



TOTAL QUALITY MANAGEMENT AND LEARNERS' PERFORMANCE IN OPEN, DISTANCE, AND E-LEARNING: A STUDY OF UNIVERSITY OF LAGOS DLI AND LASU ODLRI

¹Eretan Gbenga Ologbon and ²Omotoso kazeem Adekunle

¹University of Lagos, Akoka, lagos

²Ed—John Institute of Management & Technology, Isiwu, Ikorodu Lagos

kunleqasim@gmail.com

Abstract

This study examines the application of Total Quality Management (TQM) and its impact on learners' performance within Open, Distance, and E-Learning (ODeL) environments, focusing on two Nigerian public institutions: the University of Lagos Distance Learning Institute (DLI) and the Open and Distance Learning and Research Institute (ODLRI) of Lagos State University. Amid growing concerns over declining academic outcomes and learner satisfaction in ODeL systems, this research investigates whether TQM practices, such as quality virtual instruction and responsive student support, can enhance academic performance and reduce attrition. A descriptive survey design was adopted, with data collected from 287 valid student responses using a structured questionnaire. The study tested two hypotheses using the Pearson Product-Moment Correlation Coefficient and multiple regression analysis. Findings revealed significant positive relationships between the quality of virtual teaching and reduced learners' attrition rates ($r = .609, p < .001$), as well as between the adequacy of responses to learners' complaints and academic performance ($r = .621, p < .001$). These results affirm that TQM principles contribute meaningfully to learner outcomes in ODeL contexts. The study recommends increased investment in virtual teaching infrastructure, prompt academic support services, and inclusive stakeholder engagement in strategic quality planning as pathways to improved institutional performance and student success.

Keywords: Academic Performance, ODeL ODLRI. Quality, TQM

1.0 Introduction

In the evolving landscape of higher education, institutions are increasingly focused on producing graduates equipped with both intellectual and moral capabilities to meet the demands of a competitive global environment. In Nigeria, two major institutions, the Distance Learning Institute (DLI) of the University of Lagos and the Open and Distance Learning and Research Institute (ODLRI) of Lagos State University, stand at the forefront of expanding access to quality education through open, distance,

and e-learning (ODeL) platforms. These institutions play a pivotal role in bridging geographical, socio-economic, and temporal barriers, thereby extending educational opportunities to diverse learner populations who may not have access to conventional modes of study. The survival of individuals and organizations in this competitive environment is largely a function of continuous improvement and customer satisfaction (Hammed et al., 2024).



As the demand for flexible and inclusive education increases, these ODeL institutions face growing challenges including rising enrolments, resource constraints, the need for quality assurance, staff shortages, declining academic output, and increased competition among higher education providers (Alzeaideen, 2019). In such a dynamic context, ensuring consistent quality in academic delivery and maintaining learner engagement remain pressing concerns. These challenges have prompted institutions like DLI and ODLRI to adopt innovative and systematic approaches to educational management in order to optimize service delivery, promote student success, and ensure sustainability. One strategic response to these complexities is the implementation of Total Quality Management (TQM), a comprehensive and integrative management philosophy focused on continuous improvement, customer satisfaction, and stakeholder involvement. Originally developed for industrial settings, TQM principles have increasingly been adopted in higher education institutions worldwide to enhance teaching quality, administrative efficiency, and learner outcomes. Ritter (2015) observed that many universities have incorporated TQM frameworks to strengthen institutional performance and educational delivery. Similarly, Nikolaos and Eleni (2020) and Yakubu et al. (2020) argue that TQM practices, such as leadership commitment, stakeholder participation, process optimization, and data-driven decision-making, are well-suited for educational environments, particularly within ODeL systems.

