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Beyond Laziness: A Multidimensional Analysis of Delayed Completion in Ugandan Terminal Degree Programs

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ABSTRACT: Background: *Terminal degree completion rates in Ugandan universities remain persistently low, with delayed completion rates exceeding 60% in many programs. Traditional explanations have focused on individual student deficiencies, overlooking potential institutional and systemic barriers that may impede timely graduation.* ***Main Objective:*** *To conduct a multidimensional analysis of factors contributing to delayed comple tion in Ugandan terminal degree programs, moving beyond individual blame narratives to identify institutional and systemic barriers to timely graduation.* ***Methods:*** *A mixed-methods cross-sectional study was conducted across five public universities in Uganda, involving 384 terminal degree students and 96 academic supervisors recruited through stratified random sampling (power = 80%, α = 0.05). Analysis proceeded through univariate descriptive statistics), bivariate (chi-square tests, t-tests, correlation analyses), and multivariate phases (hierarchical logistic regression and structural equation modeling). Model assumptions including multicollinearity (VIF < 5) and adequate sample size were tested and satisfied.* ***Key Results:*** *Significant differences emerged between on-time (n=142, 37.0%) and delayed (n=242, 63.0%) completers across all domains examined. Supervision quality demonstrated the largest effect size (Cohen's d = 1.78, p < 0.001), with on-time students rating supervision at 4.2 compared to 2.8 for delayed students and attending nearly twice as many supervision meetings monthly (3.8 vs. 1.6). Financial barriers were pervasive, with 81.8% of delayed students reporting inadequate research funding compared to 29.6% of on-time completers (OR = 10.64, 95% CI: 6.84-16.54, p < 0.001).* ***Conclusion:*** *Delayed completion in Ugandan terminal degree programs resulted primarily from institutional and systemic deficiencies rather than individual student inadequacies. Inadequate supervision, insufficient financial support, and deficient research infrastructure created compound barriers that systematically impeded timely graduation. Universities should implement mandatory supervision standards with accountability mechanisms, governments and institutions should expand comprehensive scholarship programs covering all research-related costs, and substantial investment in research infrastructure and support services is essential to create enabling environments for timely degree completion.*

Keywords: terminal degree completion, graduate education, supervision quality, research funding, institutional support, systemic barriers.

Introduction

The phenomenon of extended time-to-completion in doctoral and master's degree programs, where students take significantly longer than the nominal program duration to complete their studies or abandon their programs entirely without completing their degrees, represents a source of inefficiency in higher education systems, personal frustration for students who invest years in uncompleted programs, and lost social benefit from the research and expertise that unrealized degrees would have contributed to society (Fahimah et al., 2021; Kim et al., 2022). In Uganda's higher education sector, delayed completion in terminal degree programs has reached levels that suggest systemic dysfunction rather than individual failing, yet discourse about the problem frequently defaults to characterizations of students as lazy, undisciplined, or lacking sufficient commitment to their studies explanations that locate the problem entirely within individual character deficiencies while ignoring institutional, structural, and contextual factors that create barriers to timely completion (Awacorach et al., 2021; Qahmash et al., 2023).

This multidimensional analysis rejects reductionist laziness narratives to examine the complex constellation of factors that contribute to delayed completion in Ugandan terminal degree programs, including supervisor availability and quality, institutional support structures, funding constraints that force students to divide attention between studies and income-generating activities, methodological challenges and research capacity gaps, data access difficulties, ethical review bottlenecks, and the interaction of these factors with students' personal circumstances and competing life responsibilities (Saleem et al., 2021; Sterpu et al., 2024).

Background

Terminal degree programs in Uganda, encompassing doctoral programs that remain relatively limited in number and scope as well as master's programs that have proliferated across institutions in recent decades, operate within a higher education context characterized by limited research infrastructure, nascent research cultures in many institutions, and faculty supervisors who themselves may have limited research experience or who juggle supervision responsibilities alongside heavy teaching loads and other institutional demands that constrain the time and attention they can devote to graduate student mentorship (Cheung et al., 2023; Edison & Paul Kasujja, 2020). The nominal duration for doctoral programs typically ranges from three to five years while master's programs are structured for one to two years depending on whether they include substantial research components, yet actual completion times frequently exceed these periods by years or even decades, with substantial proportions of enrolled students ultimately abandoning their programs without completing degrees (Kibuuka, 2022; ŞENYİĞİT, 2018).

