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Linear Predictors of Perceived Graduate Employability among South Africa's Rural Universities' Learners during the Covid-19 Pandemic

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Abstract. After the outbreak of Covid-19, universities in South Africa adopted blended learning and learning continued online. The outbreak of Covid-19 brought to light inherent problems that South African rural universities are facing in the utilisation of educational technologies. These problems include inadequate online support technologies, inadequate electricity supply and poor educator and learner technological skills. Resultantly, questions have been raised on rural university graduates' employability prospects and how these can be enhanced. This study provides evidence revealing that learner career ambition can be used as an intervention mechanism to enhance graduate employability among rural university learners. This study sought to determine whether online teaching and learning predict perceived graduate employability among rural university learners in South Africa. In addition, the study investigated whether learner career ambition moderates the relationship between online teaching and learning and perceived graduate employability. Quantitative data was gathered from 150 rural university undergraduate learners. Random sampling was used to select them. A survey approach was used to gather primary data and the research instrument was a self-administered questionnaire. Simple linear regression, and hierarchical regression analyses were performed. Results reveal that online teaching and learning predict perceived graduate employability, and learner career ambition negatively moderates the relationship between online teaching and learning. The study recommends that more research is needed to shed light on how ambition can be used to enhance graduate employability especially in online teaching and learning environments marred by poor information and communication technology infrastructure.

Keywords: Online teaching and learning; Covid-19; perceived graduate employability; learner career ambition

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1. Introduction

The acquisition of education remains an integral part of human life. From a human resources management perspective, education positively and significantly contributes to the economic value of an individual. The human capital theory further confirms this notion and points out that among other variables, education plays a critical role in the development of a person's skills set and other important attributes sought after by employers (Ployhart, 2006). The value that society places on education explains why in some societies it has arguably become the only hope for escaping poverty, that is, if or when an educated person successfully lands an attractive job after graduation. Although education remains critical in many human spheres, it is how education is acquired that has changed across the globe owing to unforeseen challenges, for example, the Covid-19 global pandemic (Bergdahl & Nouri, 2021).

Before the pandemic, the majority of learning took place in a classroom set-up with the educator and learners physically present, that is, face-to-face learning (Chirinda et al., 2021). According to Lave and Wenger (1998), strategies employed during face-to-face learning are meant to promote relationship building among learners with similar interests, better known as the community of practice. Under communities of practice, learners repeatedly worked hand-in-hand, heavily relying on continued reciprocal interactions. This is what the global Covid-19 pandemic temporarily took away from learners as institutions shifted from the traditional face-to-face learning approach to blended learning (van Schalkwyk. 2021).

Blended learning is a deliberate combination of both online and face-to-face teaching activities with the intent of stimulating and supporting student learning (Boelens et al., 2015). Since the pandemic swept across the globe, face-to-face learning was no longer possible as both learners and educators were at high risk of spreading the deadly virus. Resultantly, online learning temporarily became the mode in which learning activities could continue. The pandemic struck during the digital age which made the transition from face-to-face learning to online learning possible, but not without its challenges given the unprepared nature of rural universities particularly in South Africa.

The challenges some institutions of higher learning experienced in the full implementation of online learning were a result of institutional policies and disparities in infrastructure (Amin & Mahabeer, 2021). A possible reason for this is that many institutions of higher learning, professional bodies and employers still consider the traditional approach to learning as more robust, with very few questions asked with regard to graduate competencies. This is unsurprising as face-to-face learning allows educators to assess learners making use of class tests, practical work and examinations. More importantly, such assessments are taken by learners in the presence of educators, thereby limiting unwarranted learner behaviour, for example cheating.

Writing assessments in controlled environments is perceived as one of the major contributors to graduate competence. Learners usually take time to prepare for

such assessments, which involves thorough content engagement and unlimited self and peer assessments to perfect the skills resulting in maximum knowledge assimilation. Hence, fewer questions were raised on whether graduates had the skills that employers required when education was taking place following the traditional approach as opposed to the new mode of online learning.

To a certain degree, both educators and employers are somehow justified to ask questions around graduate competence as very few educators and learners had enough time to prepare for the new mode of learning especially in emerging economies' rural universities. Although online learning management systems are equally effective in controlling unethical behaviour among learners, both the educator and the learner must be highly skilled in the use of such platforms (Naidoo, 2020). Research by Matsilele (2021) found that both educators and learners had serious skills deficiency in the utilisation of educational technologies, for example, Moodle, Blackboard and others. Matsilele (2021) has further reported that the majority of learners and educators had to undergo training to acquire the basic skills on how to teach and learn using educational technologies.