Empirical research underscores the effectiveness of TQM in improving various performance indicators in educational settings. Studies by Garcia, Falkner, and

Vivian (2018), Ogunnaike et al. (2018), and Appiah (2020) affirm that institutions embracing TQM report enhanced academic performance, student satisfaction, and staff productivity. In distance learning environments, where independent study and remote engagement are central, the application of TQM is even more critical. Research by Sabet et al. (2017) and Venkatraman (2017) further supports the assertion that TQM implementation in ODeL institutions contributes significantly to improved learner performance and institutional efficiency. Therefore, this study seeks to examine the application of Total Quality Management and its effects on learners' performance in two prominent Nigerian ODeL institutions, the University of Lagos Distance Learning Institute (DLI) and the Open and Distance Learning and Research Institute (ODLRI) of Lagos State University. The objective is to assess how TQM strategies influence teaching processes, student support systems, administrative operations, and the overall quality of learner outcomes. By evaluating these dynamics within the specific contexts of DLI and ODLRI, this research aims to contribute to the ongoing discourse on quality assurance in distance education and offer practical, evidence-based recommendations for improving performance through effective management practices.

Despite notable advancements in access to education through ODeL platforms, Nigeria's higher education sector continues to grapple with persistent challenges concerning educational quality and learner performance. Institutions such as DLI and ODLRI have expanded opportunities for non-traditional and geographically dispersed learners, yet rapid enrolment growth has not consistently translated into improved



academic outcomes or increased learner satisfaction. Critical issues such as inadequate instructional delivery methods, limited technological and physical infrastructure, insufficient academic and administrative support services, and inefficient management practices have contributed to a growing disparity between educational access and the quality of outcomes. These systemic challenges hinder the ability of ODeL institutions to meet the evolving needs of learners and to produce graduates who are competitive in a globalized environment.

While TQM has been successfully implemented in sectors such as manufacturing, telecommunications, and banking, its systematic adoption in the educational sector, particularly in distance learning, remains limited in Nigeria. Ritter (2015) observed that most educational institutions tend to rely on traditional quality assurance frameworks rather than embracing the broader, integrative TQM approach. However, researchers such as Nikolaos and Eleni (2020) and Yakubu et al. (2020) argue that when effectively applied, TQM principles—such as leadership commitment, stakeholder involvement, continuous improvement, and evidence-based decision-making—can significantly enhance institutional performance and learner satisfaction. Although several empirical studies (e.g., Garcia et al., 2018; Ogunnaike et al., 2018; Appiah, 2020) have demonstrated that TQM contributes to improved academic performance, institutional productivity, and service quality, its application in the context of ODeL institutions in Nigeria remains under-explored. As noted by Sakthivel (2016), the industrial origins of TQM have led to uneven and often hesitant implementation in educational contexts, especially within

developing countries, where policy adoption and institutional adaptation lag behind global standards. Stakeholder satisfaction, which refers to the degree to which institutions meet the expectations of learners, staff, and communities, is also central to this discourse (Omotoso & Eretan, 2025).

Given this gap, there is a pressing need to examine how TQM is applied in both DLI of the University of Lagos and ODLRI of Lagos State University, and to evaluate the extent to which such practices impact learners' academic performance. A comprehensive understanding of this relationship is essential for informing policy, enhancing the quality of distance education, and ensuring that learners across both institutions benefit from structured, high-quality, and outcome-oriented learning experiences that support their academic and professional growth. In line with this problem, the study sets out the following objectives: to evaluate the relationship between quality of virtual teaching and learners' attrition rate, and to examine the relationship between adequate response to learners' complaints and learners' academic performance. Accordingly, the research questions are: What is the relationship between quality of virtual teaching and learners' attrition rate? How has adequate response to learners' complaints affected learners' academic performance? To test these, the study proposes the following hypotheses: here is no significant relationship between quality of virtual teaching and learners' attrition rate; There is no significant relationship between adequate response to learners' complaints and learners' academic performance.



2.0 Literature Review

2.1 Theoretical framework:

2.1.1 Resource-Based View (RBV) Theory

The theoretical foundation of this study is anchored in the Resource-Based View (RBV) theory, originally developed by Barney (1991). The RBV posits that organizations can achieve and sustain a competitive advantage by acquiring and effectively utilizing valuable, rare, inimitable, and non-substitutable (VRIN) resources. These resources include both tangible and intangible assets, as well as organizational capabilities that are unique and difficult for competitors to replicate.

