MEASURING ACADEMIC PERFORMANCE AT SOUTH AFRICAN PRIVATE HIGHER EDUCATION INSTITUTIONS

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Abstract

Purpose: Public institutions in South Africa dominate higher education, but private higher education institutions are proliferating due to high demand and the inability to provide education to all. This skills gap to deliver education creates a business opportunity for private higher education institutions. As a result, private higher education institutions must develop metrics to measure and manage academic performance. Therefore, this study develops a model to measure scholastic performance at private higher education institutions in South Africa.
Methodology: A theoretical model is developed based on proven selected antecedents to measure academic performance. The criteria to measure each respective antecedent are also identified and included in the theoretical model. The antecedents in the model are 1) Economic factors, 2) Parent income level, attitudes and expectations, 3) Selectivity, expenditure and retention, 4) Attendance, 5) Workload, 6) External forces, 7) Stress, 8) Help-seeking, 9) Motivation, 10) Affective factors, 11) Self-concept, 12) Self-esteem, 13) Self-efficacy, 14) Extracurricular activities, 15) Active learning, 16) Adjustment, 17) Class size and 18) General measures of academic performance. A dataset of 206 error-free responses (82.4% effective response rate) validated the 18 antecedents using standardised regression values. The data was reliable (Cronbach alpha = 0.98; decision rule: ≥0.70). Confirmatory factor analysis validated the antecedents and measured model fit.
Findings: The model is valid. The fit indices are satisfactory, easily exceeding the required minimum indices. The CFI (0.953) and NFI (0.953) both exceed 0.95. The CMIN/df index (2.516) is well below 5, and RMSEA is acceptable (below 0.1, but not below the ideal value of 0.80).
Conclusion: Significant positive relationships exist between individual antecedents and academic performance. As such, private higher education institutions and investors can use the valid model to measure academic performance. Researchers and scholars can also apply or explore academic performance models further.

Keywords

Academic; performance; model; measurement; university

JEL Classification

I20 General
I23 Higher Education; Research Institutions
M21 Business Economics

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Introduction

Public and private tertiary institutions provide higher education in South Africa. Each sector uniquely contributes to the country's educational landscape. The public sector includes universities funded and governed by the government. These institutions historically played a significant role in South Africa's higher education system, and initially seven large predominantly white universities were founded, namely the universities of Cape Town (1829), Stellenbosch (1918), Free State (1904), Potchefstroom for Christian Higher Education (1869), Pretoria (1908), The Witwatersrand (1896), and Natal (1910). Many evolved from university colleges into full universities, and most are still ranked among the top South African universities.

Similarly, two more universities were founded to accommodate black (University of Fort Hare in 1916) and coloured students (University of the Western Cape in 1959). The University of South Africa (1873) was founded as a distance education facility (SA History Online, 2021). The public sector also encompasses Technical and Vocational Education and Training (TVET) colleges. These institutions focus on providing technical and vocational skills, catering to diverse fields such as engineering, hospitality, and agriculture, among others.

Public universities receive substantial government funding, with subsidies to support teaching, research, infrastructure, and student financial aid. As a result, public institutions generally offer more affordable tuition fees than private universities. They also play a crucial role in providing access to higher education for a larger population. Public universities have a strong research focus and are known for their academic research excellence in various fields.

Private institutions in South Africa include universities, colleges, and institutions offering specialised courses. These entities are privately funded and managed independently of government control. They rely heavily on tuition fees, donations, and private funding sources. Consequently, they often have higher tuition fees compared to public universities. Some private institutions offer specialised programs, smaller class sizes, and a more flexible approach to education while providing alternative teaching methods.

Both public and private higher education sectors in South Africa contribute to the diversity and accessibility of education. Public institutions focus on catering to a broader population with government support, while private institutions often offer specialised programs with more independence but at higher costs. Efforts to address challenges in both sectors aim to improve access, quality, and inclusivity in South African higher education. South Africa's Department of Higher Education oversees all HEIs and facilitates a quality higher education environment through the Constitution and the Higher Education Act [1].

Problem statement

Managing a higher education institution (HEIs) is challenging. In the public sector, managerial challenges are to achieve social returns, but at private institutions, managers must also address commercial returns [2]. Investors evaluate the financial performance indicators of various investment opportunities and invest only in those with a satisfactory return on investment. This means investors

will channel their funding elsewhere if the private HEI does not perform amicably [3]. However, to be a top performer financially, private HEIs (HEIs) must adhere to various performance metrics of key performance indicators (KPIs) [4]. Year-on-year KPI analyses of, for example, enrolment figures, throughput figures, academic performance, student numbers in specific modules and courses, and the quality of higher education offered are critical.

However, how can a manager measure (and manage) the academic performance of a private HEI? Many state-driven performance models exist for public institutions. Likewise, myriad generalized business performance models are available to assess various business types. However, the literature lacks specific guidance to measure the academic performance of a private HEI.

Research objective

The primary objective of this study is to develop a model to measure academic performance at South African private HEI's.

Theoretical background

Historical development of South African tertiary education

The history of higher education in South Africa is complex and deeply intertwined with the country's political, social, and economic landscape, mainly due to its colonial past and the apartheid era [5] [6].