This skills deficiency among educators and learners in rural universities is known to the labour market, which therefore raise the questions, how do learners perceive their employability and what role does learner career ambition play in the relationship between online teaching and graduate perceived employability? These questions are critical given the gap that exists between educator online teaching skills, student online learning needs, skills transfer and knowledge acquisition leading to questions around graduate employability. In addition, very little is known about the role of learner career ambition in mitigating the effects of effective learning resulting in increased attractiveness and readiness for work among rural university graduates. This study will contribute to this gap by answering the raised questions from an emerging economy perspective. In so doing, the study has sought to bring to light the work that needs to be done in terms of bringing proper online teaching and learning (T&L) technologies to the needy. In the absence of such lessons, implications are that the higher education sector will continue to celebrate high throughput while the rate of graduate unemployment continues rising sharply, a challenge that the South African government is desperately trying to resolve.

The objectives of the study were formulated as follows:

1. To investigate whether online teaching and learning predict graduate perceived employability of rural university learners, and
2. To investigate whether learner career ambition moderates the relationship between online teaching and learning and perceived graduate employability.

2. Literature Review

The literature points out that learning occurs naturally and optimally in ecologies, formal and informal communities (Bridgstock, 2017; Mitchell & Sackney, 2011). However, the Covid-19 pandemic significantly changed how individuals went about their daily lives, including formal learning. Similar to other key sectors of the society, the outbreak disturbed the education sector as classroom activities

were at some point wholly suspended. In some low-income countries, it took over 500 calendar days for learners to resume classes. In South Africa, at some point, contact classes resumed and were later suspended when another wave of the deadly Delta variant of Covid-19 swept the entire nation.

As the global health environment continued to be unstable, at the local level, South African universities adopted blended learning, where both online and traditional classroom teaching methods were accepted depending on what was safer for both learners and educators. At times when the spread of the virus was very high, online teaching and learning were then fully implemented. Although this meant a continuation of educational activities, the question is how effective are educators in implementing online teaching methods in South Africa's rural universities to achieve desired learning outcomes to ensure that graduate employability prospects of learners were not in jeopardy? The paragraphs that follow deal with the concept of graduate employability in detail.

2.1 Perceived graduate employability

Literature divides the concept of perceived graduate employability into two distinct but closely related dimensions, namely perceived internal employability (PIE) and perceived external employability (PEE) (Rothwell & Arnold, 2007; Rothwell et al., 2008; Rothwell et al., 2009). On the one hand, PIE focuses on a person's perceived employability based on that person's internal skills, abilities, academic performance and ambition, and engagement with the learning material. In the context of this study, PIE refers to the graduate's belief to be employed and retained by an entity (Sulistiawan et al., 2021). On the other hand, PEE focuses on a person's perceived employability based on external factors such as the demands of the labour market, the influence of the university they will graduate from and the qualification with which they will graduate (Rothwell et al., 2008). According to Smith (2010), PEE is the perception of an employee to be able to fill open job opportunities outside the current organisation. In this study, perceived graduate employability is viewed from a unidimensional perspective where the external aspects (PEE) are deemed to be more crucial in determining perceived graduate employability. In other words, the study argues that issues that are critical from a rural university perspective are the labour market demands, focusing on graduate competencies. This is because the majority of rural universities have a low budget which is largely devoted to staff salaries and delivery of teaching and learning activities. The tight budget leaves rural universities with little capacity to engage extensively in community engagement programmes that could enhance their image.

Across disciplines, research has so far not adopted a single approach to employability (Forrier & Sels, 2003). Two competing schools of thought on the concept of employability exist. On the one hand, the competency-based approach points out that an individual's perceptions of abilities, capacities, and skills are the critical elements for being hired (Van der Heijde & Van der Heijden, 2006). Guided by the competency-based approach, it is therefore of interest for learners and the providers of education to develop and deliver a curriculum that will

produce graduates with the competencies sought by the labour market (Hillage & Pollard, 1998; Harvey, 2001; Knight & Yorke, 2004).

On the other hand, the dispositional approach points out that an individual's perceptions of their proactive attitudes toward career and work are critical elements of employment (Fugate & Kinicki, 2008). The dispositional approach is more aligned to issues related to career adaptability. In other words, the learner is assumed to have in-depth knowledge of the labour market, how it operates and what it seeks in a graduate. Guided by this understanding, the learner works towards positioning themselves for career success and growth by carefully navigating the gaps found in work and career environments. Therefore, one contributing factor that will see the learner successfully adapting to different career and work environments might be career ambition which resonates well with the concept of how a person perceives their capabilities towards career success despite challenges that exist in building a career.

2.2 Career ambition

There has been a sudden increase in research focusing on the concept of ambition and the majority of these studies highly argue that it is a standalone construct that can be expressed in many facets of life (Hirschi & Spurk, 2021; Gürlek, 2021; Jones et al., 2017; Judge & Kammeyer-Mueller, 2012). According to Ćurić Dražić et al. (2018), career ambition may be viewed as the fundamental reason why individuals place value on outcomes. As a result, there is a strong link between individual beliefs in and efforts towards career success and this phenomenon is better explained by an individual's internal locus of control. Judge and Kammeyer-Mueller (2012) defined ambition as a consistent and continuous pursuit for success, gain and accomplishment. In addition, Pettigrove (2007) described ambition as an individual's prolonged inner quest for achievement. In the context of this research, an ambitious learner is a person who strongly believes that to gain employment in the labour market, personal efforts must be consistently channelled towards academic success. This must happen despite challenges that exist in the learning environment, for example, challenges emanating from online teaching and learning as a result of the Covid-19 pandemic and other factors inherent to institutional structures, their goals, and capabilities.

