



CONTINUAL IMPROVEMENT AS PER THE ISO 9001:2015 QUALITY MANAGEMENT SYSTEM AND POST-EXAMINATION SERVICES DELIVERY IN PUBLIC UNIVERSITIES IN KENYA

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Abstract:

The examination is among the crucial processes of any university quality management system and as such, quality should be maintained at all levels. Several inefficiencies in post-examination services delivery have occurred in Kenyan public universities many of which were implementing ISO 9001: 2015 QMSs. Doubt arose on the extent to which adoption of ISO 9001 QMSs had translated to quality service delivery in these institutions. The study was guided by two objectives; to determine the extent to which Kenyan public universities pursue continual improvement as per ISO 9001:2015 QMS and to establish the relationship between continual improvement and post-examination services delivery in public universities in Kenya. A mixed methods research design was employed. The study targeted various examination process stakeholders in all 26 ISO 9001:2015 certified public universities in Kenya. Purposive sampling was used to sample 6 directors of quality assurance, 6 directors of QMS and PC and 6 deputy registrars (examinations) while 297 examination coordinators and 384 fourth-year students were sampled using a stratified sampling technique. Primary data was collected using semi-structured questionnaires and interview schedules. The study established that generally, most public universities in Kenya to a large extent aspired for continual improvement in their core processes, functions and operations. Regression analysis results revealed that continual improvement as per the ISO 9001: 2015 QMS requirements had a positive significant effect on post-examination services delivery in public universities in Kenya ($\beta = 0.727, p = .000$). The study concluded that it was crucial for these universities to optimize

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continual improvement in their key processes, operations and functions. Continuous analysis of data to assist in the identification of areas of service nonconformity for informed corrective measures to achieve continual improvement, in the long run, was recommended.

Keywords: continual improvement, ISO 9001:2015 quality management system, post-examination services delivery, public universities, quality management

1. Introduction

Given the increasingly dynamic environments in which universities operate, they have to be persistently responsive to their environment so that they can deliver academic services that meet the set standards both locally and internationally (Moturi & Mbithi, 2015). Consequently, issues of quality management (QM) are still among the most fundamental requirements and strengths within these institutions across the globe (Ekpoh, 2018). Quality management as described in the ISO 9000 standard refers to the harmonized activities that are meant to direct and control an organization in all issues relating to quality. Sallis (2014) notes that in universities, the concept of quality management explains the processes involved in ensuring that suitable standards are sustained and the quality of education optimized.

2. Literature Review

To facilitate effective quality management, the management of different organizations has prioritized the development of quality management systems (QMSs). At the very basic level, a quality management system can be viewed as the organizational structure, procedures, processes and resources required by an organization in implementing quality management (Krajcsák, 2019). A QMS according to ISO (2005) are implemented to direct and control quality issues in an organization. The most renowned QMSs as argued by Niedermeier (2017) are the ones established on the ISO 9000 series of quality standards.

Organizations implement ISO 9001:2015 QMS based on a series of requirements clauses that guarantee the constancy of management processes linked to quality (Anttila & Jussila, 2017). Organizations are for instance required to pursue continual improvement in order to achieve and maintain a suitable, adequate and effective QMS with respect to the objectives of organizations (Shakoor, 2018). Organizations are clearly expected to utilize data obtained from monitoring and measuring in reviewing their performance in their core business and that of their QMS. This information should be analyzed and utilized to ensure that there is an improvement in the core business and at the same time, areas of nonconformity are identified (Almeida, Pradhan, & Muniz Jr, 2018).

Institutions of higher learning have recognized ISO 9001 standard as suitable for meeting their needs and as such, a number of universities in the world have adopted these standards to win the confidence of their customers. The standards have been applied in many academic processes such as examinations to ensure high-quality programmes and services are offered (Hussein et al, 2017). Questions arise on whether implementation of ISO 9001 QMS have resulted in improvement in service delivery as there are complaints that persist in these institutions.

Generally, one of the most crucial processes in any university QMS is an examination which is a key distinct function that is capable of impacting a university's reputation (Tremblay, Lalancette & Roseveare, 2012). This study focused on post-examination services delivery. Some of the notable challenges facing the post-examination processes in universities include the misplacement of examination answer scripts, miscalculation of scores/marks, late exam marking and results submission, lack of proper instruments for moderation, errors in recoding marks, missing marks as well as delayed issuance of results transcripts and degree certificates (Quapp & Holschemacher, 2016; Mwangi, 2018). These challenges have been cited as key threats to quality, reliability and validity of the examination processes in several universities.

