Assessment of factors affecting adoption of Environmental Management Systems (ISO 14001). A Case study of parastatals under the Ministry of Environment and Forestry, Kenya.

MARY IVY WANJIKU KIMAMA
M. A. ENVIRONMENTAL PLANNING AND MANAGEMENT
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Department of Geography and Environmental Studies

DECLARATION

I hereby do declare that this research project is my original work and has not been submitted to any other research institution in fulfilment of a similar academic award.

Signature:  Date.... 26/11/2020.

Mary Ivy Wanjiku Kimama

C50/10804/2018

This project has been submitted with our approval as the appointed University Supervisors.

Signature

Prof. Elias Ayiemba  Date...26.11.2020

Signature  Date...26.11.2020

Dr. Martin Marani

DEDICATION

I dedicate this project to my children: Nicole, Martin & Kelsey together with my nephews: Marcellus & Leandro. In your time, May God's Omniscient spirit cause you to outshine this degree.

I salute you too Bwana.Snr. Chief J.K Thuo. Am indeed honoured to have made you this proud!!!

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God bless you all!

ABSTRACT

The rising need for both private and public institutions to enhance environmental conservation has led to development of various environmental related management tools such as EMS based on the ISO 14001 standard. The main objective of this study was to assess the factors affecting adoption of ISO 14001-EMS in the public sector with particular respect to 5 parastatals within the Ministry of Environment and Forestry (MoE&F). The study used a mixed research methodology to draw 102 responses from a purposive sample of 132 individuals from which primary data were collected by use of a semi-structured questionnaire. The study captured secondary data from ISO database, parastatal records and publications from related studies. The study applied both Environmental impact theory and Institutional theory.

With a 77.3% response rate, the study found out that 3 agencies were certified to either ISO 14001-EMS or ISO 9001-QMS while 2 were not yet certified but were in the process of seeking certification particularly for ISO 9001. A principal factor analysis was conducted to test hypothesis. Key factors that influenced adoption were: Resources adequacy, leadership commitment and perceived implementation benefits while the most significant perception attributes were: experience/skills gained from longer duration of implementation, staff involvement, staff training, awareness and perceived additional workload. Consequently, the researcher rejected the two hypotheses on the conclusion that there was enough evidence projecting how various factors and perception attributes influenced individual agency decisions to adopt varying ISO systems management decisions.

In conclusion, political influence was found to be very insignificant at the implementation stage but it was the key driver at the inception stage. As a result, lack of clear guidance on the final expected output greatly influenced adoption of ISO 9001-QMS to boost internal performance at the expense of the agencies environmentally related core mandates. The study recommended further research on why firms do not consider self-declaration option or independent third-party certifications which are less hypotheses, how the new normal (Post-COVID-19) will impact EMS uptake as well what aspects determine EMS adoption in other government ministries.

ABBREVIATIONS AND ACRONYMS

5PLS- Five Point Likert Scale

EMS- Environment Management System

ISO- International Organisation for Standardization

KEFRI- Kenya Forestry Research Institute

KFS- Kenya Forest Service

KWTA- Kenya Water Tower Agency

MoE&F- Ministry of Environment and Forestry

NEMA- National Environment Management

NETFUND - National Environment Fund

QMS- Quality management system

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TERMS AND DEFINITIONS

Adoption- Embracing and aligning the requirements of an ISO systems with the daily operations of an organisation.

Certification-Seeking registration of ISO conformance by a 3rd party (Certification body).

EMS- A part of an organisations management system used to develop and implement its environmental policy, procedures and manage its environmental aspects.

ISO 14000 standards-A series of environmental management standards that provide practical tools to enable interested organisations manage their environmental responsibilities better.

ISO 14001 standard- The only certifiable EMS standard which provides organisations with specific EMS requirements with guidance to interested organisations.

ISO 9001 standard- the international standard that specifies requirements for a quality management system.

QMS- A set of policies, processes and procedures required for planning and execution of operations in areas that can impact the organization's ability to meet customer requirements.

Self declaration –Claiming conformance to ISO Standards internally.

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1.0 CHAPTER ONE

1.1 Background of the study

1.1.1 General introduction to ISO 14001-EMS Environmental Management Systems

The rising need for both private and public institutions to enhance environmental conservation has led to development of various environmental related management tools that attempt to assess the possible impacts that various activities could cause on the surrounding environmental components. Some of the most commonly applied tools include Environmental impact assessments (EIA) that is conducted before a major project commences, Environmental auditing that is done during the implementation stage of a project to monitor compliance levels, Life cycle assessments normally carried out during and after a project is over, Strategic environmental assessments usually crucial during policy formulation phases to mention but a few (EPA, 2019).

Environmental Management Systems (EMSs) are of various types. However, the most commonly adopted voluntary standard is the ISO 14000- EMS standard. A firm that is certified to EMS under the ISO 14001-EMS standard are expected to fulfil the requirements stipulated by the standard. EMS allows implementers to be able to predict environmental risks, be able to mitigate negative environmental impacts and where possible eliminate environmental harm. To promote efficiency and conformance of the system, organisations are required to conduct periodic internal and external audits to ensure conformity to the requirements of the EMS standard. During the certification period, such organizations are expected to commit to ongoing continual improvement so as to be able to consistently minimize their environmental impacts significantly overtime (Gallagher et al, 1999).

According to (Kairu,2014), an EMS lays a platform for development and deployment of a policy in reflection of management commitment, relevant standard operating procedures and tools for periodic monitoring and evaluation of all applicable processes. Mechanisms upon which to undertake effective corrective actions to enhance continual improvement are provided by documenting preventive and corrective action plans. Other studies also recognize that laid down processes and documented procedures feed into systematic and periodic monitoring and evaluation to establish environmental status and identify possible gaps for continual improvement thus promoting EMS implementation (EPA, 2019).

1.1.2 History and development of ISO 14001-EMS

A management system can be defined as combination of interconnected features that allow development of policies and objectives with mechanisms of how to achieve them. Successful management systems are fed by successful interactions of components in defined processes. In a study by Steger (2000) EMS is defined as a transparent, systematic process that prescribes strategic implementation of goals and policies to achieve intended purpose while clearly spelling out implementer's roles and duties.

Krut & Gleckman (1998) traced back the development of possible standards that can manage potential environmental threats to 1970s. However, implementation kicked off in the mid-1980s during process of globalisation when a need to harmonise economic interactions in trade and investment agendas across the globe arose. This was later followed by a huge emergence of firms going for voluntary self-regulation, opening up such firms to public scrutiny on their ability to manage their surrounding (Clapp, 2001; Hoffman, 2001; King et al, 2002; Stewart, 2001).

The existence of varying national standards that often conflicted hence catalysed the need to harmonise them into one internationally accepted standard that guided implementation by all nations though in different levels of development (Davy, 1997; Melnyk et al, 2003; Quazi et al, 2001). This led to development of ISO 14000 series standard which was developed by a technical team (TC 207). These standards provide a frame work for organisations to manage better the impact of their activities on the environment and to demonstrate sound environmental management. Their development was highly advocated for in 1987 through the World Commissions on Environment and development conference in strive to achieve effective environmental management systems by industries.

ISO 14001-EMS is the most crucial standard because it's the one that specifies the requirements of what a functional EMS should entail and what documentation should be maintained. As such, it is a requirement of the standard to maintain and communicate an environmental policy, set and periodically review environmental objectives and commit to enhance environmental conservation by means of establishing proper means of handling and managing waste. In addition, ISO 14001-EMS also offers an organisation the basis for holding management review with set and well-defined agenda as well as allowance for undertaking relevant corrective action especially when non-conformance has been identified.

Over the years of EMS implementation, the respective technical committees continue to review the standards to ensure they are in tandem, with emerging global environmental

concerns. As a result, the last EMS version was revised and released for implementation in September 2015. This revised standard is unique in the sense that it adopted the high-level structure which makes it compatible with other management systems standards

1.1.3 ISO 14001- EMS Implementation in the Public Sector

EMS adoption in the public sector has over the years been decreasing as private firms continue increasing their adoption numbers. According to KEBS (2019) records of EMS certified organisations, there are currently 11 EMS certified firms nationally with only 2 public organisations in the whole list. i.e., Jomo Kenyatta University of Science and Technology (JKUAT) and Kenya Breweries Ltd. Other known EMS certified public organisations include Kengen, Kenya Pipeline Ltd and Kenya Revenue Authority (KRA).

1.1.3.1 Ministry of Environment and Forestry (MoEF)

Environmental sustainability is an issue of critical importance to governments around the world. With more pressure from tax payers, organisations in the public sector are compelled take more effective action while handling matters relating to natural resource use as well as manage climate change. Through Executive order No.1 of 2018 that entails provision for formation of governmental organizations in Kenya, the Ministry of Environment and Forestry (MoE&F) was created. MoE&F is mandated to undertake various roles in spearheading national environmental conservation, sustainability and forest management through its vision that upholds a clean, safe and sustainably managed environment and forestry resources. MoE&F has a mission to promote and facilitate good governance in the protection, restoration, conservation, development and management of environmental and forestry resources for equitable and sustainable development.

The MoE&F is made up of agencies that form the actual implementation wing of the ministries. By cascading the ministerial targets down to the state agencies formed under each objective, the ministry is able to accomplish its mission. In regards to ISO certification, the status of ISO adoption at MoE&F remains unclear. There are 5 parastatals at MoE&F that operate between the two state departments., the State Department of Natural Resources and the State Department of Environment. Adoption of ISO standards and certification varies greatly between the five agencies as elaborated in the scope of the study.

1.2 Statement of the research problem

As environmental issues take a lead in how to deal with potentially harmful activities, both legal and public concerns increasingly demand organisations to take responsibility regarding their Environmental Management Systems (Tauek Kang, 2017). As such, a series of

international organization for standardization (ISO) 14000 provide structured standards on how environmental activities should be managed. Specifically, ISO 14001-EMS accounts for the EMS specifications including formal environmental policy statement requiring the corporation's commitment to compliance and conformance, prevention/minimization of pollution and continued improvement (Miles et al 1997).Projections by past literature has shown that there is a general dearth of research on EMS adoption especially in the developing countries and even more particularly a huge variance has been identified by most literature in regards to EMS adoption by public organizations as compared to private organisations. As a result, recommendations for further research to establish the causes of low EMS adoption in the public sector have been made (Waxin, 2017).

The case study of the agencies at MoE& F were chosen because they form the key arm of government mandated with spearheading and overseeing all national and environmental sustainability affairs. However, the adoption of ISO standards seems to be leaning more on other standards other than particularly EMS based on ISO 14001-EMS.As a result, this study was motivated by the general reflection that public certified firms account for a very insignificant proportion of the total certified firms nationally even when it is rather obvious that in key sectors adoption of EMS should almost be mandatory. This research therefore was undertaken to find out why the huge variance exists in the adoption of ISO 14001-EMS in the Kenyan public sector with a case study of the five agencies in the MoE&F by assessing the factors that affect adoption and certification.

1.3 Research Questions

The following study questions guided this study:

1. What is the status of ISO 14001-EMS certification for the agencies in MoE&F?
2. How does the process and requirements of acquiring certification affect EMS adoption?
3. What are the factors affecting ISO 14001-EMS uptake in 5 parastatals at MoE&F?
4. What are the perceived implementer's benefits of EMS adoption and implementation in the 5 agencies?

1.4 Objectives of the Study

The main objective of this study was to assess the factors affecting adoption of ISO 14001-EMS in the public sector.

The specific objectives were to:

1. Determine the status of ISO 14001-EMS certification for the 5 parastatals in MoE&F

2. Assess how the process of acquiring certification affects EMS adoption
3. Evaluate the factors affecting ISO 14001-EMS adoption and certification in 5 parastatals at MoE&F
4. Critique I implementers perception about EMS adoption and implementation

1.5 Hypotheses

Ho_1- There are no significant factors that affect a firm's decision to acquiring ISO 14001-EMS certification

H_1-There are significant factors that affect a firm's decision to acquiring ISO 14001- EMS certification

Ho_2-The perception of implementers does not significantly affect ISO 14001- EMS adoption and certification

H_1- The perception of implementers significantly affects ISO 14001- EMS adoption and certification

1.6 Justification of the study

Despite the fact that various governments around the world have shown interest in supporting adoption of voluntary environmental management tools such as EMS based on ISO 14001-stardard, uptake remains low. Globally, there is minimal information that has been documented about the factors that influence EMS adoption and consequently its effective implementation to fulfil the requirements ISO 14001 international standard.

Statistically, the number of EMS certified firms had increased to 362,610 globally by mid-2017. Though this figure shows a significant increase in the uptake over the years, it's still not comparable with the uptake of other voluntary standards such ISO 9001 that was noted to have gained 1,058504 certifications by the same year 2017. Regionally according to Tayo et.al (2018), the number of certifications in Africa recorded an increase of 20% for ISO 9001 and 19% for ISO 14001-EMS.This increase however remains low to the total number of the ISO certifications worldwide thus making the African continent count to less than 1%. At the national level, environmental components form valuable national assets that need to be properly managed to enhance sustainable development. These assets offer a wide range of benefits to both the social and economic pillars of the national goals. While environmental degradation becomes inevitable in the process of meeting the set national environmental targets, various mandatory and voluntary mechanisms such as adoption of ISO 14001-EMS can be implemented to minimize the likely harmful environmental impacts.

Darnall, (2006) in her study on the predicted costs of EMS adoption found that there is very limited information on how a firm's corporate mandate is likely to drive its operational units to adopt ISO 14001-EMS. In the same study, it also remains unclear as to why some firms may push to certification while others do not. Consequently, considering that MoE&F is the core arm of the government mandated to protect, conserve and sustainably manage the environment and natural resources in the country, it is rather implied that MoE&F ought to be leading other ministries on matters relating to subscribing to relevant international and national environmental management tools such as ISO 14001-EMS. This is however not the case for the agencies contained in MoE&F as the current trend shows greater adoption of other customer satisfaction oriented management systems like ISO 9001(QMS) than it is for ISO 14001 based EMS.As a boost to the core functions undertaken by the various regulatory agencies in MoE& F, it is rather obvious that these agencies ought to have adopted the one standard that contains establishment, implementation, maintenance and improvement of national environmental management systems (Ceteris paribus).