Apart from academic success, Pettigrove (2007) pointed out that ambition is a critical tool that can be used by individuals for different purposes. For example, one individual can use ambition to earn invaluable societal achievements while the other may use ambition as a tool to inflict pain and suffering on others in search of personal rewards. Central to this study is the thinking that through ambition, learners may successfully navigate the challenges of online learning with the intent of enhancing their employability prospects. Research concurs and points out that ambition positively influences multiple works and career behaviours as well as outcomes (Judge & Kammeyer, 2012; Jones et al., 2017). The above description also points out that ambition is an indicator of future career success. Resultantly, ambition is a critical factor in the sense that it provides the learner with the tools to effectively deal with barriers towards academic success leading to successful employment and career growth.

2.3 Online T&L in South Africa during the Covid-19 pandemic

At least two decades ago, the South African government pointed out that if South African graduates were to become competent and attractive in the 21st-century workplace, the education sector must utilise technological-based teaching and learning mechanisms (Ministry of Education, 2001). Online teaching and learning in South Africa's higher education are therefore not new (Ravjee, 2007). The study by Damoense (2003) found that the use of technological tools for teaching and learning, for example, the Internet aided by the presence of a climate conducive to online learning was critical towards the achievement of learning outcomes in the South African context. The study by Damoense (2003) further cited research by NUA (2000) estimating that South Africa had approximately 360 000 online learners by the end of the year 2000. Given the advancements in information and communication technologies (ICT), this figure has grown exponentially to this date.

The majority of urban institutions in South Africa have adopted online teaching and learning mechanisms but given the disparity in resources between the urban and rural universities, Dube (2020) found that rural universities have been left behind in the implementation of online teaching and learning. This is because of the lack of technology required to connect to the Internet, the high cost of online learning management systems, and the poor uptake of software. There is no unified definition of rurality although in simplicity it can be defined as a non-urban area where human beings reside with limited or no access to progressive socio-economic facilities and technologies. These include, for example, electricity, running water, Internet, marketing platforms, road infrastructure, sound education and medical facilities (Mukuna & Aloka, 2020).

The failure by South African rural universities to fully implement online teaching and learning is highly influenced by the lack of a social and economic muscle required to stimulate and sustain technological advancements (Cristobal-Fransi et al., 2020). According to Dube (2020), South African authorities have not done very well, as is evident in rural learners' and educators' prolonged deprivation of important ICT infrastructure, quality education and skills, among others. The presence of these amenities could come in handy in the fight against the Covid-19 pandemic and perhaps with little disruption in teaching and learning activities in the rural areas.

People in the rural areas are highly dependent on the sale of agricultural produce and movement of people from one market to the other is critical. Proceeds from the sale of agricultural produce (livestock, vegetables and crops) enable families to assist learners in acquiring the most basic Internet connectivity facilities and ensure that their children are not left behind as online teaching and learning has so far taken over.

It can be argued that to a certain degree, rural families could have acquired a few basic online teaching and learning gadgets and improved the graduate employability prospects of many learners had the South African government not responded to the Covid-19 outbreak by implementing the harshest lockdown

which saw both the military and the police being deployed in the streets. From the government's perspective, this was necessary to ensure that non-essential services people stayed indoors, venturing outside only to buy food and medication. For unemployed rural families that largely rely on the sale of agricultural products and other merchandise, lockdowns resulted in the loss of the much-needed income for sustenance, resulting in university dropouts.

Research by Ebrahim et al. (2020) also noted that the implementation of lockdown severely affected the economic activities of the Global South, South Africa included. To this date, the exact number of learners who dropped out from South Africa's urban and rural universities owing to failure to access online teaching and learning during the Covid-19 pandemic is not known. However, it is estimated that at least 750 000 learners aged 7 to 17 years dropped out at the basic education level.

Access to online teaching in rural universities is not the only challenge that rural universities are facing but skills needed by both the educator and the learner to effectively utilise the little and overly constrained online facilities they have is another major issue (Matsilele, 2021). Highly qualified educators shun the rural areas for resourceful urban institutions of higher learning. This further adds questions on the graduate employability of learners from rural universities especially during this error of the pandemic. Du Plessis and Mestry (2019) pleaded that there is an urgent need for the development of mechanisms that will result in an improvement of the working environment of educators in rural areas. This will foster better achievement of learning outcomes by rural learners which will contribute immensely towards the development of a better human capital base across the country.