Andiva and Simatwa (2018) examined the influence of ISO 9001:2008 QMSs on the quality of services delivered by academic staff in teaching in public universities in Kenya. The study found out that continuous improvement assured students of several benefits associated with receiving teaching services that met their requirements. Continual improvement encompassed actions taken to ensure the effective provision of services and processes at reduced costs and enhanced quality. For this to happen, the study indicated that there was a need to have efficient data analysis, auditing and training of staff to minimize errors and mistakes witnessed in service delivery.

Thalmer (2015) conducted a study on continuous improvement in higher education to assess the level of application of various continuous quality improvement methods in public HEIs in Michigan. The study observed that the institutions were able to enhance efficiencies and improved the quality of their products and services, thus maintaining their competitiveness in the field. The institutions improved their services, quickened their response rate to issues raised, increased efficiencies in handling finances, and improved the efficiency of communication within their various departments. Continuous improvement teams and benchmarking were used in these institutions.

In a study that explored the impacts of QM practices on the performance of selected Kenyan universities, it was found that continual improvement in the universities' processes led to well-documented, maintained and effective systems in place (Wanza, Ntale, & Korir, 2017). Through internal and external quality audits, the universities were able to objectively ascertain whether various quality standards had been complied with. In addition, the universities updated their academic programmes enabling the provision of relevant programmes. Corrective actions were taken immediately after audit reports were out which assisted the universities to prevent

problems before they occurred. This led to customer retention due to improved processes, products/services and the competitiveness of the universities.

A study on examination processes by Abd Rahman, Rahim and Mahyuddin (2006) reported that before certification, the processes in Malaysia HEIs were highly disorganized. This improved after the HEIs adopted ISO 9001 (2000) quality management systems, with different departments being able to maintain proper students' examination records. This made their retrieval easier in cases where students had queries. In a study conducted in Turkish universities, it was noted that the number of examination-related complaints and petitions reduced significantly after ISO 9001 QMS certification (Eryilmaz et al., 2016). Most students were also able to get their certificates within the same day.

In Kenya, a study by Ongaki and Nyamiobo (2014) found out that implementing QMS had some challenges and realizing its pledged advantages was not easy. On this basis, this study sought to assess the effect of continual improvement as per the ISO 9001:2015 QMS on post-examination services delivery in Kenyan public universities. This study area remained highly unexplored in existing literature as available literature mostly focused on service delivery in general in these universities. Delineating the effect of continual improvement as per the ISO 9001:2015 QMS on post-examination services was crucial since it had been noted that the implementation of this QMS in nonacademic services was much easier compared to academic services.

2.1 Statement of the Problem

Higher education in Kenya has immensely grown due to the increased number of universities. The expansion has resulted in questions being raised on the quality of education services offered in public universities and in particular, examination services (Bisieri & Ondego, 2017). A quality audit conducted by the Commission for University Education (CUE) in 2017 highlighted issues such as missing marks, lengthy procedures for obtaining examination results and transcripts, errors in recording marks and loss of student examination data which had led to frustrations on the side of the students as a result of delayed graduation.

These issues were raised in universities that had adopted ISO QMSs thus leading to doubt on the effectiveness of implementing the ISO 9001 standards, particularly on post-examination services delivery. A review of existing literature showed that empirical studies delineating the effect of ISO 9001: 2015 QMS implementation specifically continual improvement on post-examination services delivery were scanty. Moreover, the available related studies were based on the expired ISO 9001: 2008 quality standard. The above concerns were a key motivation for undertaking this study.

2.2 Research Objective

The study was guided by two objectives;

- 1) To determine the extent to which Kenyan public universities pursue continual improvement as per ISO 9001:2015 QMS

- 2) To establish the relationship between continual improvement and post-examination services delivery in Kenyan public universities.

2.3 Research Hypothesis

H0: Continual improvement as per the ISO 9001:2015 quality management system does not significantly affect post-examination services delivery in public universities in Kenya.