In strive to find out why such huge variance exists in the adoption of ISO 14001-EMS in the public sector, this study therefore intended to lay a platform for establishing the underlying factors that affect adoption EMS in the public sector by finding out what the ISO certification process entails. This study also aimed at providing relevant information to firms interested in going for ISO 14001-EMS certification in future. The information was not only limited to what the certification process entails but also implementers perception as well as contributing factors that significantly impacted effective adoption of ISO 14001-EMS.

1.7 Scope and limitations of the study

The study was conducted in five parastatals in the Ministry of Environment and Forestry KEFRI, KFS, NEMA, KWTA and NETFUND. The study sites were selected because they form the key arm of the government mandated with an overall responsibility of guiding, overseeing management of environmental assets and liabilities on behalf of the government. While there are very many other legal and statutory requirements that the agencies comply to, this study only focused on conformance to ISO based systems with a bias on particularly ISO 14001 EMS adoption. The emergence of Covid-19 pandemic in the middle of hardcopy data collection to a larger extent affected data output and duration taken to respond especially in two agencies where the initial key guides suffered infections. As a result, the researcher resulted to creating google forms which were later shared with respondents at NEMA, KWTA and NETFUND. Weekly phone calls, email reminders, zoom discussions especially

with the coordinating quality assurance offices in the 5 agencies greatly boosted response rates. Photos showing the use ISO certification marks and ISO policy statements from the organisations visited physically were taken as shown in the appendices.

The following chapters contain relevant literature in the field of ISO 14001 based EMS around the globe, the applied research methodology, results presentation, discussion and finally provided several recommendations for future research.

2.0 CHAPTER TWO

2.1 LITERATURE REVIEW

2.1.1 Introduction

This study examined existing data regarding EMS adoption around the globe. To further understanding of 3 main objectives therefore, the views and findings of various studies were categorised in three subsections. The first sub-section contains EMS absorption in the global and national spheres as well as various views on how the requirements of certification impacts adoption. Subsection two presents key factors documented by similar studies and their likely impact on adoption and certification decisions. Subsections three contain implementers' perceptions that influence Ems adoption and certification.

2.1.1: (a) EMS Implementation in the Global Public Sector

Governments around the globe have come to the realization that issues of high national value such as national development agenda, socio-economic and environmental agenda are inseparable if a country is to uphold sustainable development thus making adoption of environmental management systems worth a consideration. This concept was conceived in the early 1980s (World Commission, 1987).

Over the past decade, the number of companies that adopt and certify the Environmental Management System (EMS), such as ISO 14001-EMS, has gradually increased worldwide (Zutshi 2008). Statistically, in 1999, 14,106 organizations acquired EMS accreditation, of which had raised the numbers to 90,569 by the end of December 2005 (ISO, 2005). Japan (23,466); China (12,683); Spain (8,620); Italy (7,080); and United Kingdom (6,055) were top five. The increase is noticeable in most countries, such as Australia, where the number of companies accredited increased from 1,370 to 1,778. The aforementioned estimates include both private and public sectors and the major drive is pressure from their key stakeholders (ISO 2005).

Enviro News (2000), Leavitt (2002) and Srinivas (2006) stated similar explanations for the introduction of the EMS in the public sector. These priorities formed part of the declared commitment of these state governments to balance its social, environmental and economic priorities. The state's Environmental Protection Authority (EPA) and two other agencies is responsible for supervising the implementation of EMS across all state departments in Australia

Some of the potential benefits recorded to have been enjoyed by public sector organisations include reduced greenhouse effluents; improved emergency response planning; improved

tracking of all types of permits eligibility for a range of incentive programs offered by government regulatory agencies, Improved performance and improved operational and administrative efficiencies and cost reduction opportunities; higher levels of employee participation and stewardship; recognition within the community or public sector that the organization is a leader in environmental management and improved relations with stakeholders as well as lower liability risks and potential savings on insurance premiums. The above benefits were the findings of various studies done by Pendleton and Nagy (2003); Leavitt (2002) and Pawar and Rissetto (2001 and EnviroNews (2000)

Implementation of EMS has been a global trend, and despite the difference in motivation (Davis, 1998, pp. ix, 31; Gale, 1996), it is now being adopted by a growing number of government departments. Evidence of the same has been actualised in both in developing and developed countries. The Kochi unit of Hindustan Organic Chemicals Ltd (HOCL), a public sector company under the Ministry of Chemicals & Fertilizers, was the first company to receive ISO 14001-EMS certification in India and in the following decade, 9 other public institutions also pursued certification including 4 Nuclear Energy firms (HOCL, 2000)

Hong Kong government is also said to have made a declaration to exclusively certify its Electrical and Mechanical Services Division (Anonymous, 2003) while Canadas SaskPower company became the first electrical utilities company to achieve ISO 14001-EMS certification. Similarly, on July 24, 2002, the UK government announced that 80% of government estates will have an EMS in place by 2006 (Anonymous, 2002a). Environmental Minister Michael Meacher announced in 2001 that by 2008, all government departments wound buy at least 10 per cent of their energy from renewable resources (Anonymous, 2001). However, the departments would have the flexibility to set their own timelines and methods for achieving the targets (Meacher, 2003).

In Japan EMS implementation is encouraged at local and municipal levels of government levels (Japan 2002-2006).US on the other hand received an Executive order (EO 13148) Signed by President Clinton requiring them to Implement EMS as a way of greening their Government by end of 2005 (Zuchelli and Kemp, 2003; Grier, 2002). As a result of the collaboration between the US Environmental Protection Agency (EPA) and the Global Environment & Technology Foundation (GETF) (EMS, 2003; Herron, 2001), a number of EMS implementation projects have also been undertaken in 5 local governments in the US. GETF provided ongoing training and technical assistance to participants in local governments as part of the collaboration (GETF, 2000; 2002a, b).

2.1.1: (b) EMS Implementation in the Regional Perceptive

In strive to find out the state of EMS implementation in African region, this study found out that implementation is highly uneven with more implementation falling on Southern Africa then followed by Northern Africa (Egypt, Morocco & Tunisia) then West Africa (Nigeria, Ghana) and lastly East Africa with the least ISO certifications. All this however account for less than 2% of the total global number of certifications (Tayo, 2018). While benefits of ISO adoption in Africa are commonly shared globally, the leading barriers of EMS adoption are more specific to African continent by the nature of our traditions, rigidity to change, scarcity of resources and inadequate infrastructure. A few of the EMS implementation experiences have been discussed below.

Dwarika (2015), acknowledges that EMS adoption in Africa came way long after the other continents had seen its significance and pursued certification. He further noted that in South African companies, EMS gained popularity in early 2000 because of the pressures from external stakeholders to proof they are environmentally conscious before collaborations. In his conclusion, he found out that the few South African companies that eventually pursued EMS gained competitive advantage over those that dint.

Chauke (2017) in her study on effectiveness of ISO 14001 in the South African chemical industry also found out that implementation of EMS in especially chemical industries reduces general environmental pollution resulting from single points of production because it covers the entire mandate of a company's existence while putting more emphasis on all significant aspects.

Similarly, another study carried out in Nigerian construction industry found out that environmental protection and need for proper waste management were the leading drivers for EMS adoption. This was following another study that showed how construction industry topped among the leading environmental polluters in West Africa. Following studies found that among the major benefits derived from an effectively implemented EMS include improved operational efficiency as well as boosted staff competence (Owolana, 2016)

2.1.1 (c) EMS implementation in Kenyan Parastatals

Nationally, the intent to acquire and implement ISOs found its way into the government systems through performance contracting process. On Annul basis, government agencies receive their whole financial year targets with specific criteria and weights set for each target. The general targets contained in performance contracts are categorised in two parts: Financial and non-financial targets. Financials indicators include financial stewardship and compliance

with budgetary limits, appropriation in aid and development index while non-financial indicators form the larger part of the performance contract with targets ranging from service delivery innovations, core mandate operations, cross cutting targets and national values and cohesion targets.

ISO implementation was one major activity emphasized in the cross-cutting section where for ease of adoption it was/ and still is defined in phases of implementation as follows: Phase 1- Appointment of Management Representative (MR), Training of the Top Management, and selection of core ISO champions. Phase 2 included: Training of the selected champions, Documentation development and awareness of all staff. Phase 3 entailed, Training of internal Auditors, Conducting internal audits and management review. The last phase (4) was all about seeking certification by engaging an independent certification body to conduct certification stage 1 & 2 audits.

In the earlier years of ISO implementation in the Kenyan public sector, the agencies were not dictated to exactly which ISO standard they were to adopt. It was therefore left at the discretion of individual organizational management to figure out which standard was more beneficial to their core mandate as long as they were able to give an implementation report at the end of the contract period. Performance evaluation would be done at the end of the financial year and scoring for ISO implementation would be done based number of activities done in each phase (PC guidelines 2013/2014).

2.1.2 Drivers of EMS Adoption & Certification

A global customer survey conducted by ISO in 2015, greatly upholds reasons why firms should take a strategic approach to improving its environmental performance. A number of implementers reported that adoption of EMS boosts compliance to applicable legal and multilateral regulatory agreements, increases leadership involvement and engagement of employees, improve company reputation and the confidence of stakeholders through strategic communication, provides a competitive and financial advantage through improved efficiencies and reduced costs. It also enhances better environmental performance of suppliers by integrating them into the organization's business systems.

A study by Ibbitson (1997) found that among the factors for low EMS diffusion in small and medium size enterprises especially in developing countries include inadequate financial and human resources to cater for the anticipated cost of implementation to fulfil the standard requirements. This implies that much as the willingness to adopt such a system may be

present, resources play a key role in establishing the baseline for effective implementation and sustainability.

Another key factor that is likely to affect the EMS adoption according to Darnall (2006) is common assumptions that parent companies/ministries do not affect the decision of the firms under them to adopt EMS. This assumption may be erroneous to a larger extent because most parent policy implementation goals are cascaded down stream where actual implementation occurs and that may be the level of practical EMS adoption points.

Menlyk et al (1999) found that end customers are not really a determinant factor in relation to driving firms in adopting EMS or even acquiring certification. Instead, the customer seemed more interested in having the firm put a word of commitment towards making plan to eventually acquire ISO certification but really never followed up to find out if those firms actually acquired certification

The level of management awareness to inform the decision to adopt ISO 14001-EMS is also noted in previous literature as a key determining factor for adoption. For firms in the US, the decision to pursue ISO 14001-EMS highly depended on level of awareness in regards to what the standard requires and its expected implications. This prompted many managers to invest effort into first learning more about ISO 14001-EMS for fear of committing to new certification uncertainties.

In a firm where EMS exists but not yet acquired formal certification, Menlyk (2003) found out that the firms were likely to keep implementing EMS as an internal policy but not necessarily go for certification especially because of the resources required to sustain it through the certification period. In his conclusion, he highlighted that a firm's decision to adopt ISO 14001-EMS were either non-economic reasons or their expectation that certification will eventually become a requirement of doing business with customers

Environmental performance tracking and organizational infrastructure are categorized as physical capital resources given that they are related to hard resources i.e., building, underground tank, drainage and communication lines. The argument that environmental performance tracking is determining factor on ISO 14001-EMS implementation has been discussed and explained by a number of researchers such as Chin 1999, Zutshi 2008, Curkovic 2005 and Wu et al, 2008. Besides, Davidson, 2001 highlighted that for environmentally friendly activities to take place; infrastructure must be created by a firm. Noting these, it can be explained that for a firm to implement ISO 14001-EMS successfully, organizational infrastructure must be available and present.

Kang (2005) and Prakash (2005) also noted that following the requirement for an external audit, ISO 14001-EMS certification could boost an organisations performance due to the external pressure emanating from the independent professionals. In addition, organizations adopt ISO 14001-EMS certification to demonstrate how friendly they are to the environment or as a means of attaining a competitive edge thus improve on market share. Hillary (2004) noted that ISO 14001-EMS certification can affect the organization both in its internal and external affairs. The author observed that the certification had a positive influence on quality of environmental information, working conditions and safety, quality of training as well as legal compliance

Welch. et al (2002) found out in his study on voluntary adoption of EMS in Japan that there is an expectation that when firms adopt EMS there will be a counter effect of beyond compliance in their business activities whose direct implication is that firm level environmental policy and actions and the effect are more stringent than regulations. This expectation is therefore likely to motivate an interested firm into acquiring certification.

On the other hand, Chin (1999) observed that implementing an ISO 14001-EMS encouraged innovation, improved procedures and documentation and enhanced strategic overview of environmental responsibility. Hillary (2004) also noted that financial benefits accrued through cost savings emanating from better material utilisation, energy saving initiatives and reduction of waste generated. All the above factors therefore are likely to compel firms that are environmentally conscious to pursue EMS based on ISO 14001-EMS with an assumption that it will take care of their significant environmental aspects

2.1.3 (d) Impact of Implementers Perception on ISO 14001- EMS Adoption & Certification

ISO 14001-EMS upholds a generic requirement for implementing firms to ensure that every now and then, an environmental awareness to all implementing staff must be conducted. While developing applicable documentation as required by the standard, it is also vital for the senior most EMS document (i.e., Policy) to commit to ensuring that staff are made aware of significant matters that have potential to affect implementation and overall conformance of the systems. It is therefore imperative that all employees (regardless of position) be knowledgeable about what an environmental management system is and their direct contribution inform of outlined individual roles. It is only after awareness has been conducted that one can confidently be able to assess the impact of the awareness as its likely to be presented in their behaviours as the end result of their perception.

Menlyk et al. (2003) stated in a research done in the United states (U.S) to find out what the drivers of EMS adoption that in regards to perception, the higher the level of implementers perception, the more they are likely to drive the process of adoption and better still rise above the possible barriers. He goes on to explain that firms that perceived ISO 14001-EMS certification as the "right thing to do" had an internal self-drive to meeting the requirements of ISO 14001-EMS which boosted even their environmental stewardship and responsibility. In the same study, Menlyk et al (2003) found out that another reason for firms in the US adopting ISO 14001-EMS certification is because management perceived it as either a way of actually implementing a formal EMS or as a platform for improving their current systems.