2.4 Online T&L and graduate perceived employability

Siemans (2005) pointed out that in the digital age, learning is highly networked as it is driven by extended and diverse connections with people, systems and information. In simple terms, there are learning platforms that are formally recognised by institutions such as Moodle, Blackboard, among others (Dong et al., 2021). However, to assume that online learning or information sharing only occurs in formal platforms will be accepting a narrow view of online learning as informal platforms are equally utilised by both learners and educators (Shava & Chinyamurindi, 2018).

To ensure that learners and educators effectively implement online learning, universities seem to be fostering both formal and informal online platforms to develop educator teaching capabilities and student learning capabilities with the view of enhancing graduate employability. Bridgstock (2017) pointed out that digital networks have enabled individuals to learn new capabilities and keep up to date with trends of interest. There is a great need to challenge university authorities to develop a conducive online learning climate that will stimulate the desire among learners and educators to fully adopt any digital platform and build learner confidence, trigger full participation and enhance problem solving and analytical skills. These competencies are critical for any graduate intending to

compete in the labour market. Online learning platforms provide both the learner and the educator unlimited learning opportunities, making online learning and teaching platforms an important instructional tool during and post the pandemic.

However, as the pandemic is still looming with health experts pointing out that the Covid-19 situation may subside post-December 2022, online teaching and learning have become the main trend among both educators and learners. Although rural universities are struggling with the effective implementation of online learning, the mere adoption of the Internet as a teaching tool on its own is a step in the right direction to ensure that South African university graduates are highly attractive, both in the local and global labour market. Based on the above discussion, the study hypothesises that:

H1: Online T&L predict graduate perceived employability of rural university learners.

2.5 Online T&L, perceived graduate employability and learner career ambition

Dube (2020) found that online teaching and learning in rural South Africa is adversely affected by poor network connectivity, the exorbitant cost of Internet data bundles, closure of Internet cafes (during lockdown), inadequate online teaching and learning devices, and lack of computer skills. In the absence of learner career ambition, the mentioned issues are expected to somehow negatively impact graduate employability especially when educators have poor skills on how to effectively utilise online learning platforms for better achievement of learning outcomes, among other difficulties. Poor technological skills from a learner perspective pose a huge challenge in content engagement and class participation. However, ambition is a strong driving force that could see a learner finding a way to be able to learn, engage and participate in online class activities. This viewpoint is supported by the engagement theory. Therefore, borrowing from the engagement theory, rural learners are most likely to navigate the challenge of poor educational technology utilisation skills by treating such as one of the real problems which they must personally overcome if they are to become attractive graduates in a competitive labour market. The engagement theory points out that during teaching and learning, real world problems are presented to learners and through increased levels of collaboration, interaction and participation, learners take charge of their learning and engage the learning content, resulting in the acquisition of knowledge and achievement of desired learning outcomes (Jones et al., 1994; Salmon, 2001). Based on the above discussion, the study further hypothesises that:

H2: Learner career ambition moderates the relationship between online teaching and learning and perceived graduate employability.

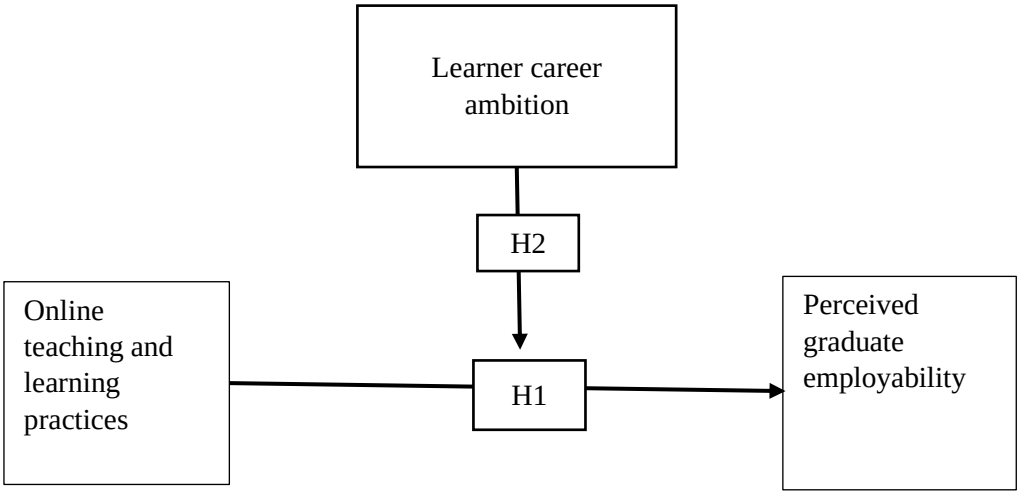

Figure 1: Conceptual model depicting learner ambition as a moderator on the relationship between online teaching and learning and perceived graduate employability

3. Research Methodology

3.1 Research design, approach and sampling

The study is positioned within the positivist research paradigm. Thus, the research is anchored in theories of learning and hypotheses were formulated and primary quantitative data collected to test such hypotheses. A survey approach was adopted for data collection where a self-administered questionnaire was randomly distributed among rural university learners who visited their campuses during the lockdown period in South Africa. Primary data collection was severely affected by the Covid-19 pandemic as universities did not allow a full return of learners on campuses except those who were to attend practical work and other reasons deemed important by university and faculty management. Although 240 questionnaires were distributed, 150 were returned with sufficient data to proceed to the data analysis stage. Based on the returned questionnaires, the study therefore utilised a sample of 150 learners. Data collection became relatively easy when the learners were allowed to return to campus in phases (Mafolo, 2020). Primary data collected was statistically analysed. Simple linear, percentages and hierarchical regression analyses were performed to make meaning of the data based on the formulated hypotheses.