3. Research Methodology

The study employed a mixed methods research design. Both qualitative and quantitative methods were applied concurrently where they were equally prioritized but the data emanating from them were analyzed separately. At the interpretation stage, however, the findings from the two methods were combined. By employing this research design, the research problem was better understood as the data obtained was different but complementary. Moreover, the validity of the study findings was enhanced as it was possible to maximize the strengths of each of these methods while at the same time minimizing their weaknesses. This study was carried out on the main campuses of all 26 ISO 9001:2015 certified public universities in Kenya. These campuses were spread out across different counties in the country. Their choice was informed by the fact that it was easier and more convenient to access them. Also, it was possible to get study participants from different faculties in one place

The target population of the study were 26 directors of quality assurance, 26 directors of QMS and PC, 26 deputy registrars (examinations), 1229 examination coordinators and 368100 fourth-year students (CUE, 2017). These individuals were part of the key stakeholders in the examination processes in these universities. A census of all the 26 Kenyan public universities that had been ISO 9001:2015 certified was taken. Purposive sampling was used to select six (6) directors of quality assurance, six (6) directors of QMS and PC and six (6) deputy registrars (examinations), 3 from established universities and 3 from the young public universities respectively. A stratified sampling method was used in selecting 297 examination coordinators and 384 fourth-year students. The samples, in this case, were determined using the Krejcie and Morgan (1970) statistical table. The universities were classified as either established or young.

The primary data used was collected using semi-structured questionnaires and interview schedules. Questionnaires were administered to the examination coordinators and students while the rest of the targeted examination process stakeholders were interviewed. To assess the reliability and validity of the research instruments, a pilot study was carried out at Moi University, Nairobi Campus, Nairobi County and Cooperative University of Kenya, Meru Campus, Meru County. These campuses were not the main campuses for these universities. All the participants in the pilot study were excluded from the main study. The face and content validity of the questionnaires was gauged based on expert opinion. For construct validity, Pearson correlation coefficients were used in testing the association between the items in the various constructs. Based

on these coefficients, redundant and less useful items were expunged from the questionnaires. Qualitative validity was ensured through careful documentation of procedures, detailed description, including negative/discrepant information and triangulation and so forth.

To determine the questionnaires' reliability, the inter-item consistency analysis through the use of Cronbach's alpha coefficients was adopted. The reliability test results after deleting redundant items revealed that all the constructs were reliable as the Cronbach Alpha coefficients obtained were > 0.7 . Qualitative reliability was ensured through the documentation of all procedures and communications and also by setting up a detailed official interview protocol. Comparing the study findings with those of other independent studies were also undertaken.

The questionnaires were self-administered through the drop-and-pick later method and through online platforms. Face-to-face interviews were conducted with the selected key informants.

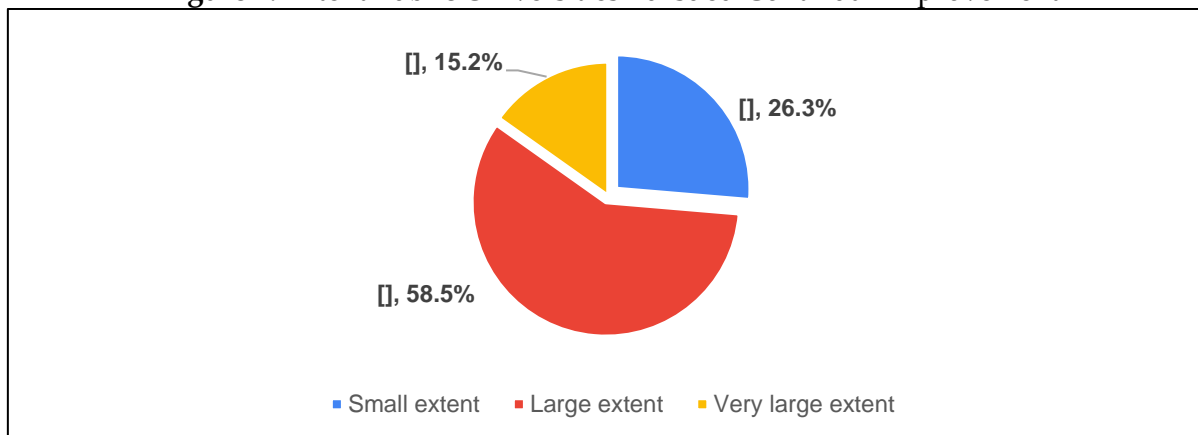
To analyze the qualitative data, content analysis was conducted. For quantitative data, both descriptive analysis and inferential analysis were conducted. The Statistical Package for Social Sciences (SPSS) software was used to analyze data. The ethical principles of informed consent, voluntary participation, confidentiality, anonymity, honesty and objectivity, and approval and authorization from the relevant institutions were adhered to in the course of this study.