The conventional attribution of delayed completion to student laziness or poor work ethic fails to account for the material realities facing many graduate students in Uganda, where the absence of comprehensive funding mechanisms means that most students must simultaneously work full-time to support themselves and their families while pursuing graduate studies, creating time constraints and competing priorities that make sustained focus on research difficult even for highly motivated individuals (Enock et al., 2023; Shuja et al., 2022). Institutional factors that contribute to delayed completion include inadequate supervision where students may have advisors who are themselves juggling numerous supervisees and lack time for regular meetings, feedback on drafts, or substantive intellectual engagement with students' work; lack of structured coursework or research methods training that leaves students inadequately prepared for independent research; absence of writing support and academic writing development programs that could help students develop the scholarly writing competencies required for theses and dissertations; limited library resources and database access that necessitate expensive travel to other institutions or countries to access literature; bureaucratic inefficiencies in processes such as ethical review where committees meet infrequently and provide delayed feedback that can stall research for months (Akter et al., 2019; Gracious, 2024; Haskel-Ittah et al., 2020).

Methodological challenges arise when students undertake ambitious research designs without adequate preparation in research methods, data analysis, or theoretical frameworks, leading to false starts, data collection that proves unusable, or analysis paralysis when faced with complex datasets they lack skills to interpret; when supervisors themselves have limited methodological expertise in the approaches students are attempting to use; or when institutional capacity for supporting quantitative analysis, qualitative data management, or specialized research techniques remains underdeveloped

Problem Statement

Uganda's graduate programs, particularly terminal degrees such as PhDs and master's programs, experience extraordinarily high rates of delayed completion, with many students taking years beyond stipulated program durations to graduate, while others never complete at all. This phenomenon is routinely attributed to student laziness, lack of commitment, or poor time management, narratives that place blame squarely on individual students while ignoring structural, institutional, and systemic factors that impede timely completion. Such simplistic explanations fail to account for the complex realities of graduate education in Uganda: inadequate supervision quality and availability, limited research funding, poor institutional infrastructure, absence of dedicated research time for students who must work full-time to support their studies, unclear program expectations, bureaucratic obstacles, and personal circumstances including family responsibilities and economic pressures.

The persistence of "laziness" narratives prevents institutions from acknowledging and addressing their own failures in creating enabling environments for graduate research and completion (Meng & Zhang, 2023).

Furthermore, delayed completion has significant consequences beyond individual frustration: it reduces research productivity, limits knowledge generation, perpetuates knowledge dependence on foreign institutions, undermines institutional credibility, wastes scarce resources, and delays the entry of highly skilled professionals into the workforce (Birioukov, 2021; Gage et al., 2016). The problem is particularly acute in Uganda where graduate programs often lack structured coursework, formalized milestone systems, regular progress monitoring, and adequate financial support mechanisms (ALANI, 2023; Julius & Geofrey, 2025).

Students frequently struggle with inadequate methodological training, limited access to research materials and data, isolation from scholarly communities, and supervisors who are themselves overburdened with teaching and administrative responsibilities. Many terminal degree students juggle full-time employment, family obligations, and part-time studies with minimal institutional support for balancing these demands. Additionally, cultural factors such as hierarchical supervision relationships may inhibit students from seeking help or challenging inadequate supervision. A multidimensional analysis that examines institutional, structural, financial, supervisory, and personal factors is essential for developing comprehensive interventions to improve completion rates.

Main Objective

To conduct a multidimensional analysis of factors contributing to delayed completion in Ugandan terminal degree programs, moving beyond individual blame narratives to identify institutional and systemic barriers to timely graduation.

Specific Objectives

1. To assess the quality and availability of supervision, mentorship, and institutional support systems for terminal degree students in Ugandan universities.
2. To examine financial, infrastructural, and resource-related barriers that impede research progress and timely completion of graduate degrees.
3. To identify effective institutional interventions and support mechanisms that can improve completion rates in Uganda's terminal degree programs.

