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An Analysis of Underemployment among Young Graduates: The Case of a Higher Education Institution in South Africa

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Abstract: Labour markets have undergone vast transformations over the last few years. There are arguments that employment and unemployment measures have not been adequate in understanding the complexities of labour markets. Research on labour underutilisation has focused on one side of the spectrum, which is just about the scarcity of jobs. However, there is more to the labour market than just scarcity of jobs, and many researchers believe unemployment is not a complete measurement of unused labour capacity, which is why this study aimed to investigate the existence of underemployment from the perceptions of young graduates themselves. In this regard, the definition of young people entailed those younger than 35 years as officially defined in South Africa. The study employed a primary data method of data collection in which an online survey was used to collect the necessary data from the alumni database of a South African university. The study used binary logistic regression to determine factors that contributed to or influenced underemployment status. The main findings indicated that underemployment was rife according to age, where younger graduates (20–29 years) were more likely to be underemployed compared to their more mature counterparts; that is, those in the 30–34 age category, with non-White graduates most likely to encounter underemployment compared to their counterparts. This study resulted in important findings that carry significant policy implications and recommendations that may be crucial in correcting the current employment mismatches in the South African graduate labour market.

Keywords: graduate underemployment; South Africa; university graduates; youth

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1. Introduction

Labour market analysis and all its aspects have undergone vast transformations over the years. Numerous studies argue that employment and unemployment measures have not been adequate in understanding the growing complexities of labour markets (Lacmanovic et al. 2016; Wilkins and Wooden 2011). Pisica et al. (2015) and the International Labor Organisation (ILO 2016a) also reiterated that unemployment figures over the years have understated the magnitude of labour market challenges confronting young people. There are times when an individual would have been employed but is in a job that is not fulfilling his reservation hours or skills and qualifications. Such a situation is referred to as underemployment. The integration of young people into the labour market, as well as their skills and educational development, are all critical to acknowledging a thriving, sustainable, and fair socio-economic environment (ILO 2016a). High structural unemployment and underemployment amongst young people are identified as severe risks confronting the global economy. Increased probabilities of unstable employment fuel this in the future as many employers resort to non-standard work arrangements (Berglund et al. 2017; ILO 2020a). In sub-Saharan Africa, young workers are struggling with poor quality and precarious employment despite low unemployment rates compared to other sub-regions (ILO 2020a). In sub-Saharan Africa, these kinds of employment affect more

than 95% of employed young people (ILO 2020a, 2020b). The COVID-19 pandemic has also exacerbated the situation for young people. They face even higher unemployment and underemployment rates than before, and are most likely to be in employment affected by the pandemic-linked lockdown restrictions (Gould and Kassa 2020).

Underemployment, in particular, is also becoming a more significant concern than youth unemployment, especially in sub-Saharan Africa, which is distressing a large proportion of young people (Flynn et al. 2017; African Development Bank 2019). While 10 to 12 million young people enter the labour market each year, only 3 million formal jobs are created by African countries, leaving the majority of the youth unemployed or forcing them to settle for low-paid and low-productive jobs in the informal sector to make ends meet (Penar 2021). Education is also proving to be a non-guarantor of employment, with graduates affected by poor employment prospects. According to the "*2020 Global and regional trends in youth employment*" report, great mismatches between demand and supply have been more acute for young people than adults in all regions of the world, South Africa not excluded (ILO 2020b). These mismatches have been pervasive, with some studies identifying them as systemic (Mogomotsi and Madigele 2017) and connected to many factors. In South Africa's case, while the widening of higher education following the end of apartheid increased the supply of graduates to the labour market, demand was not growing at the same pace, with the subsequent outcome of an oversupply of graduates (Graham et al. 2019, p. 362).

Graduate employability is a fundamental issue that is not just about quantifying job finding rates using "*destination statistics*" (Harvey as cited by (Nabi 2003)). However, it is also about graduates being better prepared and having jobs that enable them to be better individuals contributing positively to societal growth and development. Many young people are working but do not earn enough to lift themselves out of poverty, which raises the concern that they may be experiencing underemployment. Even though many economies have been trying to expand wage work among young people, evidence shows that has not necessarily implied stable employment with income security and legal and social protection, especially given the rise in temporary, casual, and "gig" work (ILO 2020b, 2017). Recent evidence from South Africa shows that non-standard employment had a major influence on strike actions, including violent strikes causing substantial interruptions in production and reputational risks for the firm in the longer term (ILO 2016b). In the 2018 labour and skills supply and demand study on Gauteng, Limpopo, and KwaZulu Natal, 32% of those regions had increased part-time employees, which had important implications for the development of skills (Manufacturing, Engineering and Related Services Sector Education and Training Authority (MerSETA) 2018). Employers are less likely to invest in skills for casual labour or may only concentrate on basic training (for the immediate job at hand), which does not contribute to the holistic development of people.

