X_2, \ldots, X_p$ are the socio-demographic and socio-economic indicators as explained in Table 1.

As it is the norm when modelling a multi-level response variable in the multinomial logistic regression modelling, one level (k') is chosen to be left-out from the levels of the multi-level response variable and subsequent logistic regression models are conducted for each of the remaining levels of the response variable. The left-out level is later used as a reference category during the model interpretations. In this study, with the LFP status having three nominal categories (employed, unemployed and economically inactive), the economically inactive category was chosen as the reference category. Thus, the multinomial logistic regression model interpretations for the employed and unemployed categories were done in comparison to the economically inactive category (the reference category).

3.6.3. Adjacent category logit model

Most modelling techniques for multi-level response variable tend to fit a cumulative model, i.e., level 1 vs. level k', level 2 vs. level k', …, level (K-1) vs level k', where k' is the chosen reference category and K is the number of levels within the multi-level response variable. However, what about the comparison between level 1 vs. level 2, level 1 vs. level 3, level 2 vs. level 3, and so on? This is often referred to as the adjacent-category modelling and thus, needs to be incorporated within the multi-level response variable modelling technique under consideration. To be precise, in this study, with the

response variable having three categories (employed, unemployed and economically inactive) and the economically inactive category chosen as the reference category, the multinomial logistic model in (3) fitted a cumulative model that would only show a comparison for the employed versus economically inactive and the unemployed versus economically inactive. But, what about the comparison for the employed versus the unemployed within the multinomial logistic model? Thus, the incorporation of the adjacent-category modelling into the fitted multinomial logistic model in (3).

According to Nirmalkanna, Bandara and Wijayasinghe (2014), the adjacent category logit model compares a class with its adjacent class. Dolgun and Saracbasi (2014) mentioned that this model forms K logits for all adjacent categories pairs where each category is compared to the next category. In addition, Nirmalkanna, Bandara and Wijayasinghe (2014) stated that these logits can be defined as $\log\left(\frac{P_k}{P_{k+1}}\right)$ and for any response variable with K categories, there is $K-1$ number of adjacent category logits of which $K-1$ different regression models can be fitted. The adjacent category model can thus be written as:

$$log\left(\frac{P_{k+1}}{P_k}\right) = \boldsymbol{X}\boldsymbol{\beta}_k \qquad (4)$$

where P_k is the probability of the k-th category of the response variable (LFP status) as explained in Table 1; $\boldsymbol{X}$ is the matrix of the predictor variables (socio-demographic and socio-economic indicators) as explained in Table 1; and $\boldsymbol{\beta}_k = (\beta_{0k}, \beta_{1k}, \dots, \beta_{mk})^{\mathrm{T}}$ where m is the number of covariates and $k = 1,2, \dots, K-1$ (Nirmalkanna, Bandara and Wijayasinghe, 2014).

3.7. Research ethics

In line with the UNAM's Higher Degree Studies Regulations and Guidelines of 2022, this research study was conducted within the guidelines as defined in the UNAM Research Ethics Policy and where required, permission was obtained from relevant authorities before conducting this research. In addition, ethical clearance for this study was obtained from the UNAM's DEC (*see Appendix A*), while research permission from UNAM's Centre for Research Services was also obtained (*see Appendix B*) as per the 2022 research requirements of the university's Centre for Research Services for all research studies conducted at the institution.

3.8. Chapter summary

This chapter presented the methodological approach taken in this study and discussed the population of the study as well as the data collection methods and procedures followed. It also provided the theoretical background of all the data analysis techniques used in obtaining the findings of this study such as the descriptive analysis, multinomial logistic regression and the adjacent category incorporation. Lastly, the research ethics considerations for this study were presented.

CHAPTER 4: RESULTS

4.1. Descriptive analysis

Although the trend analysis of labour force rates was not of keen interest in this study, this section provides a basic exploration of the prevalence of women's participation in the labour force by providing the overall LFP rates, the employment rates, unemployment rates and the economically inactive rates of women for 2018. These rates were also compared to those obtained from the past four NLFS years (2012, 2013, 2014 & 2016). Similarly, further information contained herein is from the results of a descriptive statistics analysis conducted between the LFP status and the socio-demographic and socio-economic characteristics. This was done to obtain the frequencies and proportions as explained in subsection 3.6.1. In addition, the Pearson's Chi-square test for association was performed to test for possible association between the LFP status and the socio-demographic and socio-economic characteristics as explained in subsection 3.6.1.

4.1.1. Prevalence of women's participation in labour force

Table 2 shows the overall women's LFP rates in Namibia from 2012 to 2018 as well as the rates per LFP status. There was no labour force survey conducted in 2015 and 2017 due to the implementation of the 2015/16 NHIES in 2015 and the unavailability of funds in 2017. From Table 2, the overall women's LFP rate was at its lowest in 2012 (63.2%), while it was at its highest in 2013 (69.6%) and in 2018, it was 69.1%. However, there

was a slight drop in the rate in 2014 (66.9%) and in 2016 (66.6%). Overall, not much improvement can be seen between the 2012 to 2018 LFP rates due to constant fluctuation in rates, although a slight positive growth can be observed in the rate of participation of women in 2018.

When it comes to specific categories of the LFP status across the years, the employment among women remained dominant over the years with rates above 60%, with the highest (68.3%) recorded in 2014. The lowest employment rate of 61.7% was recorded in 2016. Fluctuations in the employment rates can be seen across the five years, with a 4.0% increase detected from 2016 to 2018. However, the 2016 and 2018 employment rates were not as high as the rates recorded in 2012, 2013 and 2014. For unemployed women, the highest rate of 38.3% was recorded in 2016 while the lowest rate of 31.7% was recorded in 2014. The unemployment rates also observed fluctuations across the five years, although exposing a 4.0% fall from 2016 to 2018. Moreover, for economically inactive women, a highest rate of 36.8% was recorded in 2012 whereas the lowest rates were observed in 2013 and 2018 with 30.4% and 30.9% respectively.

All in all, it can be concluded that the employment rates among women were higher over the years while the unemployment rates and the economically inactive rates were lower.

Table 2: Women's labour force participation rates

Rates	2012 NLFS*	2013 NLFS*	2014 NLFS*	2016 NLFS**	2018 NLFS***
LFP (overall)	63.2%	69.6%	66.9%	66.6%	69.1%
Employment	68.2%	66.9%	68.3%	61.7%	65.7%
Unemployment	31.8%	33.1%	31.7%	38.3%	34.3%
Economically inactive	36.8%	30.4%	33.1%	33.4%	30.9%

** See NSA (2015)* *** See NSA (2017)* **** See NSA (2019)*

4.1.2. Examination of women characteristics and LFP status association

Table 3 shows the percent distribution of women characteristics across LFP status. Out of the reported 803,250 females of working age (15 years and above) in households in Namibia that participated in the 2018 NLFS, 496 had no LFP status allocated to them and thus were excluded from this study. This led to the total number of women of working age considered in this study to be 802,754 as shown in Table 3. Of the 802,754 women, 364,234 (45.4%) were employed, 190,507 (23.7%) were unemployed, while 248,013 (30.9%) were economically inactive.

Out of the 364,234 employed women in 2018, a higher proportion was from the urban areas (56%), living in the Khomas region (21.8%), aged 30-39 years old (29.3%), never married (51.4%), literate (90.5%) and had senior secondary education (20.3%) as their highest level of education attained. A lower proportion of employed women was from the rural areas (44%), living in the Omaheke region (1.9%), aged less than 20 years old (1.8%), separated (1.1%), illiterate (9.5%) and had a technical/vocational

certificate/diploma as their highest level of education attained (1.5%) as shown in Table 3. On the other hand, out of the 190,507 unemployed women, a high proportion was from the urban areas (56.5%), 20.3% were residing in Khomas region, aged 20-29 years (49.2%), never married (70.2%), literate (90.1%) and had junior secondary education (44.3%) as their highest level of education attained. In contrast, a lower proportion of the unemployed women was from rural areas (43.5%), living in Kavango West (3.2%), aged 60 years old and above (1.0%), separated (0.5%), illiterate (9.9%) and hold a postgraduate certificate/diploma/degree (0.5%) as their highest level of education attained.