- **Pre-20th Century**: Higher education in South Africa has roots in missionary education established by European settlers, with the first universities being founded in the late 19th Century. The University of Cape Town (UCT) was founded in 1829, followed by Stellenbosch University in 1866, and the University of the Witwatersrand (Wits) in 1896. Other large public universities followed suit.
- **Apartheids era (20th Century):** The apartheid regime (1948-1994) had a significant impact on higher education. Under apartheid, racial segregation was institutionalised, leading to separate and unequal educational opportunities for different racial groups. The Bantu Education Act (no. 47 of 1953) [76] led to the creation of separate, inferior educational systems for black South Africans, focusing on limited vocational training rather than higher education. In addition, the regime initiated the homeland system, where each ethnic group was awarded a "homeland" and universities were built. These Bantustans were used to create a white South Africa by moving black South Africans to their ethnic homelands. Typical examples were the University of Venda (1982), the University of Bophuthatswana (1988) and the University of the Transkei (1977) [6].
- **Resistance and struggle:** Despite oppressive policies, resistance against apartheid flourished within South African universities. Students and faculty members participated in protests, advocating for equality, academic freedom, and the end of apartheid policies. This period saw significant activism, including movements such as the Soweto Uprising in 1976, where students protested Afrikaans' imposition as the instruction language.
- **Transformation and post-Apartheid (1994 and beyond):** With the end of apartheid in 1994 and the establishment of a democratic government under Nelson Mandela, South Africa embarked on a path of transformation in higher education. Efforts were made to dismantle the racially segregated systems and promote inclusivity, equality, and access to higher education for all. Reforms included changes in admission policies, curriculum revisions, and affirmative action programs aimed at redressing historical inequalities.

The Education White Paper 3 on transforming higher education [7] followed to facilitate South Africa's transition from minority rule during apartheid to democracy. This meant that all existing

practices, higher institutions of learning and values required rethought to establish their fitness for a post-apartheid era and how tertiary education could play a vital role in developing the country's social, cultural, and economic development [8]. Modern challenges are addressing past inequalities and transforming higher education to meet the high demand for quality higher education.

However, in 2020, Higher Education South Africa (HESA) acknowledged that the interventions to create a differentiated higher education landscape did not efficiently address existing past inequities in the educational, financial, geographical, and material aspects between advantaged and disadvantaged students [9]. In addition, HESA highlights the role that underdeveloped capacities play in the historically black PHEIs. These PHEIs face challenges in servicing poor rural and working-class black students with inadequate subsidies that are awarded to the traditionally black PHEI's. As a result, these students do not receive the same quality education as other PHEIs [10].

Despite progress, challenges in South African higher education persisted. Universities still serve the higher social population demographic population, and funding constraints, disparities in access, quality discrepancies among institutions, and the need to decolonise the curriculum remained focal points [10]. The Department of Higher Education and Training initiated financial support to address these social disparities by initiating the National Student Financial Aid Scheme Act (No. 56 of 1999) [11]. However, financial support is only available to students studying at public HEIs. Higher tuition fees still challenge students studying at private HEIs, limiting access for lower-income students. Ensuring consistent academic quality and accreditation standards across private institutions remains a significant concern.

The current landscape

South African higher education delivers more graduates every year. In fact, South African higher education student numbers have doubled since 1994, and the highest increase is among black Africans. One million students are presently studying at HEIs; this number is significantly higher than a decade ago. However, it represents a Gross Enrolment Ratio (GER) of 23.8% [8]. (The GER is the education participation rate, which refers to the proportion of a specific age group or population enrolled or participating in education at various levels.) Higher education is at full capacity. Although the GER is favourable for sub-Saharan Africa (GER=9%), it pales in comparison to other developing countries norms (Russia = 84.6%%; China = 50.6%; and Mexico = 41.5%) [12]. Many students cannot access education annually because of insufficient space, and the public HEIs cannot absorb the demand. The private HEIs accommodate just more than 100,000 of these registered students [13]. The Department of Higher Education and Training [1] drafted a White Paper for Post-school Education to address the participation rate and excess demand. This White paper estimates that 500,000 students will be accommodated in Private Technical and Vocational Education by 2030.

The public HEIs cannot cope financially or structurally with the ever-increasing demand in South Africa; the only viable solution is for private- and public higher education to combine forces in addressing the increasing South African educational demand [14]. The South African government needs to incorporate private capital (like most developed countries successfully did) to expand the system's higher education capacity because they do not have enough money to satisfy the demand for higher education.

Businesswise, the high educational demand poses an attractive opportunity for private higher education. On 11 December 2023, 93 nationally private HEIs were registered at the DHET, an increase of 9 institutions (10.7%) during the past year [5]. Adding regional registrations, the statistics show South Africa has 125 PHEIs [1]). These PHEIs offer a wide range of educational qualifications ranging from certificates and diplomas up to doctorate degrees. The programmes include business management and administration, religion, information technology, marketing, aromatherapy and reflexology,

communication, manufacturing, journalism, social media, public relations, architecture, and others [15].

The growing number of private HEIs requires improved coordination between the institutions and the DHET to dovetail the national curriculums by addressing the skills gap between private and public tertiary education institutions. Students must enter higher education well-prepared. However, according to Bloom, Canning and Chan [16], this is not currently true in South Africa. Students entering tertiary education are not technologically well-enabled and academically well-prepared by the secondary school system. As a result, institutions provide additional services to help them. Technology remains a critical enabler. The focus should be on how institutions optimize the new benefits of this revolution, with South African students increasingly requiring new and innovative ways of thinking [17].

PHEIs do not receive subsidies; therefore, the economy and affordability are key hurdles to sustainable development. The sector can overcome these challenges using appropriate technology. Private HEIs have the advantage of swift decision-making because they are more entrepreneurially oriented. Therefore, they can act and implement new technology faster. Public HEIs are slower to adapt because bureaucratic line-management structures bind them.

South Africa's educational levels are low compared to other developing countries. Only 3% of the population has a bachelor's or honours degree, and less than 1% pursued a post-graduate qualification (0,75%). After the first free democratic election in South Africa, the government initiated three ambitious plans to improve university access [5]. They are:

- **Step 1:** Eliminate the multi-track education system in which traditionally white universities, traditionally "non-white" universities, universities of technology (called "Technikons"), and teacher training colleges operated independently. Many traditionally white and "non-white" public universities were merged. Technicons were upgraded to become fully capacitated universities of technology, and many of the specialist institutions and teacher training colleges were closed or merged into existing universities' faculties of education.
- **Step 2:** Universities' capacities were increased to accommodate more students in existing structures
- **Step 3:** Financial support systems were implemented. The most notable support to students is the National Student Financial Aid Scheme [18]. Post-graduate bursaries for master's and doctoral studies were also initiated for full and part-time students.

