

A Systematic PLS-SEM Approach to an Assessment of Unemployment among **University Graduates in Madagascar**

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Abstract

The number of university students has markedly increased over the last half-century along with the remarkable expansion of universities and their campuses, reflecting the high demand. The objectives of this study were an empirical analysis of unemployment among university graduates in Madagascar, the PLS-SEM approach to some attributes, and its relationship with unemployment and education, age, and gender may have impacts on DV. This study was based on an assessment of unemployment among university graduates in Madagascar. We tried to check how their attribute can influence job seeking. A semi-structured questionnaire was adopted from existing literature and modified as per the study area. The main indicators of research were: Lack of Awareness (LOA); Lack of Opportunity (LOO); Lack of Proper Skills (LOPS); Over Qualified (OQ); Unemployment (U); Weak GDP (W-GDP). In this study, 450 completed and filled questionnaires were collected from the study area and a pre-test was carried out to check the reliability of the data and to avoid any discrepancies. PLS-SEM is used to analyze data to check relationships among variables, since it is the most often recommended way for predicting and assessing explained variables to account for the largest potential variance, and PLS-SEM is one of the most effective approaches for predicting outcomes. We carried out a bootstrapping test using 5000 replicates to evaluate the degree to which our findings were consistent with the hypothesis. PLS-SEM direct path analysis revealed that LOA -> U (β = 0.051; p < 0.444); LOO -> U (β = -0.164; p < 0.014); LOPS -> U (β = 0.358; p < 0.000), OQ -> U ($\beta = 0.215$; p < 0.000); W-GDP -> U ($\beta = 0.415$; p< 0.000) are significant/insignificant values. These results offer support to hypotheses H1 rejected and H2-H5 accepted. As per the results of this model, we can say Lack of Opportunity (LOO); Lack of Proper Skills (LOPS); Over Qualified (OQ); Unemployment (U); Weak GDP (W-GDP). As per research results, we can say that some reasons for unemployment are Lack of Opportunity (LOO); Lack of Proper Skills (LOPS); Over Qualified (OQ); Unemployment (U); Weak GDP (W-GDP). Age, gender, and education are considered as control variables under research, as per the results of the direct relationship among control variables and dependent variables: age ($\beta = -0.111$; p < 0.004), gender ($\beta = -0.025$; p < 0.526), and education ($\beta = -0.056$; p < 0.126). As per values of direct relationships among control variables and DV, age has a significant relationship with DV while gender and education do not show any direct relationship.

Keywords

Unemployment, Graduate, Madagascar, Jobs, Work

1. Introduction

Nowadays, earning a college degree is seen as a crucial element of success in both the professional and social spheres. Due to the strong demand, there has been a noticeable growth in the number of university students during the previous 50 years, as well as a notable expansion of universities and their campuses. It is thus projected that more university graduates would join the labor force, but because the job market is not growing quickly enough to accommodate the growing number of graduates, heightened competitiveness and employment instability have formed (Wadud, 2018). As a result of the rising number of new graduates entering the labor market and the incapacity of governments and the private sector to offer suitable employment alternatives, the number of jobless and underemployed university graduates has constantly climbed (Cassidy & Wright, 2008; Madoui, 2015). Rising unemployment or underemployment is likely to have negative effects on society and individuals that aren't always adequately handled. Indeed, recent research (Lim et al., 2018; Meltzer et al., 2010; Reneflot & Evensen, 2014) revealed that the situational factors causing either unemployment or underemployment were quite diverse and appeared to be associated with the risk of manifesting common mental health consequences, such as depression, anxiety, and stress. Unemployment is an unwanted problem that may happen everywhere in the world. An individual who participates in the labor market runs the risk of becoming unemployed at some point (Razak et al., 2014). If the unemployment problem is not fixed, it will inevitably contribute to the issues of the jobless graduates, the nation, society, and possibly the entire country. In addition, when the country's unemployment rate worsens, riots and insurrection will spread throughout the nation and threaten trade. The nation will suffer a large loss due to this risky issue (Hanapi & Nordin, 2013; Arif & Sohail, 2020; Chai et al., 2021; Jian et al., 2021; Jiang et al., 2021; Kamonja et al.,