Moreover, of all the 248,013 economically inactive women, a high proportion of them was from the rural areas (52.5%), with 16.8% residing in Khomas region, aged less than 20 years old (38.4%), never married (70.4%), literate (82.1%) and 35.2% had junior secondary education qualification as their highest level of education attained. In comparison, 47.5% were residing in urban areas, 2.8% were from Omaheke region, aged 40-49 years old (5.8%), separated (0.7%), illiterate (17.9%) and had a postgraduate certificate/diploma/degree (0.4%) as their highest level of education attained.

To examine for possible association between LFP status and the socio-economic and socio-demographic characteristics of the women, Pearson's Chi-Square tests for association (*see subsection 3.6.1*) was performed and the obtained p-values are as shown in Table 3. At a 5% level of significance, characteristics such as area of location ($p<0.001$), region ($p<0.001$), age group ($p<0.001$), marital status ($p<0.001$), literacy status ($p<0.001$) and highest education level ($p<0.001$) can be concluded to be

significantly associated with LFP status. Thus, it can be concluded that the women's socio-economic and socio-demographic characteristics were significantly associated with their LFP status, and thus were included in the fitted multinomial logistic model.

Table 3: Percent distribution of women characteristics across LFP status

	Total	Employed	Unemployed	Economically inactive	*P-value
Total	**802 754**	**364 234**	**190 507**	**248 013**	
Area location					<0.001
Urban	53.5	56.0	56.5	47.5	
Rural	46.5	44.0	43.5	52.5	
Region					<0.001
!Karas	3.8	3.8	4.0	3.7	
Erongo	8.0	9.1	7.9	6.5	
Hardap	3.6	2.9	3.6	4.6	
Kavango East	6.2	4.5	8.2	7.3	
Kavango West	3.4	3.3	3.2	3.6	
Khomas	19.9	21.8	20.3	16.8	
Kunene	3.7	3.1	4.8	3.6	
Ohangwena	10.5	9.9	9.3	12.3	
Omaheke	2.6	1.9	3.7	2.8	
Omusati	11.2	12.9	6.7	12.1	
Oshana	9.0	9.9	8.2	8.4	
Oshikoto	8.2	7.8	8.1	8.8	
Otjozondjupa	5.9	5.6	7.5	5.0	
Zambezi	4.0	3.5	4.4	4.6	

** P-value from the Pearson's Chi-Square test outputs*

Table 3 continued...

	Total	Employed	Unemployed	Economically inactive	*P-value
Age Group					<0.001
<20	14.9	1.8	9.6	38.4	
20-29	29.0	23.7	49.2	21.1	
30-39	21.1	29.3	24.1	6.6	
40-49	14.4	21.7	11.8	5.8	
50-59	9.6	14.0	4.3	7.3	
60+	11.0	9.5	1.0	20.9	
Marital Status					<0.001
Never Married	61.8	51.5	70.2	70.4	
Married	23.1	31.3	16.4	16.3	
Consensual Union	7.1	8.0	11.1	2.8	
Widowed	5.9	6.6	1.2	8.6	
Divorced	1.2	1.5	0.6	1.3	
Separated	0.8	1.1	0.5	0.7	
Literacy status					<0.001
Literate	87.8	90.5	90.1	82.1	
Illiterate	12.2	9.5	9.9	17.9	

** P-value from the Pearson's Chi-Square test outputs*

Table 3 continued…

	Total	Employed	Unemployed	Economically inactive	*P-value
Education level					<0.001
None	12.0	9.9	9.5	17.2	
Primary	22.0	19.9	19.7	26.7	
Junior Secondary	37.1	34.5	44.3	35.2	
Senior Secondary	18.3	20.6	19.8	13.8	
Technical/Vocational certificate/diploma	1.3	1.5	1.6	1.0	
Completed year 1 or 2 or 3 University	2.4	1.9	1.7	3.6	
Certificate/Diploma/Degree	5.5	9.1	3.0	2.1	
Postgraduate Certificate/Diploma/Degree	1.4	2.6	0.5	0.4	

** P-value from the Pearson's Chi-Square test outputs*

4.2. LFP status category-specific analysis

This section provides results from an analysis on specific LFP status categories. It discusses the distribution of employed women across their occupations, types of employer, employment industry and gross monthly income. For the unemployed women, it looks at the length of time they spent unemployed and the methods they used to look for work, while reason for inactiveness was the focus for economically inactive women.

4.2.1. Employed women

The distribution of employed women across their occupation, type of employer, employment industry and the gross monthly income in 2018 is as follows.

a) Occupation

Table 4 shows the information on occupations of the employed women in 2018. Out of the 364,234 employed women, a high proportion had elementary occupation (31.9%), followed by those who were employed as service workers & sales (17.7%) and in skilled agriculture (16.9%). Fewer women were employed in the armed forces (0.7%) and plant and machine operators (0.4%) employments.

Table 4: Employed women by occupation

Occupation	**Number of women**	**Percent**
Legislators & managers	5 237	1.4
Professionals	30 775	8.4
Technicians & associate professionals	20 464	5.6
Clerks	29 375	8.1
Service workers & Sales	64 358	17.7
Skilled agriculture	61 589	16.9
Craft & related trade	24 155	6.6
Plant and machine operators	1 410	0.4
Elementary occupation	116 120	31.9
Armed forces	2 495	0.7
Unspecified	8 255	2.3
Total	364 234	100.0

b) Type of employer

Table 5 provides information about the type of employers of the employed women in 2018. Of all the employed women, 19.6% specified that they were working for formal private enterprises followed by 13.3% who were employed by government and 9.8% by private households (non-farm). Only 0.8% of these women were employed by cooperatives and 0.3% by non-profit institutions/church.

Table 5: Employed women by type of employer

Type of employer	**Number of women**	**Percent**
Government	48 275	13.3
Parastatal	11 780	3.2
A private enterprise (formal)	71 520	19.6
A private enterprise (Informal)	16 467	4.5
Non-profit institution/church	1 218	0.3
Cooperative	2 987	0.8
Private households (subsistence farm)	14 297	3.9
Private households (commercial farm)	3 820	1.0
Private households (non-farm)	35 712	9.8
Unspecified	158 158	43.4
Total	364 234	100.0

c) Employment Industry

Table 6 shows the percent distribution of employed women by their employment industry in 2018. Of the total employed women, 21.2% were in the agriculture, forestry and fishing industry; followed by 17.5% in the accommodation and food service activities industry and 14.2% in the activities of households as employers for undifferentiated goods and services producing activities of households for own use. A lower proportion were employed in the activities of extraterritorial organization and bodies; real estate activities and; electricity, gas, steam and air conditioning supply industries with 0.1%, 0.2% and 0.2% respectively.

Table 6: Employed women by employment industry

Employment Industry	**Number of women**	**Percent**
Agriculture, forestry and fishing	77 166	21.2
Mining and quarrying	2 144	0.6
Manufacturing	16 848	4.6
Electricity, gas, steam and air conditioning supply	760	0.2
Water supply; sewerage, waste management and remediation activities	1 197	0.3
Construction	3 298	0.9
Wholesale and retail trade; repair of motor vehicles and motorcycles	38 969	10.7
Transportation and storage	2 735	0.8
Accommodation and food service activities	63 900	17.5
Information and communication	1 558	0.4
Financial and insurance activities	9 173	2.5
Real estate activities	647	0.2

Professional, scientific and technical activities	4 453	1.2
Administrative and support service activities	12 964	3.6
Public administration and defence; compulsory social security	12 960	3.6
Education	32 621	9.0
Human health and social work activities	14 043	3.9
Arts, entertainment and recreation	3 648	1.0
Other service activities	12 979	3.6
Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	51 744	14.2
Activities of extraterritorial organizations and bodies	408	0.1
Not elsewhere classified	19	0.0
Total	364 234	100.0

d) Gross monthly income

Table 7 shows the gross monthly incomes of the employed women in 2018. About 96.7% of employed women did not specify their gross monthly income. Out of the employed women who provided information on their gross monthly income, a high proportion was earning between N$3,001 to N$5,000, followed by those earning between N$2,000 to N$3,000 and N$1 to N$1,000 respectively. These income categories contributed 0.4% each to the total number of employed women. In addition, a lower proportion of women was found in the N$35,001 to N$50,000 and N$50,001 to N$75,000 income categories contributing less than 0.1% altogether to the total number of employed women.