Identifying antecedents to measure academic performance

The theoretical model identified 18 antecedents suitable for measuring the academic performance of PHEIs. Measuring criteria for each antecedent also stemmed from the literature study, resulting in a list or measuring instrument. These criteria were used to compile a questionnaire that was completed by the study’s respondents. These criteria originate from the literature review performed. Table 1 contextualises the antecedents and their measuring criteria for the academic performance of PHEIs. The literature sources for the criteria are also listed in the table.

Table 1: Antecedents and theoretical their origins

Number	Antecedent	Measuring criteria	Sources
1	Economic factors	Disadvantaged Inequality Quality of life Social divisions	[15], [18], [19], [20]
2	Selectivity, expenditure, and retention	Access Cost of programmes Graduation rates Selection criteria Support	[21], [22], [23], [24]
3	Parent income level, attitudes and expectations	Culture Ethnic goals Family structure Parent involvement	[25], [26], [27]
4	Motivation	Behaviour Beliefs Competence Determination Personality	[28], [15], [29], [19], [30]
5	Workload	Capacity Change Energy Integration	[26], [14], [31], [19]
6	External forces	Ethnic minority Parental involvement	[32], [33], [34], [35]
7	Self-efficacy	Assurance Challenges Choices Experience	[36], [37], [38], [39]
8	Help-seeking	Faculty interactions Peers Staff Values	[10], [19], [41]
9	Attendance	Availability Communication Contact Lectures Teaching and learning	[17], [1], [42], [28]
10	Affective factors	Attitude Self-esteem	[43], [15], [44]
11	Self-concept	Attitude Ideas	[45], [2], [20]
12	Self-esteem	Stress Task completion Transition	[26], [4], [19]
13	Stress	Attention Experience	[13], [46], [26]

		Resources	
14	Active learning	Achievement Effort Engagement	[17], [47], [48]
15	Extracurricular activities	Age Grades Involvement Performance	[17], [16], [15]
16	Adjustment	Background Outcomes Psychosocial factors	[22], [9], [19]
17	Class size	Attentiveness Classmates Participation	[16], [47], [38], [48]
18	General issues	Ad hoc	

Theoretical model to measure academic performance

The theory postulates that academic performance can be measured (and as such then be managed) using the 18 antecedents in Table 1 [49]. Figure 1 shows the theoretical model graphically.

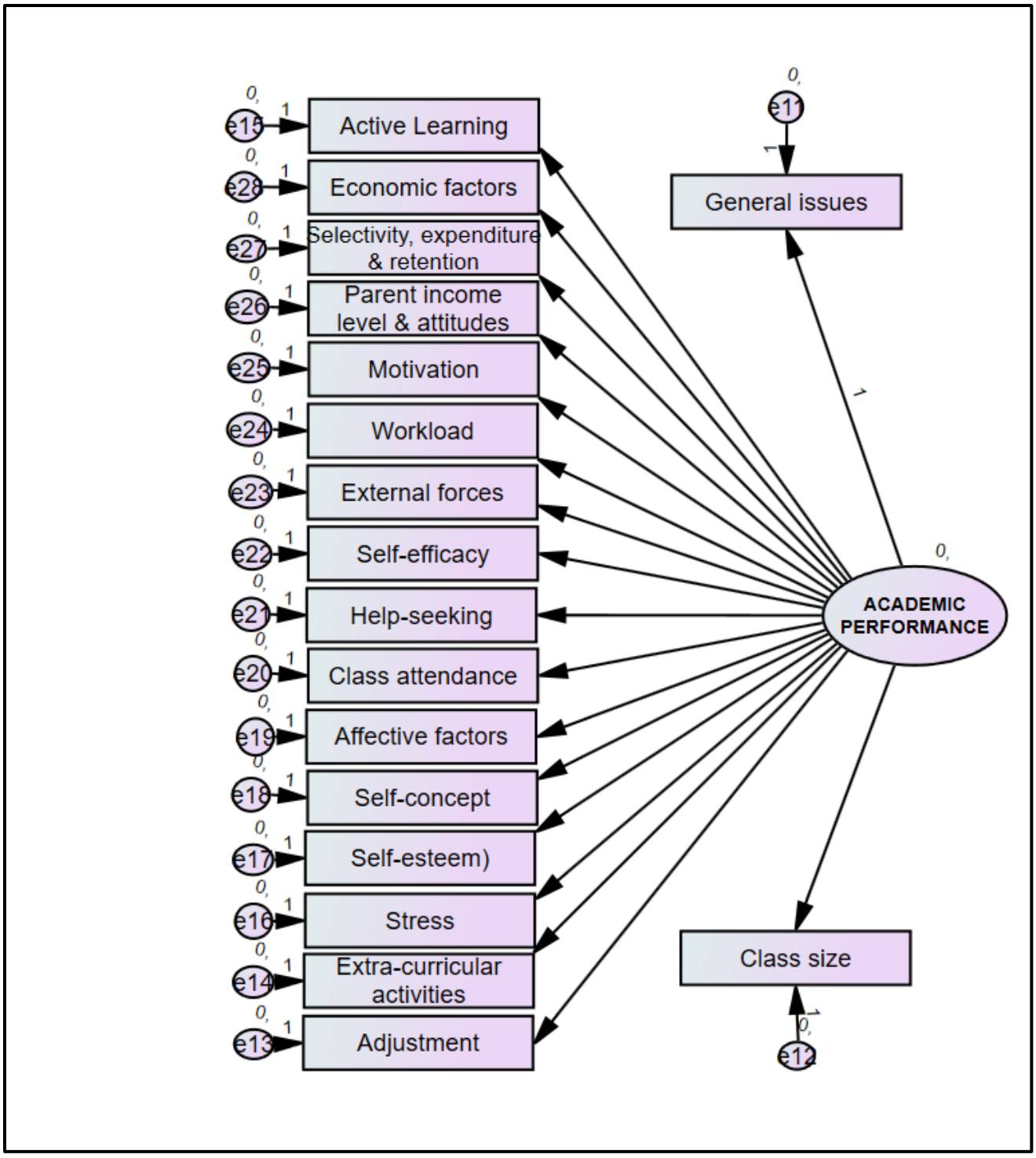

Figure 1: Theoretical model to measure and manage academic performance

From Figure 1, it is hypothesized that the following hypotheses apply to the model to measure and manage academic performance at a PHEI:

