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Level and Factors of Women's Employment in the Sekhukhune District in the Limpopo Province of South Africa: Some Discriminant Analysis

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Abstract: Unemployment is very high in South Africa with the official rate ranging from 26.7% to 35%. The Limpopo province has the highest proportion of rural dwellers in South Africa and possibly higher unemployment rate than the national average. Women's unemployment is a much bigger problem especially when women are the bread winners. Most women singularly look after their children due to polygamy and / or labour migrant system which usually takes the men from home to other parts of the country. This study focuses on factors which militate against women's employment. A 3-stage sample survey was conducted between May 2013 and January 2014 covering all the municipalities in the Sekhukhune district. About 2000 women aged between 20 and 55 years were interviewed. Applying discriminant analysis, this study shows that over 85% of the women in the district are unemployed; and factors like: education, age, family status and marital status affect the employment status of women in Sekhukhune.
DA = 0.734educ + 0.654age +0.490familystatus + 0.153marital status
If Limpopo wants to reduce unemployment of women and to redress family's crises, this study recommends that efforts be made to "educate" women, i.e. encourage women to complete higher/ tertiary education and also be given special preference/family support in job offers.

Keywords: *Employment, discriminant analysis, family status, education*

1. Introduction

South African women under the legal control of their fathers and husbands were second class citizens for many years until the introduction of the Bill of Rights which was drafted in 1990 but adopted in 1996, that made all women in this country to receive a formal recognition as equal citizens (Forum, 1998). Women, especially black women are still economically disadvantaged. They make up a disproportionate section of the unemployed and mostly engaged in the lower-paid jobs, as domestic and farm labourers. Unemployment has always been a matter of serious concern in South Africa since the 1970s (Kingdon & Knight, 2005). Successive governments have tried to tackle the problem but have not succeeded. Women's unemployment is a big problem for the society because women are the bread winners. Most women are forced to look after their children due to polygamy therefore, when they are unemployed and without money then the family is in crises. This research seeks to find out the factors militating against the employment of women in Sekhukhune district in the Limpopo Province by asking the following research questions: Do education, pregnancy, marriage and family background affect employment opportunities?

2. Literature Review

Factors Affecting Women's Unemployment: Many issues determine the suitability to be employed; issues like education, skills, good health, competence, experience, etc. Below are some of the factors considered to affect employment opportunities for women: age, marital status and educational level. Age is an important factor affecting employment or otherwise. Younger women are more able to afford job-search because they have fewer family responsibilities and financial commitments than older women. But they are more ignorant and less experience about what their skills can command in the labour market, so they may have higher reservation of wages. According to a study carried by Kryger (1999) on unemployment, the probability of being unemployed initially decreases with the age from 20 years until the age of 45. For a 20 year old woman, for example, the probability that she be unemployed decreases by 0.7 percentage-points each additional year until the age of 40 years when the probability starts decreasing by 0.1 percentage-points. At 45 years, the probability of unemployment rather starts to increase (Kryger, 1999).

Apart from age, marital status is also seen to affect women's employment. A study by The Urban Institute (2013) shows that the long term unemployment rate for unemployed single parents was higher at 55%, compared to that of unemployed married parents at 44%. As of May 2014 in the US, the regular unemployment rate for women who maintain families was substantially higher (8.4%) than the overall unemployment rate (6.3%), (US Bureau of Labour Statistics, USBLS)).Besides, even when women get jobs, majority of married women still earn less than their husbands, perpetuating the status of wives as secondary wage-earners (Hertz, 1986). Education also affects employment opportunities. Employment status is usually determined by educational level, whereby women with high educational level can access employment more easily than those with low educational level. The more education a woman possesses, the less likely she will be unemployed, especially in the West (Hertz and Marshall, 2001). For instance, the US Bureau of Labour Statistics' study in 2006, revealed that about 76% of women with less than a high school diploma were unemployed, but only 2.3% of college graduates were unable to find a job. The channel through which the relationship between education and employment arises is the same for both sexes though, namely, labour turnover. There is a stronger tendency for women with higher education to participate in the labour market because higher education creates opportunities to work in occupations or sectors where gender equality is assured (Handy et al. 2006).