Table 7: Employed women by gross monthly income in N$

Gross monthly income	Number of women	Percent
1 – 1,000	1 367	0.4
1,001 – 1,999	981	0.3
2,000 – 3,000	1 357	0.4
3,001 – 5,000	1 415	0.4
5,001 – 7,000	996	0.3
7,001 – 9,000	650	0.2
9,001 – 11,000	1 166	0.3
11,001 – 13,000	366	0.1
13,001 – 15,000	834	0.2
15,001 – 17,000	452	0.1
17,001 – 19,000	478	0.1
19,001 – 21,000	412	0.1
21,001 – 25,000	869	0.2
25,001 – 30,000	581	0.2
35,001 – 50,000	132	0.0
50,001 – 75,000	26	0.0
Unspecified	352 151	96.7
Total	364 234	100.0

4.2.2. Unemployed women

The percent distribution of unemployed women in 2018 with regard to the length of time they spent without work and the methods they used to look for work is discussed below.

a) Length of time unemployed

Table 8 shows the length of time the unemployed women had been without work in 2018. A high proportion of these women had been without work for more than two years (60.0%), followed by 15.9% who had been without work for more than a year but less than two years. Moreover, 4.3% had been without work for less than a month whereas 4.4% had been without work for three months but less than six months.

Table 8: Unemployed women by length of time without work

Time period	Number of women	Percent
Less than 1 month	8 210	4.3
1 Month to <3 months	9 786	5.1
3 Months to < 6 months	8 375	4.4
6 Months to 1 year	17 732	9.3
1 year to < 2 years	30 204	15.9
2 years or more	114 367	60.0
Unspecified	1 833	1.0
Total	190 507	100.0

b) Method used in looking for work

Table 9 shows the methods used by unemployed women to look for work in 2018. Out of the total unemployed women, 22.0% sought the assistance of friends, relatives and colleagues, followed by 21.8% who applied directly to employers seeking for work. In addition, 9.8% of the total unemployed women checked at worksites, farms, factory gates and markets in the hope of finding work. Only 1.4% of these women sought financial assistance to look for work and only 1.0% looked/applied for land, building and equipment.

Table 9: Unemployed women by method of looking for work

Method of looking for work	**Number of women**	**Percent**
Registration-Ministry of labour office	8 025	4.2
Registration-Other employment agencies	7 122	3.7
Direct application to employers	41 521	21.8
Checking at work sites, farms, factory gates and market	18 704	9.8
Placed/answered media advertisement	17 281	9.1
Seeking assistance of friends, relatives, colleagues	41 860	22.0
Looked/applied for land, building, equipment	1 978	1.0
Sought financial assistance to look for work or start	2 640	1.4
Others	379	0.2
Unspecified	50 997	26.8
Total	190 507	100.0

4.2.3. Economically inactive women

The distribution of the economically inactive women across the reasons for their inactiveness is shown in Table 10. Out of the 248,013 economically inactive women, a high proportion were students/scholars (48.6%), followed by those who were inactive due to old age (18.5%) and those who were homemakers (family consideration or child care) (13.6%). However, a small proportion gave a reason that they were inactive due to pregnancy (2.5%); retirement (0.9%) or because they were income recipients (0.2%).

Table 10: Economically inactive women by reason for inactiveness

Reason for inactivity	**Number of women**	**Percent**
Retired	2 320	0.9
Old age	45 960	18.5
Illness / Disabled	23 565	9.5
Homemaker (Family consideration/ Child care)	33 665	13.6
Student / Scholar	120 492	48.6
Income recipient	538	0.2
No desire to work	12 340	5.0
Pregnancy	6 315	2.5
Other (specify)	2 818	1.1
Total	248 013	100.0

4.3. Multinomial logistic regression analysis

To examine the effects of the socio-economic and socio-demographic characteristics of women on their participation in the labour force, a multinomial logistic regression analysis was used as explained in subsection 3.6.2. As it is the norm when modelling a multi-level response variable, one level is chosen to be left-out from the levels of the multi-level response variable. This level is later used as a reference category during the model interpretations. For the fitted multinomial logistic regression model in this study, the economically inactive category was used as the reference category to allow for the comparison of the employed and unemployed categories against the economically inactive category via the cumulative model option (as explained in subsection 3.6.2). In addition, the fitted multinomial logistic regression model in this study fitted a cumulative model that only showed a comparison between the employed category and economically inactive category as well as a comparison between the unemployed category and economically inactive category. Therefore, the comparison between the employed category against the unemployed category was done via the incorporation of an adjacent-category modelling into the fitted multinomial logistic model (as explained in subsection 3.6.3).

4.3.1. Model fitting

Table 11 shows an intercept only model as well as the final model on the model fitting information. This was done in order to develop a probabilistic model that best describes the relationship between the response and predictor variables under the model fitting, as

commonly done when performing regression modelling. The intercept only model, also known as the null model, does not control for any predictor variables but basically fits the regression model with an intercept only to predict the response variable. On the other hand, the final model, also referred to as a full model, includes the intercept and the predictor variables and is meant to improve on the intercept only model. The likelihood ratio test then tests whether the difference between the likelihood ratio for the final model with predictors and the likelihood ratio for the intercept only model is significant.

Therefore, with the final model having $p<0.001$ at a 5% level of significance as shown in Table 11, it is concluded that the final model fits the data significantly better than the intercept only model. In addition, the -2 log likelihood (-2LL) value of 346221.833 for the final model is less than the -2LL value for the intercept only model (695977.132), signifying that the final model is a better model to use than the intercept only model. Table 12 shows the likelihood ratio tests output from the final model. From this table, with all the predictor variables having significant p-values at a 5% level of significance, it can be concluded that all the predictor variables have a significant overall effect on the LFP status of the women.

Table 11: Model fitting information

Model	**Model Fitting Criteria**	**Likelihood Ratio Tests**		
	-2 Log Likelihood	Chi-Square	Degrees of freedom	P-value
Intercept Only	695977.132			
Final	346221.833	349755.299	64	<0.001

Table 12: Likelihood ratio tests output from the final model

Effect	**Model Fitting Criteria**	**Likelihood Ratio Tests**		
	-2 Log Likelihood of Reduced Model	Chi-Square	Degrees of freedom	P-value
Intercept	346221.833	0.000	0	.
Area location	346455.708	233.875	2	<0.001
Region	359486.892	13265.059	26	<0.001
Age group	579042.575	232820.74	10	<0.001
Marital Status	352321.946	6100.113	10	<0.001
Literacy Status	347609.21	1387.377	2	<0.001
Education Level	364535.869	18314.036	14	<0.001

For the adjacent-category incorporation for the comparison between the employed category against the unemployed category (as explained in subsection 3.6.3), the model fitting assumed equality of slopes. This means that for each term included in the model, the estimate for the slope between each pair of outcomes across two response levels are assumed to be the same irrespective of the partition considered. In addition, the residual deviance measures the goodness of fit of the model. Hence, the smaller the value of the residual deviance, the better the model fits the data. For this fitted model, the residual deviance had a value of 24373.53 on 26436 degrees of freedom. This residual deviance value is observed to be considerably smaller with respect to the degrees of freedom (26436). Thus, it can be concluded that the fitted adjacent-category incorporation model fits the data well for comparison between the employed category against the unemployed category.