Research Questions

1. What institutional, supervisory, and infrastructural factors contribute most significantly to delayed completion in Ugandan terminal degree programs?
2. How do financial constraints, employment obligations, and personal circumstances interact with institutional factors to affect graduate student progress?

3. What comprehensive support systems, policy reforms, and institutional practices are necessary to improve timely completion rates in Uganda's graduate programs?

Methodology.

This study employed a mixed-methods cross-sectional design to investigate factors contributing to delayed completion in Ugandan terminal degree programs across five public universities. A stratified random sampling approach was used to recruit 384 terminal degree students (PhD and Master's candidates) and 96 academic supervisors, calculated using a 95% confidence level, 5% margin of error, and 50% proportion to detect an 80% statistical power for identifying significant associations. Data collection involved structured questionnaires assessing supervision quality, institutional support, financial constraints, and infrastructural adequacy, alongside semi-structured interviews with 24 key informants including deans of graduate schools and university administrators. The questionnaires utilized validated Likert scales for measuring constructs such as supervision satisfaction, resource availability, and institutional support quality, while qualitative interviews explored systemic barriers and successful intervention strategies. Ethical approval was obtained from the relevant institutional review boards, and informed consent was secured from all participants prior to data collection.

Data analysis proceeded through three sequential phases to comprehensively address the study objectives. Univariate analysis included descriptive statistics (frequencies, percentages, means, and standard deviations) to characterize the distribution of supervision quality scores, financial barriers, and completion times across institutions. Bivariate analysis employed chi-square tests for categorical variables and independent t-tests or Mann-Whitney U tests for continuous variables to examine associations between predictor variables (supervision quality, financial support, infrastructure) and completion delays, with Pearson or Spearman correlation coefficients calculated to assess the strength of linear relationships. Multivariate analysis utilized hierarchical multiple logistic regression to model the odds of timely completion (binary outcome: on-time vs. delayed), with predictor variables entered in blocks representing individual factors (demographic characteristics), supervision-related factors, financial/resource barriers, and institutional support mechanisms.

Model assumptions including linearity of the logit, absence of multicollinearity (assessed via variance inflation factors <5), and adequate sample size (minimum 10 events per predictor variable) were tested and satisfied. Additionally, structural equation modeling was employed to examine direct and indirect pathways through which institutional factors influenced completion outcomes, with model fit assessed using chi-square statistics, comparative fit index (CFI>0.95), and root mean square error of approximation (RMSEA<0.06) (Nelson et al., 2022, 2023).

Results.

Table 1: Demographic Characteristics and Completion Status of Terminal Degree Students (N=384)

Characteristic	On-time (n=142)	Delayed (n=242)	χ^2/t-value	p-value
Age (years), Mean ± SD	32.4 ± 4.8	35.7 ± 6.2	t = -5.43	<0.001
Gender, n (%)				
Male	78 (54.9%)	145 (59.9%)	0.94	0.332
Female	64 (45.1%)	97 (40.1%)		
Program Type, n (%)				
Master's	95 (66.9%)	128 (52.9%)	7.82	0.005
PhD	47 (33.1%)	114 (47.1%)		
Funding Source, n (%)				
Full scholarship	68 (47.9%)	45 (18.6%)	48.76	<0.001
Partial scholarship	42 (29.6%)	71 (29.3%)		
Self-funded	32 (22.5%)	126 (52.1%)		
Employment Status, n (%)				
Full-time student	89 (62.7%)	78 (32.2%)	35.24	<0.001
Part-time employment	38 (26.8%)	97 (40.1%)		
Full-time employment	15 (10.6%)	67 (27.7%)		

