

**EFFECTS OF ISO 9001:2015 QUALITY MANAGEMENT SYSTEM
IMPLEMENTATION ON POST EXAMINATION SERVICE DELIVERY IN
PUBLIC UNIVERSITIES IN KENYA**

MUCHAI JEMIMAH

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DECLARATION

This thesis is my original work and has not been presented for degree in any other university or any other award. No part of this work shall be produced without permission of the author and/or Machakos University.

Sign 

Date: 24th March 2023

Jemimah Muchai
E83-7097-2015

We confirm that the work reported in this thesis has been carried out by the student under our supervision.

Sign 

Date : 24th March 2023

Prof. David Mulwa
Department of Educational Management and Curriculum Studies
Machakos University

Sign 

Date: 24th March 2023

Dr. Wycliffe Amukowa
Department of Educational Management and Curriculum Studies
Machakos University

DEDICATION

I dedicate this thesis to my mother Rahab for her constant encouragement, my sisters and brother Wanjiru, Lydia and John for keeping me in their prayers and my son Henry for his continuous moral support, without which I would not have completed this work.

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ABBREVIATIONS AND ACRONYMS

CUE	Commission for University Education
CUEA	Catholic University of Eastern Africa
HE	Higher Education
HEIs	Higher Education Institutions
ICT	Information and Communication Technology
ISO	International Organization for Standardization
ISO/TC	International Organization for Standardization Technical Committee
KCA	Kenya College of Accountancy
KEBS	Kenya Bureau of Standards
KPIs	Key Performance Indicators
KUCCPS	Kenya Universities and Colleges Central Placement Service
PC	Performance Contracting
PDCA	Plan-Do-Check-Act
QM	Quality Management
QMS	Quality Management System
SDGs	Sustainable Development Goals
SGS	Standard Global Services
TQM	Total Quality Management
UNESCO	United Nations Educational, Scientific and Cultural Organization
ABW	Activity Based Working
ERP	Enterprise Resource Planning
CAT	Continuous Assessment Test

ABSTRACT

The quality of education offered by public universities in Kenya has on several occasions been questioned particularly in as far as the integrity of examinations is concerned. Several complaints relating to missing marks, delayed completion rates, lengthy bureaucratic procedures for obtaining examination results and transcripts as well as inadequacies in the internal and external examination processes in several public universities have led to public outcry in the country. It is even worrisome that the mentioned inefficiencies occurred in public universities that are implementing ISO 9001: 2015 quality management systems having already been certified. This concern has casted doubt on the extent to which the implementation of these quality management systems (QMSs) translates to quality service delivery in public universities, and more specifically, the delivery of examination service. Currently, studies linking ISO 9001: 2015 QMS implementation and delivery of examination service are scanty. This study therefore, sought to address this research gap by assessing the effect of ISO 9001:2015 QMS implementation on post-examination service delivery in public universities in Kenya. The study in particular determined the effect of establishment of quality objectives, resource allocation, internal quality auditing and continual improvement on post-examination service delivery in public universities in Kenya moderated by organizational structure. The study was anchored on the systems theory. The study adopted a mixed methods research design. The study targeted 26 directors of quality assurance, 26 directors of QMS and PC, 26 deputy registrars (examinations), 1229 examination coordinators, and 368100 fourth year students based in the main campuses of 26 public universities that had upgraded their QMSs to ISO 9001:2015. Purposive sampling was used to sample the directors of quality assurance, directors of QMS and Performance contracting and deputy registrars while the examination coordinators and fourth year students were sampled using stratified sampling technique. The study used primary data collected using semi-structured questionnaires and interview schedules. The qualitative data gathered was analyzed using content analysis while for the quantitative data, both descriptive analysis and inferential analysis were conducted. Bivariate and stepwise regression analyses were used in generating regression coefficients, *t* statistics and associated *p* values that guided the testing of the research hypotheses. The study found out that the establishment of quality objectives, resource allocation, internal quality auditing and continual improvement positively and significantly affected post-examination service delivery in public universities in Kenya. However, organizational structure did not significantly moderate the relationship between ISO 9001:2015 QMS implementation and post-examination service delivery in public universities in Kenya. On this basis, the study concludes that successful implementation of ISO 9001:2015 quality management system implementation is a key determinant of enhanced post examination service delivery in Kenya. Therefore, these institutions need to optimize the implementation of their ISO 9001:2015 QMSs. This study recommends that there is need for the government through the Ministry of Education to increase budgetary allocations to public universities for them to efficiently implement their ISO 9001:2015 QMSs. It recommends that the management of public universities should adequately equip internal audit units/teams so that they can regularly carry out comprehensive internal quality audits. They should also maintain suitable work environments and acquire the necessary knowledge, infrastructure and staff to achieve service conformity in the delivery of post examination service. The study also recommends that examination offices in public universities should continuously acquire and monitor

students' feedback on post examination service delivered across the different departments and faculties. Such data should be continuously analysed and evaluated to identify areas of service nonconformity so that continuous improvement in the long run is achieved through informed corrective measures.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Quality is quite an extensive concept and as a result, multiple definitions have been advanced. Deming (1986), views quality as a guaranteed degree of consistency and reliability at low cost and suitable for the market. According to Mang'eli (2013), quality refers to all the features and characteristics of a given product or service bearing on its capacity to meet specified or implicit needs. Quality is explained as consistently meeting the needs as well as the expectations of customers, conformity to expectations and a journey to excellence (Ali & Shastri, 2010). Quality as far as universities are concerned alludes to a set of attributes, dimensions and characteristics relating to the university services.

Quality remains a central challenge in university education. Consequently, as asserted by Nadim and Al-Hinai (2016), in many nations, the concern of quality management (QM) has always remained a priority in the agendas of universities and higher learning institutions in general. QM issues continue to be one of the most fundamental requirements and strengths within these institutions across the globe (Ganguly, 2015). Normally, quality management pertains to the actions or measures taken by an organization to make sure that the products or services it offers conform to the requirements of customers. It is the process that involves the identification and administration of the activities required for the achievement of an organization's quality objectives (Oakland, 2012).

The ISO 9000 standard describes quality management as harmonized activities for directing and controlling an organization regarding quality. Wathiru (2013) considers QM a strategic and integrated management thinking which helps organizations ensure that the realization of the organizations' quality objectives is efficient and effective and that sustainable competitive edge is achieved. In institutions of higher education, quality management is the term applied in explaining the processes involved in ensuring suitably sustained standards as well as the optimization of the quality of education (Sallis, 2014).

The development of organizational systems to facilitate QM was seen as a key priority for management in the beginning of the 21st century (Ravichandran & Rai, 2000). A quality management system (QMS) can be defined as an organized approach to

guaranteeing proactive management of quality on the basis of recognized standards and operating procedures (Matata & Wafula, 2015). QMS can also be viewed as the organizational structure, procedures, processes and resources that an organization requires so as to execute quality management. According to ISO (2005), a QMS is a management system for directing and controlling an organization regarding quality.

The implementation of QMSs in today's setup within organizations is undertaken with regards to diverse internationally recognized approaches and standardized frameworks (Gutiérrez, 2013). It is argued by Niedermeier (2017) that the most popular QMSs are the ones established on the ISO 9000 series of quality standards that were developed by the International Organization for Standardization (ISO) and ISO 9001:2015 QMS is an example. These quality standards are universal guiding principles an organization can adopt when it decides to set up an internal QMS contingent to its nature and the various influences and challenges within the industry it operates in (Ahmed, 2017).

ISO 9001 is an international standard that stipulates the requirements for a QMS. An organization uses the standard to prove that it is able to constantly deliver products or services that satisfy customer and regulatory requirements (Sinha & Hernandez, 2010). This standard is the most popular in the ISO 9000 series and the only standard in the series to which organizations can certify (Morumudi, 2017). ISO 9001 does not specify what the objectives regarding to "quality" or "meeting customer needs" ought to be. In its place, it calls for organizations to define these objectives on their own and constantly pursue improvement in their processes so that they can realize these objectives (Militaru & Zafir, 2016).

Implementing ISO 9001: 2015 QMS is undertaken on the basis of a series of requirements clauses that guarantee constancy of management processes linked to quality in a system (Anttila & Jussila, 2017). The article on ISO 9001 contains what ought to be undertaken for those organizations wishing to build and implement a QMS and gives an explanation of how to undertake a chain of actions that are particular to each and every organization. ISO 9001:2015 resulted from a five-year revision of ISO 9001 (Castell, 2016). The revision process initiated by the ISO/Technical Committee (ISO/TC 176) was intended at making sure that international standards mirror changes in a progressively multifaceted and dynamic environment and was published in September 2015. ISO 9001:2015 incorporated the "Plan-Do-Check-Act" (PDCA) cycle and "risk-based thinking" (ISO, 2015d).

Under the ISO 9001:2015 quality management system, organizations are for instance required to establish precise, quantifiable, attainable, realistic and time-bound quality objectives and also plan to accomplish them and so forth (Murray, 2016). With this QMS, organizations are also now expected to take in to consideration the resources and in particular, the personnel, infrastructure, suitable work environment and the organizational knowledge required in delivering their products or services (Sari et al., 2017). The organizations also ought to undertake internal quality audits at planned intervals to provide information on whether the QMS conforms to the demands of ISO 9001 and other organizational stipulations and whether its implementation and maintenance is effective (Phillips, 2015). Continual improvement is also 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 (Shakoor, 2018). Organizations are clearly expected to utilize data in the improvement of the core business and identification of the areas of underperformance.

Throughout its advancement, ISO 9001 has been recognized as a standard that is suited to meeting the needs and requirements of higher education institutions (HEIs) (Zabadi, 2013). Consequently, a significant number of universities have sought to induce the confidence of their various stakeholders through the implementation of ISO 9001 into QMSs. It is pointed out by Hussein et al. (2017) that ISO 9001 QMS applies to several academic processes for instance, examination, grading, and program review towards ensuring that students receive academic programs and services that are of high quality as promised by their affiliated institutions. Nevertheless, doubts still exist as to whether ISO 9001 QMSs have assisted HEIs realize tangible improvement in service delivery seen in the contradictory findings of different scholars (Alolayan, 2014). Many of the conclusions are undertaken with regards to ISO 9001:2008 QMS which has already expired and replaced with ISO 9001:2015 QMS.

With a specific focus on examination services, Africano, Rodrigues and Santos (2019) state that one of the major advantages accruing from implementing QMSs in HEIs is improvement in student examination. In Malaysia, Abd Rahman, Rahim and Mahyuddin (2006) observe that prior to certification, the process of student examination was done in a haphazard manner. However, the ISO 9001 (2000) QMS had helped the various departments and faculties to ensure that proper students' examination records inclusive of the continuous assessment grades were maintained.

Departments were also mandated to keep records of answer scripts for easy retrieval incase students had queries relating to the final grades awarded.

Eryılmaz, Erdur, Bektaş, Kara and Aydoğan (2016) focusing on ISO 9001 QMS certification in Turkish univeristies noted that in the past, many complaints were made after examinations. With the QMS certification in place, however, the number of petitions per student with regards to faulty grades had declined immensely. Furthermore, after certification, students could take their student certificates within same day. Nevertheless, the anomalies in examination services delivery recorded even in well-established universities with several international quality certifications raise concerns in regards to their effectiveness in achieving expected results.

In Kenya, Gudo, Ongachi and Olel (2011) made a conclusion that ISO 9001 QMS was quite technical and formal and further provided a proof that things do not always change on the account of new procedures, regulations or even documentation. Data provided by the Kenya Bureau of Standards (KEBS) in 2015 showed that between 2012 and 2015, about 25,390 cases of non-conformities relating to examination processing procedures were reported in 14 ISO 9001:2008 certified public universities (KEBS, 2015). This is in line with Ongaki and Nyamiobo (2014) who argued that implementing QMS is not free from challenges and realizing its pledged advantages is not simple.

It is on the basis of these contradictory findings that this study sought to assess the effect of ISO 9001:2015 QMS implementation on post examination services delivery in public universities in Kenya. This study subject remained highly unexplored in existing literature as available literature mostly focused on service delivery in general in these universities. Delineating the effect of the implementation of ISO 9001:2015 QMS on examination services was crucial since it had been noted that the implementation of this QMS in nonacademic services such as administration was much easier compared to academic services.

Kenya has witnessed rapid growth in the number of universities. Public universities can be described as those universities that receive government funding or subsidies and their establishment is based on institutional Acts of Parliament (Okibo & Kimani, 2013). Consistent with the Kenya Universities and Colleges Central Placement Service (KUCCPS) (2018), there are 31 public universities, 3 public university constituent colleges and 33 private universities in Kenya. However, out of the 31 public universities

that are chartered, 26 had upgraded their quality manuals to ISO 9001:2015. Despite the fact that nearly all the public universities in Kenya are ISO certified, their performance in terms of their delivery of some services, for instance, has been a point of concern (Commission for University Education, 2017). This may be an indicator of the significant role of efficient implementation of QMSs in these institutions.

Examination is among the crucial processes of any university quality management system as it transforms the students as inputs into the system to useful graduates as outputs of the system (Tinkler & Jackson, 2010). Examination does not only involve evaluating students' progress but, is also a process that provides motivation and enables them to recognize their academic strengths and weaknesses (Khan & Khan, 2011). It is the means employed in facilitating decision making pertaining to how a student performs, academic improvement as well as their job opportunities (Shraim, 2019). Lecturers also benefit from the process since they are able to gain insight that helps them explore new methods and techniques of teaching.

It has been extensively documented that a key distinctive activity with the ability to impact the reputation of a university is its commitment to proper student examination (Tremblay, Lalancette & Roseveare, 2012). The conduct of examination by and large, determines quality of education being offered at any given level (Mackatiani, 2017). According to O'Sullivan (2018), the quality of output of a university education system can be conceptualized better as a triangular relationship consisting of the curriculum content, pedagogy and examination system. Thus, it is very crucial for a university to ensure that high quality and integrity is maintained when conducting examinations and all related processes (Morris, 2018).

Though there may be slight variations on how different universities execute their examination processes, there are common practices. University examination processes are normally carried out as per established statutes and procedures and the relevant personnel are expected to be responsible and uphold integrity and confidentiality all through (Bhardwaj & Singh, 2011). In the examination process, examinations are planned, organized and administered. The examination process in university systems spans from classroom teaching, examination setting, conducting the examinations, marking and grading, to certificate issuance (Ogunji, 2011). This process is a multifaceted system owing to its end goal of ensuring that all the necessary procedures

are strengthened towards establishing an examination system whose central focus is student development (Zhang, Liu & Zang, 2014).

The entire examination process in universities can sometimes be a huge task taking much time to conclude, and is susceptible to many errors, besides the considerable costs that might be incurred (Manasi & Maiyo, 2020). The three major goals for an examination process as highlighted by Sindre and Vegendla (2015) is low cost, reliability and validity. Thus, for university examination process to be successful, all the human and material resources required in conducting examinations smoothly should be marshalled (Irira, 2014). The human resource is construed as lecturers/examiners, invigilators, students, supervisors and administrators while the material resources involve the facilities accessible for teaching, learning and assessment processes (Kurasha, 2013). These material resources include learning materials, library facilities, examination halls, question papers and answer booklets and any other materials needed for a particular examination (Adow, Alio & Thinguri, 2015).

Examination process in universities entails a variety of risks for the institutions and generally contains three broad phases namely the pre-examination, examination and post examinations phases (Quapp & Holschemacher, 2016). Typical university examination process begins when the heads of relevant departments submit the courses that will be examined to the examinations office (Onias & Gudhlanga, 2012). Examination questions and the marking schemes are then generated and taken through moderation by both internal and external examiners nominated by the university at the beginning of each academic year (Geraldo, 2019). Once moderation is completed, the compilation of items is undertaken and an eligibility report (course wise) obtained. The question papers are then printed and packaged (Irira, 2014).

Conducting examinations effectively occurs when test examinations are administered to eligible students and the student eligibility in undertaking an examination hinges on their fulfilment of particular stipulated requirements (Aikins, 2019). Such requirements include registering for examinations and the course units to be examined. Students must also acquaint and adhere to particular instructions to candidates before and during examinations (Ray et al., 2018). For instance, universities always communicate that candidates without examination and university identity cards authorizing them to sit for the examination will not be allowed to sit for the examinations (Sarrayrih & Ilyas, 2013). On examination days, specific examinations are taken in specified venues where

students write and are usually closely supervised by invigilators all through (Akaranga & Ongong, 2013). Once students are done writing, the scripts are collected by the invigilators and taken back to the examinations office (Ombasa, 2017; Onias & Gudhlanga, 2012).

As soon as the marking exercise is completed, marked answer scripts are collected and dispatched to the examinations office where grading is undertaken. Normally, to enhance credibility of examinations, external examiners also mark the scripts (Ombasa, 2017). After due approval of examination reports provided by moderators/examiners, the relevant instructors proceed to enter the grades in the necessary softwares so that grade reports are produced (Munzur, 2014). In processing student results, presentation of the results to the Departmental Boards of Examiners, Faculty/School Boards of Examiners and then the senate (Onias & Gudhlanga, 2012) is carried out followed by their publication. Release of examination results is undertaken by Deans in form of provisional or official transcripts. In cases where a student is aggrieved with their results, they are permitted to appeal for the remarking of their script (Gynnild, 2011).

Several challenges confronting examination processes in universities include poor setting of examination questions, allocation of more or less time to an examination, assessing students in areas not covered in the course of teaching besides awarding undeserved grades to students (Eyo & Ofoegbu, 2012; Irira, 2014; Geraldo, 2019). Increased exam malpractices, errors related to miscalculation of marks, misplacing examination scripts and misallocation of scores to students are also rampant in many universities (Gudo, Olel & Oanda, 2011; Amadin & Ukaoha, 2014; Matovu, 2014). Other major recurrent concerns pertain to late exam marking and submission, lack of proper instruments for moderation, errors in recoding marks, missing marks as well as delayed issuance and receipt of results transcripts and degree certificate (Kyenge, 2011; Mwangi, 2018; Mbirithi, 2013;). The challenges/concerns have in many times compromised the quality, reliability and validity of examination processes in these institutions.

This study focused on the post-examination process in public universities in Kenya. The post examination process can be handled traditionally or online. The focus on this process and related services was justified by the observation that many students' complaints in these institutions as highlighted in existing literature and also the report

by CUE (2017) revolved around the outcomes of post examination activities such as processing and release of examination results. It was also evident from available literature that the impact of ISO 9001:2015 QMS implementation on post-examination services delivery in public universities in Kenya had received little attention from researchers hence the need for this study. Several challenges confronting examination processes were identified.

1.2 Statement of the Problem

Notwithstanding the massive expansion of universities in Kenya, various issues among them quality, have been a threat to the sector. There have been major points of concern regarding the quality of education offered by public universities more so where the examination process is concerned. The integrity of the manner in which examinations in public universities in Kenya are handled had on several occasion being questioned due to complaints from various stakeholders (Gudo, Olel, & Oanda, 2011; Bisieri & Ondego, 2017).

In 2017, the Commission for University Education, after carrying out a quality audit between December 2016 and January 2017, in its report was concerned that some universities had a chronic problem of missing student marks leading to delayed graduation for students at all levels (CUE, 2017). The report observed that missing marks in particular, was widespread in public universities and it had been used as a trick to trap students to visiting lecturers, who then exploited them under the guise of finding the marks (CUE, 2017).

In addition, there has been outrage within the nation pertaining to lengthy bureaucratic procedures for obtaining examination results and transcripts which created opportunities for sextortion. As a result, during the 2017 graduation cycle, CUE issued a directive that all universities would be expected to ensure that all their students received transcripts and results prior to graduating (CUE, 2017). In 2019, CUE also questioned the validity of the degrees awarded to PhD students in one of the established public universities in the nation. Among the issues raised was the inadequacies in the internal and external examination process when moderating examination marking (CUE, 2019).

Several other notable concerns related to untimely processing of students results due to late marking and submission of results by lecturers, errors in recording marks as well

as the loss of student examination data (Kara, Tanui, & Kalai, 2016; Mwangi, 2018). Overall, inefficiencies in the delivery of post examination services such as the missing scores had caused some students to be traumatized, others had been frustrated while still others had lost hope in their studies (Omanga, 2017; Ondari, 2019). Students had missed graduation, failed to complete their courses on time or to some extent dropped out of university. While this maybe the problem of the lecturers or administrative staff, the students were left to bear the consequences of the situation (Muli, 2017).

What was more worrisome is the fact that the mentioned inefficiencies occurred in public universities that were implementing ISO 9001: 2015 quality management systems having already been certified. This concern casted doubt on the extent to which implementing these QMSs translated to quality service delivery in public universities, and more specifically, the delivery of post examination services. A review of existing literature showed that empirical studies delineating the effect of ISO 9001: 2015 QMS implementation on post examination service delivery and examination services in general were scanty. Studies on the implementation of ISO 9001: 2015 QMS in public universities were also not exhaustive as a majority of the available studies were based on the expired ISO 9001: 2008 quality standard. The above were a key motivation why this current study was carried out.

1.3 Purpose of the Study

The purpose of this study was to evaluate the effect of ISO 9001:2015 quality management system implementation on post-examination service delivery in public universities in Kenya.

1.4 Objectives of the Study

The study was guided by the following specific objectives;

- i. To analyse how the establishment of quality objectives as per the ISO 9001:2015 quality management system affects post-examination service delivery in public universities in Kenya.
- ii. To explore how resource allocation per the ISO 9001:2015 quality management system affects post-examination service delivery in public universities in Kenya.

- iii. To examine how internal quality auditing as per the ISO 9001:2015 quality management system affects post-examination service delivery in public universities in Kenya.
- iv. To investigate how continual improvement as per the ISO 9001:2015 quality management system affects post-examination service delivery in public universities in Kenya.
- v. To determine the moderating effect of organizational structure on the relationship between ISO 9001:2015 quality management system implementation and post-examination service delivery in public universities in Kenya.

1.5 Research Hypotheses

The following hypotheses were tested in this study;

- i. H0₁: Establishment of quality objectives as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya.
- ii. H0₂: Resource allocation as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya.
- iii. H0₃: Internal quality auditing as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya.
- iv. H0₄: Continual improvement as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya.
- v. H0₅: Organizational structure does not have a significant moderating effect on the relationship between ISO 9001:2015 quality management system implementation and post-examination service delivery in public universities in Kenya.

1.6 Significance of the Study

The findings of this study are of great importance to several key stakeholders in the examination process in public universities such as the deputy vice chancellors (academic), registrars (academic), deputy registrars (examinations), deans of schools,

chairpersons of departments, examination coordinators, directors of quality assurance, all lecturers and directors ISO and PC. These stakeholders will get a clear picture of the quality of post examination service offered in these institutions and the gaps that need to be addressed. They will be able to determine the main points of concern as well as the strengths and weaknesses that exist in addressing areas of nonconformity where examinations are concerned.

This study provides these stakeholders and the universities' management in general with informed evidence of how they could improve the effectiveness and efficiency of their examination processes and service through the implementation of ISO 9001: 2015 quality management system. Up to this time, the success of ISO 9001:2015 QMS implementation in several universities had not been reported and therefore, the study will help in evaluating the level of efficiency in its implementation in the selected universities.

The study will be an eye opener to stakeholders in the higher education sector as to whether indeed, being ISO 9001:2015 certified translates to efficient academic services. The study goes a long way in enlightening the directors of quality assurance and directors of QMS and PC of these universities on how through their departments, they could assist their institutions to reap maximum benefits of ISO 9001:2015 QMS in all academic and nonacademic processes more efficiently and at a reduced cost.

The study will help policy makers at the Ministry of Education and also the Commission of University Education in devising and revising policies and measures meant to sustain the required standards in quality management in university processes. They will be informed on their role in supporting these institutions to implement efficient quality management systems and also addressing the examination nonconformities witnessed in these institutions.

Other stakeholders in university education in the country such as students, employers, parents and accreditation bodies will also benefit from this study by reaping the benefits of improved examination processes and services if the recommendations of this study are adequately implemented. As public universities improve the quality of service delivery due to ISO 9001: 2015 QMS implementation, other stakeholders and the public will attribute this to the work of the government thus improving its reputation in regards to the provision of quality university education.

At the conclusion of this study, three research papers have been published and this could be used as a reference point by other researchers conducting related studies. The findings could also inform further study areas. Through this, the body of literature on this study subject would be enhanced.

1.7 Limitations of the Study

In conducting this study, two main challenges were encountered. One of the challenges pertained to the accessibility of the respondents especially due to COVID-19 pandemic witnessed from 2020 and which delayed or slowed down the data collection exercise. The option of an online survey in administering the questionnaires was explored alongside the drop and pick later method to increase the pace in data collection.

The nature of information sought in this study touched on universities' examination process and systems that were considered delicate and with far reaching impacts. As a result, the information was deemed as confidential by some of the targeted participants who for fear of victimization and need to protect their positions, shied away from participating in the study at first. To mitigate against this challenge, the participants were asked to give the relevant information anonymously and assured that the study was purely being undertaken for academic purposes.

1.8 Delimitations of the Study

This study focused on the effect of ISO 9001:2015 QMS implementation on the delivery of post-examination service in selected public universities in Kenya. Even though there were several requirements stipulated in the different clauses of ISO 9001:2015 QMS which might affect the delivery of examination service in these universities, the study focused on establishment of quality objectives, resource allocation, internal quality audit and continual improvement. The moderating effect of organizational structure on the relationship between ISO 9001:2015 quality management system implementation and the delivery of post-examination service in public universities in Kenya was also considered.

In addition, given that the examination process and hence, the examination service in public universities were broad, the study delimited itself to post examination service. This service included results processing and release, making student examination results accessible, addressing or solving student grievances related to examination errors/anomalies and also the production of reports, graduation lists, transcripts and

degree certificates. The study was also undertaken in Kenyan public universities that were ISO 9001:2015 certified and the targeted groups consisted of directors of quality assurance, directors of QMS and PC, deputy registrars (examinations), examination coordinators and fourth year students placed at the main campuses of these institutions.

1.9 Assumptions of the Study

The study held a number of basic assumptions. The study assumed that the availability of groups of people selected to take part in the study would be guaranteed all through and that they would fill the questionnaires willingly or voluntarily.

It was assumed that the participants would honestly, truthfully and objectively give their responses and would also have basic knowledge and experience pertaining to the study subject and more so ISO 9001: 2015 QMS implementation for them to provide meaningful information. It was assumed that the subjects would understand the questions asked to them so as to give articulate answers.

The study also assumed that the research would be completed within the set timelines and budget and that the management of the selected public universities where the study would take place would cooperate to ensure easier access to the research participants.

It was further assumed that the selected universities had documented information on various points of concerns if any that were raised by students and other stakeholders within the examination process. The study assumed that these institutions had adequate experience with ISO 9001: 2015 QMS implementation, that is to say, they had been certified for quite a while so that informed conclusions could be made in relation to the study subject.

1.10 Theoretical Framework

This section explores the theory underpinning this study. This study was underpinned on the systems theory.

1.10.1 Systems Theory

Systems theory first developed in the 1940s by Ludwig von Bertalanffy and advanced by W. Ross Ashby and George Bateson (Wilkinson, 2011). This theory is a conceptual framework founded on the idea that the component parts of a system can adequately be comprehended in the context of the particular relationships that exists among these parts and also with other systems not when they are isolated (Whitchurch & Constantine,

2009). Thus, the core of the systems theory is that the whole is more than the sum of its parts. A public university in this case can be viewed as a complex system comprising of different structures as well as mutually dependent subsystems.

It is argued by Capra (1997) that systems thinking or system theory is “contextual thinking”, that is, in explaining things, emphasis should be placed on their context implying that their explanation is done with reference to their environments. Capra maintained that systems thinking can also be perceived as “environment thinking” and therefore, central to the systems theory, is the concept of subunits or subsystems interacting within a system and the system interacting with its environment (Amagoh, 2016).

In summary, the systems theory can be considered as a way of thinking about systems in entirety and their components (Churchman, 1968), a comprehension of the processes comprising three components, that is, inputs that are transformed into outputs through the application of particular processes. This process thinking within the systems theory context, essential structures exist and then, there are forces and mechanisms aiding the interaction of these structures to yield key processes. An organization’s inputs, processes and outputs are all contained in its environment’s boundary (Sahney, Banwet, & Karunes, 2004). The processes found within a system combine the input of people, equipment, method and environment to yield an output (De Bruyn, 2002). ISO 9001:2015 quality management system embraces the idea of systems theory as it provides the guidelines for the resources, processes and operations in all areas from the input to the output and include the controls that undertaken at every stage to ensure quality in enhanced.

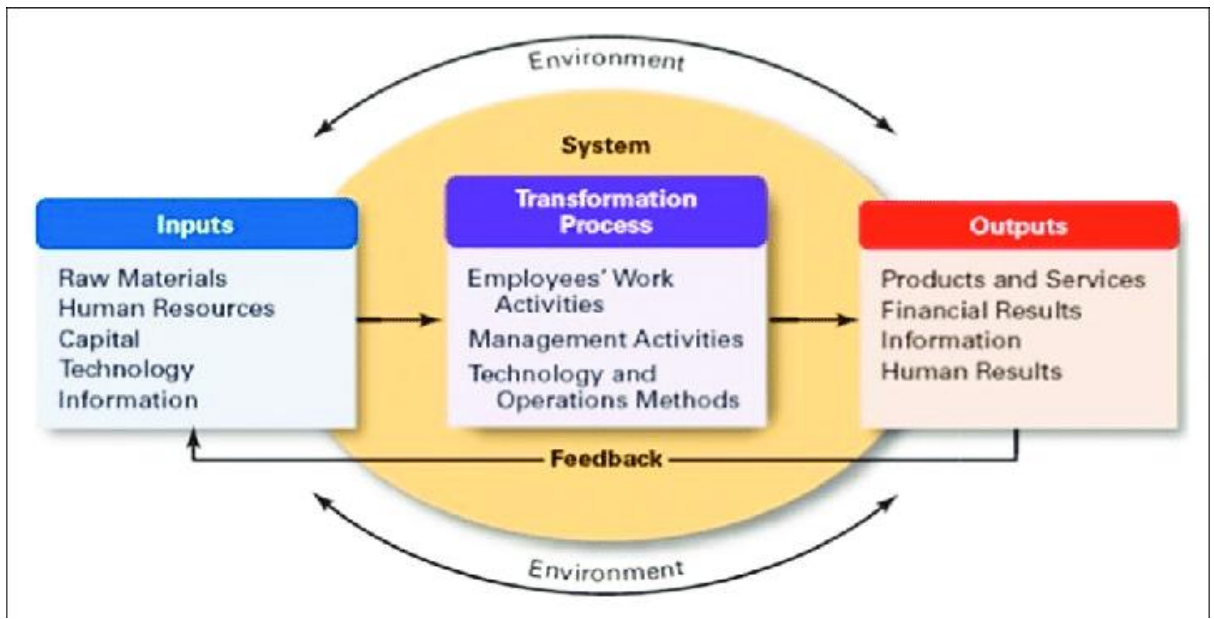
The common inputs or resources of an organization can be people in the form of labour, physical resources in the form of raw material, capital or financial resources, and information or knowledge (Reed, Lemak, & Mero, 2000). An organization must ensure that the inputs at its disposal are transformed in to outputs which can take the form of a product or service. The activities or transformation processes applied in processing inputs to outputs form the concept of management.

According to this theory, an organization can be a closed or open system. Organizations whose immediate environments have an impact on them are considered to have open systems while those with closed systems are perceived to be self-supporting, existing

independently of a given environment (Luhmann, Baecker, & Gilgen, 2013). Public universities can be viewed as open systems because they are influenced by the external environment, for instance, the stakeholders who require services that meet their expectations. Von Bertalanffy initially argued for open systems as opposed to the more closed systems as they are open to ideas from the outside that can be used to improve its processes (Wilkinson, 2011; Hammond, 2019). (Weber & Waeger, 2017).

From a systems theory standpoint, there were several environmental forces that necessitated efficient quality management of the core business of universities as institutions of higher learning (Becket & Brookes, 2008). Van der Westhuizen (2015) concurred with this statement by terming the establishment of institutions' quality management systems as responses of HEIs to their external environments. Murdoch (2005) opined that the external demands of accountability compelled HEIs to establish and enhance the quality of their activities. Quality management systems within public universities can be conceptualized as the institutional policies, systems, available resources, plans, actions and strategies that exist so as to boost the core business such as teaching and learning.

The systems theory was relevant to this study since it helped explain the role of quality management systems in public universities especially within the examination processes which ensured that adequate examination service are provided to students. The theory therefore, anchored the main objective of this study which was to evaluate the effect of ISO 9001:2015 QMS implementation on post-examination service delivery in public universities in Kenya. The systems theory is shown in the Figure 1.1 below.



Source: Hayajneh, (2007).

Figure 1.1: Systems Theory Model

1.11 Conceptual Framework of the Study

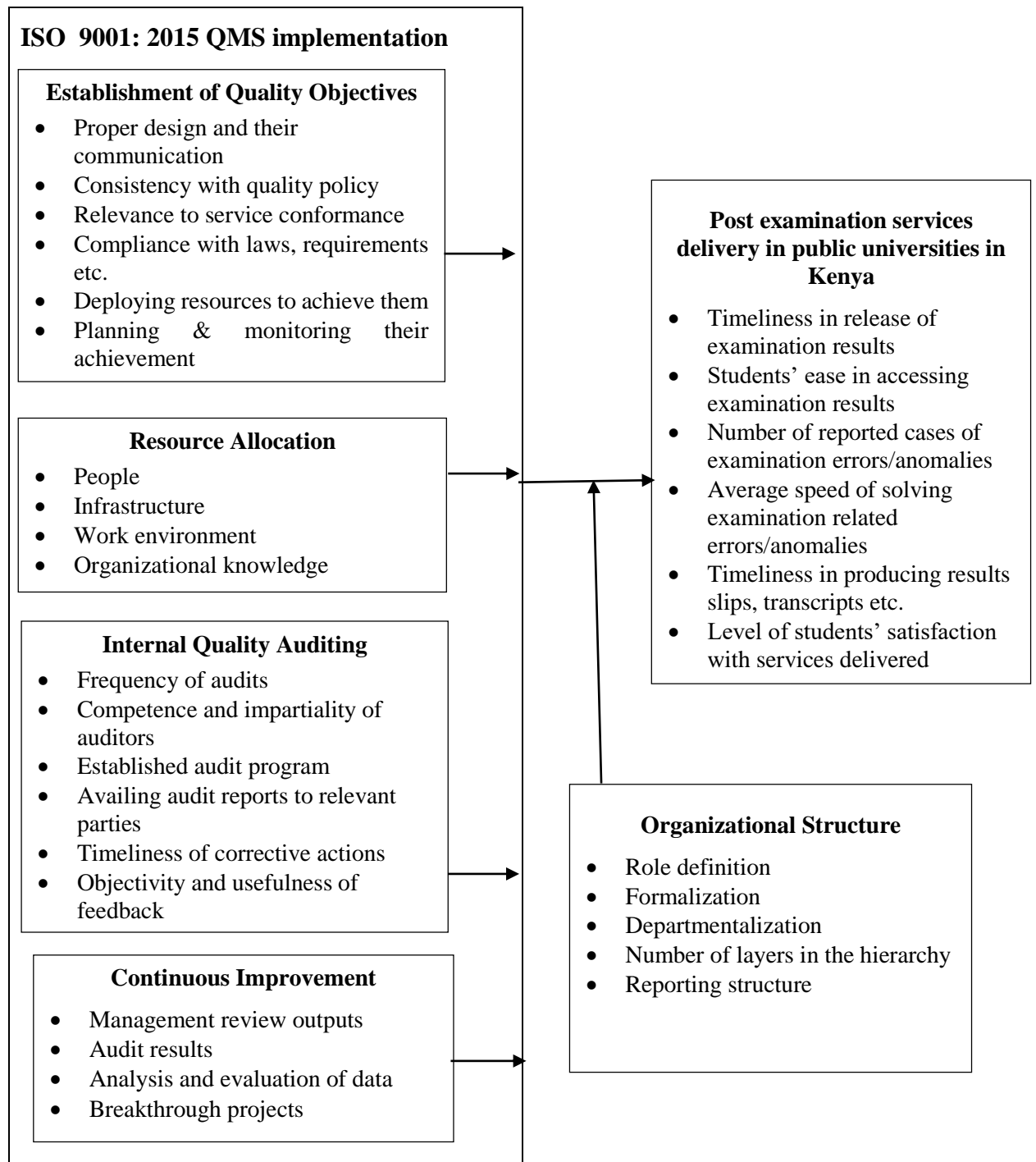
Figure 1.2 presents the conceptual framework for the study which shows the hypothesized relationship between ISO 9001: 2015 quality management system implementation and post examination services delivery in public universities in Kenya.

It is hypothesized that implementation of ISO 9001:2015 quality management system have an effect on the delivery of post examination service in public universities in Kenya. Four aspects of ISO 9001:2015 standards were tested against post examination service deliver together with a moderating variable that tested the relationship between the aspects of ISO 9001:2015 implementation and post examination service delivery. These were: (1), Establishment of quality objective; (2) Resource allocation; (3) Internal quality audit; (4) Continuous improvement; (5) Organizational structure as a moderating variable.

Independent Variables

Dependent

Variable



Moderating Variable

Source: Researcher (2022)

Figure 1.2: Conceptual Framework of the Study

1.11.1 Establishment of Quality Objectives

Clause 6.2 outlines the requirement of establishment of quality objectives as a responsibility of the management. The process of establishing quality objectives includes proper design and communication of the same to all staff, consistency with the quality policy and must be in compliance with the laws (ISO, 2015). Once the quality objectives are established, an organization plans how and when they will be met, resources that will be used in carrying out the processes and assign responsibility for each process. A regular evaluation of the objectives is planned and this should be communicated to the relevant personnel (Celik & Olcer, 2018; Irsyda et al., 2018). Established quality objectives will lead to effectiveness and efficiency in the provision of post examination service when achieve, but when most of the objectives are not achieved, then grievances arise as service delivered does not meet the requirements of the customers. This variable is anchored on systems theory model as one the management activity and guides staff as they undertake the provision of quality post examination services.

1.11.2 Resource Allocation

Resources allocation as outlined in clause 7.2 of ISO 9001:2015 standard, are planned and provided according to the established quality objectives and the service to be offered. They include personnel, infrastructure, financial resources and the work environment. Under this clause the organization is required to provide staff with necessary education, skills and experience to adequately undertake the assigned tasks (ISO, 2015; Makabi, Namusonge & Eleguni,2020). The infrastructure includes offices that are well equipped and software that eases the task of processes the results and storage of data. The infrastructure for the operations and processes should be provided and well maintained to enhance the efficiency thus leading to quality service (Kandie, 2019). Lack of competent staff; inadequate equipment and poor infrastructure, poor working environment will affect the quality of post examination service offered to the students. This variable is anchored on system theory as one of the major inputs in the system.

1.11.3 Internal Quality Auditing

Under clause 9.2 of ISO 9001:2015 standards, an organization is required to conduct internal audits for all its processes to check for suitability and effectiveness of the QMS.

The audit team assesses processes, procedures, equipment used in the operations and functions of the organization against the laid out requirements and the results of the audit is reported to the relevant management (ISO, 2015). The results of the audit are used to identify areas of nonconformity and outline corrective actions that should be taken. On one hand, internal quality audits are meant to ensure procedures and processes used on an organization's operations lead to delivery of services that are of value to the customer and on the other hand, auditing result to suggestion on changes that needs to be introduced to enhance procedures and processes (Lenning & Gremyr, 2021). An organization with infrequent audits will not be able to identify areas of nonconformity in time to take corrective actions and at the same time identify areas of improvement. This variable is anchor on system theory as a control measure carried out on the processes to provide feedback on the outputs. If the output meets the requirements, it leads to quality service delivery but if it does not, then corrective actions are done and the process starts again from the input.

1.11.4 Continuous Improvement

Clause 10.3 outlines the requirements that an organization should undertake to continually improve the efficiency and effectiveness of their processes and procedures in their operations. To do this, an organization is required to use audit reports to continually track, review and audit its plans, implementation, completion and results of its services to identify needs that have not been met and identify actions to take to meet them and at the same time identify opportunities that the organization can take to improve on its processes and procedures (ISO, 2015). These actions are aimed at improving customer requirement and enhancing customer satisfaction in the service provided. Training of staff at all levels on processes and procedures to achieve improvement of objectives, and at the same time development of processes to implement new projects are steps that an organization can apply to enhance service delivery (Moyo, 2020). This variable is anchored on the system theory as it is a results of the feedback based on audit reviews and management reviews. This can be seen as starting at the beginning of the process or improvement of the processes as the operations of the organization continues being carried out.

1.11.5 Organization Structure

An organization structure identifies the rules and guidelines, roles and responsibilities, internal communication and lines of authority and is used to express hierarchical plan adopted for effective service delivery to the customers.

Organization structure has been used in this study as a moderating variable to assess the direction and strength of the relationship between ISO 9001:2015 QMS aspects on post examination service delivery (Pokhariyal, 2019). In the study the moderation occurred when the effect of ISO 9001:2015 aspects on post examination service delivery varied according to the level of the organization structure. The moderating variable was anchor on the system theory as it formed part of the environment on which the system revolved in.

1.12 Operational Definition of Terms

Continuous improvement: this is a concept allowing for a series of improvements to warrant superior service delivery of any organization. It is a method for improving every facet of an organization's operations and increasing competitiveness by developing an organization's resources.

Implementation: refers to actions taken to execute a series of requirements clauses that guarantee constancy of management processes linked to quality in a system.

Internal quality auditing: this is the process of systematically examining a QMS which is undertaken by an internal quality auditor and audit team so that measures to improve the concerned processes for enhanced efficiency can be suggested.

ISO 9001: 2015: this is the latest version of a global standard developed by the International Organization for Standardization and which is applied internationally by in excess of one million organizations of all sizes to assist them by outlining the best practice requirements for an operational QMS. It specifies the minimum requirements to an organization's QMS in organizations so that products or services meet customer and governmental requirements are offered.

Organization structure: this is the formal configuration between individuals and groups concerning the scope of behaviour, responsibilities, allocation of tasks, lines of authority and accountability within the organization and to some extent, the organization's relationship with its external environment.

Post-examination services: these pertain to all the activities that the university personnel mandated to oversee examinations undertake once examinations have been written.

Pre-examination services: these are the activities carried out by the relevant university staff to ensure that adequate preparation for conducting examinations and the post examination activities that come thereafter are adequately and efficiently executed.

Quality management system: this is a management system or a set of policies, processes and procedures aimed at directing and controlling an organization with regards to quality issues. It assists in coordinating and directing the activities of an organization so as to adhere to customer and regulatory requirements and ensure that it operates effectively and on a constant basis.

Quality objectives: these are quantifiable goals that are pertinent in increasing customer satisfaction and are in accordance with an organization's quality policy. They are measurable quality control methods established by organizations according to recognized standards.

Resource allocation: this entails deploying organization's resources proficiently and effectively when they are needed so that quality management is effectively undertaken.

Service delivery: refers to the actual delivery of services to the customer or clients. The main concern is where, when and how the services are delivered and whether this is fair or unfair in nature.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of available literature that is relevant to the study subject. The chapter first gives an overview on ISO 9001: 2015 QMS and thereafter a link between its implementation and examination services delivery is provided. Studies conducted across the globe are considered. The reviewed studies and also the research gaps identified are later summarized.