4. Results and Discussions

4.1 Extent Public Universities Pursued Continual Improvement

The study established that generally, most public universities in Kenya to a large extent (58.5%) wanted and strived for continual improvement in their core processes, functions and operations as revealed by the examination coordinators' responses presented in Figure 1.

Figure 1: Extent Public Universities Pursued Continual Improvement



Source: Field Data (2021).

Chiarini (2017) argued that ISO 9001:2015 certified organizations were mandated to vigorously seek for opportunities for improving processes, products and services as well as their QMSs, particularly bearing in mind the requirements of their customers in the future.

The reaction of the examination coordinators to four statements that reflected the level of continuous improvement as required under the ISO 9001:2015 QMS in their universities is revealed by the findings outlined in Table 1 below. The study noted that on average, the examination coordinators were in agreement with all the statements in this construct. The composite mean score value of 3.763 for the construct suggested that public universities in Kenya had to a large extent adopted continual improvement in their processes and operations as required under ISO 9001:2015 quality management system. The attention given to the different aspects of continual improvement in these universities such as the analysis and evaluation of data, the use of management review outputs and implementation of breakthrough projects was, however, varied.

Table 1: Continual Improvement as per the ISO 9001:2015 QMS in Public Universities

Statement	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Mean	Std. Dev.
Continual monitoring data analyzed and evaluated for improvement and identification of areas of nonconformities.	0.00%	5.80%	19.60%	50.00%	24.60%	3.933	0.820
University defines and pinpoints improvement opportunities across its operations and levels.	0.00%	4.90%	28.10%	42.40%	24.60%	3.866	0.842
Management reviews determine needs or opportunities to address as part of continual improvement.	1.30%	6.20%	28.10%	47.30%	17.00%	3.723	0.865
Cross-functional teams in place to implement breakthrough projects that improve existing processes or lead to new processes	3.10%	19.20%	22.30%	32.10%	23.20%	3.531	1.136
Composite mean and standard deviation						3.763	0.661
Valid n=224							

Source: Field Data (2021).

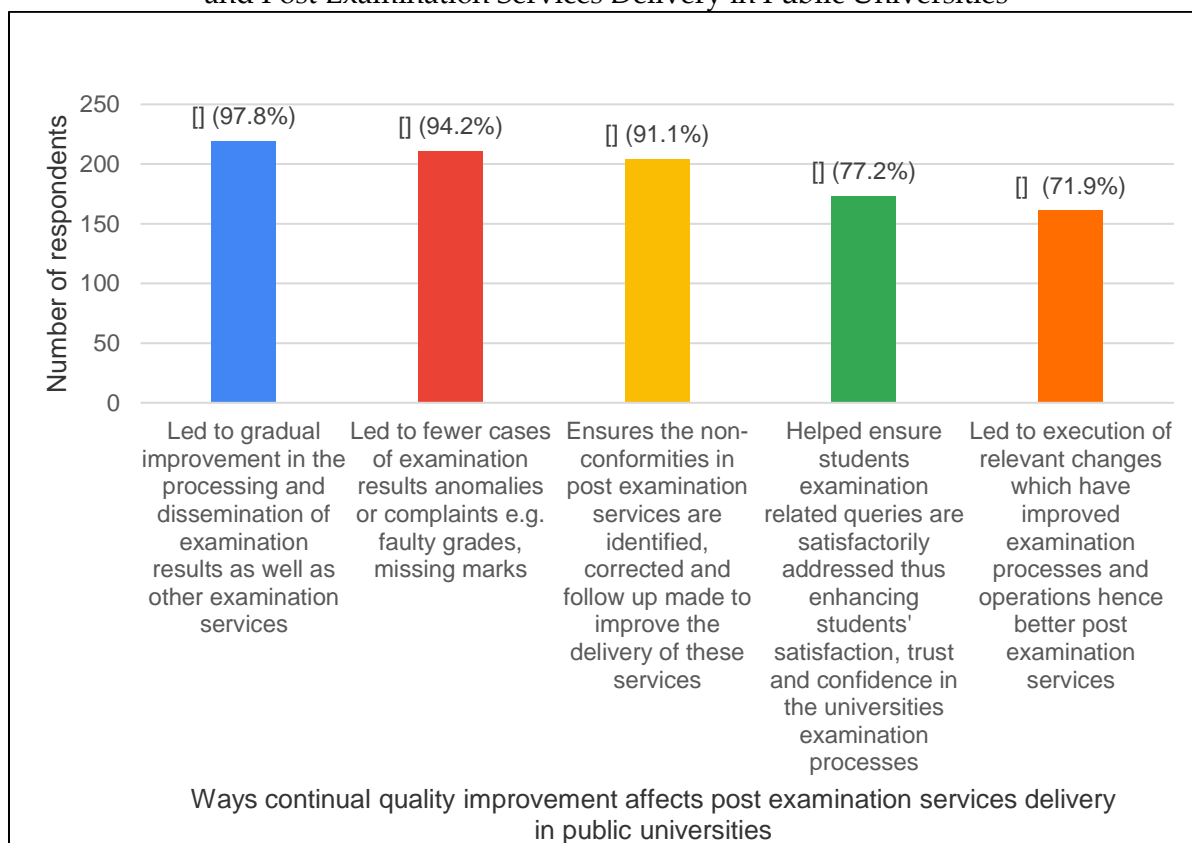
The above findings are similar to what Chiarini (2017) found ISO 9001:2015 certified organizations are required to vigorously seek opportunities for improving processes, products and services and their quality management systems. The findings also supported Shakoor (2018) view that continual improvement was a crucial aspect of the ISO 9001: 2015 QMS in achieving and maintaining a suitable, adequate and effective QMS with respect to the objectives of organizations. The study findings further reinforced the