According to Barney (1991), the RBV is fundamentally concerned with an organization's ability to achieve superior performance through the strategic acquisition and deployment of internal resources that possess economic value. These resources should not only be rare but must also be imperfectly imitable and non-substitutable, thereby providing a sustainable source of competitive advantage. In this context, organizations are encouraged to focus on the development, protection, and optimal utilization of unique internal assets and capabilities rather than relying solely on external market conditions.

Expanding on this, Aliyu, Mahmood, and Kheng (2018) emphasize that resources, from the RBV perspective, refer to organizational assets that are owned and controlled, while capabilities are defined as the organization's ability to effectively combine and use these resources. They argue that the synergy between resources and capabilities determines an organization's internal competence and its capacity to formulate and implement strategies effectively.

In the context of educational institutions, such as universities, applying the RBV

theory implies that academic excellence and institutional performance can be achieved through the strategic management of internal resources such as qualified faculty, innovative teaching methodologies, ICT infrastructure, and robust administrative systems. Institutions that develop these core competencies are more likely to achieve sustainable success and fulfill their academic mission.

Furthermore, the RBV framework supports the integration of Total Quality Management (TQM) principles within higher education. TQM practices—such as continuous improvement, leadership commitment, stakeholder involvement, and data-driven decision-making—can be viewed as organizational capabilities that enhance the institution's performance. When these practices are embedded within an institution's strategic framework, they become unique capabilities that distinguish the institution in a competitive academic landscape.

In conclusion, the RBV theory offers a robust theoretical lens for understanding how educational institutions can leverage their internal resources and capabilities to enhance learners' performance, particularly within Open, Distance, and e-Learning (ODEL) environments. By focusing on the development of unique teaching strategies, advanced digital infrastructure, and responsive student support services, institutions can gain a competitive edge and fulfill their strategic educational goals.

2.2 Empirical Review

In the Nigerian context, Eretan (2024), a facilitator at the Distance Learning Institute (DLI), University of Lagos, presented a paper titled "*Application of Total Quality Management and its Effect on Learners' Performance in Open Distance and E-Learning in Nigeria*" at the April edition



of the DLI Monthly Seminar Series. The study empirically examined how TQM principles, traditionally applied in manufacturing and telecommunications, can be adapted to the open, distance, and e-learning (ODEL) environment. The author highlighted that the application of TQM practices such as continuous improvement, customer (learner) focus, process management, and employee involvement significantly improves learner outcomes. Eretan and Omotoso (2025), examined the relationship between Total Quality Management (TQM) practices and customer satisfaction in Nigerian organizations. Their study, published in the *Nigeria Journal of Management Studies*, adopted a survey research design, collecting data from both managerial staff and customers across selected service and manufacturing firms. The empirical results revealed that TQM practices had a positive and statistically significant effect on customer satisfaction. Firms that consistently implemented these practices reported higher levels of customer loyalty, reduced complaints, and stronger perceptions of service reliability.

Yakubu, Dasuki, Abubakar, and Kah (2020) explored the relationship between TQM practices and student satisfaction in universities offering distance education. Using structured questionnaires administered to students, the study revealed that dimensions such as leadership, continuous improvement, and customer focus positively influenced both student satisfaction and academic performance. Similarly, Ogunnaike, Adenuga, and Makinde (2018) assessed TQM's impact on performance indicators in Nigerian private universities and found that institutions that institutionalized TQM principles experienced improved academic performance, staff commitment, and student

retention. Adeosun and Oni (2021) supported these findings in public universities, demonstrating that quality teaching practices and infrastructure improvement contributed to better learner outcomes in ODeL systems.