2.2 Examination Process in Public Universities

According to Ogunji (2011), an organization is a managed system that leads to the transformation of inputs for instance, raw materials, people and other resources into outputs which is the goods and services that encompass its products. Accordingly, the way in which educational inputs are processed right from the start all the way to the final year of educational programmes and also quality assessment of all learning and teaching activities would form a vital facet of high quality examination results (Fasasi, 2009). This is only achievable through the implementation of an efficient examination process.

Examination is a form of testing that is regularly applied in teaching. As stated by Zhang, Liu and Zang (2014), examinations are not only applied in assessing the performance of students in academics but also in checking the impact of the teaching offered. Moreover, examinations are used in promoting instructors so that they can enrich their teaching work. In public universities, examinations are the major tools used for assessing the student progress in their journey towards the acquisition of crucial skills and knowledge over a specified period of time (Onyibe, Uma, & Ibina, 2015). Examinations are vital as they result to certification; they are part and parcel of student assessment and are also a compulsory part for a university's advancement and completion of a programmes that is in circle (Maghnouj et al., 2020).

2.2.1 Pre-Examination Phase

In public universities, examinations are not undertaken only on the day when students take their tests. Before that actual day, many different activities or arrangements are undertaken. Ibara (2018) asserted that the starting point in a university examination process is the submission of a list of the particular courses that are to be examined to

the examinations office by the deans of the different faculties or schools. This exercise is then followed by the preparation or the setting of examination questions which are also vetted (Olasehinde, 2015). The question papers that result from the said exercise together with their corresponding marking schemes then go through internal and external moderation to ensure that they are accurate and consistent and also to probe if they cover the course content (Manasi & Maiyo, 2020).

Usually, before moderation of the set examinations is conducted, timetables are made and copies circulated to the different departments (Badu-Nyarko, 2013). Displaying these timetables on noticeboards and specified examination rooms or venues ensures that students are informed on the different examination dates. In addition, all kinds of materials needed in ensuring that examinations are conducted successfully are requested once the exercise of registering for examinations among the students is duly concluded (Rukundo & Magambo, 2011). These materials should be secured till the actual day of writing the examinations so that their quality is not compromised and the scores awarded afterwards are deemed valid.

Once enough examination materials have been secured, Sarrayrih and Ilyas (2013) opines that as part of the arrangements before the day of writing examinations, the relevant university staff mandated to administer examinations ought to notify students of the dates and time when examination will be conducted. Students according to Irira (2014), should also be reminded to carry the requisite materials required in the course of writing their examinations and a suitable plan concerning invigilation set up. At the same time, the examination administrators should have familiarized themselves with the various procedures to be followed when administering the examinations for instance, examination timing and the relevant regulations.

Onias and Gudhlanga (2012) noted that the examination process carries on where examination papers and answer booklets are printed and collected. These are prepared ready for ensuing conduct of the examinations once a report that states that the students eligible to take the examination or otherwise has been accurately generated. Ombasa (2017) emphasized that the examination rooms or venues must be well lit and adequately ventilated with seats appropriately arranged in such a way that a student cannot copy the work of another student.

2.2.2 Examination Phase

As Geraldo (2019) opined, the administrators of a particular examination should make sure that the existing conditions in the course of an examination support a successful exercise as mismanaged conditions throughout the examination writing exercise, result to unwanted outcomes regardless of the amount of efforts put in preparing adequately for the exercise. Thus, once all the relevant arrangements for an effective examination have been properly instituted and the necessary entry conditions adhered to, students proceed to the examinations venue where they take their examinations (Akaranga & Ongong, 2013). Once the students enter the stipulated venue, they are directed to sit at their designated desks and a list sent round the venue by the invigilators to ensure that the students present in the examination room append their signature before the examinations begin (Okolie, Nwosu, Eneje & Oluka, 2019). The examination room is considered to be under examination conditions right from the moment students enter the specified venue up till when all the answer scripts are collected.

Before allowing students to begin writing the examination, invigilators have to ensure that all these students have received the right question paper and informed them that they are subject to the regulations of the examination (Onyibe, Uma & Ibina, 2015). These regulations may pertain to arriving to the examination venue late or even leaving the venue, infringement of set examination regulations, irregular conduct, and emergencies. Invigilators should ensure that students are supervised all through the period of writing the examination and this requires the invigilators full attention to the task at hand (Onuka & Durowoju, 2013).

At the end of the examination, the invigilators must ensure that the answer scripts for all the students whose names appeared on the signed attendance lists are collected and the students have indicated their registration numbers on the scripts accurately (Gudo, Olel & Oanda, 2011). The sorting of the answer scripts must then be undertaken in the order presented in the attendance lists and the lists marked appropriately. After collecting the answer scripts, the invigilators must return them to the examinations office where they are checked and stored in a secure place until they are collected for marking (Longkumer, 2019).

2.2.3 Post-Examination Phase

The post-examination process in a university pertains to all the activities put in the management to be undertaken after students have written their examinations (Geraldo, 2019). Once students complete their examinations, the answer scripts or booklets collected are sent to the examination administrators for the purposes of marking and grading (Munzur, 2014). Standardization process where examiners familiarize themselves with the moderated marking schemes and then mark the scripts occurs in this phase (Irira, 2014). In order to control quality in some universities, the student answer scripts that have already been graded by the course facilitators are undertaken through a vetting process carried out by team leaders so as to guarantee a standardized marking exercise (Douglas & Smith, 2013). The answer scripts that have been evaluated or vetted are then sent to external examiners who usually judge the markers' performance after which the publication of the results on noticeboards or student portals for checking is done once the relevant approval has been issued (Ombasa, 2017; Onias & Gudhlanga, 2012).

Principally, as stated by Jawuor, Adino and Ogeta (2014) and Amadin and Ukaoha (2014), external examiners are normally invited to moderate the marked student answer scripts so as to warrant that the set standards for a particular award are befitting; that the standards for student performance are commensurate with related programmes in other universities familiar to the students and also to ensure that the processes applied to assess, examine and determine the awards to be issued to students are sound and carried out in a fair manner.

Ray et al. (2018) underlined that among the crucial procedures for efficient quality control in the management of university examinations is obtaining feedback on student performance in their examinations. In light of this, post-examination analyses are undertaken on a course basis with the aim of identifying the grade patterns in a particular examination (Sarrayrih, 2016; Jaleel & Khanum, 2020). Such analyses are also meant to measure lecturers' performance in the different courses they have handled. Students are also accorded a chance to appeal against their results if they exude confidence the various errors occurred during the marking of their answer scripts or even in the course of calculating or recording their marks (Gynnild, 2011). During the

student appeal process, as student is mandated to first share their concerns with the relevant department before formally appealing the case.

Due to the broad nature of the university examination processes and services, this study focused on post examination services delivery in Kenyan public universities. The study delimited itself to the processing and release of examination results, making student examination results accessible, issues of examination errors/anomalies in these institutions as well as the handling of examination results related queries. The study also examined the production of reports, graduation lists, transcripts and degree certificates in these universities and also the students' general satisfaction with the post examination services offered in their institutions.

2.3 Overview on ISO 9001: 2015 Quality Management System

ISO is the largest developer and publisher of international standards across the globe (Murphy & Yates, 2009). It is a global confederation of national standard bodies commonly referred to as ISO member bodies and has in place technical committees in charge of developing the different ISO standards. The ISO family of standards embodies a global accord on noble management practices whose purpose is to ensure that organizations offer products or services that satisfy the quality expectations of customers (ISO, 2002). These standards are adopted by organizations voluntarily.

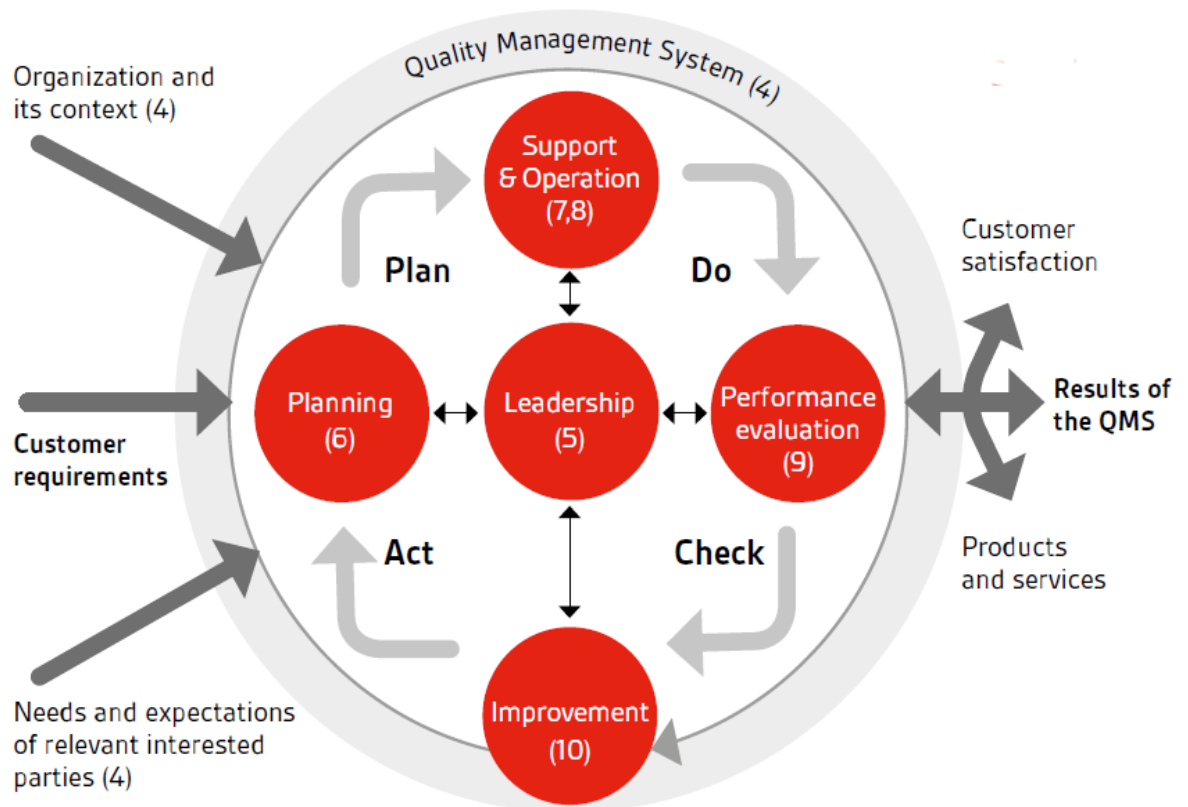
ISO 9001 is an international standard of QMS issued by ISO. This standard gives a description of the requirements that organizations need to be able to support continual improvement and attain customer satisfaction (Saleem et al., 2011). Among all ISO standards, ISO 9001 is the most widely adopted by organizations globally. The first publication for this standard was made in 1987 and has been revised several times, 1994, 2000, 2008 and 2015. The latest version is known as ISO 9001:2015 (Niedermeier, 2017). The changes encompass additional clauses and adopt of a new concept and approach referred to as risk-based thinking (Sæstad, 2017).

ISO 9001 comprises of QMS best practices that are expected to yield considerable outcomes if there is consistency in implementing the standard (Natarajan, 2017). The main aim of this standard is to make sure that organizations deliver their products or services as per the expectations of customers, that they attain customer satisfaction and also realize continual improvement on the basis of the effectiveness of their QMSs (Thu, 2013). Therefore, strategies can be formulated by organizations to thwart any

impacts associated with risks besides being hopefully more resilient and sustainable through risk accommodation (Fajrah, Putri & Amrina, 2019). Other changes embodied in the latest version pertain to considering the stakeholder needs, the significance of knowledge management as well as minimal insistence on documentation (Scrimshire, 2015).

ISO 9001 is founded on a process-oriented approach (Sumaedi & Yarmen, 2015). Process approach is a system made up of all the processes in the organization which are identifiable, act together and are managed so that the final outcome is as stipulated in the requirements (ISO 2008). Process approach enables application of ISO 9001 standards to be possible in all types of organizations and it guides organizations on proper planning of operations, use of resources, assessment of processes and action taken on risks and opportunities (Sickinger-Nagorni & Schwanke, 2016).

The process approach is based on PDCA cycle which is a model that has four stages, used by organization with an aim of improving their QMS so that the organization may operate efficiently and effectively (Castell, 2016). It is popularly known as the Deming Cycle developed from its conception by Walter Shewhart. The PDCA cycle is the foundation on which all ISO management standards are laid. It provides a systematic approach for the accomplishment of continuous improvement, controls the quality management system and ensures monitoring is done constantly for effectiveness of the organization (Fonseca, 2015). The PDCA cycle is shown in Figure 2.1 below.



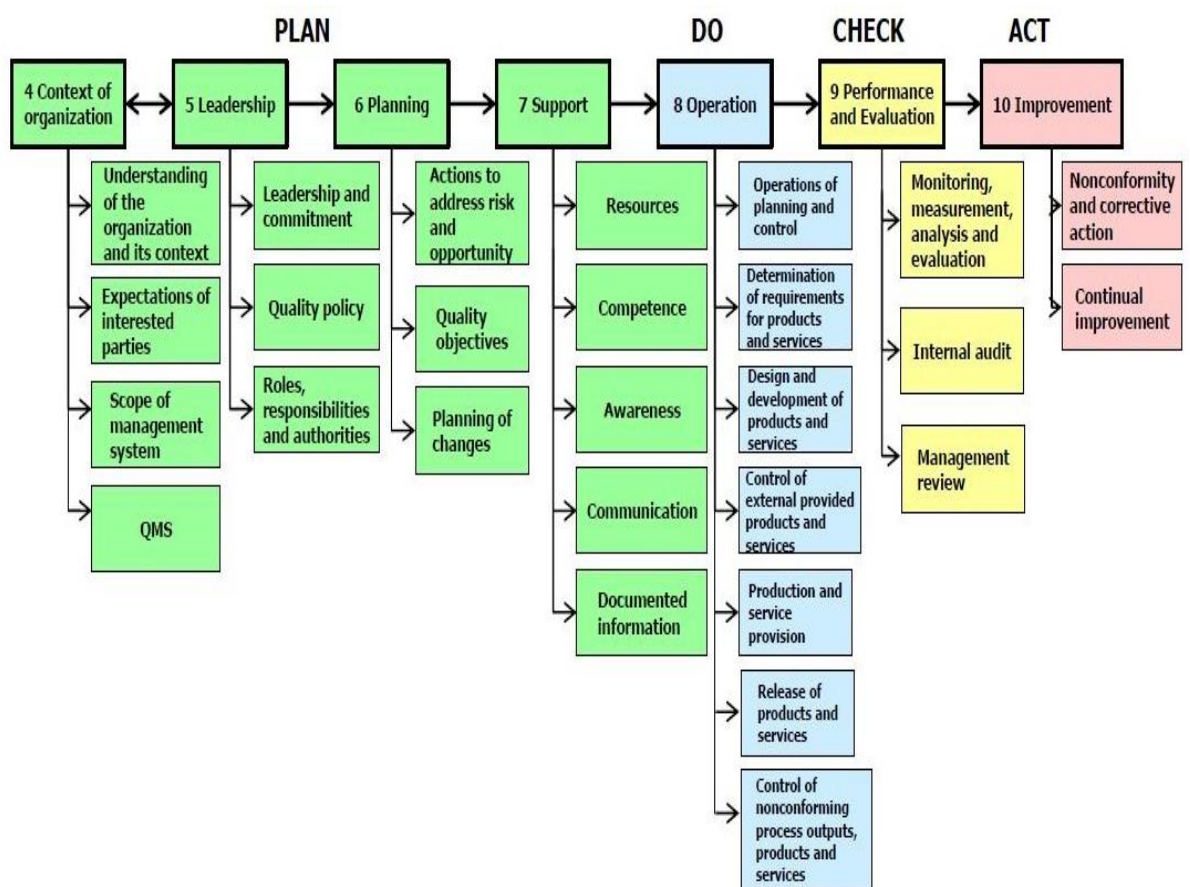
Source: ISO 19443:2018

Figure 2.1: PDCA Cycle

According to Muzaimi, Hamid and Chew (2018), the PDCA cycle consists of four stages namely: Plan: this is where the organization establishes the aim, quality policy, processes, monitoring methods, links between processes and monitoring methods guided by the requirements of the customers. Do: involves the operation of the organization as per the planned activities. Check: the processes and products and services are monitored and controlled guided by the laid down objectives, policy and customer requirements, to check whether the outcomes are satisfactory. This is done at intervals as per the ISO 9001 requirements. Act: it involves working on issues or challenges identified during monitoring and at the same time working to improve the system. Organizations are guided by the cycle to continually improve its processes both in the internal systems and when implementing the activities (Kerekes & Csernatoni, 2016).

The structure of ISO 9001: 2015 standard is divided with parts similar to PDCA-cycle (Hinsch, 2019). These parts correspond to the clauses in the 2015 version with clauses

1-3 being scope, normative references and terms and definitions. Clause 4 to 7 consists of steps that involve “Planning” for actions that would lead to management of quality. The clauses include organizational context, leadership, planning and support. Clause 8 outlines the implementation of the activities including production and management processes which is similar to “Do” in cycle. Clause 9 consists of the instruments and methods to use for assessment and verification similar to “Check” while clause 10 is similar to “Act” and outlines the methods used to analyze the whole process to enhance product conformity, effectiveness and continuous improvement of the quality management system (Wilson & Campbell, 2020).



Source: Croft (2014)

Figure 2.2: Structure of ISO 9001:2015

Figure 2.2 shows the process approach as a tool to assist an organization in internalizing the requirements of the interrelated processes so that they may result in continual improvement of the whole organization and achieve the objectives of the organization leading to customer satisfaction. The evaluation of the process looks for areas to

improve especially where the processes interact with each other and at the same time look for new ways of improving performance towards attaining better results.

Generally, the implementation of ISO 9001: 2015 QMS is founded on the series of requirements clauses that warrant constancy of management processes that relate to quality in a given system (Anttila & Jussila, 2017). Clause 1 is very comparable to the 2008 version and covers the standard's scope and nothing much has changed in this clause. Clauses 2 and 3 focus on normative references and term and definitions (Fonseca & Domingues, 2017). They both reference ISO 9000, QMS fundamentals and vocabulary which are crucial in providing valued guidance. The rest of the clauses comprise some new vital elements which ought to be taken in to consideration when executing the new standard.

The clause on the context of the organization institutes the QMS's context and how this is supported by the business strategy (Hrbáčková & Tuček, 2019). According to Deysher (2015), organizations will have to define the issues both internal and external, that are pertinent to its aim and would definitely affect the organizations' operations or activities. In addition, organizations will also have to ascertain the "interested parties" that are significant to their QMS (Makolov, 2019). Afterwards, the QMS's scope ought to be defined and must take in to consideration any functions or processes outsourced if they are important.

The leadership clause places requirements on "top management" which alludes to the individual or group of individuals who are responsible for directing and controlling the organization at the very top level (Cochran, 2015). Top management today must be significantly involved in their organizations' QMSs and ought to make sure that the requirements are incorporated in to the processes of organizations and their compatibility with the organizations' strategic directions is assured (Sari, Wibisono, Wahyudi, & Lio, 2017). The top management must also ensure that the quality policies are living documents embedded at the very heart of the organizations. Furthermore, top management is expected to boost the satisfaction of their customers by detecting and addressing the various risks and opportunities that are likely to impact this (Herdiawan & Purba, 2019).

Under planning, organizations are required to plan the actions for addressing both risks and opportunities, how these actions should be integrated and implemented in to its

management system processes besides evaluating their effectiveness (Medić, Karlović & Cindrić, 2016). Monitoring, management and communication of such actions across the organizations is mandatory. Organizations are also required to have in place quality objectives that can be measured (John & Cianfrani, 2016). The clause on support warrants that organizations have the requisite resources, people and also infrastructure in meeting the set goals (Fajrah, Putri, & Amrina, 2019). This clause pertains to the requirements that cover all the resources needed within a QMS and currently, it takes in to account both internal and external resources.

Organizational knowledge is a fresh requirement under the support clause dealing with the requirements for competence, awareness, and communication of the QMS (Hunt, 2016). Personnel ought to be conscious of the organization's quality policy and comprehend their contribution to it besides being aware of the repercussions of nonconformity (Fonseca, 2015). It is also required that there ought to be proper maintenance of the knowledge possessed by an organization so as to guarantee product or service conformity (Abuhav, 2017). There are further requirements for "documented information" necessary to control the QMS.

The operation clause relates to the implementation of plans and processes. Much emphasis is placed on controlling the processes particularly planned changes and reviewing the repercussions of unplanned changes as well as the mitigation of any negative impacts as required (Purushothama, 2014). Under this clause, the trend towards increased utilization of subcontractors and outsourcing and whose performance must be scrutinized along with post-delivery activities is acknowledged (Merrill, 2018). The clause on performance evaluation covers the requirements for monitoring, measurement, analysis and evaluation (Tricker, 2016). Organizations must therefore, take in to consideration what ought to be measured, the methods to be applied, the time and at what intervals the data ought to be analyzed and reported.

It is further emphasized that organizations ought to directly seek out information relating to how their customers perceive them (Bravi, Murmura, & Santos, 2019). A categorical requirement exists where organizations are obligated to reveal the manner in which the analysis and evaluation of this data is utilized particularly regarding the necessity of improving the QMS. Internal audits also ought to be undertaken (Parthasarthy, 2017). Management reviews are still needed though there are further

requirements comprising the attention on the changes internal and external issues that are significant to the QMS (Fonseca & Domingues, 2017).

The clause on improvement requires that organizations have a duty to define and pinpoint improvement opportunities (Wilson & Campbell, 2016). They are also mandated to vigorously seek for opportunities for improving processes, products and services as well as the QMS, particularly bearing in mind the requirements of their customers in the future (Chiarini, 2017). There has been an extension of the requirement on continual improvement to cover the QMS's appropriateness and sufficiency along with its effectiveness (Myhrberg, 2016). Nonetheless, there is no longer a specification of how an organization attains this.

When an organization decides to implement ISO 9001:2015 standard, the size of the organization and its structure, the number of processes involved in carrying out its operations and the level of quality that was previously used, are some of the aspects that are important for the success of the implementation (Zimon, 2016). According to Bernik, Sondari, and Indika (2017), ISO 9001:2015 QMS can be successfully implemented within the educational or non-educational units in higher education. With its implementation, the level of quality management in universities will be continually enhanced, and expectantly, it can boost their competitiveness not only at the national level but also internationally.

Vusa (2016) noted a strong significant correlation between ISO 9001 QMS and improved quality services in universities. Basir, Davies, Douglas, and Douglas (2017) also agreed that in the HE industry, ISO 9001 QMSs had been used as one of the indicators for providing quality educational services. Similarly, Mekic and Göksu (2014) affirmed that the implementation of ISO 9001 quality management systems has had a positive impact on the quality of programs and services provided by universities due to increased consciousness about customers particularly students and their needs. Mbaka, Jagero, Njagi, and Omolo (2017) noted that ISO 9001 QMS had considerable influence on the reliability of services offered in public universities and that, internationally acclaimed standards were meant to ensure best practice and quality services that were dependable and consistent.

On the contrary, Waswa and Swaleh (2012) with reference to ISO 9001:2008 QMS, argued that the implementation of this QMS had little influence on quality of services

offered by universities. Elmuti, Kathawala and Manippallil (2016) observed that after ISO 9001 QMS certification, educational organizations might witness a number of adverse consequences such as dilution in quality efforts impacting negatively on services offered. Kamusoko (2019) also noted that there had been a difficulty in proving causality when it came to the standard's impact on teaching and learning services compared to administrative services in universities.

Generally, in spite of the increasing reputation and the growth in the number of ISO 9001 certified public universities, it was notable that in several cases, efficient delivery of services as per specified goals had not been realized. Hussein, Abou-Nassif, Aridi, Chamas, and Khachfe (2017) observed that even with the implementation of ISO 9001 QMS, in Lebanon, the influence of educational institutions continued to be constrained and was only limited to a small percentage of institutions in the nation. In Taiwan, Cheng, Lyu, and Lin (2014) reported that national efforts to improve the quality of education services through quality certification had been slowing down. In Indonesia, Absah, Rini, and Sembiring (2019) noted that even with the formalization of QMSs by the Indonesian government, after many years, many complaints that showed the inability of this HE sector in delivering quality of services had been recorded. This current study assessed the effect of ISO 9001:2015 quality management system implementation on post-examination services delivery in public universities in Kenya.

2.4 Empirical Review

2.4.1 Establishment of Quality Objectives

Celik and Ölçer (2018) assessed the impact of ISO 9001 QMS on educational institutions in Iraq. A comparative study was conducted involving two different high schools. The study found that ISO 9001: 2015 QMS implementation positively affected the performance of the institutions. It was found that in one of the schools, all quality objectives had been defined and the dedication to the set goals and the necessary measures were always taken for the following year. In the other school, since the targets were not defined, the institution repeated itself and could not develop. This was explained by the fact that lack of quality objectives meant that there could be no positive or negative retrospective evaluation and that was a big factor for development. The study found that in the school where quality objectives had been established,

performances were controlled and structured in a regular and archived manner while in the other school, there had been chaos and indiscipline.

Although the study by Celik and Ölçer (2018) focused on ISO 9001:2015 QMS implementation in educational institutions, it was carried out in a different context and focused on organizational performance which was a different subject from what was being pursued in this current study which assessed the implementation of ISO 9001:2015 QMS in public universities in Kenya on post examination service delivery.

Osumba (2014) examined the link between QMSs and quality in Kenyan universities. The study targeted 39 chartered universities in Kenya both private and public. The study applied a descriptive survey design. The QMSs assessed in this study were based on ISO standards. The study found that the different components of QMS and the ranking of the selected universities as a measure of quality were positively and significantly related. The study found out that all the sampled universities had in place QMSs which demonstrated the significance of upholding high quality standards across all their operations. According to the study, most of these universities were cognizant of the prominence of specific, measurable, attainable, realistic and also time bound quality objectives in guiding the delivery of quality services in the institutions. This confirmed the acknowledgement of some of these universities by Webometrics ranking. The study, nonetheless, recommended that efforts to boost the universities' standing in the world rankings was a must.

The study by Osumba (2014) examined quality of university services in general yet the implementation of QMS was likely to affect the delivery of different services differently. This current study addressed this research gap by laying emphasis on the delivery of post- examination service in public universities in the country. The study also considered the implementation of the expired ISO 9001: 2008 version while the current study focused on the revised version ISO 9001: 2015 which accommodated various aspects not captured in the expired version. This current study also sought to address a methodological gap identified in the past study by using a mixed methods research design which allowed for an in-depth assessment of the study subject.

Magutu et al. (2010) explored the quality management practices adopted in Kenyan education institutions. A case study of the University of Nairobi was conducted. The main focus was on academic services. The study findings revealed that QM was

considered by the university as a critical operational issue that affected the institution's capacity to attain its envisioned goal of being regarded as an international centre for educational excellence. The study established that the institution had defined and documented measurable quality objectives comprising of those necessary to comply with the requirements for products/services in all relevant functions and levels and that QMS planning was carried out to realize these quality objectives and requirements. The study concluded that it was necessary for each and every educational institution to have in place quality objectives which could be applied in guarding against any flawed outputs from its services and activities.

This study by Magutu et al. (2010) focused on academic services in general and given the broad nature of these services and the fact that the implementation of QMS might affect various services differently, it was necessary to focus on a specific service. In addressing this research gap, this current study, sought to examine the delivery of post-examination service in public universities in Kenya. This study also did not explore quality management with respect to any internationally recognized approach such as ISO 9001 quality standard which was an aspect considered in this current study. Given that the study was qualitative in nature, generalizing its findings was also limited. Moreover, the impact of quality objectives on academic service delivery could not be tested or quantified.

2.4.1 Resource Allocation

Chiarini (2015) assessed the effect of ISO 9001 certification on academic processes by undertaking an exploratory research from Italy. The specific focus was the University of Parma. The study findings revealed that there was lack of funds for managing some improvements in the ISO 9001 QMS as other important management systems needed over time investments for improving processes, infrastructure and the organization as a whole. The study found that the funds needed in making the necessary improvements were not immediately available and that when the required investments were substantial, the decision-making process was particularly bureaucratic and took a long time. The study concluded that when the necessary resources were availed on time, improvements in several processes resulted to enhanced customer satisfaction since the university was empowered to implement actions which helped in nonconformance solution and reduction.

The study by Chiarini (2015) was carried out in a different context and its findings could only be generalized in the current context with caution. The study also considered various academic processes unlike this current study which confined itself to the examination process and in particular, the delivery of post examination service, an area scantily explored in past research. A single research design was also employed contrary to this current study where the research used a combination of research designs to comprehensively explore the study subject.

Sandström and Svanberg (2011) examined how organizations could increase their readiness in overcoming the obstacles to the adequate implementation of a QMS focusing on EDB Card Services in Sweden. The study adopted a case study research design. It was established that implementation of QMS required dedication of ample time to the daily operations pertaining to quality of services. The study noted that although there was strong willingness to enhance quality improvement, limited resources seemed to be constraining the capacity of managers to be fully committed to boosting quality. The study observed that in complying with QMS certification requirements, a lot of resources in terms of time, finances and personnel were taken up due to increased administrative tasks. The study concluded that more resources were necessary so that the organization could sufficiently initiate the work towards quality.

The study by Sandström and Svanberg (2011) focused on how the various challenges to the implementation of a QMS specifically resource challenges, could be addressed which was a different subject from that of this study which focused on how the implementation of ISO 9001: 2015 QMS affected the delivery of post examination service in public universities in Kenya. The study also applied a qualitative case study design which limited the generalizability of its findings and did not allow one to empirically test various relationships between variables. This current study addressed this gap by using a quantitative research approach in examining the various issues under study.

Hussein et al. (2017) explored the various challenges and opportunities associated with the implementation of ISO 9001:2015 QMS in HEIs in Lebanon. The study utilized a mixed methods research design and established resources for instance, human resources and financial resources were among the principal requirements for ISO 9001, which contributed to efficiency in implementing ISO 9001 in the institutions. Proper resource

management was found to minimize inefficiencies that ultimately affected the quality of education services. Facilities that supported teaching and learning processes as emphasized by the study were relevant to achieving quality in education. The study concluded that providers of higher education ought to ensure that there is deployment of adequate resources in meeting students' needs so that they can be able to learn efficiently. This study by Hussein et al. (2017) also considered a different context and did not explore how the implementation of ISO 9001:2015 QMS affected specific education services which is a research gap addressed in this current study by delimiting itself to delivery of post examination service in public universities in Kenya.

Jingura, Kamusoko, and Tapera (2020) conducted a critical analysis of the suitability of the ISO 9001 standard in HEIs in Zimbabwe. The study applied a desktop study approach. The study pointed out that people and resources were among the main factor that determined the ease of implementing the standard. The study argued that implementing the ISO 9001 standard required time and other resources and hence, should be regarded as an investment. Lack of resources limited implementation. Furthermore, the study emphasized that staff needed to invest their time in quality management related activities and this should not be perceived as 'add-on work'. The study found that the ISO 9001 standard provided a basis for promoting quality enhancement in higher education institutions. Its adoption as pointed out by the study promoted and strengthened the development of a quality culture, especially when staff who had been provided with adequate resources were deeply engaged in the process.

The study by Jingura, Kamusoko, and Tapera (2020) did not focus on a particular process or service within the said institutions and was thus broad given that the ISO 9001 standard was applied differently in different processes and services within HEIs. This current study addressed this research gap by focusing specifically on delivery of examination service in public universities in Kenya, an area which was under researched in connection to QMS implementation. The methodology applied also limited the generalizability of the study findings since it did not allow for one to test the relevant relationships that could be explored in this study. The study further focused on HEIs in general unlike this current study which limited itself to public universities in Kenya, thus a contextual gap.

Kandie (2019) explored the role of QMS implementation on students' satisfaction in ISO 9001: 2008 certified universities in Kenya. A survey was conducted. The study established that resource management conceptualized in terms of provision of financial resources, human resource, infrastructure and work environment enhanced students' satisfaction in these institutions measured by quality of service, perceived reliability, repeat purchase of courses, student completion rates and complaints rates. According to the study, the universities had strived to ensure that there were sufficient resources to support the provision of educational services in the institutions. The study noted that effective QM was obtained through ensuring that the resources of an organization are successfully managed and that the needs of each and every stakeholder are catered for. The study noted that when universities paid attention to service delivery through the provision of proper resources as recommended in ISO 9001: 2008, the students felt more secure and became more satisfied.

The study by Kandie (2019) focused on the expired ISO 9001: 2008 QMS which differed slightly from the ISO 9001:2015 QMS which incorporated additional requirements not considered in the previous version. The study also assessed students' satisfaction with university services in general unlike this current study which purposely focused on the delivery of post examination service hence, a knowledge gap. It was also evident this past study considered all certified universities in Kenya unlike this current study which laid emphasis on public universities. The study also used a single research design unlike the current study which combined two research approaches to allow for the in-depth exploration of the study subject.

Bichanga and Kimani (2013) investigated the efficiency of ISO 9001: 2008 certification in influencing the delivery of services in public universities in Kenya. The study employed a descriptive research design. The study noted that the consistency and amount of resources allocated affected the ability of the universities to achieve their quality objectives. The study underscored that university staff needed to be provided with the required resources to do their assigned duties in order to improve the quality of services delivered. The study established that the improvement in teaching facilities influenced the public universities' service delivery. The study findings unveiled that enhanced funding by the government enabled the universities to boost their infrastructure and other facilities. The improvement of these facilities and infrastructure according to the study was a proper instrument which ensured quality in teaching and

also helped in minimizing the costs involved in the day to day operations of the institutions. Furthermore, it also in the long run affected the quality of experience that students gained.

Even though the study by Bichanga and Kimani (2013) was highly relevant to this current study, the study considered the expired ISO 9001: 2008 version and the delivery of services in general yet the services provided by the universities were broad and could be affected by the implementation of their QMSs differently. Accordingly, a knowledge gap existed in this earlier study. The study also assessed the study subject from a single lens unlike this current study where the validity of the findings obtained was enhanced by combining different research designs. Thus, a clear methodological gap was evident in this past study.

2.4.3 Internal Quality Auditing

Giedt (2016) investigated the internal audit of Juland Incorporated's ISO 9001 QMS, a family owned logistics business operating in Prudhoe Bay, Alaska. A case study research design was adopted. The study found that through internal quality audits, the firm was able to identify the system's nonconformity areas besides serving as the basis for developing corrective action plans which could be executed. According to the study, internal quality audits facilitated the timely identification and correction of nonconformities in the various processes which ensured that the firm did not incur major costs arising from the need for reworks, defects, employee or customer dissatisfaction among others. The study noted that failure to undertake follow ups of what was corrected and the corrective actions meant that similar concerns were continuously found when subsequent audits were being conducted and this watered down the purpose of the audits being conducted. The study underscored the need for a formalized management plan for implementing all the corrective actions recommended in the internal quality audit reports.

The study by Giedt (2016) was undertaken in a different context and due to its qualitative nature, the findings obtained could not be generalized to suit the current situation in public universities in Kenya. Moreover, with the use of qualitative approach, the relationship between internal quality audits and service delivery in general could not be empirically tested in this past study.

Gutierrez (2013) explored the building of a performance measurement internal auditing framework for the ISO 9001 QMS. The study's intention was to determine how ISO 9001:2008 certified organizations could better quantify their QMS performance through the use of internal audits. The study applied a mixed methods research design. Based on the results obtained, eight main concerns pertaining to ISO 9001 internal auditing were recognized namely incompetence on the part of internal auditors; poor knowledge and understanding of ISO 9000 standards as well as auditing practices; poor support from the top management; poor audit planning capability; failure to carry out follow ups after the audit results were available; poor capacity to quantify audit performance as well as the inability to quantify QMS performance. In addition, five major effects of inadequate internal quality auditing practice were summarized as the inability of organizations to detect all nonconforming products or services or being unable to detect insufficiencies in their QMSs' processes; failure of the QMS to perform as anticipated; inability of organizations to improve their capabilities as mandated and increased dissatisfaction among the top management.

The above study by Gutierrez (2013) explored how different organizations carried out internal quality audits as stipulated in the ISO 9001:2008 QMS and where the standard had already expired while this current study went further to examine how internal quality audits as stipulated in the ISO 9001:2015 QMS affected the delivery of post examination service in public universities in Kenya.

Fahlén and Langell (2014) investigated the role of internal quality audits as an improvement tool based on a case study of Saab Aeronautics, a military defence and security company. The study discovered that the main purpose of the internal audits in this company was to check the level of compliance of the processes that had been audited, that is, the audits were not largely utilized as tools for improvement hence decreasing their effectiveness. The study noted that if the audits were to add more value to the company, their purpose needed to change from merely scrutinizing compliance to attention on improvement. The study findings indicated that an organization which conducted proper internal audits, embraced top practices, met expectations and fulfilled the strategic goals that had been specified by the management, normally had superior control when compared to other organizations. Furthermore, the study noted that quality auditing was still superior pertaining to the identification of general systematic letdowns, dependability and constancy of result owing to its more holistic approach.

Reduced costs, enhanced product/service quality, more reliable delivery schedules as well as reduced waste in the company were attributed to internal quality audits.

The study by Fahlén and Langell (2014) was carried out in a different context and explored the research problem using a qualitative approach which limited the generalization of its findings in other contexts. The study also could not empirically test how internal quality audits affected service delivery since it employed a qualitative approach. Further, the study did not explore internal quality audits with respect to a recognized standardized framework and this current study addressed this gap by assessing internal quality audits with regard to ISO 9001: 2015 standard in public universities in Kenya.

Kaziliūnas (2010) assessed the implementation of QMSs in service organizations. According to the study, internal quality audits helped in improving QMSs and increased the drive for quality work. A desktop study approach was applied. The study found that internal quality audits were crucial in identifying the opportunities for improvement and added value and benefits to the organizations' customers. These audits were powerful in increasing the organizations' capacity to uncover nonconformity and accordingly, increased the worth of certifications. The study found that in most organizations, internal quality audits informed many managerial decisions pertaining to quality and they yielded value-addition in the endeavor of boosting process efficacy and effectiveness. The study established that efficient internal quality audits were useful in providing crucial feedback that could be used in improving and accelerating the process of developing established quality systems and could also be considered as a point of departure for the creation of innovative solutions within the organization leading to increased service delivery.

The study by Kaziliūnas (2010) focused on service organizations in general and given that different organizations implemented QMS differently, the findings could not be generalized in the current study context. Attention was also directed towards the broad concept of service delivery while this study sought to explore a specific service namely the delivery of post examination service in public universities in Kenya. The use of document analysis meant that the generalization of the findings of this previous study was limited and that it was not possible for one to conduct any empirical tests to

establish key relationships between variables. This current study addressed this gap by incorporating quantitative approach in its research design.

Karapetrovic (2010) in examining the efficacy of quality audits argued that it was important for organizations to have in place a system of interdependent audits so as to pinpoint nonconformance and all the areas requiring improvement which could be tackled at a subsequent audit to facilitate progress review. Such a system paved the way for continuous improvement within an organization. The study noted that the primary objectives of an internal quality audit were to assess whether the QMS was efficient in sustaining control so that products and services that met the stipulated requirements were delivered besides attaining the set quality objectives. The audits were also a means to the acquisition of factual information on quality performance via neutral means. Through these audits, the inadequacies of the QMS were determined and solutions to handle them obtained. The study concluded that it was essential for organizations to carry out internal quality audits, regardless of whether it was a recognized obligation under ISO 9001 or not. For the audit systems to be effective, organizations needed to promote flexibility, minimize the level of bureaucracy and be willing to adapt to changes within their operating environments.

This study by Karapetrovic (2010) focused on how organizations carried out internal quality audits when implementing ISO 9001 QMSs while the current study went a step further to link the said quality audits to delivery of services particularly post examination service in public universities in Kenya. The specific focus was on ISO 9001: 2015 QMS. Since the study was based on document analysis, the generalization of its findings was limited and no empirical tests could be conducted which was also factor that limited the generalizability of its findings.

Ohanyan and Harutyunyan (2016) conducted an assessment of internal quality audit in continuous improvement of QMSs at private higher education institutions. The study was based on a case study of Eurasia International University (Armenia). The study noted that internal quality audits played a fundamental role in the general risk management of the institution and hence, instituting an independent internal audit function was viewed as a key tool that could be used to boost the level of efficiency in managing risks, control, as well as governance processes along with continuous improvement of the executed QMS at the institution in overall. The study also

recommended that the incorporation of diverse forms of internal audits when generating an incorporated checklist and audit activities was indispensable. According to the study, integrative quality audit would warrant a relatively easier mechanism for monitoring and consequently, make the execution more realistic and effective with respect to time and cost.

This study by Ohanyan and Harutyunyan (2016) linked internal quality audits to continual improvement which was a different subject from that explored in this current study, specifically, the delivery of post examination service in public universities in Kenya. The study also considered a different context and since it applied a qualitative case study, it was not possible to generalize the findings obtained to other contexts including public universities in Kenya. Moreover, the relationships between the study variables could not be empirically tested which is also a factor that limited the generalizability of its findings. In the current study, quantitative research approach was incorporated so that it was possible to empirically test the relationship between internal quality audits and the delivery of post examination service in public universities in Kenya.

Mail, Sudjito, and Budi (2014) explored internal quality audit towards achieving consistency in the implementation of ISO 9001 in private colleges in Sulawesi Province, Indonesia. A survey was conducted. The study established that internal quality audit process when carried out systematically and consistently resulted to growth in the quality culture in these colleges. The study found that system, compatibility and product audits all had a positive impact on quality culture in these colleges. Thus, the process of internal quality auditing had to be undertaken concurrently, every so often, and systematically. The study noted that internal quality audit resulted to crucial feedback that allowed organizations to keep on inventing new values, behaviour and attitude. Hence, the study recommended that the top management of these colleges ought to put emphasis on the internal quality audit process continuously.

Aside from focusing on a different context from that of this current study, this past study by Mail, Sudjito, and Budi (2014) did not explore the effect of internal quality audits on a given function or service in the considered institutions unlike this current study where the research focused specifically on the delivery of post examination

service in public universities in Kenya, an area that had not been adequately explored. The study was also purely quantitative giving no room for in-depth study of the research subject. In addressing this methodological gap, the current study used a mixed methods research design.

Boiyon, Manduku, and Rotumoi (2020) examined the relationship between quality audits and customer satisfaction in public universities in Kenya. Eight universities that were ISO 9001 certified were sampled. A mixed methods research design was used. The study established that most of the universities sampled for the study undertook internal quality auditing on a quarterly basis. The study established that there was a weak or marginal relationship between these internal quality audits and the satisfaction of customers in these institutions. This was attributed to insufficient auditing practices. The study findings showed that it was important that frequent auditing was undertaken to determine if what was being audited operated in conformity with the stipulated standards. Nevertheless, the study results revealed that in most of the sampled universities, highlights of the quality audits reports were not responded to straightaway by the universities and also that these reports were not availed to customers. The study concluded that universities needed to improve internal quality audits intended at enhancing processes employed in the production of the specific services they offered.

The study by Boiyon, Manduku, and Rotumoi (2020) focused on quality audits in relation to customer satisfaction with general service delivery in Kenyan public universities. This current study on the other hand delimited itself to delivery of post examination service which was a subject not exhaustively addressed in past studies.

Gitura (2014) sought to determine the influence of ISO 9001:2008 internal quality audit on the performance of the Coca-Cola Bottling Plants in Kenya. A descriptive study design was adopted. The study found out that the internal quality audits significantly and in a positive way affected the performance of the company where quality, time, cost and flexibility were involved. According to the study, internal quality audits sought to constantly examine and improve the execution of the ISO 9001:2008 QMS so that the company's quality objectives can be realized. Internal quality audits were found to play a crucial role in improving performance by empowering companies to be internally inspired so that the ISO 9001:2008 QMS can perform efficiently. The study noted that the objectives of internal quality audits could be linked to the business objectives

through quality objectives. It was thus suggested that the bottling plants ought to emphasize various audit scope areas for instance, management responsibility, management of resources to warrant the realization of performance improvements.