Usually, the wage penalty from these kinds of employment is extensive, implying that people cannot lift themselves out of poverty. For young people, the decision to settle for substandard employment is fuelled by the growing number of people with university qualifications, which raises the competition for jobs (Ndebele and Ndlovu 2019). For example, according to (Lilenstein et al. 2016), an estimated 34% of all workers in South Africa are in both low-wage employment and poverty, and not surprisingly, those people in low-skill jobs are black. Similarly, average monthly wages are below ZAR 1500 (which is equivalent to approximately USD 102.01 using the 2016 average exchange rate for the US dollar and the Rand) for black and Coloured young people increasing to an average of ZAR 3000 (equivalent to approximately USD 204.01) by the age of 35; in the meantime, average monthly wages for a White young individual begin at ZAR 3000 (equivalent to approximately USD 204.01), increasing to an average of ZAR 13,000 (equivalent to approximately USD 884.06) by the age of 35 (Salisbury 2016).

Low university completion rates amongst young South Africans have also added to the challenge (Wangenge-Ouma 2013). For young people in South Africa, entering the labour market at an early age perpetuates the likelihood of being in precarious employment,

which is characterised by low wages, amongst other factors. Despite acknowledging the value of education as promoting positive employment outcomes, the decision to enter the labour market early is propagated by limited resources such as finances and poverty (Mlatsheni and Ranchhod 2017). In deciding for earlier labour market entry, these young people often end up accepting any work, which often is low-paying and mediocre, to increase their family income and, therefore, look after themselves and their families. The failure to gain the right skills and education can make young people vulnerable to unstable, insecure, and low-paying employment. If they do not find any work, they may be prone to lengthy spells of unemployment (World Development Report 2007). Persistent vulnerable employment in the environment of an increasing and young working-age population has the potential to compromise forthcoming development opportunities (ILO 2018). Almost all policies, including the country's main policy document, the National Development Plan (NDP), stress the importance of education and training and economic growth that will absorb the growing labour force. The contention is that regardless of the government's dedication to the advancement of skills and education, including growth and employment creation, employability difficulties, despite everything, remain (World Bank 2014).

While several studies have been done on employment amongst young people in South Africa, little or no consideration has been given to the subjective valuation of employment by the employed graduates, and although this has been informative and useful, there is a threat of overlooking the kinds of jobs that graduates are in, and whether their education, skills, and abilities are being efficiently utilised or not. Though underemployment seems to have become progressively widespread in the labour market, only a slight body of research on the topic at present exists (Abel and Deitz 2016). Even amongst graduates, there is still a lack of research that goes beyond employment to determine the state of jobs. There are still many gaps in the literature on underemployment amongst graduates in South Africa, given the lack of research. This gap suggests that graduates are probably likely to encounter labour market prospects even after employment, but this is still not clear. There is, therefore, a need to investigate the subjective valuation of employment by employed graduates. This is especially true given the importance that governments attach to acquiring education for better employment prospects.

2. Literature Review

2.1. Underemployment as a Theoretical Concept

From a broader perspective, underemployment fundamentally reflects a gap between an individual's longings and their surroundings (Maynard and Feldman 2011; Luksyte and Spitzmueller 2011; Allan et al. 2017), particularly in their employment. Underemployment is multi-dimensional, and as reasoned by Feldman (1996), its scope encompasses being overqualified for a job, being involuntarily employed in a job that is not related to one's field, having more skills and experience than needed, being forced to accept non-standard employment on a part-time or temporary basis, or being in a job that pays less income than the last job or relative to one's peers.

Quite a few theories have been connected to underemployment, such as the theory of career mobility, the human capital theory, relative deprivation theory, and person–job fit theory. These theories have endeavoured to elucidate the reasons behind underemployment. For instance, as indicated by the person–job fit theory, underemployment emerges due to the gap between worker capabilities, such as skills and knowledge, and the demands of their jobs (McKee-Ryan and Harvey 2011). This, in turn, will cause the workers to be dissatisfied with their jobs and, in consequence, be more inclined to quit (Lee 2005). On the other hand, the relative deprivation theory contends that underemployment comes about when workers contrast themselves with ideal or perfect work circumstances, or even their peers who hold practically identical skills, education, experiences, and qualifications (Feldman et al. 2002; Luksyte and Spitzmueller 2011). In other words, the workers feel less satisfied with their current job since it does not match where they feel they should be (i.e., the current job comes shortly).

The human capital theory argues that underemployment arises because of the disparity between individuals' human capital and their work or employment prerequisites (Becker 1964). In line with the analysis of the proposed study, underemployment will be related, for example, to the theoretical foundations of a number of theories, including human capital, person–job fit, and relative deprivation. Thus, this study departed from the perspective that in general, underemployment arises because a person's current job is deemed inferior by some standard; and also from a graduate perspective, underemployment is a result of a mismatch between a workers' skills and competencies and their job and its demands. From one side of economics, underemployment is mainly due to an economy that is characterised by low demand, which often results in firms deciding to adjust labour utilisation of the actual labour (Weitzman 1982; Biddle 2014).

