Preparing future internal auditors for the digital age: An empirical assessment of skills, curriculum gaps, and professional expectations

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Abstract: The purpose of this paper is to examine how well South African universities prepare internal auditing graduates for a digitalized professional environment. Drawing on the Institute of Internal Auditors (IIA)'s competency guidance, national higher-education quality frameworks, and literature on 4IR and digital curricular transformation, the study employed a quantitative research approach. A questionnaire was administered to recent graduates, auditors, lecturers, and Chief Audit Executives (CAE), yielding 329 valid responses. The data was analyzed using reliability tests, exploratory factor analysis, and multiple linear regression in SPSS. Findings revealed that recent graduates are not ready for digitally operated institutions. This is consistent with gaps in data analytics, automation-aware evidence evaluation, cybersecurity awareness, and applied Artificial Intelligence (AI) audit skills. The paper concludes by recommending curriculum realignment to embed digital audit competencies, including data analytics, AI, cybersecurity, and automation. The study highlights the need for curriculum realignment, enhanced digital audit skills training, lecturer upskilling, stronger IIA–university collaboration, employer-led graduate development, and policy reforms to improve internal auditing graduates' digital readiness in South Africa.

Keywords: *Curriculum alignment, Digital audit competencies, Fourth industrial revolution (4IR), Graduate readiness, Internal auditing education.*

1. Introduction

The landscape of internal auditing is transforming rapidly, driven by advancements such as digitalization, cloud adoption, robotic process automation (RPA), and generative AI technologies. These developments necessitate a reassessment of the skill sets required for internal auditors. Traditional competencies like risk assessment, control evaluation, and ethical standards must now be complemented with data analytics capabilities, proficiency in IT audits, automated evidence evaluation, and an understanding of algorithmic risks [1]. The role of data analytics in internal auditing has been underscored as essential for enhancing audit effectiveness in digital environments [2].

In this evolution, South African universities face unique challenges stemming from a complex national quality assurance framework, pervasive inequalities, and resource constraints, combined with the demands of the Fourth Industrial Revolution (4IR) [3]. The need for curricula that produce graduates skilled in contemporary internal audit practices is critical. As highlighted by Betti and Sarens [3], integrating IT and data analytics skills into the internal audit function is crucial for adapting to a digital business landscape. This integration mirrors global trends where organizations increasingly incorporate RPA and other technological tools within their internal audit frameworks; however, implementation rates remain relatively low, indicating a gap in the preparation of future auditors [2].

An empirical assessment of curricular content at South African universities against international competency frameworks reveals significant alignment challenges. Current educational offerings may not adequately prepare students for the complexities they will encounter in professional environments,

necessitating curriculum revisions that reflect evolving competencies, particularly in technology and data analysis [4]. There is a pressing need for educational institutions to reassess and adapt their programs to ensure that graduates emerge with the skills and knowledge demanded in a rapidly evolving job market [4].

Furthermore, as emphasized by Papageorgiou et al. [5], the outsourcing of internal audit functions in South Africa requires a clear understanding of its implications on auditor independence and audit quality, making it imperative for accounting programs to integrate more nuanced discussions around these topics into their curricula. The integration of a technology-forward curriculum within South African higher education institutions can improve graduates' employability and potentially enhance the overall quality and credibility of the internal audit profession within the region [6].

In summary, the evolving demands of the internal audit profession, underpinned by technological advancements, require a vigorous educational response. This response must bridge existing gaps within South African universities, ensuring that graduates are sufficiently equipped with the requisite skills to thrive in a digitalized auditing landscape, fulfilling both local and global professional expectations [1].

2. Literature Review

2.1. Digital Transformation and Graduate Skills in South Africa

To effectively address the demands of the 4IR in South African universities, recent scholars highlight the urgent necessity for curriculum adaptation, focusing on key themes such as digital literacy, employability, and ethical awareness regarding technology, particularly AI. This adaptation should be framed within the context of addressing entrenched socio-economic inequalities that impact access to education and employment.