The study by Gitura (2014) considered a different context from that of this study and hence, due to differences in underlying conditions, generalizing its findings to the current context could only be done with caution. The study also focused on organizational performance which was a different subject from the focus of this present study and was conducted in reference to the expired version of ISO 9001 QMS which did not take in to account some of the requirements of ISO 9001: 2015 QMS. The research problem in the prior research was assessed using a single lens whereas the current study combined different research approaches to comprehensively assess the research issues under study.

2.4.4 Continual Improvement

Thalner (2015) assessed the practice of continuous improvement in higher education. The aim of undertaking the assessment was to explore the level of application of various continuous quality improvement methods used in public HEIs in Michigan. A survey was conducted. Continual improvement according to the study was pursued in order to be responsive to budget cuts, to enhance efficiencies and boost the quality of their products and services besides sustaining their competitiveness in the industry. Through continual improvement, the institutions were able to realize enhanced services, faster response to any quality issues raised, increased efficiencies and financial returns as well as improved efficiency of communications among the various departments within the institutions. The commonly used methods for continuous improvement were continuous improvement teams and benchmarking.

The study by Thalner (2015) was conducted in a different setting and used a single research design to explore the research subject. Even though the study found that continual improvement affected service delivery in the sampled institutions, it was difficult to delineate the impact on a particular service. In this study, the impact of continual improvement as required under ISO 9001:2015 QMS on the delivery of post examination service in public universities in Kenya was determined. This was an area that had received little attention from existing studies.

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. A descriptive correlational research design was used. The study found that ISO certification and implementation enhanced the quality and standard of the teaching services that the institutions offered to their students. According to the study, the ISO 9001:2008 QMS had positively impacted teaching in universities by empowering the academic staff to deliver efficient services. In effect, as underscored by the study, continuous improvement assured students of several benefits associated with receiving teaching services that met their requirements. Continual improvement according to the study entailed all the actions taken to facilitate the effective production and delivery of products, services and processes at lowered costs and enhanced quality. The study indicated that effectiveness of continual improvement in the institutions' operations required efficient data analysis, audit results and training of staffs. Training of staffs for instance, was crucial in ensuring the strategies for continual improvements were efficiently implemented. This would minimize the errors and mistakes witnessed in service delivery.

The study by Andiva and Simatwa (2018) considered continual improvement with respect to the expired ISO 9001:2008 QMSs while this current study, with the aim of taking in to account the changes captured in the latest revisions on the ISO 9001 standard, focused on continual improvement as per the ISO 9001:2015 QMS. While this earlier study focused on the delivery of academic services in general in public universities in Kenya, the current study was confined to delivery of post examination service in these institutions a study area inadequately explored in existing studies. Unlike this current study which used a combination of research designs to assess the research problem from all lenses, this previous also used a single research design, thus a methodological gap.

Wanza, Ntale, and Korir (2017) explored the impacts of QM practices on the performance of selected Kenyan universities. The study adopted explanatory survey research design. The study found evidence that continual improvement in the universities' processes was effective whereby the institutions were found to have established, documented, implemented and maintained QMSs and were continuously improving the effectiveness of their systems. Through internal and external quality audits, the universities were able to objectively ascertain whether various quality

standards had been complied with. In addition, programs' review was found to be up to date and this enabled the institutions to offer relevant programs and courses. All the operations at each level were continuously enhanced so that the changing customer demands could be met. The universities also made effort in ensuring that corrective actions pertaining to nonconformities and improvement areas were taken immediately by all units. In so doing, the universities were able to prevent problems before they occurred and this led to increased customer retention. By continually monitoring and improving processes and products/services, the competitiveness of the universities and their ability to satisfactorily meet their customers' demands was enhanced. Continual improvement supported the smooth running of university activities and guaranteed them long term survival.

The prior research by Wanza, Ntale, and Korir (2017) focused on performance which was a different subject from what this current study sought to address, in particular, the delivery of post examination service in Kenyan public universities. This study also explored quality management practices in general without regards to a particular standardized framework whereas this current study based its assessment of quality management on the ISO 9001:2015 quality standard. A methodological gap was also evident in this past study since in this current study, more than one research design was used to explore the study subject comprehensively.

2.4.5 ISO 9001: 2015 QMS Implementation, Organizational Structure and Post-Examination Service Delivery

Dale, Van Der Wiele, and Van Iwaarden (2007) in their work on managing quality argued that organizational structure was a key issue in the implementation of QMS. They posited that the manner in which organizational structure which comprised of functions, roles, responsibilities, hierarchies, boundaries, flexibility and innovation complimented and facilitated the adoption of a QMS was key in a successful implementation. They observed that clear definition of functions, roles and responsibilities in an organization, enhanced cross-functional teamwork and collaboration, while minimal bureaucratic walls enhanced the success of implementing a QMS. Dale et al. (2007), lay emphasis on the link between organizational structure and QMS implementation whereas the focus in this current study was the moderating

effect of organizational structure on the relationship between ISO 9001: 2015 QMS implementation and delivery of post examination service in public universities.

Empirical studies assessing the moderating effect of organizational structure on the relationship between ISO 9001:2015 quality management system implementation and service delivery in general were evidently lacking. The available studies highlighted the link between organizational structure and QMS implementation. Zimon (2016), while assessing the influence of QMS on process improvement in small and medium-sized enterprises noted that when an organization decided to implement ISO 9001:2015 standard, organizational structure was one of the aspects that was important for the success of the implementation. Nevertheless, the study did not test the relationship between these two variables or describe the manner in which organizational structure affected the implementation of QMSs. In this current study, the aim was to establish whether organizational structure moderated the relationship between ISO 9001:2015 QMS implementation and delivery of post examination service in public universities, a subject not addressed in this earlier research.

Hazman and Jasmine (2009) also conducted a conceptual analysis of the fit between organizational structure and the values of ISO 9000 standard. The study suggested that more mechanistic organizations (such as in public universities), would enjoy ISO certification, while the more organic organizations would experience tensions arising from the lack of fit. Thus, conceptually, the standard would work best in mechanistic settings. This study just like that of Zimon (2016) and Okelo (2015) addressed a different subject from that of this study.

Vivancos and Cardoso (2010) examined the effects of the implementation of QMSs in the organizational structure of Brazilian building construction firms. Multiple case studies were conducted. The study established that the implementation of the QMSs were responsible for a better role, authority and responsibility definition and also formalization in these companies. The study pointed out that the lack of role definition especially in the higher levels of the hierarchy for instance, was a characteristic of these firms before the implementation of their QMSs. The study by Vivancos and Cardoso (2010) was conducted in a different context and also assessed how organizational structure was affected by the implementation of QMSs which was a different focus from that of the current study. The study was also qualitative in nature thus limiting the

generalization of its findings and no empirical tests were conducted to establish the nature of relationship between the variables.

Okelo (2015) explored the factors influencing quality management standards implementation in ISO certified insurance firms in Kenya. The study adopted descriptive research design. The study found that organizational structure particularly formalization, departmentalization, authority and communication processes had an impact on the implementation of quality management standards. Nonetheless, this study did not explain how these aspects of organizational structure affected the implementation of these standards. While the study explored the effect of organizational structure on QMS implementation in insurance firms, this current study determined the moderating effect of organizational structure on the relationship between ISO 9001: 2015 QMS implementation and delivery of post examination service in public universities in Kenya.

2.4.6 Post-Examination Service Delivery in Public Universities

Adebayo and Abdulhamid (2014) studied exams system for Nigerian universities emphasizing on the security and integrity of examination results. The study was qualitative in nature. The study found that the issues of sex for marks, missing marks and increased bribery for a higher grade on campuses had been continually reported. The study argued that several academic staff in these institutions were directly or indirectly engaged in the sex for marks malady. Furthermore, in most cases, the secretaries who compiled the students' results erroneously omitted some results, scores, grades and even some student names due to the negligence of the staff tasked with the results processing. In addition, the examiners at times misplaced some scripts when carrying out the examination process. This was also witnessed among the course coordinator and lecturers who lost some answer scripts particularly when recording the marks. These incidences among others, impacted the students' capacity to graduate on time.

The study by Adebayo and Abdulhamid (2014) used a purely qualitative approach which limited the generalization of its findings to other universities and did not allow for one to empirically test the issues under study. The study also considered a different context from that of this current research, a factor which also limited the generalizability of its findings to the context of public universities in Kenya.

Matovu (2014) assessed the extent to which ICT was availed, accessible and used in managing the students' academic affairs at Makerere University. The study found that management information systems and internet were the most popular tools applied in managing examinations in the institution and that they were majorly used in the processing of examination results, tracking of learners' academic progress, students grading as per their performance as well as the processing of results transcripts. It was found that ICT was reliable when likened to the manual system that was previously used. Nevertheless, the study observed that regardless of heightened uptake of ICT, there were several concerns that resulted to loss of marks, increased exam malpractices, and other statistical problems have been reported. In addition, incorrectly computed students' cumulative grade point averages were issued together with delayed issuance and receipt of results transcripts. In several departments within the institution, according to the study, the processing of students' data is carried out manually, resulting to slowed down production of reports, transcripts and degree certificates which was prone to error. This study by Matovu (2014) was carried out in a different context and its findings therefore, could only be generalized in the case of public universities in Kenya with caution.

Eshiwani (2009) examined the expansion of universities in Eastern Africa focusing on challenges and opportunities in higher education. The study was qualitative in nature. The study found that in Kenya, external examination systems in some universities were highly dysfunctional. At the United States International University, for instance, the study pointed out that external examination was nonexistent and that the institution's lecturers were counted on to undertake the moderation of examinations and results in the university. Even though this approach was perceived to be fast and easier to manage, the university's examinations were exposed to compromise since the lecturers were familiar with each other and might show hesitation in correcting a colleague as far as the syllabus coverage and depth captured in the examinations were concerned. At the University of Eastern Africa – Baraton, external examination was not undertaken at a regular basis which meant that the university majorly depended on internal moderation by its lecturers. Such a trend was attributed to the costs involved in contracting external examiners.

This study by Eshiwani (2009) targeted private universities whereas in the current study, the focus was on public universities. Given the differences in underlying

conditions, the findings of this study might not reflect what was currently witnessed in public universities. The study was also qualitative in nature and hence, there was a limitation in as far as generalizing its findings was concerned. By applying a qualitative research design, it was not possible to conduct any empirical tests in relation to the study subject. Hence, a methodological gap was evident in this earlier study. In this current study, a mixed methods research design was adopted. This past study further concentrated on external examination leaving out other aspects of post examination service explored in this current study such as results processing, accessibility of examination results and the handling of student examination results related queries among others.

Gudo, Olel, and Oanda (2011) explored university expansion in Kenya and issues of quality education focusing on challenges and opportunities. A mixed methods research design was adopted. The study established that generally, there were many complaints, which questioned the integrity of how examinations were carried out in different universities. The examination processing in many universities as highlighted by the study was repeatedly sluggish, tiresome, costly, insecure, and predisposed to many errors as a result of the improper manner in which the exercise is undertaken leading to many complaints from stakeholders. These anomalies had been reported more so when preparing consolidated marks lists, pass lists, supplementary or special lists along with repeat performances. This study considered Kenyan universities in general whereas the current study targeted public universities in Kenya so that the subject of delivery of post examination service could be adequately explored in public universities.

Kara, Tanui, and Kalai (2016) assessed the link between the quality of academic services and the satisfaction of students in public universities in Kenya. Eight universities were sampled. The study established that the reliability of university examination services was directly and significantly linked to students' satisfaction. The study advanced that the more the marking and grading system was considered to be fair or the more learners earned their marks or grades that they expected, the more likely they were to feel satisfied. Furthermore, students were likely to be highly satisfied with universities that ensured that examinations results were released on time. Timely processing of students results was necessary so that students were provided with essential feedback to enable them learn in new ways. The study noted that when students were given crucial feedback in regards to their academic progress, their areas

of strength and the aspects that needed to be improved enabled them to take the proper actions so that they could achieve improvement in their academic performance. Such feedback helped students to engage in productive self-reflection and willingness to own their learning and this contributed to a change in the learning approaches applied by the students.

The study by Kara, Tanui, and Kalai (2016), focused on a few public universities in Kenya unlike the current study which considered nearly all the public universities in the country. The study also adopted a purely quantitative approach which might have limited in-depth examination of different aspects of examination service in these universities. The current study addressed this gap by considering a mixed methods research design.

Domeniter et al. (2018) assessed how internal and external moderation impacted the quality of examinations in Kenyan public universities. The study applied a mixed methods research design. The study focused on five institutions namely the University of Nairobi, Kenyatta University, Egerton University, Moi University and Masinde Muliro University. The study argued that internal and external moderation of examination in these institutions lacked the seriousness it deserved which affected the quality of examinations in these institutions. According to the study, the Commission of University Education guidelines and regulations on moderation were in many occasions not observed to the core leading to unmerited grades which adversely affected the quality of graduates.

The above study by Domeniter et al. (2018) only considered the established universities in Kenya ignoring the young universities which faced much challenges in the delivery of post examination services explored in this prior research. To address this gap, the current study targeted both young and established public universities in Kenya. This past study also only focused on examination moderation leaving out other aspects of post examination services considered in the current study such as results processing.

Mbirithi (2013) examined the management challenges that Kenyan public universities were facing and their repercussions for education quality in the nation. A mixed methods research design was used. The study was conducted in three public universities namely the University of Nairobi, Kenyatta University and Egerton University which were purposively sampled. The study observed that late marking of examinations, not

submitting results on time and cases of too many scripts and few marking staff was rampant in these well-established universities in the country. According to the study, lecturers were at times under considerable pressure when giving and marking examinations due to large number of students and short deadlines like two weeks for marking. Pertaining to examination data storage, there had been cases of loss of data due to computer crashes. The study further observed reduced occurrence of external examination moderation in these institutions. The challenges led to loss of quality university education and low quality grades. This study by Mbirithi (2013) only focused on three public universities in Kenya and thus, its findings could only be generalized in the current study with caution.

Kyenge (2011) explored university examination information system in Kenya. A case study of Jomo Kenyatta University of Agriculture and Technology was considered. The study established that in most of the centers, students did not receive their results immediately the examinations were taken. In various incidences, as noted by the study, the results were availed to students after several weeks and at times several months. This violated one of the major requirements for instant accessibility to examination results especially where e-exams were concerned. The study argued that this cases at times birthed cases of altered student results and meant that students were not given a chance to view the correction of their tests if they so wished to. The study emphasized that students ought to be in a position to access their results immediately after completing their examinations in order to deter any cases of human manipulation of results of any nature.

Mwangi (2018) explored the constraints to the efficient delivery of quality examinations in young Kenyan universities. The focus of the study was on Muranga University of Technology. The study noted that examination processing in young universities was weak and this had dire implications on the delivery of quality examination. In these young institutions according to study, many cases of late exam marking and submission, errors in recoding marks, missing marks, lack of proper instruments for moderation and failure to implement external examiner recommendations had been reported. The weak examination processing as a result, had in several cases casted doubt on the quality of degrees awarded by these universities. The study however, noted that the examination concerns noted in young institutions had also been observed in well-established institutions.

The study by Mwangi (2018) only considered young universities whereas in the current research, both young and established public universities in Kenya were considered to allow for comparisons since the age of the universities was likely to affect maturity of the processes and hence, the manner in which they delivered post examination service. Furthermore, the study was qualitative in nature thus limiting the generalizability of its findings to public universities in Kenya and also, empirical tests could not be considered.

2.5 Summary of Research Gaps

Various research gaps were noted in the available literature. A knowledge gap was clearly evident in the existing literature. For instance, the studies by Muturi et al. (2015), Ahmed and Taib (2019) and Osumba (2014) attempted to link quality management system implementation to delivery of university services in general yet the implementation of QMS was likely to affect the delivery of different services differently. It had also been observed that it was much easier to implement a QMS within the context of administrative services in educational institutions compared to learning and teaching services and hence, this was likely to affect the service outcomes obtained in relation to different services.

Others studies such as Chepkemai and Bett (2018) and Kipkosgei and Bii (2018) linked the implementation of quality management system to organizational performance in various universities and hence, it did not address the subject of delivery of post examination services in public universities in Kenya. Furthermore, these existing studies explored QMS implementation with respect to the expired ISO 9001: 2008 quality standard and thus, did not incorporate the requirement changes stipulated in the new version, ISO 9001: 2015. This current study addressed this knowledge gap by laying emphasis on the link between ISO 9001: 2015 QMS implementation and delivery of post examination service moderated by organizational structure in selected public universities, a study area not explored in the available literature.

A contextual gap was also identified in several studies such as Magutu et al. (2010), Celik and Ölçer (2018), Chiarini (2015) and Hussein et al. (2017). The generalization of the findings obtained in these studies to current population was limited due to differences in underlying contextual factors that were likely to affect the findings of the current study. The study had also observed contradictory findings regarding whether

the implementation of ISO 9001 QMS resulted to improved service delivery in general thus a contradictory evidence gap. This study provided informed evidence pertaining to effect of ISO 9001: 2015 QMS implementation on post examination service delivery in public universities in Kenya.

It was also observed that several studies like that of Giedt (2016), Fahlén and Langell (2014), Ohanyan and Harutyunyan (2016) and Njeru and Omondi (2016) were based on qualitative approaches and hence, their findings could not be generalized. They also relied on a single research design which meant that it was not possible to explore the research issues under study from all lens. Furthermore, the use of qualitative approaches meant that it was not possible for the researchers to test crucial relationships between variables. Hence, methodological gap had been noted in available literature. This study addressed this gap by adopting a mixed methods research design that ensured that the research problem was not only explored from different lens but also the effect of ISO 9001: 2015 QMS implementation on post examination service delivery in public universities in Kenya was empirically tested.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter encompasses a description of the methodology used in this research. It articulates the research design used, the study location and the study population. It also specifies the sampling procedure and the sample size as well as the research instruments used and their validation. The chapter further highlights the data collection and data analysis procedures followed and the ethical principles adhered to in undertaking the study.

3.2 Research Paradigm

A research paradigm is a framework consisting of beliefs and assumptions held by a researcher that direct in generation of knowledge and is the bases of a research theories and practices (Kaushik, & Walsh, 2019 Turyalikayo, 2021). It is the researcher's idea of an identified problem from which new and reliable knowledge is obtained. Research processes are directed by the researcher's assumption which pertains to human knowledge (Kaushik, & Walsh, 2019). There are several world views that structure and organize research work and these include: positivism, constructivism and pragmatism among others that are philosophical in nature. The world views comprises of three components: ontology; epistemology and methodology (Kaushik, & Walsh, 2019).

Ontology describes the nature of reality of a research project as perceived by the researcher (Zukauskas, Vveinhardt & Andriukaitiene, 2017). Epistemology is the assumption of the researcher about knowledge, otherwise, the study of knowledge (Saunders, 2009; Zukauskas, Vveinhardt & Andriukaitiene, 2017). It expound on how a researcher arrives at new knowledge in the process of carrying out his/her research and includes all types of data collected for the research such as numerical, textual, visual, facts, interpretations and narratives (Saunders, 2009). The data is used in the generation of new knowledge which maybe theory, solution to a problem or model. Methodology outlines the strategy to be used in collection of data and the data analysis that guide the interpretation of findings which is the new reality ((Saunders, 2009; Zukauskas, Vveinhardt & Andriukaitiene, 2017).

On one hand, positivism paradigm considers a single reality that can be quantified and comprehended. They use quantitative approached to measure this reality (Cannon, Azer & Taheri, 2022). Accordingly, the reality is used to explain a phenomenon that a

researcher is studying by developing and testing hypotheses. To positivists, reality is objective and external and is open for impartial measurement. Cannon, Azer & Taheri. (2022) posit that for positivists, knowledge is discovered using quantified and quantifiable factors, propositions and hypotheses and they believe that this is the main strategy for knowledge creation.

On the other hand, constructivism is centered on the existence of more than one realities and is mainly used in qualitative research. Constructivist assert that human behavior can only be understood by interpreting the meaning human beings attach to their behavior which is founded on social values, experiences, prejudices and social classes (Myers, 2020). Constructivist believes in subjective reality which is based on interpretations. They base their knowledge on cultural characteristics and this knowledge is influenced by the experiences, both the individual's and the society's as a whole which may have occurred in different social contexts; the meaning being interpreted based on past experiences and present perception of the of the world (Cannon, Azer & Taheri, 2022). The researcher decide on methodology based on themes and patterns established to give meaning, then use methods that leads to gathering, analyzing and interpreting the narrative data (Myers, 2020).

Pragmatism is characterized by a compromise between positivism and constructivism. Reality is seen as that which works practically and is both effective and efficient (Cannon, Azer & Taheri, 2022). The pragmatists believe that knowledge is developed from several outcomes that are not formed on antecedences. Studies that adopt this paradigm can use various approaches to comprehend a research problem. The actions and interactions of participants forms the researcher's quest of description, theory, explanation and narrative (Kaushik & Walsh, 2019). Pragmatists assert that knowledge is continuous and it exist on a continuum provided by the objectivity and subjectivity of reality.

Pragmatism methodology employs inductive-deductive cycle at various stages in the research. Cannon, Azer and Taheri assert (2022) that pragmatism is used as a practical alternative to various methodological issues that may arise in a research and abduction is used to back the process of inquiry that measures previous inductive results. For pragmatists, deduction is aimed at building valid and quantifiable hypotheses based upon acceptable premises, with induction being used to estimate the truth and at the same time recognizing that researcher's beliefs shape the study. This approach to

reasoning is used when integrating qualitative and quantitative methods in sequential designs (Kaushik & Walsh, 2019; Cannon, Azer & Taheri, 2022).

Due to the research process being inter-subjective, knowledge is produced through combined actions related with several methodological approaches. Pragmatists acknowledge the usefulness of qualitative and quantitative methods linking the decision to use either or mix them in order to tackle the research problem (Creswell, 2014). The combination of the two approaches allows for use of the most applicable methods to generate knowledge based on the research questions.

This study adopted pragmatism paradigm since it allowed the researcher to use philosophical and methodological approach that worked best for the problem that was being investigated (Kaushik & Walsh, 2019). The study embraced mix method approach where qualitative and quantitative approaches were utilized. Data was collected using questionnaires and by conducting interviews producing objective and subjective data.

3.2.1 Research Design

This study adopted a mixed method approach with the convergent design to investigate the effects of ISO 9001:2015 QMS implementation on post examination service delivery in public universities in Kenya. According to Creswell and Clark, (2011), convergent design used both the qualitative and quantitative methods at the same time in the research process where both methods were equally prioritized, but kept separately when analyzing data but the results for both were merged in the overall interpretation stage. The Researcher used convergent design in order to comprehend the research problem better as the data obtained was different but complementary. It also helped in ensuring that the strengths of each of the two approaches were maximized while at the same time minimizing their weaknesses. Therefore, by using this research design, the validity of the research findings was enhanced consistent with Zohrabi (2013) who argued that no single design existed in isolation and when diverse research approaches were combined, the findings obtained were more valid.

Creswell and Clark, (2011) posit that convergent design assists the researcher to evaluate the differences and similarities between quantitative statistical results with qualitative findings for support and confirmation purposes. They further states that convergent design helps in clarifying quantitative results with qualitative findings,

while combining them together for a comprehensive understanding of a phenomenon which may not be provided fully when either approach is used alone (Creswell, 2006). According to Creswell and Clark, (2011) convergent design is appropriate when considering the following: A need exists for both quantitative and qualitative approaches, that is, to provide more complete picture by noting trends and generalizations as well as in-depth knowledge of respondents' perspectives. When there is a need to enhance the study with a second source of data for instance when a quantitative design can be enhanced by qualitative data or when a qualitative design can be enhanced by quantitative data. It can also be used when there is a need to explain the quantitative results especially when the results are inadequate to provide explanations of outcomes and the problem can best be understood by using qualitative data to enrich and explain the quantitative results in the words of participants.

The quantitative approach in this study was used to describe the causes of grievances experienced by students though most of the universities had adopted ISO 9001:2015 standards. The testing of hypotheses helped one to comprehend the relationship existing between variables by finding out how a given variable affected the changes in another, the main focus being to understand, explain, predict and control relationships existing between variables (Creswell & Creswell, 2017). Hence, this method assisted in answering the 'how' question of the effect of ISO 9001:2015 QMS implementation on post-examination services delivery in public universities in Kenya. The use of a qualitative approach was resourceful in ensuring that the study problem explored in depth and that the multiple facets of the study phenomenon were revealed and understood as supported by Pathak, Jena, and Kalra (2013).

3.3 Location of the Study

The study was undertaken in the main campuses of the public universities in Kenya that were ISO 9001:2015 certified as shown in Appendix IX. The main campuses for the institutions are spread across different counties in Kenya and were considered due to their easier accessibility and the fact that it was possible to reach participants drawn from different faculties in one place. Thus, the study was undertaken in the University of Nairobi main campus along University Way, Nairobi County; Kenyatta University main campus in Kahawa, Nairobi County, Jomo Kenyatta University of Agriculture and Technology main campus in Juja, Kiambu County; Moi University in Kesses, Uasin Gishu County; Maseno University main campus in Maseno Township, Kisumu

County; Chuka University main campus in Chuka, Tharaka Nithi County; Karatina University main campus in Kagochi, Karatina, Nyeri County; Kisii University main campus Along Kisii-Kilgoris Road Kisii County; Laikipia University main campus in Nyahururu, Laikipia County; Meru University of Science and Technology main campus in Nchiru, Meru County; Multimedia University of Kenya main campus along Magadi Road, Nairobi County; Technical University of Mombasa main campus in Tudor, Mombasa, Mombasa County; University of Eldoret main campus in Eldoret Town Uasin Gishu County; Technical University of Kenya main campus along Haile Selasse Avenue, Nairobi County; Pwani University main campus in Kilifi County; Cooperative University of Kenya main campus in Karen, Nairobi County; Dedan Kimathi University of Technology main campus in Nyeri County; Kibabii University main campus in Bungoma County; Kirinyaga University main campus in Kutus, Kerugoya, Kirinyaga County; Machakos University main campus in Machakos County; South Eastern Kenya University main campus in Kitui County; Taita Taveta University main campus in Voi, Taita Taveta County; University of Embu main campus in Embu County; University of Kabianga main campus in Kericho County; Murang'a University of Technology main campus in Murang'a County and Maasai Mara University main campus in Narok County.

3.4 Target Population

The study targeted various examination process stakeholders in all the 26 public universities in Kenya that had upgraded their QMSs to ISO 9001:2015. According to KUCCPS (2018), there are 31 public universities, 3 public university constituent colleges and 33 private universities in Kenya. However, out of the 31 public universities that are chartered, 26 had upgraded their quality manuals to ISO 9001:2015 as shown in Appendix IX. Five of these universities are considered established while the rest, 21 in number, are young public universities having been established after 2010. Table 3.1 shows the list of universities indicating those that are established and those that are young.

Table 3.1: List of Targeted Chartered Universities

Established Universities	Year Chartered	Young Universities	Year Chartered
University of Nairobi	1970	Technical University of Mombasa	2013
Moi University	1984	Maasai Mara University	2013
Kenyatta University	1985	Chuka University	2012
Maseno University	1991	Dedan Kimathi University of Technology	2012
Jomo Kenyatta University of Agriculture and Technology	1994	Karatina University	2013
		Kisii University	2013
		Laikipia University	2013
		Meru University of Science and Technology	2013
		MultiMedia University of Kenya	2013
		University of Eldoret	2013
		Technical University of Kenya	2013
		Pwani University	2013
		South Eastern Kenya University	2013
		University of Kabianga	2013
		Kibabii University	2015
		The Cooperative University of Kenya	2016
		Kirinyaga University	2016
		Machakos University	2016
		Taita Taveta University	2016
		University of Embu	2016
		Murang'a University of Technology	2016
Total	5		21

Source: KUCCPS (2018)

The study considered all the directors of quality assurance, directors of QMS and PC, examination coordinators, deputy registrars (examinations) and fourth year students from these public universities and who were based at the institutions' main campuses.

These groups of people were considered since they were part of the leading stakeholders in the examination process in these universities. Involving different stakeholders in the examination process in this study ensured that objective information that was a true reflection of the current state of affairs as it pertains to ISO 9001: 2015 QMS implementation and the delivery of post-examination services in these universities was

gathered. This is because getting the perspectives of the different stakeholders was likely to reduce the level of biasness in the responses given.

Table 3.2: Distribution of Targeted Examination Process Stakeholders

Category	Number
Directors of quality assurance	26
Directors of QMS and PC	26
Deputy registrars (examinations)	26
Examination coordinators	1229
Fourth year students	368100

Source: CUE (2017); Universities' Academic Divisions (2020)

3.5 Sampling Techniques and Sample Size

Sampling in research is normally necessitated by difficulty in subjecting the entire population of interest to investigation due to prohibitive monetary costs and time (Etikan, Musa & Alkassim, 2016). Various techniques were applied in selecting the different categories of respondents in this study.

3.5.1 Sampling for Public Universities

Since the number of Kenyan public universities that had upgraded their quality management systems to ISO 9001:2015 was small, a census sample was considered. Therefore, a census sampling technique where all 26 public universities were considered in this study was applied.

3.5.2 Sampling for Key Informants

Purposive sampling was used to select 6 directors of quality assurance, 6 directors, QMS and PC and 6 deputy registrars (examinations), 3 from established universities and 3 from the young public universities respectively. This number was considered since it was not feasible to interview all these categories of respondents from all the 26 public universities. They acted as key informants. They provided in depth insight of the level of ISO 9001:2015 QMS implementation in these institutions in relation to the delivery of post examination services.

According to Sibona and Walczak (2012), purposive sampling allowed one, when carrying out their research, to use the particular cases that possessed the important information that could not be obtained from other choices subject to the study

objectives. The groups participated in the research based on some criteria that was preselected and which suited the given study questions. The sample size chosen depended on the resources and time that was available and also the research objectives (Taherdoost, 2016). The underlying idea in this technique was the selection of the most ‘productive’ sample that would adequately respond to the research question(s) establishing a framework of variables that was used in guiding the selection (Etikan & Bala, 2017). The sample representativeness was therefore less important. Thus, purposive sampling in this case was ideal because the participants were easily identifiable and choosing them was based on the researcher’s judgment.

3.5.3 Sampling for Examination Coordinators and Fourth Year Students

To determine the sample size for the examination coordinators and fourth year students, the statistical table provided by Krejcie and Morgan (1970) was used. This table is provided in Appendix VIII. Applying the table, the sample size for the examination coordinators was 297 while that of fourth year students was 384. The examination coordinators and fourth year student were selected using stratified sampling. The population was subdivided into two groups for each category based on number of years the university has been in operation since it was established. Based on the overall population in each category, the number of examination coordinators and fourth year students were calculated to select a sample from each sub group who were then be selected randomly in order to enhance the representation of the sample (Taherdoost, 2016). Table 3.3 summarizes the sample size for examination coordinators and fourth year students from both established and young public universities.

Table 3.3: Sample Size for Examination Coordinators and Fourth Year Students

Category of participant	Category of university	Population	Sample Size
Examination coordinators	Established	763	$(763/1229*297)=184$
	Young	466	$(466/1229*297)=113$
	Total	1229	297
Fourth year students	Established	206,136	$(206,136/368,100*384)=215$
	Young	161,964	$(161,964/368,100*384)=169$
	Total	368,100	384

Table 3.4 below summarizes the sample sizes and sampling techniques for each category of participants targeted in this study.

Table 3.4: Summary of Sample Size and Sampling Techniques

Category	Target Population	Sample Size	Sampling Technique
Universities	26	26	Census technique
Directors, Quality Assurance	26	6	Purposive sampling
Directors of QMS and PC	26	6	Purposive sampling
Deputy registrars (examinations)	26	6	Purposive sampling
Examination coordinators	1229	297	Stratified sampling
Fourth year students	368,100	384	Stratified sampling

3.6 Research Instruments

This study used primary data. The said data was gathered using two research instruments; questionnaires and key informant interview schedules.

3.6.1 Questionnaire

Semi-structured questionnaires were administered to the examination coordinators and fourth year students. The questionnaire for the examination coordinators contained several sections where section I contained questions relating to the bio-data of the participants while the rest, that is, sections II, III, IV, V, VI, and VII contained questions on establishment of quality objectives, resource allocation, internal quality auditing, continual improvement, organizational structure and post-examination service delivery in the public universities respectively. These sections were informed by the study objectives and the questions asked were aligned with the study's conceptual framework. The questionnaire for the fourth year students contained questions pertaining to their demographic characteristics and post-examination services delivery in public universities. This was because students were the primary beneficiaries of the examination service and they provided crucial information pertaining to these services in these institutions.

Most of the structured questions were based on a Likert 5-point scale ranging from 1 to 5. In this case, the participants were requested to rate the extent they agreed or disagreed with different statements. The questionnaires are provided in Appendices IV and V. The choice of questionnaires in this case was informed by the ease when it comes to their design and administration and they did not take up much resources in terms of time and cost. The use of questionnaires also allowed for the collection of objective information.

3.6.2 Interview Schedule

The directors of quality assurance, directors of QMS and PC and the deputy registrars (examinations) were interviewed as guided by the interview schedules provided in Appendices VI and VII. Interview guides offered several advantages in that one could elicit more in-depth responses due to the open ended nature of the questions posed (Newing 2010). The questions contained in the interview schedules pertained to the bio-data of the participants, various aspects of ISO 9001:2015 QMS implementation namely establishment of quality objectives, resource allocation, internal quality auditing, continual improvement, organizational structure and post-examination services delivery in public universities in Kenya. Interviewing these parties was crucial since it was possible to gather detailed information related to the study objectives so as to complement the views provided by the examination coordinators and the fourth year students.

3.7 Pilot Study

A pilot study was undertaken in order to assess whether the research instruments used in the study were reliable and that their validity was guaranteed. The main aim of the pilot study was to determine whether the instruments were suitable for use in the main data collection exercise. It helped the researcher to get a clear view of what to expect to get and how best to get it without incurring expenses and effort of undertaking a fully-fledged research (Kim, 2011). The pilot study was based on 10% of the sample population. Julious, (2016) posit that one can use the rule of thumb sample size estimation for a pilot study of at least 30 participants hence the 10% used in this study guided the selection 29 examination coordinators and 38 fourth year students.

The pilot study was undertaken in one established university namely Moi University, Nairobi Campus, Nairobi County and one young public university, specifically

Cooperative University of Kenya, Meru Campus, Meru County. The persons involved in the pilot study were not part of the main study, hence, their selection. Cooper and Schindler (2013) argued that it was not a must for those participating in the pilot study to be selected using some statistical criteria. Hence, the participants were selected based on convenience and researcher's judgement. The findings obtained were used as a basis for redesigning and revising the questions where necessary before the instruments were used in the main data collection exercise.

3.7.1 Validity of Research Instruments

Validity refers to how accurate or meaningful and technically sound the research is. It is the extent to which the instrument measures what it was purported to measure (Heale & Twycross, 2015). The content validity, face validity and construct validity of the questionnaire were determined. According to Kim (2011), content validity is a measure of the extent to which the items of a test represent the sphere of the characteristic that was being measured. Under face validity tests, the suitability of the content of a given test as it appeared on the surface was considered (Taherdoost, 2016). Construct validity on the other hand pertains to ensuring that the measurement compares with the construct that one wants to measure (Mohajan, 2017).

To ensure the questionnaire's face and content validity, the expert opinion of the thesis supervisors was sought. They were requested to scrutinize and gauge the appropriateness and usefulness of the content in the questionnaire. Relying on their observations and remarks, the required adjustments in readiness for the main data collection exercise were undertaken. To achieve construct validity, the Pearson correlation coefficients were used in testing the association between the items in the various constructs. The Pearson correlation coefficient (r) of the scores of respondents' responses to an item with their total scores were also computed. This made it possible to edit and improve the format and number of items included in each construct by removing the redundant as well as the less useful items. The formula for calculating the (r) is as shown below.

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

r is the Pearson's correlation coefficient,

n is the number of valid responses,

x represents the score of an item,

y represents the total score of each respondent with valid responses; with an assumption that both variables (x and y) are normally distributed

A general rule for validity coefficient direct that the higher the validity coefficient the more the beneficial it is and rarely exceeded $r = .40$. Validity coefficient values of 0.35 and above indicated that an item was very beneficial or strongly valid. Following the analysis, two out of the initial nine items in the establishment of quality objectives construct were deleted. As for internal quality auditing, two out of the seven items in the initial questionnaire were deleted. One of the items in the continual improvement construct was also deleted. The remaining items for these constructs were valid since their correlations with the total score values were significant given p values was less than 0.05. None of the items in the resource allocation, organizational structure and post examination services delivery construct was deleted. The above method of testing construct validity has been used by several scholars among them Oktavia, Mentari and Mulia (2018), de Barros Ahrens et al. (2020) and Paranhos et al. (2014).

Qualitative validity in this study was enhanced by ensuring careful documentation of procedures and the participants checking the data to ensure that what they said was written down and not misrepresented. Detailed description, clarifying study bias, including negative or discrepant information, and involvement of research assistants were also considered. Furthermore, triangulation was undertaken to enhance accuracy of the findings by combining different methods, different sampling strategies, different research instruments and also combining different data analysis techniques. With regards to the methods, a mixed methods research design that combined both qualitative and quantitative approaches was adopted to study the phenomenon at hand. The intention was to minimize the inadequacies and biases associated with any single method where the findings from each of the methods were employed in enhancing, augmenting and clarifying those of the other.

In this study, triangulation was also supported by gathering data using different sampling strategies from different people. In this case, stratified and purposive sampling techniques which were probability and non-probability sampling techniques respectively, were used. Stratified sampling permitted for statistical inferences to be made while purposive sampling ensured that rich information was available to better understand the study phenomenon. The combined use of data collection instruments that were commonly associated with either qualitative or quantitative research specifically interviews and questionnaires were also pursued so as to achieve or facilitate corroboration of data, or convergent validation.

Furthermore, both qualitative and quantitative approaches to data analysis were applied concurrently where qualitative techniques (content analysis) were used to analyze qualitative data and quantitative techniques (descriptive and inferential analysis) were used to analyze quantitative data. The results from the two approaches were then combined at the interpretive level of the research, but each data set remained analytically separate from the other.

3.7.2 Reliability of Research Instruments

Reliability provides an estimate of the consistency of measurements or basically the extent to which a research tool measures in a similar manner each and every time it is utilized under similar circumstances and with the same subjects (Creswell, 2012). In this study, the inter-item consistency method/analysis through the use of Cronbach's alpha coefficients was applied in determining the reliability of the questionnaire. The choice of this method was informed by the fact that the technique was most frequently adopted when one had multiple Likert questions in a survey/questionnaire that formed a scale and they wished to test the scale's reliability. This view is supported by several authors including Tavakol and Dennick (2011) and Croasmun and Ostrom (2011). Cronbach Alpha coefficients therefore revealed whether the responses given by study respondents across the items on a multiple-item measure were consistent (Singh, 2017). Generally, all the items on such measures needed to reflect the same underlying construct, thus, the respondents' scores on those items ought to be correlated with each other.

The results obtained from the pilot test were coded into the Statistical Package for Social Sciences (SPSS) and the reliability coefficients for all the constructs in the

questionnaire generated. Coefficients ≥ 0.7 were deemed as sufficient and a measure of construct reliability (Heo, Kim, & Faith, 2015). The reliability test results presented in Table 3.5 demonstrated that all the constructs were reliable since the Cronbach Alpha coefficients were greater than 0.7. Hence, the revised questionnaire could be used in the final study.

Table 3.5: Reliability Test Results after Deleting Redundant Items

Construct	Number of respondents	Number of Items	Cronbach's Alpha
Establishment of quality objectives	29	7	0.864
Resource allocation	29	4	0.798
Internal quality auditing	29	5	0.826
Continual improvement	29	4	0.799
Organizational structure	29	5	0.853
Post examination service delivery (examination coordinators)	29	8	0.892
Post examination service delivery (students)	38	8	0.876

Source: Field Data (2021)

Qualitative reliability was ensured through the documentation of all procedures and setting up a detailed official procedure used when conducting the interviews. The written responses from the interviews were checked for obvious mistakes, caution taken to ensure that there was no drift in definitions of codes or applications of the items during the coding process and communications from meetings were documented. The findings were also compared with the findings of different independent studies which were independently derived.

3.8 Data Collection Procedures

Clearance to conduct this study was sought from Machakos University Graduate School after which a research permit from the National Commission for Science Technology and Innovation (NACOSTI) was obtained. Visits to the institutions for approval, introductions and making appointments for the days to administer the questionnaires and carry out the interviews were made. This enhanced the legitimacy of the study.

The questionnaires were self-administered with the assistance of two research assistants who administered the questionnaires during the official university working hours. A drop and pick later method was employed in order to give the participants ample time

to appropriately respond to the questions and in so doing, the objectivity of the research findings was enhanced. Where possible, the questionnaires were also administered through the online platform. The exercise spanned two months where constant follow ups through phone calls and emails were undertaken to enhance the response rate.

3.9 Data Analysis

Both qualitative and quantitative approaches to data analysis were adopted.

3.9.1 Qualitative Data Approach

Qualitative data analysis was conducted using content analysis. The data collected from the interviews was recorded, transcribed, coded and grouped into themes guided by the research questions. The data generated was then presented using direct quotes or in a narrative form.

3.9.2 Quantitative Data Approach

In analyzing the quantitative data, both descriptive and inferential analysis were performed and this was facilitated by SPSS Version 26. Descriptive statistics computed consisted of frequencies, percentages, mean and standard deviation. Inferential analysis entailed both correlation analysis and regression analysis. Pearson's correlation coefficients (r) which normally range from -1 to 1 were used to determine the nature of the association between the independent variables and the dependent variable. The direction, strength and significance of the association was determined before proceeding to regression analysis. Correlation analysis is normally undertaken to measure the extent of interdependence where two variables are linearly related so that the variables that ought to be included in the regression model are identified (Gogtay & Thatte, 2017).

Regression analysis was applied in determining the strength of the effect of establishment of quality objectives, resource allocation, internal quality auditing and continual improvement as per the ISO 9001: 2015 QMS on post-examination service delivery in public universities in Kenya. While a multiple linear regression model was used to show the joint effect of the independent variables on the dependent variable, bivariate or individual regression equations were used to reveal the individualized effect of each independent variable on the dependent variable. Thus, by carrying out the regression analysis, it was possible to understand how much the dependent variable

changed with a change in one or more of the independent variables in this study. This was shown by the beta coefficients.