On the other hand, underemployment arises due to mismatches between educational achievements and job requirements (Barnichon and Zylberberg 2019) or even certain institutional factors which force people to be in underemployment (Ihlanfeldt 1999). Underemployment, therefore, represents a deviation from equilibrium, which is often referred to as a disequilibrium state (Pagano 1990). In particular, aspects of theories such as the theory of career mobility advocate that education furnishes people with human capital, which eventually increases their future income and improves their career path (Sicherman and Galor 1990). Even the theory of human capital has reinforced the idea that employment benefits improve with education and training received (Becker 1964; Krul 2010). However, these theories have been subject to criticism, particularly in countries characterised by high unemployment rates, youth issues, and especially graduates who seem to struggle to find employment even after graduation (Jamoussi and Gassab 2011; Van Broekhuizen 2016). Be that as it may, most researchers from either discipline would agree that both economic and sociological forces have some role in influencing labour market outcomes. Growing underemployment may be taken as a sign that the economy is moving away from equilibrium, mirroring the presence of the labour market's inability and inefficiency in matching workers to jobs (Green and Henseke 2016). As much as these theories provide a good explanation for underemployment, no single theory offers a comprehensive explanation (Grapsa 2017), given that underemployment is a multidimensional and complex construct.

2.2. Emirical Measurement of Underemployment

Lester and McCain (2001) understood the idea of underemployment to consider both the capacity and inclinations, which were connected basically to human capital. Accordingly, underemployment would undoubtedly arise when a worker is employed in a job that is lower by certain standards (McKee-Ryan and Harvey 2011). Put differently, this implies a deviation between a worker's expectations or desires and characteristics of their job (Luksyte and Spitzmueller 2011). The worker who can only find part-time work even though they seek full-time work; the "downsized" worker who has been compelled to take a job that is not within their area of expertise with a specific end goal of avoiding unemployment; the full-time temporary worker who has abilities, knowledge, and capabilities equal to those of her permanent colleagues, but who is categorised as impermanent and deprived of benefits—these cases may all fit into underemployment (Lester and McCain 2001). The African Development Bank (2012) refers to underemployment as "vulnerable employment", which essentially signifies workers in unprotected forms of employment, with low productivity and high risk of poverty.

The ILO (2005), on the other hand, recognises that underemployment is a broad predicament that includes "persons who even though they worked or had a job during the reference week, they were willing and available to work better or more adequately". However, the ILO provides a definition that inherently limits underemployment to involuntary part-time work, inter alia, time-related, which is visible and easily measured, since there are concerns relating to other measures of underemployment (Addy et al. 2012).

Other researchers have gone beyond the ILO definition to explain underemployment as a situation in which a worker is in a position that underutilises their skills and abilities

(McKee-Ryan and Harvey 2011)—implying that their current job is inferior to a specified norm or alternative employment. For Greenwood (1999), underemployment involves people who, even though amid the reference or overview period had an occupation, were eager and accessible to work better or more adequately. Couriel (1984) reports two ways in which underemployment can be defined: first, as working a limited number of hours; and second, by the low income a person receives given the conditions of productivity in which they work. This means that an employed person becomes available for more hours of work to increase their wage and salary income (Wilkins 2006). Ross and Bateman (2019) based their definition of underemployment on the proportion of those working full-time but earning less than minimum wage.

3. Methodology

3.1. Research Design and Sample

This study was primarily an empirical analysis that was based on primary data collected through an online electronic survey. The questionnaire was stored in a Google Forms server, on which the questionnaire had a unique link to be followed by the respondents. This link, together with the cover letter (informed consent), was sent through to the alumni database of the university in question, inviting interested participants to complete the questionnaire. Given the shortage of studies on graduate underemployment in South Africa, only limited studies were found at the time of writing (e.g., see Baldry's (2013) study, which aimed to examine the influence of demographic and educational characteristics on the employment/unemployment status of South African graduates, and had a sample of 1175 respondents). The overall sample size in this study, disregarding the respondents' age, was 1072, where graduates younger than 35 were only 576 in total. According to Avikaran (1994), for multi-variate statistical analysis to be employed, the sample size was recommended to be more than 200, which rendered this study's sample size statistically adequate.

The questionnaire, which was inclusive of demographic, higher education, and employment information, was distributed to the university's alumni database in question. Since the study used a survey type of research, a quantitative research design was deemed suitable and fit for the study. After data sorting, the data to be used for the analysis was limited to only graduates between the ages of 15 to 34 years to fit in the young graduate category. This age selection was also based on Stats SA (2019) findings that young people in the age category of 15–34 years tend to be more disadvantaged in the labour market, and are most likely to encounter negative employment outcomes. Thus, the selected age category fit within this finding. The definition of young people differs from country to country, and in some instances, a more flexible definition of young people reflects national realities (United Nations Development Programme 2014). Therefore, this definition of young people fell under the South African National Youth Policy (2020). The study targeted at least graduates who had completed at least a bachelor's degree at university. The reason for selecting the university in question was mainly due to findings that graduates from historically advantaged higher education institutions (HAI) seem to enjoy the more effective job search and employment success than graduates from historically disadvantaged higher education institutions (HDI) in South Africa (see Moleke 2009; Baldry 2013; Van Broekhuizen 2016). However, there is still little empirical data that has been collected to state that graduates from HDI were also likely to be underemployed.