2014; Lan et al., 2022; Li et al., 2022a, 2022b; Sohail et al., 2022a). Madagascar is a nation in development. It is an upper middle class, very open economy. Nevertheless, the population is growing faster than the number of jobs that the market has created. As a result, it qualifies as an explanation for unemployment. The concept of "unemployed" covers those who want to work but are unable to find employment within a specific time frame (Ismail, 2011). When there is a labor shortage due to an economic downturn, there is typically a high rate of unemployment. The unemployment rate can also be impacted by a variety of other domestic variables, including firm downsizing, mergers and acquisitions, technological advancements, international competitiveness, and job outsourcing to other nations. The main cause of unemployment is a mismatch in skills between the needs of companies and fresh graduates. The acquisition of entry-level graduates is heavily influenced by soft skills, and students from colleges in Madagascar appear to be lacking in these areas. Companies and educational institutions don't always match graduating students with entry-level opportunities, even in the early phases of recruiting. Career service centers are underutilized and frequently do not understand the needs of businesses. Policies to increase employment have been viewed as an important aspect of economic development (ILO, 1972; Yasara et al., 2019; Yen et al., 2017, 2018, 2021; Sohail et al., 2020, 2021c, 2022a; Lu & Sohail, 2022). The underlying assumption in this situation has been that higher economic growth would result in the creation of jobs and that earning money via work would result in an increase in living standards and the eradication of poverty. On the other hand, unemployment has an impact on a nation's ability to thrive economically. This is a result of unemployment, particularly among young people. The objectives of this study were 1) An empirical analysis of unemployment among university graduates in Madagascar; 2) A PLS-SEM approach to some attributes and its relationship with unemployment; 3) Education, Age, and gender may have impacts on DV. Based on our literature review, we develop the following hypothesis (Figure 1).



Figure 1. Hypothesis model.

- H1: Lack of awareness about jobs job is directly significant to unemployment.
- H2: Lack of proper skills is directly significant with unemployment.
- H3: Overqualified directly significant with unemployment.
- H4: Lack of opportunity for jobs is directly significant to unemployment.
- H5: Weaker GDP is directly significant unemployment.

2. Material and Method

Data Sources and Data Preparation

This study was conducted based on an analysis of Madagascar's university graduates' unemployment rates. We looked at how a person's personality traits could affect their job search. A semi-structured questionnaire was adapted from prior research and tailored to the subject of the study (Zhao et al., 2019, 2022a, 2022b; Wang & Sohail, 2022; Mustafa et al., 2022d; Rasool et al., 2017; Shahab et al., 2016; Sohail et al., 2013, 2014b, 2022a, 2022b). When establishing the research goals and gathering data, fundamental research ethics were taken into account (Rasool et al., 2017; Sohail et al., 2019b, 2021a, 2021b, 2022b, 2022c, 2022d, 2022e). Participants were informed that the data would only be used for research purposes and that they were not required to provide answers (McCusker & Gunaydin, 2015). Lack of Awareness (LOA), Lack of Opportunity (LOO), Lack of Proper Skills (LOPS), Over Qualified (OQ), Unemployment (U), and Weak GDP were the main research indicators (W-GDP). In this study, 450 fully completed questionnaires from the study region were gathered, and a pre-test was conducted to ensure the accuracy of the data and prevent any inconsistencies. This information was gathered from a few recently graduated students. Data was gathered online via social media platforms, email, and WeChat (Liu et al., 2022; Muhammad et al., 2014; Sohail & Delin, 2013; Sohail et al., 2014a, 2015, 2019a). Data must be very important for any research (Mahfooz et al., 2017, 2019, 2020). The data was then entered into PLS-SEM and SPSS 24 for further analysis. PLS-SEM is used to analyze data to examine relationships between variables since it is one of the best methods for forecasting outcomes and is frequently advised for predicting and evaluating explained variables to account for the greatest possible variation. Hair, Howard, and Nitzl 2020 use PLS-SEM to analyze data to examine relationships between variables since it is frequently advised for forecasting and evaluating explained variables to account for the greatest possible variation and because it is one of the best methods for prognosticating outcomes (Hair, Howard, & Nitzl, 2020). PLS-SEM allows for the use of smaller sample size while producing better results than other methods. In addition, it can conduct concurrent internal and external processing on all the models. This kind of data collection may be used to investigate intricate route models (Hair Jr. & Sarstedt, 2021). Recent academic research has shown that the PLS-SEM approach's popularity in management science may be at least largely attributable to its potential advantages (Mustafa, Qiao, et al., 2022a). As a result, it appears that the PLS-SEM technique is the best choice for this investigation.