Through these regression estimates, the relationship between the independent and dependent variables in this study was explained. According to Uyanık and Güler (2013), regression analysis helps determine if there are relationships between the dependent and independent variables and if these relationships exist, what is the power or strength of the relationship and if certain conditions are controlled, what effect does a specific independent variable or a group of independent variables have on the dependent variable. The regression equations estimated in this study are as shown;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

$$Y_1 = \beta_0 + \beta_1 X_1 + e$$

$$Y_2 = \beta_0 + \beta_2 X_2 + e$$

$$Y_3 = \beta_0 + \beta_3 X_3 + e$$

$$Y_4 = \beta_0 + \beta_4 X_4 + e$$

Where: Y = Post-examination service delivery in public universities in Kenya; Y₁, Y₂, Y₃, and Y₄ = dependent variables which are measures of post-examination service delivery in public universities in Kenya for each construct of ISO 9001: 2015 QMS implementation; X₁ = Establishment of quality objectives, X₂= Resource allocation, X₃= Internal quality auditing, X₄= Continual improvement; β₁, β₂, β₃, β₄ = Beta coefficients, β₀= Constant Term, ε= Error term

In order to determine whether organizational structure had a significant moderating effect on the relationship between ISO 9001:2015 QMS implementation and post-examination services delivery in public universities in Kenya, the step wise regression technique as proposed by Baron and Kenny approach (1986) was applied. When testing moderation, the changes in R² square from step I to step III were monitored.

$$\text{Step I: } Y = \beta_0 + \beta_1 X + e$$

$$\text{Step II: } Y = \beta_0 + \beta_1 X + \beta_2 M + e$$

$$\text{Step III: } Y = \beta_0 + \beta_1 X + \beta_2 M + \beta_3 X * M + e$$

Where; Y is the Post-examination service delivery in public universities in Kenya; X is Composite for all the independent variables (computed by finding a mean of X₁, X₂, X₃

and X_4); M = Organizational structure (Moderating Variable); $X*M$ = Moderator multiplied by the composite (Interaction term), ϵ = Error term

In testing the study hypotheses, the beta coefficients, t-statistics and their associated significance (p) values were examined after conducting the bivariate regression analyses where the individualized effect of each independent variable on the dependent variable were conducted. All inferences were made at the 95% level of confidence or 0.05 significance level.

The coefficient of determination (R Square) was used to determine the proportion of changes in post-examination service delivery in public universities in Kenya which were as a result of the changes in the establishment of quality objectives, resource allocation, internal quality auditing and continual improvement when combined and also when assessed individually and further when the moderating effect of organizational structure was considered.

The F statistic on the other hand helped determining if the models fitted suit the population and if the independent variables were the ideal predictors of the post-examination service delivery in these universities. This was demonstrated by the significance or probability value linked with the F-statistic. The quantitative findings in this study were presented using charts and tables.

Table 3.6: Summary of Data Analysis Techniques

Objective	Data analysis	Hypothesis	Hypothesis (Analytical technique)	Testing	Interpretation
Objective 1: To determine how the establishment of quality objectives as per the ISO 9001:2015 quality management system affects post-examination service delivery in public universities in Kenya.	<ul style="list-style-type: none"> • Content analysis • Descriptive analysis • Inferential analysis- Correlation and regression analysis 	H ₀₁ : Establishment of quality objectives as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya.	Bivariate regression analysis Where $Y_1 = \beta_0 + \beta_1 X_1 + e$ Y ₁ = Post examination service delivery β_0 = Constant β_1 = Beta coefficient X ₁ = Establishment of quality objectives ϵ = Error term		β_1 showed by how many units a unit change in the establishment of quality objectives changed Y ₁ When <i>p</i> value associated with β_1 was less than 0.05, it meant that relationship/effect of X ₁ on Y ₁ was significant, hence reject the H ₀₁
Objective 2: To establish how resource allocation per the ISO 9001:2015 quality management system affects post-examination service delivery in public universities in Kenya.	<ul style="list-style-type: none"> • Content analysis • Descriptive analysis • Inferential analysis- Correlation and regression analysis 	H ₀₁ : Resource allocation as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya.	Bivariate regression analysis Where $Y_2 = \beta_0 + \beta_2 X_2 + e$ Y ₂ = Post examination service delivery β_0 = Constant β_2 = Beta coefficient X ₂ = Resource allocation ϵ = Error term		β_2 showed by how many units a unit change in the establishment of quality objectives changed Y ₂ When <i>p</i> value associated with β_2 was less than 0.05, it meant that relationship/effect of X ₂ on Y ₂ was significant, hence reject the H ₀₂
Objective 3: To examine how internal quality auditing as per the ISO 9001:2015 quality management system affects post-examination service delivery in public universities in Kenya.	<ul style="list-style-type: none"> • Content analysis • Descriptive analysis • Inferential analysis- Correlation and regression analysis 	H ₀₃ : Internal quality auditing as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya.	Bivariate regression analysis Where $Y_3 = \beta_0 + \beta_3 X_3 + e$ Y ₃ = Post examination service delivery β_0 = Constant β_3 = Beta coefficient X ₃ = Internal quality auditing ϵ = Error term		β_3 showed by how many units a unit change in the establishment of quality objectives changed Y ₃ When <i>p</i> value associated with β_3 was less than 0.05, it meant that relationship/effect of X ₃ on Y ₃ was significant, hence reject the H ₀₃
Objective 4: To establish how continual improvement as per the ISO 9001:2015 quality management system affects post-examination service delivery in public	<ul style="list-style-type: none"> • Content analysis • Descriptive analysis • Inferential analysis- Correlation and regression analysis 	H ₀₄ : Continual improvement as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya.	Bivariate regression analysis Where $Y_4 = \beta_0 + \beta_4 X_4 + e$ Y ₄ = Post examination service delivery β_0 = Constant β_4 = Beta coefficient X ₄ = Continual improvement ϵ = Error term		β_4 showed by how many units a unit change in the establishment of quality objectives changed Y ₄ When <i>p</i> value associated with β_4 was less than 0.05, it meant that relationship/effect of X ₄ on Y ₄ was significant, hence reject the H ₀₄

universities in Kenya.

Objective 5: To determine the moderating effect of organizational structure on the relationship between ISO 9001:2015 quality management system implementation and post-examination service delivery in public universities in Kenya.

- Content analysis
- Descriptive analysis
- Inferential analysis- Correlation and regression analysis

H₀₅: Organizational structure does not have a significant moderating effect on the relationship between ISO 9001:2015 quality management system implementation and post-examination service delivery in public universities in Kenya.

Step wise regression technique

$$\begin{aligned} \text{Step I: } Y &= \beta_0 + \beta_1 X + e \\ \text{Step II: } Y &= \beta_0 + \beta_1 X + \beta_2 M + e \\ \text{Step III: } Y &= \beta_0 + \beta_1 X + \beta_2 M + \beta_3 X * M + e \end{aligned}$$

Where;

Y= Post examination service delivery

X= Composite for all the independent variables (mean of X₁, X₂, X₃ and X₄)

M=Organizational structure (Moderating Variable)

X*M=Moderator multiplied by the composite (Interaction term)

e = Error term

The null hypothesis was to be rejected if the *p* value associated with β₃ (beta coefficient for the interaction term) in step three was less than 0.05.

3.9.3 Diagnostic Tests

A number of diagnostic tests were carried out before conducting inferential analysis. These tests were crucial since they helped in determining if the assumptions of the ordinary linear regression model were upheld or not. This ensured that chances of getting unbiased, efficient and consistent parameter estimates were enhanced. One of the assumptions of a multiple linear regression is that the data of the chosen variables follow a normal distribution because considerable outliers end up distorting relationships and significance tests (Nguyen, 2019). Thus, normality tests were conducted to each of the data on establishment of quality objectives, resource allocation, internal quality auditing, continual improvement, organizational structure and post-examination service delivery in Kenyan public universities assumed a normal distribution. The Shapiro-Wilk test was conducted in this case. The rule of the thumb was that the null-hypothesis of a normal distribution should not be rejected when the Shapiro-Wilk p-values for the study variables were greater than 0.05.

Multicollinearity is a condition which occurs when the explanatory variables in a study are highly correlated to the extent that it becomes difficult to separate the effect of each of these variables on the dependent variable (Daoud, 2017). The multiple linear regression assumes that the data does not suffer from multicollinearity (Kraha et al., 2012). Multicollinearity in this study was checked using the Variance Inflation Factor (VIF) test where VIF values ranging between 1 and 5 were an indication that the data did not suffer from multicollinearity. VIF values beyond 5 showed that the independent variables were highly correlated.

The assumption of linearity was also checked. The study determined whether there were linear relationships between the independent variables and the dependent variable. According to Kelley and Bolin (2013), when the linearity assumption is not upheld, the true relationship between these variables is underestimated based on the regression results obtained. The linearity test in this study involved the use of scatter plot diagrams. For variables with a linear relationship, the data distribution should show a linear trend with a roughly constant variance.

3.10 Ethical Considerations

Ethical issues in research relate to the moral code of conduct which must be observed by researchers in all phases of the research. Their main aim is to ensure that the integrity of findings obtained is enhanced (Resnik, 2011). Honesty and integrity when carrying out the study was maintained by ensuring that data whose credibility could be proven was used. The laid down research standards were followed and reference materials used duly cited.

The principles of informed consent and voluntary participation were adhered to. The respondents took part in this study on a voluntary basis without any form of external pressure and were informed why the study was being carried out, the benefits of the study and risks that were involved when they agreed to be participants. They were accorded the liberty to pull out of the research process if they deemed it necessary without any repercussions.

The information given by the respondents was held in confidence and anonymity maintained. Identity of individual respondents by their names was not allowed throughout the research and instead, random numbers were used as identifiers. This element of anonymity was very important since it enabled the respondents to give

information without fear thus enhancing the trustworthiness of the researcher. In submitting the final report, care was taken not to reference a particular respondent. The respondents were allowed the liberty to give and withhold as much information as they wished to the person they chose to.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION OF THE FINDINGS

4.1 Introduction

This chapter focuses on data analysis, the interpretation of results obtained and the discussion of these findings in relation to other relevant past studies. Three kinds of analyses were conducted namely content analysis, descriptive analysis and inferential analysis. All the quantitative data obtained was presented using charts and tables. The qualitative data obtained from the interviews was presented using a combination of narratives and direct quotes. On the other hand, the themes identified from the responses to the unstructured questions in the questionnaire were coded and simple summaries computed.

4.2 Response Rate

One of the key indicators of the quality of a study is the response rate obtained. Table 4.1 contains results that reveal the successful response rate obtained for each of the examination process stakeholders involved in this study.

Table 4.1: Response Rate

Research Instrument	Category	Frequency	Percent
Questionnaire for examination coordinators	Returned	224	75.4
	Unreturned	73	24.6
	Total	297	100.0
Questionnaire for students	Returned	364	94.8
	Unreturned	20	5.2
	Total	384	100.0
Interview guide (Deputy registrars, examinations)	Successful	6	100.0
	Unsuccessful	0	0.0
	Total	6	100.0
Interview guide (Directors of QMS and PC)	Successful	4	66.7
	Unsuccessful	2	33.3
	Total	6	100.0
Interview guide (Directors, quality assurance)	Successful	3	50.0
	Unsuccessful	3	50.0
	Total	6	100.0

Source: Field Data (2021)

The findings presented in Table 4.1 reveal that out of the 297 questionnaires administered to examination coordinators in the public universities in Kenya, 224 of them were adequately filled and returned. This represented a successful response rate of 75.4% for the examination coordinators. The response rate for the students was 94.8% as 364 out of the 384 questionnaires administered to them were completed and returned. Regarding the scheduled interviews with the deputy registrars (examinations), directors of QMS and PC and directors, quality assurance, successful response rates of 100.0%, 66.7% and 50.0% were attained respectively. Given that the successful response rates for all the selected examination process stakeholders involved in this study were 50.0% and above, data analysis and reporting was successfully conducted. According to Saunders et al. (2016), although a response rate of 50.0% is generally acceptable, successful response rates equal to 60.0% and above were considered more desirable and it was possible to achieve them using efficient data collection strategies.

4.3 Bio Data of Respondents

This section contains findings that relate to the respondents' bio data. Some of the basic information sought about the different examination process stakeholders included their

gender, age, educational achievements and duration of working with the respective institutions. Gathering such information was crucial since these characteristics were likely to influence the respondents' capacity to articulate the different issues explored in this study.

4.3.1 Gender of the Respondents

The gender of the sampled students and examination coordinators was determined. The findings are presented in Table 4.2.

Table 4.2: Gender of Examination Coordinators and Students

Examination process stakeholder	Gender	Frequency	Percent
Examination coordinators	Male	132	58.9
	Female	92	41.1
	Total	224	100.0
Students	Male	185	50.8
	Female	179	49.2
	Total	364	100.0

Source: Field Data (2021)

It was found that 132 (58.9%) of the examination coordinators were male while 92 (41.1%) were female. As for the sampled students, 185 (50.8%) were male while 179 (49.2%) were female. The above findings demonstrate that the perspectives of both genders were considered in this study. Abbate (2020) argues that the perspectives of men and women on a given topic do vary and therefore, it is likely that the responses given by participants in a study would be influenced by their gender identity. Thus, taking in to account the views from both genders made this study wholesome.

4.3.2 Age of Respondents

The age of the different examination process stakeholders involved in this study was also examined. The results are outlined in Table 4.3.

Table 4.3: Age of Respondents

Examination process stakeholders	Age bracket	Frequency	Percent
Examination coordinators	Below 30years	3	1.3
	30-39years	63	28.1
	40-49years	109	48.7
	50years and above	49	21.9
	Total	224	100.0
Directors of QMS and PC	40-49 years	1	25.0
	50-59 years	2	50.0
	60 years and above	1	25.0
	Total	4	100.0
Directors, quality assurance	40-49 years	2	66.7
	50-59 years	1	33.3
	Total	3	100.0
Deputy registrars (examinations)	30-39 years	2	33.3
	40-49 years	1	16.7
	50-59 years	2	33.3
	60 years and above	1	16.7
	Total	6	100.0

Source: Field Data (2021)

The findings showed that 3 (1.3%) of the examination coordinators were below the age of 30 years, 63 (28.1%) were in the age bracket of 30 to 39 years, 109 (48.7%) of these examination coordinators were between the age of 40 and 49 years while the rest, 49 (21.9%), were aged 50 years and above. Pertaining to the directors of QMS and PC, one was in the age bracket of 40 to 49 years, two were between the ages of 50 and 59 years while the other was in the age bracket of 60 years and above. The findings also showed that two of the directors, quality assurance were between the ages of 40 and 49 years while the other was in the age bracket of 50 to 59 years. It was further noted that two of the deputy registrars (examinations) were aged 30 to 39 years, one was in the age bracket of 40 to 49 years, two were aged 50 to 59 years while the other was in the age bracket of 60 years and above.

From the findings outlined in Table 4.3, it can be inferred that a remarkably larger number of the examination process stakeholders in Kenyan public universities and more specifically, examination coordinators, deputy registrars (examinations), directors of QMS and PC and directors, quality assurance were relatively old, mostly over 40

years of age. The findings also meant that the participants in this study had gained substantive experience regarding university processes, systems and operations which enhanced their capacity to respond to the issues under study. This observation is supported by the studies conducted by Margolis (2010) and Maforah (2015) which revealed that increasing age brought about more experience and familiarity with the work environment.

4.3.3 Respondents' Highest Level of Education

Table 4.4 outlines the level of education attained by the examination process stakeholders who took part in this study.

Table 4.4: Highest Level of Education Attained by the Respondents

Examination process stakeholders	Highest Level of Education	Frequenc y	Percen t
Examination coordinators	Undergraduate degree	6	2.7
	Master's degree	78	34.8
	PhD	140	62.5
	Total	224	100.0
Directors of QMS and PC	Undergraduate degree	1	25.0
	Master's degree	3	75.0
	Total	4	100.0
Directors, quality assurance	PhD level	3	100.0
	Total	3	100.0
Deputy registrars (examinations)	Undergraduate degree	2	33.3
	Master's degree	3	50.0
	PhD	1	16.7
	Total	6	100.0

Source: Field Data (2021)

The findings reveal that 6 (2.7%) of the examination coordinators had undergraduate degrees, 78 (34.8%) had obtained masters degrees while the rest, 140 (62.5%) were PhD holders. With regards to the directors of QMS and PC, one had an undergraduate degree while the rest, three in number, had education up to the masters' level. All the directors, quality assurance were on the other hand found to be PhD holders while for the deputy registrars (examinations), two had undergraduate degrees, three had master's degrees while one had education up to the PhD level.

Since most of the sampled examination coordinators, deputy registrars (examinations), directors of QMS and PC and directors, quality assurance were master’s degree and PhD holders, it was deduced that they possessed the necessary qualifications that they needed to effectively and efficiently carry out their roles and responsibilities. With such academic qualifications, these examination process stakeholders were able to easily comprehend the issues under study and eventually give well informed responses.

4.3.4 Duration of Working at the University

The duration to which the sampled examination process stakeholders had worked in their respective institutions is revealed by the findings presented in Table 4.5.

Table 4.5: Duration of Working at the University

Examination process stakeholders	Years of working at the university	Frequency	Percent
Examination coordinators	1 to 5 years	83	37.1
	6 to 10 years	100	44.6
	11 to 15 years	41	18.3
	Total	224	100.0
Directors of QMS and PC	1 to 5 years	2	50.0
	6 to 10 years	2	50.0
	Total	4	100.0
Directors, quality assurance	1 to 5 years	2	66.7
	6 to 10 years	1	33.3
	Total	3	100.0
Deputy registrars (examinations)	1 to 5 years	3	50.0
	6 to 10 years	2	33.3
	11 to 15 years	1	16.7
	Total	6	100.0

Source: Field Data (2021)

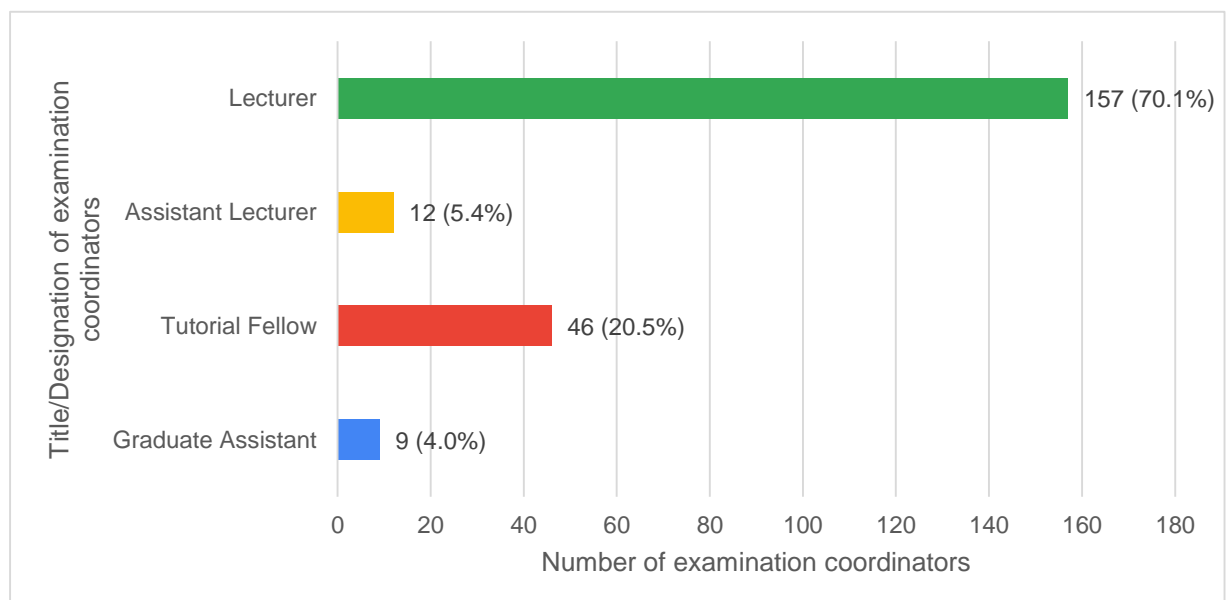
The study found that 83 (37.1%) of the examination coordinators had worked in their respective institutions for 1 to 5 years, 100 (44.6%) had worked in these universities for 6 to 10 years while 41 (18.3%) indicated that they had worked in their respective institutions for 11 to 15 years. The study findings also show that 2 of the directors of QMS and PC had worked in their respective institutions for 1 to 5 years while the other two had been in these institutions for 6 to 10 years. For the directors, quality assurance, two of them had worked in their respective universities for 1 to 5 years while the other

for 6 to 10 years. The study further established that three of the deputy registrars (examinations) had worked in their respective institutions for 1 to 5 years, two had been working in these universities for 6 to 10 years while the other had worked in their institution for 11 to 15 years.

The main inference drawn from the above findings is that a larger proportion of the examination process stakeholders who took part in this study had worked in their respective institutions for a relatively longer duration of time. For this reason, it was implied that they were conversant or well informed about various systems, processes, operations and services related to examinations in their respective universities. Hence, they were in a position to respond to the various questions asked when conducting this study. Zikmund, Babin, Carr, and Griffin (2010) recommended that participants in a study needed to have the requisite experience on what the researcher intended to study for them to be incorporated in the research.

4.3.5 Examination Coordinators’ Designation/Title in the University

The titles/designations of the examination coordinators involved in this study were also determined. The findings are presented in Figure 4.1.



Source: Field Data (2021)

Figure 4.1: Title/ Designation of Examination Coordinators

The findings provided in Figure 4.1 show that 9 (4.05) of the examination coordinators were graduate assistants, 46 (20.5%) were tutorial fellows, 12 (5.4%) served as assistant lecturers while the rest, 157 (70.1%) in number, were lecturers. These findings implied that the examination coordinators in public universities in Kenya were well qualified to carry out their mandate. Based on their titles or designations in their respective universities, these examination coordinators were also able to comprehend the issues under study and this enabled them to provide relevant responses to the questions asked in this study.

4.3.6 Examination Coordinators' Work Department

The findings presented in Appendix X reveal the work departments from which the examination coordinators who took part in this study were drawn from. The findings showed that examination coordinators drawn from diverse departments in public universities in Kenya were part and parcel of this study. This implied that this study was comprehensive and that the status of post examination services delivery in the face of ISO 9001:2015 quality management system implementation in different departments was explored.

4.3.7 Courses Pursued by Students

The different courses pursued by the students who participated in this study are outlined in Appendix XI. Just like the examination coordinators, the students who participated in this study were drawn from different departments and faculties. This ensured that the nature of post examination services delivery in the different departments and faculties in Kenyan public universities was determined thus making it possible to generalize the study findings.

4.4 Descriptive and Content Analysis

The study sought to assess the effect of ISO 9001:2015 quality management system implementation on post-examination service delivery in public universities in Kenya. Before carrying out inferential analysis, descriptive statistics on establishment of quality objectives, resource allocation, internal quality auditing, continual improvement, organizational structure and post-examination services delivery in public universities in Kenya were computed. The descriptive statistics computed consisted of frequencies, percentages, mean and standard deviation. The mean score values obtained

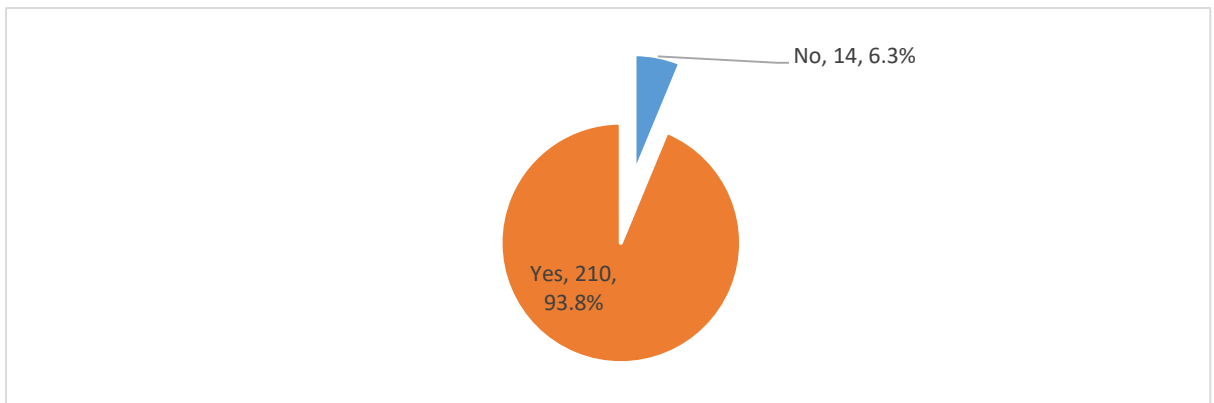
for the different statements (items) in all the constructs in this study were interpreted using a scale interval. A mean value of (1.000-1.499) denoted 1=strongly disagree, (1.500-2.499) signified disagree, (2.500-3.499) meant neither agree or disagree, (3.500-4.499) implied agree while (4.500-5.000) indicated strongly agree. Content analysis was also carried out for triangulation purposes.

4.4.1 Establishment of Quality Objectives in Public Universities in Kenya

The study sought to determine how the establishment of quality objectives as per the ISO 9001:2015 quality management system affected post-examination service delivery in public universities in Kenya. The establishment of quality objectives as per the ISO 9001:2015 QMS in these institutions was first examined by presenting a series of questions to the examination process stakeholders who took part in the study.

4.4.1.1 Existence of quality objectives that specifically guide post examination phases in Kenyan public universities

The study investigated whether public universities had in place well-defined quality objectives as per the ISO 9001:2015 QMS that specifically guided the post examination phase in their examination processes. The findings presented in Figure 4.2 showed that 210 (93.8%) of the examination coordinators indicated that, in deed, such quality objectives existed in their institutions while 14 (6.3%) stated that their institutions did not have such quality objectives.



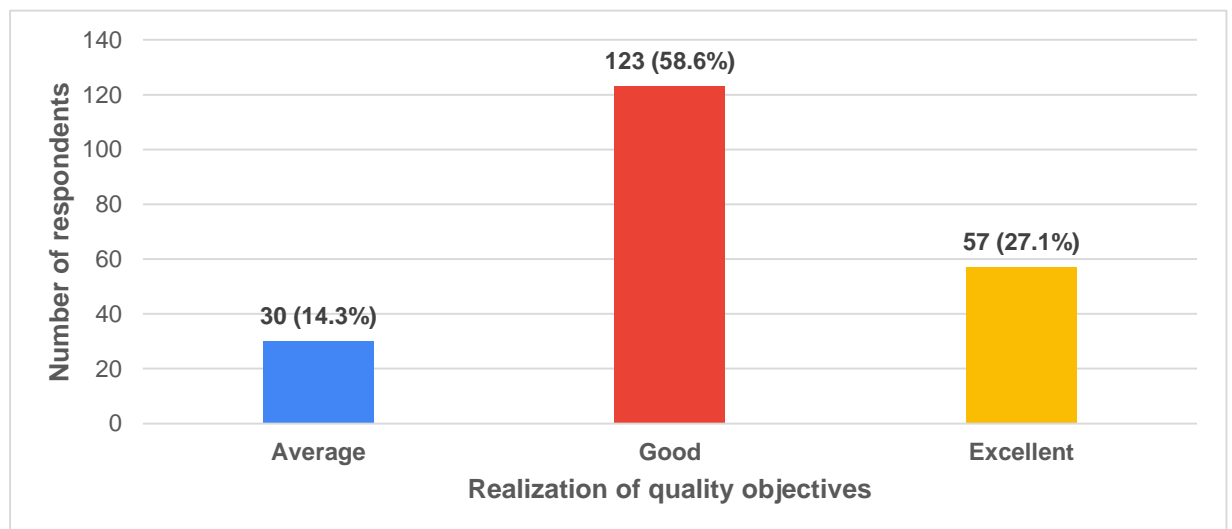
Source: Field Data (2021)

Figure 4.2: Quality Objectives that Guide Post Examination Phases in Public Universities

The above findings suggested that generally, quality was a pertinent goal that Kenyan public universities strived to institutionalize and achieve in their post examination service delivery. Towards the realization of this goal, the institutions defined and pursued various quality objectives in the long term. These findings resonated well with the assertion by Osumba (2014) that Kenyan universities both public and private universities recognized the significance of quality objectives in meeting their quality needs/requirements in the delivery of core services. The findings also echoed the studies by Murray (2016) and Abuhav (2017) that in the course of implementing their QMSs, ISO 9001: 2015 certified organizations were required to establish quality objectives for all their relevant processes and progress in their achievement monitored.

4.4.1.2 Realization of quality objectives guiding post examination phases in public universities

The examination coordinators who stated that their institutions had well-defined quality objectives as per ISO 9001:2015 QMS that guided the post examination phases in their institutions' examination processes also rated the realization of these quality objectives. The results are provided in Figure 4.3.



Source: Field Data (2021)

Figure 4.3: Realization of Quality Objectives Guiding Post Examination Phase

From the findings presented in Figure 4.3, it can be seen that 30 (14.3%) of the examination coordinators indicated that the realization of these quality objectives in their respective universities was average, 123 (58.6%) noted that their realization was

good while 57 (27.1%) stated that the achievement of these quality objectives was excellent. On this basis, it can be deduced that in most public universities in Kenya, the set quality objectives guiding post examination phases had not been fully realized or achieved. This can be attested by the various complaints related to post examination service delivery put forth by the students, for example, unsettled cases of missing marks and delayed processing and release of results (see Table 4.13), issues that were also confirmed by a large number of the examination coordinators.

Similar observations were made in the study conducted by Mutuku and Kisimbii (2017) on service delivery in Kenya's ISO 9001 certified public universities. The study revealed that though these institutions had in place quality objectives that guided daily activities, several gaps had limited their achievement. The study highlighted the lack of a conducive environment to enable staff to fully achieve these objectives as one of the gaps. Thus, much more effort was required on the part of the relevant university staff and offices to ensure the full realization of these quality objectives as part of the ISO 9001:2015 quality management system implementation. Militaru and Zanfir (2016) emphasize that ISO 9001:2015 standard calls for organizations to constantly pursue improvement in their processes so that they can realize their defined quality objectives across board.

4.4.1.3 Establishment of quality objectives as per the ISO 9001:2015 QMS in public universities

The examination coordinators also reacted to seven (7) statements contained in the construct on the establishment of quality objectives as per the ISO 9001:2015 QMS in their institutions. They stated the extent they agreed or disagreed with the statements based on a five point Likert scale. The mean and standard deviation for each statement were computed and revealed the extent to which all the respondents agreed or disagreed with that specific statement, on average. On the other hand, the overall or composite mean for the construct indicated their level of agreement with all the statements on the construct when combined, on average.

Table 4.6: Establishment of Quality Objectives as per the ISO 9001:2015 QMS in Public Universities

Statement	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Mean	Std. Dev.
The university has well-defined quality objectives across all its functions, levels and processes.	1.80%	4.00%	7.10%	48.70%	38.40%	4.179	0.865
The university's quality objectives at all levels are highly consistent with its quality policy.	1.80%	1.80%	19.60%	41.50%	35.30%	4.067	0.883
The university's quality objectives at all levels strictly comply with the law and industry standards, they conform with the services requirements and enhance customer satisfaction.	0.00%	8.00%	22.80%	39.30%	29.90%	3.911	0.919
All staff have been made aware of the importance of the established quality objectives and how they must contribute to their realization.	0.00%	10.30%	19.20%	43.80%	26.80%	3.871	0.926
The university has adequate plans developed to achieve its quality objectives and evaluate results across all its operations.	4.50%	9.40%	15.20%	46.90%	24.10%	3.768	1.059
The university constantly monitors and communicates the progress made in achieving the targets described in its quality objectives across all its functions.	1.80%	18.30%	25.00%	41.10%	13.80%	3.469	1.002
The university's top management always provides the leadership, organization and resources that need to be deployed to achieve planned quality objectives in all its relevant functions.	1.80%	13.80%	34.40%	37.90%	12.10%	3.446	0.936
Composite mean and standard deviation						3.816	0.601
Valid n=224							

Source: Field Data (2021)

From the findings outlined in Table 4.6, it can be noted that the highest mean score value for the establishment of quality objectives construct was 4.179 while the lowest was 3.446. The study established that on average, the examination coordinators agreed that their universities had well-defined quality objectives across all their relevant functions, levels and processes ($M=4.179$, $SD=0.865$) and that their universities' quality objectives at all levels were highly consistent with their quality policies since ($M=4.067$, $SD=0.883$). The examination coordinators also on average agreed that their universities' quality objectives at all levels strictly complied with the law and industry standards, they conformed with the services requirements and enhanced customer satisfaction as confirmed by ($M=3.911$, $SD=0.919$).

The study also found that on average, the examination coordinators agreed that university staff at all levels in their respective institutions had been made aware of the importance of the established quality objectives and how they must contribute to their achievement as revealed by ($M=3.871$, $SD=0.926$). Likewise, the examination coordinators on average agreed that their universities had adequate plans developed to achieve their quality objectives and evaluated results across all their operations as demonstrated by ($M=3.768$, $SD=1.059$). Nonetheless, on average, the examination coordinators neither agreed nor disagreed that their universities constantly monitored and communicated the progress made in achieving the targets described in their quality objectives across all its functions as shown by ($M=3.469$, $SD=1.002$).

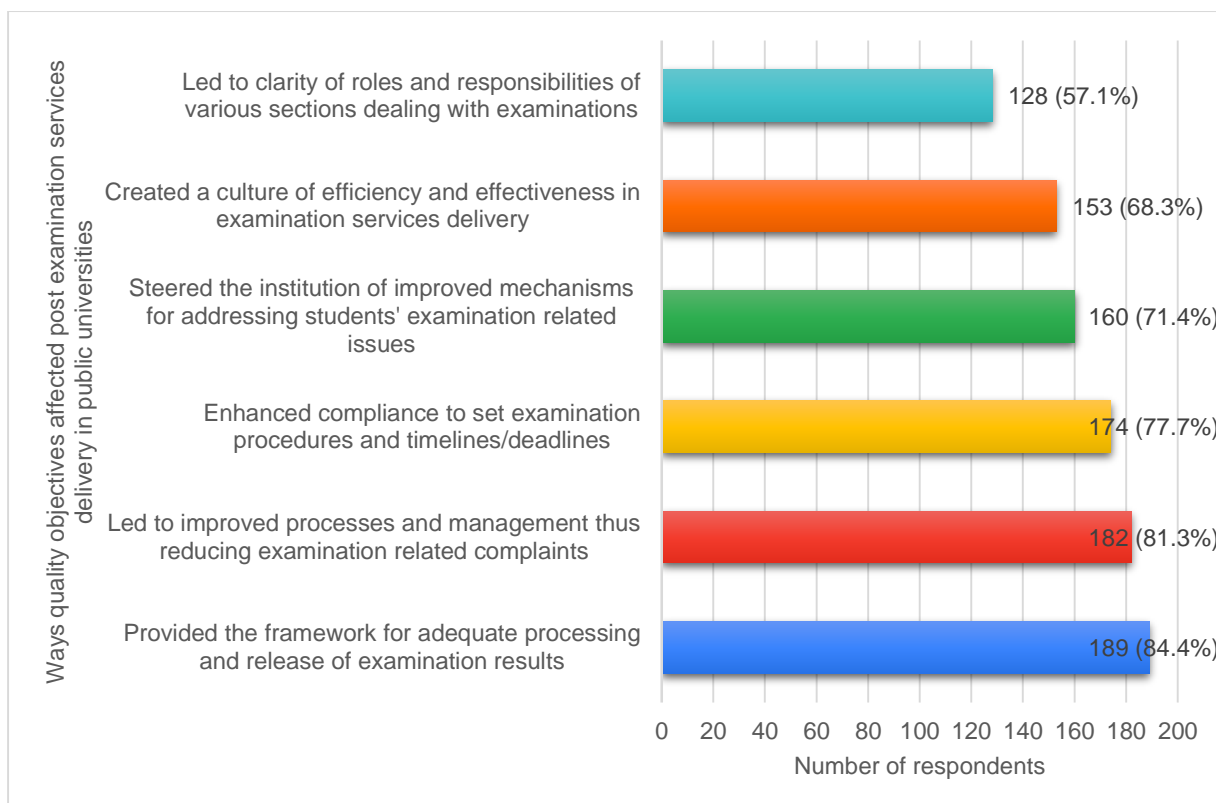
On average, the examination coordinators also neither agreed nor disagreed that their universities' top management always provided the leadership, organization and resources that needed to be deployed to achieve planned quality objectives in all their relevant functions as revealed by ($M=3.446$, $SD=0.936$). The composite mean value for the construct of 3.816 and standard deviation of 0.601 suggested that on average, the examination coordinators were in agreement with most of the statements presented on the establishment of quality objectives as per the ISO 9001:2015 QMS in public universities. Though their responses were varied, they were closely clustered around the mean.

From the overall mean score value (3.816), it can also be deduced that on average, public universities in Kenya had to a large extent established quality objectives as required under the ISO 9001:2015 quality management system. These universities had,

for instance, largely prioritized having well-defined quality objectives across all their functions, levels and processes and also having quality objectives at all levels that were highly consistent with their quality policies. Nonetheless, other aspects such as constantly monitoring and communicating the progress made in achieving the targets described in their quality objectives across all their functions and also their top managements always providing the leadership, organization and resources that needed to achieve the planned quality objectives in all their relevant functions were prioritized only to a moderate extent, on average. The above findings also support the argument by Ongaki and Nyamiobo (2014) that implementing quality management systems was not without challenges and realizing their pledged advantages was not simple.

4.4.1.4 Perceived link between quality objectives and post-examination service delivery in public universities

The views of the examination coordinators regarding how the available quality objectives had affected the delivery of post examination service in their institutions are as highlighted in Figure 4.4.



Source: Field Data (2021)

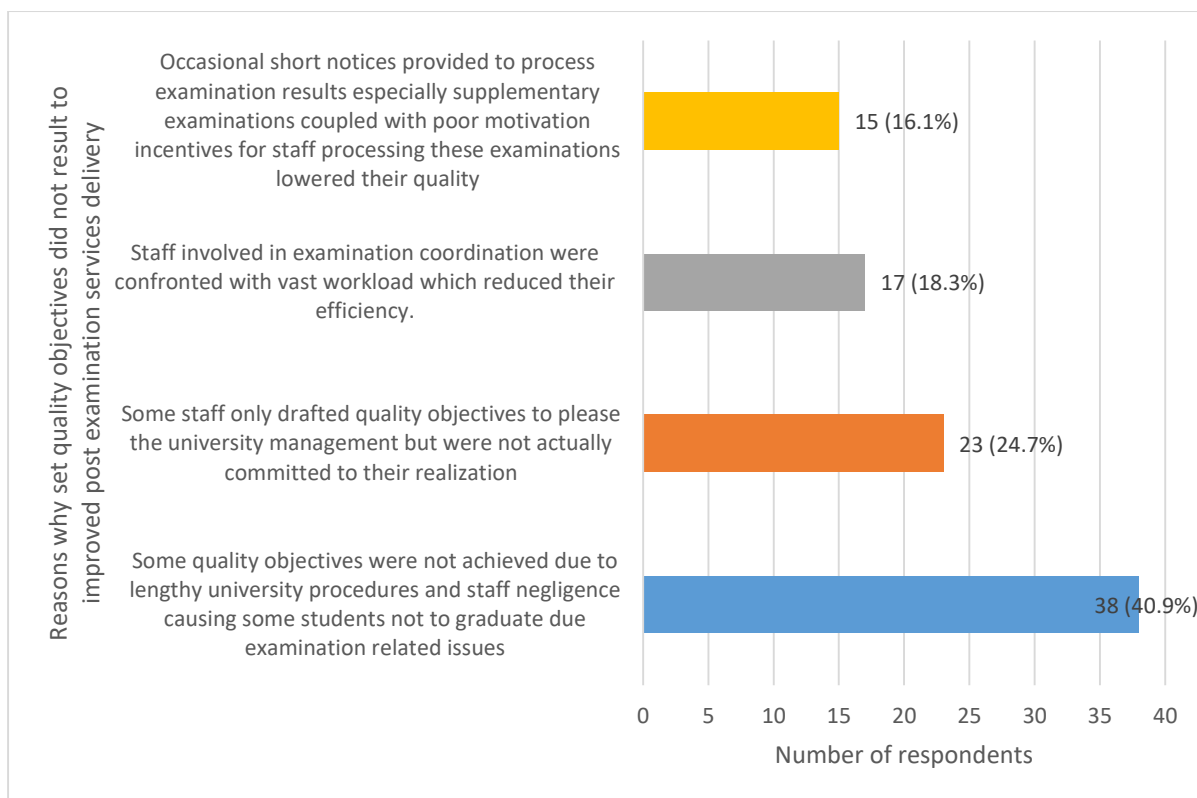
Figure 4.4: Ways Quality Objectives affected Post-Examination Service Delivery

According to 189 (84.4%) of the examination coordinators, as shown in Figure 4.4, quality objectives affected the delivery of post examination service in their institutions by providing the framework for supporting adequate processing and release of examination results. About 182 (81.3%) of the examination coordinators indicated that quality objectives led to improved processes and management in their universities which resulted to reduced examination related complaints. It was also mentioned by 174 (77.7%) of the examination coordinators that quality objectives enhanced compliance to set examination procedures and timelines/deadlines.

Quality objectives were cited as a means of steering the institution to improved mechanisms for addressing students' examination related issues by 160 (71.4%) of the examination coordinators. It was also found that quality objectives created a culture of efficiency and effectiveness in examination services delivery as noted by 153 (68.3%) of the examination coordinators. Furthermore, quality objectives affected the delivery of post examination service in public universities by clarifying the roles and responsibilities of various sections dealing with examinations according to 128 (57.1%)

of the examination coordinators. Based on the responses of the examination coordinators, the above culminated to timely release of students' examination results to relevant stakeholders as per the examination processing schedules, it reduced the cases of missing marks and also increased timely response to students' examination related requests and queries.

A number of the examination coordinators, 93 (41.5%), however were keen to note that there were instances where the laid down quality objectives did not significantly improve post examination service delivery in their institutions. According to 38 (40.9%) of these examination coordinators, as shown in Figure 4.5 below, some quality objectives were not achieved due to lengthy university procedures and staff negligence. As a result, some students were not able to graduate due to examination related issues. Others, 23 (24.7%) in number, argued that some staff only drafted quality objectives to please the university management but were not actually committed to their realization. About 17 (18.3%) of these examination coordinators decried that staff involved in examination coordination were confronted with vast workload which reduced their efficiency. It was also noted by 15 (16.1%) of these examination coordinators that occasional short notices provided to process examination results especially supplementary examinations coupled with poor motivation incentives for staff processing these examinations lowered their quality.



Source: Field Data (2021)

Figure 4.5: Reasons why Set Quality Objectives did not Improve Post Examination Service Delivery

From the responses given by key informants, the establishment of quality objectives generally improved post examination service delivery in public universities. This, according to one of the directors QMS and PC, was achieved since the examination management systems were continually improved as universities strived to achieve set quality objectives. Quality objectives as underlined by another director, QMS and PC, ensured that university staff efforts were directed towards delivering services as per students' expectations. This director for instance, noted that;

“Every department in this university has a quality objective to release results within a given time frame. In order to achieve this objective, the staff must work towards its realization.”

It was also emphasized by one of the directors, quality assurance that having in place quality objectives ensured that staff discharged their duties in compliance with set guidelines, procedures and standards and this resulted to quality post examination service. With established quality objectives, it was also possible to monitor and efficiently audit post examination service delivery and this led to identification of areas

of improvement as noted by another director, quality assurance. Nonetheless, two of the deputy registrars (examinations) argued that even though all departments in their institutions had in place quality objectives, nothing much was done to achieve them. One of the quality registrar asserted that: -

“All schools’ departments have quality objectives. However, not many are strictly realized and this affects service delivery. The quality objectives are well defined but not fully achieved due to challenges in the process of executing of the relevant functions.”

Consequently, examination related anomalies such as missing marks and incomplete results continued to persist in these institutions. From the above findings, it can therefore be deduced that the establishment of quality objectives as per the ISO 9001:2015 QMS in public universities in Kenya was associated with several benefits which could be exploited to improve post examination service delivery. By defining quality objectives on post examination service delivery, these institutions could for instance, enhance their examination processes and management and this would help them reduce stakeholders’ examination related complaints.

