FACTORS INFLUENCING THE IMPLEMENTATION OF THE KENYA OPEN DATA INITATIVE: A CASE OF NAIROBI COUNTY

BY

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DECLARATION

This project is my original work and has not been presented for any award in any other university.

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DEDICATION

This project is dedicated to my late parents Pascal and Genevieve Oyatsi. Without you, life has been different; at the same time your absence has been a motivation to achieve what you wanted for me. I also cherish in making you proud.

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ABBREVIATIONS AND ACRONYMS

CSV – Comma Separated Values

CSO – Civil Society Organization

FOI – Freedom of Information

ICT – Information and Communication Technologies

KNBS – Kenya National Bureau of Statistics

KODI – Kenya Open Data Initiative

NGO – Non Governmental Organization

OGD – Open Government Data

OGP – Open Government Partnership

PDF – Portable Document Format

PS – Permanent Secretary

UN – United Nations

XML – Extensible Markup Language

ABSTRACT

The purpose of this study was to investigate the factors that influence the implementation of the Kenya Open Data Initiative in Nairobi County. The objectives were: to establish the influence of user awareness of open data on the implementation of the KODI; to determine the influence of data use on the implementation of the KODI and to determine the influence of FOI legislation on the implementation of the KODI. The research design that was applied in this study was the descriptive survey design. The study targeted KODI stakeholders': government institutions, private sector organizations, civil society organizations and citizens within Nairobi County which had a population of 200 people and used a sample of 132 respondents. The researcher used questionnaires as the main instrument for this study. A pilot study was carried out in organizations not involved in the actual study. A test-retest technique was used to test the reliability of the questionnaires using Pearson's product moment correlation. The researcher obtained a correlation coefficient of 0.89 and concluded that the research instrument was reliable. Validity was determined by pre-testing the questionnaires on a small sample of respondents not involved in the actual study, responses were assessed and then poorly prepared items were reviewed. The data was analyzed using descriptive statistics, Mann Whitney u-test and Kruskal Wallis test. The findings indicated that there was low awareness about the open data initiative in Kenya. It also revealed that the usage of the portal is very minimal and that awareness about the initiative does not necessarily translate in usage of the portal. The findings also indicated that the respondents agree that opening up government information will result in an open government that fosters transparency, collaboration and participation between government and citizens. The study found out that there is a significant relationship between user awareness of open data and the implementation of the KODI. It also found out that there is a significant relationship between open data use and the implementation of the KODI. There is also a significant relationship between FOI legislation and the implementation of the KODI. The findings of the research may be a benchmark for policy makers and implementers in torching the avenues of the improvement of the KODI. Recommendations to the KODI include: it should enhance support for civic education on open data, its availability and use; it should enhance collaborations and partnerships between stakeholders within the open data ecosystem; user awareness of open data does not necessarily translate to using the open data portal. Thus, the users should not only be told why they need the data but should also be shown why they need the data through actionable user experience. This will enhance their chances of using the portal; and while noted it did not hinder the setup of KODI, the enactment of an access to information law is needed to provide a policy framework for data provision and use, and safeguard the initiative.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Wonderlich (2010) notes that in October 2007, 30 open government advocates met in Sebastopol, California to discuss how government could open up electronically-stored government data for public use. Up until that point, the federal and state governments had made some data available to the public, usually inconsistently and incompletely, which had whetted the advocates' appetites for more and better data. He states that the conference, led by Carl Malamud and Tim O'Reilly and funded by a grant from the Sunlight Foundation, resulted in eight principles that, if implemented, would empower the public's use of government-held data.

These principles were summarized by Tauberer (2014) as, data must be complete: all public data are made available. Data are electronically stored information or recordings, including but not limited to documents, databases, transcripts, and audio/visual recordings. Public data are data that are not subject to valid privacy, security or privilege limitations, as governed by other statutes. Data must be primary: data are published as collected at the source, with the finest possible level of granularity, not in aggregate or modified forms. Data must be timely: data are made available as quickly as necessary to preserve the value of the data. Data must be accessible: data are available to the widest range of users for the widest range of purposes. Data must be machine processable: data are reasonably structured to allow automated processing of it. Access must be non-discriminatory: data are available to anyone, with no requirement of registration. Data formats must be non-proprietary: data are available in a format over which no entity has exclusive control. Data must be license-free: data are not subject to any copyright, patent, trademark or trade secret regulation. Reasonable privacy, security and privilege restrictions may be allowed as governed by other statutes.

These basic principles were then updated and re-phrased by the Sunlight Foundation in August 2010 to now number ten principles, including the use of open standards, making data permanent, and keeping usage costs to an absolute minimum. All of these are laudable points. Each may or may not be provided in a fully open way by any given governmental entity (Civic Dynamics, 2014). According to the Sunlight Foundation (2010), the list is not exhaustive, and each principle exists along a continuum of openness. The principles are completeness, primacy, timeliness, ease of physical and electronic access, machine

readability, non-discrimination, use of commonly owned standards, licensing, permanence and usage costs.