3.2 Measures

The research instrument was divided into four sections (A to D). Section A questions were meant to gather demographic data of the respondents, such as age, gender, and the qualifications that they were studying at the time of the research. Section B was designed to gather data on how lecturers utilised online teaching and learning platforms. On that note, the Online Teaching Self-Efficacy Inventory was modified to suit the context of the study. The wording on the questionnaire items was changed from a self-evaluation perspective to a learner evaluation perspective. Thus, instead of lecturers evaluating themselves, in this study, it was learners evaluating lecturers. Consequently, four dimensions of the Online Teaching Self-Efficacy Inventory were used, with the first dimension being virtual interaction that was measured on a five-point Likert scale, where 1 represented

strongly disagree and 5 represented strongly agree. An example of a virtual scale interaction reads, "lecturers are able to effectively express emotion within the online environment". The virtual interaction scale's Cronbach alpha coefficient was derived as .772, indicating that it was internally consistent. The second dimension which was unit content migration had 7 scale items, also measured on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). An example of the scale items reads, "lecturers are able to transfer lecture presentations used in face-to-face style units to online formats". The unit content migration scale had a satisfactory Cronbach alpha coefficient of .749. The online course alignment sub-scale with 11 items was the third dimension used. An example of the scale items reads, "Lecturers are able to accurately assess the depth of students' level of engagement". Similarly, online course alignment was measured on a five-point scale (1 = strongly disagree to 5 = strongly agree). The online course alignment scale was reliable given a Cronbach alpha coefficient = .783. The last sub-scale was the web-based module structure with 11 items also measured on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). An example of the scale items reads, "lecturers are able to design online module content that is easy for students to navigate". The web-based module structure scale was also reliable with a Cronbach alpha coefficient = .826.

The employability and ambition scales which comprised section C and D of the questionnaire were both developed by Rothwell et al. (2008). The employability and the ambition scales had 16 and 6 questionnaire items, while their internal reliability scores of .864 and .850 were acceptable given that they were above the minimum threshold of .7. Both scales were measured on a five-point Likert scale, with 1 representing strongly disagree and ranging up to 5 representing strongly agree. The employability scale item example reads, "Employers are eager to employ graduates from my university" and the ambition scale item example reads, "I feel it is urgent that I get on with my career development". See Appendix 1 for the study's research instrument.

4. Results

The data showed the distribution of respondents by gender was 56% female and 40% male. The remaining 4% were not comfortable revealing their gender (rather not say category). The majority of the respondents were Africans 98% and 2% were coloureds. This result reflects that the majority of learners in rural universities come from an African background as opposed to Whites, Indians and Chinese. The mentioned races are well represented in South Africa's resourceful universities as opposed to rural universities. The distribution of respondents by age revealed that 25% of the respondents were aged 20 and below, while the 21-25 age group was the majority with 70% and the 26 years & above category was the least represented by a low value of 5%. The distribution of learners by disciplines revealed that 33% were in the natural sciences (chemistry, physics, geography, mathematics), 10% in the information and communication technology sector, and the main group comprised learners in the management and commerce disciplines, represented by 46%. The social sciences and humanities disciplines were represented by 6% while the engineering and health sciences were represented by 3% and 2% respectively.

Before simple linear regression was performed, the hypothesis stating that online teaching and learning predict perceived graduate employability, normality tests were performed and the results revealed that the *p*-values were below .05 for both the Kolmogorov-Smirnov and the Shapiro-Wilk tests. This result is an indicator that the data violated the assumptions of normality. Resultantly, simple linear regression analysis with bootstrapped confidence intervals and their significance levels was performed as these take into consideration the position that the data violated the assumptions of normality and heteroscedasticity. Results of the model fit and summary are shown in Table 1.

Table 1: Simple linear regression model fit and summary for online teaching and learning on perceived graduate employability

Source	*df*	Sum of squares	Mean squares	*F*	Pr > *F*	*r*	*R*2	Adjusted *R*2	Estimated standard error
Model summary	-	-	-	-	-	0.597	0.356	0.349	0.42180
Regression	1	9.535	9.535	53.590	0.000*	-	-	-	-
Residual	149	17.258	0.178	-	-	-	-	-	-
Total	**150**	**26.793**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Note: Predictor variable: Online teaching and learning; Outcome variable: perceived graduate employability.