3. Methodology

Material/Data: Primary data from a survey were used in the analysis. The survey was conducted from May 2013 to January 2014 in the Sekhukhune district. A 3-stage sampling including stratified random of municipalities and households/dwelling units were done to get the women. The first stage was stratification to get all the municipalities in the district represented. Within a selected municipality, a random sampling was done to get a town or village and once a village or town is selected; systematic sampling was done to get the households/dwelling units. Women in the sampled households were interviewed. About 2000 women aged between 20 and 55 years were interviewed using structured questionnaire.

Methods/Analysis: Multivariate analysis was performed to assess the factors that are associated with women's employment. Generalized linear models were first performed before the Discriminant Analysis. Generalized linear models are extensions of traditional regression models that allow the mean to depend on the explanatory variables through a link function, and the response variable to be any member of a set of distributions called the exponential family (e.g. Normal, Poisson, etc.). Discriminant analysis on the other hand, is used when the dependent is categorical with the predictors at interval level or ordinal or categorical such as age, income, attitudes, perceptions, and years of education. Discriminant analysis can also be used when there are more than two dependent variables, unlike logistic regression, which is limited to a dichotomous dependent variable. The following are the purposes of discriminant analysis:

- To investigate differences between groups on the basis of the attributes of the cases, indicating which attributes contribute most to group separation. The descriptive technique successively identifies the linear combination of attributes known as canonical discriminant functions which contribute maximally to group separation.
- Predictive discriminant analysis addresses the question of how to assign new cases to groups.
- To determine the most parsimonious way to distinguish between groups.
- To classify cases into groups. Statistical significance tests using chi square enable you to see how well the function separates the groups.
- To test theory whether cases are classified as predicted.

Statistical Tests: Box's M tests, were used to test the null hypothesis of no difference between groups formed by the dependent. The log determinants were used to check that. The Durbin Watson test was used to detect the presence of autocorrelation among the predictor variables and found to be none. The goodness-of-fit table in the appendix shows the analysis is plausible.

4. Results

Table 1 provides information on socio-demographic characteristics of the respondents. The mean age of the 2000 women interviewed was 31.5 years with a standard deviation of 9.7 years. Over 85% of the 2000 women interviewed were unemployed, about 80% of the women were single (either never married or separated or divorced), over 94% had ever attended school of whom, 48% did not go past primary

school level, 45% went no further than secondary level and only 7.6% went into tertiary institutions. About 84% were ready to do any job available to be offered and almost no woman had missed a job because of pregnancy. With respect to family background, 49.5% of the women were from the low class, 50.1% were from the middle class and only 0.4% declared to come from high class.

Table 1: Socio-demographic Characteristics of the respondents

Variables	Frequency	Percentage
Marital status		
Single	1578	78.9
Married	422	21.1
Are you employed?		
Yes	295	14.7
No	1705	85.3
Have you ever been to school?		
Yes	1885	94.3
No	115	5.7
What is your highest qualification?		
No schooling, primary,	947	47.4
Secondary	900	45.0
Tertiary	153	7.6
Have you ever missed job opportunity because of your age?		
Yes	11	5.5
No	1989	94.5
Have you ever missed job opportunity because of pregnancy?		
Yes	1	0.05
No	1999	99.95
Will you feel comfortable to do any kind of a job?		
Yes	1682	84.1
No	318	15.9
Have you rejected any kind of a job?		
Yes	10	0.5
No	1990	99.5
Do you have a husband who is working?		
Yes	157	7.9
No	1843	92.1
What is your family background?		
Low class	990	49.5
Middle class	1003	50.1
High class	7	0.4

Initially, the Generalized Linear Models was run to "scan" the data before the Discriminant Analysis. Table 2 gives the results from the Generalized Linear Models. It can be seen from the table that women's employment in Sekhukhune depends on education, marital status, spouse's occupation, family background and age. The number of children that a woman has however does not have any relationship with employment. Kyei and Gyekye (2012) have found out that education is one of the factors that influence employment opportunities in Limpopo; that those without matric qualification (i.e. without high school certificate) find it difficult to be employed. The results here from Sekhukhune support that finding.