Open government data began to truly take off in 2009. This was the year of the first two Transparency Camp conferences run by the Sunlight Foundation, numerous apps developed outside of government, and a new interest in open government from inside of government (Tauberer, 2014). He further notes that the Open Government Data movement was also spurred by policy changes in 2009. President Obama's Open Government Directive (December 8, 2009) re-framed the world-wide movement. This was so, in part, because it presented a definition of "open government" which many found appealing. The three principles of transparency, participation, and collaboration form the cornerstone of an open government.

While transparency was a core component of open government from the beginning of the open government movement in the 1950s, participation and collaboration were relatively new and certainly untested. Each of those three parts of the definition of open government was to be backed up by a new White House technology project. Data.gov, a dataset catalog, and an information technology spending dashboard were launched early that year as new efforts to promote transparency. Davies (2012), notes that the current open data movements draws upon diverse roots, it really burst on to the policy scene in 2009, when US President Barack Obama signed a Memorandum on Transparency and Open Government as one of his first acts in office, leading to the creation of the data.gov platform hosting hundreds of federal datasets for public access.

The White House's interest in transparency was soon replaced by an interest in using open data to spur economic activity; Data.gov spurred a world-wide movement of data.gov-style catalogs in cities and countries throughout the world (Tauberer, 2014). This US move was quickly followed by the UK launching data.gov.uk in early 2010 and starting a programme of open data reforms across government that continued and were expanded under a new administration from mid-2010 onwards. In April 2010, the World Bank launched its own data portal, providing free access to hundreds of economic and social indicators. The Open Government Partnership, launched in 2011, is a multi-government effort to advance parallel transparency reforms in participating countries, focusing on disclosure, citizen participation, integrity, and technology (Tauberer, 2014).

1.1.1 Open government data trends

Open data has been transforming how government does business. Over the past five years ranging from national governments such as the United States and the United Kingdom to hundreds of local governments and municipalities and all forms of government in between – a veritable revolution in opening up data to the public has been underway. The open data in government (OGD) movement has spawned an entirely new cottage industry in open data advocacy and tools. Literally hundreds of government organizations are committed to open data, supported by an ecosystem of advocacy, technology and consulting groups (Civic Dynamics, 2014).

With experience and practice, we are beginning to see a generational shift in how open data is being handled by governments. The first generation, still mostly the current practice, was built around the idea of just making the data public and open. This current generation of open data is characterized by the publishing of datasets via catalogs. The datasets are static, unconnected and dumb. Mostly, too, the data within those datasets are poorly described and documented, often lacking standard metadata. What is now exciting, however, is the emergence of what can best be called dynamic open data (Civic Dynamics, 2014). According to Tauberer (2014), actors in the private sector in the United States and abroad are stepping up to empower the public through not merely online access to government publications but through a digital transformation of government data into completely new tools.

In order to embrace and utilize dynamic open data, Civic Dynamics (2014) states that there is need to expose the underlying data dynamically, such that users may request and filter and correlate what they need and only what they need. Thus, there are five principles or dimensions by which we need to judge next-generation dynamic open data. Data should be connected: because we are now collecting by datum and not dataset, connections between relevant things must be made explicit across relevant datasets. Similar things should be retrievable together. To achieve this aim, some schema or data definition framework must be layered over the data and datasets. Data should be documented: in order for these dynamic selections to be achievable, the data in the system must be fully documented, specifically including the full description and units used for attributes and values and the scope of entities and concepts. Only through such complete documentation can accurate connections and relevant selections per above be made. Data should be expandable: since new data and new instances and new datasets will constantly arise, the design of the overall data management system must itself be "open", enabling expansion of the available data store at acceptable cost

and effort. Data should be filterable: data should be selectable by type (class), attribute or value such that only the data of interest is exposed to the user. This means the data should be structured in some way with facets that can be used dynamically to filter and make those selections. Data should be atomic: data should be exposed as individual entities or concepts with their attributes and values. The unit of manipulation thus becomes the datum, rather than the dataset (Civic Dynamics, 2014).

1.1.2 Kenya Open Data Initiative

In July 2011, with World Bank support, Kenya also launched an open data portal (opendata.go.ke), becoming the first developing country to have a national government open data platform (Davies, 2012). President Mwai Kibaki launched the Kenya Open Data Initiative, making key government data freely available to the public through a single online portal. The 2009 census, national and regional expenditure, and information on key public services were some of the first datasets to be released. The website is a user-friendly platform that allows for visualizations and downloads of the data and easy access for software developers. Indeed, tools and applications have already been built to take this data and make it more useful than it originally was (KODI, n.d.).