The questionnaire was approved with ethical clearance and the study complied with ethical principles of academic research, in which respondents could participate in the study out of free will and withdraw their participation. Confidentiality was also ensured, and all responses were only used for statistical purposes. For ethical reasons, the study did not disclose the name of the university where graduates were sourced under any circumstances. After the successful design of the questionnaire, ethical clearance was applied before the Research Data Gatekeeper Committee of the university in question, and permission to do the study was granted with Ethics Reference number: ****-GK-2018 (the use of (*) is meant to*

protect the identity of the university in question—the ethical clearance certificate can be provided upon request).

In designing the questionnaire of the current study, careful attention was paid to the respondents in mind, ensuring that the questions asked were not only less confusing, but also still assisted in answering the research problem (Salkind 2012, p. 149). The survey ideas were mostly adopted from the various ILO International Conference of Labour Statisticians (ICLS) working documents to try to go beyond unemployment and focus on other forms of labour force underutilisation, particularly underemployment and inadequate employment situations. In addition, more ideas were adapted from the BLS Alternative Measures of Labour Underutilisation, since the USA is one of the countries globally that comprehensively measures labour underutilisation over and above unemployment. This was important, since Stats SA only measures time underemployment, so using questions from the ILO and BLS provided an opportunity to now measure and understand underemployment more broadly in the South African context. More ideas were also taken from the literature review.

The questionnaire underwent a peer-review process to make certain that there were no technical and applicability issues. The pilot testing of the survey (15 respondents) also confirmed that the time needed for the questionnaire completion was less than the prescribed 20-min duration, and only took 10 min to complete (McDaniel and Gates 2013). All this information was indicated in the cover letter with the questionnaire link sent to the respondents. Once online, the first page had clear instructions about how the sections should be completed, and upon having read these, the respondents had to provide consent regarding whether they agreed to complete the survey or not.

3.2. Analysis of the Data and Model Specification

The data as captured were analysed using IBM Statistical Package for Social Sciences (SPSS) Version 26-2020. The study used the descriptive and statistical approaches of analysis on the data set. The choice of empirical model was somewhat influenced by the nature of the outcome variable, data type, and objectives. This study used a binary logistic regression to determine factors that influenced underemployment status. A binary logistic regression allows the response variable to have two alternatives. In other words, it allows for two categories of the dependent variable. In general, regardless of which specific logit model has been chosen, logistic regression is highly effective and accurate in estimating the probability that an event will occur (Sarkar and Midi 2010), and its usage has become very important in social sciences. Initially, one considers the case in which the response P_i is binary; in other words, taking on only two values that for convenience were coded as 0 or 1 (Gujarati 2004), defined as:

$$P_i = \frac{1}{1 + e^{-(\beta_1 + \beta_2)}} \tag{1}$$

Equation (1) can also be expressed as:

$$P_i = \frac{1}{1 + e^{-Z_i}} = \frac{e^z}{1 + e^z} \dots \tag{2}$$

where $Z_i = \beta_1 + \beta_2 X_i$.

Equation (2) is known as the logistic distribution function. Thus, as Z ranges from $-\infty$ to $+\infty$, P_i ranges between 0 and 1 (Gujarati 2004). This equation is basically linearised by stating the ratio of the probability of the success event to that of the complement in the case of a binary variable, which is also known as the odds ratio, which is given as follows:

$$L_i = ln\left(\frac{P_i}{1 - P_i}\right) = \beta_0 + \beta_1 X_i \tag{3}$$

where P_i stands for probabilities of either being underemployed or not, and X_i is the various explanatory variables that predict the probability of whether the individual is underemployed or not. For estimation purposes, Equation (3) has the error term, and all the other explanatory variables were included as follows:

$$L_i = ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1 X_1 + \ldots\ \beta_n X_n + u_i \quad (4)$$

Therefore, the dependent variable was the probability of being underemployed, where a yes response was coded as 1 and a no response was coded as 0. Therefore, if the individual was underemployed, $L_i = ln\left(\frac{1}{0}\right)$, and if not underemployed, $L_i = ln\left(\frac{0}{1}\right)$. β_n constant terms associated with $\mathcal{X}_n$ were the categorical values that were entered as dummies, where the number of dummies will be n − 1, and n is the number of categories. This means that the number of variables required was one less than the number of groups that were recorded (Field 2018). Henceforth, when there were five categories, four dummies were created, and the fifth dummy served as the baseline or reference point against which all other groups were compared.