The integration of digital literacy across curricula is essential, as it aligns with the modern workforce's expectations, which increasingly prioritize technological competence and adaptability. Studies indicate that the lack of ICT education significantly contributes to high youth unemployment, particularly among marginalized groups, emphasizing that enhancing digital skills is pivotal for improving employment prospects for these populations [7]. Furthermore, Muringa and Adjin-Tettey [8] highlight that advancing work-integrated learning (WIL) opportunities within journalism reflects a broader trend where universities must forge stronger industry partnerships to facilitate student employability.

Moreover, the need for incorporating ethical considerations into AI training emerges as a significant theme. Matiwane and Olaitan [9] emphasize that AI tools must be integrated thoughtfully into curricula to prepare students for ethical dilemmas they may face in the workforce. The ethical implications surrounding data use and AI functionality are crucial, given that improper handling could exacerbate existing inequalities rather than alleviate them, as discussed by Mokoena and Seeletse [10]. Hossain [11] addresses the importance of fostering AI literacy to cultivate responsible decision-making among students in the context of an AI-driven labor market.

In addition, aligning academic programs with industry needs is vital for enhancing the employability of graduates. Seti et al. [12] underscore the necessity for agricultural graduates to acquire skills relevant in the 4IR suggests that developing specific curricula informed by employer expectations can bridge the gap between academia and the labor market. This industry-academia collaboration is also supported by Aboderin et al. [13], who discuss the significance of experiential learning environments that prepare students for practical challenges they will face in their careers. Zhou et al. [14] advocate for strengthening connections between universities and employers through structured internships and hands-on projects to enhance workforce readiness.

2.2. Internal Audit Competency Frameworks

In contemporary internal auditing, professionals need to possess a blend of both technical and professional competencies aligned with frameworks such as the Internal Auditing Competency Framework and the Global Model Internal Audit Curriculum. These frameworks emphasize

competencies relevant to governance, risk management, operations, and technology, highlighting the increasing relevance of data analytics, IT controls, and cyber risk management as essential skills for modern auditors. The Auditing Profession Act of 2005 in South Africa mandates the establishment of educational guidelines for internal auditors, reinforcing the need for institutions to ensure that educational curricula reflect these competencies to ease graduate integration into the workforce effectively [15].

The digital transformation of the auditing profession further emphasizes the necessity for internal auditors to be well-versed in evolving areas such as cybersecurity and data analytics. Research also indicates that internal auditors equipped with comprehensive IT capabilities are better positioned to navigate and assess risks, thereby enhancing organizational governance and control mechanisms. For example, a systematic literature review highlights the imperative for internal auditors to acquire IT skills, data analytics proficiency, and a solid understanding of emerging technologies to address the increasing complexity of audits today [16]. Furthermore, the pervasive nature of cyber threats necessitates continuous professional development for auditors, aligning with the global movement towards frameworks that integrate such skills as mandatory for ensuring audit effectiveness [17].

Additionally, the role of the internal auditor is being reframed to emphasize a proactive stance in risk governance via models such as the "Three Lines of Defence." This model redefines accountability pathways within organizations and promotes a comprehensive understanding of both operational and cyber risks, thereby necessitating curricula that prepare students to meet these demands [18]. Institutions of higher learning in South Africa are encouraged to align their programs with these frameworks, ensuring that they cultivate graduates who are aware of governance and risk complexities and are also skilled in applying data-driven insights for enhanced decision-making processes.

The increasing demand for skilled internal auditors can also be seen within the South African context, where public and private sector entities are striving to improve their auditing frameworks to remain compliant with international best practices. This process underscores the critical importance of integrating technology-focused training into auditing curricula as a response to regulatory and organizational expectations [19]. The emphasis on continual professional learning reflects a broader consensus that enriches educational opportunities for future auditors to significantly contribute to an improved audit quality and organizational performance [20].