*, Significant fit at $p < 0.05$.

Results in Table 1 reveal a moderate positive association between online teaching and learning and perceived graduate employability (r = .597). Further, online teaching and learning explained 35.6% of the variance in perceived graduate employment (R^2 = .356). Given this result, the effect size of online teaching and learning (independent variable), on perceived graduate employability (dependent variable), as measured by Cohen's f^2 is .553 and is considered to be large.

The *F*-ratio seeks to explain whether this model is significantly better at predicting graduate employability as opposed to the mean value. From Table 1, an *F*-ratio = 53.590 that is significant at p = .000 provides enough evidence to suggest that this model is significantly better and can be relied upon to predict graduate employability as opposed to the use of a mean value.

Table 2 provides the parameter estimates for online teaching and learning on perceived graduate employability and we can observe that b_0 = 1.131 and b_1= .605, and significant as p < .05. This result indicates that for a single unit increase in the use of online teaching and learning, there is a corresponding positive increase in perceived graduate employability of rural university learners in South Africa. Based on this result, there is enough evidence to support the hypothesis stating that online teaching and learning predict perceived graduate employability at a 95% confidence interval.

Table 2: Parameter estimates for online teaching and learning on perceived graduate employability

Parameter	*B*	Unstandardised co-efficient Standard error	Significance
Constant	1.131	0.335	0.000*
Online teaching and learning	0.605	0.083	0.000*

Note: Predictor: Online teaching and learning; Outcome: perceived graduate employability.
*, Significant at $p < 0.05$.

To determine whether learner career ambition moderates the relationship between online teaching and learning and perceived graduate employability, a hierarchical regression analysis making use of Hayes' process model was performed. Focusing on the conditional effects of online teaching and learning at different values of the moderator (lowest, mean and highest), it was observed that when learner career ambition is at its lowest, there is a significant positive relationship between online teaching and learning and perceived graduate employability, b = .707, 95% CI [.488, .925], t = 6.416, p = .000. At the mean value of learner career ambition, the results revealed that there is a significant positive relationship between online teaching and learning and perceived graduate employability, b = .587, 95% CI [.419, .755], t = 6.940, p = .000. Further, when learner career ambition is high, there is a significant positive relationship between online teaching and learning and perceived graduate employability, b = 468, 95% CI [.286, .650], t = 5.105, p = .000.

To establish whether moderation took place, the interaction between learner career ambition and online teaching and learning was observed. The results showed the interaction between learner career ambition and online teaching and learning was significant, b = -.201, 95% CI [-.394, -.015], t = -2.144, p = .035. Also, important to note is that the effect size of online teaching and learning on perceived graduate employability in the presence of the moderating variable is very large, Cohen's f^2 = .75 and is an indication that learner career ambition plays a critical role and that it is a factor we should pay special attention to when designing measures that are meant to improve graduate employability perception and online teaching and learning in institutions of higher learning. Given this result, the study's hypothesis stating that learner career ambition moderates the relationship between online teaching and learning and perceived graduate employability is supported. Table 3 summarises the results.

Table 3: Linear model predictors of perceived graduate employability

	b	*SE B*	*t*	*P*
Constant	3.567	.042	84.03	$p < .001$
	[3.48, 3.65]			
Online teaching and learning	.587	.085	6.940	$p < .001$
	[.419, .755]			
Ambition	.132	.077	1.723	$p < .001$
	[-.020, .285]			
Interaction (Online teaching and learning * Ambition)	-.205	.096	-2.144	$p = .035$
	[-.394, - .015]			

R^2 = .43

5. Discussion

The study's results emphasise the importance of learner career ambition as far as online teaching and learning and perceived graduate employability are concerned. This picture is painted clearly by two aspects, that is, the derived R^2 and corresponding effect sizes (Cohen's f^2), shown in two models. The first model showed that online teaching and learning explained 35.6% of the variance in perceived graduate employability. More importantly, the effect size of online teaching and learning equal to .553 is reasonably large. Given the large effect size, there is significant evidence to suggest that with the use of educational technologies, learning is improving in South Africa's rural universities. Research by van Rensburg (2018) pointed out that online teaching and learning had their challenges but on the bright side, they provide the desired pathway to uplift and address the needs of the society resulting in an improved standard of education, a desirable spillover as far as graduate employability is concerned. Challenges of online teaching and learning experience in South Africa's rural universities that could erode graduate employability include selective utilisation of online learning platforms by lectures, resistance, and poor skills among educators and learners in the use of educational technologies (Matsilele, 2021). Although both educators and learners received training on the use of educational technologies, that is, before the adoption of online teaching and learning, trainers were either non-subject specialists or non-academics (support staff). Another notable challenge affecting online teaching and learning and graduate employability is the poor internet connectivity. Most students studying in rural universities received laptops and Internet bundles through the understanding between rural universities and leading South African information and communication technology companies. In addition, university websites and learning activities that took place on such platforms were zero-rated. The major issue was Internet connectivity as learners returned home, mostly in rural areas, during the height of Covid-19.