Applying the discussed model as shown in Equation (4), the regression for the aforementioned empirical objective will have all the variables of interest formulated as follows:

$$L_i = ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1 X_{MS} + \beta_2 X_{Loc} + \beta_3 X_{car\_guid} + \beta_4 X_{age} + \beta_5 X_{race} + u_i \quad (5)$$

where β_0 represents the intercept term of the regression; $\beta_{1,2,\ldots,n}$ are the coefficients for the corresponding independent variables $X_{1,2,\ \ldots,\ n}$; and U_i is the error term of the regression.

The explanatory variables included in the model were marital status, geographical location, career guidance, age, and race; these were assumed to influence underemployment status. The choice of these independent variables was guided by the results of the cross-tabulations based on the statistically significant relationships. The choice of these specific variables was determined by the fact that pre-analysis showed that none of the other variables, such as levels of education, gender, or field of study, were statistically significant, which was different from the findings of those such as Abel and Deitz (2016) and De Anda and Sobczak (2011). Table 1 elucidates the coding of the explanatory variables, including a description of the used dummy variables.

Table 1. Explanation of the explanatory variables in the ANOVA model.

Variable	Description	Coding/Dummy
MS	Marital status	Categorically defined as 1 = not married (single or widowed); 0 = married (married and living together)
Loc	Geographical location	Categorically coded as 1 = urban; 0 = rural
Car_guid	Career guidance	Categorically defined as 1 = received and 0 = not received
Age	Age	3 dummy variables created as follows: $\mathcal{D}_1$ defined as 1 = 20–24 and 0 = otherwise; $\mathcal{D}_2$ defined as 1 = 25–29 and 0 = otherwise; $\mathcal{D}_3$ defined as 1 = 30–34 and 0 = otherwise; 30–34 = reference group
Race	Population group	3 dummy variables created as follows: $\mathcal{D}_1$ defined 1 = Black and 0 = otherwise; $\mathcal{D}_2$ defined as 1 = Asian/Indian and 0 = otherwise; $\mathcal{D}_3$ defined 1 = Coloured and 0 = otherwise; White = reference group

Source: compiled by author.

To determine the usefulness of the model, various tests were conducted, including, but not limited to, the Cox and Snell R-squared and the Nagelkerke R-squared, and Hosmer–

Lemeshow goodness. The next section presents an analysis of the data and discusses the results.

4. Results

This section provides a discussion relating to the demographic profile of the sample. Further explanations are directed towards the economic aspects of the sample, including their employment and underemployment status, and the duration of unemployment. Table 2 shows the demographic composition of the sampled graduates. In particular, 28.6%of the participants were between the ages of 20 and 24, 44.7% in the 25–29 age category, and 26.5% were between the ages of 30 and 34 years. From the figure, it is clear that there were more female respondents, at 62%, than males, at 38%. The Department of Higher Education and Training reports large gender distribution gaps between males and female students in enrolment and graduations in higher education, where there are more females than males (Department of Higher Education and Training 2020). In terms of underemployment status, approximately 45% of the participants considered themselves underemployed, while about 55% were not underemployed. It was also interesting to find that an estimated 63% of the underemployed graduates desired to change their jobs at the time of the survey or had another job in addition to their main one. This was further confirmation of the frustration that graduates experience in their jobs, being that they were underemployed. In other words, their jobs at the time were not fulfilling to them, and hence were inferior by some standard, be it income, time, or skills (McKee-Ryan and Harvey 2011). These findings also confirmed what was advocated in the literature review: that young graduates encounter substantial barriers in the labour market compared to their adult counterparts.

Table 2. Demographic background of the participants.

Aspect	Sub-Cat.	%	Aspect	Sub-Cat.	%
Age	20 to 24 years	28.6	Broad underemployment status	Underemployed	45
	25–29 years	44.7		Not underemployed	55
	30–34 years	26.5	Employment status	Employed	82.6
Race	Black/African	33.5		Unemployed	17.4
	Coloured	2.8	Geographical location	Urban/City	80
	Asian/Indian	1.2		Rural/Township	20
	White	62.5	Marital status	Married/living together	34
Gender	Male	38		Not married/Living alone	66.5
	Female	62			
Desire to change job/have another job in addition to present one	Yes	67.7	Education level distribution	Bachelors	40.6
	No	32.3		Honours	32.8
				Masters	18.8
				Other	7.8

Source: calculations from survey data.