From the findings, these quality objectives could also be used as a means of enforcing adherence and compliance to set procedures, guidelines and standards on post examination service delivery besides sustaining the culture of efficiency and effectiveness in the delivery of these services. Nonetheless, the improvement of these services to the expected levels could only be achieved when the established quality objectives were fully realized and other university structures streamlined to ensure that the relevant staff efficiently delivered on their mandate towards the realization of these objectives.

The above findings reiterate the arguments by Magutu et al. (2010) that educational institutions should have in place quality objectives that can be applied in guarding against any flawed outputs from its services and activities. The findings also supported the views by Osumba (2014) that quality objectives were a key determinant of quality service delivery in Kenyan universities, their achievement boosting their standing in the world rankings. The study’s observations further echoed the conclusion by Mutuku and Kisimbii (2017) that improved service delivery in ISO 9001 certified public universities in Kenya was contingent on the extent to which university staff were

supported to achieve the set quality objectives, for instance, through adequate resource allocation.

4.4.2 Resource Allocation in Public Universities in Kenya

The objective of the study was to establish how resource allocation per the ISO 9001:2015 quality management system affected post-examination service delivery in public universities in Kenya. Primarily, the level of resource allocation as required under the ISO 9001:2015 quality management system in these universities was determined before establishing its relationship with post-examination service delivery.

4.4.2.1 Resource allocation as per the ISO 9001:2015 quality management system in public universities

The level of resource allocation per the ISO 9001:2015 QMS requirements in the public universities in Kenya was determined by asking the examination coordinators to react to four (4) items on this construct. They stated their level of agreement or disagreement with these statements on a five point Likert scale ranging from 1=Strongly Disagree to 5= Strongly Agree. The findings obtained are presented in Table 4.8. The study found that the largest mean score value for this construct was 3.884 with the lowest being 3.540 as shown in Table 4.7. On average, the examination coordinators agreed that their universities were constantly seeking ways of acquiring additional knowledge both internally and externally so as to augment their capacity to address changing needs and trends in the industry ($M=3.884$, $SD=0.986$). The study also found that the examination coordinators on average agreed that their universities had adequate competent persons needed to consistently meet customer, applicable statutory and regulatory requirements for the QMS including the necessary processes ($M=3.719$, $SD=0.916$).

The examination coordinators on average, were also in agreement that their universities determined, provided and maintained the necessary infrastructure for the operation of their processes to achieve service conformity ($M=3.638$, $SD=0.997$). It was further noted that the examination coordinators on average, agreed that their universities determined, provided and maintained the work environments necessary for the operation of their processes to achieve conformity of services ($M=3.540$, $SD=0.988$). The overall mean for the construct was 3.695 with an associated standard deviation of 0.776. This overall mean implied that on average, the examination coordinators agreed

with the statements presented on resource allocation as per the ISO 9001:2015 QMS requirements in public universities.

Table 4.7: Resource Allocation as per the ISO 9001:2015 QMS in Public Universities

Statement	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Mean	Std. Dev.
The university is constantly seeking ways of acquiring additional knowledge both internally and externally so as to augment its capacity to address changing needs and trends in the industry.	1.80%	8.50%	18.80%	41.50%	29.50%	3.884	0.986
The university has adequate competent persons needed to consistently meet customer, applicable statutory and regulatory requirements for the QMS including the necessary processes.	1.80%	8.90%	22.30%	49.60%	17.40%	3.719	0.916
The university determines, provides and maintains the necessary infrastructure for the operation of its processes to achieve service conformity.	3.10%	12.50%	17.90%	50.40%	16.10%	3.638	0.997
The university determines, provides and maintains the work environment necessary for the operation of its processes to achieve conformity of services.	1.80%	15.20%	25.90%	41.50%	15.60%	3.540	0.988
Composite mean and standard deviation						3.695	0.776
Valid n=224							

Source: Field Data (2021)

From the findings in Table 4.7, it can be deduced that public universities in Kenya had undertaken resource allocation as per the ISO 9001:2015 QMS requirements to a greater extent. These institutions had to a large extent committed themselves to acquiring the relevant knowledge, competent staff and infrastructure as well as maintaining a suitable work environment to support their processes, key operations and functions with the aim of ensuring service conformity. It was also evident that the

greater emphasis as at the time of the study was on acquisition of additional knowledge needed in responding to changing industry needs and trends and having adequate staff that were competent to consistently meet customer, applicable statutory and regulatory requirements for the QMSs including the necessary processes.

The above views resonated well with the observation by Kandie (2019) who, though in reference to the expired ISO 9001:2008 standard, noted that certified Kenyan universities were keen on mobilizing sufficient resources to support the provision of educational services in line with their quality management systems. According to Fajrah, Putri and Amrina (2019), the ISO 9001:2015 clause on support warrants that organizations should have the requisite resources, people and also infrastructure in meeting their set goals in the course of delivering their products or services. Medić, Karlović and Cindrić (2016) also pointed out that organizations implementing ISO 9001:2015 QMSs needed to for instance, determine and ensure that sufficient and fit personnel were deployed to guarantee effective implementation of their systems and also be able to operate and control all their processes.

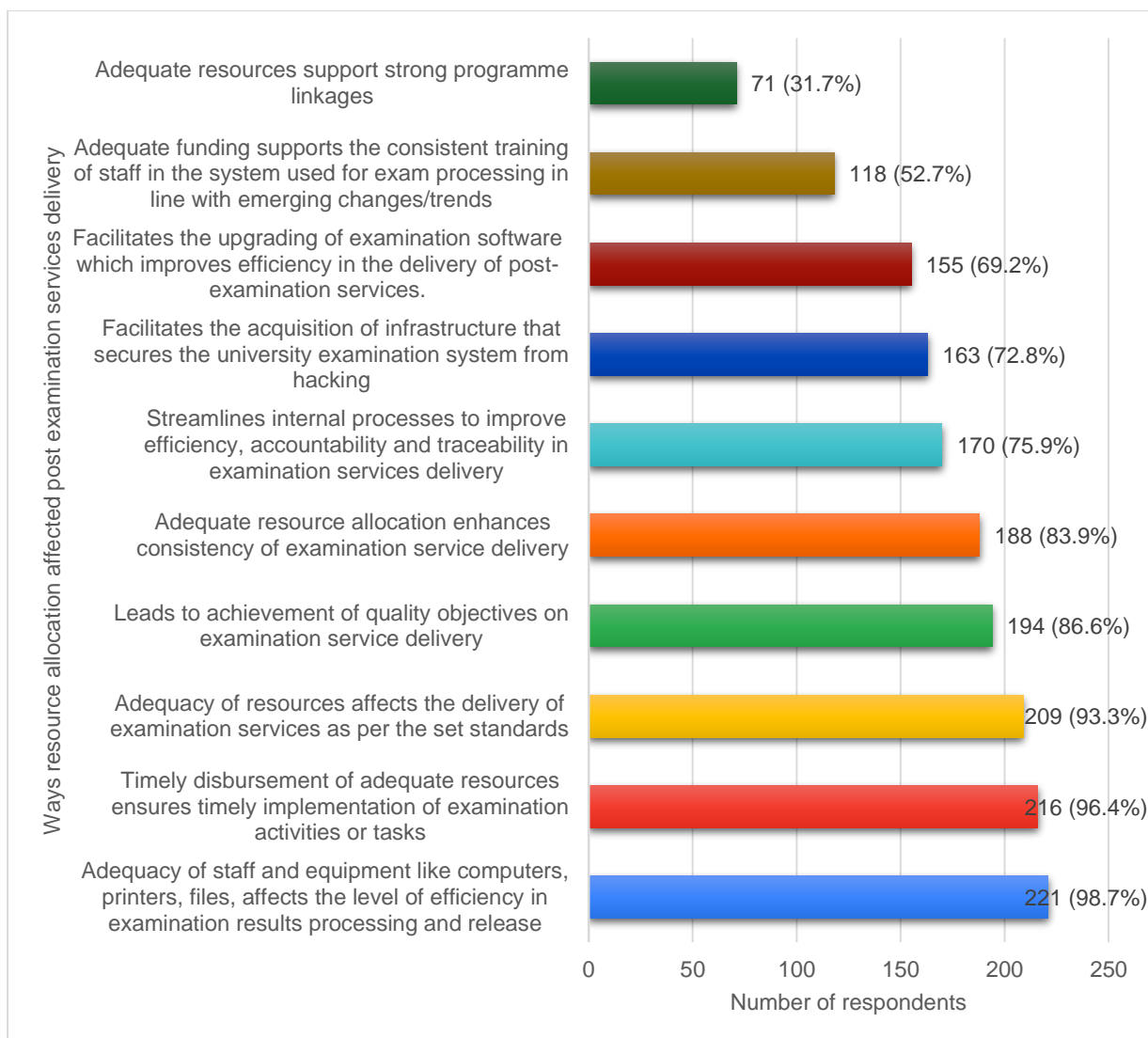
4.4.2.2 Views on the link between resource allocation as per ISO 9001:2015 QMS and post-examination service delivery

Figure 4.6 provides the ways in which the level of resource allocation as per ISO 9001:2015 quality management system requirements affected the delivery of post-examination service in public universities in Kenya as pointed out by the examination coordinators. The findings revealed that adequacy of staff and equipment such as computers, printers and files determined the level of efficiency in the processing and release of examination results as pointed out by 221 (98.7%) of the examination coordinators. It was noted that adequate staffing, for instance, supported timely release of students' examination results. This ensured that students were able to progress to the next level with feedback on their performance and those required to seat for supplementary examinations informed on time. Adequate storage facilities on the other hand, ensured quick retrieval of student files and examination scripts when necessary.

According to 216 (96.4%) of the examination coordinators, timely disbursement of adequate resources ensured that examination related activities were executed smoothly and on time. Others, about 209 (93.3%), observed that adequacy of resources affected the delivery of examination services as per the set standards while, 194 (86.6%) argued

that adequate resource allocation led to achievement of quality objectives on examination service delivery. Adequate resource allocation also enhanced consistency of examination service delivery as indicated by 188 (83.9%) of the examination coordinators. With adequate resources, internal university processes were streamlined to improve efficiency, accountability and traceability in examination services delivery as stated by 170 (75.9%) of the examination coordinators.

Approximately 163 (72.8%) of the examination coordinators underlined that adequate resource allocation facilitated the acquisition of infrastructure that secured their university examination systems from hacking. Others, 155 (69.2%) in number, were of the view that adequate resources facilitated the upgrading of examination software which improved efficiency in the delivery of examination services in their institutions. It was further noted by 118 (52.7%) of the examination coordinators that adequate funding supported the consistent training of staff on examination processing systems in line with emerging trends while 71 (31.7%) of them believed that adequate resources supported strong programme linkages in the entire university which made examination service delivery easier especially at the departmental level.



Source: Field Data (2021)

Figure 4.6: Ways Resource Allocation affected Post-Examination Service Delivery

The key informants unanimously agreed that resource allocation as required under the ISO 9001:2015 quality management system improved post examination service delivery in public universities in Kenya. One of the Directors QMS and PC noted that adequate resource allocation ensured that more innovative methods or techniques of delivering these services efficiently were adopted. The rest of the interviewees reiterated that resource allocation influenced the extent to which quality objectives on post examination service delivery were achieved. One of the deputy registrars (examinations) stated that: -

“To realize set quality objectives, resource allocation is key. Our core mandate gets first priority in resource allocation whether examinations materials,

personnel, infrastructure, ERP system etc. However, resource allocation is based on their availability.”

Thus, it can be inferred that the level of resource allocation as per the ISO 9001:2015 QMS in public universities in Kenya was perceived by examination process coordinators as a key determinant of post examination service delivery. The study findings suggested that resource allocation affected post examination service delivery in these universities by for instance, influencing the timeliness and efficiency in executing post examination activities, supporting adherence to set standards and consistency in the delivery of post examination service and facilitating the realization of set quality objectives on this specific function.

Resource allocation also determined the extent the institutions were able to acquire the necessary infrastructure, softwares and innovative techniques which trained university staff could use to improve efficiency, accountability and traceability in post examination service delivery. Furthermore, given that the allocation of resources in these public universities was likely to be dependent on what was available as noted by one of the key informants, it was necessary that the institutions marshalled or mobilized sufficient resources so that they could meet their quality management systems' requirements.

The above inference supported the finding by Medić, Karlović and Cindrić (2016) that organizations that implemented ISO 9001: 2015 quality management systems were able to demonstrate the ability to consistently deliver services which met customer and regulatory requirements. The study findings were also consistent with the observation by Bichanga and Kimani (2013) that the delivery of services in public universities in Kenya depended on the consistent allocation of adequate resources which enabled the institutions to achieve their quality objectives. The findings of this study were also found to be in agreement with that of a study by Kandie (2019) which noted that with proper resource allocation, ISO 9001 certified universities in Kenya were able to provide quality and reliable services which reduced complaint rates among students.

The findings also corroborated the conclusion by Chiarini (2015) that when the necessary resources were availed on time in the course of implementing ISO 9001 quality management systems, universities were able to improve their processes and this resulted to delivery of quality services with minimal cases of nonconformity due to the execution of innovative corrective actions. The findings were in support of the

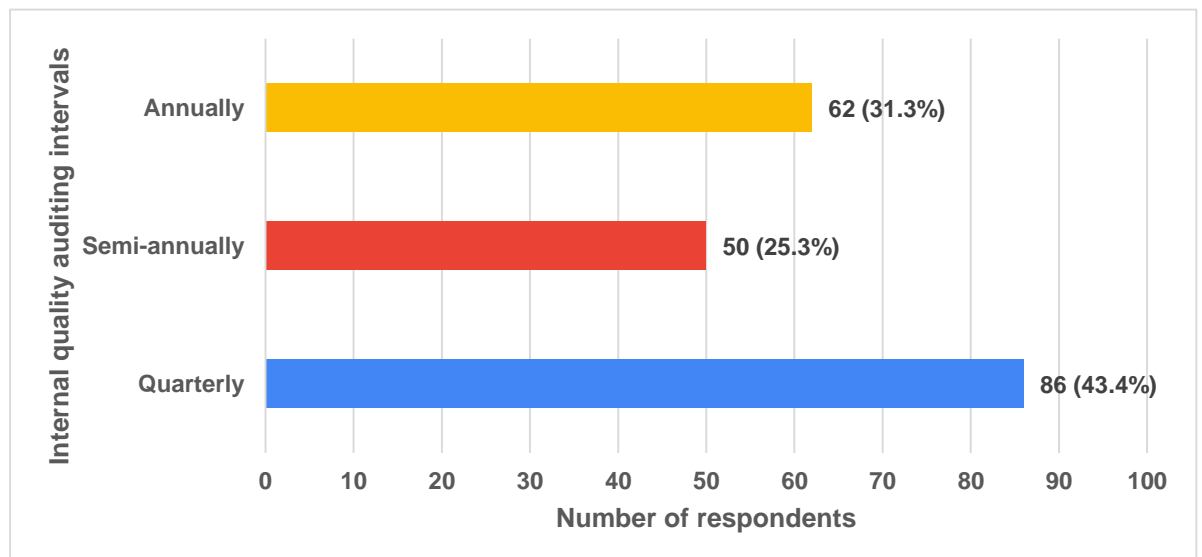
argument by Jingura, Kamusoko, and Tapera (2020) that ISO 9001 standard provided a basis for enhanced quality assurance in the delivery of services in higher education institutions by ensuring that adequate resources were allocated to key university processes in a bid to meet the QMS requirements. The findings further affirmed the finding by Hussein et al. (2017) that the implementation of ISO 9001:2015 quality management system through adequate resource allocation minimized inefficiencies in higher education institutions which led to quality academic services.

4.4.3 Internal Quality Auditing in Public Universities in Kenya

The study sought to examine how internal quality auditing as per the ISO 9001:2015 quality management system affected post-examination service delivery in public universities in Kenya. Before determining the relationship between these two variables, the level of internal quality auditing as required under the ISO 9001:2015 QMS was first determined by presenting a series of questions to the examination process stakeholders involved in this study.

4.4.3.1 Frequency of internal quality audits in Kenyan public universities

The intervals at which internal quality audits as per the ISO 9001:2015 QMS were undertaken in public universities in Kenya are revealed in Figure 4.8.



Source: Field Data (2021)

Figure 4.7: Frequency of Internal Quality Audits in Kenyan Public Universities

The findings presented in Figure 4.7 revealed that 86 (43.4%) of the examination coordinators stated that in their institutions, internal quality auditing as required under the ISO 9001:2015 QMS was undertaken on a quarterly basis, 50 (25.3%) noted that this auditing was carried out semi-annually while the rest of the examination coordinators, 62 (31.3%), confirmed that their institutions carried out this auditing on an annual basis. These findings suggested that public universities in Kenya conducted internal quality audits at fixed or planned intervals majorly on a quarterly, semi-annually and annually basis. According to Phillips (2015) and Parthasarthy (2017), organizations implementing ISO 9001:2015 quality management systems were mandated to carry out internal audits at planned intervals to provide information on whether their QMSs complied with the requirements of the standard and other organizational requirements and whether their implementation and maintenance was effective. Mail, Sudjito, and Budi (2014) also recommended that higher education institutions implementing ISO 9001 quality management systems should continuously carry out systematic internal quality audits.

4.4.3.2 Internal quality auditing as per the ISO 9001:2015 QMS in public universities

The results presented in Table 4.8 pertain to the examination coordinators' reaction to five (5) statements relating to internal quality auditing as per the ISO 9001:2015 quality management system in their universities.

Table 4.8: Internal Quality Auditing as per ISO 9001:2015 QMS in Public Universities

Statement	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Mean	Std. Dev.
Internal quality audits in this university are carried out at planned intervals to check service conformance at all levels and functions.	3.10%	1.80%	5.40%	51.30%	38.40%	4.201	0.868
Reports of the internal quality audits conducted in this university are usually made available to the relevant management for action.	4.90%	0.40%	17.00%	43.80%	33.90%	4.013	0.986
We have in place an internal audit program(s) that takes into account the quality objectives, importance of the concerned processes, customer feedback, changes affecting the institution and the results of previous audits.	3.10%	8.00%	14.70%	39.30%	34.80%	3.946	1.049
Internal quality audits in this university always yield crucial objective feedback that allows the university to determine whether its QMS conforms to established quality requirements.	0.00%	8.90%	24.60%	42.00%	24.60%	3.821	0.906
After internal quality audits are conducted, the necessary corrective actions are taken without undue delay.	6.70%	11.60%	34.40%	30.80%	16.50%	3.388	1.099
Composite mean and standard deviation						3.873	0.772
Valid n=224							

Source: Field Data (2021)

From Table 4.8, it can be seen that the highest mean score value for the internal quality auditing construct was 4.201 while the lowest was 3.388. The study established that on average, the examination coordinators agreed that internal quality audits in their universities were carried out at planned intervals to check service conformance at all levels and functions ($M=4.201$, $SD=0.868$). The findings also confirmed that the examination coordinators on average, agreed that reports of the internal quality audits

conducted in their universities were usually made available to the relevant management for action ($M=4.013$, $SD=0.986$). It was also noted that on average, the examination coordinators were in agreement that their universities had in place an internal audit program(s) that took into account the quality objectives, importance of the concerned processes, customer feedback, changes affecting the institutions and the results of previous audits ($M=3.946$, $SD=1.049$).

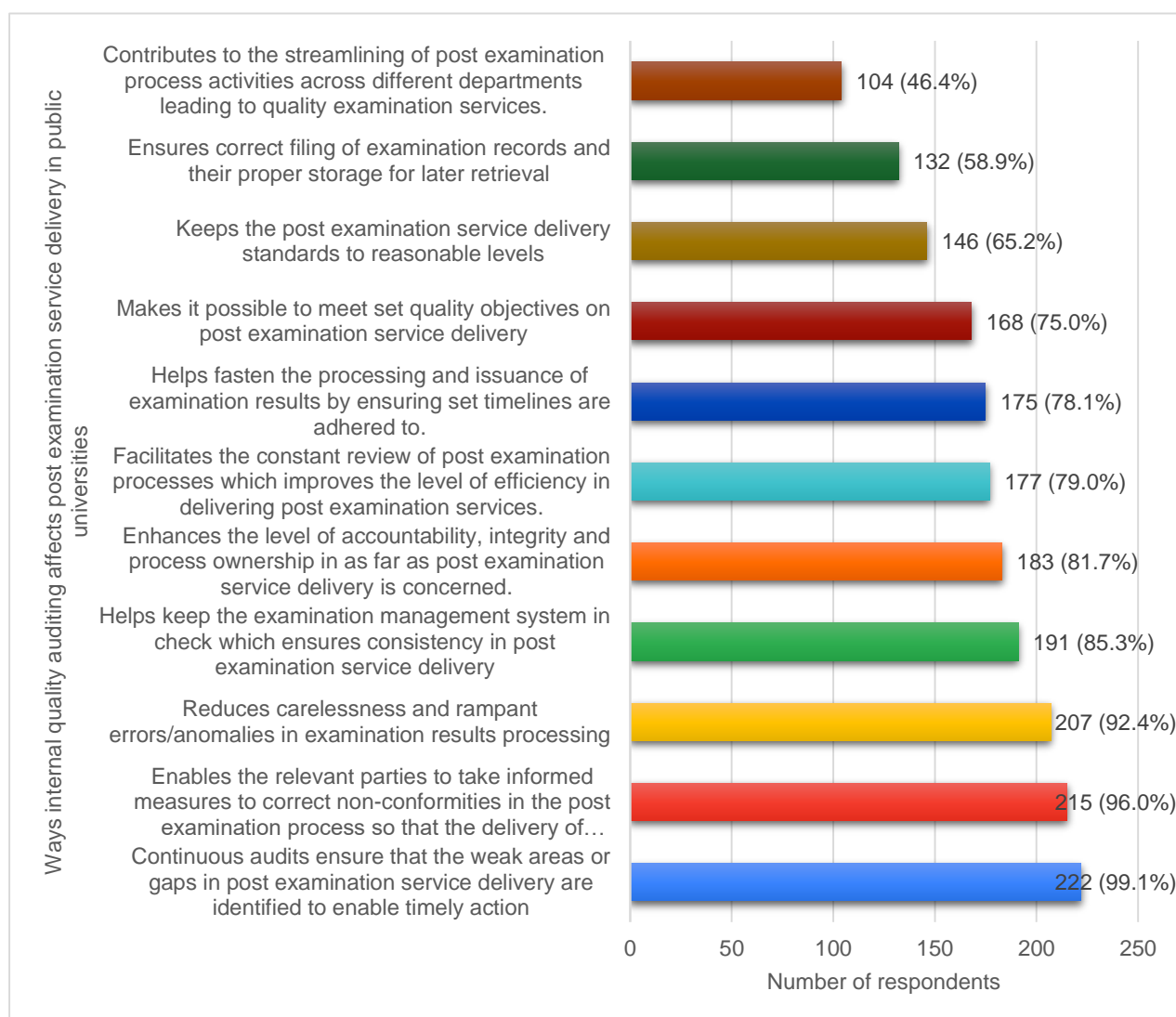
The study further discovered that on average, the examination coordinators agreed that internal quality audits in their universities always yielded crucial objective feedback that allowed the universities to determine whether their quality management systems conformed to established quality requirements ($M=3.821$, $SD=0.906$). The examination coordinators, however, neither agreed or disagreed that after internal quality audits were conducted, the necessary corrective actions were taken without undue delays on average since ($M=3.388$, $SD=1.099$). The composite mean score value for the entire construct was 3.873 with an associated standard deviation of 0.772 suggesting that on average, the examination coordinators were in agreement with most of the statements presented on internal quality auditing as per the ISO 9001:2015 QMS in public universities.

The above findings meant public universities in Kenya had to a large extent implemented internal quality auditing as required under their ISO 9001:2015 quality management systems though the different aspects of internal quality auditing received varying level of attention in these institutions. For instance, though these universities had to a large extent ensured that internal quality audits in their institutions were conducted at planned intervals in order to check service conformance at all levels and functions, ensuring that the necessary corrective actions were taken without undue delay after these audits was prioritized only to a moderate extent. Therefore, it can be argued that there were areas of internal quality auditing that still needed to be optimized in Kenyan public universities so that their ISO 9001:2015 QMS requirements could be adequately met. The study findings were consistent with that of Boiyon, Manduku, and Rotumoi (2020) who found that public universities in Kenya did not gain full benefits from internal quality audits due to inadequate implementation of some aspects, for instance, not acting upon the recommendations of internal quality reports on time. This was also reiterated in the study carried out by Gutierrez (2013) which demonstrated that

there were a number of requirements on internal quality auditing in ISO 9001 certified organizations that were not sufficiently met.

4.3.3.3 Perceived relationship between internal quality auditing and post-examination service delivery

The views of the examination coordinators regarding how the level of internal quality auditing as required under ISO 9001:2015 quality management system affected post examination service delivery in their universities were further sought.



Source: Field Data (2021)

Figure 4.8: Ways Internal Quality Auditing affected Post-Examination Service Delivery

The study as shown in Figure 4.8, established that continuous internal quality audits ensured that the weak areas or gaps in post examination service delivery were identified to enable timely action as stated by 222 (99.1%) of the examination coordinators. Internal quality auditing according to 215 (96.0%) of the examination coordinators also enabled the relevant parties to take informed measures to correct non-conformities in the post examination process towards improved examination service delivery.

About 207 (92.4%) of the examination coordinators reported that internal quality audits led to reduced carelessness and rampant errors/anomalies in examination results processing in their institutions while 191 (85.3%) also noted that these audits helped keep their universities' examination management systems in check which ensured consistency in post examination service delivery. The study also noted that internal quality auditing as required under the ISO 9001:2015 QMS improved post examination service delivery in public universities by enhancing the level of accountability, integrity and process ownership in the post examination process as emphasized by 183 (81.7%) of the examination coordinators. Internal quality auditing as underlined by 177 (79.0%) of the examination coordinators facilitated the constant review of post examination processes in public universities which improved the level of efficiency in the delivery of post examination service.

With continuous internal quality auditing, as indicated by 175 (78.1%) of the examination coordinators, the processing and issuance of examination results was faster due to enforced adherence to set timelines. About 168 (75.0%) of the examination coordinators observed that internal quality audits made it possible to meet set quality objectives on post examination service delivery, 146 (65.2%) noted that such audits kept the post examination service delivery standards to reasonable levels, 132 (58.9%) noted that internal quality auditing ensured correct filing of examination records and their proper storage for later retrieval while 104 (46.4%) indicated that internal quality audits contributed to the streamlining of post examination process activities across different departments leading to quality post examination service.

Nonetheless, some examination coordinators, 75 (33.5%) decried that in some cases, the issues raised in the internal quality audit reports were not always expeditiously addressed while others, 57 (25.4%) in number, argued that there were many errors or areas of improvement which were not captured in such reports. Consequently,

achieving many of the quality objectives on post examination service delivery could take longer than expected or some may never be achieved at all. From the key informant interviews conducted, internal quality auditing improved post examination service delivery majorly by ensuring that all areas of non-conformity were identified and addressed and the right procedures adhered to in service delivery. One of the Directors QMS and PC explained that;

“In our internal quality audits, we incorporate an aspect of academic processes audit in every academic department. Our audits run throughout the year and so we have an opportunity to identify gaps and see to it that they are addressed in good time. We are also able to borrow what works for one department and apply it in another.”

One of the directors, quality assurance also reiterated that regular scheduled and unscheduled audits ensured that examination coordination offices followed the laid down guidelines and procedures since non conformities were not kindly taken by the management. Internal quality auditing according to one of the deputy registrars (examinations) ensured uniformity in service delivery across all the departments and that all requirements for examinations are met on time. Another deputy registrar also cited internal quality auditing as a means of achieving quality objectives on post examination service delivery since through it, cases of non-conformities were picked on time and the needful corrective actions required following the closure of the audits suggested on time as well. According to them: -

“Internal quality audits are carried out after six months to ensure set quality objectives are met. During these audits, cases that have nonconformities are picked and corrective action required after the closure of the audit.”

The above findings suggested that when efficiently exploited, internal quality auditing as required under the ISO 9001:2015 quality management systems in public universities in Kenya would considerably enhance post examination service in these institutions. The basis of this inference is the fact that internal quality audits yielded information that was used to identify areas of service non-conformities in as far as post examination service were concerned. Armed with such evidence, the relevant offices in these public universities were in a position to take the necessary corrective actions to address such non-conformities. This would in turn lead to realization of quality objectives on post examination service delivery and also continual improvement in the long run.

Internal quality auditing was also associated with adherence to set standards, procedures and timelines as well as reduced errors which were very key in improving the quality of post examination service delivered to students. Reduced errors in the processing of students' examination results was for instance, necessary if the public universities were to minimize the cases of missing student marks. Adherence to set timelines and standards on the other hand was a means of ensuring that students' examination results were processed and release on time and that these results were not questioned by key stakeholders and especially, the students.

By carrying out internal quality auditing as required under the ISO 9001:2015 QMS, public universities were able to enforce accountability and integrity in the delivery of post examination service while still ensuring that consistency was achieved. Internal quality auditing further yielded information that public universities in Kenya could use to improve and streamline the key processes impacting post examination services delivery in these institutions. The culmination of the above would enhance realization of quality objectives on post examination services delivery. Nevertheless, internal quality auditing in Kenyan public universities would significantly transform the delivery of post examination service only if all the areas of service non-conformities are adequately identified and the recommendations for corrective actions made in the audit reports fully executed. This amplifies the need for follow ups to determine whether the recommendations made after internal quality audits in public universities in Kenya are fully adopted or executed.

The above findings were coherent with the observation by Gitura (2014) that internal quality audits enabled the realization of an organization's quality objectives and ultimately their overall organizational objectives. The study findings also resonated with that of Mail, Sudjito, and Budi (2014) which revealed that internal quality audit resulted to crucial feedback that allowed organizations to keep on inventing new values, behaviour and attitude meant to enhance quality culture in their processes/operations, leading to enhanced service delivery. The findings also supported the inference by Giedt (2016) that through internal quality audits, an organization was able to identify the system's nonconformity areas and also develop corrective action plans which could be executed thus saving the organizations major costs related to customer dissatisfaction for instance.

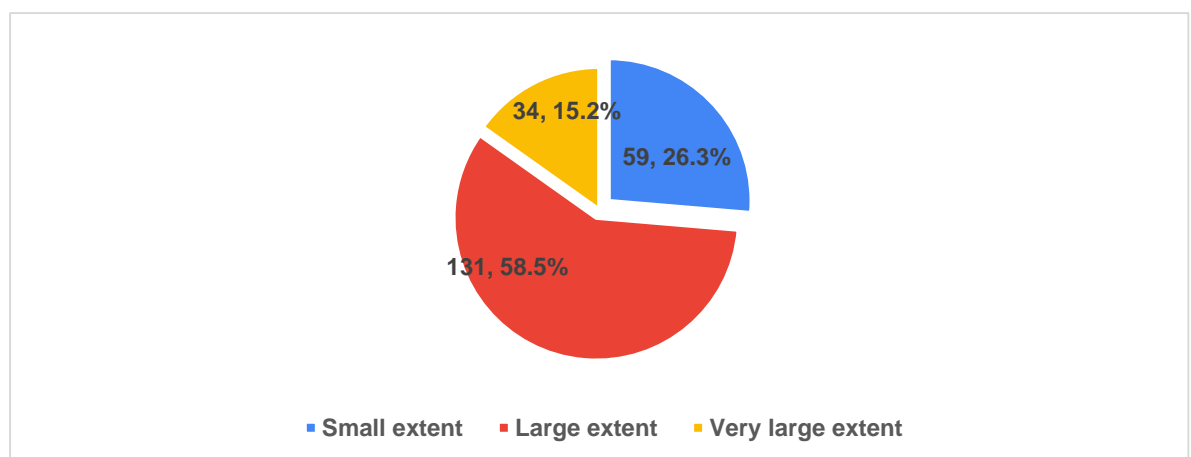
The study findings affirmed the conclusion by Boiyon, Manduku, and Rotumoi (2020) that organizations needed to improve both internal quality audits which aimed at improving processes used to produce the particular services they offered. The findings of this study further agreed with the assertion by Kaziliūnas (2010) that internal quality auditing enabled organizations to boost process efficacy and effectiveness through the implementation, creation of innovative solutions leading to increased service delivery and also the observation by Karapetrovic (2010) that internal quality audits paved the way for continuous improvement within an organization.

4.4.4 Continual Improvement in Public Universities in Kenya

The study also sought to establish how continual improvement as per the ISO 9001:2015 QMS affected post-examination service delivery in public universities in Kenya. Continual improvement as per the ISO 9001:2015 quality management system in these universities was first determined where the views of the examination coordinators and the key informants were sought.

4.4.4.1 Extent Kenyan public universities are pursuing continual improvement in their operations and processes

The examination coordinators indicated the extent to which their universities were pursuing continual quality improvement in their operations and processes as per the requirements of the ISO 9001:2015 QMS as shown in Figure 4.9.



Source: Field Data (2021)

Figure 4.9: Extent Public Universities Pursued Continual Improvement

The study findings showed that 59 (26.3%) of the examination coordinators noted that their universities were pursuing continual quality improvement to a small extent, 131 (58.5%) stated to a large extent while 34 (15.2%) indicated that their institutions had embraced continual quality improvement to a very large extent. These findings reveal that in general, most public universities in Kenya to a large extent wanted and strived for continual improvement in their different processes, functions and operations. This inference supported the assertions by Chiarini (2017) that ISO 9001:2015 certified organizations were mandated to vigorously seek for opportunities for improving processes, products and services as well as their QMS, particularly bearing in mind the requirements of their customers in the future.

4.4.4.2 Continual improvement as per the ISO 9001:2015 QMS in Kenyan public universities

The reaction of the examination coordinators towards four (4) statements on continual quality improvement as required under ISO 9001:2015 QMS in their universities is captured by the findings presented in Table 4.9. The examination coordinators stated the extent they agreed or disagreed with the statements on a five point Likert scale that ranged from 1=Strongly Disagree to 5= Strongly Agree.

Table 4.9: 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.
We analyze and evaluate data from continual monitoring of processes and services for the improvement of the core business and identification of the areas of underperformance.	0.00%	5.80%	19.60%	50.00%	24.60%	3.933	0.820
The university emphasizes on defining and pinpointing improvement opportunities across all its operations and at all levels in the university.	0.00%	4.90%	28.10%	42.40%	24.60%	3.866	0.842
The outputs from management reviews are used to determine if there are needs or opportunities that must be addressed as part of continual improvement.	1.30%	6.20%	28.10%	47.30%	17.00%	3.723	0.865
The university has cross-functional teams that have implemented significant breakthrough projects that revise or improve existing processes or lead to new processes across all levels in the university.	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 findings presented in Table 4.9 reveal that the highest mean score value for this construct was 3.933 while the lowest was 3.531. On average, the examination coordinators agreed that their institutions analyzed and evaluated data from continual monitoring of processes and services for the improvement of the core business and identification of the areas of underperformance ($M=3.933$, $SD=0.820$). The examination coordinators also on average agreed that their universities emphasized on

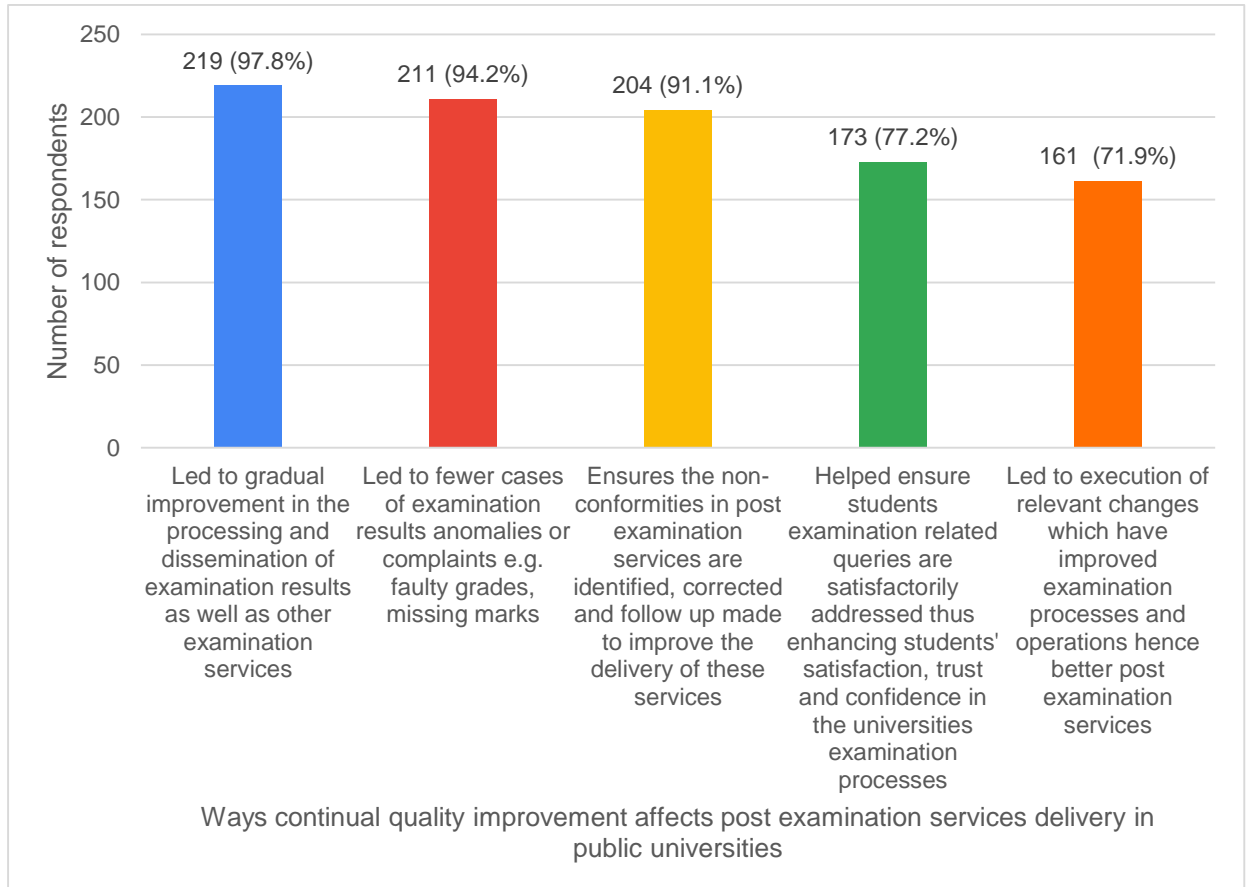
defining and pinpointing improvement opportunities across all their operations and at all levels in their universities ($M=3.866$, $SD=0.842$). It was also noted that the examination coordinators on average agreed that the outputs from management reviews were used to determine if there were needs or opportunities that must be addressed as part of continual improvement in their institutions ($M=3.723$, $SD=0.865$).

Furthermore, the examination coordinators on average agreed that their universities had cross-functional teams that had implemented significant breakthrough projects that revised or improved existing processes or led to new processes across all levels in the universities ($M=3.531$, $SD=1.136$). Overall, the examination coordinators were on average, agreeing with most of the statements presented on continual improvement as per ISO 9001:2015 QMS as shown by the composite mean score value of 3.763 and associated standard deviation of 0.661 which meant that though their responses were varied, they were closely clustered around the mean. The composite mean for the construct also 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 QMS. The attention given to the different of 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.

The above findings reiterated the assertion by Chiarini (2017) that ISO 9001:2015 certified organizations are mandated to vigorously seek for opportunities for improving processes, products and services and their quality management systems. The findings also supported the view held by Shakoor (2018) 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 cemented 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 nonconformity.

4.4.4.3 Perceived linkage between continual improvement and post examination services delivery in public universities

The results provided in Figure 4.10 show the ways in which the level of continual quality improvement as required under ISO 9001:2015 QMS affected post examination service delivery in public universities from the perspective of the examination coordinators.



Source: Field Data (2021)

Figure 4.10: Ways Continual Improvement affected Post-Examination Service Delivery in Public Universities

It was noted by 219 (97.8%) of the examination coordinators that continual improvement resulted to gradual improvement in the processing and dissemination of examination results among other examination services. It also led to fewer cases of examination results anomalies or complaints for instance, faulty grades and missing marks as asserted by 211 (94.2%) of the examination coordinators. About 204 (91.1%) of the examination coordinators indicated that continual improvement as required under

ISO 9001:2015 QMS ensured that the non-conformities in post examination service in their institutions were identified, corrected and follow up made to improve the delivery of these services.

Continual improvement also helped ensure that students examination related queries were satisfactorily addressed as pointed out by 173 (77.2%) of the examination coordination and this translated to enhanced students' satisfaction, trust and confidence in the universities' examination processes. It further led to execution of the relevant changes which improved examination processes and operations hence better post examination services according to 161 (71.9%) of the examination coordinators. Some examination coordinators however observed that only minimal continual improvement was achieved in their institutions as some issues raised by students were often not exhaustively addressed. They attributed this to little action taken to improve different processes impacting post examination service following management reviews and audits.

From the interviews conducted, continual improvement was the basic principle that was applied by public universities when seeking to enhance post examination service delivery. One of the deputy registrars (examinations) stated that: -

“We always give room for our staff to do better especially when handling examination related concerns raised by our students. Moreover, examination offices are among the areas where reviews of documentation to enhance performance is done.”

Management reviews and audit reports were used to ascertain the quality objectives not met and on this basis, corrective actions to achieve them. The views of one of the directors of quality assurance were quoted as follows: -

“The university always strives to ensure that corrective actions to address the identified service nonconformities are taken immediately by all units once audit and management review reports are released to the relevant parties. This has helped the university to deal with examination related concerns that are easily preventable.”

Where the reviews and audit reports showed that the quality objectives had been achieved, higher objectives were set as a way of further improving post examination service as mentioned by one of the Directors QMS and PC.

From the above findings, it was inferred that commitment to continual improvement as required under the ISO 9001:2015 quality management system was very critical in the

quest for improving post examination service delivery in public universities in Kenya. This is because continual improvement served as means through which the universities could identify and correct the non-conformities in post examination service which were the greater sources of examination related complaints among students who were their main customers. When public universities pursued continual improvement, they were in a better position to adopt the necessary changes needed to improve their examination management processes. This was a key step to minimizing and addressing the various anomalies and complaints when processing students' examination results.

The inferences of this study echoed the finding by Andiva and Simatwa (2018) that continuous improvement in public universities in Kenya assured students of several benefits associated with receiving academic services that met their requirements as witnessed in minimal errors and mistakes in services delivered, for instance. The study findings also supported that of Thalner (2015) who found that in higher education institutions, continual improvement contributed to enhanced efficiencies and boosted the quality of their products and services as the institutions were able to quickly respond to any quality issues raised. The findings were also in agreement with the finding by Wanza, Ntale, and Korir (2017) that continual improvement ensured 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. The findings affirmed the finding by Otieno (2016) that continual improvement enhanced organizational efficiency which led to fewer mistakes in as far as service delivery was concerned.

4.4.5 Organizational Structure in Public Universities in Kenya

The study further sought to determine the moderating effect of organizational structure on the relationship between ISO 9001:2015 quality management system implementation and post-examination services delivery in public universities in Kenya. Before meeting this objective, the organizational structure in these institutions was determined by presenting a number of questions to the study participants.

4.4.5.1 Organizational Structure in Kenyan Public Universities

The results presented in Table 4.10 show the extent to which the examination coordinators agreed or disagreed with various items related to their institutions' organizational structure.