argument by Almeida, Pradhan and Muniz Jr (2018) that ISO 9001:2015 certified organizations needed to utilize data for the improvement of their core business and also in the identification of the areas of underperformance or non-conformity.

The findings presented in Figure 2 below showed the perceived relationship between continual improvement and post-examination services delivery in public universities from the examination coordinators' perspective. About 97.8% of the examination coordinators noted that continual improvement ensured that examination services were improved such as results processing and dissemination. Continual improvement reduced cases of examination results errors and missing marks as asserted by 94.2% of the examination coordinators. Continual improvement ensured that the non-conformities in post-examination services were identified and corrected and follow-ups were made to improve the delivery of these services (91.1%).

About 77.2% of the examination coordination indicated that continual improvement ensured satisfactory addressing of examination complaints and enhanced students' satisfaction, trust and confidence in their universities' examination processes. Changes as a result of continual improvement in examination processes and operations led to better post-examination services according to 71.9% of the examination coordinators. In some institutions, it was observed that only a few changes occurred as some issues were not fully tackled as a result of required actions not being implemented.

Figure 2: Perceived Link between Continual Improvement and Post Examination Services Delivery in Public Universities



Source: Field Data (2021).

From the key informants, it was observed that management reviews and audit reports were used to ensure that corrective actions were taken where quality objectives had not been met. Where quality objectives had been achieved, the management reviews acted as a guide to set higher objectives for further improving post-examination services, especially in areas related to complaints among students. From the above findings, it was inferred that commitment to continual improvement as required under the ISO 9001:2015 QMS was very critical in the quest for improving post-examination services delivery in public universities in Kenya.

The study findings were in agreement with what Andiva and Simatwa (2018) observed that continuous improvement in public universities in Kenya assured students of several benefits associated with receiving academic services that met their requirements resulting in fewer errors and mistakes in services delivered, for instance. A study by Thalner (2015) found that HEIs improved their efficiencies, and the quality of their products and services, and responded faster to any quality issues raised as a result of continual improvement. This was reiterated by Wanza, Ntale, and Korir (2017) who observed that universities immediately took corrective actions pertaining to nonconformities and improvement areas across all their operational units thus preventing problems that led to customer dissatisfaction.