The successful launch of KODI in 2011 was after several failed attempts before. Political will is a key driver in incentivizing open data initiatives. In Kenya, government institutions are charged with collecting and storing data that relates to their mandates. Unfortunately, due to policies and ingrained practices of the colonial and early Kenyan governments, most of this information was 'siloed' within the respective institution and was rarely shared, even with other government institutions. Corrupt networks in public institutions benefited greatly from this culture of monopolizing access to information, and used this power to advance their personal interest, usually at the expense of the citizens. Access to this information was extremely difficult and in some cases impossible. These corrupt networks put up a spirited fight against any and all attempts to release data that would have made them accountable (Majeed, 2012; Schwegmann, 2013; Kwamboka, 2013; Mutuku & Mahihu, 2014).

These efforts were continuously met with resistance mostly due to vested interests, up until Dr. Bitange Ndemo's appointment as the PS (Permanent Secretary) of the Ministry of Information and Communications Technologies. His role was vital in promoting an open data ecosystem as he spearheaded the initiative to avail data in an open platform. He and a volunteer task force made up of computer programmers, data experts and World Bank officials, worked together to launch Kenya's first successful open data platform in July of

2011 (Majeed 2012). The KODI initiative was not the first attempt at releasing government-held data though. Ndemo, who joined the then President Kibaki's government in 2005, was able to successfully map distributions of Constituency Development Funds (CDF) and by doing this, exposed the unfair allocation of funds. The initiative ran into intense political resistance from Members of Parliament as it exposed the allocation of funds to vote rich areas at the expense of deserving marginalized areas. In order to protect their interests, politicians lobbied to the minister at that time and the initiative was eventually terminated. In 2010, due to pressure from the private sector (businesses and the technology community), the ICT board launched a government website that also aimed to equip the public with crucial government held data (Mutuku & Mahihu, 2014).

However, the board had no access to information leading to lack of content on the site, and before the year ended, the site was taken down. The failure of these early attempts were attributed to lack of well established relationships with the various ministries and institutions that held this data, as well as lack of political will (Majeed 2012, Kwamboka 2013). At this time, pressure to increase transparency from different sectors, more notably the civil society, was piling up. In 2011, Mzalendo, a civil society initiative that aimed to increase public participation, advocated for release of financial data to allow citizen scrutiny of the management of public resources. This provided a great opportunity for the development of an open data initiative. Ndemo and the then Minister of Information and communication, Mutahi Kagwe, had a good working relationship and were fortunate to have the president's ear. Buy-in from the very top of political power created a favorable environment to persuade government institutions to release their data, allowing for launch of the Kenya Open Data Initiative (Majeed 2012). Unfortunately, the momentum built during this time wore off as the political landscape changed. The shift from a centralized system of government to devolved units (in response to schedules stipulated in the constitution promulgated in 2010) significantly changed the roles of national government officials especially those working in ministries whose functions were to be devolved to county governments. The transition period into a devolved government system which is still taking effect today brings with it many challenges, and sometimes hinders effective adoption of open data (Mutuku & Mahihu, 2014).

Kenya is the first developing country to have an open government data portal, the first in sub-Saharan Africa and second on the continent after Morocco. The initiative has been widely acclaimed globally as one of the most significant steps Kenya has made to improve

governance and implement the new Constitution's provisions on access to information. As of November 2011, there are close to 390 datasets that have been uploaded to the site, with a plan currently in place to upload more data over the next year. There have been over 17,000 page views and over 2,500 dataset downloaded and embedded to various websites and portals. There are now over a hundred requests from the public for new datasets, and there is a clear demand for more data to be made available (KODI, n.d.).

Kenya's information is a national asset, and this site is about sharing it. The goal of opendata.go.ke is to make core government development, demographic, statistical and expenditure data available in a useful digital format for researchers, policymakers, ICT developers and the general public (KODI, n.d.).
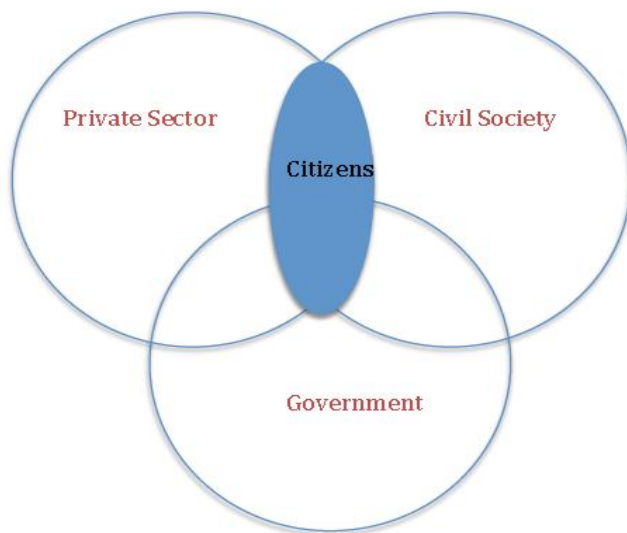
Figure 1: KODI stakeholders