2.3. Gaps Reported in Curriculum and Practice

Studies examining the curriculum for audit and IT-related courses in South Africa reveal significant gaps that mirror findings from international contexts. Specifically, there is a deficiency in hands-on exposure to audit software, structured data analytics modules, applied IT audit labs, and the integration of digital evidence concepts into audit methodology courses. In a review of current literature, important gaps were identified in the training of auditors that can affect practical implementation [21]. Such curriculum inadequacies are concerning, considering the transformative potential of digital tools in enhancing auditing practices and the need for a workforce skilled in these areas [21].

The professional body in South Africa, including the Institute of Internal Auditors of South Africa (IIASA), provides Continuous Professional Development (CPD) and technician-level programs aimed at bridging these gaps; however, the degree of curricular alignment across institutions is inconsistent [22]. While initiatives like CPD are essential, they often lack sufficient integration with academic programs, highlighting a disconnect between theoretical education and practical, industry-relevant skills [22]. As Kangwa et al. [23] note, effective bridging of these educational gaps involves an active dialogue between academic institutions and professional bodies to create competency frameworks that support alignment in educational content and professional standards.

Moreover, the integration of AI into IT audit training is growing in relevance, as current practices indicate a need for updating training methodologies to include these technologies [21]. AI's role in auditing can enhance efficiency and accuracy, thereby necessitating its inclusion as a core component in related curricula. Studies emphasize the importance of equipping auditors with skills that incorporate

both technological literacy and critical thinking [21]. Such integration is not only about adopting the latest technology but also about fostering a culture of continuous learning and adaptation within the field [22].

2.4. Professional Expectations

To enhance the educational framework for applied digital competencies, it is essential to integrate active learning, project-based assessments, and industry co-supervision into the curricula. Such strategies facilitate the acquisition of technical skills and support the development of essential competencies needed in modern workplaces, particularly in South Africa's diverse economic landscape. For instance, healthcare professionals are increasingly required to demonstrate digital skills essential for effective patient care, including proficiency in technology and ethical considerations surrounding its application [24].

Project-based assessments allow students to engage directly with real-world problems, reflecting the collaborative nature of professional environments [25]. This aligns with findings that suggest the need for graduates to possess not only technical skills but also competencies in relational and decision-making areas, as emphasized by South African professional bodies [25]. Collaborations with industry leaders can provide students with crucial insights into current practices and foster networks that are vital for career development.

Moreover, assessing rubrics are vital tools for measuring technical proficiency, such as SQL, Excel, and Python, but also soft skills like critical thinking and ethical decision-making. The use of structured rubrics has been shown to improve the clarity of assessment criteria, thereby facilitating better learning outcomes Gleason et al. [26] and empowering students to engage in reflective practice regarding their skills and ethical stances [27]. This approach is particularly relevant to the South African context, where authoritative bodies like the Health Professions Council emphasize maintaining high standards of ethical conduct in professional practices [28].

Ethical decision-making is particularly crucial in industries like healthcare, where the implications of technology use directly affect patient care [29]. As South Africa faces various challenges, including socio-economic inequalities and a history of disadvantage in education, integrating multicultural and ethical considerations into learning environments fosters inclusivity and enhances students' preparedness for future challenges [30]. Developing a comprehensive framework that incorporates these methods aligns educational practices with industry needs and ensures the cultivation of responsible, skilled professionals prepared for the complexities of the modern workforce.

3. Theoretical Framework

In this study, the framework of competency-based education (CBE) and employability theory provides a structured approach to evaluate curricula in higher education institutions. CBE focuses on aligning learning outcomes with professional competencies, ensuring that educational programs are responsive to the demands of the labour market. According to Alsharhan et al. [31], competency-based education is vital for healthcare learners to acquire and demonstrate the necessary skills for effective practice, especially in distributed healthcare education systems. This framework transitions students from education to professional environments effectively, ensuring they meet the requisite competencies expected in various industries.