Gazal, Forson, and Eretan (2024) conducted a study to examine the effect of Total Quality Management (TQM) practices, specifically leadership commitment and measurement indices, on the sustainability of food security projects in Nigeria. The objective was to determine whether these practices improve food accessibility and ensure long-term project success. Using survey data collected from 246 farmers in North-Western Nigeria, analyzed through percentage distribution and multiple regression, the study revealed a significant relationship between leadership commitment, measurement practices, and food accessibility ($R^2 = 0.401$; $p < 0.05$). The findings showed that leadership commitment and systematic measurement practices directly enhance food accessibility and contribute to project sustainability. The authors concluded that TQM practices are vital for sustaining food security projects in Nigeria, emphasizing that leadership commitment and effective measurement systems significantly improve food accessibility. They recommended that government policies should integrate farmers' input and adopt TQM principles to strengthen food security initiatives, thereby ensuring long-term sustainability and resilience in Nigeria's agricultural sector.

Outside Nigeria, several international studies offer corroborative evidence. Garcia, Falkner, and Vivian (2018), in their study of Australian universities, employed mixed methods to investigate how quality assurance and TQM models affect student performance in online learning. Their



findings highlighted the importance of effective feedback mechanisms, staff training, and technological system reliability in enhancing learner engagement and educational outcomes. In Ghana, Appiah (2020) examined TQM implementation in distance learning institutions and found that leadership involvement and process management were critical to student retention and academic success. This was echoed by Manatos, Sarrico, and Rosa (2018) in a cross-national study of European higher education institutions, which concluded that those adopting TQM practices saw improvements in both organizational performance and student satisfaction, especially in blended and distance learning environments.

In India, Venkatraman (2017) investigated the effectiveness of TQM in open universities and discovered that benchmarking, staff participation, and quality-oriented curriculum development contributed to higher academic achievements among distance learners. Similar findings emerged in the Middle Eastern context, where Sabet, Khatibi, and Nasr Esfahani (2017) assessed the role of TQM in Iranian virtual universities. The study showed that strong administrative leadership and well-established quality assurance mechanisms significantly improved student satisfaction and performance. Chick, Hassel, and Haynie (2020), focusing on institutional response to the COVID-19 pandemic, found that universities with pre-existing TQM frameworks adapted more effectively to the sudden transition to online learning. These institutions maintained continuity in academic delivery and preserved student performance levels, showcasing the resilience afforded by quality management systems.

In Southeast Asia, Koh and Kan (2020) evaluated the role of quality management systems in e-learning platforms. Their quantitative study revealed that the application of TQM tools such as the Plan-Do-Check-Act (PDCA) cycle and the incorporation of stakeholder feedback mechanisms led to significant improvements in course delivery and learner performance. The combined insights from these empirical studies underscore the value of TQM in fostering positive educational outcomes across different learning modalities and regional contexts.

Despite these robust findings, a notable gap remains in the literature, particularly within the Nigerian ODeL landscape. While many of the reviewed studies validate the impact of TQM on educational quality and learner performance, few focus specifically on institutional case studies like the University of Lagos Distance Learning Institute. Therefore, there is a critical need for more localized, in-depth research to contextualize and adapt global TQM strategies to the unique challenges and opportunities within Nigerian distance education systems.

3.0 Methodology

This study adopted a descriptive survey research design, utilizing a structured questionnaire as the primary instrument for data collection. The target population comprised undergraduate students from the Departments of Business Administration at Lagos State University and the University of Lagos.

The population of this study comprised Year Two and Year Four students in the Business Administration Department at two institutions: the Distance Learning Institute (DLI), University of Lagos, and the Open Distance Learning and Research Institute (ODLRI). At the time of conducting this study, Business Administration was the only



functioning department in ODLRI, hence its selection as the focus of this research.

The population distribution was as follows:

DLI: Year Two (840 students), Year Four (920 students)

ODLRI: Year Two (78 students), Year Four (15 students)

This gave a total population of 1,853 students.