Table 4.10: Organizational Structure in Public Universities

Statement	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Mean	Std. Dev.
The roles and responsibilities of the various offices within the university are clearly defined and assigned to guarantee efficiency in all its processes and operations.	1.30%	4.00%	8.90%	41.50%	44.20%	4.232	0.873
The university management has developed and enforced formal behaviour rules and procedures which specify what needs to be done by staff across all levels.	1.80%	0.00%	15.20%	47.30%	35.70%	4.152	0.806
Reporting lines and mandates of key positions within the university are clear to govern workflow in the university and prevent unnecessary conflicts over roles and accountabilities.	1.80%	5.40%	8.00%	49.60%	35.30%	4.112	0.894
There are adequate frameworks in place that guarantee coordination and commitment of all universities departments across all its operations.	1.80%	3.10%	19.60%	42.40%	33.00%	4.018	0.903
There are optimal layers of authority within the university to warrant coordination, integration and speedy decision making processes in the institution.	3.60%	4.00%	12.50%	55.40%	24.60%	3.933	0.923
Composite mean and standard deviation						4.089	0.740
Valid n=224							

Source: Field Data (2021)

The study found that on average, the examination coordinators agreed that the roles and responsibilities of the various offices within their universities were clearly defined and assigned to guarantee efficiency in all their processes and operations ($M=4.232$, $SD=0.873$). The examination coordinators also on average agreed that their

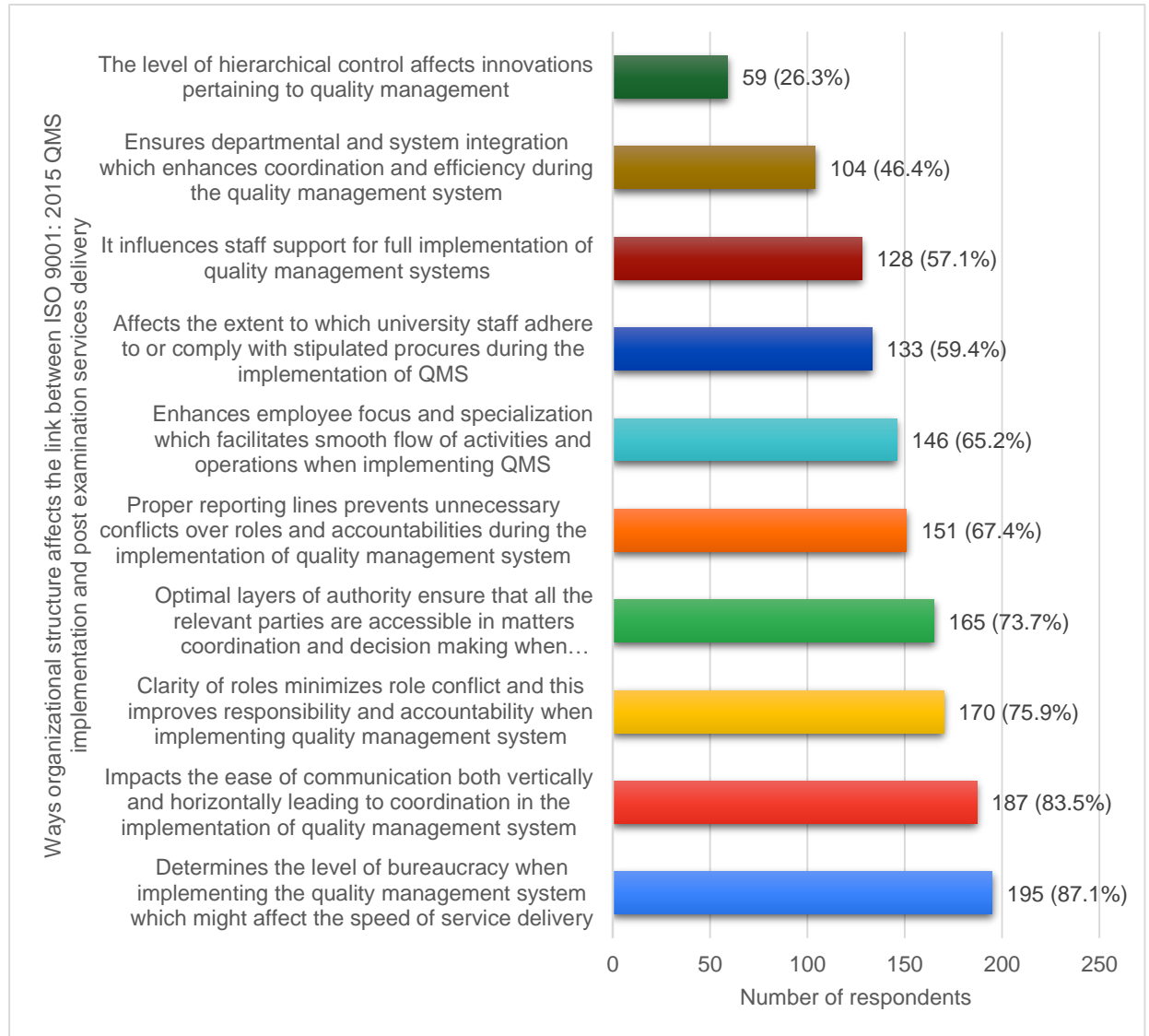
universities' managements had developed and enforced formal behaviour rules and procedures which specified what needed to be done by the universities' staff across all levels ($M=4.152$, $SD=0.806$). On average, the examination coordinators were also in agreement that reporting lines and mandates of key positions within their universities were clear to govern workflow in the institutions and prevent unnecessary conflicts over roles and accountabilities ($M=4.112$, $SD=0.894$).

The examination coordinators as well agreed that there were adequate frameworks in place that guaranteed coordination and commitment of all universities' departments across all their operations, on average. This finding was backed by ($M=4.018$, $SD=0.903$). The study further established that on average, the examination coordinators did agree that there were optimal layers of authority within their universities to warrant coordination, integration and speedy decision making processes in the institutions as evidenced by ($M=3.933$, $SD=0.923$). The overall mean score value for the organizational structure construct was 4.089 with a standard deviation of 0.740 . From this mean value, it can be deduced that on average, the examination coordinators agreed with most of the statements presented on organizational structure.

The findings suggested that public universities in Kenya had ensured the clarity and definition of the roles and responsibilities of various offices to a great extent. The institutions had also to a large extent developed and enforced formal behaviour rules and procedures besides clearly defining their reporting lines and mandates of key positions. These universities also had frameworks for warranting coordination and commitment of all departments across all their operations and also maintained optimal layers of authority to a large extent. The above findings support the views by Dale, Van Der Wiele, and Van Iwaarden (2007) that organizations considered the definition of roles and responsibilities as well as cross-functional teamwork and collaboration as important in the adoption and successful implementation of their quality management systems. The findings also reiterated the assertion by Vivancos and Cardoso (2010) that enhanced role, authority and responsibility definition and also formalization were crucial in the implementation of quality management systems.

4.4.5.2 Views on ISO 9001: 2015 QMS implementation, organizational structure and post-examination services delivery

The responses given by the examination coordinators regarding how their universities' organizational structures affected the link between the implementation of the institutions' ISO 9001: 2015 QMS and post examination service delivery are outlined in Figure 4.11.



Source: Field Data (2021)

Figure 4.11: Ways Organizational Structure Affects link between ISO 9001: 2015 QMS Implementation and Post Examination Services Delivery

As stated by 195 (87.1%) of the examination coordinators, organizational structure determined the level of bureaucracy during QMS implementation which in turn affected the speed of delivering examination service. Organizational structure, according to 187 (83.5%) of the examination coordinators, impacted the ease of communication both vertically and horizontally within the institutions which also influenced the level of coordination during the implementation of the universities' quality management systems. Approximately 170 (75.95) of the examination coordinators asserted that clarity of roles as part of the universities' organizational structures minimized role conflict in these institutions and as a result, responsibility and accountability when implementing quality management systems were improved. The study also established that optimal layers of authority within public universities ensured that all the relevant parties were accessible in matters pertaining to coordination and decision making when implementing quality management system as noted by 165 (73.7%) of the examination coordinators.

Proper reporting lines in these universities prevented unnecessary conflicts over roles and accountabilities during the implementation of quality management systems as highlighted by 151 (67.4%) of the examination coordinators. The organizational structure adopted by public universities also determined the level of employee focus and specialization which facilitated the smooth flow of activities and operations when implementing quality management systems as stated by 146 (65.2%) of the examination coordinators. Organizational structure also affected the extent to which university staff adhered to or complied with stipulated procedures during the implementation of quality management systems as maintained by 133 (59.4%) of the examination coordinators.

Others, 128 (57.1%) in number, reported that organizational structure in public universities influenced the level of staff support towards adequate implementation of quality management systems. About 104 (46.4%) of the examination coordinators further argued that organizational structure influenced departmental and system integration in these institutions which in turn enhanced coordination and efficiency during quality management system implementation while others 59 (26.3%) indicated that the level of hierarchical control in public universities affected the level of innovation towards quality management system implementation.

The above findings demonstrated that the organizational structure of public universities in Kenya affected the implementation of their quality management systems. These findings resonated with the observation by Krommuang and Suwunnamek (2015) that the right kinds of organizational structure such as few hierarchies of command affected the level of effectiveness in the implementation of QMS. The findings also supported the view by Wardhani, Utarini, van Dijk, Post and Groothoff (2009) success in the implementation of quality management systems was affected by organizational structure in an organization such as the level of bureaucracy and formalization.

4.4.6 Post Examination Services Delivery in Public Universities in Kenya

The study further assessed post examination service delivery in public universities based on a number of metrics. The views of the different examination process stakeholders were sought.

4.4.6.1 Examination coordinators' responses on post examination service delivery

The results presented in Table 4.11 reveal the extent to which the examination coordinators agreed or disagreed with eight statements in the post examination service delivery construct.

Table 4.11: Examination Coordinators’ Response on Post Examination Service Delivery

Statement	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Mean	Std. Dev.
The grades and certifications awarded to students are always fair and unbiased.	1.80%	6.20%	15.60%	49.60%	26.80%	3.933	0.913
The quality of exam results issued to students in the university is rarely questioned by students or any other university stakeholder.	1.80%	9.80%	21.90%	34.40%	32.10%	3.853	1.038
The number of petitions with regards to faulty grades has declined immensely.	1.80%	8.00%	22.30%	42.40%	25.40%	3.817	0.965
All students are always able to promptly and easily access their examination results once released.	1.80%	12.50%	18.80%	42.00%	25.00%	3.759	1.022
All complaints and anomalies related to students’ examination results once raised are addressed on time and in an objective and fair manner.	4.90%	7.60%	22.80%	45.10%	19.60%	3.670	1.032
Examination results in this university are always released to students on time.	5.80%	16.50%	12.10%	43.30%	22.30%	3.598	1.171
The production of reports, graduation lists, transcripts and certificates in this university is quick and devoid of errors.	5.40%	20.50%	25.90%	29.90%	18.30%	3.353	1.154
There has been no reported cases of missing student marks and scripts in this university.	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)

As shown in Table 4.12, the highest mean score value for the post examination service delivery construct was 3.933 while the lowest was 2.384. It was noted that on average, the examination coordinators agreed that in their institutions, the grades and certifications awarded to students by the university are always fair and unbiased ($M=3.933$, $SD=0.913$). The examination coordinators on average, also agreed that the quality of examination results issued to students in their universities were rarely

questioned by students or any other university stakeholder ($M=3.853$, $SD=1.038$). In the same vein, the examination coordinators on average agreed that the number of petitions per student with regards to faulty grades had declined immensely in their institutions ($M=3.817$, $SD=0.965$) and that all students in their respective institutions were always able to promptly and easily access their examination results once released ($M=3.759$, $SD=1.022$).

From the findings, it can also be observed that on average, the examination coordinators agreed that in their institutions, all complaints and anomalies related to students' examination results once raised were addressed on time and in an objective and fair manner ($M=3.670$, $SD=1.032$). The examination coordinators on average, further agreed that examination results in their universities were always released to students on time ($M=3.598$, $SD=1.171$). Nevertheless, the examination coordinators neither agreed or disagreed that the production of reports, graduation lists, transcripts and degree certificates in their universities was quick and devoid of errors ($M=3.353$, $SD=1.154$). The examination coordinators on average, also disagreed that there had been no reported cases of missing student marks and scripts in their universities ($M=2.384$, $SD=1.247$).

The composite mean value of 3.546 for the construct and its associated standard deviation 0.676 meant that on average, the examination coordinators agreed with most of the statements in the post examination services delivery construct. The findings suggested that post examination services delivery in public universities in Kenya was largely satisfactory from the viewpoint of the examination coordinators except for a few areas that pertained to the speed and accuracy in the production of reports, graduation lists, transcripts and degree certificates as well as the reported cases of missing marks. The view held by the examination coordinators was to a large extent supported by the interviewed deputy registrars (examinations), directors of QMS and PC and directors, quality assurance. It however, to a large extent, contradicted the view held by the sampled students who seemed to complain about the post examination service delivered by their departments/faculties as revealed in the subsequent subsections.

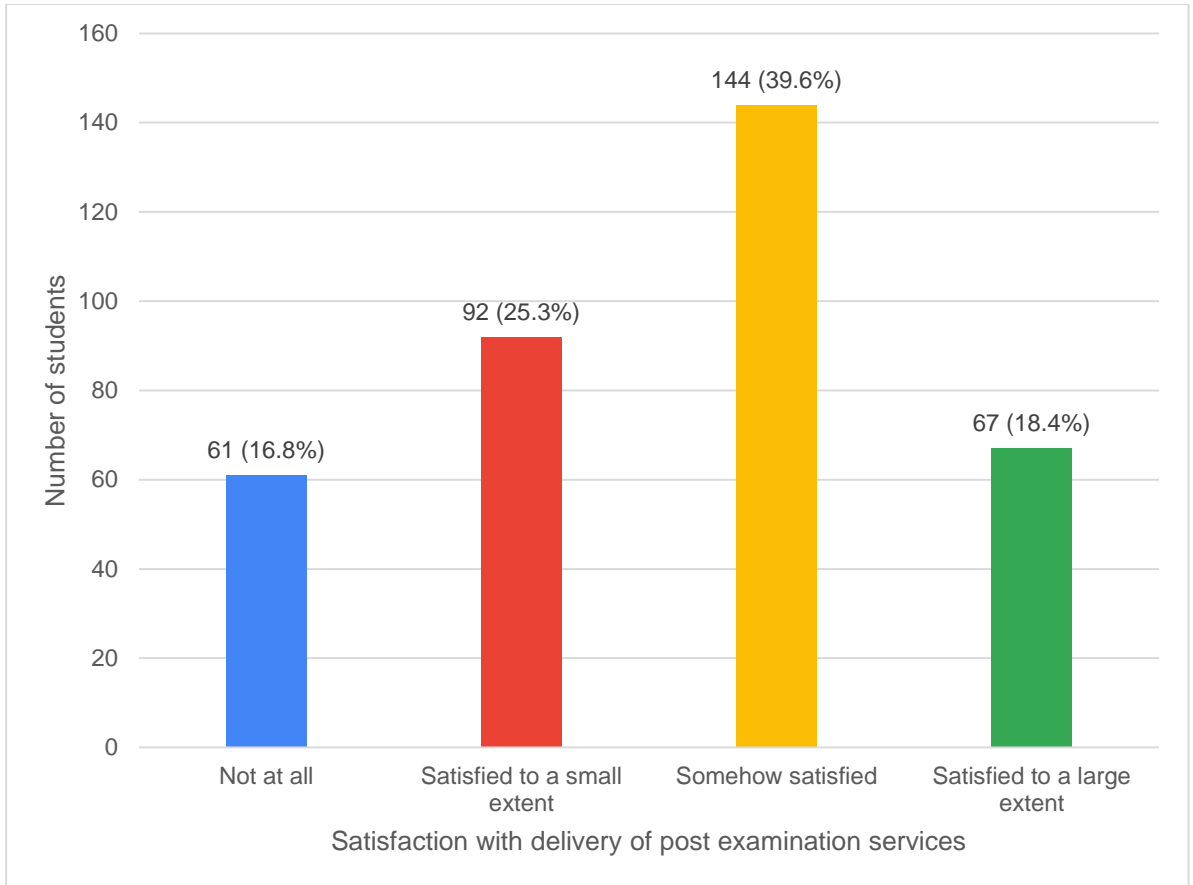
The views of the examination coordinators on post examination service delivery in public universities in Kenya appeared to largely contradict the observations made in

several existing studies conducted in the country such as Mwangi (2018), Domeniter et al. (2018), Kara, Tanui, and Kalai (2016), Mbirithi (2013), Kyenge (2011) and Eshiwani (2009) which showed that there were several concerns or issues surrounding the delivery of post examination service in several universities.

4.4.6.2 Students' level of satisfaction with post examination service delivery by their faculties/departments

The results presented in Figure 4.12 shows the level of students' satisfaction with how their faculties or departments delivered various post-examination service for instance, the processing of exam results and awarding of grades. The findings showed that 61 (16.8%) of the students were not at all satisfied with the delivery of these services, 92 (25.3%) were satisfied to a small extent, 144 (39.6%) of the students were somehow satisfied while the rest, 67 (18.4%) of the students noted that they were satisfied with the delivery of these services to a large extent. It can therefore, be deduced that the post examination service delivery in public universities in Kenya were not perceived or considered entirely satisfactory by most of the students. This can be attributed to 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 concerns also raised in several other studies such as Mwangi (2018), Mbirithi (2013) and Kyenge (2011).

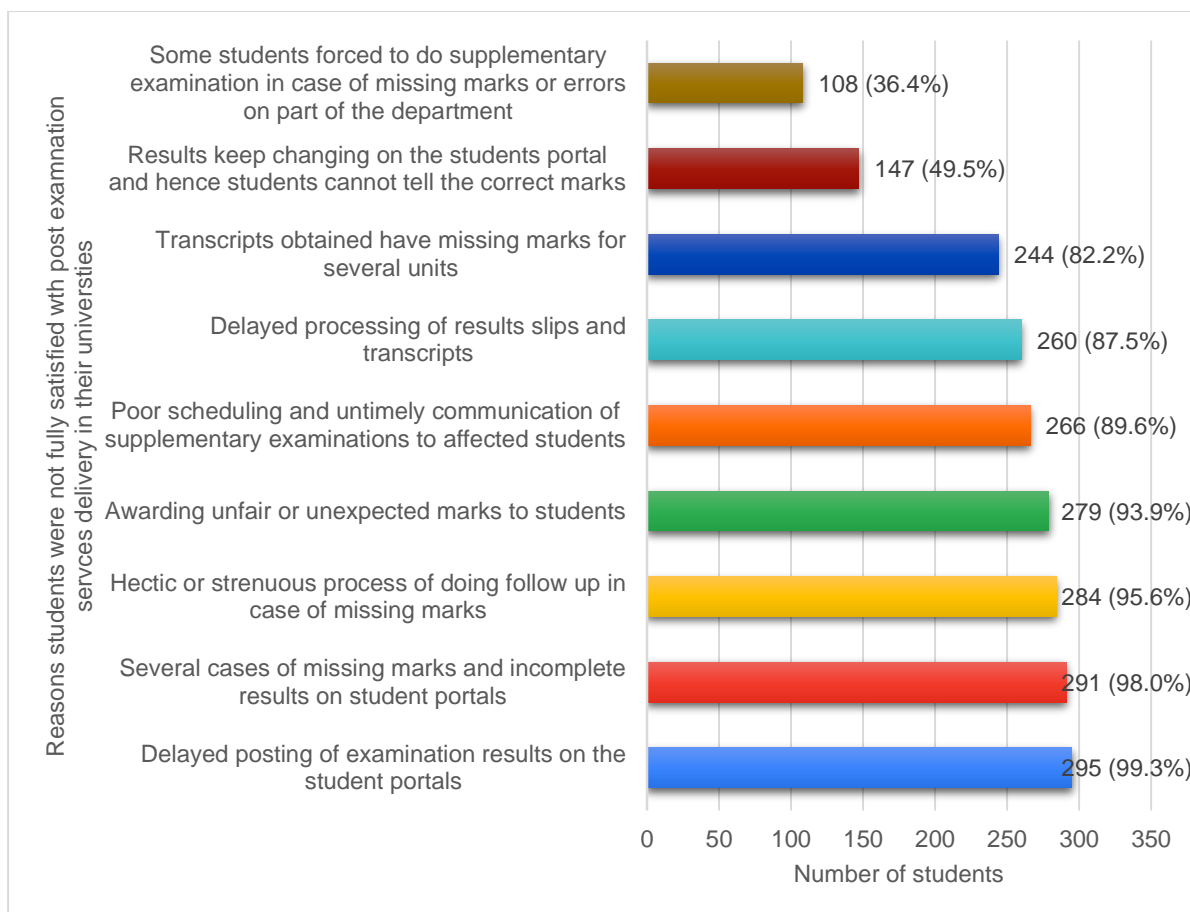
The findings also supported the study by Kara, Tanui, and Kalai (2016) which established that the reliability of university examination service was directly and significantly linked to students' satisfaction.



Source: Field Data (2021)

Figure 4.12: Students’ Satisfaction with Post Examination Service Delivery

The students’ explanations for their responses regarding the extent they were satisfied with post examination service delivered by their faculties or departments were also sought. The major highlights for the students not at all or not fully satisfied with these service are provided in Figure 4.13.



Source: Field Data (2021)

Figure 4.13: Reasons for why Students were Unsatisfied with Post Examination Service

According to 29 (99.3%) of the students, there was delayed posting of examination results on their universities' student portals. Some students noted that their first year examination results were not released until their fourth year in school. About 291 (98.0%) of the students decried that several cases of missing marks and incomplete results posted on their student portals was a key concern. Other students, 284 (95.6%) in number, indicated that the process of follow up on cases of missing marks in their institutions was hectic and strenuous. They explained that in most cases, it took long for the relevant lecturers to respond while other officers at the department were rude to the students. Consequently, in most cases, the queries related to missing marks were not addressed on time and hence, the students were forced to sit for supplementary examinations. Moreover, students had to spend much time moving up and down for their queries to be addressed.

Several students, 279 (93.9%), indicated that in most cases, students were awarded unfair or unexpected marks despite hard work. Many explained that at times, students believed they had done the examination well. Nonetheless, since the examination booklets were never returned, students could not do any follow up with their lecturers. Others believed that the examinations were partially or randomly marked and marks awarded in an inconsistent manner to students. Generally, a majority of the students expressed disappointment in the marks awarded to them in some units. It was also reported by 266 (89.6%) of the students that poor scheduling and untimely communication of supplementary examinations to affected students was a persistent issue in their universities.

Delayed processing of results slips and transcripts was highlighted by 260 (87.5%) of the students while 244 (82.2%) asserted that in most cases, the transcripts obtained did not capture the results for several units. It was also noted that by 147 (49.5%) of the students that students' examination results uploaded in the student portals kept on varying and hence students could not tell the correct marks. This increased panic among students. Others, 108 (36.4%), further decried that some students were forced to do supplementary examinations when actually their issues arose from cases of missing marks or errors on part of their departments or faculties. This is explained by the fact that the examination booklets were never returned and thus, there was no way of proving whether the need for a supplementary examination was justified or not.

The 67 (18.4%) students satisfied to a large extent with post examination service delivered by their faculties and departments on their part indicated their examination results were released on time and that there was fair moderation of marks. They also noted that their transcripts were provided at the end of each semester and given that results were posted online; they could easily print them. According to them, the marks awarded truly reflected students' performance and ability. These students argued that though perfection had not been achieved, they were okay with how their faculties and departments currently delivered post examination services.

The above findings suggested that there were several concerns pertaining to post examination service delivery in Kenyan public universities that needed to be addressed by the relevant examination offices in order to increase students' satisfaction with the services. This was necessary if the universities were to change the negative perception

that most students had of the post examination service delivered across the different departments and faculties. This is especially so where the students' concerns arose from a lapse on the part of the university staff or the examination management systems. These findings mirrored the observations made in several other studies that explored examination services delivery in universities including Mwangi (2018), Domeniter et al. (2018), Kara, Tanui, and Kalai (2016), Matovu (2014), Mbirithi (2013), Kyenge (2011), Gudo, Olel, and Oanda (2011) and Eshiwani (2009) regarding shortcomings in the delivery of post examination service in various universities.

4.4.6.3 Major students' complaints about post examination service delivery in public universities

The major concerns or complaints advanced by students pertaining to delivery of post examination service in public universities in Kenya are ranked in Table 4.12.

Table 4.12: Major Students' Complaints on Post Examination Service Delivery

Complaints	Frequenc y	Percenta ge
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)

The findings provided in Table 4.12 show that unsettled cases of missing marks was a leading complaint advanced by students as pointed out by 358 (98.4%) of the students. Delayed processing and release of results as well as unfair or inconsistent grades were reported by 353 (97.0%) and 344 (94.5%) of the students respectively. Poor handling of students with examination results related queries by relevant university staff was underlined by 340 (93.4%) of the students while delayed release of examination results slips and transcripts was reiterated by 316 (86.8%) of the students. The above findings meant that most students across the different departments and faculties in the public universities in Kenya were not satisfied with the very basic post examination service delivered in these institutions. This is contrary to the position held by the examination coordinators and key informants who believed that the services delivered in their

institutions were of the required standards expect for a few areas that needed improvement. From these findings, it can also be inferred that the very key quality objectives guiding post examination service in public universities in Kenya had not be successfully realized when assessed using the students' feedback. These findings were consistent with the observations made by several other studies such as Matovu (2014), Mwangi (2018), Amadin and Ukaoha (2014), Mbirithi (2013) and Kyenge (2011) that issues of misallocation of scores to students, late exam marking and submission, missing marks and delayed issuance and receipt of results transcripts and degree certificates among others were rampant challenges facing post examination processes in many universities.

4.4.6.4 Students' overall responses on post examination service delivery in Kenyan public universities

The findings presented in Table 4.13 further show how the students responded to several statements regarding post examination service delivery in their universities based on a five point Likert scale that ranged from 1= Strongly Disagree to 5= Strongly Disagree.

Table 4.13: Students' Overall Response on Post Examination Service Delivery

Statement	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Mean	Std. Dev.
All students are always able to promptly and easily access their examination results once released.	16.80%	29.10%	11.80%	24.50%	17.90%	2.975	1.387
The number of petitions per student with regards to faulty grades in this university has declined immensely.	19.00%	22.00%	28.60%	21.70%	8.80%	2.794	1.228
Examination results in this university are always released to students on time.	22.80%	21.40%	20.10%	26.90%	8.80%	2.775	1.304
The quality of exam results issued to students in the university is rarely questioned by students.	25.30%	18.70%	19.20%	28.00%	8.80%	2.764	1.334
The grades and certifications awarded to students by the university are always fair and unbiased.	22.30%	22.80%	23.90%	20.60%	10.40%	2.742	1.296
The production of results slips and transcripts in this university is quick and devoid of errors.	29.10%	25.30%	15.40%	20.30%	9.90%	2.566	1.354
All complaints and anomalies related to students' examination results once raised are addressed on time and in a fair manner.	34.90%	23.10%	16.50%	19.50%	6.00%	2.387	1.301
There has been no reported cases of missing student marks and scripts in this university.	59.90%	20.10%	5.80%	7.70%	6.60%	1.810	1.235
Composite mean and standard deviation						2.602	0.869
Valid n=364							

Source: Field Data (2021)

The study findings show that the highest mean score value obtained in this case was 2.975 while the lowest was 1.810. On average, the students neither agreed or disagreed that in their universities, all students were always able to promptly and easily access their examination results once released ($M=2.975$, $SD=1.387$). The students also on average, neither agreed or disagreed that the number of petitions per student with

regards to faulty grades in their universities had declined immensely ($M=2.794$, $SD=1.228$). The students on average neither agreed or disagreed that examination results in their universities were always released to students on time ($M=2.775$, $SD=1.304$) and that the quality of exam results issued to students in their universities were rarely questioned by students ($M=2.764$, $SD=1.334$).

The findings further showed that on average, the students neither agreed or disagreed that the grades and certifications awarded to students by their universities were always fair and unbiased ($M=2.742$, $SD=1.296$) and that the production of results slips and transcripts in their universities was quick and devoid of errors ($M=2.566$, $SD=1.354$). On the other hand, the students disagreed that in their universities, all complaints and anomalies related to students' examination results once raised were addressed on time and in a fair manner ($M=2.387$, $SD=1.301$). The students also disagreed that there had been no reported cases of missing student marks and scripts in their universities ($M=1.810$, $SD=1.235$). The overall mean of 2.602 and standard deviation of 0.869 implied that on average, the students neither agreed or disagreed with most of the statements presented on post examination service delivery and that although their responses were varied, they were clustered around the mean.

The general comments of Directors Quality Assurance and Directors QMS and PC on post examination services delivery in their universities were sought. All the four (4) directors of QMS and PC interviewed stated that their institutions had strived to ensure quality services and that their students were generally satisfied with the post examination service delivered. One of these directors asserted that: -

“All examinations are marked and results posted in the learners' management system in good time for the students to know whether they are progressing to the next level or not. The university has laid emphasis on zero tolerance to missing marks.”

As for the Directors, Quality Assurance, only one of the three interviewed noted that post examination service delivery in their institutions was okay. One of them noted that:

-

“Sometimes, our staff do not do what they are required to as per our policy guidelines. Likewise, some students do not know what they should do in case of missing marks. This leads to confusion and pressure and especially when the graduations are just around the corner.”

Regarding timeliness in the release of examination results, four out of the six deputy registrars (examinations) indicated that the release of examination results in their institutions was timely. The other two stated that the release of these results was at times not done on time. The study also noted that three of the deputy registrars (examinations) indicated that their students were able to easily and promptly access their examination results once released while the other three noted that this was not always the case in their institutions. When asked about missing student marks and scripts, all the deputy registrars (examinations) reported that cases of missing marks and scripts in their universities were very minimal or rare and when they did occur, it was mostly because of students' failure to register their units.

Pertaining to quality of examination results, four of the deputy registrars (examinations) indicated that the quality was average while the other two asserted that they found the quality of examination results in their institutions good or satisfying. With regards to how quick the production of reports, graduation lists, transcripts and degree certificates was, one of the deputy registrars (examinations) noted that the production took time, three stated that the production was relatively fast while two of the registrars stated that the production was promptly done as needed. One of these two stated that:

“Transcripts and degree certificates are printed to graduates on request at least one month after graduation date. Results slips are produced at the end of each semester.”

The study found that five out of the six deputy registrars (examinations) interviewed noted that in their institutions, there was security and ease in retrieving students' examination data when needed. Two of these attributed this to efficient ERP management systems in place in their institutions. The other deputy registrar, however, decried that retrieving students' examination data in their university was not easy and that the security of such data was minimal. When asked about the timeliness, objectivity and fairness when addressing complaints and anomalies related to students' examination results once raised, five of the deputy registrars indicated that all reported anomalies were taken seriously and dealt with on time. The other registrar on their part stated that: -

“Some cases were promptly addressed while others took time. Nonetheless, fairness was maintained when handling these cases.”

The above findings clearly suggested that there was a disconnect between the students' view of post examination service delivery in public universities and those held by the examination coordinators, the deputy registrars (examinations), directors of QMS and PC and directors, quality assurance. Overall, the students maintained that their departments and faculties did not deliver post examination services as per their expectations while the other examination process stakeholders involved in this study and who were university staff, believed that the delivery of these service was adequate except for a few concerns. The independent samples t-test findings presented in Table 4.14 confirmed that there were significant differences in the mean score values of students and examination coordinators regarding nature of post examination service delivery in public universities in Kenya given a significance (p) value of 0.000 in the lower row and which was less than 0.05.

Table 4.14: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed)	Mean Differenc e	Std. Error Differenc e	95% Confidence Interval of the Difference	
								Lower		Upper
Mean	Equal variances assumed	20.42 5	0.00 0	13.8 8	586	0.000	0.9441	0.068	0.810	1.077
	Equal variances not assumed			14.7 2	554.8 8	0.000	0.9441	0.064	0.818	1.070

Source: Field Data (2021)

Therefore, it was necessary for the relevant examination offices in the public universities in Kenya to take measures that could be used to change the students' perception of post examination service delivery across all departments and faculties in these institutions. As highlighted in previous sections, these findings mirrored the observations made in several other existing studies such as Mwangi (2018), Domeniter et al. (2018), Kara, Tanui, and Kalai (2016), Matovu (2014), Mbirithi (2013), Kyenge (2011), Gudo, Olel, and Oanda (2011) and Eshiwani (2009) and which pinpointed several shortcomings in post examination service delivery in various universities.

4.4.6.5 Measures to improve post examination service delivery in public universities

The students' suggestions regarding the actions their faculties or departments can take to increase students' satisfaction with post-examination service delivery are outlined in Table 4.15.

Table 4.15: Students Suggestions on Improvement of Post Examination Service Delivery

Suggested Measures	Frequency	Percentage
1. Adequate verification/ cross checking of recorded marks to avoid inconveniencing students with missing marks	352	96.7
2. Departments to constantly liaise with lecturers to ensure timely marking and posting of students' examination results	344	94.5
3. Timely and fair handling of students' examination related complaints by relevant department offices	333	91.5
4. Ensure results for all units covered in an academic year are captured in the transcripts issued	331	90.9
5. Awarding fair marks to students	327	89.8
6. University to enforce team work, professionalism and customer focus in all departments	311	85.4
7. Deliver marked examination booklets to students for transparency	293	80.5
8. Adequate students' examination records keeping to reduce missing marks and for easier follow up on queries raised	270	74.2
9. Upgrade university examination system and in particular, the technology used in processing examination results for easier access and reflection	255	70.1
10. Release temporary results so that students can countercheck with those approved by university senates	239	65.7
11. Hold regular meetings/forums with students that highlight and address or resolve students' concerns	228	62.6
12. Have a functional well-staffed unit in each department that can handle student examination results' related queries	220	60.4
13. Conduct regular students' satisfaction surveys	205	56.3
14. Ensure resits and special examination should be administered and marked on time	181	49.7

15	Take disciplinary action on university staff who fail to adequately address students' grievances related to examinations	147	40.4
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Source: Field Data (2021)

The findings presented in Table 4.16 show that 352 (96.7%) of the students emphasized on adequate verification/ cross checking of recorded marks to avoid missing marks related inconveniences. About 344 (94.5%) of the students noted that it was necessary for their departments to constantly liaise with lecturers to ensure timely marking and posting of students' examination results. The students who called for timely and fair handling of students' examination related complaints by relevant department offices were 333 (91.5%). Other students, 331 (90.9%) in number, indicated that their faculties/departments should ensure that results for all units covered in an academic year were captured in the transcripts issued while 327 (89.8%) stated that fair marks should be awarded to students.

It was argued by 311 (85.4%) of the students that universities' managements should enforce team work, professionalism and customer focus in all departments while 293 (80.5%) found it important for marked examination booklets to be delivered to students to enhance transparency. Adequate students' examination records keeping to reduce missing marks and for easier follow ups on queries raised was proposed by 270 (74.2%) of the students. On the other hand, the upgrading of university examination systems and in particular, the technology used in processing students' examination results for easier access and reflection was suggested by 255 (70.1%) of the students. This was also seen as a means of enhancing the stability of student portals so that students' marks already posted are not altered. The study also discovered that 239 (65.7%) of the students called for release of temporary results so that students could countercheck with those approved by university senates.

Holding regular meetings/forums with students to highlight, address or resolve students' post examination service concerns was suggested by 228 (62.6%) of the students. A considerable number of students, 220 (60.4%), noted that having in place a functional well-staffed unit in each department that could handle student examination results' related queries would be helpful. Carrying out regular students' satisfaction surveys and ensuring that resits and special examinations were administered and marked on time were suggestions given by 205 (56.3%) and 181 (49.7%) of the students. About

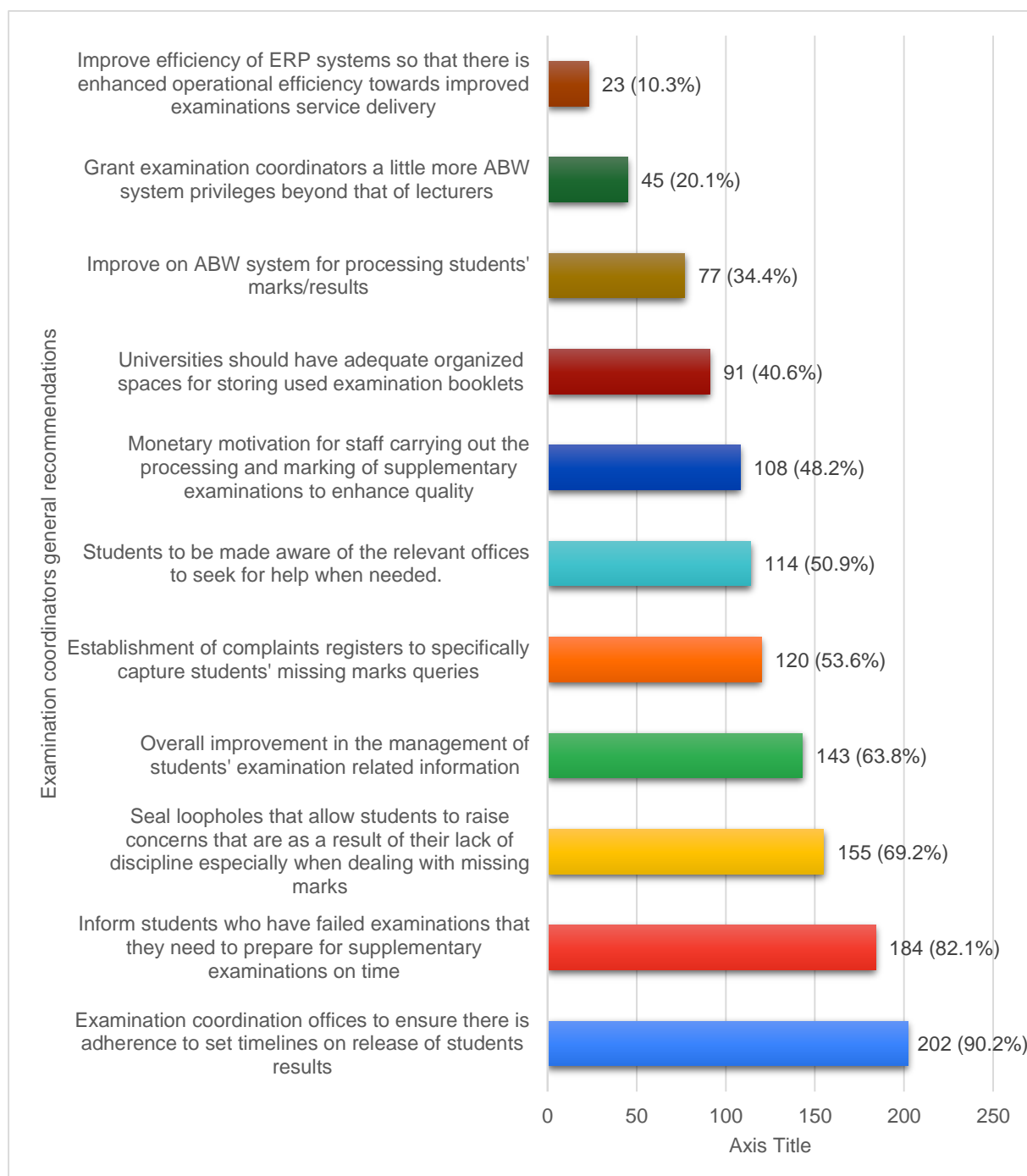
147 (40.4%) of the students further stated that disciplinary action on university staff who failed to adequately address students' grievances related to examinations was of great importance.

The above findings implied that there were several measures that could be undertaken by the relevant university staff to improve the delivery of post examination services in public universities in Kenya. The findings also demonstrated that most of the recommendations by the students revolved around issues that were already captured on the examinations information handbooks of these universities. This observation is evidently reflected in the quality objectives guiding post examination services delivery in these institutions as highlighted by the examination coordinators (see Table 4.6). Hence, it can be suggested that there was a need for strict adherence of the laid down procedures, requirements and regulations on examinations in Kenyan public universities by both the students and relevant university staff as their concerted efforts led to a successful examination process.

The above observation was well aligned with the assertion by Bhardwaj and Singh (2011) that university examination processes were normally carried out as per established statutes and procedures that needed to be upheld by the relevant university personnel. The findings also supported the assertion by Amadin and Ukaoha (2014) that the need for students to have access to their examination results on time and accurately cannot be overemphasized. The findings also affirmed the conclusion by Afolabi and Ojeyinka (2015) that examination results needed to be released to students on to enable them know their performance in the various courses written so that the students would know what courses they failed in order to retake the exams.

The findings of this study were also consistent with the recommendation by Omilabu et al. (2015) that there was need for increased automation of results processing immediately after examinations in universities so as to reduce any form of complexity that may arise as a result of its delay. The findings were in line with the argument by Shraim (2019) that marking times specified by universities needed to be adhered to so as to allow for increased feedback to students at times when it would be most effective. The findings further supported the views by Kanwar and Sanjeeva (2022) and Razinkina et al. (2018) who found that student satisfaction surveys were a means of quality monitoring and improvement in innovative higher education institutions.

The examination coordinators' general recommendations on the issues under study are captured by the findings presented in Figure 4.14.



Source: Field Data (2021)

Figure 4.14: Examination Coordinators' General Recommendations

As revealed by the findings presented in Figure 4.14, about 202 (90.2%) of the examination coordinators suggested that it was vital for examination coordination offices in their institutions to ensure set timelines on release of students' examination

results were adhered to. It was emphasized by 184 (82.1%) of the examination coordinators that students who failed examinations should be informed that they needed to prepare for supplementary examinations on time. This would go a long way in reducing the backlog of pending supplementary examinations. Sealing the loopholes allowed students to raise concerns that were as a result of their personal lack of discipline especially when dealing with missing marks was recommended by 155 (69.2%) of the examination coordinators. They highlighted that many students did not comply with the policy barring students who had not cleared their school fees from sitting for examinations. Other students did not register their units while others never checked their results once out and waited until near the graduation dates where issues in units undertaken in their first year were noted. Some students according to the examination coordinators also failed to sit for their CAT examinations which made the processing of their results difficult.

Overall improvement in the management of students' examination related information and establishment of complaints registers to specifically capture students' missing marks queries were proposed by 143 (63.8%) and 120 (53.6%) of the examination coordinators respectively. Several examination coordinators, 114 (50.9%), mentioned that it was important that students were made aware of the relevant offices to seek for examination related help when needed. Others, 108 (48.2%) in number, argued that monetary incentives or motivation for staff carrying out the processing and marking of supplementary examinations was needed to enhance the quality of the results. Adequate organized spaces for storing used examination booklets and improved ABW system for processing students' marks/results were suggested by 91 (40.6%) and 77 (34.4%) of the examination coordinators. Granting examination coordinators more ABW system privileges beyond that of lecturers and improved efficiency of ERP systems to enhance operational efficiency towards improved examinations service delivery were further recommended by 45 (20.1%) and 23 (10.3%) of the examination coordinators respectively.

From the key informant interview responses, all the deputy registrars (examinations) called for the extension of the examination marking and results processing period. They also noted that it was necessary that continuous training of staff on the importance of the ISO 9001:2015 QMS besides ensuring that there are part and parcel of the QMS implementation process. Continuous sensitization of staff as a way of ensuring

efficiency in post examinations service delivery was suggested by one of the Directors of QMS and PC. They emphasized on proper induction of new members of staff noting that: -

“The directorate should hold sensitization at least twice per year. Most of the staff especially the lecturers do not have adequate background in ISO 9001:2015 QMS and hence, have poor attitude towards the system. Therefore, there is need for them to be sensitized of the importance of the system.”