In the context of South African higher education, integrating the IIA Competency Framework into curricular Designs are crucial. The framework acts as a mapping instrument to align educational outcomes with professional competency standards outlined in various higher education quality assurance documents. The South African Higher Education Quality Committee (HEQC) emphasizes this alignment by placing an obligation on institutions to ensure that graduate attributes meet both educational and industry standards [32]. This requirement is echoed in the findings of Bakari and Hunjra [32], who argue that heavy investments in higher education should lead to improved

employability prospects for graduates, thus reaffirming the link between educational quality and job readiness.

Furthermore, the significance of employability theory is underscored within this analytical framework. Employability does not only involve the skills acquired but also how these skills signal to potential employers the readiness and capability of graduates to meet market demands. Research has demonstrated that enhancing educational programs aligned with professional competencies can significantly improve graduates' employability outcomes [33]. The role of competency-based frameworks in enhancing educational quality is supported by evidence linking clear competency specifications to improved student outcomes in various fields [34].

4. Methodology

4.1. Research Design

This study employed a quantitative approach. A questionnaire survey was disseminated to capture prevalence and correlates (student readiness, course coverage). The participants were sampled as follows: final-year internal auditing, accounting, or final-year students majoring in internal audit, alumni who graduated within the last 2 years at the host university, lecturers, internal auditors, and CAE. A target sample of 400 participants was sampled using purposive sampling. However, only 329 participants completed the questionnaire, resulting in an 82% response rate. The remaining percentage represents participants who declined to participate.

5. Results and Discussion

A total of 329 valid survey responses were used for the quantitative analysis. The sample has a diverse representation of students, graduates, internal auditors, instructors, and chief audit executives, who significantly contributed to the renewal and digital transformation of the auditing curriculum. The sample's characteristics are summarised in Table 1.

Table 1.
Demographic and Occupational Characteristics of the Sample.

Variable	Category	Frequency	Percentage
Position	Final-year internal auditing student	151	46%
	Recent Graduate (within 2 years)	103	31%
	Lecturers	20	6%
	Internal Auditors	35	11%
	Chief Audit Executives	20	6%
Organization Type	University	109	33%
	Private sector	170	52%
	Public sector	50	15%
Years of Experience	0–2 years	75	23%
	3–5 years	98	30%
	6–10 years	70	21%
	More than 10 years	86	26%

The descriptive statistics of the sample indicated that final-year internal auditing students constitute the largest subgroup at 46%, significantly surpassing the proportions of recent graduates (within 2 years) at 31%, internal auditors at 11%, lecturers at 6%, and chief audit executives at 6%. This composition outlines the principal stakeholders in the curriculum creation and digitalization of the internal audit curriculum, as indicated by the survey, presumably attributable to its greater market presence and superior labor capability compared to other auditing functions.

This descriptive statistic also conveyed information regarding the participants' organizational types, with the commercial sector exhibiting a significantly high proportion of 52%, followed by the university sector at 33%, and the public sector at 15%. Finally, the statistics also presented data regarding the individuals' years of experience. Most participants have 3-5 years of experience (30%), followed by those

with over 10 years of experience (26%), individuals with 0-2 years of experience (23%), and those with 6-10 years of experience (21%). This distribution corresponds with the knowledge-based and digital requirements of auditing competencies, where industry experience is progressively acknowledged as vital for fulfilling professional standards and guaranteeing audit quality.

The demographic and occupational attributes of the sample align with the structural characteristics of the auditing and accounting profession. These features enhance the dataset's representativeness and establish a robust foundation for the reliability and validity of subsequent empirical investigations.

5.1. Validity And Reliability of the Results

The survey items were mapped to the IIA Internal Auditing Competency Framework to ensure content validity. A pilot test was conducted with 20 students for clarity, and internal consistency was measured using Cronbach's alpha, with a target greater than 0.7 for scales.

Table 2.
Results of Cronbach's Alpha reliability test.