The level of management awareness to inform EMS adoption is also noted in previous literature as determining factor for adoption. For firms in the US, the decision to pursue ISO 14001-EMS highly depended on level of awareness in regards to what the standard requires and its expected implications. In as far as studies that attempt to analyse the motivation behind adopting meta-standards are concerned, the perceptions of not general managers but also of internal stakeholders (such as middle-managers or workers themselves who do not perform management tasks) and those outside the company (Customers, suppliers, consultants and auditors) should be taken into account. (Inaki, 2013)

In a study done by Waxin et al (2019) on key factors of success for ISO 14001-EMS certification in Gulf countries, EMS has the potential to influence staff perception by conducting periodic awareness and sensitization if properly implemented. This also boost staff engagement and involvement that over time it motivates them to want to be a part of improving the corporate image, reputation and improved stakeholder's relationships of their organisations. To the top managers, increased environmental awareness enhances their continued support and free will indulgence to both environmental and social aspects which boost the overall organisational output.

In addition, Waxin et al (2019) continues to emphasize that though several countries in the Gulf have started to embrace ISO 14001 based EMS, there is still a huge gap in EMS based on ISO 14001 research. He therefore encourages for more research especially concentrating on the success factors as well as finding out how UAE firms perceive the outcomes of a successful EMS adoption as this is greatly expected to impact on the motivation and commitment of other interested organisations. In the same study, Waxin et al (2019) noted that employee's attitudes are also greatly impacted by their competence levels, skills, knowledge and experience in the sense that the higher any one of this is, the higher the ease

of adoption as well as focuses their perception into how applicable and implementable EMS can be hence becoming a motivating factor other than a challenge.

Another study by Okwiri (2010) noted that there can be variations in actions emanating from associated motivations for certifications through its influence on the perception and reception of the implementer's factors in the organisation which in the long run is likely to affect organizational outputs which are a direct product of behavioural inputs.

2.2 THEORETICAL FRAMEWORK

According to Anja 2007 previous literature has to a larger extent dwelt more on performance related aspects of implementing EMS than it has paid attention to potential institutional factors that are likely to affect adoption. As result, a niche on the applicability of institutional theory in the adoption and maintenance of an EMS has been identified. O'Neil et al (1998) further emphasizes that EMS diffusion patterns are likely to be influenced by the organisational internal policies, cultures and beliefs, organisational key mandate and characteristic of the EMS innovation itself. This therefore means that the organisations with higher environmental uncertainties are likely to be more creative on various ways of managing negative environmental impacts if not be prompted to adopt ISO standards-based EMSs. The following two theories explain how various factors play diversified roles in influencing a firm's decision and commitment to adopt an ISO 14001 based EMS.

2.2.1 Environmental Impact View Theory

This theory evolved from ecology field in mid 1960's as a result of rising environmental awareness amongst environmental experts which then promoted the need to responsibly account for environmental impacts emerging from various anthropogenic activities around the globe. Application of this theory through the years eventually became essential in decision making especially on matters to do with promoting sustainable development with a wider theoretical scope McHarg (1969).

Initially, this theory was adopted with desire to design upcoming projects with an environmentally friendly eye throughout its life cycle however much later it got engaged in more strategic platforms in environmental plans and policy development. Rationalists such as Weston 2004 and Cashmore 2004 acknowledge that while policy development decisions are not solely dependent on mere provision of relevant information, there are several other factors such as socio-economic and political factors, among others, that come into play. It also acknowledges the role of key players and their involvement in decision making process

hence making this theory suitable in this study as it guided the researcher into relevant factor to look into that impacted Ems adoption and implementation in the five agencies.

2.2.3 Institutional Theory

This concept was by developed by Lawrence & Suddaby (2006) in a strive to logically explain how external socio-economic and political factors play a role in either breaking or sustaining the organisational systems. According to Darnall (2006), a firm's inspiration to absorb a voluntary environmental management mechanism such as one provided by ISO 14001-EMS is to a larger extent a product of factors beyond the internal conditions of a firm. That is to mean that demands from key regulator, customers as well as market changes have potential to cause a firm to pursue conformance to systems such as ISO 14001-EMS (Khanna & Damon, 1999)

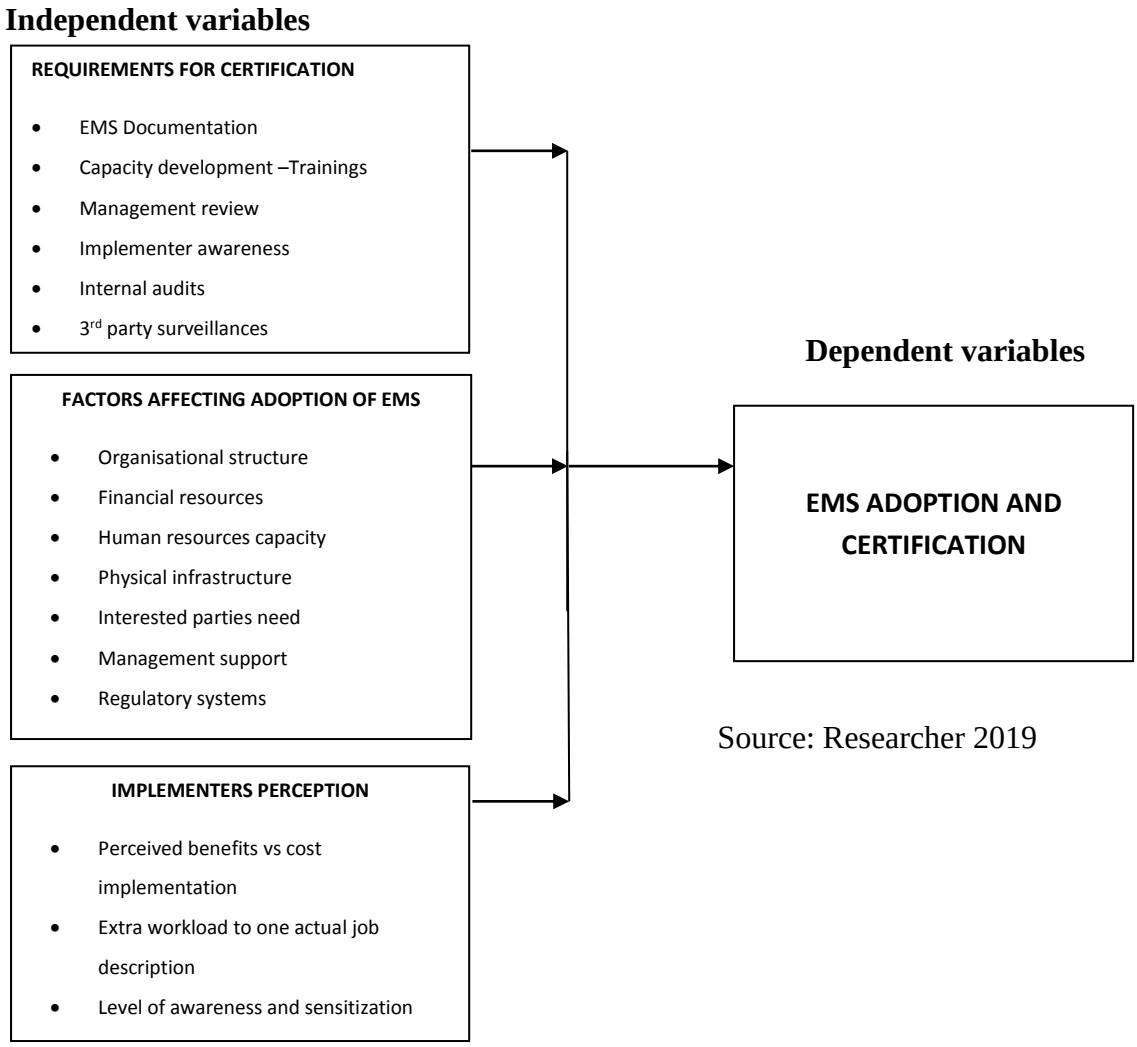
This theory brings into perspective the interaction between organisational characteristics as projected in the norms, rules of governance, policies and beliefs within the existing systems. The healthier the interaction between these aspects is what determines the survival and legitimacy of a system. As organisations strive to be consistent with the goals of their institutional environments, they adopt a concept referred to as Institutional Isomorphism. For an organisation to effectively manage and sustain its success, the harmonious integration of Coercive, Mimetic and Normative of processes should be upheld.

Additionally, (Hoffman, 1999; Scott, 2001) have explained that for one to understand corporate behaviour, institutional theory suggests that it goes beyond the internal organisational motivation to take up crucial strategic decisions. This is to mean that external pressures too have an active role in adoption of various systems. This study therefore wishes to unfold both the internal and external factors that are likely to affect adoption of EMS in the parastatals at MoEF

This theory has however received criticism by several authors in the sense that it is considered to be a static theory. Ibrahim (2017) argues that this theory upholds a concept that is very much fixed on key organisational characteristics which makes measurability of various institutional variables difficult. Mezias (1990) also urges that the objectivity of this theory is likely to be affected by intensity of power and interest from key players. That is to mean that as strong social structure that is against a specific institutional structure increases its opposition, institutional influence reduces hence nullifies the applicability of this theory

Related to the decision to institute a corporate mandate for ISO 14001-EMS, previous research indicates that institutional pressures from regulators and markets may play a particularly strong role in encouraging companies to adopt similar environmental practices

2.2.4 Conceptual Framework



Source: Researcher 2019

Figure 1: Conceptual framework

The three boxes represent the independent variables whose variations directly affects the dependant variables that are adoption and consequently certification. This study assumed that the requirements for certification had a direct relationship with the firm's ability and willingness to adopt and certification. This is in the context of, for instance the only way an organisations is able to demonstrate that its ready to absorb and implement the requirements of ISO 14001-EMS standard is by domesticating and maintaining relevant documentation in fulfilment of clause 7.5 of the EMS standard (ISO 14001-EMS:2015).Additionally, the standard requires a firm to show intentions of cascading the system to all staff by mandating firms to undertake all staff awareness and thereafter defining roles of each staff in order to

enhance collective system implementation. After all staff have been sensitized, there is need to narrow down to a more specific working team referred to as the ISO champions who after a thorough training, become auditors who periodically should undertake internal audits to evaluate how the system is fairing. The output of those audits should be presented to the top management for further deliberations as one of the key agendas of the top management review meeting. Failure or inability to meet these initial requirements for certification highly determines if a firm will actually adopt such a management system.

The second proposition was that there were underlying factors that influence a firm decision to either or not adopt EMS by means of certification. From previous literature the factors with potential to impact a firm's decision to adopt such a system are both internal and external. Internal factors include organisational structures (Processes interactions), Human resources, Physical infrastructures among others, External factors include: Interested parties and stakeholders need as well as regulatory systems that define the legal and other statutory requirements that a firm intending to adopt an ISO 14001-EMS based EMS should comply to. This is in fulfilment of clause 6.1.3 (ISO 14001-EMS: 2015).

The third proposition were the drivers of perception by those intended that they will implement the EMS actively. Several studies have noted that perception is greatly shaped by the benefits they hope/expect to derive from adopting such a system. Those benefits may range from general organisational value addition or personal because of the likelihood that one may be working in an area prone to significant environmental hazards. In-case EMS is adopted at a later stage after normal firms' operations have kicked off, implementers may feel like its additional work added to their daily work which most times gives an unfavourable perception about the system. Therefore, its likely to face resistance or encounter demotivation challenges during implementation phase. In the context of the implementation cost, all around the globe, the cost of acquiring certification and maintaining the system have been recorded to be high while the associated benefits especially for-profit making enterprises have been known not to match. This is likely to shape implementers attitude and equally jog their beliefs and the outcome is what defines the dependant variables of adoption and certification.

In summary therefore, this study was motivated by **research gaps identified** in existing literature on EMS adoption around the globe with key highlights from a study by Darnall, (2006) on the predicted costs of EMS adoption. She found that there is very limited information on how a firm corporate mandate is likely to drive its operational units to adopt ISO 14001-EMS. She therefore recommends further research on, why some sectors may push

for ISO certification for some of their its organisations while others may not. Similarly, another gap was identified in a study by Dwarika (2015) that found that there exists a lot of pressure especially by stakeholders for collaborating government agencies to adopt voluntary EMS. Consequently, this stakeholders pressure has not yielded much in boosting ISO adoption in the public sector, hence, futher research to build the body of EMS literature, is recommended. Finally, while benefits for adopting voluntary ISO standards both whether nationally or internationally are similar in most literature, adoption however varies from country to another (Owolana 2016). This study is therefore set to fill into the key factors (pressures) affecting adoption of EMS as well as establish why the public sector in Kenya has not yet been to embraced EMS adoption wholesomely despite acknowledging projected benefits.

3.0 CHAPTER THREE

3.1 RESEARCH METHODOLOGY

3.1.1 Introduction

This section provides details of the methodology used while undertaking the study. It includes, the study area, research design, study population, sampling size and sample technique, data collection instruments, data collection procedures and data analysis, findings presentation as well as ethical consideration in the study.

3.1.2 Study area

The study will be carried out in two counties that is Nairobi and Kiambu counties. These geographical locations are guided by the physical locations of the Head offices of the agencies. While satellite offices of respective agencies are nationally distributed, the study particularly concentrated on Head offices operations because that is where all policy formulation and adoption take place. The study also acknowledged that various EMS tools such as EIA and strategic environmental assessment are in application by some of the agencies on a need be basis. The study however is limited to ISO 14001 based EMSs because of their projected value additions, compatibility with the global needs and relevance to the core mandate.