1.2 Statement of the problem

The availability of open data has grown significantly, with pressure being placed on all kinds of public organizations to release their raw data. Some main motivations are that open access to publicly funded data provides greater returns from the public investment, can generate wealth through the downstream use of outputs, provides policy-makers with data needed to address complex problems (Arzberger, Schroeder, Beaulieu, Bowker, Casey & Laaksonen, 2004) and can help to involve the citizenry in analyzing large quantities of data sets (Surowiecki, 2004). The Kenya Open Data initiative was launched in July 2011. Kenya was a pioneer in launching such an initiative with the main objective of making key government

data freely available to the public through a single online portal and helping in propagating better governance through the implementation of the new constitution (Kwamboka, 2013; Mutuku, Colaco & Omenya, 2013). Kenyan open data portal has been a catalyst for regional activity on open data. Ghana, Rwanda, and Tunisia have all taken steps to open up government data and the Kenyan Open Data Task Force has been contacted for guidance by officials in Uganda, Tanzania, and Nigeria (Brown, 2013).

However, since the launch of the KODI in 2011, access to and utilization of open datasets by the population has still remained low, despite availability on the main portal opendata.go.ke. There have also been community applications built using this data available on the platform, pulling data from the portal and presenting it in a more simplified way for use by the population. Despite these initiatives, there has been little documented evidence of consequential increase in use of open data from the platform or the resulting impact of these initiatives and technologies on the way citizens engage with government information (Mutuku & Mahihu, 2014). Brown (2013) also opines that Kenya's open data portal is floundering. He notes that despite the excitement that surrounded its launch, the portal has not been updated regularly, has seen stagnant traffic, and is quickly losing its status as the symbolic leader of open government in Africa. He further notes that for a number of reasons, the portal has not lived up to the often sky-high expectations of many onlookers.

This claim is supported by the 2014 Global Open Data Index survey in which Kenya was ranked 13 in Africa out of the 20 countries in the continent that took part in the survey (Open Knowledge Foundation [OKF], n.d.). The Global Open Data Index measures and benchmarks the openness of data around the world by looking at ten key datasets in each place. These include: national election results; company register; national map (low resolution: 1:250,000 or better); government spending – high level of spending by sector; detailed transactional level government Budget data; legislation – laws and statutes; national statistical office data; national postcode/ZIP database; public transport timetables and pollutant emissions data. Open Knowledge's recent publication of the 2014 Open Data Index shows slow progress by governments in opening up key data. Overall, the level of open is down to 11% from 15% in 2013 (Hare, 2014). Overall, Kenya was ranked 85 out of the 97 countries surveyed in 2014 with an open index of 22%. In 2013 it was ranked 59 out of the 60 countries surveyed with an open index of 20% (Open Knowledge Foundation [OKF], n.d.). This study sought to establish the reasons for the dismal performance and declining status of the KODI as a leader of open government in Africa despite being a pioneer. The study investigated the factors that

are influencing the implementation of the KODI.

1.3 Purpose of the study

The purpose of this study was to investigate the factors that influence the implementation of the Kenya Open Data Initiative in Nairobi County.

1.4 Objectives of the study

This study strove to achieve the following objectives:

i) To establish the influence of user awareness of open data on the implementation of the KODI.

ii) To determine the influence of data use on the implementation of the KODI.

iii) To determine the influence of FOI legislation on the implementation of the KODI.

1.5 Research questions

i) How does user awareness of open data influence the implementation of the KODI?

ii) How does data use influence the implementation of the KODI?

iii) What is the influence of FOI legislation on the implementation of the KODI?

1.6 Research hypotheses

i) There is a significant relationship between user awareness of open data and the implementation of KODI.

ii) There is a significant relationship between data usage and the implementation of KODI.

iii) There is a significant relationship between FOI legislation and the implementation of KODI.

1.7 Significance of the study

The findings of the study highlighted factors which influence the implementation of the KODI in Nairobi County. This has contributed to the body of knowledge in the fairly new area of open government data in Kenya. It also suggests further areas of research for other researchers.

This study may be useful to the Ministry of ICT, KODI, Kenya ICT board and KNBS. This is because its findings have provided statistical data which will highlight the current state of the

KODI in terms of factors influencing its implementation hence impacting its role in promoting an open government. This will enable them to come up with strategies to curb factors that are negatively influencing the implementation of the KODI.

The study may also have played a role in creating awareness and shedding further light about the KODI especially to those respondents who were not familiar with the project.

1.8 Basic assumptions of the study

The study was based on the assumptions that: the respondents provided truthful information when filling out the questionnaires and gave 100% effort; the views of those who were interviewed represented the opinions of the target population and that through participation in the study, the respondents were able to understand the concept of open data and open government and their role through participation and collaboration.

1.9 Limitations of the study

Open government and open data is a fairly new concept in its infancy stages thus very few related studies have been carried out about the KODI.