Variable observation		Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Curriculum Content and Digital Integration		**Cronbach's Alpha =0.896**	
CCDI 1	Our internal auditing curriculum includes training in data analytics and visualization tools (e.g., Excel, Power BI, ACL, IDEA)	0.771	0.893
CCDI 2	Our program covers cybersecurity awareness and related audit procedures	0.780	0.868
CCDI 3	Blockchain and its auditing implications are part of the curriculum	0.739	0.876
CCDI 4	Students are taught how to use artificial intelligence or machine learning tools in the context of internal auditing	0.773	0.877
CCDI 5	The curriculum includes practical digital auditing skills beyond theory	0.827	0.855
CCDI 6	Digital auditing competencies are clearly outlined in the curriculum's learning outcomes	0.776	0.869
Graduate Digital Readiness		Cronbach's Alpha =0.842	
GDR 1	As a recent graduate/student, I feel confident in using the digital tools required in auditing environments	0.681	0.933
GDR 2	I received adequate digital training as part of my internal auditing qualification	0.769	0.798
GDR 3	My auditing education included real-world digital case studies and simulations	0.866	0.649

In evaluating the reliability of instruments, it is widely established that a Cronbach's alpha (α) coefficient of 0.70 or above indicates acceptable reliability [35]. Based on this alpha value, a conclusion was made that all construct groups in the research "empirical assessment of skills, curriculum gaps, and professional expectations" demonstrated high internal consistency, with Cronbach's alpha values ranging from 0.842 to 0.896, exceeding the recommended threshold of 0.7, according to Goh et al. [35]. This result confirms that the observed items within each construct are internally correlated and consistently capture the underlying latent dimensions they are designed to measure. Specifically, the graduate digital readiness construct = 0.842 demonstrates the readiness of graduates and their ability to meet industry demands. All adjusted item-total correlations surpassed 0.60, and no measurement items were omitted, validating that the constructed scales are appropriate for evaluating skills, curriculum deficiencies, and professional expectations, and demonstrate adequate reliability for subsequent exploratory factor analysis (EFA) and regression analysis.

5.2. Exploratory Factor Analysis (EFA)

An Exploratory Factor Analysis was performed on two observable variables to ascertain the underlying factor structure. The KMO score is 0.746, exceeding the acceptable threshold of 0.5, signifying that the dataset is very appropriate for factor analysis. Bartlett's Test of Sphericity produces a Chi-Square value of 6262.925 with a significance level of 0.001, indicating that the observed variables are correlated within the population and satisfy the criteria for EFA. The Total Variance Explained chart indicates that two factors were recovered with Eigenvalues exceeding 1, aligning with the independent variable categories in the study model. The total variance explained is 90.345%, substantially exceeding the 50% minimum criterion, signifying that the two extracted components account for over 80% of the variance in the data. The extraction ceases at the second factor, which has an Eigenvalue of 2.064, indicating that the observed variables aggregate into two separate factor groups.

Table 3.
Results of Total Variance Explained for Independent Variables.
Total Variance Explained

Component	Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.067	67.409	67.409	5.013	55.698	55.698
2	2.064	22.937	90.345	3.118	34.647	90.345

Note: Extraction Method: Principal Component Analysis.

The results indicate that the observed variables are associated at the population level, and the model comprises two separate elements that must be incorporated into the forthcoming regression analysis. The Rotated Component Matrix derived from Varimax rotation identifies two distinct factor groupings.

Table 4.
 Results of EFA.

	Component	
	1	**2**
CCDI 1	0.927	
CCDI 2	0.916	
CCDI 3	0.913	
CCDI 4	0.909	
CCDI 5	0.897	
CCDI 6	0.852	
GDR1		0.970
GDR2		0.967
GDR3		0.962
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.746
Bartlett's Test of Sphericity	Approx. Chi-Square	6262,925
	Df	36
	Sig.	<,001

The rotational component matrix findings demonstrate that both observable variables distinctly converged into two separate factor groups, with no indications of cross-loading. The factor loadings range from 0.852 to 0.970, surpassing the minimum threshold of 0.5, thus indicating robust convergent validity for all observable variables within their respective latent constructs (refer to Table 4). The EFA results validate the suitability of the measuring scales used in the research model. Both independent variables demonstrate distinct representational value and meet the criteria for inclusion in the subsequent regression analysis.