Table 2: Tests of Model Effects from the GLM

Source	Wald chi-sq	Df	Sig
(Intercept)	13.737	1	.000
Highest Standard	98.662	2	.000
Job Comfort	.126	1	.723
Marital Status	6.208	1	.013
Working Husband	4.356	1	.037
Family Background	69.328	2	.000
Age	46.050	1	.000
No. of Children	.359	1	.549

Dependent Variable: Are you employed?
Model: (Intercept), marital Status, Job Comfort, Working Husband, Family Background, Age, No. of Children

Table 3 gives the results from the discriminant analysis (stepwise procedure). The results show that though in step one, job satisfaction and job pregnancy appeared in the list of the variables influencing employment or otherwise, at the final stage (i.e. step four), only age, education, marital status and family background came out strongly as factors affecting employment.

Table 3: Stepwise Analysis-Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Age	-.071	.010	46.926	1	.000	.932
	No. of Children	.027	.045	.359	1	.549	1.027
	Marital Status(1)	.442	.176	6.312	1	.012	1.555
	Family Background			63.397	2	.000	
	Family Background(1)	2.991	.865	11.952	1	.001	19.897
	Family Background(2)	1.793	.853	4.414	1	.036	6.007
	Working Husband(1)	.500	.245	4.182	1	.041	1.649
	Job Comfort(1)	.066	.185	.126	1	.723	1.068
	Job Pregnancy(1)	8.912	20096.401	.000	1	1.000	7422.039
	Highest Standard			94.811	2	.000	
	Highest Standard(1)	2.996	.347	74.662	1	.000	20.007
	Highest Standard(2)	1.633	.196	69.429	1	.000	5.117
	Constant	8.775	20096.401	.000	1	1.000	6467.577
Step 2[a]	Age	-.071	.010	46.982	1	.000	.932
	No. of Children	.027	.045	.358	1	.550	1.027
	Marital Status(1)	.441	.176	6.301	1	.012	1.555
	Family Background			63.505	2	.000	
	Family Background(1)	2.992	.865	11.968	1	.001	19.930
	Family Background(2)	1.794	.853	4.420	1	.036	6.013
	Working Husband(1)	.502	.245	4.211	1	.040	1.652
	Job Comfort(1)	.066	.185	.126	1	.722	1.068
	Highest Standard			94.852	2	.000	
	Highest Standard(1)	2.997	.347	74.691	1	.000	20.019
	Highest Standard(2)	1.633	.196	69.460	1	.000	5.119
	Constant	-.138	.906	.023	1	.879	.871
Step 3[a]	Age	-.071	.010	47.027	1	.000	.932
	No. of Children	.028	.045	.384	1	.536	1.028
	Marital Status(1)	.439	.176	6.247	1	.012	1.551
	Family Background			64.581	2	.000	
	Family Background(1)	3.016	.862	12.243	1	.000	20.405
	Family Background(2)	1.813	.851	4.539	1	.033	6.130
	Working Husband(1)	.497	.244	4.157	1	.041	1.644
	Highest Standard			95.393	2	.000	
	Highest Standard(1)	2.995	.347	74.657	1	.000	19.978
	Highest Standard(2)	1.640	.195	70.801	1	.000	5.155
	Constant	-.109	.902	.014	1	.904	.897
Step 4[a]	Age	-.067	.008	63.220	1	.000	.935
	Marital Status(1)	.434	.175	6.129	1	.013	1.543
	Family Background			64.930	2	.000	
	Family Background(1)	3.015	.861	12.266	1	.000	20.394
	Family Background(2)	1.810	.850	4.531	1	.033	6.107
	Working Husband(1)	.508	.243	4.368	1	.037	1.661
	Highest Standard			97.692	2	.000	
	Highest Standard(1)	3.013	.345	76.076	1	.000	20.344
	Highest Standard(2)	1.652	.194	72.563	1	.000	5.218
	Constant	-.174	.895	.038	1	.846	.840

a. Variable(s) entered on step 1: Age, No. of Children, marital Status, Family Background, Working Husband, Job Comfort, Job Pregnancy, and Highest Standard.