The following map shows the location of the study sites in Nairobi & Kiambu counties

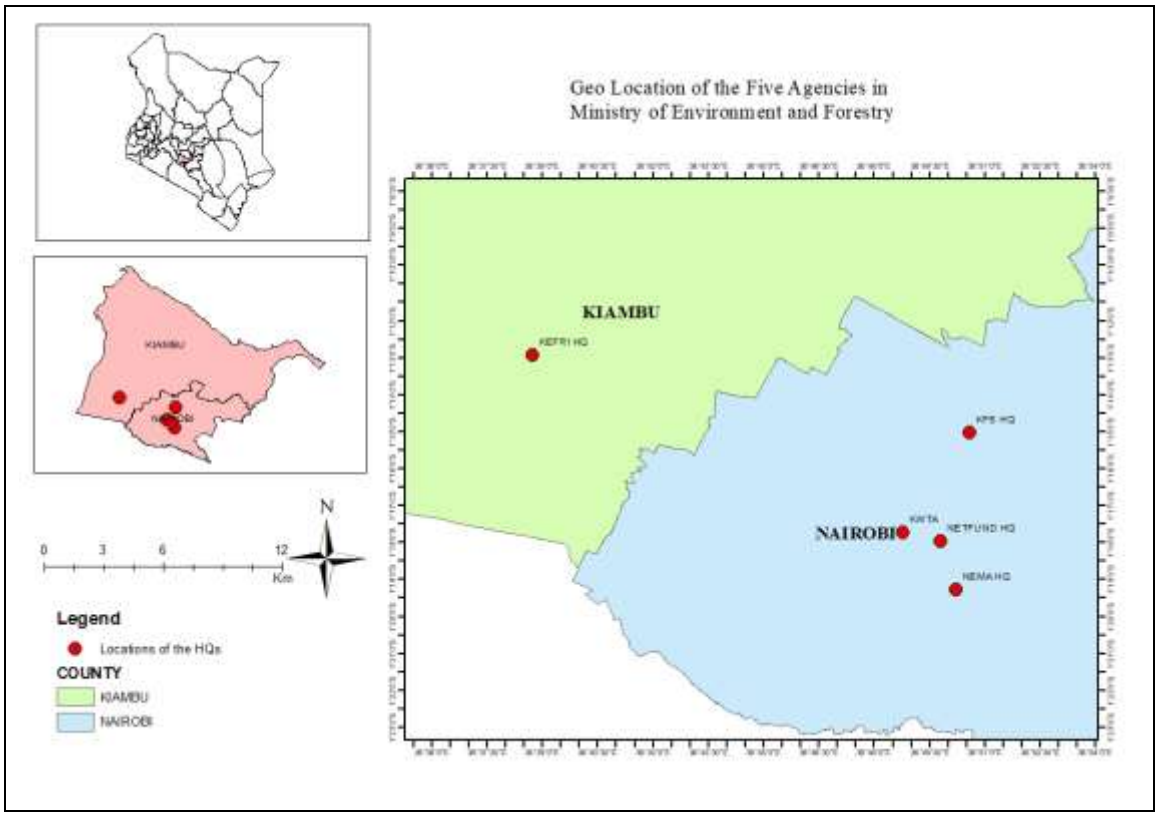


Figure 2:Map of the geographical locations of the study sites **Source: Researcher (2020)**

3.1.3 Research Design

The study applied a mixed research design involving collection of quantitative and qualitative data in a case study research strategy. MoE&F as a case study was particularly been chosen because it offers an umbrella to the 5-leading environmental-mandated agencies nationally hence making it the binding entity that allow this research to be conducted amicably. A case studies is a strong research design that can qualitatively help a researcher gather data about a certain social phenomenon within its real-life context while giving an allowance for a researcher to do an in-depth exploration of major contributors in an underlying matter that is of research interest (Kothari,1990).

3.1.4 Study population

The target population comprised of 5 agencies each focusing on 40 staff from particularly their Head-offices thus making the target population to add up to a total of 200. The sample included 10 Top management staff,10 heads of processes and 20 champions (internal auditors) in the five (5) parastatals. This population was purposively selected because they understand ISO requirements at length and were therefore likely to reason out in details how diverse factors within the organisation affect implementation and adoption in the long run.

These study population was also more informed of the organisational structures as well as input and output processes that interact to make an ISO management system functional. The study applied purposive sampling technique as elaborated in section 3.7

3.1.5 Sample Size

The study's sample size was obtained by use of Krejcie and Morgan sample size determination formulae and the calculated figure cross checked with population target figure on the table to validate the calculated figure. (Krejcie & Morgan 1970). The table was generated by computation of the following formula given a target population of 200 staff members hence giving a required sample size of 132 respondents

Below is the formula used to calculate the sample size:

$$n = \frac{x^2 NP(1-P)}{(ME^2(N-1))+(x^2 P(1-P))}$$ Where: n=sample size x^2=3.841, N=200, P = 0.5, ME=0.5

$$\frac{3.841\times200\times0.5\times0.5}{((0.05)^2\times200-1) + (3.841\times 0.5 \times0.5)} = \frac{192.05}{1.46} = 131.5 = \mathbf{132}$$

3.1.6 Sampling Technique

This research applied purposive sampling technique to get 132 respondents then applied a multistage-random sampling technique to simply identify potential respondents at different categories. Purposive sampling is a non-probability method that is mostly used when the samples of a given research are selected from point of a sound judgement where the researcher is well aware of the characteristics of the study population and their ability in providing relevant information to inform the study objectives. While general ISO requirements calls for inclusion of every staff in the implementation phase, the researcher only intended to randomly sample a smaller group made of only those who actively take part in the day-to-day implementation of the ISO matters. In addition, the researcher also had no intentions of making generalizations pertaining EMS adoption status of the 5 parastatals.

These techniques are most applicable because the researcher categorically needed to get data from ISO core teams which is under normal circumstance made up of the top management, management representatives, and internal auditors who periodically evaluate the implementation of the management systems

3.1.7 Data Collection

For purposes of collecting all the crucial information, the researcher used triangulated-multistage research approach. According to Gratton et al (2007), this research approach

allows for the use of several methods to gather both secondary and primary data in phases. For primary data, a semi structured questionnaire was administered both in soft and hardcopy with the guidance of respective management representatives (MR) depending on the nature of accessibility of individual respondents. This tool was most preferred because of its ability to serve respondents who are in varying locations. Data was collected from 26 respondents who were top management and heads of divisions, 27 respondents were Internal auditors and 49 who were implementers/champions. A (5PLS) five-point Likert scale ranging from strongly agree, agree, neither, disagree and strongly disagree were used to determine respondent's degree of agreement or disagreement that most reflects their perception about EMS adoption. For the sites visited physically, observation method was used to indentify evidence of ISO conformance. Secondary data such as ISO standards requirements for certification and related factors impacting EMS uptake globally were obtained from previous research data publications, organisational operations and records, textbooks and applicable websites and databases. Primary data was collected by means of questionnaires both soft and hardcopy designed to feed into the four research objectives. Photos on the use of ISO certification marks and policy statements were taken.

3.1.8 Data analysis

The data collected was organized and coded then analysed using descriptive statistics with the aid of microsoft excel. Quantitative data was coded and the subjected to content analysis to determine relationships between key variables. Graphical representations in forms of graphical frequencies, pie charts and percentages were used to describe and interpret research findings as discussions for each objective were presented after each figure. To enable testing of hypothesis, selected key variables where be subjected to Kasier-Meityer-Olkin test to analyse the adequacy of the sample data as well as Bartlett's test to test if there were existing relationships among the variables. The results of both tests were presented in tables 1 and 2 in section 4.6. Factor analysis for each variable was then conducted in the factors to enable testing of hypothesis.

In terms of study response rate, the findings were received from 102 respondents within the initial sample size of 132.This signifies 77.3% which according to Mugenda and Mugenda (2003) is statistically acceptable to derive significant research information that informed the study objectives. To boost the response rate especially by respondents who partially understood ISO matters, the researcher interpreted the various technical parts of the questionnaire through physical visits, phone calls and emails.

3.1.9 Ethical Consideration

Before commencement of data collection, the researcher acquired an authorization letter from the Department of Geography and Environmental studies (UoN). This letter was presented to the human resource officers in the 5 parastatals to seek for permission to conduct the research in their organisations as well as access relevant secondary data which to some extent was confidential or in cases where access rights may have to be secured from key process managers. To uphold research integrity, the researcher applied for a research permit from NACOSTI. Data obtained was handled with utmost confidentiality and shall only be scrutinized during and after the study only to feed into the research objectives.

4.0 CHAPTER FOUR

4.1 RESEARCH FINDINGS AND DISCUSSION

4.1.1 Introduction

The main objective of this study was to assess the factors affecting adoption of ISO 14001 on Environmental Management Systems in the public sector. The arrangement of this section follows the 4 specific objectives. The data collection tool was designed in the same arrangement with the general characteristics of the respondents laying a platform for the study.

4.1.2 Characteristic of respondents

Respondents were asked to indicate their levels of education where 8% indicated to be PhD holders, 36% masters' holders and 42% been undergraduate while the remaining 24% were diploma and certificate holders. When asked about the duration they had worked for their respective organisations, 59% had worked for 7 or more years, 29% had worked for 4-6 while 12% had worked for 3years and below. This was important because a single ISO certification contract period runs for three years while the duration of implementation in relation to experience gained overtime were among the factors that later feeds into the objectives as discussed in objective three and four. Considering that this study applied purposive-random sampling to identify those who were involved in daily running of ISO matters, the respondents were asked to categorize their level of involvement as this would later determine the degree of implementation. As a result, 85% of the respondents said they were directly involved in the daily running of ISO matters,16% categorized their involvement as been part of Top management or a Head of department.28% categorically indicated that they were ISO internal auditors while 49% were in the core implementers team commonly referred to as ISO champions.

This background information particularly aspects of education, experience and level of involvement were considered important to gather at the onset because they formed the understanding platform for upon which other key variables contributed in answering the study objectives.

4.1.3. STATUS OF ISO 14001 EMS ADOPTION IN THE 5 PARASTATALS

Agency	Certified	Not certified	ISO Standards certified to.
KEFRI	52%	0%	EMS & QMS
KFS	26%	0%	QMS
KWTA	0%	61%	None
NEMA	19%	0%	QMS
NETFUND	0%	39%	None

Figure 3:Status of ISO certification in the 5 agencies

The respondents were asked to indicate whether their respective agencies had certified to any ISO standard. 60% representing 3 agencies i.e., KEFRI, KFS and NEMA indicated that their employers had certified to at least 1 ISO system while 40% representing two organisations that is NETFUND and KWTA had not yet been certified to any ISO system. The two non-certified agencies further indicated that they were in the process of pursuing a single ISO system each with an intention of seeking certification through internal implementation and regular audits. Further, 20% out of 60% that were certified were found to be implementing both ISO 14001-EMS & ISO 9001-QMS while the 40% were certified to only ISO 9001 as shown in the figure 3. These findings are in concurrence with the research topic that indeed there is low adoption of EMS among the agencies since it was only 1 out 5 that had adopted EMS to certification. Similar findings in a study by Tayo et.al (2018) established that ISO adoption in Africa especially in the public sector account for a very insignicant count.

Regarding the duration of implementation, 35% recorded to have implemented for 7years and while 46% recorded to have implemented for at least 3yrs while 19% reported to have implemented at least one system for 4-6yrs.These findings present a direct relationship between the duration of implementation and the status of certification in the sense that the 3 organisations that had implemented for more than 4years had also formerly persued third party certification as opposed to those that implemented for less than 3years.As a result, the next objective sought to find out if the duration taken was a factor of the process and requirements of certification.

4.1.4 PROCESS & REQUIREMENTS OF CERTIFICATION

For a firm to be certified to ISO 14001 EMS standard, the national certification bodies in any of the ISO member countries require interested firms to fulfil the mandatory requirements in

their documentation, capacity building and demonstrate how monitoring to evaluate effectiveness of implementation is carried out (KEBS 2020, SGS(K) 2020). Additionally, the revised 2015 high level structure standards such ISO 1400:2015 and 9001:2015 standards prescribe a process flow principle that should be followed by firms seeking conformance to their requirements. This principle upholds the 5 key elements of a Deming cycle i.e., Policy, Planning, Implementation, Checking and Management Review (Hikichi et al, 2017)).

To establish how the process and requirements of certification affects adoption and certification decisions, this study applied the same concept in the following results presentation.

The ability of an implementer to comprehend the standards requirement is key to effective implementation. The respondents were asked to indicate how much they understand the requirements of ISO 14001 standard, 46% reported to fully understand the standard while 54% indicated they understand partially. It was noted that most of those who said they understood the standard requirement fully were mostly from the already certified firms while those who partially understood were greatly from the non-certified firms. This therefore showed that's those agencies that were able to point out what the standards demands of them had an easier time during implementation and eventually were able to pursue certification compared to those who partially understood. Further, the respondents were asked to name 4 main documents that they knew are mandatory for an organisation to meet before certification is claimed. The following were the major four recorded: -Policy statement, Risks and Aspects, Objectives and targets and Mandatory Operating procedures.

i. Documentation development & Planning for EMS Implementation

Documentation been a mandatory requirement that must be fulfilled before an organisation acquires certification, 48.4% reported to have carried out documentation development both internally and externally through the assistance of an independent consultant. On the other hand, 37.9% carried it out internally while 13.7% hired the services of a consultant until documentation was completed. Having acknowledged earlier some of the mandatory documents required, they were asked to mention those that they had developed & maintained. 69.5% of the respondents indicated an ISO policy statement, 44.6% indicated measurable objectives and targets, 59% said mandatory procedures and finally 41.1% indicated risks and opportunities. While in the documentation phase, the respondent was asked to describe how their experience was during and after documentation and the following was the feedback: it's a long and tedious process hence demotivating, it creates lots of workload which requires a

lot of resources to complete the process. Others observed that development of ISO documentation conflicted with other policy documents especially those of external origin that must be applied to the latter. On a positive note, other respondents noted that some of the advantages experienced after completing documentation included, Ease of documents retrievability, streamlined internal processes, increased efficiency and that ISO documentation process helps an implementing organisation identify their key stakeholders as well their needs and expectations with an intention of offering customer satisfaction.

ii) EMS Implementation structure

While the latest 2015 version of EMS standard does not require an organisation to have mandatory management representatives defined by job descriptions, it requires that key ISO matters be managed by a unit without necessary dictating the numbers. The study sought to find out if the agencies had coordinating units and 100% meaning all the 5 agencies had designated officers/sections that spearheaded daily running of ISO matters as quality assurance units. On a positive note, all the organisations reported to have formally appointed management representatives who were part of the top management as well heads of a division and were trained auditors. The numbers however rated from the highest having a team of 30-55 staff in the 3 agencies that were already certified while those not yet certified had 2-20 people who oversaw implementation in their respective sections.