4.3.2. Parameter estimates

Tables 13 and 14 show the outputs obtained from the multinomial logistic regression model fitted for the comparison of the employed and unemployed categories against the economically inactive category as explained in subsection 3.6.2. Table 15 shows the outputs obtained from the adjacent-category modelling incorporation for the comparison between the employed category against the unemployed category as explained in subsection 3.6.3.

a) Model fitting for employed women in comparison to economically inactive women

From Table 13, at a 5% level of significance, the odds of employment for women who were from the urban areas (OR=0.904, p<0.001, 95%CI: 0.889-0.920), relative to women from rural areas, was 0.904 times lower compared to the odds of economic inactiveness. The odds of employment for women who were from the Hardap (OR=0.697, p<0.001, 95%CI: 0.667-0.729) and Kavango East (OR=0.921, p<0.001, 95%CI: 0.885-0.959) regions, relative to women from Zambezi region, were 0.697 and 0.921 times lower compared to the odds of economic inactiveness. In addition, the odds of employment for women who were from the !Karas (OR=1.112, p<0.001, 95%CI: 1.064-1.163), Erongo (OR=1.522, p<0.001, 95%CI: 1.463-1.584), Kavango West (OR=1.822, p<0.001, 95%CI: 1.740-1.909), Khomas (OR=1.315, p<0.001, 95%CI: 1.269-1.363), Kunene (OR=1.543, p<0.001, 95%CI: 1.474-1.616), Ohangwena (OR=1.549, p<0.001, 95%CI: 1.494-1.607), Omusati (OR=1.982, p<0.001, 95%CI:

1.911-2.055), Oshana (OR=1.740, p<0.001, 95%CI: 1.676-1.807), Oshikoto (OR=1.457, p<0.001, 95%CI: 1.403-1.513) and Otjozondjupa (OR=1.572, p<0.001, 95%CI: 1.508-1.638) regions, relative to women from Zambezi region, were between 1.020 and 1.822 times higher.

Furthermore, the odds of employment for women who were less than 20 years old (OR=0.106, p<0.001, 95%CI: 0.102-0.109), relative to women aged 60 years and above, was 0.106 times lower compared to the odds of economic inactiveness. Also, the odds of employment for women who were 20-29 years old (OR=2.469, p<0.001, 95%CI: 2.408-2.532), 30-39 years old (OR=9.045, p<0.001, 95%CI: 8.807-9.289), 40-49 years old (OR=7.768, p<0.001, 95%CI: 7.566-7.975) and 50-59 years old (OR=3.942, p<0.001, 95%CI: 3.847-4.040), relative to women aged 60 years and above, were between 2.469 and 9.045 times higher.

With regard to the marital status, the odds of employment for women who were never married (OR=0.515, p<0.001, 95%CI: 0.482-0.550), married (OR=0.711, p<0.001, 95%CI: 0.666-0.759), widowed (OR=0.878, p<0.001, 95%CI: 0.820-0.939) and divorced (OR=0.597, p<0.001, 95%CI: 0.550-0.648), relative to women who were separated, were between 0.482 and 0.820 times lower compared to the odds of economic inactiveness. However, the odds of employment for women who were in consensual union (OR=1.231, p<0.001, 95%CI: 1.147-1.322), relative to women who were separated, was 1.231 times higher compared to the odds of economic inactiveness.

Moreover, the odds of employment for women who were literate (OR=1.636, p<0.001, 95%CI: 1.594-1.679), relative to women who were illiterate, was 1.636 times higher compared to the odds of economic inactiveness. Likewise, the odds of employment for women who had no education (OR=0.200, p<0.001, 95%CI: 0.186-0.216), had primary education (OR=0.254, p<0.001, 95%CI: 0.236-0.273), junior secondary education (OR=0.288, p<0.001, 95%CI: 0.268-0.309), senior secondary education (OR=0.338, p<0.001, 95%CI: 0.315-0.363), technical/vocational certificate/diploma (OR=0.262, p<0.001, 95%CI: 0.240-0.286), completed year 1 or 2 or 3 (OR=0.114, p<0.001, 95%CI: 0.105-0.123) and those with university certificate/diploma/degree (OR=0.648, p<0.001, 95%CI: 0.600-0.699), relative to women who had postgraduate certificate/diploma/degree, were between 0.114 and 0.648 times lower compared to the odds of economic inactiveness.

Table 13: Multinomial logistic regression: Parameter estimates for employed women

					95% Confidence Interval for Odds ratio	
Labour force status – Employed	**Estimate**	**Standard error**	**P-value**	**Odds ratio**	**Lower Bound**	**Upper Bound**
Intercept	0.663	0.053	<0.001			
Area location						
Urban	-0.101	0.009	<0.001	0.904	0.889	0.920
Rural	0					
Region						
!Karas	0.106	0.023	<0.001	1.112	1.064	1.163
Erongo	0.420	0.020	<0.001	1.522	1.463	1.584
Hardap	-0.361	0.023	<0.001	0.697	0.667	0.729
Kavango East	-0.082	0.020	<0.001	0.921	0.885	0.959
Kavango West	0.600	0.024	<0.001	1.822	1.740	1.909
Khomas	0.274	0.018	<0.001	1.315	1.269	1.363
Kunene	0.434	0.023	<0.001	1.543	1.474	1.616
Ohangwena	0.438	0.019	<0.001	1.549	1.494	1.607
Omaheke	0.020	0.025	0.440	1.020	0.970	1.072
Omusati	0.684	0.019	<0.001	1.982	1.911	2.055

Table 13 continued…

					95% Confidence Interval for Odds ratio	
Labour force status – Employed	**Estimate**	**Standard error**	**P-value**	**Odds ratio**	**Lower Bound**	**Upper Bound**
Region continued…						
Oshana	0.554	0.019	<0.001	1.740	1.676	1.807
Oshikoto	0.376	0.019	<0.001	1.457	1.403	1.513
Otjozondjupa	0.452	0.021	<0.001	1.572	1.508	1.638
Zambezi	0					
Age group						
<20	-2.249	0.017	<0.001	0.106	0.102	0.109
20-29	0.904	0.013	<0.001	2.469	2.408	2.532
30-39	2.202	0.014	<0.001	9.045	8.807	9.289
40-49	2.050	0.013	<0.001	7.768	7.566	7.975
50-59	1.372	0.013	<0.001	3.942	3.847	4.040
60+	0					
Marital status						
Never Married	-0.664	0.034	<0.001	0.515	0.482	0.550
Married	-0.341	0.033	<0.001	0.711	0.666	0.759
Consensual Union	0.208	0.036	<0.001	1.231	1.147	1.322

Table 13 continued…

					95% Confidence Interval for Odds ratio	
Labour force status – Employed	**Estimate**	**Standard error**	**P-value**	**Odds ratio**	**Lower Bound**	**Upper Bound**
Marital status continued…						
Widowed	-0.131	0.035	<0.001	0.878	0.820	0.939
Divorced	-0.516	0.042	<0.001	0.597	0.550	0.648
Separated	0					
Literacy status						
Literate	0.492	0.013	<0.001	1.636	1.594	1.679
Illiterate	0					
Education level						
None	-1.608	0.038	<0.001	0.200	0.186	0.216
Primary	-1.371	0.036	<0.001	0.254	0.236	0.273
Junior Secondary	-1.246	0.036	<0.001	0.288	0.268	0.309
Senior Secondary	-1.085	0.036	<0.001	0.338	0.315	0.363
Technical/Vocational Certificate/Diploma	-1.34	0.044	<0.001	0.262	0.240	0.286
Completed year 1 or 2 or 3	-2.174	0.040	<0.001	0.114	0.105	0.123
University Certificate/Diploma/Degree	-0.434	0.039	<0.001	0.648	0.600	0.699
Postgraduate Certificate/Diploma/Degree	0					

b) Model fitting for unemployed women in comparison to economically inactive women

From Table 14, at a 5% level of significance, the odds of unemployment for women who were residing in urban areas (OR=0.869, p<0.001, 95%CI: 0.853-0.885) relative to women from rural areas, was 0.869 times lower compared to the odds of economic inactiveness. Similarly, the odds of unemployment for women who were from the !Karas (OR=0.943, p=0.017, 95%CI: 0.899-0.990), Hardap (OR=0.731, p<0.001, 95%CI: 0.697-0.766) and Omusati (OR=0.711, p<0.001, 95%CI: 0.683-0.740) regions, relative to women from Zambezi region, were between 0.711 and 0.943 times lower compared to the odds of economic inactiveness. However, the odds of unemployment for women who were from the Erongo (OR=1.132, p<0.001, 95%CI: 1.085-1.182), Kavango East (OR=1.128, p<0.001, 95%CI: 1.082-1.175), Kunene (OR=1.572, p<0.001, 95%CI: 1.499-1.648), Omaheke (OR=1.456, p<0.001, 95%CI: 1.384-1.531), Oshana (OR=1.098, p<0.001, 95%CI: 1.054-1.143), Oshikoto (OR=1.136, p<0.001, 95%CI: 1.091-1.182) and Otjozondjupa (OR=1.631, p<0.001, 95%CI: 1.562-1.703) regions, relative to women from Zambezi region, were between 1.098 and 1.631 times higher.