Since the model considers the non-linear account interactions, a two-stage analysis is more beneficial. To guarantee the precision and dependability of the assessments of the constructs, a route modeling technique based on PLS is examined twice. To make an inner model or link between the latent components, first, the validity and reliability of a structural model are looked at, and then the convergent validity is looked at.

3. Results and Discussion

This study's foundation is an analysis of the unemployment rate among university graduates in Madagascar. We looked at how a person's personality traits could affect their job search. A total of 450 completed questionnaires were gathered to examine the potential relationships between the control variables, IV, and DV in the future. We have compiled the participant's age, gender, and education to understand our study sample and its features. Researchers believe that certain multivariate assumptions must first be established before conducting a multivariate inquiry (Mustafa et al., 2022a, 2022b, 2022c). It is crucial to consider both the convergent and discriminant validity of the indicators and constructs when analyzing measurement models (Hair, Howard, & Nitzl, 2020). In order to examine whether or not the construct indicators give a suitable evaluation of the research variables, we put them through a variety of tests to put them to the test. We were able to assess the reliability of the instrument by using item loading and Cronbach's alpha. The composite reliability, also known as CR, and the average variance extracted (AVE), both measures used to show the degree of variance in indicators compensated for by the latent construct, are also utilized. These measurements are both referred to by their respective acronyms, AVE and CR. The dependability of each uses the factor loadings on the related structures (Table 1, Figure 2). For a component to be regarded as important, the outer loading must be more than or equal to 0.6 (Hair et al., 2020). For all constructions, it is advised that the Cronbach's Alpha value be more than or very near to the suggested cutoff of 0.7 in order confidence. This will increase the reliability of the findings (Werts, Linn, & Jöreskog, 1974). The composite reliability (CR) of the constructs was assessed in addition to only using Cronbach's alpha. The conventional approach was replaced by this (Werts, Linn, & Jöreskog, 1974). It is generally agreed that a value between 0.6 and 0.7 denotes an adequate degree of reliability and a value between 0.8 and 1.0, is a very good level. Values above 0.95, however, may indicate redundancy, so they are not always a favorable sign (Hulin, Netemeyer, & Cudeck, 2001). These findings are further supported by the results' strong reliability ratings, which are greater than 0.7. Cronbach's alpha, or how closely connected a group of things are to one another, is measured by Cronbach's alpha. It is regarded as a gauge of large-scale dependability. Even if alpha has a "high" value, the measure may not be one-dimensional. Lack of Awareness (LOA) is equal to 0.714, Lack of Opportunity (LOO) is equal to 0.852, Lack of Proper Skills (LOPS) is equal to 0.738, Over Qualified (OQ) is

equal to 0.785, Unemployment (U) is equal to 0.939, and Weak GDP (W-GDP) is equal to 0.890 (Hair, Howard, & Nitzl, 2020; Hair Jr. & Sarstedt, 2021). These findings demonstrate that the dataset contains sufficient data for additional study.