Regarding enhancing staff capacity before and during implementation, 72.9% of the respondents reported to have carried out training to their top management, 61% conducted both a training and periodic sensitization to their key implementers,70% reported to have trained auditors and periodically subjected them to refresher courses while 22% carried out sensitization and awareness to all other staff members who may not have a part of the above 3 categories. In application, the researcher noted that firms that had combined several modes of capacity enhancement for each individual group achieved better output and their systems run more smoothly than those that used single modes on individual groups. This realization was found to be in concurrence with the findings of a similar study that found that most success factor recorded in the Gulf countries were derived from the positive implementers perception that emanated from a well-established knowledge base (Waxin et al 2019).

iii) Checking and corrective action, monitoring and audits

Given the above-mentioned teams, the organisations were asked to indicate how they monitor and evaluate the extent to which their systems were conforming to adopted standards. 95.6% conducted internal audits biannually while 62% conducted external audits annually. Other

mechanisms established to enhance monitoring include environmental & quality monitoring schedules such as waste generation and management records while those that were not yet certified reported to be using the divisional chart flows and quarterly performance appraisals to track implementation. In application, this finding showed that though some agencies were not yet certified, they still conducted internal checks to evaluate conformance. However, only those agencies that were certified were able to undertake third party external audits.

During the implementation stage, key 3 challenges encountered during implementation were highlighted as follows: Inadequate resources to maintain the system, Lack of leadership commitment as reflected in existing Institutional culture and difficulties in comprehending the standard requirements. These challenges were found to be in concurrence with the findings of several other studies that found out that among the main factors for low EMS diffusion especially in developing countries include inadequate financial and human resources to cater for the anticipated cost of implementation to fulfil the standard requirements Kairu. N (2014) and Ibbitson (1997).

iv) Management Review Meetings

To sum up the implementation, the ISO 14001 standard requires that periodic management review meeting should be held to review the adequacy of implementation. As such, 4 out of 5 agencies reported to have been holding their top management review meeting annually while 1 agency reported to have been still in the documentation stage hence not able to meet the basic agenda requirements for holding a management review meeting.

4.1.4 FACTORS AFFECTING ADOPTION AND CERTIFICATION

In seeking to find out the likely factors that could be affecting adopting of ISO systems in the public sector, the respondents were provided with 15 tabulated independent variables presented in a Likert scale. The following graphs represent the extent to which different respondents felt each variable affected adoption.

i. Political influence

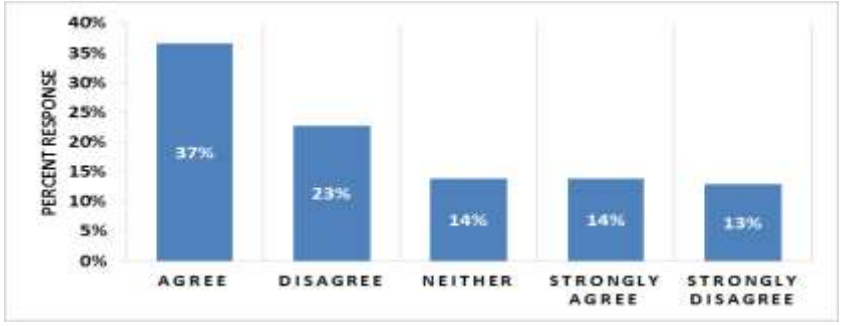


Figure 4:Political influence

ISO implementation was first introduced in the public sector through the performance contract guidelines of Financial year 2013/14. Since then, adoption of various ISO standards has been varying from sector to sector. The study therefore sought to find out how political influence affected the current adoption status in the 5 agencies at MoEF.37% of the respondents agreed that political influence was a driver to adoption while cumulatively those who either disagreed or indicated neither added up to 60%. In addition, the respondents clearly indicated that political influence was a key contributor at the initiation stage but later after the state departments had been evaluated on performance contract achievements, the momentum for further adoption got lost since the target for the year was achieved. This therefore means that other factors took over implementation and therefore at implementation stage, political influence did not count. When asked about the variations in the standards adopted, the respondents said that the choice was left open for the agencies to choose the one they most preferred as long as by the end of the financial year they had jumped started the process incorporating an ISO system to their operations. This therefore explains why majority of the agencies took up QMS with an intention of enhancing their service delivery while one agency adopted both EMS & QMS to improve their service delivery and environmental management mandate

ii) Extent of understanding the ISO standards requirements

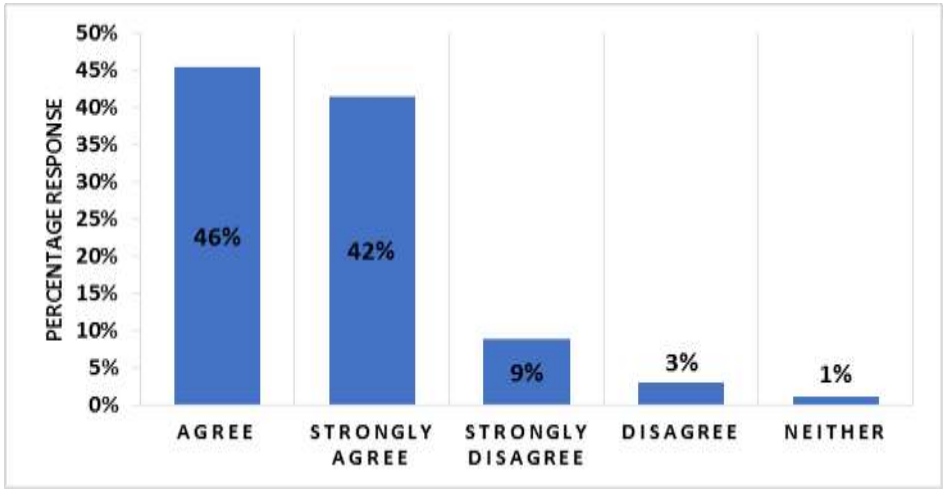


Figure 5: Extent of understanding the ISO standards requirements

Extent of understanding the ISO standards requirements

The study found out that 46% followed by 42% agreed and strongly agreed that the level of understanding the actual requirements of the ISO standards has the potential to either make an organisation adopt or not adopt an ISO standard to certification. While there was 9% and 3% that disagreed with the finding, 1% neither agreed nor disagreed.

The findings present a correlation between the ability of the implementers to grasp what the requirements demand and the actual fulfilment in the sense that those who agreed to this factor mostly were from those firms that were certified while those that either disagreed or said neither were from the non certified firms implying that most of those who were able to understand the standard were also able to put up mechanisms to address the requirements and hence were able to pursue certification as opposed to those who did not.

iii) Leadership commitment

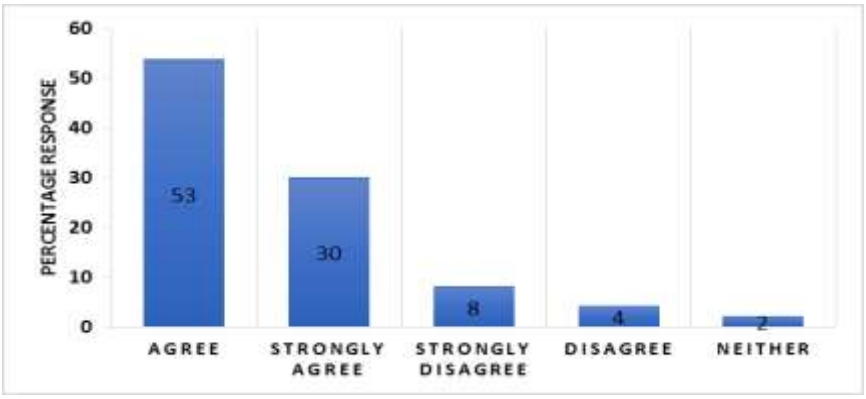


Figure 6: Leadership commitment

Clause 5 of the revised ISO standards requires organisations to demonstrate all round management commitment for the systems to be implemented effectively (ISO 14001:2015). While this is a mandatory requirement, 53% of respondents reported to strongly agree that leadership commitment is a major contributor to adoption and certification followed by 30% that agreed on the same. Further observations made in responses is that the agencies that had not been certified acknowledged to have fallen victim of non-committal senior management or had experienced managerial changes in the course of implementation which either led to delay in acquiring certification or largely barred proper satisfaction of ISO systems requirements. On a positive note, those that were certified acknowledged the input of their leaders in terms of resources provision, capacity building and clear core mandates. This finding was in concurrence with the findings of similar studies carried out in a South African Construction industry where among the leading barriers of EMS adoption included resistance from top management (Nyamazana, 2017).

iv) Adequacy of relevant legal systems

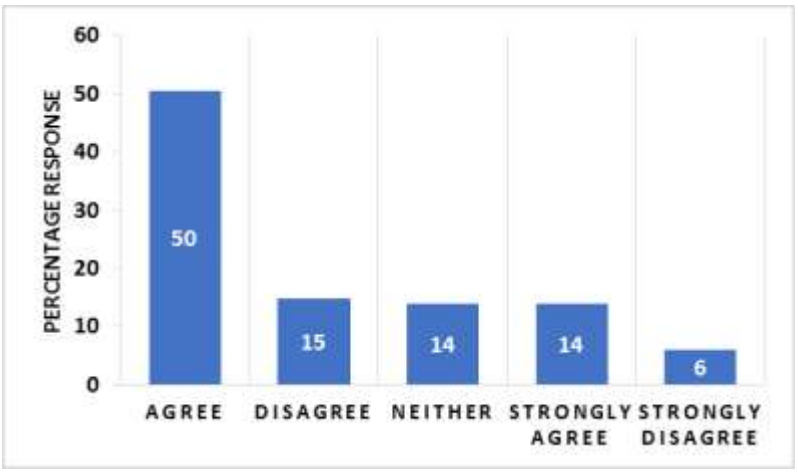


Figure 7:Adequacy of relevant legal systems

Although adoption of ISO standards is not dependant of existence of other applicable legal systems, compliance to existing legal and statutory obligations that a firm subscribes to is a mandatory requirement of all ISO standards (clause 6.1.3). The respondents were therefore asked to indicate how adequate they felt the existing legal obligations they had subscribed to were in relation to adoption. While 56% of the respondents agreed that adequacy of existing legal framework had the ability to affect ISO adoption, 44% either disagreed or said neither. This further informs the state of ISO adoption by the 5 agencies in the sense that the fact that all the agencies to a larger extent had subscribed to the same environmental legal and statutory obligations, this dint not prompt them to further take up related voluntary ISO systems such as one provided by ISO 14001.

v) Ease of integration with other standards

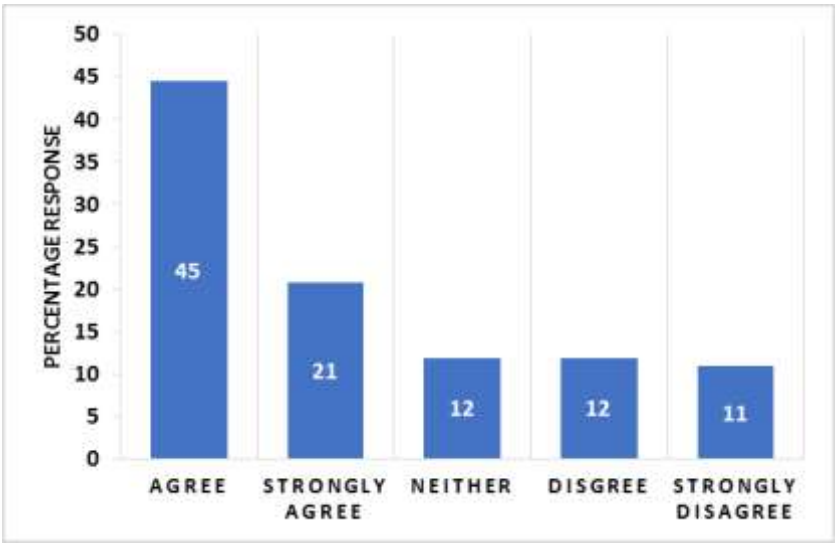


Figure 8: Ease of integration with other standards

Ease of integration with other related standards have in previous studies been found to be a driving force in the sense that it creates a synergy that motivate firms to adopt more ISO systems especially in the context of the benefits that tag along during and after adoption (Casadesus et al 2009). As a result, the study sought to find if existence of other ISO systems affected the decision of an organisation to adopt EMS. 45% agreed followed by 21% that strongly agreed. This finding was more positive from the 3 organisation that had been certified to at least 1 ISO standard

vi) Organisational structure (Organogram)