H_{01}: There are no significant positive relationships between the Antecedents and Academic performance.

H_1: There are significant positive relationships between the Antecedents and Academic performance.

$H_{1.1 \text{ to } 1.12}$ There are significant positive relationships between the individual Antecedents and Academic performance.

Research methodology

The literature review encompasses the academic performance of private higher education providers in South Africa and how to measure it. This means locating relevant performance measurement antecedents from the literature and identifying latent variables or factors within private higher education's academic performance [50]. The literature review included academic articles, official publications, conference proceedings and acts by consulting electronic databases such as library catalogues, local and international journals, Internet publications, and Ebscohost, Emerald and Sabinet databases. Latent variables were identified empirically and confirmed as per the methodology used in various previous studies [50, 51, 52, 53, 54, 55, 56]. The literature originally identified 24 antecedents of academic performance; 18 were retained after scrutiny.

Quantitative data collection

The questionnaire measured the demographic profile and the academic performance antecedents. The antecedent's respective criteria were validated with exploratory factor analysis to weed out invalid criteria [49]. The final questionnaire measured the level of agreement or disagreement on a five-point Likert scale across the 18 antecedents comprising 86 measuring criteria. Confirmatory factor analysis validated the model and determined the model fit [57, 58]

The population comprised all the full-time employees at two South African private business schools in the KwaZulu-Natal province. However, these schools deliver higher education in a vast geographic area, covering South Africa and Southern Africa. No sample was drawn. The total population was targeted. All employees were requested to complete the emailed questionnaires via the two institutions' human resource departments. Participation was anonymous and voluntary. The questionnaires were distributed to the gatekeepers' HR managers and Academic managers at the head office in Durban for distribution and collection. Management’s supporting letters were added to the questionnaire. Some 250 questionnaires were distributed, and 247 were completed and returned (signifying a response rate of 98.8%). The data was captured by the Statistical Consultation Services of the North-West University and analysed using IBM’s Social Package for Social Services Version 28 [59]. IBM’s AMOS software analysed confirmatory factors [60].

Ethical considerations

The study was ethically approved by North-West University's Ethical Committee in the Faculty of Economic and Management Sciences and issued a formal ethics number (EMS17/04/15-01/2).

Results

Suitability of the data

The dataset was cleaned to eradicate possible data errors [61]. This included 1) Using calculated minimum and maximum values to identify out-of-data range errors and 2) Screening for missing values to enable the IBM AMOS software to calculate the modified indices; modified indices are required in structural model development [57, 60]. Missing values were removed. 3) Finding and correcting any other errors. After cleaning the 247 responses, 206 error-free responses were analyses (resulting in an 82.4% effective response rate).

The data's skewness and kurtosis were measured against the normal distribution curve. Most variables are slightly negatively skewed (-.5≤Skew≤.5), meaning most of the data are to the right of the normal distribution. Some variables show stronger (but still acceptable) negative skewness (-1≤Skew≤.5). The Kurtosis showed that the variables are slightly negatively "peaked", but well within

acceptable limits (-.5≤Kur≤.5). These values represent acceptable normality deviation levels (<.50) [51, 62]. This means that the data peaks higher than in a normal distribution. However, these deviations are also within acceptable limits [62]). Two variables were discarded because they are highly negatively skewed (≥2.). The same variables also exceeded the acceptable deviations for the Kurtosis (≥2). The discarded variables dealt with professional conduct and student communications.

Only suitable data can be used in multivariate analysis, such as confirmatory factors analysis or structural equation modelling. As such, the sample must be adequate (Kaiser, Meyer & Olkin test), possess acceptable sphericity (Bartlett's test), and the data must be reliable (Cronbach's coefficient alpha). Table 2 shows that the sample is adequate (KMO=.946) (decision rule: KMO≥.70), and Bartlett's Sphericity is significant (p=.00) (decision rule: p≤.05) [61] [62].

Table 2: KMO sample adequacy and Bartlett's sphericity

Kaiser-Meyer-Olkin value		.946
Bartlett's Sphericity Test	Approx. Chi-Square	14381. 871
	df	2415
	Sig.	.000

Reliability

Cronbach's coefficient alpha measured the reliability and internal consistency of the antecedents, latent variables, and the total dataset [62]. All three datasets possess excellent reliability (α=.977; .958; .984 (decision rule: α≥0.70; 0.57) [62, 63] (see Table 3).

Table 3: Reliability of the data

Antecedents		Latent variables		Total dataset	
Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
.977	18	.958	10	.984	80

The analysis shows that the data is reliable and suitable for further analyses.

Validating the model

The confirmatory factor analysis model empirically evaluated the theoretical model to measure academic performance. The IBM AMOS (version 28) statistical software analysed the data and produced the models' results. (see Figure 2).