Some cross-tabulations were done as part of a detailed descriptive analysis. Surprisingly, the study found that out of the total number of underemployed participants, 59.9% where White, followed by 35.8% blacks, 3.8 % Coloured, and 0.5% Asian/Indians. However, within each race group, the findings still mirrored themes that emerged from the literature (e.g., Bell and Blanchflower 2013, 2018; Branson et al. 2019), that underemployment is more prevalent among non-White workers. Specifically, within the Coloured race, 72.7% were underemployed, while within the black race, 53.3% of participants were underemployed, while only 40.8% were within the White race. The majority of underemployed participants

were in the economics and management sciences (EMS), with 38.6%, followed by those in the humanities field (Human) with 18.9%, and engineering (Eng) with 12.6%. Within each study field, 1 in 10 participants that studied engineering, 7 were skills-underemployed, and 6 were within the EMS and health sciences (HS) field, followed by 5 in agriculture and natural sciences (Agri sci) and humanities.

It was interesting to note that of all the participants who felt if they started over, they would change their initial courses; 56% were underemployed, which could indicate that some of the graduates were in jobs in which their fields of studies were irrelevant. Another significant finding was related to career guidance and whether it may have a relationship with underemployment status. The results showed that 63.4% of the graduates who considered themselves underemployed had not received any career guidance. What came out of literature was that many graduates did not make use of career guidance facilities during their studies (e.g., Cape Higher Education Consortium 2013). In this study, sampled graduates were asked to provide reasons, and 43.3% did not know about such services, which raised concerns about the visibility of university career centres and whether are they doing enough to attract students. Perhaps another issue could be whether regular recruitment drives are being hosted or not. Be that as it may, it could be argued that perhaps having career guidance only at the university level is too late in assisting students in selecting adequate courses, and that such services through mentorship programmes and psychometric testing must be enforced in the curriculum at the basic education level (e.g., at the start of secondary schooling). As argued by Robertson (2019, p. 2), "*Where the choice of career pathway is informed by good guidance, work is more likely to be rewarding, consistent with an individual's needs and values, and as a result more likely to be sustainable over time*".

Before the regression analysis was performed, it was important to determine whether the chosen model fit with the data (see Table 3). The model fit was measured by conducting the Omnibus test of model coefficients, which showed an overall indication of how well the model performed, also referred to as a goodness of fit (Pallant 2010). The Omnibus test rested on the null hypothesis that the model was a bad fit with the data that was used. The results obtained from the regression model showed a chi-square statistic of 24.638 with 13 degrees of freedom and a p-value of 0.026, which inferred the rejection of the null hypothesis at the 5% level of significance, and hence was indicative of a good model fit. Another test was conducted to determine the model fit, the Hosmer and Lemeshow test, which was based on the null hypothesis that the model was a good fit with the data, which was opposite to one in the Omnibus test, in which the former looked for a significant value of more than the mentioned (Pallant 2010). The results in Table 3 show a chi-square statistic of 3.598 with a significant value of 0.825, implying that we failed to reject the null hypothesis of a good fit. Therefore, the model was a good fit at the 5% level of significance. The variables in the models were also tested for multi-collinearity. As such, the variance inflation factor (VIF) results indicated that there was no cause for concern regarding multi-collinearity between the variables in the model, with the VIF values at less than 2 and the tolerance values being greater than 0.1 (Field 2018).

Finally, Table 4 reports the results of the binary logistic regression model. In this case, being underemployed, since "*underemployed*" was coded as 1 and "*not underemployed*" was coded as 0. The chosen p-value was 10%, $\alpha = 0.1$ significance level, since most of variables in the study became significant when considering the 10% significance level. According to Gujarati and Porter (2010, p. 506), 1, 5, and 10% are commonly used values of α. This significance level was also chosen mainly because of the low sample size in this study. As argued by Labovitz (1968, p. 220): *"Small error rates (0.01 or 0.001) should usually accompany large samples sizes N and large error rates (0.10 or 0.05) should be used for small sample sizes N"*.

Table 3. Diagnostic tests and summary results for the binary logistic regression model.

Omnibus Test of Model Coefficients		**Hosmer and Lemeshow Test**	
Chi-square = 24.638	*p*-value = 0.026	Chi-square = 3.598	*p*-value = 0.825
−2 Log Likelihood = 618.418	Cox and Snell R-squared = 0.151	Nagelkerke R-Squared = 0.169	
Test for Multicollinearity			
(Constant)	**Tolerance**	**VIF**	
Race	0.573	1.746	
Age	0.912	1.097	
Geographical location	0.577	1.732	
Career guidance	0.944	1.060	
Marital status	0.893	1.120	

Source: calculations from survey data.

Table 4. Binary logistic regression results.

Variables	**B**	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Constant	10.721	0.229	9.896	1	0.002 *	0.486
Age (20 to 24)	0.38	0.277	1.882	1	0.17	1.463
Age (25 to 29)	0.412	0.229	3.232	1	0.072 *	1.509
Marital status (not married)	0.352	0.213	2.719	1	0.099 *	1.421
Geographical location (urban/city)	−0.654	0.243	7.229	1	0.007 *	1.924
Career guidance (received)	−0.518	0.206	6.333	1	0.012 *	0.596
Race (Black)	0.425	0.209	4.124	1	0.042 *	1.53
Race (Indian/Asian)	−0.737	1.165	0.4	1	0.527	0.479
Race (Coloured)	1.27	0.691	3.376	1	0.066 *	3.561

Note: Dependent variable: underemployment status. Predictors: (constant), age, marital status, geographical location, career guidance, race. Age: 30–34 is the reference category; race: White is the reference category. * Significant at 0.1 level of significance. Source: calculations from survey data.