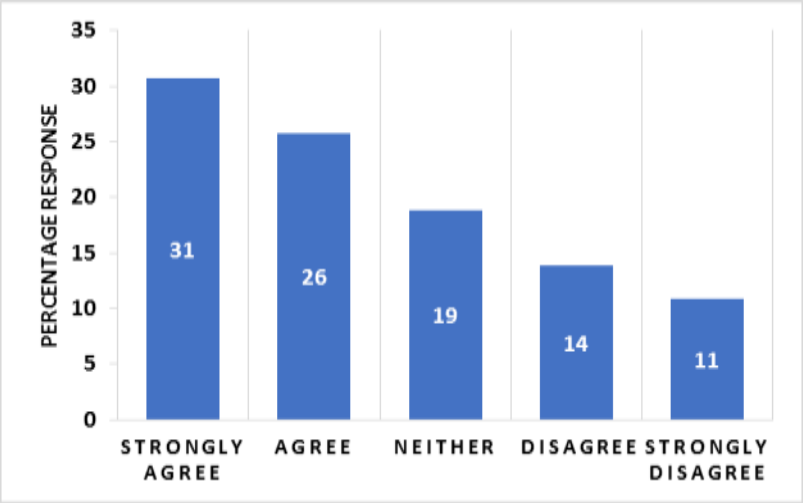


Figure 9: Organisational structure

Considering that ISO 14001 upholds the idea of clearly defining roles and responsibilities for key actors involved (Clause 5.3), the study focused on establishing if the organisational structure enables clear definition of ISO responsibilities which has a direct relationship with eventual output during and after implementation. Normally the best representation of roles is obtained from a clear organisational structure. As a). As result the respondent were asked to rate how much their structures could affect ISO adoption and 57% were in agreement.25% however disagreed while 19% indicated neither as shown in figure 9

vii) Resources provision

For any ISO management systems to operate effectively**,** the management must ensure resources needed to sustain a system are determined and provided (Clause 7.1). Resources can be diverse in nature and therefore for purposes of this study they were categorised as follows:

a) Human resources

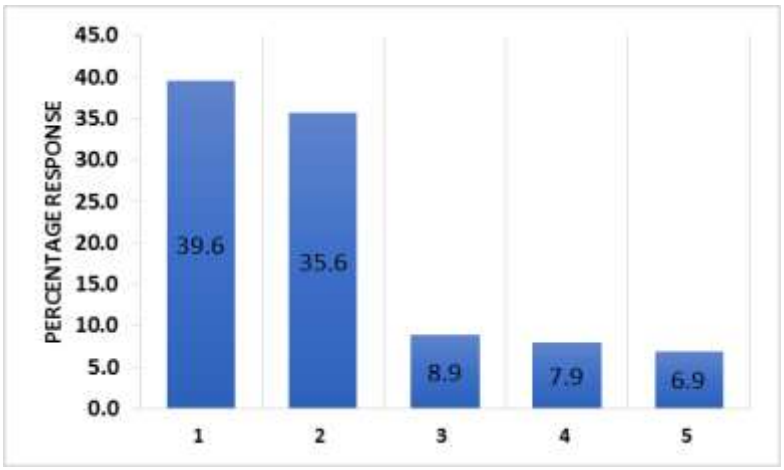


Figure 10: Human resources

Respondents were asked to indicate to what extent they felt that human resources adequacy could affect ISO adoption and 39.6 % were found to agree that it can affect adoption followed by those strongly agreed on the same with a count of 35.6% while the lesser percent disagreed as shown in figure 10

b) Financial resources

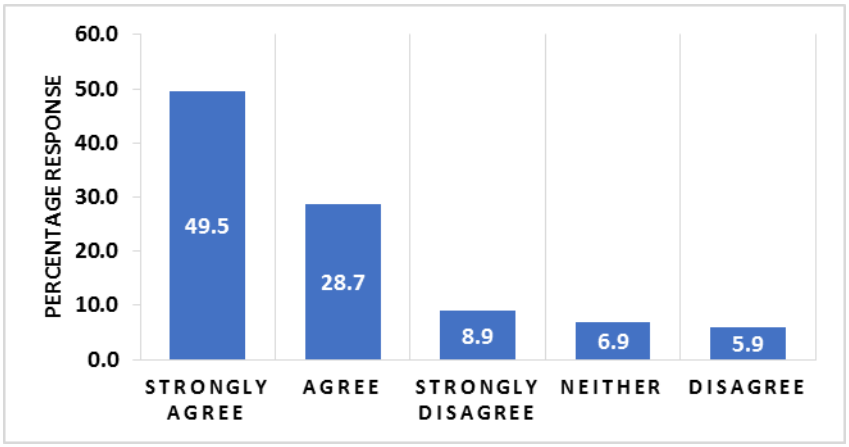


Figure 11: Financial Resources

When asked about how much they thought financial resources could affect uptake, 49.5% of the respondents strongly agreed followed by 28.7% who agreed that availability of financial resources are key contributors as others went on to explain that ISO systems are generally financially expensive to maintain. (Clause 5.1d)

viii) Physical infrastructure

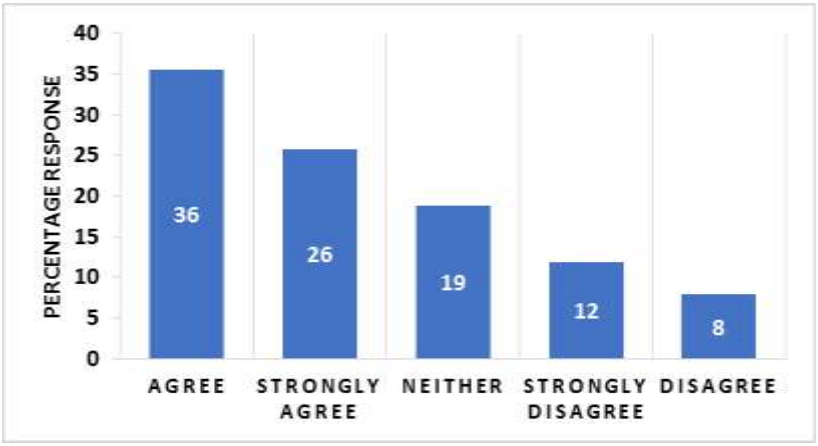


Figure 12: Physical infrastructure

In addition to the resources discussed in figure 12, the respondents were asked to indicate how much they thought physical infrastructure could affect ISO adoption. 62% percent agreed that adequacy of infrastructure could affect adoption decisions. This is in line with resource-based theory that upholds the thought that adequacy of resources plays a role in informing the strategic decisions that firms may undertake in regards to applicable systems.

Generally, this research found out that all round resources played a vital role in adoption, maintenance and certification of EMS. On the contrast, findings of a related study found out that adequacy of resources in ISO certified firms dint always guarantee improved system performance and therefore recommended that enhancing staff capacity would go along way than just providing resources (Otulia et.al,2017)

ix) Stakeholder's needs & expectations

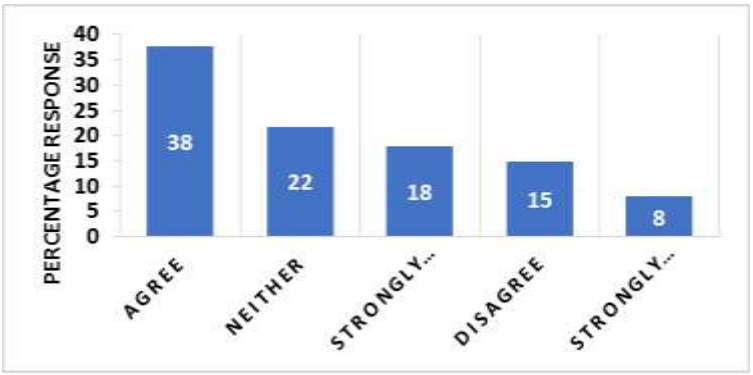


Figure 13: Stakeholder needs and expectations

It is a requirement of the standard that needs and expectations of the interested be taken into considerations and in essence when need be those needs should be treated as compliance obligations of the implementing agency (Clause 4.2). This study found out that 38% of the

respondents agreed that ability or failure to determine stakeholders needs can affect ISO adoption and more so certification because records of the same must as well be maintained. However, 22% could neither agree nor disagree while 33% disagreed.

x) Communication adequacy

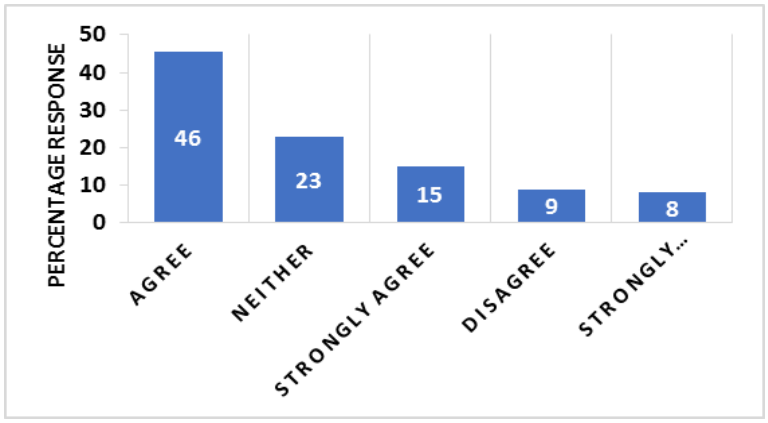


Figure 14:Communication adequacy

ISO 14001 standard requires adopting firms to establish, implement and demonstrate how they will maintain the processes needed for effective internal and external communications. This is done in consideration with its compliance obligations and shall ensure all information provided is consistent and reliable to inform the state of its EMS. (ISO 14001, clause 7.4.1). The study found that 61% of the respondents either agreed or strongly agreed while 23% could neither agree or disagree. This is in support of several findings in related studies that established that organisations with proper communication structures that enable clear communication flow tend to outdo the strategies set much more effectively compared to those with inadequate communication channels. (Rapert and Wren 1998, Kairu. N 2014)

xi) Related perceived benefits

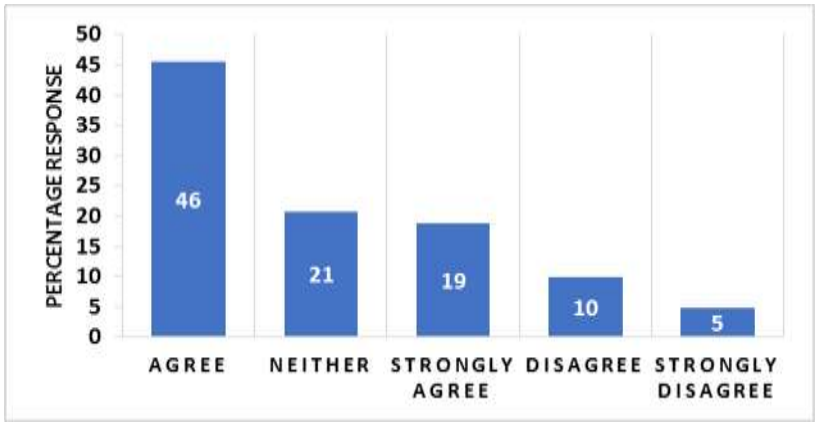


Figure 15:Related perceived benefits

Several other research studies found out that one of the key drivers of ISO systems adoption is related perceived benefits (Casadesus et al 2009, Kairu N, 2014). This study sought to find out the extent to which this factor may have contributed to the current state of EMS adoption in the 5 agencies.46% backed up by 19% agreed to it, while 21% dint feel like this was a driving factor. Those who agreed, further indicated that some of the 3 main foreseeable benefits include; Increased efficiency resulting from streamlined processes, Improved energy resources use and enhanced corporate image

xii) Other adopted ISO standards

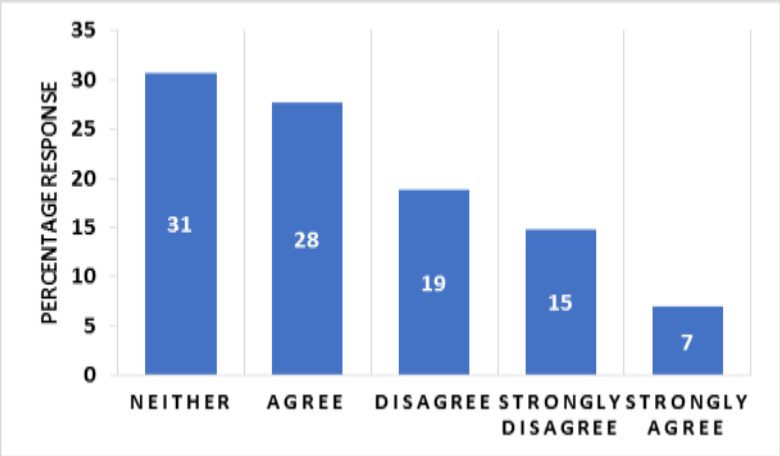


Figure 16:Other adopted ISO standards

The study also assumed that existence of other ISO standards that are not necessarily EMS based could have been a motivation for those firms to take up EMS in due course. It was however found out that this may not be the case as 35% agreed while, 21% reported neither as 34% disagreed. This could be attributed to the status of certification where the 40% of those certified to only ISO 9001 did not feel as if existence of QMS motivated them adopt EMS. In addition, the 2 organisations that are not yet certified accounted the for the larger percent that reported neither for lack of proper implementation experience hence could exactly define the motivation behind adopting multiple ISO systems simultaneously.

xiii) Cost of certification & maintenance of the system

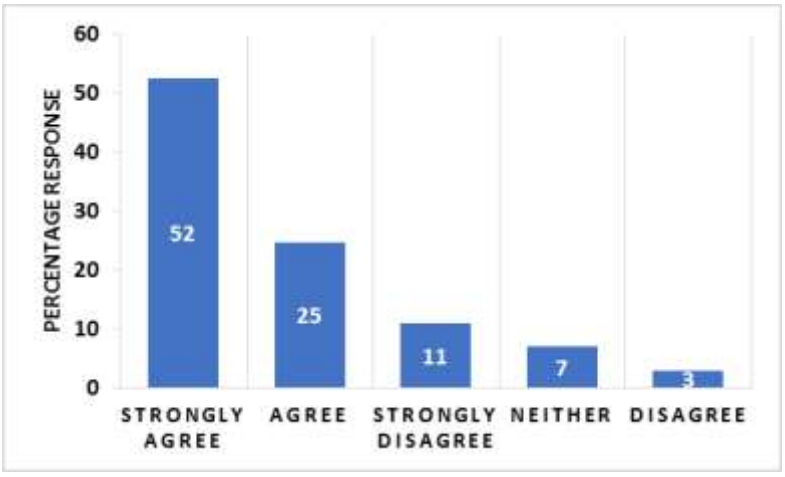


Figure 17:Cost of certification & maintenance of the system

While firms could be willing to adopt relevant ISO standards, the cost of maintaining the system actively operational and that of acquiring 3rd party certification have in previous studies been noted to be major determinants of adoption. (Ibbitson (1997) found that financial and human resources were the most leading drivers of low EMS diffusion in developing countries. This study too found that 52 % of the respondents strongly agreed followed by 25% that agreed plainly. Also, important to note that 11% strongly disagreed meaning that over and beyond the cost of adoption, there could be other more serious underlying factors in play.