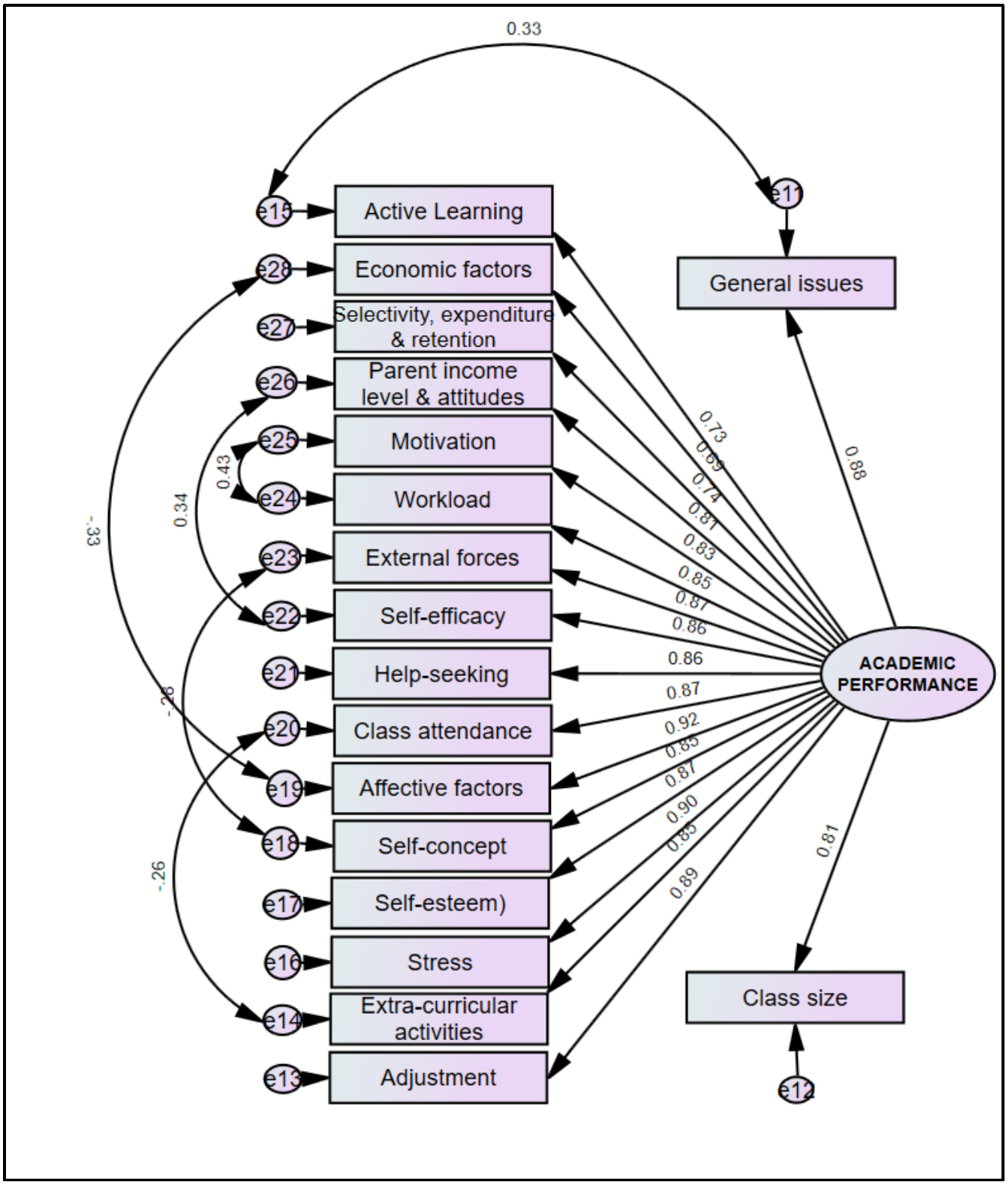

Figure 2: The validated model

The retained 18 theoretical antecedents constituted the theoretical model (Figure 1). These antecedents are validated by using the standardised regression values in the confirmatory model (see Figure 2). Ideally, a standard regression value of 0.7 is significant because the squared value explains almost 50% of the variance (R=0.7; R^2 = 0.49.) [57].

Analysis of the standardised regression weights indicates that 17 of the 18 antecedents exceed the required standardised regression weight of 0.70. Only the antecedent *Selectivity, expenditure and*

retention has a weighting of 0.69. This is marginally lower than the required weight. However, Henseler et al., in support of Hulland, argue that standardised regression weights lower than 0.7 should be reviewed for relevance in the context of the other variables before elimination [63, 63]. Variables with regression weights lower than 0.40 are redundant, while weights between 0.4 and 0.7 can be retained after consideration because they reflect a moderate influence [64] [65]. It was retained after considering the relevance of the antecedent Selectivity, expenditure, and retention. All 18 theoretical antecedents could be validated empirically as measures of students' academic performance at a private higher education institution.

Validity and reliability of the empirical model

A confirmatory model needs to be reliable and possess convergent and discriminant validly. This model has excellent composite reliability (CR=0.98; decision rule: CR≥0.70) [65] [72] and validity as measured by the Average Variance Explained (AVE=0.71; decision rule: AVE≥0.50) [66] [67].

Model fit analysis

This study used five goodness-of-fit indices to evaluate the model. These indices measure the absolute, incremental, and non-normed fit [69]. Table 2 shows the index values for the *Degrees of freedom* (CMIN/df), *Comparative fit index* (CFI), *Normed Fit index (NFI), Tucker-Lewis index* (TLI), and *Root Mean Square Error of Approximation* (RMSEA). The baseline model is compared by the incremental fit indices, CFI and TLI, while the NFI index is a normed fit index and the Tucker-Lewis index a non-normed fit index [67] [69]. Absolute fit is measured by the RMSEA index [70]. (See Table 4).