Due to the small sample that was used in the study, only views from a small percentage of stakeholders: citizens, civil society, government and private sector were highlighted in the study and were not generalized to apply to the whole country.

1.10 Delimitations of the study

The study confined itself to respondents aged eighteen years and above drawn from Nairobi County, Kenya. Time and financial constraints on the researcher's part did not allow for a broader coverage. Since very little research has been done about factors influencing the implementation of the KODI, the review was basically drawn within and outside Kenya. The study limited itself to 3 factors that are influencing the implementation of the KODI namely: user awareness of open data, data use and FOI legislation.

1.11 Definition of significant of terms used in the study

Data use – refers to utilization of data on the KODI portal.

Implementation of KODI – refers to the successful operation of the open data initiative.

FOI legislation – refers to laws governing the distribution and freedom of information.

Open government – consists of transparency, participation and collaboration of the state towards third actors like the economy or the citizenship.

Open data – non-privacy-restricted and non-confidential data which is produced with public money and is made available without any restrictions on its usage or distribution.

User awareness of open data – refers to the user's familiarity with the concept of open data.

1.12 Organization of the study

The study was organized into five chapters. Chapter one dealt with the general introduction, background to the study, statement of the problem, purpose of the study, research objectives, questions, limitations and delimitations, definition of significant terms and organization of the study. Chapter two highlighted the review of literature while chapter three dealt with the research design and methodology. Research findings and discussion were presented in chapter four and chapter five handled summary of the study, discussion, conclusions, recommendations and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter deals with review of related literature under the following sub-headings: introduction, open data and open government, user awareness of open data and implementation of open data initiatives, data use and implementation of open data initiatives and FOI legislation and implementation of open data initiatives. This chapter also covers the theoretical framework, conceptual framework, explanation of relationships between variables in the conceptual framework, gaps in the reviewed literature and summary of reviewed literature.

2.2 Open data and open government

Open data and open government have recently risen on the international agenda. Many countries are moving towards availing public data on online portals in a bid to foster open governments. The Kenya Open Data Initiative is driven both by an interest in innovation and government modernization and by an interest in determining whether government is delivering services effectively and accountably (Weinstein & Goldstein, 2012). However, several studies have found that the Kenya open data portal is failing (Brown, 2013; Kapchanga, 2013; Hargreaves, 2013 & Mugai, 2014). Open data and open government are two terms that are often linked to each other. Although the terms are often used together, they can exist independent of each other. Open Government Data website (n.d.) defines open data as data that is produced or commissioned by government or government controlled entities and can be used, reused and redistributed by anyone. Open data mends the traditional separation between public organizations and users. The opening of data leads to two important assumptions about government. First, it assumes the readiness of public agencies for an opening process which considers influences, discourses and exchanges as constructive and welcomes opposing views and inputs. Second, it assumes that government is to give up control, at least to some extent demanding considerable transformations of the public sector (Janssen, Charalabidis & Zuiderwijk, 2012). The Open Knowledge Foundation (2012) outlines the following as the areas where open data is creating value: transparency and democratic control, participation, self-empowerment, improved or new private products and services, innovation, improved efficiency of government services, improved effectiveness of

government services, impact measurement of policies and new knowledge from combined data sources and patterns in large data volumes. Open Government Data website (n.d.) outlines three main reasons why government data should be open. To start with, is transparency. In a well-functioning, democratic society, citizens need to know what their government is doing. To do that, they must be able to freely access government data and information and to share that information with other citizens. Transparency isn't just about access, it is also about sharing and reuse – often, to understand material it needs to be analyzed and visualized and this requires that the material be open so that it can be freely used and reused. Second, is releasing social and commercial value. In a digital age, data is a key resource for social and commercial activities. Everything from finding your local post office to building a search engine requires access to data, much of which is created or held by government. By opening up data, government can help drive the creation of innovative business and services that deliver social and commercial value. Lastly, is participatory governance. Much of the time citizens are only able to engage with their own governance sporadically – maybe just at an election every 4 or 5 years. By opening up data, citizens are enabled to be much more directly informed and involved in decision-making. This is more than transparency: it's about making a full "read/write" society, not just about knowing what is happening in the process of governance but being able to contribute to it.