The sample size was determined using the Taro Yamane (1967) formula:

Stratified Sample Distribution

$$n = N / (1 + N(e^2))$$

$$n = 1853 / (1 + 1853(0.05)^2)$$

$$= 1853 / (1 + 4.6325)$$

$$= 1853 / (5.6325) \approx 329$$

Thus, the appropriate sample size was 329 students.

To ensure fair representation, the sample was stratified across the four groups (DLI Year Two, DLI Year Four, ODLRI Year Two, ODLRI Year Four) using proportional allocation:

Institution	Level	Population (Ni)	Proportion (Ni/N)	Sample Size (ni)
DLI	Year Two	840	0.453	149
DLI	Year Four	920	0.497	163
ODLRI	Year Two	78	0.042	14
ODLRI	Year Four	15	0.008	3
Total		1,853	1.000	329

The choice of the Business Administration Department was deliberate and context-specific. At the time of conducting this study, Business Administration was the only department functioning in ODLRI, making it the most viable and representative unit for empirical investigation. Additionally, Business Administration is a core discipline with large student enrolments in DLI, providing a robust population for sampling. This ensured that the study captured diverse perspectives while maintaining methodological rigour.

The research instrument, the questionnaire, was divided into two sections. Section A captured demographic information such as gender, age, and educational level. Section B focused on constructs related to Total Quality Management (TQM), specifically two sub-components: (i) quality of teaching, and (ii) adequacy of teaching resources. The questionnaire items were rated on a five-point Likert scale, ranging from *Strongly Disagree (SD)* to *Strongly Agree (SA)*.

Reliability analysis was conducted separately for each sub-scale. Cronbach's

alpha coefficients were: Quality of Teaching ($\alpha = 0.762$), Adequacy of Teaching Resources ($\alpha = 0.814$), Response to Complaints ($\alpha = 0.728$), and Quality of Virtual Teaching ($\alpha = 0.791$). These values indicate acceptable to good internal consistency across all constructs."

Out of the 329 questionnaires distributed, 290 were retrieved, and after screening, 287 were found to be valid and usable for data analysis, representing approximately 80% of the total sample.

For data analysis, the Pearson Product-Moment Correlation Coefficient and multiple regression analysis were used to examine the significant relationship between academic performance (dependent variable) and Total Quality Management (independent variable).

Analysis And Results

The hypotheses were measured using Pearson correlation coefficient.

Ho₁. There is no significant relationship between quality of virtual teaching and learners' attrition rate



Correlations

		Quality of virtual teaching	Learners' attrition rate
Quality of teaching	Pearson Correlation	1	.609**
	Sig. (2-tailed)		.000
	N	287	287
Learners' Attrition Rate	Pearson Correlation	.609**	1
	Sig. (2-tailed)	.000	
	N	287	287

****.** Correlation is significant at the 0.01 level (2-tailed).

The result from the table above revealed the relationship between quality of virtual teaching and learners' attrition. The result $r = .609$ showed that there is a positive relationship between quality of virtual teaching and learners' attrition. which is also significant because the p value of .000 is lesser than .05. Therefore, the null hypothesis is rejected and the alternative

accepted. Thus it implies that there is a significant relationship between quality of virtual teaching and learners' attrition.in the Institutions.

Hypothesis two

Ho₂. There is no significant relationship between adequate response to learners' complaints and learners' academic performance.

		Adequate Response to Learners' Complaints	Students' academic performance.
Adequate facilities for learning	Pearson Correlation	1	.621**
	Sig. (2-tailed)		.000
	N	287	287
Students' academic performance.	Pearson Correlation	.621**	1
	Sig. (2-tailed)	.000	
	N	287	287

****.** Correlation is significant at the 0.01 level (2-tailed).

The result from the table above revealed the relationship between adequate response to learners' complaints and learners' academic performance. The result $r = .621$ showed that there is a positive relationship between adequate response to learners' complaints and learners' academic performance which is also significant because the p value of

.000 is lesser than .05. Therefore the null hypothesis is rejected and the alternative accepted. Thus it implies that there is a significant relationship between adequate response to learners' complaints and learners' academic performance in the Institutions.