4.5 INFLUENCE OF IMPLEMENTERS PERCEPTION ON ADOPTION

The fourth objective sought to find out what respondent views were in regards to how the perception of the implementers affected adoption and eventually certification. To set the pace, they were asked if they thought ISO systems adoption was beneficial to the adopting agencies and 100% reported yes. Further, they were asked to support their answers and among the major three support answers provided included the following: - (1) It boosts documents management and legibility, (2) standardization of processes boost operational efficiency and (3) periodic monitoring of environmental aspects catalyses effective environmental management and quality service provision.

The respondents were then asked to rate the extent to which the following attributes were likely to affect ISO adoption and certification. The results were as follows:

i) Staff training and awareness

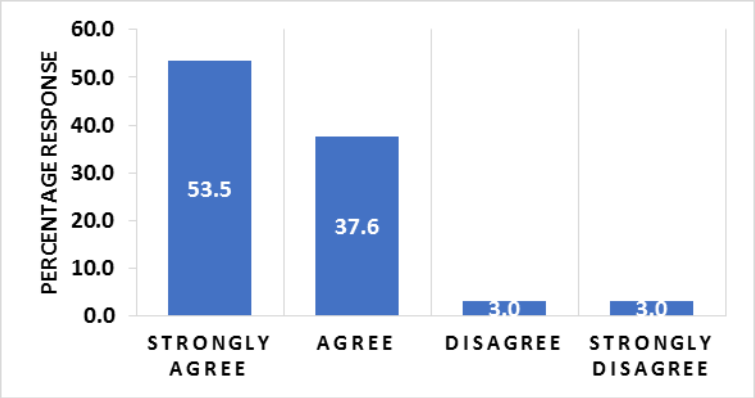


Figure 18: Staff training and awareness

ISO 14001 standards requires organisations to ensure that all persons working in areas likely to affect the overall performance should undergo competence evaluation and where need be skills be enhanced by means of training, education, sensitization or experience (Clause 7.2)

Figure 19 shows that 53.5 % of the respondents strongly agreed that staff training has the potential to affect the decision of a firm to take-up ISO. Similarly, 37.6% agreed to the same while those who disagreed accounted for 3% the same as neither. In application, both the certified and non-certified firms were found to have a record for scheduled trainings and awareness to different categories of their staff. Trainings to do with enhancing auditing skills were in all agencies sort from external consultants while periodic awareness were carried out internally. Evaluation of trainings carried out were evaluated and in especially the certified agencies, a positive approach towards implementation had been observed.

ii) Organisational culture and beliefs

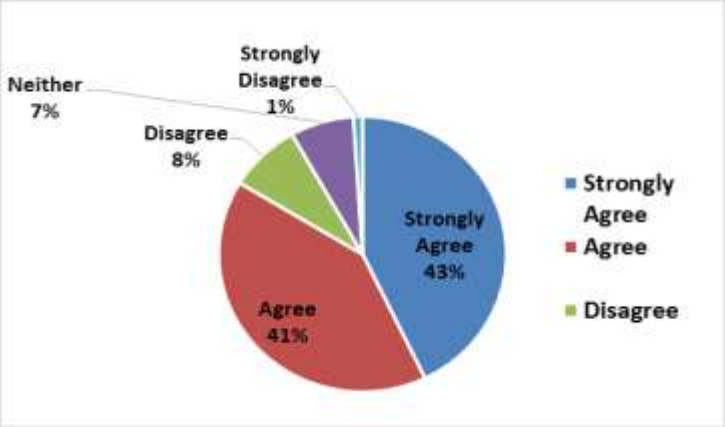


Figure 19: Organisational culture & beliefs

The researcher wanted to know how organisational culture and beliefs affected ISO adoption and certification. 43% of the respondents strongly agreed followed by 41% that also agreed

that organisational culture and belief can influence the decision to adopt ISO 14001.This finding greatly complements the finding of a similar research objective earlier done by Kairu. N (2014). A peculiar observation was made in one of the non-certified agencies where a change in top management who had initially bore the idea of ISO adoption left a bad taste in the organisational beliefs in that the agency had up to the time of this data collection not yet embarked on the completion of the process towards acquiring certification simply because the vision bearer left. The results of Kairus study indicated that organisational culture was a major barrier to effective adoption and implementation of EMS as evidence of the same was observable in implementers resistance to change, cooperation hence eventually causing delays in general organisational output.

iii) Implementers Skills & Education levels

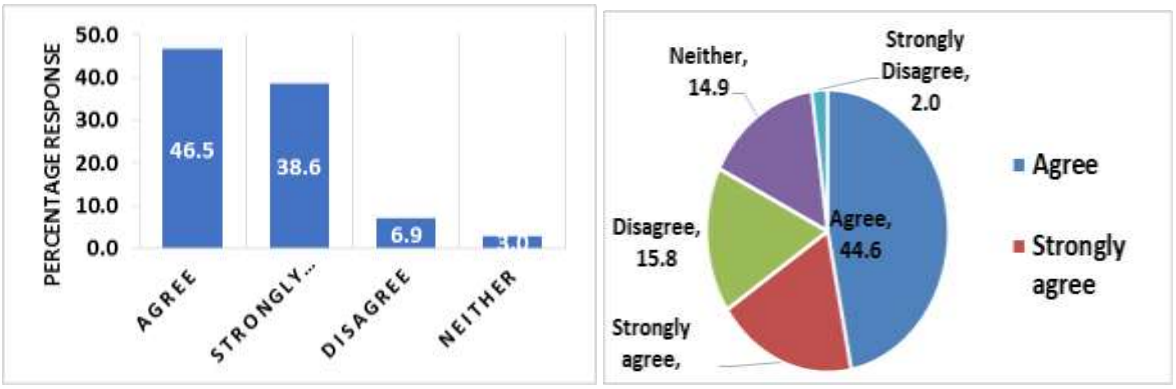


Figure 20: Implementers skills and education levels

While skills can be achieved either through education, training or experience (Clause 7.2), the researcher sought to know what implementers thought about in regard to its direct impact on ISO adoption. The results show that 38.6% strongly agreed followed by 46.5% who also agreed. When asked to rate how much education would affect adoption rates, 44.6% followed by 15.8% strongly agreed that education levels to a larger extent, has the potential to affect uptake. This could be attributed to a former finding that showed that among the major challenges encountered in the documentation stage is failure to comprehend the requirements of the standard eventually leading to wrong information documentation which doesn't meet the threshold during certification evaluation. As result, firms take longer and deplete the already scarce resources while trying to fulfil the requirements of certification

iv) Perceived additional workloads

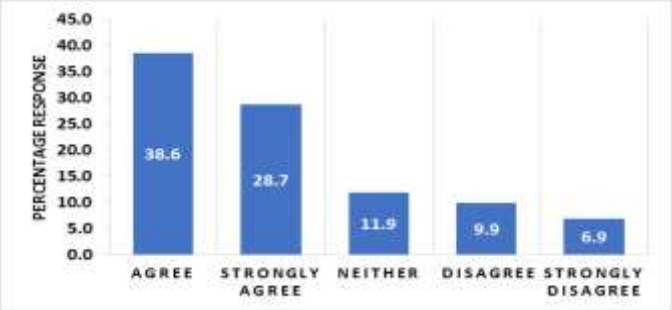


Figure 21: Perceived additional workload

Considering that effective implementation is a factor of many actors, the study sought to find out how the implementers rated the extra workload that came along having been a part of an ISO system. The larger percent (38.6 & 28.7%) of respondents as in figure:22 said that ISO implementation added a lot of work to their daily duties. This was not however taken positively since monitoring of process performance requires consistency. The notion of continual improvement made implementers feel burdened because they felt that regardless of how much they do their efforts are never enough. As a result, there is a general dearth of ISO adoption due to foreseeable additional workloads in most times with no compensation.

v) Staff involvement

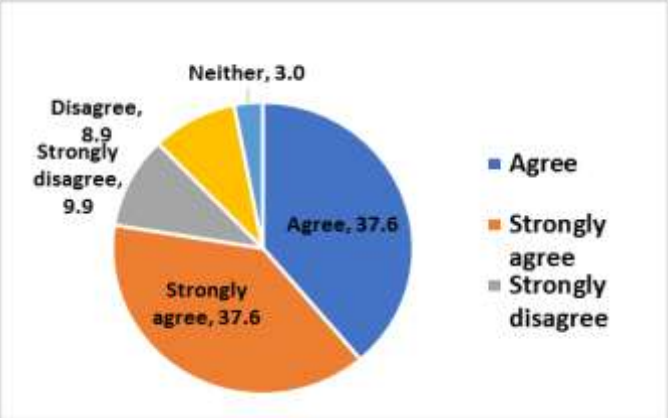


Figure 22: Staff involvement

All ISO stardards uphold the requirement that all stakeholders of an implementing firms be it internal or external must be involved in the periodic running of ISO matters.Consequently,staff involvement is majorly upheld in the fourth principle of ISO 14001 stardard that advocates for process approach where internal stakeholders (staff) play a key role in various milestones of a process(s).Consequently,the larger percent of respondents totalling to 75.2% agreed that indeed the level of staff involvement has the pontential to

affect adoption and certifcation of ISO 14001. A smaller percent as shown in the chart however felt like staff involvement does affect adoption.

Duration of Implementation

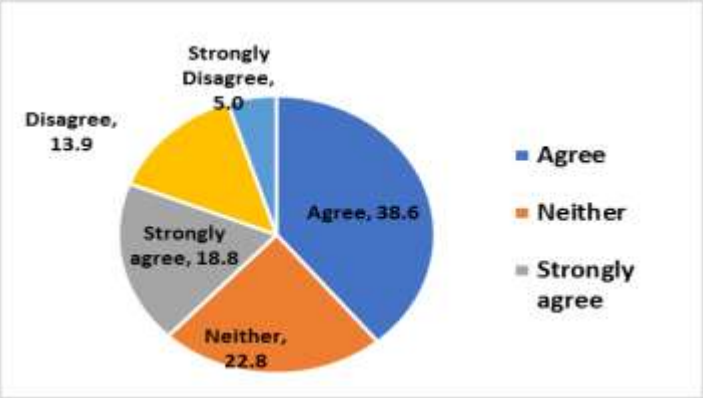


Figure 23: Duration of Implementation

Considering that time and exposure are key actors in dertermining experience levels, the researcher wanted to know the extent to which the respondents thought that the duration taken to establish a management system would influence the decision to seek formalization in certification.18.5% strongly agreed followed by 38.6% who agreed that the duration of implementation and experience therein gained would affect certification.A correlation was also noted in the sense that this agreeing percent was greatly derived from respondents who had earlier indicated they had implemented the existing system for more than 4years.Additionally, 22.8% said neither while 18 percent in total disagreed. This 2 responses were found to be from the 40% that had internally implemented the system for less than 4years and were not yet certified as in the findings of objective 1.

vi) Perceived certification benefits

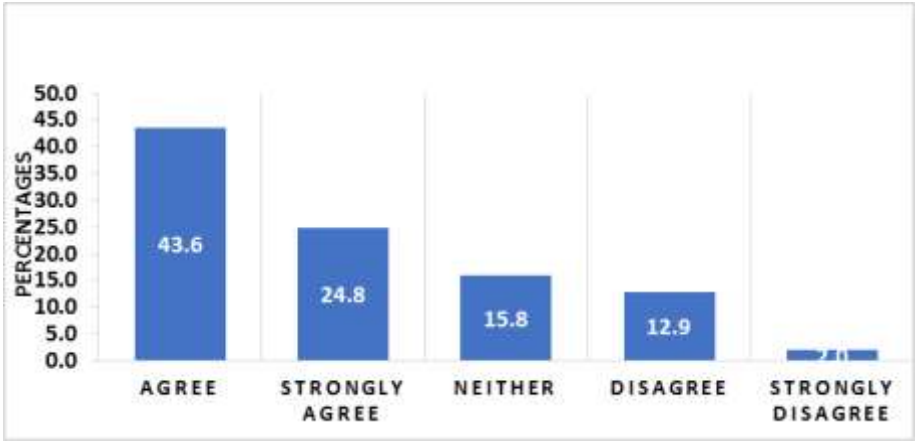


Figure 24: Perceived certification benefits

Several related studies established that foreseeable benefits of implementation are key drivers of why a firm would pursue ISO certification. Among the benefits cited include, enhanced visibility & credibility, improved energy consumption, and to boost their industrial competitiveness (Kairu 2014). As result, 43.6% strongly agreed followed by 24.8% who also said perceived benefits are leading cause for ISO adoption. Further, they were asked to mention some of benefits they had experienced and the following were highlighted: - improved waste management, Operational efficiency due to streamlined processes, enhanced customer satisfaction, improved institutional environmental performance and enhanced legal compliance.