The first independent variable in the regression model was age, which was a categorical variable with three categories. The last age category (30–34) was used at the reference point. The results in Table 4 shows that age (25–29) had a *p*-value of 0.072, which was statistically significant at the chosen level of significance, and an odds ratio of 1.509. The positive coefficient implied that graduates in the 25 to 29 age category had a higher probability of being underemployed than the reference group (30 to 34), and that the odds of them being underemployed was 1.509 times higher compared to their counterparts (30 to 34). The age group of 20 to 24 was not significant. In their study, Beukes et al. (2017) found the incidence of underemployment to be the highest among those between the ages of 24 and 44 years. Felstead and Green (2013) found higher underemployment rates among young people aged 20–24 years. Young people in this age category were most likely to be working part-time, which was most likely to be involuntary (Stats SA 2020). The lack of working experience and graduating in courses irrelevant to the needs of the labour market were often one of the main reasons many people would find themselves working fewer hours and earning less income than desired. To clarify, Ahmed (2016) argues that an oversupply of over-educated workers often reduced the reservation wages, implying that those who were over-educated or over-qualified would still earn less than those who were not. Graduates who struggled to find employment within their studied education fields were most likely just to accept any employment (whether it was for survival or with the hope that they would have higher chances of good jobs in future), even the one requiring the level of education that was below the one they attained (Sharma and Sharma 2017).

Consequently, accepting such a job would imply fewer earnings, among other things, be underemployed by both skills and income.

The second independent variable in the regression model was marital status, which was dichotomously coded as 0 for married and 1 for not married. The results shown in Table 4 indicated that the variable had a *p*-value of 0.099, a significant factor at the 10% level of significance. The results further showed a B value of 0.352 and an odds ratio of 1.421, which meant that those who were not married had a higher probability of falling into the category of the underemployed, and that the odds of the occurrence were 1.421 times higher than their counterparts (married). Niyimbanira (2016), who examined time-related underemployment in South Africa, found that married individuals had less probability of being underemployed relative to single individuals. Grapsa (2017) also found that those who had never married had the highest likelihood of being over-skilled for their jobs. Wu and Eamon (2011) also found substantial employment problems among single females, including underemployment. To clarify, it could be argued that single individuals may probably have more time, hence the desire to use it to work. At the same time, their married counterparts do not wish to work more as a result of family responsibilities (Niyimbanira 2016). These findings were different from those of the study by Kent et al. (2018), which investigated the impact of socio-demographic characteristics on underemployment among those with and without cancer in the US, and found underemployment to be frequently prevalent among married cancer survivors, specifically married females. Similar findings were also reported for Ghana by Sackey and Osei (2006).

Geographical location was another explanatory variable in the regression model, and since it was a categorical variable, it was coded as 0 for rural/township and 1 for urban/city. The results presented in Table 4 show that graduates from urban localities had a coefficient of −0.654, meaning they scored 0.654 less than their rural counterparts on underemployment. Therefore, the implication was that urban graduates were less vulnerable to underemployment than their counterparts, which in other words implied that rural graduates were more vulnerable to underemployment. The *p*-value of 0.007 was statistically significant at the chosen level of significance. In determining how well South Africans do in their jobs, Grapsa (2017) found respondents less matched in rural areas, where they were also more likely to be undereducated. Rural workers were also reported to have a high likelihood of being less satisfied with their jobs than their urban counterparts. Given the nature of economic sectors in rural areas, people, particularly those in the youth category, were most likely to find part-time work that was low-paying and casual. Zizzamia and Ranchhod (2019) also found more probabilities of being in volatile employment for rural workers than their urban counterparts in South Africa. Similar findings were echoed by Stéphane (2019), who reported accentuated underemployment rates in rural over urban areas.

Another independent variable in the model was categorical career guidance, coded as 0 for not received and 1 for received. The results in Table 4 show that the estimated coefficient was negative at −0.518 and statistically significant, implying that those who received career guidance were less likely to fall into underemployment and that the odds of this was 0.596 higher than participants who did not receive career guidance. Career guidance helps with the effective functioning of labour and work. The longer young people stay in education and training, and the more complex labour markets become, the more important career guidance becomes (Musset and Kurekova 2018). According to Cedefop (2016), career guidance can also provide labour market and economic information that can assist students in making better career choices that will contribute to their development and better employment prospects. It could prevent many students from graduating from courses irrelevant to the needs of the labour market, thereby becoming prone to vulnerable employment.