Table 4 gives the results of Group Statistics from discriminant analysis. It could be seen that age, education, marital status and family background appear from the table to influence employment because the difference between the mean of Yes and that of the No for these values seem to be significant. Table 5 confirms that education, age and family background are the discriminants.

Table 4: Group Statistics

Are you employed?	Mean	Std. Deviation	Valid N (list wise) Weighted	unweighted
Yes: Marital status	1.36	0.480	295	295.000
Age	35.69	7.741	295	295.000
A number of children	2.53	1.751	295	295.000
Family background	1.78	0.447	295	295.000
Education level	2.18	1.040	295	295.000
Job comfort	1.19	0.395	295	295.000
No: Marital status	1.19	0.389	1705	1705.000
Age	31.31	9.902	1705	1705.000
A number of children	2.06	2.089	1705	1705.000
Family background	1.46	0.502	1705	1705.000
Education level	1.94	0.391	1705	1705.000
Job comfort	1.15	0.360	1705	1705.000
Total: Marital status	1.21	0.408	2000	2000.000
Age	31.95	9.737	2000	2000.000
A number of children	2.12	2.049	2000	2000.000
Family background	1.51	0.507	2000	2000.000
Education level	1.98	0.420	2000	2000.000
Job comfort	1.16	0.366	2000	2000.000

In discriminant analysis we attempt to predict membership by firstly, examining whether there are any significant differences between groups on each of the independent variables using group means results data. The Group Statistics and Tests of Equality of Group provide us with the information. There is no need to proceed with the analysis if there are no significant group differences. From Table 4, the mean differences between age which is 4.38, education level which is .24 and family background which is 0.34, imply that these independent variables are good discriminators because the separations are relatively large.

Table 5: Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
Marital status	.978	44.591	1	1998	.000
Age	.974	52.373	1	1998	.000
A number of children	.993	13.328	1	1998	.000
Family background	.950	104.086	1	1998	.000
Education level	.958	87.494	1	1998	.000
Job comfortability	.998	3.032	1	1998	.000

Table 5 shows strong statistical evidence of significant differences between employed and unemployed for all independent variables except job comfort and the number of children. Marital status (with F=44.591), age (with F=52.373), family background (with F=104.086) and education level (with F=87.494) are high values proving the discrimination. Equally, Table 6 confirms, in step 4, that the four factors are important discriminants.

Table 6: Variables in the Analysis

Step	Tolerance	F to Remove	Wilks' Lambda
1. Please state the status of your family background	1.000	104.086	
2. Please state the status of your family background	.981	77.339	.958
2. If yes, what is your highest standard passed?	.981	60.966	.952
3. Please state the status of your family background	.980	68.519	.898
3. If yes, what is your highest standard passed?	.831	131.622	.925
3. How old are you?	.846	125.388	.922

4. Please state the status of your family background	.974	64.710	.894
4. If yes, what is your highest standard passed?	.828	127.203	.921
4. How old are you?	.710	84.931	.902
4. Marital status	.826	5.203	.868

Table 7: Standardized Canonical Discriminant Function Coefficients

	Function
	1
How old are you?	.654
Marital status	.153
If yes, what is your highest standard passed?	.734
Please state the status of your family background	.490
How many children have you?	.027
Job comfort	.006