According to another director of QMS and PC, strict adherence to audit schedules would ensure that the stipulated procedures are followed and service conformity enhanced. It was emphasized by another director of QMS and PC that universities should ensure that non-conformities raised are addressed and follow up done through adequate monitoring. Moreover, the relevant examination offices should follow up with the university management to ensure that requests for resources are fulfilled to facilitate the smooth flow of examination activities. One of the directors of quality assurance on their part noted that every process in the universities should be defined and ISO 9001:2015 quality management procedures followed in order to check whether non-conformities have been dealt with. Another director of quality assurance argued that it was important that university management ensured that staff were working as required by holding them accountable for their actions. They explained that: -

“In many cases, the staff may be holding several positions, for instance, director, lecturer and researcher extra. Consequently, some areas may not be given priority and thus, staff may overlook such areas.”

From the above findings, it can be noted that most of the suggestions to improve post examination service in Kenyan public universities as given by examination coordinators were aspects already embedded in the university guidelines on examinations and also the quality objectives guiding post examination service as depicted in Table 4.6. This implied that with strict adherence to those guidelines and objectives along with other measures such as motivating staff and improving supporting systems, there would be enhanced post examination service in public universities in Kenya. These findings are a reflection of the expectations on post examination service highlighted in various studies as Onias and Gudhlanga (2012), Sarrayrih and Ilyas (2013), and Ray et al. (2018).

4.5 Diagnostic Tests

A number of diagnostic tests were conducted to ensure that the models fitted in this study were correctly specified using unbiased, efficient and consistent parameter estimates and that the necessary model assumptions were adhered to. The normality, multicollinearity and linearity tests were carried out.

4.5.1 Test for Normality

The normality of the data on establishment of quality objectives, resource allocation, internal quality auditing and continual improvement as per ISO 9001: 2015 QMS, organizational structure and post examination service delivery in Kenyan public universities was checked using Shapiro-Wilk results presented in Table 4.16. Since the significance (p) values for the variables were greater than 0.05, it was inferred that the data for all the variables followed a normal distribution.

Table 4.16: Normality Test Results

Variable	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Establishment of quality objectives	0.117	22	0.20	0.965	22	0.43
		4	0		4	0
		22	0.09		22	0.17
Resource allocation	0.150	4	3	0.949	4	4
		22	0.20		22	0.27
Internal quality auditing	0.116	4	0	0.936	4	7
		22	0.13		22	0.63
Continual improvement	0.144	4	0	0.973	4	6
		22	0.14		22	0.14
Organizational structure	0.163	4	7	0.925	4	1
Post examination services delivery	0.152	22	0.08		22	0.22
		4	7	0.954	4	7

Source: Field Data (2021)

4.5.2 Test for Multicollinearity

Multicollinearity is commonly defined by Gujarati (2012) as a condition in which the independent or explanatory variables in a study are strongly correlated or associated making it hard for one to accurately predict or determine the impact that a specific explanatory variable has on the dependent study variable. Thus, the study tested the assumption that the independent variables considered in this study were not strongly correlated with each other. Variance Inflation Factor (VIF) results presented in Table

4.16 were used since they were more conclusive when likened to Pearson correlation coefficients. VIF values ranging from 1 to 5 were a sign that multicollinearity did not exist in the dataset and the opposite is true. The findings showed that the data used in this study did not suffer from multicollinearity since the VIF values for all the variables were within the range of 1 and 5.

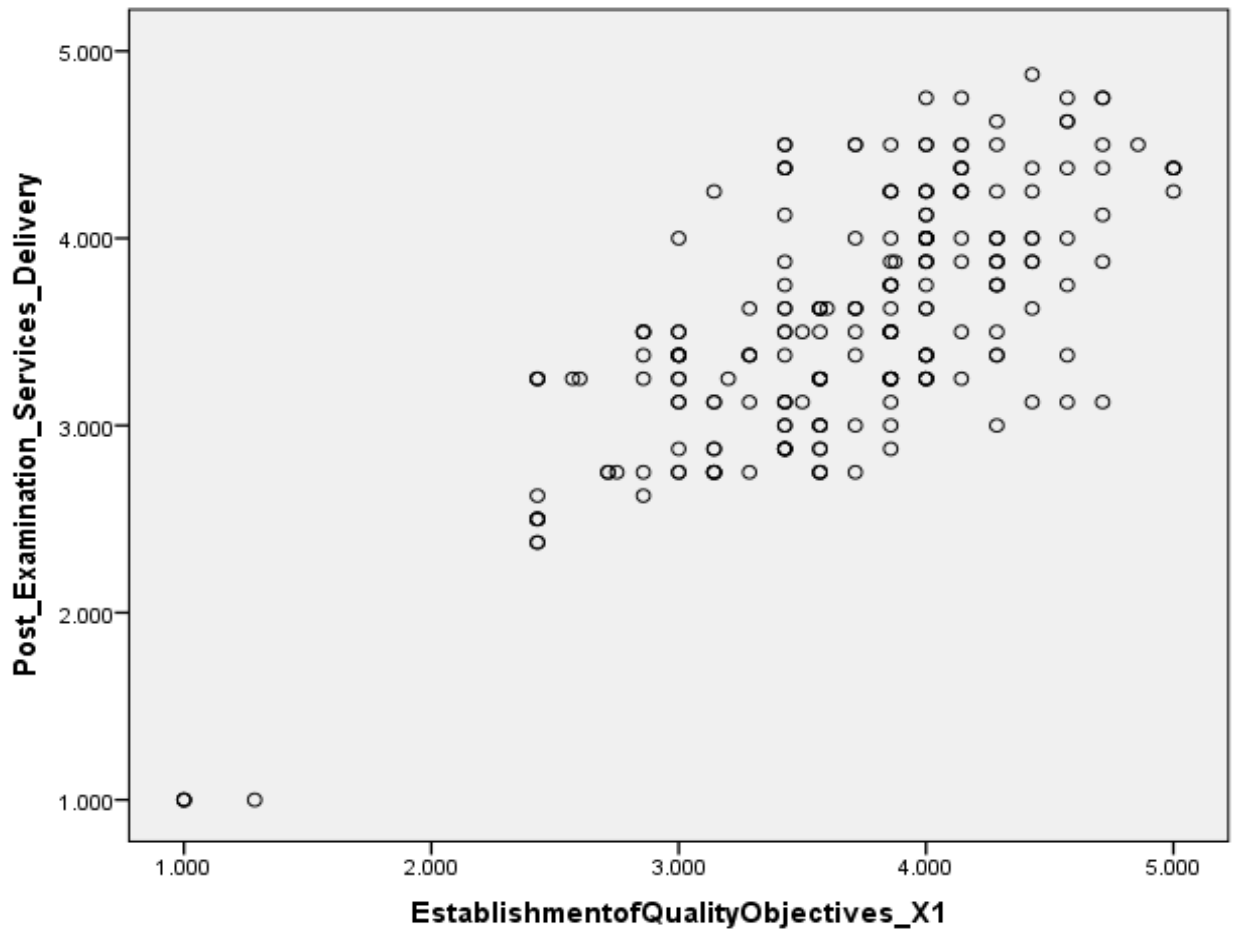
Table 4.17: Collinearity Statistics

Independent Variables	Tolerance (1/VIF)	VIF
Establishment of quality objectives (X ₁)	0.432	2.314
Resource allocation (X ₂)	0.442	2.262
Internal quality auditing (X ₃)	0.424	2.360
Continual improvement (X ₄)	0.403	2.478
Mean		2.354

Source: Field Data (2021)

4.5.3 Tests of Linearity

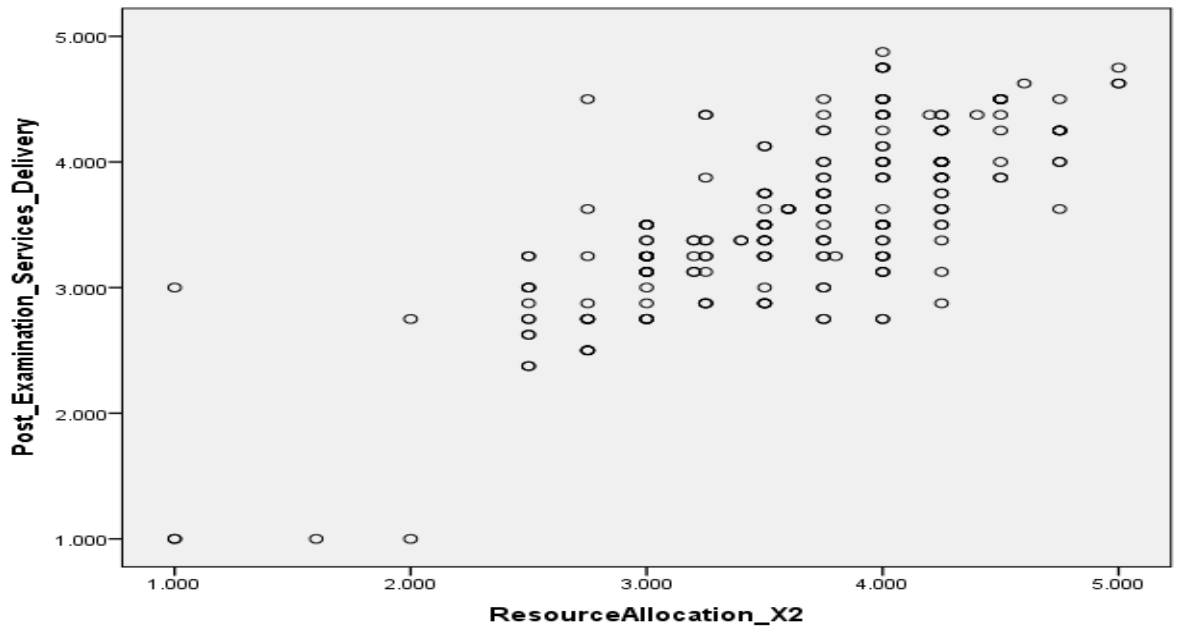
Linearity tests using scatter plot diagrams were used to check whether linear relationships existed between the establishment of quality objectives, resource allocation, internal quality auditing and continual improvement as per ISO 9001: 2015 QMS and post-examination service delivery in public universities in Kenya. These tests were vital since a standard linear regression model could only accurately estimate the relationship between dependent and explanatory variables if the relationships were linear in nature (Orngreen & Levinsen, 2017). The scatter plots of the relationship between the dependent and independent variables are displayed in Figures 4.15, 4.16, 4.17 and 4.18.



Source: Field Data (2021)

Figure 4.15: Scatter Plot for the Relationship between Establishment of Quality Objectives as per the ISO 9001:2015 QMS and Post Examination Service Delivery

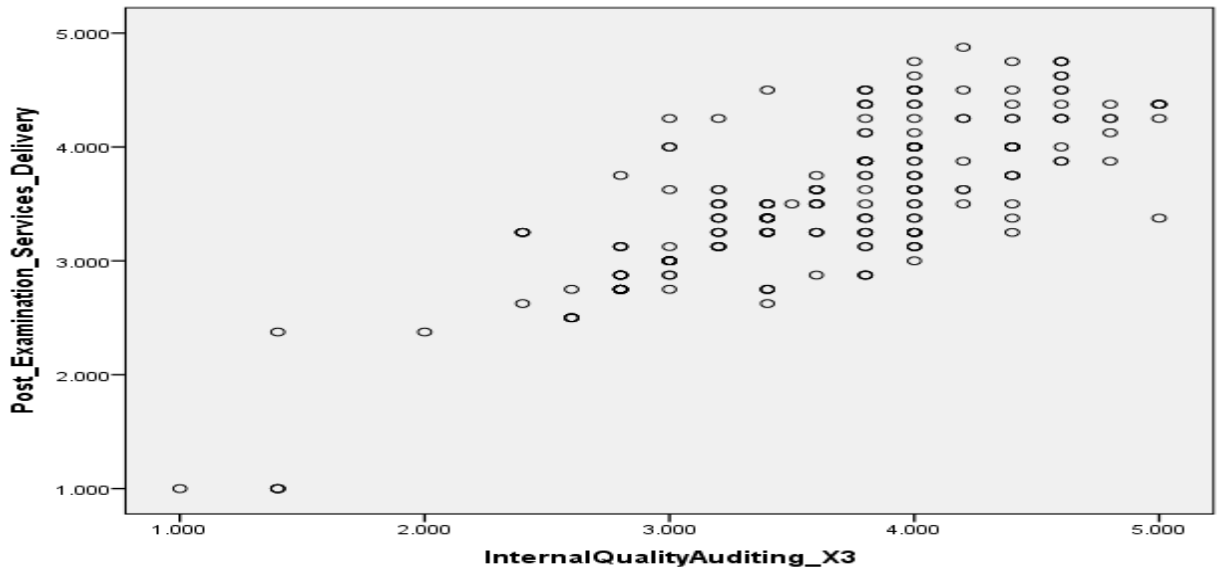
From the findings presented in Figure 4.15, it was deduced that a positive linear relationship existed between post examination service delivery in public university in Kenya and the establishment of quality objectives as per the ISO 9001: 2015 quality management system. This is because the data points seemed to fairly follow a straight trend line right from the origin out to high x-and y-values. The arrangement of the data points generally took an oval shape. The scatterplot diagram presented as Figure 4.16 also demonstrates that a fairly positive linear relationship existed between post examination service delivery in Kenyan public universities and resource allocation as per the ISO 9001: 2015 QMS. This is because the data points also tended to assume an oval shape.



Source: Field Data (2021)

Figure 4.16: Scatter Plot for the Relationship between Resource Allocation as per the ISO 9001:2015 QMS and Post Examination Service Delivery

From the scatter plot diagram presented as Figure 4.17 below, it was inferred that there was a positive linear relationship between post examination service delivery in public universities in Kenya and internal quality auditing as required under the ISO 9001: 2015 QMS.



Source: Field Data (2021)

Figure 4.17: Scatter Plot for the Relationship between Internal Quality Auditing as per the ISO 9001:2015 QMS and Post Examination Service Delivery

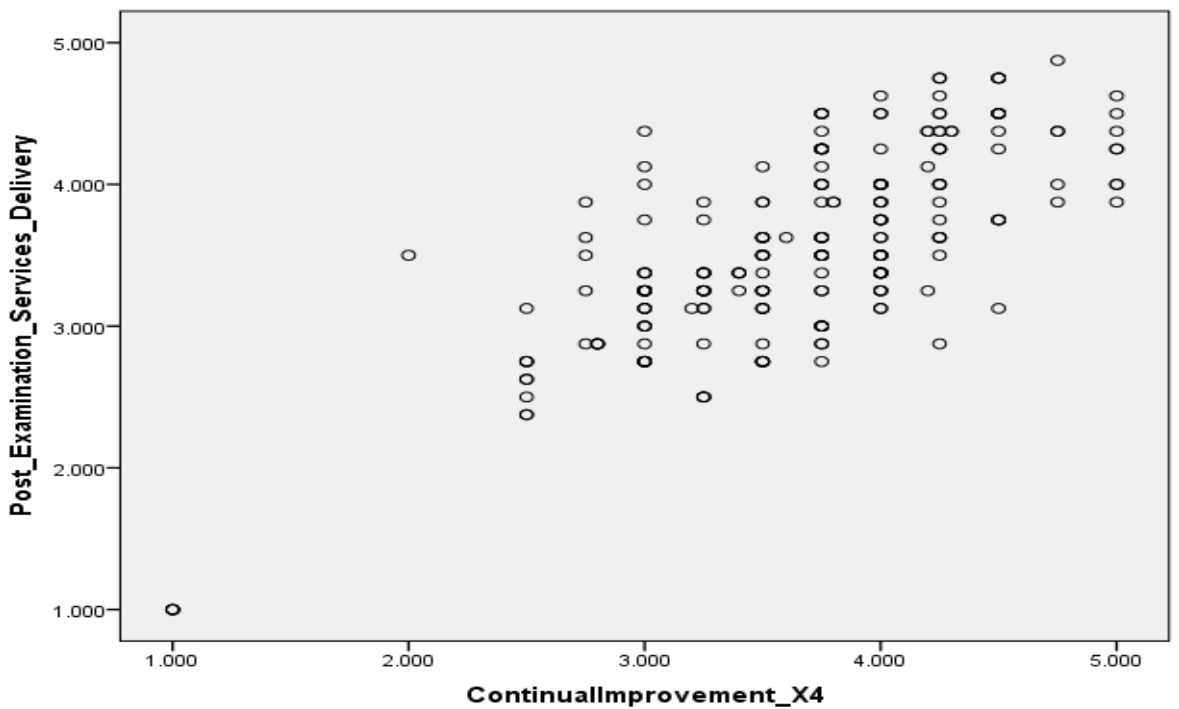


Figure 4.18: Scatter Plot for the Relationship between Continual Improvement as per the ISO 9001:2015 QMS and Post Examination Service Delivery

The study also found that a positive linear relationship existed between post examination service delivery in public universities in Kenya and continual improvement as per the ISO 9001: 2015 QMS as illustrated by the scatterplot provided as Figure 4.18. The linearity test results generally show that the data used exhibited a linear pattern and hence, linear regression modelling to show the link between post examination service delivery in public universities in Kenya and ISO 9001: 2015 quality management system implementation was justified.

4.6 Correlation Analysis

In order to determine whether there was significant association or correlation between establishment of quality objectives, resource allocation, internal quality auditing, continual improvement, organizational structure and post-examination service delivery in public universities in Kenya, Pearson's correlation analysis was conducted. The strength and direction of association between these variables was determined by checking the value and sign of the Pearson correlation coefficients respectively. The significance of the correlations was assessed by examining the significance or probability (p) values corresponding to the Pearson correlation coefficients that were computed. The critical p value was set at 0.05 level of significance (that is, 95% confidence level) and a calculated p value less than 0.05 indicated that the correlation was significant, otherwise, insignificant.

In interpreting the magnitude of the correlation between the variables, a criteria recommended by Sedgwick (2012) was used. According to Sedgwick, correlation coefficients ranging from .00 to 0.19 demonstrated very weak correlation, values ranging from 0.20 to 0.39 indicated weak correlation, coefficients ranging from 0.40 to 0.59 pointed to moderate correlation, while correlation coefficients ranging from 0.60 to 0.79 and 0.80 to 1.00 indicated that the correlation between variables was strong and very strong respectively. Table 4.18 contains the correlation test results.

Table 4.18: Correlation Test Results

		Post examination services delivery	Establishment of Quality Objectives	Resource Allocation	Internal Quality Auditing	Continual Improvement	Organizational Structure
Post examination services delivery	Pearson Correlation	1					
	Sig. (2-tailed)						
Establishment of Quality Objectives	N	224					
	Pearson Correlation	.734**	1				
Resource Allocation	Sig. (2-tailed)	0.000					
	N	224	224				
Internal Quality Auditing	Pearson Correlation	.749**	.640**	1			
	Sig. (2-tailed)	0.000	0.000				
Continual Improvement	N	224	224	224			
	Pearson Correlation	.778**	.669**	.665**	1		
Organizational Structure	Sig. (2-tailed)	0.000	0.000	0.000	0.000		
	N	224	224	224	224	224	
	Pearson Correlation	.754**	.685**	.676**	.675**	1	
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		
	N	224	224	224	224	224	
	Pearson Correlation	.793**	.646**	.647**	.688**	.642**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	
	N	224	224	224	224	224	224

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

Source: Field Data (2021)

The study noted that the correlation between the establishment of quality objectives as per the ISO 9001:2015 QMS and post examination services delivery in public universities in Kenya was positive, strong and significant as illustrated by $r=.734$ and $p=0.000$. These findings supported the assertion by Mutuku and Kisimbii (2017) that improved service delivery in ISO 9001 certified public universities in Kenya relied on the extent the set quality objectives were achieved. The findings also resonated with those of Waweru, Odero and Buigutt (2020) which demonstrated that the formulation of guiding quality objectives was among the measures that improved service delivery in educational academic institutions.

Resource allocation as per the ISO 9001:2015 QMS and post examination services delivery in public universities in Kenya were also positively and significantly correlated as demonstrated by $r=.749$ and $p=0.000$. The value of the correlation coefficient also

showed that the correlation between these two variables was strong. These findings were consistent with the finding by Hussein et al. (2017) that resource allocation in higher education institutions implementing ISO 9001:2015 QMS improved the academic services delivered.

The study also found that the correlation between internal quality auditing as per the ISO 9001:2015 QMS and post examination service delivery in public universities in Kenya was positive, strong and significant. This finding was supported by $r=.778$ and $p=0.000$. These findings echoed the argument by Kaziliūnas (2010) and Karapetrovic (2010) that internal quality auditing enhanced service delivery in organizations. The findings, however, did not support the finding by Boiyon, Manduku, and Rotumoi (2020) that internal quality audits in ISO 9001 certified public universities in Kenya had weak effect on the services delivered in these institutions.

Continual improvement as per the ISO 9001:2015 QMS was also positively, strongly and significantly correlated with post examination service delivery in public universities in Kenya given $r=.754$ and $p=0.000$. These findings supported the assertion by Thalner (2015) that continuous improvement in higher education institutions enhanced efficiencies in different processes and this boosted the quality of service delivered. The study further established that organizational structure and post examination service delivery in public universities in Kenya were positively and significantly correlated. The correlation was also deemed strong as shown by $r=.793$ and $p=0.000$.

Overall, these findings suggested that ISO 9001:2015 QMS implementation, organizational structure and post examination service delivery in public universities in Kenya changed in the same direction. Thus, the association between establishment of quality objectives, resource allocation, internal quality auditing and continual improvement as per the ISO 9001:2015 QMS, organizational structure and post-examination service delivery in public universities in Kenya was positive, strong and significant. These findings supported the findings by Basir et al. (2017) and Mekic and Göksu (2014) that ISO 9001 QMSs had positive impact on the quality of educational services provided in higher education institutions. The findings, however, contradicted the observation by Absah, Rini, and Sembiring (2019) that the implementation of QMSs did not guarantee the delivery of quality services in higher education institutions.

4.7 Regression Analysis and Hypothesis Testing

Having found that all the independent variables were significantly associated with post-examination service delivery in public universities in Kenya, regression analysis was conducted to determine the nature of the relationship that existed between these variables. Determining the relationship between the independent variables and the dependent variable was vital since it made it possible to quantify the effect that each of the aspects of ISO 9001:2015 quality management system implementation considered in this study had on post-examination service delivery in public universities in Kenya.

The individualized effect of the establishment of quality objectives, resource allocation, internal quality auditing and continual improvement as per the ISO 9001:2015 QMS on post-examination service delivery in public universities in Kenya was determined by carrying out bivariate regression analyses. These bivariate regression analyses revealed the isolated effect of each of the aspects of ISO 9001:2015 QMS implementation considered in this study on post-examination service delivery in public universities in Kenya. These bivariate regression analyses also formed the basis for hypothesis testing in this study.

A multiple regression analysis was also conducted to show the combined or joint effect of the establishment of quality objectives, resource allocation, internal quality auditing and continual improvement as per the ISO 9001:2015 QMS on post-examination service delivery in public universities in Kenya. Step wise regression analysis was further conducted to test the moderating effect of organizational structure on the relationship between ISO 9001:2015 QMS implementation and post-examination service delivery in public universities in Kenya. All inferences in this case were also made at the 0.05 level of significance.

4.7.1 Establishment of Quality Objectives and Post-Examination Services Delivery

The study sought to analyse how the establishment of quality objectives as per the ISO 9001:2015 quality management system affected post-examination service delivery in public universities in Kenya. A bivariate regression analysis was conducted to quantify the effect that the establishment of quality objectives had on post-examination service delivery in these institutions. The following null hypothesis was stated and tested: -

H₀₁: Establishment of quality objectives as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya.

The bivariate regression analysis yielded the regression coefficient results as follows.

Table 4.20: Significance of Regression Coefficient for Establishment of Quality Objectives

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.893	0.168		5.329	0.000
	Establishment of quality objectives (X ₁)	0.723	0.045	0.734	16.105	0.000

a Dependent Variable: Post-examination service delivery in public universities in Kenya

Source: Field Data (2021)

The estimated regression coefficient presented in Table 4.20 and the associated significance value were used to determine the nature and significance of the effect of establishment of quality objectives on post-examination service delivery in public universities in Kenya. A significance value less than 0.05 pointed to significant effect, otherwise, insignificant. From the findings obtained, it can be inferred that the establishment of quality objectives as per the ISO 9001:2015 QMS positively and significantly affected post-examination service delivery in public universities in Kenya. This finding was supported by ($\beta = 0.723$, $t = 16.105$, $p = .000$). These findings meant that holding all other factors constant, a unit increase in the establishment of quality objectives as per the ISO 9001:2015 QMS would lead to enhanced post-examination service delivery in public universities in Kenya by 0.723 units. Therefore, since the t statistic calculated was greater than 1.96 and the p value was less than 0.05, the null hypothesis was rejected and a conclusion made that the establishment of quality objectives as per the ISO 9001:2015 quality management system significantly affected post-examination service delivery in public universities in Kenya. With the estimated regression coefficient results, the following model was fitted;

$$Y = 0.893 + 0.723 X_1$$

Where; Y = Post-examination service delivery in public universities in Kenya and X_1 = Establishment of quality objectives as per the ISO 9001:2015 quality management system

The above findings were consistent with that of Magutu et al. (2010) who found that quality objectives enabled educational institutions in Kenya to be centres of excellence by guarding against any flawed outputs from its services and activities. The study findings also agreed with the observation by Osumba (2014) that chartered universities in Kenya took cognizance of the prominence of quality objectives in the delivery of quality standardized services across all their operations. The findings also reinforced the argument by Mutuku and Kisimbii (2017) that improved service delivery in ISO 9001 certified public universities in Kenya was contingent on the extent university staff were supported to achieve the set quality objectives. The above findings also affirmed the finding by Waweru, Odero and Buigutt (2020) that the formulation of guiding quality objectives was among the measures that academic institutions adopted to improve service delivery and student satisfaction as these quality objectives led to improved processes and set directions for continuous improvement. The findings also affirmed the finding by Abdul-Aziz and Azizan (2014) that the realization of quality objectives set at various functional levels of an organization was directly linked to the provision of high-quality services.

4.7.2 Resource Allocation and Post-Examination Service Delivery

The study also sought to explore how resource allocation as per the ISO 9001:2015 quality management system affected post-examination service delivery in public universities in Kenya. To achieve this objective, bivariate regression analysis was undertaken. The following null hypothesis was tested: -

***H₀₂:** Resource allocation as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya.*

Table 4.21: Significance of Regression Coefficient for Resource Allocation

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.957	0.157		6.107	0.000
Resource allocation (X ₂)	0.715	0.043	0.749	16.824	0.000

a Dependent Variable: Post-examination service delivery in public universities in Kenya

Source: Field Data (2021)

The regression coefficient results provided in Table 4.21 showed that resource allocation as per the ISO 9001:2015 QMS had a significant positive effect on post-examination service delivery in public universities in Kenya since ($\beta = 0.715$, $t = 16.824$, $p = .000$). These findings meant that when all other factors were held constant, increasing the level of resource allocation as per the ISO 9001:2015 quality management system by one unit would result to enhanced post-examination service delivery in Kenyan public universities by 0.715 units. Since the calculated t statistic was greater than 1.96 and the p value was less than 0.05, the null hypothesis that resource allocation as per the ISO 9001:2015 quality management system did not significantly affect post-examination service delivery in public universities in Kenya was rejected. The bivariate model fitted after obtaining the regression estimates in this case is illustrated by the following regression equation: -

$$Y = 0.957 + 0.715 X_2$$

Where; Y = Post-examination service delivery in public universities in Kenya and X_2 = Resource allocation as per the ISO 9001:2015 quality management system

The above study findings were in line with the observation by Bichanga and Kimani (2013) who with reference to ISO 9001: 2008 certified public universities in Kenya, noted that increased and consistent resource allocation in these institutions enabled improved service delivery by supporting the execution of different tasks and the achievement of quality objectives. The findings were also congruent with that of Kandie (2019) who also while referring to ISO 9001: 2008 certified Kenyan universities discovered that adequate resource allocation in the implementation of quality management systems facilitated the delivery of improved, quality and reliable academic services which led to reduced student complaint rates. The study findings were also

found to be coherent with the finding by Chiarini (2015) that the timely provision of the requisite resources enabled universities to improve their academic processes and to implement actions which led to reduced cases of nonconformity in as far as the delivery of their academic services were concerned. The findings further supported the conclusion by Hussein et al. (2017) that resource allocation in higher education institutions implementing ISO 9001:2015 QMS improved the academic service delivered by minimizing the inefficiencies that were likely to affect the quality of these services.

4.7.3 Internal Quality Auditing and Post-Examination Service Delivery

The study examined how internal quality auditing as per the ISO 9001:2015 quality management system affected post-examination service delivery in public universities in Kenya. A bivariate regression analysis was carried out where the following null hypothesis tested: -

H0₃: Internal quality auditing as per the ISO 9001:2015 QMS does not significantly affect post-examination service delivery in public universities in Kenya.

Table 4.22: Significance of Regression Coefficient for Internal Quality Auditing

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.884	0.147		6.016	0.000
Internal quality auditing (X ₃)	0.731	0.040	0.778	18.465	0.000

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

Source: Field Data (2021)

The regression estimates provided in Table 4.22 showed that post examination service delivery in public universities in Kenya was positively and significantly affected by the level of internal quality auditing as per ISO 9001: 2015 quality management system given ($\beta = 0.731$, $t = 18.465$, $p = .000$). When all other factors were held constant, increased internal quality auditing as per the ISO 9001: 2015 QMS requirements in these universities would result to improved post examination service delivery by 0.731 units. With calculated t being greater than 1.96 and p value less than 0.05, the null hypothesis was rejected. The inference made, therefore, was that in deed, internal quality auditing as per the ISO 9001:2015 quality management system did significantly

affect post-examination service delivery in public universities in Kenya. The following equation shows the bivariate regression model fitted having obtained the regression estimates: -

$$Y = 0.884 + 0.731X_3$$

Where; **Y**= Post-examination service delivery in public universities in Kenya and **X₃**= Internal quality auditing as per the ISO 9001:2015 quality management system

The above findings were comparable with those of a study by Mail, Sudjito, and Budi (2014) which showed that ISO 9001 certified educational institutions which conducted systematic and consistent internal quality audits were able to enhance quality culture across all their services by using the crucial feedback from these audits to invent new ways of doing things. The findings were also in agreement with the finding by Giedt (2016) that internal quality audits reduced customers' dissatisfaction with services offered by organizations by supporting timely identification and correction of nonconformities in various processes. The findings were also found to affirm the observation by Kaziliūnas (2010) that internal quality auditing enhanced service delivery in organizations as they facilitated the identification of key opportunities for improvement and also yielded valuable feedback that could be used to boost the efficacy and effectiveness of key processes through creation of innovative solutions. The findings further backed the conclusion by Karapetrovic (2010) that internal quality auditing was necessary in ensuring that the products and services offered by organizations met the stipulated requirements. The findings, however, did not support the finding by Boiyon, Manduku, and Rotumoi (2020) that internal quality audits in ISO 9001 certified public universities in Kenya had weak effect on the services delivered in these institutions.

4.7.4 Continual Improvement and Post-Examination Service Delivery

The study further sought to investigate how continual improvement as per the ISO 9001:2015 quality management system affected post-examination service delivery in public universities in Kenya. To achieve this objective, the following null hypothesis was tested: -

H04: Continual improvement as per the ISO 9001:2015 QMS does not significantly affect post-examination service delivery in public universities in Kenya.

Bivariate regression analysis was conducted where the relevant statistics used in testing this hypothesis were computed.

Table 4.23: Significance of Regression Coefficient for Continual Improvement

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.897	0.158		5.687	0.000
	Continual improvement (X ₄)	0.727	0.043	0.754	17.091	0.000

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

Source: Field Data (2021)

The study established 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. This finding is affirmed by ($\beta = 0.727$, $t = 17.091$, $p = .000$) as shown in Table 4.23. Based on these findings, it was inferred that a unit increase in continual improvement as per the ISO 9001: 2015 quality management system would lead to enhanced post examination service delivery in these universities by 0.727 units holding all other factors constant. The t calculated being greater than 1.96 and the p value less than 0.05, the null hypothesis that continual improvement as per the ISO 9001:2015 QMS did not significantly affect post-examination service delivery in public universities in Kenya was rejected. This implied that in deed, continual improvement as per the ISO 9001:2015 QMS in these institutions actually affected the delivery of post examination service. Using the regression estimates, the following bivariate regression model fitted to show the relationship between these two variables.

$$Y = 0.897 + 0.727X_4$$

Where; Y = Post-examination service delivery in public universities in Kenya and X_4 = Continual improvement as per the ISO 9001:2015 quality management system

The study findings were consistent with that of the study by Andiva and Simatwa (2018) which demonstrated that ISO 9001 certified public universities in Kenya were able to reap many benefits among them the delivery of academic services that met the required standards by pursuing continual improvement in the course of implementing their QMSs. The findings also supported the views by Thalner (2015) that continuous improvement in higher education institutions enhanced efficiencies in different processes and this boosted the quality of services delivered through the handling on quality issues raised on time. The findings further supported the observation by Wanza, Ntale, and Korir (2017) that continual improvement in the different processes, operations and units in the Kenyan universities ensured that students' demands for quality services were met since it facilitated the execution of corrective actions pertaining to the identified nonconformities and improvement areas.

4.7.5 Joint Effect of ISO 9001:2015 QMS Implementation Aspects on Post Examination Service Delivery

To determine the combined or joint effect of the establishment of quality objectives, resource allocation, internal quality auditing and continual improvement as per the ISO 9001:2015 quality management system on post-examination service delivery in public universities in Kenya, a multiple regression analysis was conducted.

Table 4.24: Significance of Regression Coefficient for Combined ISO 9001:2015 QMS Implementation Aspects

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.044	0.136		0.325	0.746
	Establishment of quality objectives (X ₁)	0.198	0.050	0.201	3.985	0.000
	Resource allocation (X ₂)	0.240	0.048	0.251	5.024	0.000
	Internal quality auditing (X ₃)	0.303	0.048	0.322	6.324	0.000
	Continual improvement (X ₄)	0.221	0.050	0.229	4.388	0.000

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

Source: Field Data (2021)

The regression coefficient estimates for the joint effect model provided in Table 4.24 show that the establishment of quality objectives as per the ISO 9001:2015 quality

management system had a positive significant effect on post examination service delivery in public universities in Kenya as demonstrated by ($\beta = 0.198, t = 3.985, p = 0.000$). Holding all other factors constant, a unit increase in the establishment of quality objectives as per the ISO 9001:2015 QMS would result to improved post examination service delivery in these universities by 0.198 units. The findings also revealed that resource allocation as per the ISO 9001:2015 quality management system positively and significantly affected post examination service delivery in Kenyan public universities as supported by ($\beta = 0.240, t = 5.024, p = 0.000$). These findings implied that when all other factors were held constant, a unit increase in resource allocation as per the ISO 9001:2015 QMS would translate to enhanced post examination service delivery in public universities in Kenya by 0.240 units. The study also established that the effect of internal quality auditing as per the ISO 9001:2015 quality management system on post examination services delivery in public universities in Kenya was positive and significant as affirmed by ($\beta = 0.303, t = 6.324, p = 0.000$).

Therefore, increasing the level of internal quality auditing as required under the ISO 9001:2015 QMS would boost post examination service delivery in these institutions by 0.303 units, holding all other factors constant. The study further noted that continual improvement as per the ISO 9001:2015 quality management system had a significant positive effect on post examination services delivery in public universities in Kenya. This finding is proved by ($\beta = 0.221, t = 4.388, p = 0.000$). Holding all the other factors constant, a unit increase in continual improvement as per the ISO 9001:2015 QMS in these universities would enhance post examination services delivery by 0.221 units. Based on the above results, the optimal multiple or joint effect regression model for this study was specified as follows: -

$$Y = 0.044 + 0.198X_1 + 0.240X_2 + 0.303X_3 + 0.221X_4$$

Where: Y = Post-examination service delivery in public universities in Kenya, X_1 = Establishment of quality objectives as per the ISO 9001: 2015 QMS, X_2 = Resource allocation as per the ISO 9001: 2015 QMS, X_3 = Internal quality auditing as per the ISO 9001: 2015 QMS, X_4 = Continual improvement as per the ISO 9001: 2015 QMS

The above findings supported those of a study by Kiplagat (2016) which found a significant relationship between ISO 9001 quality management systems and delivery of tangible, responsive and consistent academic services in public universities in Kenya

leading to increased students' satisfaction. The findings were also consistent with that of Mutuku and Kisimbii (2017) and Bichanga and Kimani (2013) who, with reference to the implementation of ISO 9001: 2008 certification, noted that aspects of QMSs in public universities in Kenya such as continual improvement, increased quality audits and the provision of adequate resources to ensure the achievement of set objectives enhanced service delivery in these institutions as witnessed by the processing of examination results on time and reduced student complaints. Bichanga and Kimani (2013) attributed the above to increased streamlined processes which, for instance, led to prompt and easy accessibility of student examination results and the timely handling of complaints once raised among other benefits. The findings further supported the findings by Basir et al. (2017) and Mekić and Göksu (2014) who agreed that ISO 9001 QMSs had positive impact on the quality of educational services provided in higher education institutions due to enhanced consciousness to students' needs.

Nonetheless, the above study findings were inconsistent with the argument by Absah, Rini, and Sembiring (2019) that the implementation of quality management systems was incapable of guaranteeing the delivery of quality services in higher education institutions. The study findings also did not support the finding by Waswa and Swaleh (2012), that implementation of ISO 9001 quality management system had little influence on quality of services offered by universities. The study findings also did not support the finding by Kamusoko (2019) that there was a difficulty in proving causality in as far as the impact of ISO 9001 QMS on delivery of academic services in universities was concerned.

The findings supported the systems theory concept of contextual thinking or environmental thinking where public universities as open systems operating in an environment that was complex and regulatory, strived to achieve quality management in their core business such as student assessment by developing quality management systems as responses to the demands for quality examination services from stakeholders such as students and relevant government bodies.

4.7.6 ISO 9001: 2015 QMS Implementation, Organizational Structure and Post-Examination Service Delivery

The study appraised the moderating effect of organizational structure on the relationship between ISO 9001:2015 quality management system implementation and

post-examination service delivery in public universities in Kenya. Usually, when a moderating variable was introduced in a model, it either enhanced, reduced or generally changed the effect that the explanatory variables in the study had on the dependent variable. The following null hypothesis was tested: -

H0₅: Organizational structure does not have a significant moderating effect on the relationship between ISO 9001:2015 quality management system implementation and post-examination service delivery in public universities in Kenya.

The study adopted the step wise regression technique proposed by Baron and Kenny (1986). This technique encompassed three steps and in testing moderation, the changes in the coefficient of determination (R Square) from step I to step III were monitored. In the first step, post examination service delivery in public universities in Kenya was regressed against the composite of all the independent variables (X). The regression results captured in are provided in Table 4.25 below. The regression coefficient (β) equal to 0.964 and corresponding $p=0.000$ suggested that the composite of all the ISO 9001:2015 quality management system implementation aspects examined had a positive significant effect on post examination services delivery in public universities in Kenya. A unit increase in the composite of these aspects would thus enhance post examination service delivery in these institutions by 0.964 units. Overall, the study found that results in the first step were all significant.

Table 4.25: Stepwise Regression Analysis Results for Step I

Model		Coefficients ^a			t	Sig.
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta		
1	(Constant)	0.033	0.136		0.242	0.809
	Composite of independent variables (X)	0.964	0.037	0.87	26.279	0.000

^a Dependent Variable: Post examination service delivery in public universities in Kenya

Source: Field Data (2021)

In step II of the stepwise regression analysis, the moderating variable (organizational structure) was introduced. The effect of the composite of ISO 9001:2015 QMS implementation aspects under study (X) and organizational structure (M) on post examination service delivery in public universities in Kenya was determined. The findings from this analysis are outlined in Table 4.26 below. The finding showed that the composite of ISO 9001:2015 QMS implementation aspects and organizational structure positively and significantly affected post examination services delivery in public universities in Kenya given ($\beta=0.700$, $p=0.000$) and ($\beta=0.305$, $p=0.000$) respectively.

Table 4.26: Stepwise Regression Analysis Results for Step II

		Coefficients ^a				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0.141	0.126		-1.117	0.265
	Composite of independent variables (X)	0.700	0.051	0.632	13.692	0.000
	Organizational structure (M)	0.305	0.045	0.315	6.815	0.000

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

Source: Field Data (2021)

In third and final step in the stepwise regression analysis, an interaction term (composite of ISO 9001:2015 QMS implementation aspects *organizational structure) was incorporated in to the model. Post examination service delivery was regressed against the composite of all the independent variables (X), organizational structure (M) and the interaction term ($X*M$). The findings are presented in Table 4.27 below. The regression coefficients results showed that the effect of the interaction term ($X*M$) on post examination service delivery in public universities though positive, was not significant. This was proved by ($\beta=0.023$, $p=0.398$).

Table 4.27: Stepwise Regression Analysis Results for Step III

		Coefficients^a				
Mode		Unstandardized		Standardized		
I		Coefficients		Coefficients	t	
			Std.		Sig.	
		B	Error	Beta		
1	(Constant)	0.094	0.32		0.295	0.768
	Composite of independent variables (X)	0.614	0.102	0.554	6.046	0.000
	Organizational structure (M)	0.243	0.103	0.251	2.364	0.019
	Interaction term (X*M)	0.023	0.027	0.142	0.846	0.398

^a Dependent Variable: Post examination service delivery in public universities in Kenya

Source: Field Data (2021)

The above findings suggested that organizational structure did not significantly moderate the relationship between ISO 9001:2015 quality management system implementation and post-examination service delivery in public universities in Kenya. The positive beta coefficient associated with interaction term also meant that organizational structure strengthened the relationship between ISO 9001:2015 QMS implementation and post-examination service delivery in these universities. Nevertheless, this effect was insignificant. Based on the above findings, the null hypothesis that organizational structure did not have a significant moderating effect on the relationship between ISO 9001:2015 quality management system implementation and post-examination service delivery in public universities in Kenya was not rejected. These findings contradicted the argument by Zimon (2016) that when organizations decided to implement ISO 9001:2015 quality management, organizational structure was one of the aspects that was important for the success of the implementation towards process improvement which ultimately impacted the nature of products and services offered. The findings were also inconsistent with the observation by Domingues et al. (2019) that for organizations to benefit more from ISO 9001:2015 quality management systems, for instance, in terms of improved processes and services, they needed to consider the nature of their organizational structures.

4.8 Chapter Summary

This chapter has comprehensively captured all the study findings and their interpretations. The study found that public universities in Kenya had to a large extent implemented their ISO 9001:2015 quality management systems. This was demonstrated by the overall mean values for the different constructs of ISO 9001:2015 QMS implementation namely the establishment of quality objectives construct (3.816), resource allocation (3.695), internal quality auditing (3.873) and continual improvement (3.763). The study noted that the university staff and students did not hold a consensus view on the nature of post examination service delivery in these universities as depicted by the large difference in the composite mean values for their individual constructs, that is, (3.546) and (2.602) respectively.

The findings also reveal that ISO 9001:2015 quality management system implementation positively and in a significant way affected post examination service delivery in public universities in Kenya. All aspects of ISO 9001:2015 quality management system implementation explored in this study namely the establishment of quality objectives, resource allocation, internal quality auditing and continual improvement as required under this system significantly enhanced post examination service delivery in these universities. Nonetheless, the study discovered that the universities' organizational structure did not significantly moderate the relationship between ISO 9001:2015 quality management system implementation and post examination service delivery in these institutions. Table 4.37 summarizes the hypothesis test findings.