The fifth variable included in the regression model was race, which was categorical with four categorical variables, and White was used at the reference point. The positive coefficient of 0.425 and the odds ratio of 1.53 meant that being black increased the probability

of being underemployed compared to the reference category White, and the odds of being underemployed increases by 1.53. Similar results were also reported for Coloureds, with a *p*-value of 0.066. The positive coefficient of 1.27 and odds ratio of 3.561 implied that the probability of a Coloured graduate being underemployed was more than that of a White graduate. The odds of this probability were 3.561, which were far higher than it even is for black people. These results mirrored what is indicated in the literature, that black people and Coloureds, particularly youth, are more prone to negative labour market experiences. Their transition to work is more difficult than young White graduates (Mncayi and Dunga 2016; Reddy et al. 2016; Beukes et al. 2017; Bhorat et al. 2017; Baidoo 2018).

5. Conclusions

Underemployment is a problematic component of the labour market, and typical labour market indicators are not enough to provide the true picture of the labour market. Understanding the dynamics surrounding labour markets has become a crucial point of departure in alleviating social ills such as poverty and inequality. This is especially true given the rise of other forms of labour underutilisation. With the prospects of stable and secure employment declining worldwide, young people are the most vulnerable and negatively affected. The main aim of this paper was to investigate the existence of underemployment among young university graduates. The use of primary data collection gave the study the chance to access data that was otherwise not accessible from secondary sources.

The main findings from the analysis was that age, in terms of graduates between 25–29 years, caused a higher likelihood of being underemployed compared to the reference category (30–34 years); the probability of underemployment was also high for unmarried graduates compared to their married counterparts. In terms of geographical location, the regression results found that urban graduates were less vulnerable to underemployment as compared to their counterparts, which in other words implied that rural graduates were more vulnerable to underemployment. Career guidance was also statistically significant in the model, as the study found that graduates who had access to career guidance services were less likely to fall into underemployment. These findings suggested the importance of career guidance as an incubator of the labour market and economic information that can assist students in making better career choices that will contribute to their own development and better employment prospects. Lastly, regarding race, Black and Coloured youth have an increased probability of being underemployed compared to their White and Asian/Indian counterparts. Being young and Black in South Africa, as reiterated in literature, despite the government's efforts to improve labour market outcomes of previously disadvantaged groups, is still associated with negative labour market outcomes and difficult school-to-work transitions. It was interesting to note that gender, and the education variables such as the level of education, were not significant based on prior analysis of the variables.

These results emphasised what is currently known: that more than two decades after democracy in South Africa, race is really an important factor in explaining the negative labour market, regardless of other factors. The situation is even worse for young people, who still find themselves at a disadvantage compared to their older counterparts. There is a need for an increased emphasis on improving the labour market attachment of young people, particularly Black and Coloured people. It is clear that young graduates are looking for better employment outcomes—they either want to earn enough income or find a job in which they feel fulfilled, and their skills/abilities are adequately used. These are concerning findings, particularly given that, despite the majority of young people being employed, almost half indicated that they were in jobs that were inferior by some standard. This justifies governments to not only focus on ensuring that people are employed, but even more so, to be concerned about the types of employment young people are in. The economy loses output and productivity through underemployment, and most importantly, poverty is perpetuated through meagre income. Other effects are also felt at both the firm and

individual levels. Governments need to work with higher education institutions (HEIs) and the private sector to try and prepare graduates better for work.

Efforts should be made to improve the labour market attachment of young people, particularly black youth. The attention on tending to unemployment should not divert from the conceivably similarly crucially important role of reinforcing the labour market attachment of young people who could be underemployed. Focusing exclusively on the unemployment rate or just time-underemployment numbers (as in South Africa's national statistical services) gives an incomplete image of the actual labour environment. There could be more employed young workers who are in "dead-end" jobs living in poverty than there are unemployed ones

There is also a need to revisit and reinforce the importance of career guidance education from early primary schooling. South Africa only created its initial draft of a curriculum framework for career guidance in basic education in 2020. This unfortunately is not a good indication. At the same time, HEIs need to strive for regular career guidance and recruitment drives, especially now more than ever, in the increasingly difficult labour market environment characterised by job–skill mismatches. This career guidance education needs to be intentional and future-driven, focusing on skills needed in the future; assisting with the knowledge that will lead to an informed career choice, and providing updated labour market information to help prepare for the future.

The study was not without any limitations, which can open up the scope for future research. Firstly, the results of the study should not be generalised to the South African youth graduate population. Another limitation is that it should be noted that there were not enough numbers to run analyses on key variables such as field of study and level of education, rather than the fact that these variables would not be associated with the types of underemployment. Nonetheless, this study still had important findings in the context of South Africa. In terms of future research, the same study could be tested on employed graduates older than 35, contributing to the existing literature on underemployment in South Africa. In addition, future research could attempt to understand how factors such as global digitalisation, career changes, and on-the-job training influence underemployment. Lastly, future studies could entail larger sample sizes for better predictions.

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