Open government on the other hand is said to be a government with high levels of transparency and mechanisms for public scrutiny and oversight in place, with an emphasis on government accountability. Transparency is considered the traditional hallmark of an open government, meaning that the public should have access to government-held information and be informed of government proceedings. In recent years, however, the definition of open government has expanded to include expectations for increased citizen participation & collaboration in government proceedings through the use of modern, open technologies (Chernoff, n.d.). She further states that the 2009 US Open Government Directive identifies transparency, participation, and collaboration as the key principles of an open government. Noveck (2011) defines open government as an innovative strategy for changing how government works. By using network technology to connect the public to government and to one another informed by open data, an open government asks for help in solving problems. The end result is more effective institutions and more robust democracy. Heller (2012) notes that open government combines three elements: information transparency: that the public understands the workings of their government including freedom of information initiatives;

open data and Big [Public] Data efforts, including open data portals; procurement, budget, and policy transparency like voting records, meeting minutes, political finance transparency; public engagement: that the public can influence the workings of their government by engaging in governmental policy processes and service delivery programs (including e-government services; open311 and service delivery feedback loops; stakeholder and participatory processes like participatory budgeting, town hall meetings, both online and offline; electoral processes); and accountability: that the public can hold the government to account for its policy and service delivery performance (including anti-corruption mechanisms such as auditing, ombudsmen; conflicts of interest and influence peddling safeguards). GovLab (2013) argues that defining what open government means is complicated by the range of definitions, meanings and motivations that exist – with new ones still emerging. However, they point out that the definitions may focus to varying degrees on the key elements of transparency, citizen participation and collaboration, among others, depending on the context.

According to Janssen et al. (2012), open data should result in open government in which the government acts as an open system and interacts with its environment. Weinstein & Goldstein (2012) opine that open data is a precursor to open government. It can be argued that most open data initiatives are geared towards achieving an open government. In the recent past, open data and open government have been put under the same roof, with open data seen as a means to achieve open government. However, Robinson and Yu argue that bringing open data and open government under a single banner, leads to conceptual muddling that ultimately impedes progress for both projects. A central element of their argument is the notion that while governments may increasingly deliver open data, such initiatives are not necessarily conducive to achieving accountability goals. They argue that open government used to refer to politically sensitive disclosures of government information, used in the 1950s in the debates leading up to passage of the Freedom of Information Act. But over the last few years, that traditional meaning has blurred, and has shifted toward government data released openly through technology. Recent public policies have stretched the label open government to reach any public sector use of these technologies. Thus, the term open government data might refer to data that makes the government as a whole more open (that is, more publicly accountable), or instead might refer to politically neutral public sector disclosures that are easy to reuse, even if they have nothing to do with public accountability. They argue that today, a regime can call itself "open" if it builds the right kind of website – even if it does not

become more accountable or transparent. This shift in vocabulary makes it harder for policymakers and activists to articulate clear priorities and make cogent demands. Given the ambiguity of the term open government data, they argue, public sector actors may project a veneer of openness by publishing data that has little or nothing to do with accountability.

They mention that in October 2010, president Obama addressing the UN General assembly stated that "In all parts of the world, we see the promise of innovation to make government more open and accountable. And now, we must build on that progress. And when we gather back here [in 2011], we should bring specific commitments to promote transparency; to fight corruption; to energize civic engagement; and to leverage new technologies so that we strengthen the foundation of freedom in our own countries, while living up to ideals that can light the world." They state that following up on this idea, the U.S. State Department organized a series of meetings leading to what became the multilateral Open Government Partnership (OGP). They claim that the multilateral initiative, instigated by the United States, has dramatically accelerated the spread of these ideas over the past years. They further contend that the ambiguity of open government remains alive and well in the international sphere. They also state that to some ears, the idea of open government data has also developed a more threatening cast. Wikileaks, first launched in 2008, has created what some call "involuntary transparency," reshaping the conversation over leaks of secret government information to the press.

Heller (2011) echoes the views of Robinson and Yu. He points out that the obvious explanation for why open data gets so much attention in the context of open government is that it is the sexiest, flashiest reform of the bunch. He opines that it's much cooler and frankly less politically controversial for any government to put government health databases online than it is for the same government to provide greater transparency around the financing of political parties in the country. He notes that there was a concern shared amongst some OGP parties that open data provides an easy way out for some governments to avoid the much harder and likely more transformative, open government reforms that should probably be higher up on their lists. Instead of fetishizing open data portals for the sake of having open data portals, he'd rather see governments incorporating open data as a way to address more fundamental structural challenges around extractives (through maps and budget data), the political process (through real-time disclosure of campaign contributions), or budget priorities (through online publication of budget line-items). He also questions whether the time, expenses, and political capital devoted to building the KODI portal were really the best

uses of resources. According to him, Kenya has a range of governance and open government challenges that go far beyond the lack of a website where citizens (many of whom are not online) can chart government datasets.

In response to Robinson and Yu's, 'The new ambiguity to open government', Weinstein and Goldstein (2012) drawing on their experiences with the Kenya Open Data Initiative and the Open Government Partnership argue that bringing open data and open government under a single banner, does not lead to conceptual muddling. They express forth three arguments: first, they maintain that a commitment to open data involves reorienting the production of information in a public bureaucracy in ways that have the potential to institutionalize a commitment to openness. Second, they note that an open data campaign can accelerate demand for information and generate a public conversation about what kind of data matter for accountability. Finally, they note that the two movements may be stronger together. The open data movement helps open government advocates focus on the end user's needs and the possibilities of new technologies, while open government campaigners challenge open data advocates to focus on how transparency and technology can be leveraged for civic accountability. They say that while it is too early to tell how these movements will play out, they believe that bringing these movements under the same big tent, coherently aligning their strategies, goals, and priorities, might ultimately be helpful for citizens interested in promoting openness in their own countries. They conclude that conceptual clarity about the distinct meanings of open data and open government will benefit everyone. But the power of a close partnership between these two movements is also becoming evident. The big tent is strengthening both movements and creating opportunities for progress in places where traditional reforms have stalled or failed to fulfil their promises. While clarity about distinct goals and policies is welcome, separation risks setting back an emerging, more unified movement that is bringing technology and innovation to the age-old task of making government work for people.