Statistical Interpretation

The univariate and bivariate analyses revealed significant demographic and programmatic differences between students who completed on-time versus those who experienced delays. Students in the delayed completion group were significantly older (M = 35.7 years, SD = 6.2) compared to those who completed on-time (M = 32.4 years, SD = 4.8), with an independent t-test indicating a

statistically significant difference ($t = -5.43$, $p < 0.001$). This age difference suggested that older students faced additional challenges that impeded timely completion. Gender distribution showed no significant association with completion status ($\chi^2 = 0.94$, $p = 0.332$), indicating that male and female students experienced delays at similar rates. However, program type demonstrated a significant relationship with completion outcomes ($\chi^2 = 7.82$, $p = 0.005$), with PhD students representing 47.1% of delayed completions compared to only 33.1% of on-time completions, suggesting that doctoral programs posed greater completion challenges than master's programs. The most striking associations were observed for funding source ($\chi^2 = 48.76$, $p < 0.001$) and employment status ($\chi^2 = 35.24$, $p < 0.001$), both demonstrating highly significant relationships with completion timelines at the $p < 0.001$ level.

Discussion of Findings

The findings illuminated critical systemic and financial barriers affecting terminal degree completion in Uganda. The strong association between funding source and completion status was particularly noteworthy, with only 18.6% of delayed students having full scholarships compared to 47.9% of on-time completers, while self-funded students constituted 52.1% of the delayed group versus 22.5% of the on-time group. This pattern underscored the paramount importance of adequate financial support for timely degree completion, suggesting that institutional and governmental scholarship programs played a protective role against delays. The employment status findings reinforced this interpretation, as students engaged in full-time employment were disproportionately represented in the delayed completion group (27.7% vs. 10.6%), indicating that the necessity to work for financial survival competed directly with research and academic obligations. The higher prevalence of PhD students among delayed completions aligned with international literature documenting the greater complexity, longer duration, and more intensive resource requirements of doctoral research. These demographic patterns suggested that delays were not primarily attributable to individual student deficiencies but rather reflected structural inequities in financial support systems and the challenging reality of balancing economic survival with academic pursuits in resource-constrained contexts.

Table 2: Quality of Supervision, Mentorship, and Institutional Support (N=384)

Variable	On-time (n=142) Mean ± SD	Delayed (n=242) Mean ± SD	t-value	p-value	Cohen's d
Supervision Quality Score (1-5 scale)	4.2 ± 0.6	2.8 ± 0.9	16.82	<0.001	1.78
Supervisor availability	4.3 ± 0.7	2.6 ± 1.0	18.45	<0.001	1.95
Quality of feedback	4.1 ± 0.8	2.7 ± 0.9	15.23	<0.001	1.63
Research guidance	4.2 ± 0.7	2.9 ± 1.0	14.67	<0.001	1.48
Mentorship Support Score (1-5 scale)	3.9 ± 0.8	2.4 ± 0.9	16.34	<0.001	1.77
Institutional Support Score (1-5 scale)	3.7 ± 0.7	2.3 ± 0.8	17.28	<0.001	1.87
Research training workshops	3.8 ± 0.9	2.2 ± 0.9	16.45	<0.001	1.78
Writing support services	3.6 ± 1.0	2.1 ± 0.9	14.89	<0.001	1.58
Statistical consultation	3.7 ± 0.9	2.4 ± 1.0	13.12	<0.001	1.39
Frequency of Supervision Meetings (per month)	3.8 ± 1.2	1.6 ± 0.9	19.23	<0.001	2.08

Correlation Analysis (Spearman's rho)

- Supervision Quality Score vs. Completion Time: $\rho = -0.68$, $p < 0.001$
- Institutional Support Score vs. Completion Time: $\rho = -0.61$, $p < 0.001$
- Mentorship Support Score vs. Completion Time: $\rho = -0.59$, $p < 0.001$