Discussion: The unemployment rate of 85% for the women in Sekhukhune is very high. Normally, unemployment is slightly higher among women than men, but the case of Sekhukhune appears to be extreme. There are considerable variations among countries. Across the Gallup World Poll sample the unemployment rate among young women is 18% compared to 15% for men. This masks strong variations among countries and regions. Across sub-Saharan Africa the unemployment rate for women is 16% compared to 14% for men. In North Africa, however, 31% of women are unemployed compared to 19% of men (World Bank, 2014). In some countries unemployment rates among women are much lower than among men. According to LFS data, the unemployment rate among women in Rwanda is only 16% of that of men and in Niger this ratio is 50%. Women are more likely to be discouraged or out of the labor force than men. The unemployment rate for women is far higher in South Africa because they experience a far lower participation in the labor economy. According to the Statistician-General of Statistics South Africa, the unemployment rate of women in the country is at least 12.9% higher than that of men, and that cuts across all the racial groups (SANews, 2014). The figures released by him indicated that 72.6% of white men compared with 56.1% of white women were employed. Similarly, 42.8% of black men compared with 30.8% of black women were employed. The low participation rate in the job market among the African population lends itself to high poverty rate in Africa. Poverty rate in Africa is substantially higher than in other developing countries (World Bank, 2004).

In 2004, the unemployment in Sub-Saharan Africa was estimated at 29.4 million, with marked differences by sub-region, country, gender and age group. The lowest unemployment rate occurred in West Africa at 6.7%, a figure which is explained by the fact that the citizens in the sub-region participated very minimally in paid employment in the formal sector. Southern Africa had the highest unemployment rate of 31.6% with Lesotho's figure rising to 39% (World Bank, 2014). The unemployment among the youth is even more disturbing at 21% in Sub-Saharan and 22.8% in the North Africa, with rate for those in the age bracket 15 – 24 years being twice higher than the overall rate (World Bank, 2014). Unemployment among educated youth follows some dynamics of mis-match. Among university educated youth in Tunisia the unemployment rate is lowest for engineers (24.5%), and highest for graduates in economics, management and law (47.1%) and in social sciences (43.2%) (Stampini and Verdier-Chouchane, 2011). Assuming similar patterns across other countries the high numbers of students choosing to enter these fields with high unemployment rates are surprising. The better educated often come from better-off families and can afford to stay unemployed while waiting ("queuing") for a good job, often in the public sector; and this is the pattern or behavior frequently observed in North African countries, but also in Ethiopia (Serneels, 2004) and Senegal. The strong link between field of study and unemployment rate, however, suggests a major mismatch.

5. Conclusion

The unemployment rate of women in Sekhukhune district is well over 85% and this creates much concern, especially when we consider the fact that women are the breadwinners in the family. Thus, if they are unemployed, how does the family survive? The results from this study show that pregnancy does not affect job opportunity at all. The discriminant analysis rather shows that education level, age, family status and marital status are factors that discriminate between employed and unemployed. The number

of children a woman has and job comfort are clearly not relevant as far as the discriminant analysis is concerned. They are the weakest predictors and therefore could be taken as not associated with employment or unemployment.

Recommendation: To solve the unemployment problem which results to poverty in Africa, particularly in South Africa, women, especially young women should be encouraged to complete high schools and even go further to complete tertiary education. Affirmative action to address the opportunities for women from low family background and to empower women should be taken more seriously in job offers so as to reduce poverty in the households.

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Appendix:

Table: Goodness of fit

Source	Value	Df	Value/df
Deviance	975.675	823	1.186
Scaled Deviance	975.675	823	
Pearson Chi-Square	1102.546	823	1.340
Log Likelihood	-576.943		
Akaike's Information Criterion (AIC)	1169.886		
Finite Sample Corrected AIC (AICC)	1169.958		
Bayesian Information Criterion (BIC)	1214.693		
Consistent AIC (CAIC)	1222.693		

Dependent Variable: Are you employed?
Model: (Intercept), marital Status, Job Comfort, Working Husband, Family Background, Age, No. of Children

a. Information criteria are in smaller-is-better form.
b. The full log likelihood function is displayed and used in computing information criteria.

Functions at Group Centroids

	Function
Are you employed?	1
Yes	.546
No	-.094

Unstandardized canonical discriminant functions evaluated at group means