Table 4.28: Summary of Hypothesis Test Findings

Objective	Hypotheses	Analysis Conducted	Results	Remarks on Hypotheses
To determine how the establishment of quality objectives as per the ISO 9001:2015 quality management system affects post-examination service delivery in public universities in Kenya.	Establishment of quality objectives as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya.	Bivariate regression analysis	$\beta_1=0.723$, $t=16.105>1.96$ $p=0.000<0.05$	Rejected
To establish how resource allocation per the ISO 9001:2015 quality management system affects post-examination service delivery in public universities in Kenya.	Resource allocation as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya.	Bivariate regression analysis	$\beta_2=0.715$, $t=16.824>1.96$ $p=0.000<0.05$	Rejected
To examine how internal quality auditing as per the ISO 9001:2015 quality management system affects post-examination service delivery in public universities in Kenya.	Internal quality auditing as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya.	Bivariate regression analysis	$\beta_3=0.731$, $t=18.465>1.96$ $p=0.000<0.05$	Rejected

	universities in Kenya.			
To establish how continual improvement as per the ISO 9001:2015 quality management system affects post-examination service delivery in public universities in Kenya.	Continual improvement as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya.	Bivariate regression analysis	$\beta_4=0.727$, $t=17.091>1.96$ $p=0.000<0.05$	Rejected
To determine the moderating effect of organizational structure on the relationship between ISO 9001:2015 quality management system implementation and post-examination service delivery in public universities in Kenya.	Organizational structure does not have a significant moderating effect on the relationship between ISO 9001:2015 quality management system implementation and post-examination service delivery in public universities in Kenya.	Step wise regression technique	R square improved after introducing the moderating variable (Organizational structure). Step 1= $R^2 =0.757$ Step 2= $R^2 =0.799$ Step 3= $R^2 =0.806$ However, the effect of the interaction term (X*M) on Y though positive, was insignificant given: - $\beta=0.023$, $t=0.846<1.96$ $p=0.398>0.05$	Failed to reject

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the major findings of this study. It also highlights the conclusions made from these findings and the recommendations for policy and practice. The suggestions for further research are also captured in this chapter.

5.2 Summary of Findings

The study sought to assess the effect of ISO 9001:2015 quality management system implementation on post-examination service delivery in public universities in Kenya. Five specific objectives were specified as follows: (i) To determine how the establishment of quality objectives as per the ISO 9001:2015 quality management system affects post-examination service delivery in public universities in Kenya; (ii) To establish how resource allocation per the ISO 9001:2015 quality management system affects post-examination service delivery in public universities in Kenya; (iii) To examine how internal quality auditing as per the ISO 9001:2015 quality management system affects post-examination services delivery in public universities in Kenya; (iv) To establish how continual improvement as per the ISO 9001:2015 quality management system affects post-examination service delivery in public universities in Kenya and; (v) To determine the moderating effect of organizational structure on the relationship between ISO 9001:2015 quality management system implementation and post-examination service delivery in public universities in Kenya. Based on these objectives, five research hypotheses were formulated and tested. The main findings under each of these objectives are captured in the subsequent sub sections.

5.2.1 Establishment of Quality Objectives and Post Examination Services Delivery in Kenyan Public Universities

The study found that in order to institutionalize and achieve quality in post examination service delivery, public universities in Kenya, in general, had defined several quality objectives that specifically guided this function across all their departments and faculties. Among the key common quality objectives set in this case was the verification of examination marks or results before they were released, having a set period of time when students' marks were entered in to the university examination systems, reducing

the time taken in processing and releasing of examination results as well as the strict adherence to set deadlines for processing of marks. However, the study found that these quality objectives had not been fully realized in most public universities in Kenya as most of the students' examination related complaints, for instance, delayed processing and release of results, revolved around these quality objectives.

The descriptive analysis also revealed that on average, public universities in Kenya had to a large extent established quality objectives as required under the ISO 9001:2015 quality management system. Nonetheless, the level of prioritization of the different aspects under this construct was varied. The study noted that the universities had given the greatest priority to having well-defined quality objectives across all their functions, levels and processes. However, ensuring that the universities' top managements always provided the leadership, organization and resources that needed to be deployed to achieve the planned quality objectives in all their relevant functions only received moderate attention, for instance.

The study also established that there was a perceived connection between the establishment of quality objectives as per the ISO 9001:2015 QMS and post examination service delivery in Kenyan public universities. The study found that establishment of these quality objectives enhanced post examination service delivery in these institutions by steering improvement of examination processes and management and also enforcing adherence and compliance to set procedures, guidelines and standards on the delivery of these services, for instance. Nonetheless, it emerged that significant transformations in the delivery of these services could only be achieved when the established quality objectives were adequately achieved and the necessary structures meant to help the relevant staff discharge their mandate streamlined.

From the correlation analysis, the study noted that the establishment of quality objectives as per the ISO 9001:2015 QMS and post examination service delivery in public universities in Kenya were positively and significantly associated/correlated. Their association was also found to be strong. This was confirmed by ($r=.734$, $p=0.000$). The bivariate regression analysis on the other hand revealed that the establishment of quality objectives as per the ISO 9001:2015 quality management system had a positive significant effect on post examination service delivery in these

institutions. This was attested by ($\beta = 0.723, p = .000$). This suggested that enhanced establishment of quality objectives as required under the ISO 9001:2015 quality management system would enhance post examination service delivery in public universities in Kenya. The calculated $p=0.000$ confirmed that the establishment of quality objectives as required under the ISO 9001:2015 QMS would significantly improve post examination service delivery in Kenyan public universities. This finding served as the basis for rejecting the null hypothesis that the establishment of quality objectives as per the ISO 9001:2015 quality management system does not significantly affect post-examination services delivery in public universities in Kenya.

5.2.2 Resource Allocation and Post Examination Service Delivery in Kenyan Public Universities

The descriptive statistics obtained showed that on average, public universities in Kenya had to a large extent carried out resource allocation as required under their ISO 9001:2015 quality management systems. These institutions had to a large extent acquired the relevant knowledge, competent staff and infrastructure besides maintaining a suitable work environment to support their processes, key operations and functions. All these were aimed at enhancing service conformity. The study also found that resource allocation as per the ISO 9001:2015 QMS affected post examination service delivery in Kenyan public universities by supporting the timely execution of examination activities/tasks. It ensured that the requisite staff and equipment needed in enhancing efficiency in examination results processing and release were availed. Resource allocation was also found to enhance service consistency, the achievement of set quality objectives as well as the acquisition of relevant infrastructure and upgraded softwares necessary in boosting the delivery of post examination service among other benefits.

The correlation results pointed to a strong, positive and significant association between resource allocation as per the ISO 9001:2015 quality management system and post examination service delivery in public universities in Kenya. This was proved by ($r=.749, p=0.000$). The bivariate regression results further showed that the effect of resource allocation as mandated under the ISO 9001:2015 quality management system had a significant positive effect on post examination service delivery in these universities. This was demonstrated by ($\beta = 0.715, p = .000$). The implication of these

findings was that increasing the level of resource allocation as required under the ISO 9001:2015 QMS would boost the level of post examination service delivery in public universities in Kenya. The calculated $p=0.000$ that was associated with the regression coefficient obtained in this case meant that enhancing the level of resource allocation as per the ISO 9001:2015 QMS requirements would significantly boost the delivery of post examination service in these institutions. Consequently, the null hypothesis that resource allocation as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya was rejected.

5.2.3 Internal Quality Auditing and Post Examination Service Delivery in Kenyan Public Universities

From the descriptive analysis conducted, it was evident that most public universities in Kenya were to a large extent committed to carrying out internal quality audits as required under the ISO 9001:2015 quality management system. These audits were conducted at planned intervals. These institutions carried out internal quality audits either on a quarterly basis, semi-annually or an annual basis. The findings showed that Kenyan public universities were doing relatively well in as far as ensuring that frequent internal quality audits were conducted to check service conformance at all levels and functions and the emerging audit reports availed to the relevant parties for action. The universities were also devoted to having in place established audit programs and also ensuring that the feedback derived from the internal quality audits was objective and useful. Nevertheless, timely corrective actions once internal quality audits were closed were prioritized only to moderate extent.

The study established that internal quality auditing as per the ISO 9001:2015 quality management system majorly influenced post examination service delivery in Kenyan public universities by facilitating the identification of areas of service non-conformities and also informing the corrective actions taken to deal with the identified non-conformities. Internal quality auditing was also associated with reduced anomalies, enhanced realization of quality objectives, adherence to set timelines and standards as well as continual improvement in the long run. All these among other benefits, supported improved post examination service delivery in these institutions. All the same, the study discovered that internal quality auditing as per the ISO 9001:2015 QMS

would significantly enhance post examination service delivery in these university when the areas of service non-conformities are comprehensively identified and timely corrective actions taken to address them.

The correlation results demonstrated that internal quality auditing as per the ISO 9001:2015 QMS was positively and significantly associated with post examination service delivery in public universities in Kenya. The correlation was also deemed strong as revealed by ($r=.778$ and $p=0.000$). Further analysis showed that the effect of internal quality auditing as per the ISO 9001:2015 quality management system on post examination service delivery in Kenyan public universities was positive given that ($\beta=0.731$). The $p=0.000$ associated with the beta coefficient was a proof that the effect of internal quality auditing as per the ISO 9001:2015 quality management system on post examination service delivery in these universities was also significant. The findings meant that increased internal quality auditing as per the ISO 9001:2015 QMS requirements would significantly improve post examination service in public universities in Kenya. Based on this finding, the null hypothesis that internal quality auditing as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya was rejected.

5.2.4 Continual Improvement and Post Examination Service Delivery in Kenyan Public Universities

The study established that generally, public universities in Kenya were pursuing continual improvement in their different processes, functions and operations as per the requirements of the ISO 9001:2015 QMS to a large extent. These universities largely analyzed and evaluated the data drawn from their monitoring systems so as to improve their core businesses and also identify areas of underperformance. They also to a large extent pinpointed the areas that needed to be improved across their operations and were also pursuing breakthrough projects that revised or improved existing processes or led to new processes across all levels.

The study also noted that continual improvement was perceived as a vital way of significantly improving post examination services in public universities in Kenya since it led to the identification and correction of nonconformity areas when delivering these services. It also steered the adoption of the relevant changes required to improve examination management processes besides enabling the institutions to set and achieve

higher quality objectives among other benefits. These actions resulted to gradual improvement in the post examination service delivered in these universities.

The correlation analysis revealed that continual improvement as per the ISO 9001:2015 quality management system was positively and significantly correlated with post examination service delivery in Kenyan public universities. The correlation was strong as illustrated by ($r=.754$, $p=0.000$). The bivariate regression results further demonstrated that post examination service delivery in public universities in Kenya was positively and significantly affected by continual improvement as per the ISO 9001:2015 quality management systems in these institutions. This was supported by ($\beta = 0.731$, $p = .000$). The main inference drawn from this finding was that enhanced pursuit of continual improvement as required under the ISO 9001:2015 quality management system in these universities would considerably boost post examination service delivery. On this basis, the null hypothesis that continual improvement as per the ISO 9001:2015 quality management system does not significantly affect post-examination service delivery in public universities in Kenya was rejected.

5.2.5 ISO 9001: 2015 QMS Implementation, Organizational Structure and Post-Examination Service Delivery

The study sought to determine the moderating effect of organizational structure on the relationship between ISO 9001:2015 quality management system implementation and post-examination service delivery in public universities in Kenya. The descriptive analysis showed that the universities had to a great extent ensured the clarity and definition of the roles and responsibilities of various offices. The institutions had also to a large extent developed and enforced formal behaviour rules and procedures besides clearly defining their reporting lines and mandates of key positions. Furthermore, these universities had frameworks for warranting coordination and commitment of all departments across all their operations and also maintained optimal layers of authority to a large extent.

The study established that organizational structure had no significant moderating effect on the relationship between ISO 9001:2015 quality management system implementation and post-examination service delivery in public universities in Kenya. This was attested by the $p=0.398$ associated with the beta coefficient (0.023) linked to the interaction term between the composite of ISO 9001:2015 quality management

system implementation aspects under study and the universities' organizational structure. The study therefore, failed to reject the null hypothesis that organizational structure does not have a significant moderating effect on the relationship between ISO 9001:2015 quality management system implementation and post-examination service delivery in public universities in Kenya.

5.3 Conclusions

The study concluded that while post examination service delivery in public universities in Kenya was generally considered satisfactory by the staff, most of the students across the different departments and faculties were not fully satisfied with the services delivered.

The study concluded that public universities in Kenya had to a great extent implemented the ISO 9001: 2015 quality management system by establishing quality objectives, allocating resources, conducting internal quality auditing and pursuing continual improvement in their processes, key operations and function in line with the key requirements of this QMS. Nonetheless, there were still several aspects of this QMS requirements that needed to be prioritized or optimized in these universities.

The study concluded that ISO 9001:2015 QMS implementation positively and significantly affected post-examination service delivery in Kenyan public universities. It was concluded that the establishment of quality objectives, resource allocation, internal quality auditing and continual improvement as required under this QMS had significant positive individualized and joint effect on post-examination service delivery in these institutions.

The study concluded that internal quality auditing as required under the ISO 9001:2015 quality management system had the largest individualized and joint effect on post examination service delivery in Kenyan public universities. The study also concluded that organizational structure did not significantly moderate the relationship between ISO 9001:2015 quality management system implementation and post-examination service delivery in public universities in Kenya.

The study further concluded that ISO 9001:2015 QMS implementation is among the factors that the management and examination offices in public universities in Kenya should take in to account when evaluating the factors likely to affect post examination

service delivery. Hence, it should be optimized so as to enhance post examination service delivery in these institutions.

5.4 Recommendations

The study recommends that university examination offices at the department and faculty levels should devise and adopt integrated monitoring frameworks and systems that can be used in tracking and communicating the achievement of set targets described in their quality objectives guiding post examination services delivery. The feedback obtained from these systems can be used to hold the relevant offices and staff accountable for non-achievement of these targets.

The government through the Ministry of Education should increase budgetary allocations to public universities so that they can efficiently and fully implement their ISO 9001:2015 QMSs. The managements of these universities should also devise innovative strategies for mobilizing resources that can complement the funds allocated by the government to enhance the realization of the above mandate. Such a measure will, for instance, ensure that there is smooth and timely execution of post examination activities towards the achievement of set quality objectives.

The study recommends that the management of public universities should maintain suitable work environments and acquire the necessary knowledge, infrastructure and staff to achieve service conformity in the delivery of post examination service as required under their ISO 9001: 2015 quality management systems.

The management of public universities in the country should adequately equip internal audit units/teams so that they can regularly carry out comprehensive internal quality audits to ensure that all areas of nonconformities and underperformance in the delivery of post examination service are identified on time and corrective measures undertaken on time.

The management of Kenyan public universities should also constitute independent teams/units that can regularly monitor and follow up on progress made in the adoption and implementation of the recommendations for improvements in post examination service delivery as suggested in the internal quality audit reports.

The study further recommends that the Ministry of Education through the Commission for University Education should design policies that can be used to enforce or support

compliance with ISO 9001: 2015 QMS requirements among public universities towards the improvement of different academic processes and more particularly, the examination process.

5.5 Suggestions for Further Research

The study recommends that studies that assess the effect of ISO 9001:2015 quality management system implementation on other academic and non-academic processes/services in public universities in Kenya can be carried out. A comparative study to show how ISO 9001:2015 quality management system implementation in public and private universities in Kenya had affected post examination service delivery was necessary. A study that compared the effect of ISO 9001:2015 QMS implementation on academic and non-academic services delivery in Kenyan public universities could also be undertaken. The study also suggests that a study that takes in to account the other aspects of ISO 9001:2015 QMS implementation not considered in this study should also be undertaken. The study further recommends that studies which incorporate other moderating or intervening variables are necessary.

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APPENDICES

Appendix I: Letter of Introduction

The Vice Chancellor,

Dear Sir/Madam,

RE: PERMISSION TO CARRY OUT DATA COLLECTION IN THE INSTITUTION

I am Jemimah Muchai, a postgraduate student pursuing a Degree of Doctor of Philosophy in Educational Administration at Machakos University. I am currently carrying out a research entitled “**ISO 9001:2015 Quality Management System Implementation and the Delivery of Post-Examination Services in Public Universities in Kenya**”. As such, I have identified your institution as one of the six where I will carry out the research. I am kindly requesting for your permission to administer questionnaires to examination coordinators and fourth year students and also to interview the Director Quality Assurance, Director QMS and PC as well as the Deputy Registrar (Exams). The information gathered will be strictly used to achieve the stated objective and will be treated with utmost confidentiality.

Thank you in advance for your support.

Yours faithfully

Jemimah Muchai

Email:jmmhmuchai@gmail.com

Appendix II: Participant Information Sheet

Researcher:Jemimah Muchai

Affiliated university: Machakos University

Introduction: I am a postgraduate student pursuing a Degree of Doctor of Philosophy in Educational Administration at Machakos University. For me to qualify for the award of the stated degree, I have to successfully undertake a research project. To this end, my study focuses on “**ISO 9001:2015 Quality Management System Implementation and Post Examination Services Delivery in Public Universities in Kenya**”. This is one of the institutions that I wish to conduct the research in.

This information sheet has been designed to enable me furnish you with all the necessary information in regards to the study so that you can be in better position to make informed decisions pertaining to your involvement and availability throughout the entire process. You have the freedom to enquire and seek clarification about any aspect of this research. I will also request you to answer a number of questions in regards to the study before you sign as an indication that you have comprehended the information that I will have provided.

Background and objective: The aim of this study is to assess the effect of ISO 9001:2015 QMS on post-examination services delivery in public universities in Kenya. The study will examine various aspects of ISO 9001:2015 QMS implementation particularly establishment of quality objectives, resource allocation, internal quality auditing and continual improvement and how they have affected post-examination services delivery in public universities in Kenya. This will enable the researcher to provide several suggestions for improvement not only in practice but also for policy decisions with respect to the study subject.

Voluntary participation: Participation in this study is voluntary. If you choose to be involved in this process, several questions regarding the study subject will be presented to you in form of a questionnaire or interviews. You will not be subjected to any intrusive procedures and you have the freedom to pull out of the research process if necessary without suffering any costs.

Eligibility: The study participants will be all the examination coordinators, fourth year students, the Director Quality Assurance, Director QMS and PC as well as the Deputy Registrar (Exams) and who are based at the universities' main campuses.

Non eligibility: Due to time constraints and other logistical factors, persons in all the targeted categories based on other campuses will not be considered in this study.

My involvement in the research process: With the assistance of two trained research assistants, I will approach you and convince you of the need to be part of this study. Once you are fully confident that you comprehend the objective of this study, I will proceed to ask you to append your signature on the informed consent form and afterwards familiarize you with the questions in the research instrument.

Benefits of taking part in the study: There is no direct monetary benefit in being part of this research. Nonetheless, the study findings will be resourceful in providing insight on the level of efficiency in the implementation of the university's QMS and how it has affected the post-examination services delivery in the institution so that any gaps identified can be addressed. The study will not only help the university management but also other stakeholders in the education sector in making informed decisions regarding how continuous improvement can be achieved in regards to implementation of universities' QMSs and how any nonconformities observed in relation to post-examination services delivery can be corrected. This will result to satisfied students. The study findings can also support further related research.

Risks of taking part in the study: There are no risks linked to your involvement in this study. Nevertheless, you will be required to spare a few minutes from your set schedule to answer the questions specified in the questionnaire to be administered. The desire of the researcher is for you to spend about 20 minutes to respond to the outlined questions.

Confidentiality and anonymity: Paramount discretion will be upheld and all the information you give shall only be utilized for the envisioned study purpose. Moreover, you will not write your name on any form or the questionnaire so that anonymity is ensured. All the materials that will be utilized during the study will be under the care of the researcher and unauthorized persons will be allowed to access them. Electronic files containing the data obtained will be secured by the use of personal passwords and fire-wall protected computers.

Compensation: There will be no compensation whatsoever for your involvement in the study so that the integrity of the research process is upheld.

Conflict of interest: The researcher and the supervisors can confidently affirm that conflict of interest does not exist among them.

In the event that you require further clarification, kindly do not shy from contacting the researcher (Jemimah Muchai, Email;jmmhmuchai@gmail.com).

Appendix III: Participant Consent Form

If you agree to be a participant in this study process, kindly tick (✓) in the box against each of the following statements if you are in agreement and append your signature below:

- 1) I hereby consent to be involved in this study
- 2) I have received adequate information in regards to the kind of research been carried out and any possible risk (s) clarified to me
- 3) I am also aware that my involved in the research process is on a voluntary basis and my decision to either be part or not be part of the process will not in any way impact my job status in this institution in any way at all
- 4) I may also opt out of the study process at any point without providing explanations or facing any penalties
- 5) I have further received assurance that my personal details and any other relevant information that I will provide will be handled with much discretion
- 6) I therefore, confirm that all the concerns that I had regarding my involvement in the study have been satisfactorily tackled by the researcher and that they have presented to me questions to determine whether I understand the information given to me

Participant _____ Signature _____
Date.....

I confirm that I have provided clear and detailed explanation to the participant with regards to the nature of this study and all the contents of this consent form and that the participant has made a choice to be involved in this study voluntarily with any form of coercion or undue pressure.

Researcher Signature..... Date.....

Appendix IV: Questionnaire for Examination Coordinators

This questionnaire is designed to help the researcher gather research information regarding to the effect of ISO 9001:2015 quality management system implementation on the delivery of post examination services in public universities in Kenya. The questionnaire has nine sections. For each section, please respond to all items using a tick (✓) or filling in the blanks where appropriate. Kindly **do not** write your name or the name of your institution on the questionnaire. All the information volunteered will be treated with utmost confidentiality.

SECTION A: DEMOGRAPHIC INFORMATION

1. Gender

a. Male []

b. Female []

2. Age bracket (years)

a. Below 30 []

b. 30-39 []

c. 40-49 []

d. 50 and above []

3. Highest level of education

a. Undergraduate degree []

b. Masters degree []

c. PhD []

d. Others (specify) _____

4. How long have you worked at this university?

a. 1 to 5 years []

b. 6 to 10 years []

c. 10 to 15 years []

d. Above 15 years []

5. What is your title or designation in this university?

6. Indicate your work department within the university?

SECTION B: ESTABLISHMENT OF QUALITY OBJECTIVES

7. Are there defined quality objectives as per ISO 9001:2015 quality management system that guide the post examination phase in the university’s examination process?

a. Yes [] No []

8. If yes in 7, rate the achievement of these quality objectives in the institution?

a. Poor [] b. Average [] c. Good [] d. Excellent []

9. Kindly indicate the extent to which you agree with the following statements on establishment of quality objectives as per ISO 9001:2015 quality management system requirements in this university. Use this scale; **1=Strongly Disagree, 2=Disagree, 3= Neither Agree or Disagree, 4= Agree and 5=Strongly Agree.**
Tick only one option.

Statement	1	2	3	4	5
a) The university has well-defined quality objectives across all its relevant functions, levels and processes.					
b) The university’s quality objectives at all levels are highly consistent with its quality policy.					
c) The university has adequate plans which have been developed to achieve its quality objectives and evaluate results across all its operations.					
d) University staff at all levels have been made aware of the importance of the established quality objectives and how they must contribute to their achievement.					
e) The university’s top management always provides the leadership, organization and resources that need to be deployed to achieve planned quality objectives in all its relevant functions.					
f) The university constantly monitors and communicates the progress made in achieving the targets described in its quality objectives across all its functions.					
g) The university’s quality objectives at all levels strictly comply with the law and industry standards, they conform with the services requirements and enhance customer satisfaction.					

10. Based on your experience, how have the available quality objectives affected the delivery of post examination services in this institution?

SECTION C: RESOURCE ALLOCATION

11. State your level of agreement or disagreement with the following statements on resource allocation as per ISO 9001:2015 quality management system requirements in this university using this scale; **1=Strongly Disagree, 2=Disagree, 3= Neither Agree or Disagree, 4= Agree and 5=Strongly Agree**

Statement	1	2	3	4	5
a) The university has adequate competent persons needed to consistently meet customer, applicable statutory and regulatory requirements for the QMS including the necessary processes.					
b) The university determines, provides and maintains the necessary infrastructure for the operation of its processes to achieve service conformity.					
c) The university determines, provides and maintains the work environment necessary for the operation of its processes and to achieve conformity of services.					
d) The university is constantly seeking ways of acquiring additional knowledge both internally and externally so as to augment its capacity to address changing needs and trends in the industry.					

12. How has the level of resource allocation as per ISO 9001:2015 quality management system requirements affected the delivery of post-examination services in this university?

SECTION D: INTERNAL QUALITY AUDITING

13. At what intervals are internal quality audits undertaken?

- a. Quarterly [] b. Semi-annually [] c. Annually []
 d. Other (specify) _____

14. To what extent do you agree or disagree with the following statements on internal quality audits as per ISO 9001:2015 quality management system requirements in this university using this scale; **1=Strongly Disagree, 2=Disagree, 3= Neither Agree or Disagree, 4= Agree and 5=Strongly Agree**

Statement	1	2	3	4	5
a) We have in place an internal audit program(s) that takes into account the quality objectives, importance of the concerned processes, customer feedback, changes affecting the institution and the results of previous audits.					
b) Internal quality audits in this university are carried out at planned intervals to check service conformance at all levels and functions.					
c) Reports of the internal quality audits conducted in this university are usually made available to the relevant management for action.					
d) After internal quality audits are conducted, the necessary correction and corrective actions are taken without undue delay.					
e) Internal quality audits in this university always yield crucial objective feedback that allows the university to determine whether its QMS conforms to established quality requirements.					

15. How has the level of internal quality auditing as required under ISO 9001:2015 quality management system affected post examination services delivery in this university?

SECTION E: CONTINUAL IMPROVEMENT

16. To what extent is the university pursuing continual quality improvement in its operations and processes as per the requirements of ISO 9001:2015 quality management system?

- a. Not at all []
- b. Small extent []
- c. Large extent []
- d. Very large extent []

17. To what extent do you agree or disagree with the following statements on continual quality improvement as required under ISO 9001:2015 QMS in this university using this scale; **1=Strongly Disagree, 2=Disagree, 3= Neither Agree or Disagree, 4= Agree and 5=Strongly Agree**

Statement	1	2	3	4	5
a) The university emphasizes on defining and pinpointing improvement opportunities across all its operations and at all levels in the university.					
b) We analyze and evaluate data from continual monitoring of processes and services for the improvement of the core business and identification of the areas of underperformance.					
c) The outputs from management reviews are used to determine if there are needs or opportunities that must be addressed as part of continual improvement.					
d) The university has cross-functional teams that have implemented significant breakthrough projects that revise or improve existing processes or lead to new processes across all levels in the university.					

18. In your opinion, how has the level of continual quality improvement as required under ISO 9001:2015 QMS affected post examination services delivery in this university?

SECTION F: ORGANIZATIONAL STRUCTURE

19. Kindly respond to the following statements regarding the university’s organizational structure by indicating the degree to which you agree or disagree with them. Use the following scale; using this scale; **1=Strongly Disagree, 2=Disagree, 3= Neither Agree or Disagree, 4= Agree and 5=Strongly Agree**

Statement	1	2	3	4	5
a) The roles and responsibilities of the various offices within the university are clearly defined and assigned to guarantee efficiency in all its processes and operations.					
b) Reporting lines and mandates of key positions within the university are clear to govern workflow in the university and prevent unnecessary conflicts over roles and accountabilities.					
c) There are adequate frameworks in place that guarantee coordination and commitment of all universities departments across all its operations.					
d) There are optimal layers of authority within the university to warrant coordination, integration and speedy decision making processes in the institution.					
e) The university management has developed and enforced formal behaviour rules and procedures which specify what needs to be done by the university staff across all levels.					

20. In your opinion, how has the university’s organizational structure affected the link between the implementation of the university’s ISO 9001: 2015 quality management system and post examination services delivery in this institution?

SECTION G: POST EXAMINATION SERVICES DELIVERY

21. Using the following scale; 1=Strongly Disagree, 2=Disagree, 3= Neither Agree or Disagree, 4= Agree and 5=Strongly Agree, kindly give your assessment of the post examination services delivery in this university by stating your level of agreement or disagreement with following statements.

Statement	1	2	3	4	5
a) Examination results in this university are always released to students on time.					
b) All students are always able to promptly and easily access their examination results once released.					
c) There has be no reported cases of missing student marks and scripts in this university.					
d) The quality of exam results issued to students in the university is rarely questioned by students or any other university stakeholder.					
e) The number of petitions per student with regards to faulty grades has declined immensely.					
f) The production of reports, graduation lists, transcripts and degree certificates in this university is quick and devoid of errors.					
g) The grades and certifications awarded to students by the university are always fair and unbiased.					
h) All complaints and anomalies related to students' examination results once raised are addressed on time and in an objective and fair manner.					

22. What are your other general views on the issues highlighted in this study?

Appendix V: Questionnaire for Students

This questionnaire is designed to help the researcher gather research information regarding to the **post-examination services delivery in public universities in Kenya.** Kindly respond to the following questions honestly and objectively. Please respond to all items using a tick (✓) or filling in the blanks where appropriate. Kindly **do not** write your name or the name of your institution on the questionnaire. All the information volunteered will be treated with utmost confidentiality and used only for academic purposes.

Kindly Note: Post examination services pertain to all the activities aimed at ensuring that examination results are accurately and clearly presented to students and that students obtain or reach these results in a timely and secure manner.

Section A: Demographic Information

1. Gender

a. Male []

b. Female []

2. Which course do you pursue?

3. Are you satisfied with how your faculty or department delivers various post-examination services (e.g. processing of exam results, awarding of grades, etc.)?

a. Not at all []

b. Satisfied to small extent []

c. Somehow satisfied []

d. Satisfied to a large extent []

Explain your answer in question 3

4. Based on your own experience or what you have observed with other students, what are the major concerns or complaints advanced by students pertaining to delivery of post examination services in this university?

5. Using the following scale; **1=Strongly Disagree, 2=Disagree, 3= Neither Agree or Disagree, 4= Agree and 5=Strongly Agree**, kindly give your assessment of post examination services delivery in this university by stating your level of agreement or disagreement with the following statements.

Statement	1	2	3	4	5
a) Examination results in this university are always released to students on time.					
b) All students are always able to promptly and easily access their examination results once released.					
c) There has be no reported cases of missing student marks and scripts in this university.					
d) The grades and certifications awarded to students by the university are always fair and unbiased.					
e) The quality of exam results issued to students in the university is rarely questioned by students.					
f) The number of petitions per student with regards to faulty grades in this university has declined immensely.					
g) The production of results slips and transcripts in this university is quick and devoid of errors.					
h) All complaints and anomalies related to students' examination results once raised are addressed on time and in a fair manner.					

6. In your opinion, what can your faculty or department do to increase students' satisfaction post-examination services delivery in this university?

Appendix VI: Interview Schedule for Directors Quality Assurance and Directors QMS and PC

The following questions will be asked during the interview sessions with the Directors, Quality Assurance and Directors QMS and PC in the public universities.

1. What is your age?
2. For how long have you in this position in this university?
3. Which is your highest academic qualification?
4. What are your general comments on post examination services delivery in this university?
5. Generally, has the implementation of a ISO 9001:2015 quality management system in the university affected post examination services delivery in this university? Explain
6. Kindly give your general assessment of the level of efficiency in the implementation of the university's ISO 9001:2015 quality management system?
7. How has post examination services delivery in this university been affected by the level to which the university has implemented the various requirements stipulated in the ISO 9001:2015 quality management system in regards to the following?
 - a) Establishment of quality objectives
 - b) Resource Allocation
 - c) Internal quality auditing
 - d) Continual improvement
8. How has the university's organizational structure affected the extent to which ISO 9001:2015 quality management system implementation impacts post examination services delivery in this university?
9. Suggest measures to enhance the implementation of the university's ISO 9001:2015 quality management system towards the efficient post examination services delivery in this institution? How can your office assist the university to achieve this goal?

Appendix VII: Interview Schedule for Deputy Registrars (Examinations)

The following questions will be asked during the interview sessions with the Deputy Registrars in the public universities.

1. What is your age?
2. For how long have you in this position in this university?
3. Which is your highest academic qualification?
4. What are your general comments on post examination services delivery in this university with regards to the following?
 - a) Timeliness in the release of examination results
 - b) Ease and promptness with which students can access their examination results once released
 - c) Missing student marks and scripts
 - d) Quality of exam results from the perspective of students and other university stakeholders
 - e) How quick the production of reports, graduation lists, transcripts and degree certificates is and any reported errors
 - f) Security and easy in retrieving students' examination data if need be.
 - g) Timeliness, objectivity and fairness when addressing complaints and anomalies related to students' examination results once raised.
5. To what extent is the implementation of the university's ISO 9001:2015 quality management system influencing post examination services delivery in this university?
6. How has post examination services delivery in this university been affected by the level to which the university has implemented the various requirements stipulated in the ISO 9001:2015 QMS in regards to the following?
 - a) Establishment of quality objectives
 - b) Resource Allocation
 - c) Internal quality auditing
 - d) Continual improvement
7. In your opinion, what needs to be done differently to ensure that maximum benefits of the implementation of ISO 9001:2015 quality management system in the university are reaped where post examination services delivery is concerned?

Appendix VIII: Krejcie and Morgan Table

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

Appendix IX: List of Universities that are ISO 9001 Certified

No.	Institution	Certification Body	Series	Year of Obtaining University Status
1.	University of Nairobi	KEBS	ISO 9001:2015	1970
2.	Kenyatta University	SGS	ISO 9001:2015	1985
3.	Jomo Kenyatta University of Agriculture and Technology	KEBS	ISO 9001:2015	1994
4.	Egerton University	KEBS	ISO 9001:2008	1988
5.	Moi University	KEBS	ISO 9001:2015	1984
6.	Maseno University	KEBS	ISO 9001:2015	1991
7.	Chuka University	SGS	ISO 9001:2015	2012
8.	Jaramogi Oginga Odinga University of Science & Technology	KEBS	ISO 9001:2008	2013
9.	Karatina University	KEBS	ISO 9001:2015	2013
10.	Kisii University	SGS	ISO 9001:2015	2013
11.	Laikipia University	SGS	ISO 9001:2015	2013
12.	Meru University	KEBS	ISO 9001:2015	2013
13.	Multimedia University of Kenya	KEBS	ISO 9001:2015	2013
14.	Technical University of Mombasa	SGS	ISO 9001:2015	2013
15.	University of Eldoret	KEBS	ISO 9001:2015	2013
16.	Technical University of Kenya	KEBS	ISO 9001:2015	2013
18.	Pwani University		ISO 9001:2015	2013
19.	The Cooperative University of Kenya	KEBS	ISO 9001:2015	2011

20.	Dedan Kimathi University of Technology	Bureau Veritas	ISO 9001:2015	2012
21.	Kibabii University	SGS	ISO 9001:2015	2011
22.	Kirinyaga University	Bureau Veritas	ISO 9001:2015	2011
23.	Machakos University	KEBS	ISO 9001:2015	2011
24.	Masinde Muliro University of Science and Technology	KEBS	ISO 9001:2008	2009
25.	South Easter Kenya University	KEBS	ISO 9001:2015	2013
26.	Taita Taveta University	KEBS	ISO 9001:2015	2011
27.	University of Embu	KEBS	ISO 9001:2015	2011
28.	University of Kabianga	KEBS	ISO 9001:2015	2013
29.	Murang'a University of Technology	KEBS	ISO 9001:2015	2011
30.	Maasai Mara University	KEBS	ISO 9001:2015	2013
31.	Rongo University		In the process	2011

Appendix X: Work Department of Sampled Examination Coordinators

Department (Depending on the University)	Frequency	Percentage
Agricultural Bio-Systems, Economics and Horticulture	8	3.6
Agricultural Sciences	4	1.8
Agriculture, Economics and Extension	3	1.3
Agroforestry	4	1.8
Aviation Management & Operations	4	1.8
Biological Sciences	7	3.1
Biomedical Science	4	1.8
Business	14	6.3
Chemistry and Biochemistry	4	1.8
Community Health	3	1.3
Computation and Information Technology	3	1.3
Computer Science and Informatics	4	1.8
Education	10	4.5
Education Management and Curriculum Studies	4	1.8
Educational Administration and Planning	4	1.8
Educational Administration and Planning	4	1.8
Educational Communication and Technology	4	1.8
Educational Communication and Technology and Early Childhood Education	3	1.3
Educational Foundations	4	1.8
Educational Psychology	4	1.8
Engineering	4	1.8
Environmental Science	3	1.3
Hospitality and Tourism	18	8.0
Hospitality Management	3	1.3
Hotel and Hospitality	4	1.8
Information Technology	8	3.6
Kiswahili and Other African Languages	11	4.9
Land and Water	3	1.3
Law	7	3.1
Linguistics & Languages	4	1.8
Linguistics & Literature	4	1.8
Linguistics, Literature and Communication	4	1.8
Mathematics	4	1.8
Mathematics & Statistics	3	1.3
Mathematics, Physics & Computing	4	1.8
Mechanical and Manufacturing Engineering	3	1.3
Mechanical Engineering	4	1.8
Nursing	5	2.2
Philosophy, Religion and Theology	4	1.8
Physical Sciences	3	1.3
Resource Management	3	1.3
School of Business and Economics	7	3.1
Sociology Anthropology and Community Development	4	1.8
Technology Education	4	1.8
Tourism and Hospitality Management	4	1.8
Total	224	100.0

Appendix XI: Courses Pursued by Sampled Students

Courses Pursued (Depending on the university)	Frequency	Percentage
Accounting and Finance	1	0.3
Accounting and Finance with IT	1	0.3
Actuarial Science	2	0.5
Agribusiness	2	0.5
Agribusiness Management	5	1.4
Agricultural Economics	1	0.3
Agricultural Economics and Resources Management	2	0.5
Agricultural Education and Extension	7	1.9
B. Commerce	29	8.0
B. Commerce and Accounting	1	0.3
B. Economics and Statistics	4	1.1
B.A Economics	10	2.7
B.Ed. Arts (Music)	1	0.3
B.Ed. Mechanical engineering	1	0.3
B.Ed.(Library Science)	3	0.8
B.Sc. Education	3	0.8
BA in Language and Communication with IT	5	1.4
BA Interior Design	1	0.3
BA Kiswahili	1	0.3
BA Textile & Apparel Design	2	0.5
Bachelor in Business Administration	14	3.8
Bachelor in Purchasing and Supplies Management	5	1.4
Bachelor of Arts	4	1.1
Bachelor of Commerce (HRM) option	1	0.3
Bachelor of Commerce Accounts option	2	0.5
Bachelor of Commerce Finance option	4	1.1
Bachelor of Economics and Finance	10	2.7
Bachelor of Education (Arts)	55	15.1
Bachelor of Education (Sciences)	3	0.8
Bachelor of Education Special Needs	4	1.1
Bachelor of Education with Guidance and Counseling	1	0.3
Bachelor of Hotel Management	6	1.6
Bachelor of Hotels and Hospitality Management	7	1.9
Bachelor of Library and Information Science	6	1.6
Bachelor of Procurement in Purchasing and Supply Chain Management	13	3.6
Bachelor of Science Civil Engineering	2	0.5
Bachelor of Science in Chemistry	1	0.3
Bachelor of Science in Hospitality and Tourism Management	30	8.2
Bachelor of Science in Nursing	5	1.4
Bachelor of Science Information Technology	1	0.3
Bachelor of Science with Education	2	0.5
Bachelors Education Arts with IT	1	0.3
Bachelors in Human Resource Management	9	2.5
Bachelors of Agribusiness Management and Trade	1	0.3
Bachelors of Arts with IT	1	0.3
Bachelors of Business Administration with IT	3	0.8

Bachelors of Interior Design with IT	2	0.5
Bachelors of Science in Public Health	1	0.3
Basic Science	1	0.3
Basic Science with IT	1	0.3
BED Education Science	4	1.1
BSc. Agriculture	1	0.3
BSc. Agriculture Crop Science	1	0.3
BSc. Agriculture Extension Education	1	0.3
BSc. BBIT	1	0.3
BSc. Botany, Zoology And Chemistry	1	0.3
BSc. Business Information Technology	1	0.3
BSc. Computer Science	5	1.4
BSc. Computer Science	1	0.3
BSc. Environmental Chemistry	1	0.3
BSc. Geography and Natural Resource Management with IT	4	1.1
BSc. Hospitality and Tourism Management	1	0.3
BSc. Hotel Management	1	0.3
BSc. Human Resource Management	1	0.3
BSc. Information Technology	2	0.5
BSc. Mathematics and Computer Science	2	0.5
BSc. Mathematics and Computing	1	0.3
BSc. Mechanical and Manufacturing Engineering	1	0.3
BSc. Mechanical Engineering	4	1.1
BSc. Physics	1	0.3
BSc. Purchasing and Supply Chain	1	0.3
Chemical Engineering	2	0.5
Civil and Building Engineering	1	0.3
Civil Engineering	3	0.8
Education Science	8	2.2
Entrepreneurship	1	0.3
Entrepreneurship and Small Enterprise Management	1	0.3
Environmental Science	3	0.8
Fashion Design and Textile Technology	4	1.1
Geospatial Engineering	1	0.3
ICT	1	0.3
Industrial Chemistry	2	0.5
Information Science	8	2.2
language and communication	3	0.8
Law	2	0.5
Mass Media	1	0.3
Mathematical Science	1	0.3
Medical Laboratory Science	1	0.3
Medical Microbiology	1	0.3
Physical and health education	1	0.3
Psychology	2	0.5
Pure and applied science	1	0.3
Range management	1	0.3
Sociology	1	0.3
Total	364	100.0

Appendix XII: Approval Letter from the University



MACHAKOS UNIVERSITY
OFFICE OF THE REGISTRAR
(RESEARCH, INNOVATION AND LINKAGES)

Telephone: 254 – (0)799 086901/(0)735 247939
E-mail: registrar-ril@mksu.ac.ke
Website: www.mksu.ac.ke

P.O. Box 136-90100
Machakos
KENYA

Our Ref: MksU/RIL/2/1/VOL.I

27th May 2021

TO WHOM IT MAY CONCERN

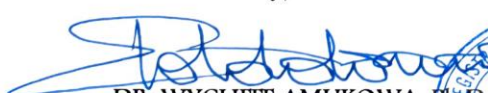
RE: INTRODUCTION LETTER FOR MS. JEMIMAH MUCHAI


This is to certify that, Jemimah Muchai, Reg. No. E83-7097-2015 is a bona fide student at Machakos University pursuing a Degree of Doctor of Philosophy in Educational Administration. The student is carrying out a research entitled “Effects of ISO 9001:2015 Quality Management System Implementation on Post Examination Service Delivery in Public Universities in Kenya”. She has been cleared by National Commission for Science, Technology & Innovation (NACOSTI) as attached.

I am kindly requesting for your permission to allow the student to administer questionnaires to examination coordinators and fourth year students and also to interview staff in charge of Quality Assurance and, Quality Management Systems & Performance Contract as well as the Examination Officer in your institution. The information gathered will be strictly used to achieve the stated objective and will be treated with utmost confidentiality.

Any assistance given to the furtherance of her research will be highly appreciated.

Yours sincerely,


DR. WYCLIFFE AMUKOWA, Ph.D.,
REGISTRAR (RESEARCH, INNOVATION AND LINKAGES)
WA/em



 ISO 9001:2015 Certified Soaring Heights in Transforming Industry and Economy