Also in response to Robinson and Yu, Piexoto (2013) contends that the authors ignore the enabling conditions under which transparency may lead to accountability, notably the publicity and political agency conditions. The publicity condition is the extent to which disclosed information actually reaches and resonates with its intended audiences while the political agency condition refers to mechanisms through which citizens can sanction or reward public officials. He states that the authors disregard the possibility that even when publishing adaptable data that could promote public accountability (as advocated in their

essay), actual accountability still might be far from being achieved. He further argues that Robinson and Yu also overlook the role of participatory mechanisms as an essential element in unlocking the potential for open data to produce better government decisions and policies. He maintains that it is the combination of (publicized) transparency and institutions that promote governmental responsiveness and empower citizens to partake in public decision making that leads to substantive accountability. He sums it up by stating that the nature of the data is as relevant as the context in which this data is disclosed. He argues that in the absence of a free press, open data stands little chance of entering the public arena to foster accountability. In a similar vein, he argues that in the absence of an environment that enables citizens to hold rulers accountable, express preferences, and influence policy, little can be achieved.

2.3 User awareness of open data and implementation of open data initiatives

Open data is a great phenomenon that if fully tapped into will revolutionize the way citizens and their governments relate with each other. It will open up an avenue for collaboration, participation and foster transparency in government. The benefits of open data will only be realized once stakeholders: citizens, CSOs, private sector, government and developers are familiar with the concept of open data and put it to use. Although KODI was lauded internationally, it seems to be operating in obscurity in the host nation. Weinsten and Goldstein (2012); Mutuku and Mahihu (2014) note that despite the efforts to avail government datasets openly through KODI, utilization of data from the portal was not as widespread instantly as expected. Therefore, a fellowship and outreach initiative, Code4Kenya was conceptualized. This initiative in the form of a preincubator was launched and run from July to November 2012 in a bid to test a model that could potentially increase uptake of government datasets by creating technology based applications, services and platforms. Code4Kenya was also created to accelerate the awareness and ability of the public to make sense of data and to promote engagement around critical public issues. Kapchanga (2013) reports that Jesuit Hakimani: a research body says that most Kenyans do not know of the open data government portal. As a result, they have not used it. According to Muigai (2014), the ICT board had an active communications office through which information about the platform and the initiative was disseminated, and carried out activities aimed to grow awareness of the portal within different parts of the ecosystem (academia, technology, media, etc) and engage with communities. Despite this engagement, however, as Mutuku and Mahihu's study found, few people were aware of the initiative. Kwamboka (2014) cites lack

of an informed and motivated citizenry as one of the challenges facing the KODI. She maintains that citizens, globally, are generally less informed or motivated to demand for their right to access information. She claims that someone would argue that the average Kenyan is more concerned about matters of food, education, health, rent and livelihood to care about as opposed to their right to have access to information. She suggests that there needs to be a complete overhaul to this notion by synthesizing this data and translating it to reflect the matters that directly affect the citizens to create its demand. In a study carried out by the Global Open Data Initiative [GODI] (n.d.) in 23 countries, many respondents claimed that while a majority of government employees knew nothing or very little about open data, the specific individuals working on technology and open government are more familiar with the concept. As expected, knowledge of open data is typically isolated within relevant departments and branches of government.

Muigai (2014) opines that open data has been 'siloed' as a technology conversation and this could be contributing to its low awareness. She states that open data is much more than building an open data portal, releasing data and building apps. She suggests that in pursuit of a more transparent, accountable and effective government, the conversations that surround open data go beyond just the technology itself. By fostering inclusion by bringing in together stakeholders and formulating solid legal, policy and institutional frameworks will prove to be the way forward in strengthening the open data movement. Similarly, Hammer (2013) states that while the "opening" has generated excitement from development experts, donors, several government champions, and the increasingly mighty geek community, the hard reality is that much of the public has been left behind, or tacked on as an afterthought. He poses the question: 'So how can we support "data-literacy" across the full spectrum of users, including media, NGOs, labor unions, professional associations, religious groups, universities, and the public at large? He suggests working more with journalists and civic groups. He says Knight Fellow Justin Arenstein calls these folks "mass mobilizers" of information and O'Reilly Media's Alex Howard points to these groups in particular because they can help demystify data, to make it understandable by populations and not just statisticians. Pak (2014) shares the sentiments of Hammer and Muigai by agreeing that regular people don't know what "open data" means. He notes that actually, they probably don't care what we call it and don't know if they need it. He states that Apple's Steve Jobs said that a lot of times, people don't know what they want until you show it to them. He suggests that we need to stop telling them they need it and start showing them why they need it, through actionable user experience. He