Statistical Interpretation

The analysis revealed highly significant differences in supervision quality, mentorship, and institutional support between on-time and delayed completion groups, with all t-tests yielding p-values < 0.001 and large effect sizes (Cohen's d ranging from 1.39 to 2.08). The overall supervision quality score demonstrated the most substantial difference, with on-time students rating their supervision significantly higher ($M = 4.2$, $SD = 0.6$) compared to delayed students ($M = 2.8$, $SD = 0.9$), producing a t-value of 16.82 and an effect size of $d = 1.78$, which represented a very large practical significance. Supervisor availability showed the largest effect size ($d = 1.95$, $t = 18.45$, $p < 0.001$), indicating that regular access to supervisors was critically associated with timely completion. The frequency of supervision meetings exhibited the strongest differentiation between groups, with on-time students meeting their supervisors nearly 3.8 times per month compared to only 1.6 times for delayed students ($t = 19.23$, $p < 0.001$, $d = 2.08$). Correlation analyses demonstrated strong negative associations between all support measures and completion time, with supervision quality showing the strongest relationship ($\rho = -0.68$, $p < 0.001$), followed by institutional support ($\rho = -0.61$, $p < 0.001$) and mentorship ($\rho = -0.59$, $p < 0.001$). These large negative correlations indicated that as quality of support increased, completion time decreased substantially.

Discussion of Findings

These findings provided compelling evidence that inadequate supervision and institutional support systems constituted major systemic barriers to timely degree completion in Ugandan universities, directly addressing the first specific objective of the study.

The magnitude of differences observed—with effect sizes exceeding Cohen's threshold for "large" effects (d > 0.80)—suggested that supervision quality was not merely a contributing factor but potentially a primary determinant of completion outcomes. The particularly low mean scores for delayed students across all supervision dimensions (ranging from 2.4 to 2.9 on a 5-point scale) indicated that many students were receiving inadequate guidance, feedback, and support throughout their research journey. The dramatic difference in supervision meeting frequency (3.8 vs. 1.6 meetings per month) pointed to a systemic failure in ensuring consistent supervisor-student engagement, possibly reflecting excessive supervisor workloads, unclear institutional expectations for supervision intensity, or insufficient accountability mechanisms.

The strong correlations between support measures and completion time reinforced the interpretation that these were not merely associated factors but likely causal influences on student progress. The consistent pattern across supervision, mentorship, and institutional support dimensions suggested that completion delays resulted from multiple, interconnected deficiencies in the academic support infrastructure rather than isolated problems. These results challenged individual blame narratives by demonstrating that students who experienced delays operated within markedly inferior support environments, suggesting that institutional investment in robust supervision standards, reduced supervisor-to-student ratios, mandatory supervision frequency requirements, and comprehensive support services could substantially improve completion rates.

Table 3: Financial, Infrastructural, and Resource-Related Barriers (N=384)

Barrier Category	On-time (n=142) n (%)	Delayed (n=242) n (%)	χ^2	p-value	Odds Ratio (95% CI)
Inadequate Research Funding	42 (29.6%)	198 (81.8%)	106.34	<0.001	10.64 (6.84-16.54)
Limited Library Resources	38 (26.8%)	176 (72.7%)	84.52	<0.001	7.32 (4.83-11.08)
Poor Internet Connectivity	51 (35.9%)	189 (78.1%)	69.23	<0.001	6.24 (4.15-9.38)
Insufficient Laboratory Equipment	34 (23.9%)	167 (69.0%)	79.86	<0.001	7.09 (4.63-10.86)
Lack of Research Assistants	28 (19.7%)	154 (63.6%)	75.34	<0.001	7.12 (4.52-11.22)
Data Collection Challenges	56 (39.4%)	203 (83.9%)	79.56	<0.001	8.23 (5.28-12.83)
Statistical Software Access	31 (21.8%)	148 (61.2%)	61.87	<0.001	5.67 (3.68-8.74)
Publishing Costs	45 (31.7%)	187 (77.3%)	82.45	<0.001	7.35 (4.83-11.18)

Resource Availability Scores (Mean ± SD, 1-5 scale)

Resource Type	On-time	Delayed	t-value	p-value
Financial resources	3.8 ± 0.9	2.1 ± 0.8	18.92	<0.001
Infrastructure adequacy	3.6 ± 0.8	2.3 ± 0.7	16.34	<0.001
Technology access	3.7 ± 0.9	2.2 ± 0.8	16.78	<0.001
Research materials	3.5 ± 0.9	2.0 ± 0.7	17.56	<0.001

Statistical Interpretation

The chi-square analyses revealed overwhelmingly significant associations between resource-related barriers and completion status, with all eight barrier categories demonstrating p-values < 0.001 and substantial effect sizes. Inadequate research funding showed the strongest association with delayed completion ($\chi^2 = 106.34$, $p < 0.001$), with 81.8% of delayed students reporting this barrier compared to only 29.6% of on-time completers. The odds ratio of 10.64 (95% CI: 6.84-16.54) indicated that students lacking adequate research funding had more than ten times the odds of experiencing completion delays, with the confidence interval excluding unity and demonstrating precision in this estimate.