Variables	Items	Loadings	T-Value	VIF	α	CR	AVE
	LOA1	0.722***	16.273	1.341			
Lack of awareness	LOA2	0.790***	22.327	1.550	0.714	0.824	0.842
(LOA)	LOA3	0.626***	9.939	1.166	0.714	0.824	0.042
	LOA4	0.794***	25.106	1.534			
	LOPS1	0.705***	14.160	1.470			
Lack of proper skills	LOPS2	0.715***	14.367	1.532	0 738	0.832	0 554
(LOPS)	LOPS3	0.788***	24.072	1.517	0.750	0.032	0.334
	LOPS4	0.765***	20.964	1.287			
	OQ1	0.820***	24.324	1.877			
Over Qualified	OQ2	0.853***	35.426	2.145	0 785	0 864	0.616
(OQ)	OQ3	0.612***	8.847	1.165	01700	0.001	0.010
	OQ4	0.831***	28.858	1.929			
	LOP1	0.830***	26.933	1.815			
Lack of opportunities	LOP2	0.715***	14.014	1.491	0.852	0.900	0.695
(LOO)	LOP3	0.898***	48.550	2.910	0.002	0.200	0.020
	LOP4	0.879***	38.032	2.941			
	W-GDP1	0.850***	38.292	2.241			
Weaker GDP	W-GDP2	0.893***	73.745	2.622	0.890	0.924	0.752
(W-GDP)	W-GDP3	0.859***	43.159	2.341	0102.0	00021	0,,,,,
	W-GDP4	0.866***	43.496	2.424			
	U1	0.860***	35.890	2.924			
Unemployment	U2	0.905***	74.997	3.394	0.913	0.939	0.794
(U)	U3	0.875***	61.835	2.910			0.794
	U4	0.922***	79.967	4.184			

 Table 1. Reliability and validity analysis.

Notes: $\alpha > 0.7$; CR > 0.7; AVE > 0.5; VIF < 5; ***Significant at p < 0.001.

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Figure 2. Measurement model.

One of the most frequently used methods for evaluating the discriminant validity of measurement models is the Fronell-Larcker criteria. This criterion states that the correlation between a construct and any other construct must be bigger than the square root of the average variance retrieved by the construct. The discriminant validity of the proposed model is evaluated using the Fornell-Larcker criteria and heterotrait-monotrait (HTMT) ratios (Hair et al., 2020; Hair Jr. & Sarstedt, 2021). The strongest significant correlation of variables in each column in Table 2 demonstrates that the Fornell-Larcker criteria have been utilized to demonstrate discriminant validity (Fornell & Larcker, 1981). The HTMT ratio methodology was proposed by Hensel, Ringle, and Sarstedt (2015) as a novel method to assess the existence or absence of discriminant validity. They asserted that the Fornell-Larcker criterion, even if it was effective for evaluating discriminant validity, could not tell the difference between the presence or lack of discriminant validity. This led directly to the use of the HTMT in the process of evaluating the discriminant validity. The HTMT values for each of the numerous criteria that were examined throughout this research are shown in Table 3. All of the HTMT values of the variables in this research are less than 0.90, which proves the discriminant validity of the variables and lets the experiment work and meet its goals (Henseler, Ringle, & Sarstedt, 2015).

Variables	STDEV	Mean	Lack of Awareness	Lack of Opportunity	Lack of Proper Skills	Over Qualified	Unemployment	Weak GDP
Lack of Awareness	0.064	0.079	0.736					
Lack of Opportunity	0.068	-0.164	0.406	0.834				
Lack of Proper Skills	0.056	0.354	0.392	0.207	0.744			
Over Qualified	0.061	0.214	0.574	0.330	0.358	0.785		
Unemployment	0.051	0.495	0.430	0.275	0.554	0.464	0.891	
Weak GDP	0.075	0.404	0.395	0.667	0.318	0.333	0.510	0.867

Table 2. Fornell-Larcker criterion.