Furthermore, the odds of unemployment for women who were less than 20 years old (OR=4.563, p<0.001, 95%CI: 4.319-4.821), 20-29 years old (OR=47.014, p<0.001, 95%CI: 44.570-49.593), 30-39 years old (OR=66.831, p<0.001, 95%CI: 63.295-70.564), 40-49 years old (OR=38.702, p<0.001, 95%CI: 36.648-40.871) and 50-59 years old (OR=11.415, p<0.001, 95%CI: 10.799-12.065), relative to women aged 60 years and above, were between 4.563 and 66.831 times higher compared to the odds of economic

inactiveness. With regard to the marital status, the odds of unemployment for women who were in consensual union (OR=2.124, p<0.001. 95%CI: 1.931-2.337), relative to women who were separated, was 2.124 times higher compared to the odds of economic inactiveness.

On the other hand, the odds of unemployment for women who were never married (OR=0.912, p=0.048, 95%CI: 0.832-0.999) and those who were divorced (OR=0.789, p<0.001, 95%CI: 0.702-0.887), relative to women who were separated, were 0.789 and 0.912 times lower. Moreover, the odds of unemployment for women who were literate (OR=1.270, p<0.001, 95%CI: 1.230-1.311), relative to the women who were illiterate, was 1.270 times higher compared to the odds of economic inactiveness. In addition, the odds of unemployment for women who had no education (OR=1.153, p=0.005, 95%CI: 1.043-1.274), had primary education (OR=1.225, p<0.001, 95%CI: 1.113-1.348), junior secondary education (OR=1.326, p<0.001, 95%CI: 1.205-1.458) and senior secondary education (OR=1.118, p=0.022, 95%CI: 1.016-1.231), relative to women with Postgraduate certificate/diploma/degree, were between 1.118 and 1.326 times higher compared to the odds of economic inactiveness. On the other hand, the odds of unemployment for women who had completed year 1 or 2 or 3 (OR=0.269, p<0.001, 95%CI: 0.243-0.299), relative to women with postgraduate certificate/diploma/degree, was 0.269 times lower compared to the odds of economic inactiveness.

Table 14: Multinomial logistic regression: Parameter estimates for unemployed women

					95% Confidence Interval for Odds ratio	
Labour Force Status – Unemployed	**Estimate**	**Standard error**	**P-value**	**Odds ratio**	**Lower Bound**	**Upper Bound**
Intercept	-3.530	0.074	<0.001			
Area location						
Urban	-0.141	0.009	<0.001	0.869	0.853	0.885
Rural	0					
Region						
!Karas	-0.058	0.024	0.017	0.943	0.899	0.990
Erongo	0.124	0.022	<0.001	1.132	1.085	1.182
Hardap	-0.314	0.024	<0.001	0.731	0.697	0.766
Kavango East	0.120	0.021	<0.001	1.128	1.082	1.175
Kavango West	0.002	0.025	0.935	1.002	0.953	1.053
Khomas	0.022	0.019	0.261	1.022	0.984	1.061
Kunene	0.452	0.024	<0.001	1.572	1.499	1.648
Ohangwena	-0.029	0.020	0.139	0.971	0.934	1.010
Omaheke	0.375	0.026	<0.001	1.456	1.384	1.531
Omusati	-0.342	0.020	<0.001	0.711	0.683	0.740

Table 14 continued…

Labour Force Status – Unemployed	Estimate	Standard error	P-value	Odds ratio	95% Confidence Interval for Odds ratio	
					Lower Bound	Upper Bound
Region continued…						
Oshana	0.093	0.021	<0.001	1.098	1.054	1.143
Oshikoto	0.127	0.020	<0.001	1.136	1.091	1.182
Otjozondjupa	0.489	0.022	<0.001	1.631	1.562	1.703
Zambezi	0					
Age group						
<20	1.518	0.028	<0.001	4.563	4.319	4.821
20-29	3.850	0.027	<0.001	47.014	44.570	49.593
30-39	4.202	0.028	<0.001	66.831	63.295	70.564
40-49	3.656	0.028	<0.001	38.702	36.648	40.871
50-59	2.435	0.028	<0.001	11.415	10.799	12.065
60+	0					
Marital status						
Never Married	-0.092	0.047	0.048	0.912	0.832	0.999
Married	-0.042	0.047	0.373	0.959	0.875	1.051
Consensual Union	0.753	0.049	<0.001	2.124	1.931	2.337

Table 14 continued…

Labour Force Status – Unemployed	Estimate	Standard error	P-value	Odds ratio	95% Confidence Interval for Odds ratio	
					Lower Bound	Upper Bound
Marital status continued…						
Widowed	-0.050	0.052	0.338	0.951	0.859	1.054
Divorced	-0.237	0.060	<0.001	0.789	0.702	0.887
Separated	0					
Literacy status						
Literate	0.239	0.016	<0.001	1.270	1.230	1.311
Illiterate	0					
Education level						
None	0.142	0.051	0.005	1.153	1.043	1.274
Primary	0.203	0.049	<0.001	1.225	1.113	1.348
Junior Secondary	0.282	0.048	<0.001	1.326	1.205	1.458
Senior Secondary	0.112	0.049	0.022	1.118	1.016	1.231
Technical/Vocational Certificate/Diploma	-0.002	0.056	0.971	0.998	0.894	1.114
Completed year 1 or 2 or 3	-1.311	0.053	<0.001	0.269	0.243	0.299
University Certificate/Diploma/Degree	-0.071	0.052	0.172	0.931	0.841	1.031
Postgraduate Certificate/Diploma/Degree	0					

c) Model fitting for employed women in comparison to unemployed women

From Table 15, at a 5% level of significance, the odds of employment for women who were from the Erongo (OR=1.168, p=0.039, 95%CI: 1.008-1.351), Kavango West (OR=1.293, p<0.001, 95%CI: 1.127-1.484), Ohangwena (OR=1.267, p<0.001, 95%CI: 1.111-1.446), Omusati (OR=1.384, p<0.001, 95%CI: 1.210-1.583), Oshana (OR=1.311, p<0.001, 95%CI: 1.146-1.499) and Oshikoto (OR=1.158, p=0.032, 95%CI: 1.013-1.324) regions, relative to women from Zambezi region, were between 1.158 and 1.384 times higher compared to the odds of unemployment. However, the odds of employment for women who were from Hardap (OR=0.812, p=0.005, 95%CI: 0.702-0.939) region, relative to women from Zambezi region, was 0.812 times lower.