Despite the abovementioned challenges, the results of the study reveal that learner ambition can be used as an important tool to address challenges that could erode graduate employability. In the presence of ambition, the effect size of online teaching and learning rose to .75 from .553 which indicates that ignoring the impact of learner career ambition in a learning set-up that is aided by educational technologies may yield unpleasant results as far as graduate employability is concerned. The results also reveal that given the right levels of ambition, that is, low, average and high results in a positive and significant relationship between online teaching and learning and perceived graduate employability. The results further revealed that upon increasing the values of ambition, the effect of online teaching and learning on perceived graduate employability becomes negative. Based on the result, educators have to guard their learners against being overly ambitious. Ambition is a strong force that can be used in different avenues in a person's lifetime. From an academic perspective, the right levels of ambition provide the learner with a clear course of action, that is, class attendance and engagement with the learning content including participation. This viewpoint is supported by the engagement theory. However, an overly ambitious learner may fail to pay special attention to the basic things that are critical in building a strong

foundation for learning that could lead to the learner failing to achieve the desired learning outcomes. Upon failing, the chances for the learner to make meaningful participation in the labour market drastically diminish.

Learner career ambition is an important tool for graduate employability. Through ambition, learners can engage and participate in online teaching and learning activities which increase their chances of attaining desired learning outcomes. More research is needed to investigate the concept of ambition and develop more theories that can contribute to ambition in a learning set-up to be unambiguous. Currently, little research exists on how educators and policy makers can exploit the concept of ambition to enhance graduate employability especially in turbulent times such as now with communities struggling to deal with the Covid-19 pandemic. In addition to that, there is an urgent need to create a conducive online teaching and learning environment in rural universities just like the online teaching and learning environment in urban universities. Addressing the resources and information communication and technology gap that exists between the urban and rural communities is critical to enhance the graduate employability of rural university learners.

6. Conclusion

The research investigated whether online teaching and learning predict graduate employability of rural university learners in South Africa. The findings of the study revealed that online teaching and learning is a predictor of perceived graduate employability. The results revealed that the effect of online teaching and learning on perceived graduate employability is relatively large. This result is a significant theoretical contribution to research and provides a valuable guideline on how academics and industry players who are concerned about enhancing graduate employability can design and implement such mechanisms. In addition, the study further investigated whether learner career ambition moderates the relationship between online teaching and learning and perceived graduate employability. The findings revealed that learner career ambition negatively and significantly moderates the relationship between online teaching and learning and perceived graduate employability. This finding is another significant contribution to theory revealing that ambition can also be incorporated in intervention mechanisms that are meant to enhance graduate employability of rural university learners who during their studies face various challenges, unlike learners who are studying in affluent universities. This study provides enough evidence to conclude that online teaching and learning, and learner career ambition are linear predictors of perceived graduate employability.

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Appendix 1 – Questionnaire

Section A: Demographics

Gender	Male		Female		Rather not say								
Race	African		Indian		White		Coloured						
Age	20 and below		21 - 25		26 - 30		31 - 35		36 and above				
Name of University/College													
Name of qualification you are registered for (please state)													
What year are you in?	First year		2nd year		3rd year		4th year (if it is a 4 year qualification)						
Do you use online learning at your institution?							Yes		No				
If you answered yes above, which online tool do you use?													
Ms Teams		Blackboard		Zoom		Moodle		Google meet		Other			

Section B: Online learning use by lecturers at your institution

Questions 1-32 are concerned with understanding how you judge the capability of educators from various faculties at your university in using online platforms to conduct lecture online. 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree.						
Virtual interaction						
1	Get students to work together in online classes.	1	2	3	4	5
2	Lecturers are able to overcome the influence of adverse student interactions online.	1	2	3	4	5
3	Lecturers are able to encourage students to ask questions.	1	2	3	4	5
4	Lecturers are able to promote online student participation.	1	2	3	4	5
5	Lecturers are able to project a positive virtual social presence (the perception of being real).	1	2	3	4	5
6	Lecturers are able to effectively express emotion within the online environment.	1	2	3	4	5
7	Lecturers are able to use emotion to effectively enrich communication.	1	2	3	4	5
8	Lecturers are able to adopt a teaching style that allows for the facilitation of learning through guidance.	1	2	3	4	5
9	Lecturers are able to manage the pace of facilitating interaction.	1	2	3	4	5
10	Lecturers are able to adequately convey their availability for consultations making use of online platforms.	1	2	3	4	5
	Unit content migration					
1	Lecturers are able to prepare the teaching materials to use online.	1	2	3	4	5
2	Lecturers are able to select the appropriate digital media format (PowerPoint, digital photographs, Adobe Flash, etc.) to transfer unit content and materials.	1	2	3	4	5
3	Lecturers are able to select the appropriate online method to effectively convey unit content once used in traditional style (lecture of face-to-face) classrooms.	1	2	3	4	5
4	Lecturers are able to transfer lecture presentations used in face-to-face style units to online formats.	1	2	3	4	5
5	Lecturers are able to transfer assignments and assessments (such as exams) used in face-to-face style units to online formats.	1	2	3	4	5
6	Lecturers are able to determine the appropriate resources (i.e. technological, personnel, software,	1	2	3	4	5