Data collection challenges (OR = 8.23, 95% CI: 5.28-12.83) and publishing costs (OR = 7.35, 95% CI: 4.83-11.18) also demonstrated very strong associations with delays. All odds ratios ranged from 5.67 to 10.64, indicating that each barrier substantially increased the likelihood of delayed completion. The continuous resource availability scores reinforced these findings, with independent t-tests showing highly significant differences across all resource domains. Financial resources showed the largest disparity ($t = 18.92$, $p < 0.001$), with on-time students rating availability at 3.8 compared to 2.1 for delayed students. The consistency of large, significant differences across diverse resource categories suggested systemic under-resourcing rather than isolated deficiencies.

Discussion of Findings

These findings provided robust evidence that financial, infrastructural, and resource-related barriers constituted fundamental systemic obstacles to timely degree completion, directly addressing the second specific objective. The magnitude of the odds ratios was particularly striking, with inadequate research funding increasing the odds of delay more than tenfold, suggesting that financial constraints were not merely inconvenient but often prohibitive to research progress. The high prevalence of multiple concurrent barriers among delayed students—with majorities reporting problems with funding (81.8%), data collection (83.9%), internet connectivity (78.1%), and publishing costs (77.3%)—indicated that students faced compound disadvantages that cumulatively undermined their capacity to progress efficiently. The strong association between publishing costs and completion delays was

especially noteworthy in the context of many programs requiring publications for graduation, suggesting that this institutional requirement, without corresponding financial support, created an additional barrier that disproportionately affected under-resourced students.

The significant disparities in library resources, laboratory equipment, and statistical software access pointed to inadequate institutional investment in research infrastructure, forcing students to seek external solutions or proceed without essential tools. These resource deficiencies likely extended research timelines by necessitating workarounds, limiting methodological options, or causing repeated delays in data collection and analysis phases. The pattern of findings challenged narratives attributing delays to student inadequacy and instead revealed a context where systemic under-investment in research infrastructure and student funding created predictable obstacles to completion. The results suggested that addressing completion rates would require substantial institutional and governmental commitment to research funding, infrastructure development, and removal of financial barriers such as publishing costs—interventions that would address root causes rather than symptoms of the completion crisis.

Table 4: Multivariate Logistic Regression Model for Predictors of Timely Completion (N=384)

Predictor Variable	B	SE	Wald χ^2	p-value	Adjusted OR	95% CI
Model 1: Demographics						
Age (years)	-0.08	0.03	7.11	0.008	0.92	0.87-0.98
Gender (Female vs. Male)	0.21	0.24	0.76	0.383	1.23	0.77-1.97
Program (PhD vs. Master's)	-0.67	0.26	6.64	0.010	0.51	0.31-0.85
Full scholarship	1.89	0.31	37.16	<0.001	6.62	3.60-12.16
Full-time student	1.34	0.28	22.96	<0.001	3.82	2.21-6.60
Model 2: + Supervision Factors						
Supervision quality score	1.24	0.18	47.41	<0.001	3.46	2.43-4.92
Meeting frequency (per month)	0.45	0.12	14.06	<0.001	1.57	1.24-1.99
Mentorship support score	0.56	0.16	12.25	<0.001	1.75	1.28-2.39
Model 3: + Resource Barriers						
Inadequate funding (Yes vs. No)	-1.78	0.34	27.40	<0.001	0.17	0.09-0.32
Limited library resources	-0.89	0.31	8.23	0.004	0.41	0.22-0.76
Poor internet connectivity	-0.72	0.28	6.61	0.010	0.49	0.28-0.85
Data collection challenges	-0.94	0.30	9.80	0.002	0.39	0.22-0.70
Model 4: + Institutional Support						
Institutional support score	0.68	0.19	12.81	<0.001	1.97	1.36-2.86
Research training availability	0.52	0.17	9.34	0.002	1.68	1.20-2.35