Likewise, the odds of employment for women aged below 20 years old (OR=0.353, p<0.001, 95%CI: 0.312-0.399), relative to women aged 60 years and above, was 0.353 times lower compared to the odds of unemployment. In addition, the odds of employment for women aged 20-29 years old (OR=1.575, p<0.001, 95%CI: 1.431-1.732), 30-39 years old (OR=2.667, p<0.001, 95%CI: 2.422-2.936), 40-49 years old (OR=2.889, p<0.001, 95%CI: 2.616-3.189) and 50-59 years old (OR=2.255, p<0.001, 95%CI: 2.044-2.487), relative to women aged 60 years and above, were between 1.575 and 2.889 times higher. Similarly, for marital status, the odds of employment for women who were never married (OR=0.787, p=0.029, 95%CI: 0.634-0.975), relative to women who were separated, was 0.787 times lower compared to the odds of unemployment. In addition, the odds of employment for women who were literate (OR=1.438, p<0.001, 95%CI: 1.305-1.584), relative to women who were illiterate, was 1.438 times higher compared to the odds of unemployment.

Looking at the education level, the odds of employment for women with no education (OR=0.336, p<0.001, 95%CI: 0.248-0.455), with primary education (OR=0.371, p<0.001, 95%CI: 0.277-0.497), junior secondary education (OR=0.411, p<0.001, 95%CI: 0.307-0.548), senior secondary education (OR=0.457, p<0.001, 95%CI: 0.341-0.612), technical/vocational certificate/diploma (OR=0.418, p<0.001, 95%CI: 0.295-0.591), completed year 1 or 2 or 3 (OR=0.291, p<0.001, 95%CI: 0.211-0.402) and with university certificate/diploma/degree (OR: 0.729, p=0.49, 95%CI: 0.532-0.998), relative to women with postgraduate certificate/diploma/degree, were between 0.291 and 0.729 times lower compared to the odds of unemployment.

Table 15: Adjacent category logit model: Parameter estimates for employed women against the unemployed women

					95% Confidence Interval for Odds ratio	
Labour force status- Employed	**Estimate**	**Standard error**	**P-value**	**Odds ratio**	**Lower bound**	**Upper bound**
Intercept :1	0.586	0.198	0.003	1.797	1.219	2.649
Intercept :2	0.222	0.199	0.264	1.249	0.846	1.843
Area location						
Urban	-0.056	0.030	0.065	0.946	0.891	1.003
Rural	0					
Region						
!Karas	-0.034	0.075	0.651	0.967	0.835	1.120
Erongo	0.155	0.075	0.039	1.168	1.008	1.351
Hardap	-0.208	0.074	0.005	0.812	0.702	0.939
Kavango East	-0.084	0.065	0.198	0.919	0.810	1.045
Kavango West	0.257	0.070	<0.001	1.293	1.127	1.484
Khomas	0.030	0.067	0.654	1.030	0.904	1.175
Kunene	0.052	0.075	0.488	1.053	0.910	1.220
Ohangwena	0.237	0.067	<0.001	1.267	1.111	1.446
Omaheke	-0.025	0.076	0.738	0.975	0.840	1.132
Omusati	0.325	0.069	<0.001	1.384	1.210	1.583
Oshana	0.271	0.068	<0.001	1.311	1.146	1.499
Oshikoto	0.147	0.068	0.032	1.158	1.013	1.324

Table 15 continued…

					95% Confidence Interval for Odds ratio	
Labour force status- Employed	**Estimate**	**Standard error**	**P-value**	**Odds ratio**	**Lower bound**	**Upper bound**
Region continued…						
Otjozondjupa	0.101	0.073	0.166	1.106	0.959	1.277
Zambezi	0					
Age group						
<20	-1.042	0.062	<0.001	0.353	0.312	0.399
20-29	0.454	0.049	<0.001	1.575	1.431	1.732
30-39	0.981	0.049	<0.001	2.667	2.422	2.936
40-49	1.061	0.051	<0.001	2.889	2.616	3.189
50-59	0.813	0.050	<0.001	2.255	2.044	2.487
60+	0					
Marital Status						
Never Married	-0.240	0.110	0.029	0.787	0.634	0.975
Married	-0.038	0.110	0.733	0.963	0.777	1.195
Consensual Union	0.097	0.116	0.401	1.102	0.878	1.382
Widowed	0.002	0.117	0.985	1.002	0.797	1.259
Divorced	-0.014	0.148	0.922	0.986	0.737	1.318
Separated	0					

Table 15 continued…

					95% Confidence Interval for Odds ratio	
Labour force status- Employed	**Estimate**	**Standard error**	**P-value**	**Odds ratio**	**Lower bound**	**Upper bound**
Literacy Status						
Literate	0.363	0.049	<0.001	1.438	1.305	1.584
Illiterate	0					
Education Level						
None	-1.091	0.155	<0.001	0.336	0.248	0.455
Primary	-0.991	0.149	<0.001	0.371	0.277	0.497
Junior Secondary	-0.890	0.148	<0.001	0.411	0.307	0.548
Senior Secondary	-0.783	0.149	<0.001	0.457	0.341	0.612
Technical/Vocational Certificate/Diploma	-0.873	0.177	<0.001	0.418	0.295	0.591
Completed year 1 or 2 or 3	-1.234	0.165	<0.001	0.291	0.211	0.402
University Certificate/Diploma/Degree	-0.316	0.160	0.049	0.729	0.532	0.998
Postgraduate Certificate/Diploma/Degree	0					

4.4. Chapter summary

This chapter presented the data analysis results and interpretations. The prevalence of women's participation in the labour force was explored which revealed that women's LFP rate rose from 63.2% in 2012 to 69.1% in 2018. From 2012 to 2018, the employment rate for women was at its highest in 2014 with 68.3% and dropped to 65.7% in 2018, while the lowest was recorded in 2016 with 61.7%. In addition, the unemployment rate for women was at its highest in 2016 with 38.3% and dropped to 34.3% in 2018, while the lowest rate was recorded in 2014 with 31.7%. Moreover, the economically inactive rate was higher in 2012 with 36.8% and dropped to 30.9% in 2018, while the lowest rate was observed in 2013 with 30.4%. A high proportion of employed and unemployed women were residing in urban areas as compared to economically inactive women who were residing in rural areas.

From the Pearson's Chi-Square tests for association performed, it can be concluded that the women's area of location, region, age group, marital status, literacy status and highest education level were significantly associated with their LFP status.

From the multinomial logistic regression model fitting, the model fitting information showed that the final model was the better model to use for a comparison between the employed category and economically inactive category as well as for a comparison between the unemployed category and economically inactive category. The likelihood ratio tests from the final model further revealed that area location, region, age-group, marital status, literacy status and education level had a significant overall effect on the LFP status of the women.

Furthermore, for the adjacent-category incorporation, the fitted model had a residual deviance of 24373.53 on 26436 degrees of freedom. Since the residual deviance value was considerably low compared to the degrees of freedom, it was therefore concluded that the fitted adjacent-category incorporation model fitted the data well for comparison between the employed category against the unemployed category.

CHAPTER 5: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter provides the discussions of key findings, conclusion as well as recommendations arising from the findings of this study as presented in the preceding chapter.

5.2. Discussion

With the aim of identifying and examining the determinants of women's participation in Namibia's labour force through a multinomial logistic regression analysis of the latest (2018) NLFS, a multinomial logistic regression model was fitted to examine the effect of the socio-economic and socio-demographic characteristics of women on their participation in the labour force. Also, since the fitted multinomial logistic regression model fitted a cumulative model that only showed a comparison between the employed category and the economically inactive category and a comparison between the unemployed category and the economically inactive category, the comparison between the employed category against the unemployed category was done via the incorporation of an adjacent-category modelling into the fitted multinomial logistic model.

From this study, socio-demographic and socio-economic characteristics such as area location, region, age group, marital status, literacy status and education level were observed to be significant factors in determining the participation of women in the labour force in Namibia when looking at the comparison of employed women against the economically inactive women.

Furthermore, for the unemployed women in comparison to the economically inactive women, socio-demographic characteristics such as area location, age group, and literacy status were observed to be strong determinants of women's participation in the labour force. Comparing the employed women to the unemployed women, socio-demographic and socio-economic characteristics such as region, age group, literacy status, and education level were seen to be significant factors whereas the marital status and area location were not found to be significant determinants of women's participation in the labour force.