5.3. Model Testing

The regression results (Table 5) demonstrate a correlation coefficient of R= 0.754, indicating a robust link between the independent and dependent variables. The model attains an R^2 value of 0.569 and an adjusted R^2 of 0.561, signifying that 56.1% of the variance in the dependent variable (GDR) is elucidated by the two independent variables; the residual variance is ascribed to extraneous factors and random error.

The Durbin–Watson statistic is 1.384, indicating positive autocorrelation, while the Variance Inflation Factor (VIF) values for all independent variables are below 2, signifying no breach of autocorrelation or multicollinearity assumptions. The F-test in the ANOVA table shows F = 70.784 with a significance level of 0.001 (< 0.05), indicating the model is statistically significant, and all variables contribute to explaining GDR variation.

Table 5.
Results of linear regression analysis.

Model	R	R Square	Adjusted R-Square	Std. Error of the Estimate	Durbin–Watson
1	0.754[a]	0.569	0.561	0.321	1.384

Note: a. Predictors: CCDI 1_CCDI 2_CCDI 3_CCDI 4_CCDI 5_CCDI 6
b. Dependent Variable: GDR1_GDR2_GDR3.

Table 5. Continue…

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	43.853	6	7.309	70.784	0.001[b]
	Residual	33.248	322	.103		
	Total	77.100	328			

Note: a. Predictors: CCDI 1_CCDI 2_CCDI 3_CCDI 4_CCDI 5_CCDI 6
b. Dependent Variable: GDR1_GDR2_GDR3.

Table 6.
Results of the multiple regression model.

Model		Unstandardized Coefficients		Standardized	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-2.770	0.196		-14,100	0,000		
	CCDI 1	0.453	0.095	0.382	12.032	0.000	0.850	1.024
	CCDI 2	0.411	0.063	0.426	13.748	0.000	0.722	1.006
	CCDI 3	0.358	0.077	0.310	12.004	0.000	0.821	1.038
	CCDI 4	0.405	0.089	0.433	13.840	0.000	0.783	1.026
	CCDI 5	0.384	0.082	0.423	13.805	0.000	0.747	1.013
	CCDI 6	0.327	0.073	0.374	12.364	0.000	0.830	1.093

Note: a. Dependent Variable: GDR1_GDR2_GDR3

A multiple linear regression analysis was performed to assess how each component affects the readiness of auditing graduates to apply the abilities demanded by digitalized institutions. The results in Table 6 show that all six independent variables have both negative and positive standardized Beta coefficients and are statistically significant at Sig. = 0.000 < 0.05, indicating these factors are essential for graduate readiness and competencies in digital organizations.