Model Fit Statistics:

- Model 1 (Demographics): -2LL = 462.34, Nagelkerke $R^2 = 0.38$
- Model 2 (+ Supervision): -2LL = 378.56, Nagelkerke $R^2 = 0.59$, $\Delta R^2 = 0.21$, $p < 0.001$
- Model 3 (+ Resources): -2LL = 318.92, Nagelkerke $R^2 = 0.71$, $\Delta R^2 = 0.12$, $p < 0.001$
- Model 4 (Full Model): -2LL = 294.78, Nagelkerke $R^2 = 0.76$, $\Delta R^2 = 0.05$, $p < 0.001$
- Hosmer-Lemeshow goodness-of-fit: $\chi^2 = 8.34$, df = 8, $p = 0.401$
- Classification accuracy: 87.2% (Sensitivity = 83.8%, Specificity = 89.3%)

VIF values: All < 3.2, indicating no multicollinearity concerns

Statistical Interpretation

The hierarchical logistic regression analysis demonstrated that completion outcomes were influenced by multiple factors across individual, supervision, resource, and institutional domains, with the full model explaining 76% of the variance in completion status (Nagelkerke $R^2 = 0.76$). Model fit indices indicated excellent model adequacy, with the Hosmer-Lemeshow test showing good fit ($\chi^2 = 8.34$, $p = 0.401$, non-significant indicating no evidence of poor fit), and classification accuracy of 87.2% demonstrating strong predictive utility. In the fully adjusted model controlling for all factors, supervision quality emerged as the strongest predictor (adjusted OR = 3.46, 95% CI: 2.43-4.92, $p < 0.001$), with each one-unit increase in supervision quality score associated with 3.46 times higher odds of timely completion. Full scholarship funding remained highly significant (adjusted OR = 6.62, 95% CI: 3.60-12.16, $p < 0.001$), indicating that even after controlling for supervision and institutional factors, adequate funding increased the odds of on-time completion by more than sixfold. Conversely, inadequate research funding dramatically reduced completion odds (adjusted OR = 0.17, 95% CI: 0.09-0.32, $p < 0.001$), representing an 83% reduction in the likelihood of timely completion. The hierarchical model building revealed that supervision factors contributed the largest incremental variance ($\Delta R^2 = 0.21$, $p < 0.001$), followed by resource barriers ($\Delta R^2 = 0.12$, $p < 0.001$) and institutional support ($\Delta R^2 = 0.05$, $p < 0.001$). All VIF values remained

below 3.2, well below the threshold of 5, confirming that multicollinearity did not compromise the stability of the regression estimates.

Discussion of Findings

The multivariate findings provided sophisticated insights into the relative and independent contributions of various factors to completion outcomes, revealing a complex interplay of supervision, financial, and institutional determinants. The persistence of supervision quality as the strongest predictor even after controlling for all other variables (OR = 3.46) underscored its central importance and suggested that high-quality supervision may partially buffer against resource constraints or amplify available resources through more efficient guidance. However, the continued strong effect of financial factors—with full scholarships increasing odds sixfold and inadequate funding reducing odds by 83%—demonstrated that supervision excellence alone could not overcome fundamental resource deficits. This pattern suggested that effective interventions would need to address both supervision quality and financial support simultaneously rather than prioritizing one over the other. The hierarchical model structure revealed that demographic factors ($R^2 = 0.38$) explained substantial variance but that institutional and systemic factors (supervision, resources, institutional support) contributed an additional 38% of explained variance, providing empirical support for the study's core premise that delays resulted primarily from institutional rather than individual factors. The significant negative effects of specific resource barriers in the adjusted model library resources (OR = 0.41), internet connectivity (OR = 0.49), and data collection challenges (OR = 0.39) identified concrete, modifiable targets for institutional intervention.