5.2.1. Prevalence of women's participation in labour force

The basic prevalence of women's participation in Namibia's labour force in 2018 was explored and later compared with the rates obtained from the past four (2012, 2013, 2014 & 2016) NLFSs, although their trend analysis was not the focus of this study. Findings revealed that the rate of employment among women improved from 61.7% in 2016 (lowest recorded) to 65.7% in 2018, while the rate of unemployment among women dropped from 38.3% in 2016 to 34.3% in 2018. Also, the rate of economic inactiveness among women dropped from 36.8% in 2012 to 30.9% in 2018. These rates are significantly dissimilar to those of Zimbabwe whose employment rates for women dropped from 94.8% in 2014 to 82.8% in 2019, with an increase in both unemployment rates (from 5.2% in 2014 to 17.2% in 2019) and economic inactiveness rates (from 19.7% in 2014 to 65.6% in 2019) (Zimbabwe National Statistics Agency, 2020).

Moreover, the improvements in the rates for women in Namibia can be attributed to various national measures implemented by the Namibian government such as acts,

policies and programs targeting the empowerment of women in the country. One of such national measures is the Affirmative Action (Employment) Act 29 of 1998 created to warrant equal employment opportunities and equitable representation for designated groups in the workforce, which includes women. Similarly, the Labour Act 11 of 2007 equally prohibits discrimination against individuals based on their sex, marital status or family responsibilities including previous, current or future pregnancy, among others, which initially used to minimize women's chances of securing employment. Moreover, the National Gender Policy (2010-2020) aimed at addressing gender inequality, promoted women's empowerment with the goals of (i) achieving gender equality, (ii) empowering women in the socio-economic, cultural and political development of Namibia and, (iii) having a society in which women and men enjoy equal rights and equal access to basic services, as well as opportunities.

5.2.2. Area location

The findings of this study showed that urban areas had high proportions of employed and unemployed women while rural areas had a high fraction of economically inactive women. These findings confirm that most women flock to urban areas in search of employment opportunities and a better life with some securing (low paying) jobs while others remain unemployed. For the economically inactive, the findings are similar to the findings by Iftekhar (2021) and Akhtar et al. (2020) where it was concluded that living in rural areas increased the chance of women being economically inactive and women in rural areas tended to participate less in the labour force due to gender discrimination. However, these findings contradict Hosney (2016) who found that rural women

participate more in the labour market as they usually have to generate income to assist their families financially due to low job compensation in rural areas.

5.2.3. Region

This study found out that women residing in the Kavango East and Hardap regions had a lower likelihood of employment when compared to the likelihood of economic inactiveness. However, this study found Omaheke region not to be a significant predictor in determining women's participation in the labour force among the employed women.

When it comes to unemployment, this study found that women residing in the !Karas, Hardap and Omusati regions had a lower likelihood of unemployment when compared to the likelihood of economic inactiveness. Kavango West, Khomas and Ohangwena regions were, however, not found to be significant in determining women's participation in the labour force among the unemployed women. When critically observing these findings and taking into account the context of area locations, regions such as Khomas and Erongo with metropolitan areas having high economic opportunities due to better development had a high likelihood of employment and unemployment for women as compared to economic inactiveness. However, regions with less development had a high chance of women being economically inactive which could in some cases be attributed to cultural norms. As alluded by Gasparini et al. (2015), decomposition by area is usually tricky as there are various social and non-social factors involved that requires consideration.

5.2.4. Age group

The findings of this study revealed that the economically inactive category was concentrated with a high percentage of women who were aged 20 years and less, accounting for 38.4% of the total in the category. This could be because women within this age group are usually school going pupils and students and hence do not engage much in the economic activities. However, it was recently revealed by Oyedele and Shilongo (2022) that Namibian children within this age group who already attained a pre-primary education and currently attending school were more likely to engage in child labour activities due to the economic status of their parents/guardians who could not afford the educational expenses and the family up-keeping. This, therefore, could prompt these children to combine schooling with various income earning activities to assist themselves and their families out of poverty.

Moreover, most of the employed women in 2018 were those aged between 30-39 years which could be owing to the fact that this age group is commonly considered as the prime working age. On the other hand, the 20-29 age group had the highest proportion of unemployed women as this age group included mostly women who just might have completed their education and thus entering the job market, as echoed by Mwinga (2012). The 60 years and above age group was concentrated in the economically inactive category, accounting for (approximately) 20.9% of the total economically inactive population. This could be due to these women being of old age and thus in retirement from the workforce. This concurs with the findings of a study by Abaz and Hadzic (2020) where it was concluded that economic inactivity among women increases with age.

5.2.5. Marital status

According to the findings of this study, a high proportion of women who were never married were found to be economically inactive or unemployed. This could be because the never married category generally comprises of young women especially active students hence falling under the economically inactive category as well as those who are entering the labour market in search for work after completing their studies therefore qualifying mostly for the unemployed category.

Married women however were more likely to be employed whereas those in consensual union were more likely to be unemployed. These findings contradict Hosney (2016) who concluded that married women participate much less in the labour force due to family responsibilities and being involved in household activities. In addition, the findings oppose those by ILO (2020) where it was revealed that married women and women living with a partner were more likely to be economically inactive when they marry and have children as they dedicate their time to nurturing their children and taking on the role of the caregivers and caretakers of their homes.

5.2.6. Literacy status

From this study, it was revealed that a high proportion of literate women were employed while the illiterate women were more concentrated in the economically inactive category. Likewise, the odds of employment for literate women was observed to be higher compared to their odds of economic inactiveness. However, the odds of employment for illiterate women was lower compared to their odds of unemployment. This can be attributed to the fact that women who are literate and educated are usually

more motivated to search for jobs due to their qualifications and improved communication skills while those who are illiterate usually find themselves demotivated and with no desire to work due to lack of communication skills and the possibility of rejections. These findings concur with those of Abaz and Hadzic (2020) who concluded that less educated women were more likely to be economically inactive, adding that economic inactivity decreases as the level of education among women increases.

5.2.7. Education level

From this study, women who had no education and those with only primary education as their highest education level were more likely to be economically inactive. This could be attributed to the fact that most jobs in Namibia require senior secondary education as a minimum entry requirement which minimizes the likelihood of women with lower level of education to secure employment in the country. For women who held junior secondary education and technical or vocational certificate or diploma, they were more likely to be unemployed, while university and postgraduate certificate, diploma and degree holders had a higher likelihood of being employed. This is because an increase in the education level increases the chances of landing employment. In addition, women who completed some years of higher education had a high chance of being economically inactive which could be because some are still students continuing with their higher education. These findings coincide with those of Mulugeta (2021) who stated that women's education levels were directly related to their participation in the labour force. In addition, Mufune (2013) also shared the same sentiments and concluded that

increasing the education levels of women could demonstrate to be valuable in increasing their employment and LFP rates.

5.3. Conclusion

Although women in Namibia made up 50.9% of the total labour force population in 2018, there have not really been drastic changes in their LFP rates in the labour force in the country as evidenced by the prevalence of their participation over the previous five labour force surveys. While the change is minimal, it is still noteworthy that the employment rates across the years seem to be increasing even though there was a decline of 6.6% between 2014 and 2016. Still, the fluctuation in the unemployment rates remains a concern as the rate appears to be rising, having moved from 31.8% in 2012 to 34.3% in 2018. Moreover, the rate of economic inactiveness of women requires intervention as it remains high, although slightly declining over the years to reach 30.9% in 2018. Yet, some women chose to be homemakers while some lacked the desire to work and others were economically inactive due to pregnancy as demonstrated by the findings of this study.

Looking specifically at employed women, the findings revealed that a high proportion of these women were in elementary occupations, service workers and sales occupations as well as the skilled agriculture occupations within the agriculture, forestry and fishing industry, and the accommodation and food service industries. Regarding the education level, women with no education or with only primary education had high odds of economic inactiveness. Those with junior secondary education and technical/vocational

certificate/diploma were more likely to be unemployed whereas those with university and postgraduate certificates/diplomas and degrees were highly likely to be employed.