Furthermore, all Tolerance values ≥ 0.722 and VIF values ≤ 1.093 are within the permitted limits (VIF < 2), so affirming the lack of multicollinearity and guaranteeing the model's stability and trustworthiness. They additionally indicate that providing auditing students with digital tools will prepare them for digital work situations.
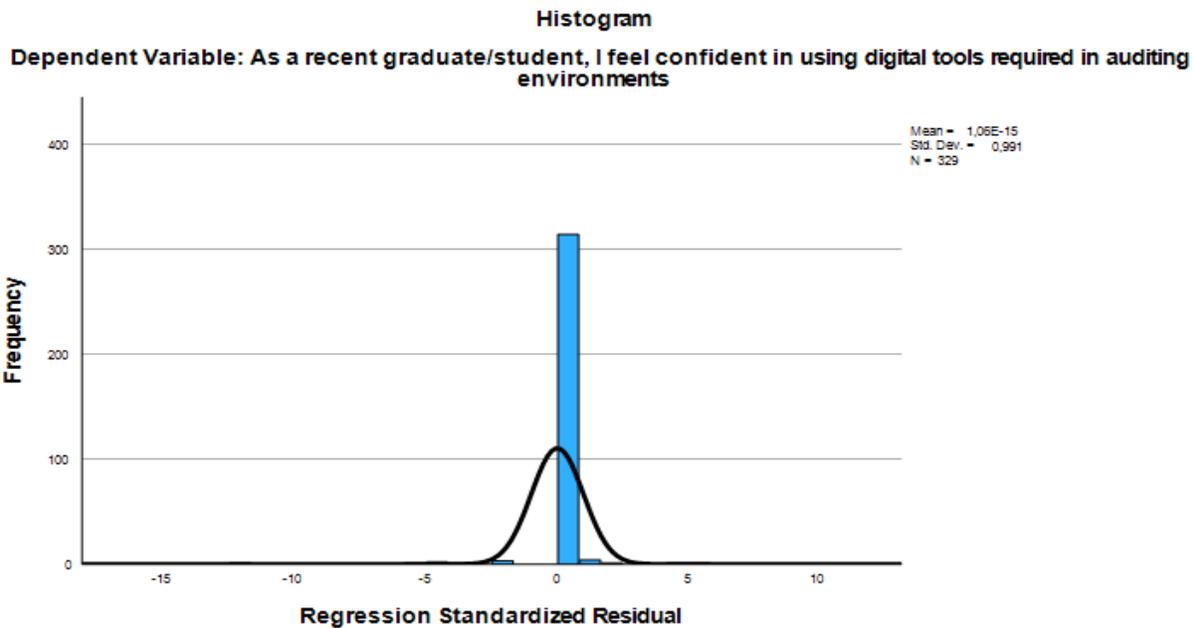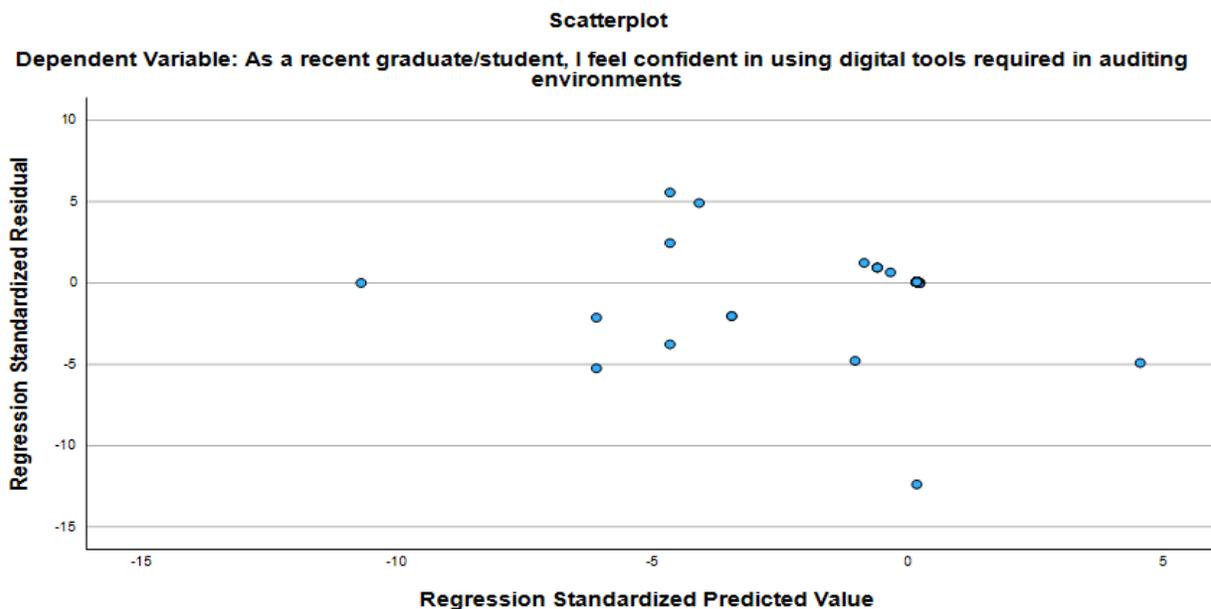
Figure 1.
Histogram.