Table 4: The model's goodness of fit indices

Index name	Decision rule (preferred; minimum)	Model's index	Fit metrics	Source
Significance	p≤0.05	p≤0.05	Significant	[69]
CMIN/df	≤ 5	2.516	Good	[68] [69]
CFI	≥ 0.95; ≥ 0.85	0.953	Good	[72] [73]
NFI	≥ 0.90; ≥ 0.80	0.925	Good	[69]
TLI	≥ 0.95; ≥ 0.85	0.945	Good	[71], [75]
RMSEA	≤ 0.08; ≤ 0.10	0.086	Acceptable	[68, 69])

Source: Bisschoff (2021)

The fit indices are all satisfactory, easily exceeding the required minimum index. CFI (0.953) and NFI (0.953) both exceed 0.95 [69] [71], and the CMIN/df (2.516) is well below five [69]. These indices indicate that the model fit is good. RMSEA is acceptable (below 0.1) but not ideal (below 0.80) [74].

Accepting or rejecting the hypotheses

The null hypothesis is rejected, and all the H_1 hypotheses are accepted.

H_1 Significant positive relationships exist between the Antecedents and Academic performance.

$H_{1.1 \text{ to } 1.18}$ Significant positive relationships exist between the individual Antecedents and Academic performance.

This means that all the antecedents identified from the literature (after screening and scrutinizing) are measures of academic performance.

Conclusions

The study empirically validated a theoretical model to measure academic performance of South African PHEI's. More specifically, the valid model provides:

- A sound theoretical basis that researchers and theoreticians can use in their future academic performance-related research projects.
- A planning tool to assess and monitor academic performance factors, initiatives and activities.
- A practical managerial tool whereby managers can measure individual antecedents to track each one's role in the academic performance of private HEIs.
- A comprehensive model to practically measure academic performance in academic performance of private HEIs.

Limitations

Regionality is a prominent study limitation. However, this is not relevant to the location of the PHEIs (Durban, South Africa) but to the location of the respondents (Southern Africa). This means that the results could differ in other geographical regions or cultures. Researchers and managers should confirm the relevance of the validated antecedents before applying the findings in other geographic regions.

Future research

The study can be repeated using respondents from other geographic areas to determine if the antecedents remain valid. Likewise, a comparative study can determine which antecedents are regional and generic.

References

[1] DHET (DEPARTMENT OF HIGHER EDUCATION AND TRAINING). (2022). *Statistics on Post-School Education and Training in South Africa*: *2019*. Pretoria: DHET.

[2] KAMAL, P., AHUJA, S. (2021). Academic performance prediction using data mining techniques: Identification of influential factors effecting the academic performance in undergrad professional course. In Yadav, N., Yadav, A., Bansal, J., Deep, K., Kim, J. (eds). *Harmony Search and Nature Inspired Optimization Algorithms. Advances in Intelligent Systems and Computing* (Vol 741). Singapore: Springer. https://doi.org/10.1007/978-981-13-0761-4_79

[3] DHET (DEPARTMENT OF HIGHER EDUCATION AND TRAINING). (2024). Higher education deregisters four private institutions. SA News. 26 March. https://www.sanews.gov.za/south-africa/higher-education-deregisters-four-private-institutions

[4] MARKS, G., MCMILLAN, J., HILLMAN, K. (2020). *Tertiary entrance performance: The role of student background and school factors. Longitudinal Surveys of Australian Youth.* Research Report No. 22. Victoria: Australian Council for Educational Research. https://research.acer.edu.au/cgi/viewcontent.cgi?article=1023&context=lsay_research

[5] DHET. (DEPARTMENT OF HIGHER EDUCATION AND TRAINING). 2023. Register of Private Higher Education Institutions. LIST OF REGISTERED PRIVATE HIGHER EDUCATION INSTITUTIONS (dhet.gov.za)

[6] SA HISTORY ONLINE. (2021). The homelands. The Homelands | South African History Online (sahistory.org.za)

[7] CHE (COUNCIL FOR HIGHER EDUCATION). 1997. Education White Paper 3: A programme for the transformation of higher education. Education White Paper 3: A Programme for the Transformation of Higher Education | Council on Higher Education (che.ac.za)

[8] STATISTICS SA. (2021). Education series vol. VII. Children's well-being in South Africa. Education Series Volume VII: Children's education and well-being in South Africa, 2018 | Statistics South Africa (statssa.gov.za)

[9] NGOZI, M. (2020). Relationship between gender and university students' academic performance in arts-related subjects. *Gender & Behaviour*, 9(1), 3701-3710. http://dx.doi.org/10.4314/gab.v9i1.67468

[10] DOUGLASS, J.A. (2019). *The conditions for admission: Access, equity and the social contract of public universities*. Redwood City: Stanford University.

[11] SA. (SOUTH AFRICA). (1999). National Student Financial Aid Scheme (Act no. 56 1999). Pretoria: Government printers.

[12] KHULUVU, M. and Ganyaupfu, 2021, E. 2021. Fact sheet access to tertiary education country comparison using Gross Enrolment Ratio. Fact Sheet - Access to Tertiary Education - Country Comparison using Gross Enrolment Ratio[1].pdf (lmi-research.org.za)

[13] FAROOQ, M.S., CHAUDHRY, A.H., SHAFIQ, M., BERHANU, G. (2020). Factors affecting students' quality of academic performance: A case of secondary school level. *Journal of Quality and Technology Management*, 7(2), 1-14.

[14] MATTES, R., LUESCHER-MAMASHELA, T.M. (2019). The roles of higher education in the democratization of politics in Africa: Reports of HERANA studies. *Journal of Higher Education in Africa,* 10(1): 139-170.

[15] GHAZVINI, S.D., KHAJEHPOUR, M. (2020). Gender differences in factors affecting academic performance of high school students. *Procedia - Social and Behavioral Sciences*, 15, 1040-1045. https://doi.org/10.1016/j.sbspro.2011.03.236

[16] BLOOM, D., CANNING, D., CHAN, K. (2020). *Higher education and economic development in Africa*. Cambridge: World Bank.