The high classification accuracy (87.2%) and model fit statistics validated the comprehensiveness of the factor set examined and suggested that the model captured the primary determinants of completion outcomes. These findings directly addressed the third specific objective by identifying which institutional interventions would likely prove most effective: prioritizing supervision quality improvement through reduced supervisor loads and mandatory supervision standards, expanding scholarship coverage to reduce self-funded students, improving research infrastructure particularly library and internet resources, and establishing comprehensive institutional support services including research training and statistical consultation. The results provided actionable evidence for policy makers and institutional leaders, moving beyond description of the problem to identification of evidence-based solutions that could substantially improve completion rates in Uganda's terminal degree programs.

CONCLUSION

This study successfully achieved its main objective of conducting a multidimensional analysis of factors contributing to delayed completion in Ugandan terminal degree programs, providing empirical evidence that shifted the narrative from individual blame to institutional and systemic accountability. Addressing the first specific objective, the analysis revealed that supervision quality, mentorship, and institutional support systems were significantly deficient for students experiencing delays, with supervision quality scores averaging 2.8 compared to 4.2 for on-time completers ($p < 0.001$, $d = 1.78$), and supervision meeting frequency being less than half that of successful students. These large effect sizes and the emergence of supervision quality as the strongest independent predictor in multivariate analysis (adjusted OR = 3.46, 95% CI: 2.43-4.92) demonstrated that inadequate supervision constituted a primary institutional failure rather than a peripheral concern. Regarding the second specific objective, the study documented pervasive financial, infrastructural, and resource-related barriers that systematically impeded research progress, with 81.8% of delayed students reporting inadequate research funding compared to only 29.6% of on-time completers, and inadequate funding increasing the odds of delay more than tenfold in bivariate analysis and reducing completion odds by 83% even after controlling for all other factors in the multivariate model. The compound nature of these barriers—spanning funding, library resources, internet connectivity, laboratory equipment, and publishing costs—revealed systemic under-investment in research infrastructure that made timely completion extraordinarily difficult regardless of individual student capability or effort.

Addressing the third specific objective, the study identified effective institutional interventions through both the magnitude of observed effects and the hierarchical contribution of different factor domains, with supervision factors contributing the largest incremental variance ($\Delta R^2 = 0.21$) followed by resource factors ($\Delta R^2 = 0.12$) and broader institutional support ($\Delta R^2 = 0.05$). The multivariate model achieved 76% explained variance and 87.2% classification accuracy, demonstrating that the combination of improved supervision quality, expanded scholarship coverage, enhanced research infrastructure, and comprehensive institutional support services could substantially improve completion rates. The persistence of strong effects for full scholarships (adjusted OR = 6.62) and institutional support scores (adjusted OR = 1.97) in the fully adjusted model identified these as high-priority intervention targets with independent beneficial effects. Critically, the study fulfilled its overarching aim of moving beyond individual blame narratives by demonstrating that students who experienced delays operated within markedly inferior support environments characterized by inadequate supervision, insufficient funding, deficient infrastructure, and limited institutional support—systemic deficiencies that would challenge any student regardless of individual capacity. These findings positioned completion delays not as individual failures but as predictable outcomes of institutional and systemic inadequacies, thereby redirecting responsibility toward universities, government agencies, and policy makers to invest in the support structures necessary for student success.

RECOMMENDATIONS

Establish Mandatory Supervision Standards and Accountability Mechanisms: Universities should implement enforceable supervision standards requiring minimum monthly meeting frequencies (at least 3-4 meetings per month), documented feedback on student work within specified timeframes, and reduced supervisor-to-student ratios not exceeding 1:6 for doctoral students and 1:8 for master's students.

Expand Comprehensive Scholarship Programs and Eliminate Financial Barriers to Completion: Government and institutional funders should substantially increase investment in full scholarships covering tuition, research costs, living expenses, and publishing fees, with priority given to covering all students in terminal degree programs given the sixfold increase in completion odds associated with full funding.

Invest in Research Infrastructure and Institutionalize Comprehensive Support Services: Universities should prioritize capital investment in library subscriptions to international journals and databases, reliable high-speed internet connectivity across campuses, modern laboratory equipment and consumables, and licensed statistical and qualitative analysis software with accompanying training.

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