Figure 2.
Scatterplot Chart.

The regression assumption tests, as indicated by the histogram and scatterplot charts, show that the model meets the necessary statistical assumptions for linear regression analysis reliability. The histogram of standardized residuals shows an approximately normal distribution. The fitted curve nearly aligns with the measured frequencies, having a mean of 0 and a standard deviation of 1. This confirms that the residuals have a normal distribution, which is a key criterion for the validity of

regression estimations using the Ordinary Least Squares method. Meanwhile, the scatterplot depicting the association between standardized residuals and anticipated values shows data points randomly distributed throughout the horizontal axis, with no discernible pattern or trend. This proves that the error terms' variance is constant, with no symptoms of autocorrelation or linearity violations. In conclusion, the graphical diagnostics show that the regression model in the study "Preparing Future Internal Auditors for the Digital Age: An Empirical Assessment of Skills, Curriculum Gaps, and Professional Expectations" fully satisfies the key assumptions of multiple linear regression. The findings demonstrate the reliability of the computed coefficients and provide excellent explanatory power for assessing the impact of digital tools on graduation preparedness audits.

6. Conclusions and Curriculum Implications

The findings of this study indicate that graduates in internal auditing are not sufficiently prepared for digitalized audit environments, largely because the curriculum still prioritizes traditional audit theory over applied technological skills. Although students demonstrate competence in foundational concepts such as risk assessment, control evaluation, and audit methodology, they lack confidence and proficiency in key digital competencies required by modern organizations. These gaps include data analytics using AI, understanding of cyber risk, and the ability to work with automated or system-generated audit evidence.

Employers increasingly expect entry-level internal auditors to navigate complex, technology-driven audit landscapes where data-driven decision-making and the use of AI are standard requirements. The misalignment between industry expectations and university curricula results in graduates who are academically qualified but not fully work-ready for digital audit environments. This challenge is further amplified by rapid technological changes driven by artificial intelligence, automation, and cloud systems, developments that require continuous learning and agility.

Therefore, the study concludes that without targeted curriculum reform, South African universities will continue to produce graduates who struggle to meet professional expectations, limiting both their employability and the ability of internal audit functions to fully embrace digital transformation. Meaningful curriculum renewal is urgently needed to bridge this skills gap and ensure that internal auditing graduates are prepared for the realities of contemporary audit practice.

7. Curriculum Implications

Integration of digital audit skills across modules: digital competencies must be embedded throughout the curriculum rather than offered as optional or peripheral topics. Core courses should integrate data analytics, automated evidence evaluation, AI general controls, and cyber risk awareness as explicit learning outcomes.

Introduction of dedicated digital audit or data analytics modules: The curriculum should include chapters such as audit data analytics, AI audit, general controls, cybersecurity for auditors, digital evidence, and automation in auditing. There should be practical labs and case studies aligned with IIA standards and employer requirements.

Practical, hands-on learning using audit technology: Universities should invest in access to audit tools such as IDEA, ACL, Power BI, or SQL-based environments. Practical assessments, simulated audit engagements, and datasets should be incorporated to build real-world competence. Embedding continuous learning and digital adaptability: Students should be taught how to learn new technologies quickly, given the fast pace of digital innovation. Micro-credentials, workshops, and short courses can supplement formal modules. Policy and accreditation considerations: Universities must document their digital curriculum enhancements for HEQC reviews, demonstrating clear learning outcomes related to digital competency and alignment with 4IR imperatives.

Transparency:

The author confirms that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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