4.6 HYPOTHESIS TESTING

The study tested the following 2 hypotheses, i.e., Ho_1- There are no significant factors that affect a firm's decision to acquiring ISO 14001- EMS certification and Ho_2-The perception of implementers does not significantly affect ISO 14001- EMS adoption and certification. The findings for each hypothesis have been explained as follows:

i) Ho_1- There are no significant factors that affect a firm's decision to acquiring ISO 14001- EMS certification

Table 1: Results of Kasier Meiyter-Olkin Test and factor affecting Ems adoption loadings

Factor titles	Factors	Factor loading	KMO	BT	DF	P-value
Adoption and Certification	Financial resources	0.81	0.861	850.0461	100	0.000
	Human resources	0.80				
	Leadership commitment	0.76				
	Ease of integration with your org' core mandate	0.75				
	Cost of certification & Maintenance of the System	0.73				
	Organisational structure (Organogram)	0.72				
	Related perceived benefits	0.70				
	Communication of adequacy	0.70				
	Extent of understanding the ISO standard requirements	0.65				
	Other adopted ISO standards	0.65				
	Ease of integration with other standards	0.64				
	Adequacy of relevant legal systems	0.63				
	Stakeholders needs & Expectations	0.60				
	Physical infrastructure	0.56				
	Political influence	0.21				

Results of the Kasier-Meityer-Olkin test (KMO = 0.861) and Bartletts test at significance level of 0.05

In order to test the first hypothesis, the researcher first tested the adequacy of the research sample data obtained by subjecting the data collected in 102 questionnaires to Kasier-Meityer-Olkin test. For a data sample to be adequate enough, to be used further for research purposes, the factor loading for each tested variable has to fall between a score of 0.5-1.0. After running the tests for all 15 the independent variables, the test gave a factor loading of each variable as presented in table 1 with an overall KMO score of 0.861. In addition, the data was subjected to a bartletts test to test if there exist any significant relationships between the variables. A p-value of 0.00 was obtained and was tested against a 0.05 degree of

significance. In bartletts test, any value that is lesser than 0.05 signifies existence of a relationship between variables and therefore the researcher went further ahead to conduct a factor analysis to show which factors are prioritized in adoption and certification of ISO in the organisations. In all statements (factors) except for political influence, the factor loadings were higher than 0.5 which indicates that all these factors can optimally explain corresponding levels of significance. With a significance value of 0.000, this shows that majority of these factors significantly affected ISO adoption in the 5 agencies. The researcher therefore rejected H_{01} and accepted the alternative hypothesis hence concluding that there are significant factors that affect a firm's decision to acquire ISO standards.

Consequently, the results of this analysis were found to be in concurrence with several findings of other researchers who found out that among the major 5 contributors of EMS adoption include the following factors: - Adequacy of main resources (Financial and Human), leadership commitment, ease of integration with organisational core mandate last but not least being the generic cost of sustaining the system. (Kairu N,2014).

ii) *Ho_2*-The perception of implementers does not significantly affect ISO 14001-EMS adoption and certification

Table 2:Ho2- Results of the Kasier-Meityer-Olkin Test on Implementers perception

Factor titles	Attributes	Factor loading	KMO	BT	DF	P-value
Personal attributes	Duration of implementation experience	0.758	0.694782	292.0977	100	0.000
	Previous ISO experience	0.731				
	Perceived certification benefits	0.642				
	Implementers Skills	0.611				
	Staff involvement	0.599				
	Staff Training	0.575				
	Staff awareness	0.539				
	Perceived additional workloads	0.522				
	Organisational culture & beliefs	0.387				
	Education levels	0.372				

Results of the Kasier-Meityer-Olkin test (KMO = 0.69) and Bartletts test at significance level of 0.05

To test the second hypothesis, the researcher tested the adequacy of the sample data obtained by subjecting the data collected in 102 questionnaires to Kasier-Meityer-Olkin test. For a data

sample to be adequate enough so as to be used further for research purposes, the factor loading for each tested variable has to fall between a score of 0.5-1.0. After running the tests in addition, the data was subjected to a bartletts test to check if there exist any significant relationships between the variables. The test gave a factor loading of each variable as presented in table 2 with an overall KMO score of 0.69. A p-value of 0.00 was obtained and was tested against a 0.05 degree of significance. In bartletts test, any value that is lesser than 0.05 signifies existence of a relationship between variables and therefore the researcher went further ahead to conduct a factor analysis to show which perception attributes are prioritized in adoption and certification of EMS in the 5 agencies. To a larger extent, 8/10 attributes were found to have a factor loading higher than 0.5 which indicates that these 8 attributes had a greater role in informing the decision of the agencies to adopt ISO policies hence considered very significant. These attributes included duration of implementation experience, previous ISO experience, perceived certification benefits implementers skills, staff involvement, staff training and awareness and last but not least, perceived additional workload with their respective factor loading shown in table 2. Consequently, the researcher therefore rejected the null hypothesis and concluded that the perception of implementers significantly affected EMS adoption and certification in the five agencies.

5.0 CHAPTER FIVE

5.1 Conclusion and Recommendations

This chapter contains the summary of the findings, the results after hypotheses testing and offers recommendations for further research. The 4 specific objectives of the study were to find the status of EMS adoption in the 5 agencies, assess how the process and requirements of certification affects adoption, establish factors that affects adoption and critique implementers perception on adoption.

5.2 Summary of the research findings

In the first objective on status of ISO adoption in the five agencies, the researcher found out that 1 agency (KEFRI) was certified for more than 7 years to both ISO 14001(EMS) and ISO 9001(QMS) while 2 agencies i.e., KFS and NEMA had been certified to ISO 9001 for 4-6years.NETFUND and KWTA were not yet certified but were in the process of perusing ISO 9001 certification. In summary, 3 out 5 were found to be certified while two were not. Among the initial key reasons why the five agencies adopted the respective standards they were certified to or were in the process of pursuing certification, include the need to enhance overall organisational performance by complying to the performance contract requirements and targets in the earlier years when they initiated ISO certification implementation. The respondents however projected the fact that in the latter years ISO certification seized to be a requirement which made firms which hadn't yet acquired certification to loosen up and that explains why two of the firms were not certified to date much as the process kicked off several years back. Leadership support was also highlighted to be a major contributor by especially those that were not certified as the respondents indicated that at one point a change in leadership affected negatively the continuity of the process.

In regards to process and requirements of certification, the study found out that much as the basic requirements that must be fulfilled before certification are cumbersome and may take a longer duration, they dint not affect the decision of agencies to adopt or not adopt their respective systems. Data collected from especially the 3 certified agencies indicated that the process was long and demanding/manageable but none the less they still acquired certification. In regards to documentation requirements, all the five firms were well aware of the main documentation requirements and had made effort to develop and maintain the key ones like the Policy statements, Key process flows and Mandatory procedures. All the five agencies had carried out internal audits to check how much their system was conforming and

on annual, basis 4 of the agencies carried out management review meetings. If fulfilment of the above key requirements automatically granted a firm certification, then at least four of the agencies would have been certified while it was not the case. The findings of the first objective therefore concluded that the process and requirements for certification did not affect individual agency current status of ISO adoption. The researcher further carried on to test the 2 hypotheses.

The first hypothesis ($H0_1$) focused on the moderating effect of other possible factors that influence EMS adoption and certifications. Among the 5 leading factors reported to affect ISO uptake include; Adequacy of main resources (Financial and Human), leadership commitment, ease of integration with organisational core mandate and the generic cost of sustaining the system. An interesting observation was however noted on the significance score of political influence as it scored the lowest at implementation stage but was reported to have been the major contributor during inception and solely the only reason why ISO certification ever knocked in the public sector doors. In summary, considering that majority of the factors were above the threshold of 0.5 the researcher therefore rejected this hypothesis *$H0_1$ and concluded that indeed there are other factors beyond certification requirements that significantly affect a firm's decision to acquire ISO standards.*

The second hypothesis dwelt on the impact of Implementers perception on adoption and certifications. The results showed that 75 % of respondents felt that the duration that an organisation had lasted in the implementation stage before acquiring certification directly affected the eventual ability and motivation to acquire certification. As such those agencies that had taken a longer time putting up the system felt more confident while applying for a third-party certification than those that had been in it for a shorter while. They also felt that those agencies that had other systems in place or whose key implementers had gained ISO implementation experience in other fields greatly boosted the management decision to pursue adoption and certification as this came along with enhanced implementation skills. Perceived certifications skills as well was found to be a driving force for adoption as some respondents indicated that some of the foreseen benefits to be, improved corporate image, quality assurance in processes and energy conservation to mention but a few. As a result, the *researcher therefore rejected H_{02} and concluded that the perception of implementers significantly affects EMS adoption and certification in the five agencies.*

In conclusion, this study found out that as much as ISO adoption and certification depended on many other actors in different magnitudes as explained above, lack of initial clear guidelines on which ISO system to adopt so as to give uniformed results was the main reason why most of firms opted to go for ISO 9001 on quality management systems with an organisational intention of improving their process performance so as to meet customers' requirements without necessary dwelling on the contribution the system they adopted would have on the internal organisational core mandate which are all environmentally related. The findings are in tandem with findings of a similar study that established that lack of proper coordination with a firm's environmental mandates at the onset could to a larger extent undermine management decisions to take in voluntary EMSs (Krut and Gleckman,1998).

This study as well feeds into the existing wealth of knowledge in confirming the applicability of Institutional theory with the school of thought that indeed firm's inspiration to absorb a voluntary environmental management mechanism such as one provided by ISO 14001-EMS is to a larger extent a product of factors beyond the internal conditions of a firm. In this case the needs to satisfy customers requirements been the primary factor while the need for environmental management been the secondary factor. The study too does not discredit the fact that resources adequacy too plays a key part, however ISO 14001 standard neither doesn't require any extra resources that would influence its uptake compared to other standards like QMS that is dominantly adopted in the public sector.

5.3 Recommendations

The following were the recommendations derived from the findings this study.

First, there is need for formulation of clear national policies to guide adoption of voluntary international systems. In addition, this research was limited to only the Ministry of Environment & Forestry. Further research should be done in other ministries to find out what motivation factors drive EMS adoption in other government ministries. Secondly, more studies can be done to find out how the new normal (Post-COVID-19) will affect eventually EMS implementation and certainly certification. This is derived from the finding that before Covid-19 pandemic, implementation was to a larger extent physically manageable but the current virtual way of monitoring implementation may not be the most effective way to enhance continual improvement.

Third, considering that all the revised

ISO standards with high level structure allows for self-declaration or confirmation of its ability to conform to the EMS requirements without necessarily going for 3rd party certifications, there doesn't seem to be a trace of some government agencies who have voluntary self declared or sought for confirmation of their claim to EMS conformity. Interactions with the respondents projected that interested parties only believe in conformance when its formally granted by means of national certification body registrations. While the findings of this research found out that the cost of applying for formal registrations is a major barrier to adoption, further research should be done to find out why firms in the public sector do not consider the self declaration option.

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APPENDICES

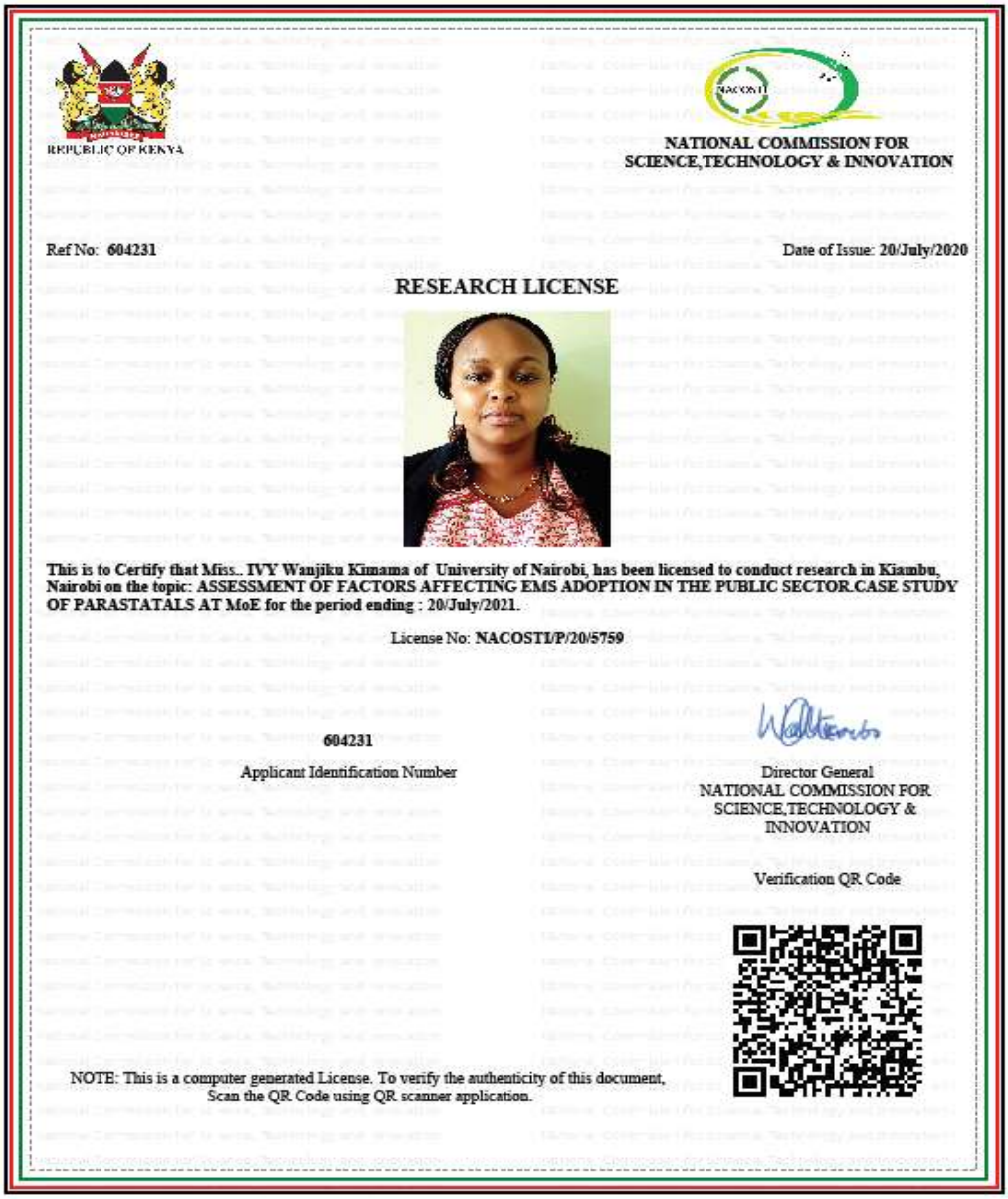

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Figure 26: Turn-in-it certificate

Figure 27: Evidence of use of ISO certification marks and policy statements