	etc.) to assist with transferring unit materials from face-to-face to online formats.					
7	Lecturers are able to manage the time needed to transfer unit content from face-to-face to online formats.	1	2	3	4	5
	Online course alignment					
1	Lecturers are able to evaluate the degree to which learning outcomes have been met.	1	2	3	4	5
2	Lecturers are able to use strategies to increase students' ability to remember content covered online.	1	2	3	4	5
3	Lecturers are able to provide students with detailed feedback about their academic progress.	1	2	3	4	5
4	Lecturers are able to determine the most appropriate evaluation method for a particular unit.	1	2	3	4	5
5	Lecturers are able to clearly articulate the learning goals that students are expected to achieve.	1	2	3	4	5
6	Lecturers are able to connect unit assignments with the stated learning outcomes.	1	2	3	4	5
7	Lecturers are able to accurately assess the depth of students' learning.	1	2	3	4	5
8	Lecturers are able to accurately assess the depth of students' level of engagement.	1	2	3	4	5
9	Lecturers are able to engage students from a variety of cultural backgrounds.	1	2	3	4	5
10	Lecturers are able to engage students who have a wide variety of familiarity with online learning.	1	2	3	4	5
11	Lecturers are able to use written instructions to facilitate student engagement in online units.	1	2	3	4	5
	Web-based module structure					
1	Lecturers are able to adapt the design of online class content to the needs of students (motivation, interest, prior knowledge, etc.).	1	2	3	4	5
2	Lecturers are able to design online module content in accordance with the requirements of South African Qualifications Authority (SAQA).	1	2	3	4	5
3	Lecturers are able to design online module content that is easy for students to navigate.	1	2	3	4	5
4	Lecturers are able to create appropriate links to module content pages and materials.	1	2	3	4	5
5	Lecturers are able to design a unit that is representative of my institution's mission, goals and objectives.	1	2	3	4	5

6	Lecturers are able to design module content that addresses students' concerns and apprehensions about module content.	1	2	3	4	5
7	Lecturers are able to design module content that another teacher could teach.	1	2	3	4	5
8	Lecturers are able to manage the time requirements needed to develop courses.	1	2	3	4	5
9	Lecturers are able to design module content that meet regulatory agency accreditation guidelines.	1	2	3	4	5
10	Lecturers are able to use digital media to create module content.	1	2	3	4	5
11	Lecturers are able to create module learning content that is consistent and structured.	1	2	3	4	5

Section C: Graduate employability

1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree.						
Employability scale						
1	I achieve high grades in relation to my studies.	1	2	3	4	5
2	I regard my academic work as top priority.	1	2	3	4	5
3	Employers are eager to employ graduates from my university.	1	2	3	4	5
4	The status of this university is a significant asset to me in job seeking.	1	2	3	4	5
5	Employers specifically target this university in order to recruit individuals from my subject area(s).	1	2	3	4	5
6	My university has an outstanding reputation in my field(s) of study.	1	2	3	4	5
7	A lot more people apply for my degree than there are places available.	1	2	3	4	5
8	My chosen subjects rank highly in terms of social status.	1	2	3	4	5
9	People in the career I am aiming for are in high demand in the external labour market.	1	2	3	4	5
10	My degree is seen as leading to a specific career that is generally perceived as highly desirable.	1	2	3	4	5
11	Currently, there is generally a strong demand for graduates.	1	2	3	4	5
12	There are plenty of job vacancies in the geographical area where I am looking.	1	2	3	4	5
13	I can easily find out about opportunities in my chosen field.	1	2	3	4	5
14	The skills and abilities that I possess are what employers are looking for.	1	2	3	4	5

15	I am generally confident of success in job interviews and selection events.	1	2	3	4	5
16	I feel I could get any job as long as my skills and experience are reasonably relevant.	1	2	3	4	5

Section D: Ambition

Some people can be regarded as ambitious, that is, they have the drive and the burning desire to achieve something in life. Rate these following statements relating to ambition by either agreeing or disagreeing with their description of you. 1= strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree.						
Ambition scale						
1	I want to be in a position to mostly do work which I really like.	1	2	3	4	5
2	I am satisfied with the progress I have made meeting my goals for the development of new skills.	1	2	3	4	5
3	I have clear goals for what I want to achieve in life.	1	2	3	4	5
4	I regard myself as highly ambitious.	1	2	3	4	5
5	I feel it is urgent that I get on with my career development.	1	2	3	4	5
6	What I want to do in the future is really important.	1	2	3	4	5