[17] ALI, M., HAYAT, B. (2021). Non-academic factors influencing students' achievement: a study in the Indonesian madrasahs. International Journal of Learning and Intellectual Capital, 16(2), 180-192.An, B.P. (2010). The relations between race, family characteristics, and where students apply to college. *Social Science Research*, 39, 310-323. http://dx.doi.org/10.1504/IJLIC.2019.10018851

[18] NSFAS (NATIONAL STUDENT FINANCIAL AID SCHEME). (2018). http://www.nsfas.org.za/content/mission.html

[19] PETERSEN, I., LOUW, J., DUMONT, K. (2019). Adjustment to university and academic performance among disadvantaged students in South Africa. *Educational Psychology,* 29, 99-115. https://psycnet.apa.org/doi/10.1080/01443411003659978

[20] BSE (BARRON'S EDUCATIONAL SERIES). (2017). *Barron's Profiles of American Colleges of 2001. New York,* NY: Hauppauge.

[21] SIKHWARI, T.D. (2017). The relationship between affective factors and the academic achievement of students at the University of Venda. *South African Journal of Higher Education* 21, 520-536. https://doi.org/10.4314/sajhe.v21i3.25721

[22] [21] BUILT, J. (2005). Dropout rates remain a challenge for higher education. *SUN Media*, 53, 18, September.

[23] GANSEMER-TOPF, A.M., SCHUH, J.H. (2016). Institutional Selectivity and Institutional Expenditures: Examining Organizational Factors that Contribute to Retention and Graduation. *Research in Higher Education,* 47, 6-18.

[24] MAYER-FOULKER, D. (2014). On the dynamics of quality student enrolment at institutions of higher education. *Economics of Education Review*, 21, 481–489.

[25] ERMISCH, J., FRANCESCONI, M. (2018). Family matter: Impacts of family background on educational attainment. *Economica,* 68, 137-156.

[26] JACOBS, N., Harvey, D. (2019). Do parents make a difference to children's academic achievement? Differences between parents of higher and lower achieving students. *Educational Studies,* 31, 431-448. https://doi.org/10.1080/03055690500415746

[27] MALEFO, V. (2015). Psycho-social factors and academic performance among African women students at a predominantly white university in South Africa. *South African Journal of Psychology* 30, 40-45.

[28] FALLIS, R.K., OPTOTOW, S. (2014). Are students failing schools or are schools failing students? Class cutting in high school. *Journal of Social Issues* 59, 103-119.

[29] Moore, R. (2015). Class attendance: How students' attitudes about attendance relate to their academic performance in introductory science classes. *Research & Teaching in Developmental Education*, 23, 1-14.

[30] VAN DER AARDWEG, E.M., Van der Aardweg, E.D. (2016). *Dictionary of educational psychology.* Pretoria: E&R Enterprises. SA News, 26 March. https://www.sanews.gov.za/south-africa/higher-education-deregisters-four-private-institutions
[31] MERRIAM, S., CAFFARELLA, R., BAUMGARTNER, L. (2017). *Learning in adulthood: a comprehensive guide*. San Francisco, CA: Wiley.
[32] BODOVSKI, K., 2016. Parental practices and educational achievement: social class, race, and habitus', *British Journal of Sociology of Education*, 31, 139-156.
[33] EPSTEIN, J.L. (2014). *School, family and community partnerships: Preparing educators and improving schools*. Boulder, CO: Westview.
[34] MAY, S., BIDGOOD, P., SAEBI, N. (2016). Are they thinking what we're thinking? College staff and student perceptions of the impact of ethnicity and gender on completion and achievement at a college of further education. *Journal of Further and Higher Education,* 30, 243–254.
[35] [34] PILLAY, P. (2018). *Higher education and economic development: A review of the literature*. Cape Town: Centre for Higher Education Transformation.
[36] BONG, M. (2018). Between- and within-domain relations of academic motivation among middle and high school students: Self-efficacy, task-value and achievement goals. *Journal of Educational Psychology,* 93, 23-34. 10.1037/0022-0663.93.1.23
[37] BANDURA, A., (2017). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-hall.
[38] FENOLLAR, P., ROMA´N, S., CUESTAS, P.J. (2017). University students' academic performance: An integrative conceptual framework and empirical analysis. *British Journal of Educational Psychology,* 77, 873-891. https://psycnet.apa.org/doi/10.1348/000709907X189118
[39] GREENE, B.A. (2019). Predicting high school students' cognitive engagement and achievement: Contributions of classroom perceptions and motivation. *Contemporary Educational Psychology*, 29, 499-517. https://doi.org/10.1016/j.cedpsych.2004.01.006
[40] LOWIS, M., CASLEY, A. (2017). Factors affecting student progression and achievement: Prediction and intervention*. Innovations in Education and Teaching International*, 45, 333-343. https://doi.org/10.1080/14703290802377232
[41] ROBBINS, S.B. (2020). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin,* 130, 261-288.
[42] MARBURGER, D.R. (2014). Absenteeism and undergraduate exam performance', *Journal of Economic Education,* 32, 2-21.
[43] ADEDIRAN, A.A., OYEDIRAN, W.O. (2020). Factors influencing the academic achievement of students' in Colleges of Education in Southwest, Nigeria. *Journal of Education and Human Development*, 7(3), 109-115. http://dx.doi.org/10.15640/jehd.v7n3a12
[44] MCCOACH, D.B. (2015). A validation study of the school attitude assessment survey. *Measurement and Evaluation in Counselling and Development*, 35, 66-77. http://dx.doi.org/10.1080/07481756.2002.12069050
[45] HALL, M. (2020). *Inequality and higher education: Marketplace or social justice. A stimulus paper*. London: Leadership Foundation for Higher Education.
[46] KENNETT, D.J., REED, M.J. (2017). The Importance of Perceived University-Life Balance, Hours per Week Engaged in Academic Activities, and Academic Resourcefulness. *Teaching & Learning Inquiry*, 7(1), 137-153. http://dx.doi.org/10.20343/teachlearninqu.7.1.9
[47] FENOLLAR, P., ROMA´N, S., CUESTAS, P.J. (2017). University students' academic performance: An integrative conceptual framework and empirical analysis. *British Journal of Educational Psychology* 77, 873-891.
[48] FINN, J.D., PANNOZZO, G. M., ACHILLES, C. M. (2020). The why's of class size: Student behaviour in small classes. *Review of Educational Research*, 73, 321-368. https://psycnet.apa.org/doi/10.3102/00346543073003321
[49] REHMAN, S., BISSCHOFF, C.A., BOTHA, C.J. (2019). A Model to measure Academic Performance of Private Higher Education Institutions. *Journal of Contemporary Management*, 16(2), 178-200. https://doi.org/10.35683/jcm19064.32