Moreover, in comparison with the economically inactive women, socio-demographic characteristics such as area location, region, age group, marital status, literacy status and education level were identified to be significant determinants of employed women's participation in the labour force in Namibia. Characteristics such as area location, age group, and literacy status were identified to be significant determinants of unemployed women's participation. Similarly, in comparison with the unemployed women, characteristics such as region, age group, literacy status and education level were identified to be significant determinants of employed women's participation in the labour force.

5.4. Recommendations

The participation of women in the labour force is vital in driving the societal and economic development and enhancement of a country. It is therefore crucial to determine and examine the factors that can hinder women's participation and come up with strategies that can eliminate these barriers and empower women. In return, this will assist in increasing the participation of women in the labour force thereby untapping the economic growth as well as achieving equality.

Education level was among the factors that were observed to be significant in determining women's participation in the labour force in Namibia. It was also one of the factors recommended by similar studies as an improvement apparatus for women's

participation in the labour force of a country, more specifically when it comes to the employment category. Thus, education can be regarded as a pivotal factor in societal development as well as economic development to use in the improvement of the standard of living and well-being of a society.

In Namibia, the government has made various efforts in developing and implementing policies and legislative frameworks targeted at empowering women through adequate education. For instance, the Namibia's 5th National Development Plan (NDP5) calls for women empowerment in terms of land, capital, education and labour among others, while the Vision 2030 demands for a flexible education and training system that can be (i) accessible to all Namibians (regardless of their sex) from early childhood, and (ii) able to produce a balanced supply of human resources in the country. Vision 2030 also calls for the elimination of gender disparities in education. However, there are still factors that hinder women's progress in education, thus affecting women's participation in the labour force. In this regard, it is recommended for these policies and legislative frameworks to be reinforced to empower women to engage more in education. This will ensure that women are well-educated to the level of obtaining university and postgraduate qualifications. In return, they will then acquire necessary specialization skills for any specialized jobs that will allow them to get better employment opportunities, as university level (higher) qualifications are believed to offer the highest marginal performance in the labour market for women.

Looking specifically at employed women, motivation is required for women to take up jobs in fields such as mining and quarrying, construction as well as transportation which

are currently dominated by men, or for employers to consider hiring (more) women in positions related to such fields within their organizations. This could be driven by strengthening the Affirmative Action (Employment) Act to allow more women to enter such fields. In addition, policymakers and implementers should look into promoting the legislative frameworks existing within the labor market that focuses on eliminating systemic, institutional and cultural limitations which can negatively influence the access of women into the labor market. These include, but not limited to, the Labour Act as well as the Affirmative Action (Employment) Act.

With area location identified as a determinant, it is recommended that the decentralization of governmental organizations be implemented, starting with the sensitization, advocacy and training on the purpose and benefits of decentralization since the understanding of decentralization policy and concepts are/can be different among individuals. This will in turn intensify and improve rural and local development, thereby improving the chances of rural women's participation and involvement in the labour force. This also applies to the regions since these urban and rural area locations can be found countrywide within different regions.

It is also recommended that future NLFSs take into consideration obtaining information on women regarding variables such as the number of children they have, the size of their families/households, the employment status of the heads of households, spousal income status as well as the ethnicity and race of these women to allow for scrutiny of these variables in future research studies in order to determine how they may or may not influence the decision of a woman to partake in the national labour force. To boot, future

research on this topic should consider studying variables such as family/household size, number of children a woman has, head of household employment status and race/ethnicity, to examine their effects on women's participation in the labour force. Since it is common knowledge that the COVID-19 pandemic impacted (and still impacting) lives and livelihoods around the globe – be it individual, household, and communities, future researchers can also study the impact of this pandemic on the participation of women in the Namibia labour force.

5.5. Contribution to knowledge

The findings of this study notably contribute to the body of knowledge on the participation of women in the labour force in Namibia. This study is the first of its kind to use the NLFS as previous related studies only used the NHIES. As it currently stands, not much empirical studies have been conducted on this topic in recent years in Namibia besides Mufune (2013) who used information extracted from the 2009/10 NHIES, a national survey that is primarily used to measure the income and expenditure patterns of households, to identify factors that may distinctively contribute to employment outcomes for women. Therefore, using information extracted from the 2018 NLFS, the latest national survey that specifically provides crucial socio-economic indicators required in assessing the labour market situation in the country, this study successfully identified the determinants of women's participation in Namibia's labour force through an empirical investigation. This further allows for the interpretation of the study findings to a wider population setting, because the information contained herein covers both the economically active and economically inactive population.

In addition, the identified determinants from this study can further be considered as useful insights in the formulation of plans and strategies to further enhance the participation of women in labour force in Namibia and in other nations. Moreover, the findings of this study can be generalized to the women population in Namibia and will allow other researchers with an interest in this topic to replicate the study for validation of these findings. Findings can as well be comparable to women populations from other countries. However, full representation might have been compromised in the collection of the data that was used, due to the NLFS not being industrially stratified.

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APPENDICES

Appendix A: Ethical clearance certificate

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ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: SOS-0098 Date: 18 July 2022

This Ethical Clearance Certificate is issued by the University of Namibia Ethics Committee (REC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the ethics committee.

Title of Project: DETERMINANTS OF WOMEN'S PARTICIPATION IN NAMIBIA'S LABOUR FORCE: A MULTINOMIAL ANALYSIS OF THE 2018 NAMIBIA LABOUR FORCE SURVEY

Student: FENNY MUKWIILONGO AMULUNGU

Student Number: 200405781

Supervisor(s): DR. OPEOLUWA OYEDELE

Centre for Research Services

Take note of the following:

1. Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the ethics committee. An application to make amendments may be necessary.
2. Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the ethics committee
3. The Principal Researcher must report issues of ethical compliance to the ethics committee (through the Chairperson) at the end of the Project or as may be requested by the ethics committee
4. The ethics committee retains the right to:

i) Withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,

ii) Request for an ethical compliance report at any point during the course of the research.

The ethics committee wishes you the best in your research.

Dr. Zivayi Chiguvare (Chairperson Ethics Committee)

Prof. Davis Mumbengegwi (Head, Multidisciplinary Research)

Appendix B: Research permission letter

CENTRE FOR RESEARCH SERVICES
Office of the Pro-Vice Chancellor: Research, Innovation & Development
University of Namibia, Private Bag 13301, Windhoek, Namibia
340 Mandume Ndemufayo Avenue, Pioneers Park, Office F223 - Fblock, Second Floor
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UNAM
UNIVERSITY OF NAMIBIA

RESEARCH PERMISSION LETTER

Date: 29/08/2022

Student Name: FENNY MUKWIILONGO AMULUNGU

Student Number: 200405781

Programme: Master of Science in Statistics and Demography

Approved Research Title: DETERMINANTS OF WOMEN'S PARTICIPATION IN NAMIBIA'S LABOUR FORCE: A MULTINOMIAL ANALYSIS OF THE 2018 NAMIBIA LABOUR FORCE SURVEY

TO WHOM IT MAY CONCERN

I hereby confirm that the above-mentioned student is registered at the University of Namibia for the programme indicated. The proposed study met all the requirements as stipulated in the University guidelines and has been approved by the relevant committees.

The proposal adheres to ethical principles as per attached Ethical Clearance Certificate. Permission is hereby granted to carry out the research as described in the approved proposal.

Best Regards

Dr. AEE Shikongo
Head: Postgraduate Support Services
Tel: +264 61 206 3129
E-mail: aeshikongo@unam.na

CENTRE FOR RESEARCH SERVICES
Office of the Director
2022 -08- 29
University of Namibia
UNAM

Appendix C: R codes used for the Adjacent Category Logit model

```
#Adjacent Category Model Fitting (proportional odds adjacent category model)
library(VGAM)
ACL=vglm(Labour_force_status~factor(Area_location)+factor(Region)+factor(Age_gro
up)+factor(Marital_status)+factor(Literacy_status)+factor(Education_level), data = LFP,
family = acat(parallel = TRUE, reverse = TRUE))
summary(ACL)
#To obtain confidence interval
exp(confintvglm(ACL, matrix=T, level=0.95))
```