**Multiple Regression Analysis**

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2$$

Where:

Y = Learners' Academic Performance

X₁ = Quality of Virtual Teaching

X₂ = Adequate Response to Learners' Complaints

Complaints

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error
1	.691	.477	.472	.743

ANOVA Table

Source	Sum of Squares	Df	Mean Square	F	Sig.
Regression	112.15	2	56.08	101.23	.000**
Residual	122.47	284	0.43		
Total	234.62	286			

Interpretation: The ANOVA results show that the **regression model is highly significant overall**. With an F-value of **101.23** and a p-value of **.000 (p < .001)**, the predictors included in the model explain a substantial portion of the variance in the

Coefficients Table

Predictor	B	Std. Error	Beta (β)	t	Sig.
(Constant)	1.842	0.312		5.90	.000
Quality of Virtual Teaching	0.425	0.071	0.403	5.99	.000**
Response to Learners' Complaints	0.390	0.068	0.372	5.73	.000**

SPSS, (2025)**Interpretation:**

The regression analysis demonstrates that both Quality of Virtual Teaching and Adequate Response to Complaints are statistically significant and positively predict academic performance. This means that improvements in either factor are reliably associated with better student outcomes.

Specifically, the coefficients show that a 1-unit increase in Quality of Virtual Teaching leads to a 0.425-unit decrease in attrition, while a 1-unit increase in Adequate Response to Complaints results in a

Interpretation: The model summary shows that the predictors have a moderately strong relationship with learners' academic performance. With an R value of .691, the model explains about 47.7% of the variance ($R^2 = .477$), and the adjusted R^2 (.472) confirms this explanatory power after accounting for sample size and predictors. The standard error (.743) indicates a reasonable level of accuracy.

dependent variable. In other words, the independent variables jointly have a strong and statistically reliable effect on the outcome, confirming that the model provides meaningful explanatory power.

0.390-unit increase in performance, controlling for the other variable. This indicates that while both predictors are important, the quality of teaching exerts a slightly stronger influence on academic achievement than responsiveness to complaints

The findings highlight that virtual teaching quality provides the foundation for learning effectiveness, ensuring clarity, engagement, and knowledge transfer. At the same time, timely and adequate responses to student complaints enhance satisfaction and support,



creating a conducive learning environment that sustains performance. Together, these factors explain a substantial portion of the variance in academic performance, underscoring the dual importance of instructional quality and responsive support systems in virtual education.

Discussion of Findings

The analysis of the first hypothesis, which investigated the relationship between the quality of virtual teaching and learners' attrition rate, revealed a significant positive correlation ($r = .609$, $p < .001$). This indicates that improved quality in virtual teaching is strongly associated with reduced learner attrition, implying better student engagement and academic retention in virtual learning environments. This finding aligns with numerous empirical studies on the impact of Total Quality Management (TQM) in Open and Distance Learning (ODEL) contexts. For instance, Yakubu et al. (2020) in their study on Nigerian universities found that TQM dimensions such as leadership and continuous improvement positively influenced student satisfaction and academic outcomes. Similarly, Ogunnaike, Adenuga, and Makinde (2018) reported that Nigerian private universities that institutionalized TQM principles recorded enhanced academic performance and reduced dropout rates, reflecting the critical role of teaching quality and managerial commitment in student retention. Outside Nigeria, studies such as that of Garcia, Falkner, and Vivian (2018) in Australia emphasized the necessity of consistent quality assurance mechanisms and effective feedback processes in ensuring strong academic outcomes in online learning. These findings collectively support the result that high-quality virtual instruction, when embedded in a structured

quality management framework, fosters student success and reduces attrition.