Table 3. HTMT ratio.

Variables	Lack of Awareness	Lack of Opportunity	Lack of Proper Skills	Over Qualified	Unemployment	Weak GDP
Lack of Awareness						
Lack of Opportunity	0.524					
Lack of Proper Skills	0.542	0.249				
Over Qualified	0.784	0.401	0.463			
Unemployment	0.532	0.305	0.648	0.549		
Weak GDP	0.491	0.770	0.372	0.397	0.563	

The second step of the PLS-SEM evaluation process, which is divided into several parts, is the analysis of the structural model. The predictive relevance of the model, multicollinearity, the empirical importance of the path coefficients, and the level of confidence are some of the factors that should be taken into account while examining the structural path model. Additionally, it is crucial to assess the structural route model's dependability. To comprehend the data, this study analyzed the structural model following the principles given by Hair Jr. & Sarstedt (2021). We've put a model through its paces to look into the direct effects of several variables on LP. As a consequence, the PLS-SEM path analysis findings (Figure 3) gave an R2 value that demonstrated how well our model fits (Table 4).

PLS-SEM was applied to check the relationship among variables Lack of Awareness (LOA); Lack of Opportunity (LOO); Lack of Proper Skills (LOPS); Over Qualified (OQ); Unemployment (U); Weak GDP (W-GDP). Different techniques were used to check the relationships among variables. Following that, we carried out a bootstrapping test using 5000 replicates to evaluate the degree to which our findings were consistent with the hypothesis (Mustafa, Qiao, et al., 2022a). PLS-SEM direct path analysis revealed LOA -> U (β = 0.0.051; p < 0.444);



Figure 3. PLS-SEM path model.

Table 4. Path	analysis	(PLS-SEM).
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Statistical Paths	Beta (<i>β</i>)	Std. Dev	T-Value	P-Value	Hypothesis
LOA -> U	0.051 ^{NS}	0.066	0.766	0.444	Rejected
LOO -> U	-0.164***	0.067	2.466	0.014	Accepted
LOPS -> U	0.358***	0.057	6.317	0.000	Accepted
OQ -> U	0.215***	0.061	3.514	0.000	Accepted
W-GDP -> U	0.415***	0.074	5.579	0.000	Accepted
		Control V	ariables		
Age -> U	-0.111***	0.039	2.859	0.004	Significant
Gender -> U	-0.025 ^{NS}	0.040	0.635	0.526	Insignificant
Education -> U	-0.056^{NS}	0.040	1.392	0.164	Insignificant
\mathbb{R}^2			0.505		
Adjusted R ²			0.494		
Q^2			0.390		

***Significant at p < 0.001, **Significant at p < 0.05, NS: Not Supported; Lack of Awareness (LOA); Lack of Opportunity (LOO); Lack of Proper Skills (LOPS); Over Qualified (OQ); Unemployment (U); Weak GDP (W-GDP).

LOO -> U (β = -0.164; p < 0.014); LOPS -> U (β = 0.358; p < 0.000), OQ -> U (β = 0.215; p < 0.000); W-GDP -> U (β = 0.415; p < 0.000) are significant/insignificant values. These results offer support to hypotheses H1 rejected and H2-H5 accepted. As per the results of this model, we can say Lack of Opportunity (LOO); Lack of Proper Skills (LOPS); Over Qualified (OQ); Unemployment (U); Weak GDP (W-GDP). As per research results, we can say some reasons for unemployment are Lack of Opportunity (LOO); Lack of Proper Skills (LOPS); Over Qualified (OQ); Unemployment (U); Weak GDP (W-GDP). Age, gender, and education are considered as control variables under research, as per the results of the direct relationship among control variables and dependent variables age ($\beta =$ -0.111; p < 0.004), gender ($\beta = -0.025$; p < 0.526), and education ($\beta = -0.056$; p< 0.126). As per values of direct relationship among control variables and DV, age has a significant relationship with DV while gender and education did not show any direct relationship. It means gender and education do not have any direct relationship with unemployment but age or any other way word working experience can be a favorable control variable (Table 4 and Figure 3). Mathematical models can be used to depict a realistic relationship between parameters for the explanation of unemployment. This study offers a forecasting method and a way to determine the type of relationship existing between the variables. Multivariate parameters were subjected to a Pearson's correlation analysis; the results are shown in the highlighted numbers. All factors show a positive connection that ranges from strong to moderate. The descriptive statistics and correlation coefficient of these chosen variables are displayed in Table 5 as well. Lack of awareness (LOA), lack of opportunity (LOO), lack of appropriate skills (LOPS), over qualification (OQ), unemployment (U), weak GDP (W-GDP), age, gender, and education are some of the factors that need to be addressed. A method to examine the relationship between two or more variables is a correlation.