4.2 Post-examination Services Delivery in Kenyan Public Universities

As shown in Table 2, the composite mean value of 3.546 for the construct and its associated standard deviation of 0.676 meant that on average, the examination coordinators agreed with most of the statements in the post-examination services delivery construct. The study found that post-examination services delivery in public universities in Kenya was largely satisfactory from the opinions of the examination coordinators apart from the areas of timeliness and accuracy in the production of reports, graduation lists, transcripts and degree certificates as well as the reported cases of missing marks.

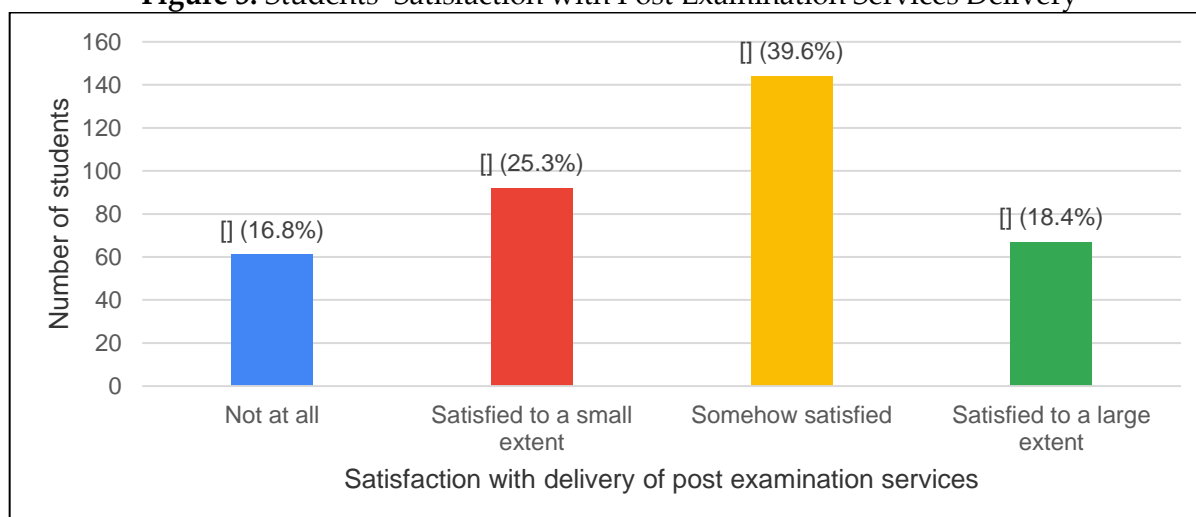
The key informants supported the above views which were contradictory to the views held by the sampled students who seemed to complain about the post-examination services delivered by their departments. The results in Figure 3 showed the level of students' satisfaction with post-examination services delivery by their faculties or departments.

Table 2: Examination Coordinators’ Response on Post Examination Services Delivery

Statement	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Mean	Std. Dev.
Grades and certifications awarded fair and unbiased.	1.80%	6.20%	15.60%	49.60%	26.80%	3.933	0.913
Quality of exam results rarely questioned.	1.80%	9.80%	21.90%	34.40%	32.10%	3.853	1.038
Number of petitions on faulty grades have declined immensely.	1.80%	8.00%	22.30%	42.40%	25.40%	3.817	0.965
Students able to promptly and easily access exam results once released.	1.80%	12.50%	18.80%	42.00%	25.00%	3.759	1.022
Exam results related complaints and anomalies addressed on time, in an objective and fair manner.	4.90%	7.60%	22.80%	45.10%	19.60%	3.670	1.032
Examination results released to students on time.	5.80%	16.50%	12.10%	43.30%	22.30%	3.598	1.171
Production of reports, graduation lists, transcripts and certificates quick and devoid of errors.	5.40%	20.50%	25.90%	29.90%	18.30%	3.353	1.154
No reported cases of missing student marks.	32.10%	26.80%	15.60%	21.40%	4.00%	2.384	1.247
Composite mean and standard deviation						3.546	0.676
Valid n=224							

Source: Field Data (2021).

Figure 3: Students’ Satisfaction with Post Examination Services Delivery



Source: Field Data (2021).

From the above findings, it was concluded that the post-examination services delivered in public universities in Kenya were not perceived as entirely satisfactory by most of the students. This is a result of the various complaints the students had regarding these

services, for instance, the many unsettled cases of missing marks, delayed processing and release of results and unfair or inconsistent grades. Similar concerns were raised in studies conducted by Mwangi (2018) and Domeniter et al. (2018) which underscored that there were several concerns surrounding the delivery of post-examination services in several universities. Table 3 summarizes the major concerns/complaints advanced by students pertaining to the delivery of post-examination services in public universities in Kenya.