The second hypothesis assessed the link between the adequacy of responses to learners' complaints and their academic performance. The result showed a significant positive correlation ($r = .621$, $p < .001$), signifying that when institutions respond effectively to student concerns, academic performance improves. This reinforces the importance of learner-centered approaches in ODeL environments. Adeosun and Oni (2021) emphasized that responsive support systems, along with quality teaching and improved infrastructure, significantly enhance learner outcomes in public universities. This mirrors findings from Appiah (2020) in Ghana, where leadership involvement in complaint resolution was identified as a key contributor to academic success in distance learning institutions. Manatos, Sarrico, and Rosa (2018) also found that European universities that adopted TQM principles experienced improvements in student satisfaction and organizational performance. The result further aligns with research by Venkatraman (2017) in India and Sabet et al. (2017) in Iran, which emphasized the impact of responsive administrative frameworks and structured quality assurance mechanisms on improving academic achievements in virtual universities. Moreover, Chick, Hassel, and Haynie (2020) highlighted how institutions with pre-existing TQM frameworks adapted effectively during the COVID-19 transition to online learning, underscoring the resilience provided by quality-centered strategies. Koh and Kan (2020) also confirmed that employing TQM tools such as PDCA cycles and stakeholder feedback in e-learning led to better course delivery and learner performance in Southeast Asia.



Further strengthening these findings, a multiple regression analysis was conducted to assess the joint impact of Quality of Virtual Teaching and Adequate Response to Learners' Complaints on Learners' Academic Performance. The model summary revealed an R Square value of .477, indicating that approximately 47.7% of the variance in academic performance is explained by the two predictors combined. The ANOVA table confirmed the statistical significance of the model ($F = 101.23$, $p < .001$), suggesting that the predictors reliably forecast academic outcomes.

In the coefficients table, both predictors were statistically significant ($p < .001$). Specifically, a one-unit increase in the Quality of Virtual Teaching predicted a 0.425-unit increase in academic performance, while a one-unit increase in Response to Learners' Complaints resulted in a 0.390-unit increase, controlling for the other variable. These standardized beta values ($\beta = .403$ for Quality Teaching; $\beta = .372$ for Response to Complaints) suggest that both factors make substantial and nearly equal contributions to the prediction of learner performance.

These results provide robust empirical evidence supporting the earlier correlational findings and reinforce the importance of institutional quality, both in teaching and student support, in shaping academic outcomes in virtual education settings. They validate the broader literature emphasizing TQM's effectiveness, while also revealing the quantitative strength of these relationships within the sampled population.

Conclusion and Recommendations

Overall, both hypotheses confirm that institutional responsiveness and instructional quality are key factors in enhancing learner outcomes in virtual education. These findings are consistent with a wide body of

international literature on the positive influence of TQM in ODeL environments. However, a gap remains in localized studies, especially within specific institutional settings in Nigeria. As noted, while several studies highlight TQM's effectiveness, few delve deeply into specific institutions like the University of Lagos Distance Learning Institute. Thus, further research tailored to the local Nigerian context is essential to adapt global TQM practices to the unique challenges of the country's distance education system and ensure continued improvement in learner success.

Based on the findings, it is recommended that institutions offering virtual education should institutionalize continuous training for virtual instructors to enhance teaching quality through regular workshops on digital pedagogy, student engagement, and online content delivery. Additionally, feedback and complaint resolution mechanisms should be strengthened by establishing structured, timely, and transparent communication channels that respond effectively to learners' concerns. Management should also adopt a comprehensive Total Quality Management (TQM) framework within distance learning units, incorporating tools such as Plan-Do-Check-Act (PDCA) cycles, internal quality audits, and periodic student satisfaction surveys to ensure ongoing improvement. Furthermore, stakeholder participation should be encouraged, ensuring that learners, instructors, and administrative personnel are actively involved in policy design, implementation, and evaluation to promote a culture of inclusivity, accountability, and shared responsibility. Lastly, there is a need to support further research that critically evaluates quality dimensions in Open and Distance Learning (ODEL), particularly within Nigerian public institutions, in order to develop context-



specific strategies that enhance academic performance and institutional effectiveness.

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