[50] [48] ASVAT, R., BISSCHOFF, C.A., BOTHA, C.J. (2022). Measuring the performance of a private higher education institution. *International Journal of Management in Practice*, 15(6):771-
[51] TSHIVHASE, L., BISSCHOFF, C.A. (2023). Benefits and challenges of implementing green initiatives at public universities in South Africa. *Journal of Economic Development, Environment and People*, 12(2):5-25.
[52] VENTER, A. (2022). *Developing a model to measure and manage brand loyalty in South Africa.* Potchefstroom: North-West University. (Mini-dissertation – MBA).
[53] SCHMULIAN, M. (2019). *Measuring brand loyalty of KwaZulu-Natal consumers towards their chicken brand of choice*. Potchefstroom: North-West University. (Mini-dissertation – MBA).
[54] BISSCHOFF, C.A., BESTER, C.J. (2018). The influence of brand loyalty and nutrition in soft drink consumption of South African children. In: Krey N. & Rossi, P., eds. *Boundary blurred: a seamless customer experience in virtual and real spaces*: *proceedings of the Academy of Marketing Science Annual Conference*. Champaigne, IL: Springer. pp. 267-280. https://doi.org/10.1007/978-3-319-99181-8_87
[55] BISSCHOFF, C.A. (2021). A model to measure and manage brand loyalty of commercial farmers towards their agribusiness. *Baltica,* 34(8), 32-64.
[56] BISSCHOFF, CA & TSHIVHASE, L. (2023b). Designing a model to measure and manage the implementation of green initiatives at South African universities. *Environmental Economics*, 12(1), 1-12.
[57] ARBUCKLE, J.L. (2021). *IBM SPSS Amos 27 user's guide*. Chicago, IL: IBM Software Group.
[58] BISSCHOFF, CA & TSHIVHASE, L. (2023a). A conceptual model to measure and manage the implementation of green initiatives at South African Public Universities. *Frontiers in Sustainability*, 4:1237514. (pp. 1-16). doi: https://doi.org/10.3389/frsus.2023.1237514
[59] IBM AMOS. (2022). *IBM AMOS.* (Version 28). Seattle, WA: IBM.
[60] IBM SPSS. (2022). *IBM statistical package for social sciences.* (Version 28). Seattle, WA: IBM.
[61] PALLANT, J. (2020). *SPSS survival manual: a step-by-step guide to data analysis using SPSS*. 7th ed. New York, NY: McGraw-Hill Education.
[62] FIELD, A. (2017). *Discovering statistics using IBM SPSS statistics*. 5th ed. London: Sage.
[63] CORTINA, J.M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology,* 78(1), 98-104.
[64] HULLAND, J. (1999). Use of Partial Least Squares (PLS) in strategic management research: a review of four recent studies. *Strategic Management Journal*, 20(2):195-204.
[65] KOMANG, A. 2018. Standardized regression weight in AMOS. In SEM, how to interpret standardized regression weights and their significance? | ResearchGate
[66] HAIR, J.F., BLACK, W.C., BABIN, B.J., ANDERSON, R.E. (2010). *Multivariate data analysis*. 7th ed. Upper Saddle River, NJ: Prentice-Hall.
[67] MUNIM, Z.H. (2022). *Common issues in structural equation modelling (SEM) and their solutions.* https://researchhub.org/common-issues-in-structural-equation-modelling-sem-and-their-solutions/
[68] KUMAR, G.N.S. (2019). *My easy statistics: structural equation modeling using Amos, Part 4 Model fit* [YouTube video]. https://youtu.be/nFml5AQwwHY?t=18 Date of access: 12 May 2021.
[69] DISTEFANO, C., MORGAN, G.B. (2014). A comparison of diagonal weighted least squares robust estimation techniques for ordinal data. *Structural Equation Modeling: A Multidisciplinary Journal,* 21(3), 425-438.
[70] BROWN, M.W., Cudeck, R. (1992). Alternative ways of assessing model fit. *Social Methods and Research, 21*(2), 230-258. https://doi.org/10.1177/0049124192021002005
[71] BENTLER, P.M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107(2):238-246. https://psycnet.apa.org/doi/10.1037/0033-2909.107.2.238
[72] TUCKER, L.R., LEWIS, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika, 38,* 1-10. https://doi.org/10.1007/BF02291170
[73] HAMID, A. SAMI, W., SIDEK, M. (2017). Discriminant validity assessment: Use of Fornel & Lacker criterion versus HTMT criterion. *Journal of Physics: Conference Series*, 890.
[74] XIA, Y., & YANG, Y. (2019). RMSEA, CFI, and TLI in structural equation modeling with ordered categorical data: The story they tell depends on the estimation methods. *Behavior Research Methods, 51*(1), 409-428. https://doi.org/10.3758/s13428-018-1055-2
[75] SA (SOUTH AFRICA). (1953). The Bantu Education Act (no 47 of 1953). Pretoria: Government printers.