Table 3: Major Students' Complaints on Post Examination Services Delivery

Complaints	Frequency	Percentage
Unsettled cases of missing marks	358	98.4
Delayed processing and release of results	353	97.0
Unfair or inconsistent grades	344	94.5
Poor handling of students with examination results-related queries	340	93.4
Delayed release of results slips and transcript	316	86.8

Source: Field Data (2021).

4.2 To Establish the Relationship between Continual Improvement and Post-examination Services Delivery in Kenyan Public Universities

The findings presented in Table 4 revealed that the correlation between continual improvement as per the ISO 9001:2015 QMS and post-examination services delivery in public universities in Kenya was positive, strong and significant given ($r=.754, p=0.000$). This finding supported the argument by Thalner (2015) that continuous improvement in higher education institutions enhanced efficiencies in different processes and this boosted the quality of services delivered.

Table 4: Correlation Matrix

		Post-examination Services Delivery	Continual Improvement
Post-examination Services Delivery	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	224	
Continual Improvement	Pearson Correlation	.754**	1
	Sig. (2-tailed)	0.000	
	N	224	224

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

Source: Field Data (2021).

Bivariate regression analysis was conducted to establish how continual improvement as per the ISO 9001:2015 quality management system affected post-examination services delivery in public universities in Kenya.

The regression coefficient results revealed that continual improvement as per the ISO 9001: 2015 quality management system positively and significantly affected post-examination services delivery in public universities in Kenya given ($\beta = 0.727, t = 17.091, p = .000$) as shown in Table 5. A unit increase in continual improvement as per the ISO

9001: 2015 QMS would therefore lead to enhanced post-examination services delivery in these universities by 0.727 units holding all other factors constant. The calculated p-value is less than 0.05, the null hypothesis that continual improvement as per the ISO 9001:2015 QMS did not significantly affect post-examination services delivery in public universities in Kenya was rejected. This implied that in deed, continual improvement as per the ISO 9001:2015 QMS requirements in these institutions actually affected the delivery of post-examination services.

Table 5: Significance of Regression Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.897	0.158		5.687	0.000
	Continual improvement (X)	0.727	0.043	0.754	17.091	0.000

a Dependent Variable: Post examination services delivery in public universities in Kenya

Source: Field Data (2021).

Using the regression estimates obtained, the optimal bivariate regression model for the study was specified as follows:

$$Y = 0.897 + 0.727X$$

Where;

Y = Post-examination services delivery in public universities in Kenya, and

X = Continual improvement as per the ISO 9001:2015 quality management system.

The above findings were consistent with Andiva and Simatwa (2018) observation that ISO 9001-certified public universities in Kenya improved their academic services delivery by implementing continually improving their procedures and processes in their QMSs. The same findings were reiterated by Thalner (2015) who observed that procedures and processes were improved as a result of handling quality issues raised on time. It was observed that students' expectations for quality services were achieved as continual improvement directed the execution of corrective actions on identified nonconformities and areas requiring improvement (Wanza, Ntale, & Korir, 2017)

5. Conclusions

The study concluded that most public universities in Kenya were to a large extent pursuing continual improvement in their key processes, operations and functions in line with the ISO 9001:2015 QMS requirements. These institutions capitalized on management review outputs, audit results, the analysis and evaluation of data from their monitoring systems and also breakthrough projects in order to achieve continual improvement. It was also concluded that continual improvement as per the ISO 9001:2015 QMS had a significant positive effect on post-examination service delivery in these institutions and hence should be maximized.

6. Recommendations

Three key recommendations were made:

- 1) University examination offices should continuously acquire and monitor students' feedback and any other information related to the kind of post-examination services delivered across the different departments/faculties. This data should be continuously analyzed and evaluated to identify areas of service nonconformity so that in the long run, continuous improvement is achieved through informed corrective measures.
- 2) Regular and comprehensive management reviews on post-examination services delivery in public universities should be carried out to ascertain the quality objectives not met and the corrective actions needed to achieve them.
- 3) University management should constitute and give adequate monetary and technical support to university cross-functional teams to enable them to implement substantial breakthrough projects needed to improve post-examination processes.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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