Variables	Age	Education	Gender	Lack of Awareness	Lack of Opportunity	Lack of Proper Skills	Over Qualified	Unemployment	Weak GDP
Age	1.000								
Education	0.178	1.000							
Gender	-0.208	-0.227	1.000						
Lack of Awareness	-0.136	-0.062	0.024	1.000					
Lack of Opportunity	-0.041	0.185	-0.118	0.406	1.000				
Lack of Proper Skills	-0.004	0.007	-0.040	0.392	0.207	1.000			
Over Qualified	-0.056	-0.050	0.065	0.574	0.330	0.358	1.000		
Unemployment	-0.153	-0.042	0.004	0.430	0.275	0.554	0.464	1.000	
Weak GDP	-0.056	0.167	-0.065	0.395	0.667	0.318	0.333	0.510	1.000

Tab	le 5.	Correlation	among	variable.
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Correlation values range from +1.0 to -1.00. The magnitude of the number, with 1 being the largest, determines the strength of the link. There is a considerable association among all the factors in the current study, and there is a medium-to-high correlation between various variables. All of the chosen factors were found to have a weak to moderate positive or negative relationship with each other (Table 5). This meant that all of the variables were important.

4. Conclusion

This study focuses on the factors that affect unemployment among recent graduates in Madagascar. This study raises awareness and offers suggestions for issues facing recent graduates that must be addressed immediately since they will worsen as they evolve. Not to be forgotten is the fact that many more graduates are still without jobs several years after receiving their degrees. Additionally, new fresh grads will be added to the list each year. Therefore, to lower the unemployment rate, the government, educational institutions, and individuals must all play a significant role. The study's results helped explain some of the things that affect the unemployment rate of recent graduates in Madagascar. The findings of this study showed that there is a relationship between DV and IV. The main indicators of research were: Lack of Awareness (LOA); Lack of Opportunity (LOO); Lack of Proper Skills (LOPS); Over Qualified (OQ); Unemployment (U); Weak GDP (W-GDP). In this study, 450 completed and filled questionnaires were collected from the study area and a pre-test was carried out to check the reliability of the data and to avoid any discrepancies. PLS-SEM was used to analyze data to check relationships among variables. PLS-SEM direct path analysis revealed that LOA -> U is insignificant, while LOO -> U; LOPS -> U; OQ -> U; and W-GDP -> U are significant. These results offer support to hypotheses H1 and H2 and H5 accepted. Age, gender, and education are considered to control variables under research based on the results of the direct relationship between control variables and dependent variables. Age was significant, while gender and education were insignificant. Before joining the workforce, graduates of an effective skills program will be knowledgeable and skilled. Additionally, it will result in proactive graduates, have strong work ethics, and can work through issues related to their jobs. In addition, by presenting more precise data, a study encompassing the entire population of Madagascar may be carried out to assess the actual situation of the research issue. Additionally, qualitative methods of analysis must be taken into consideration for future study. It is suggested that case studies of recent graduates be looked at to find out what the exact cause of unemployment is. This research was done in Madagascar and results may be used for Madagascar or some same type regions.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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