further states that part of the reasons people don't embrace concepts such as open data is because it is part of a lingo that has nothing to do with them. No empathy is involved. He instead suggests that we start talking about people's right to know and use the data generated by governments for instance as Tim O'Reilly puts it: "Government as a Platform for Greatness," with examples we can relate to, instead of dead PDF's and dirty databases.

OKF (2012) suggests that if you open up a bunch of datasets, it's definitely worth spending a bit of time to make sure that people know (or at least can find out) that you've done so. In addition to things like press releases, announcements on your website, and so on, you may consider: contacting prominent organizations or individuals who work/are interested in this area, contacting relevant mailing lists or social networking groups and directly contacting prospective users who you know may be interested in this data. Also, GovDelivery (2015) notes that it's clear that open data is a powerful tool in the public sector. It connects citizens with government data, enabling developers to build innovative apps, all while promoting transparency. But there's one catch. Open data unlocks its power when audiences actually know about it and use it! Similarly GODI, (n.d.) notes that governments have a lot to gain from making data openly available, which makes it even more important for the global community working to open data to communicate more effectively with elected officials. This also suggests that government-wide outreach and education will be a necessary step forward for the global open data community. Kapchanga reports that because of the low awareness about the KODI, Kenyans may fail to realize the potential returns of this initiative. Therefore, it is imperative that the government through the ministry of ICT scales up its efforts to promote KODI to the public.

2.4 Data use and implementation of open data initiatives

The government is compared to an oyster that automatically closes up when approached. Managers and other public servants often have the tendency to avoid opening their data, as this would provide the public with new insights which might in turn result in critical questions (Janssen et al., 2012). However, data: its quality and use is crucial in the success of open data initiatives.

Robinson and Yu (2012) observe that the internet's power to make government information more available and useful has, in the last several years, become a topic of keen interest for citizens, scholars, and policymakers alike. This has acted as a catalyst for a data revolution in governments around the world. Capgemini, (2013); Jurisch and Kautz and Wolf and

Kremar (2015) state that government agencies worldwide have embarked on initiatives of open government for making their data and related information available to the public. Today, governments rely on ICT to support the processes connected to opening up their data as well as involving the public in democratic processes. Government data is now made accessible online and in machine-readable formats through the use of ICT where businesses as well as citizens can access and re- use these data to create innovative value-added products and services (Robison, Yu, Zeller & Felten, 2009; Janssen, 2011; Robinson & Yu, 2012 & Palka, Jurisch, Leicht, Wolf & Krcmar, 2013)..

Many governments are striving to release more datasets but the question is whether the data is comprehensible and meaningful to the users. According to Dawes (2010), open government initiatives received critique for being too often just one-dimensional, for their lack of usability, weak application of stewardship principles, lack of improvement mechanisms and providing inadequate meta-data. Hammer (2013) states that in the last two years, central and local governments and multilateral organizations around the world have opened a range of data – information on budgets, infrastructure, health, sanitation, education, and more online, for free. The data are not perfect, but then perfection is not the goal. Rather, the goal is for this data to become actionable intelligence: a launch pad for investigation, analysis, triangulation, and improved decision making at all levels.

Kwamboka (2014) also shares the view that data provided has to be meaningful. She asserts that a truly successful data revolution means not only that the people have access to data but that this data can be turned into information that can be used to improve the quality of life of the people by helping them make more informed decisions and for their leaders to be able to make better resource allocation decisions and that these efforts will most importantly lower poverty levels. Citizens that can use data to improve their lives are more likely to move to a next step that is being able to hold their governments accountable to improve transparency, resource allocation and governance, particularly in developing and emerging markets. She however states that not all potential data users have the ability to understand what data means. She suggests that there needs to be an interpretation mechanism that turns data into information that is more relevant and applicable to the everyday user, within their context and ability. She opines that when citizens are left with the responsibility of understanding data that is released and made available to them in its raw format, the most common reaction is to repel the data. If they cannot relate to the data as it is, they will have no interest in demanding for more or using the existing data.

Data in itself is of no value if it does not serve any purpose; hence it has to be used. This is supported by Janssen et al. (2012) who maintain that open data on its own has little intrinsic value; the value is created by its use. Supporting use should not be viewed as secondary to publicizing data. The publicizing of data needs to be accompanied by an infrastructure which is able to handle the data in an easy-to-use way to lower the user threshold. They further state that too often governments only publish vast amounts of their data without actively involving the public for feedback to improve their own government action and processes. Not surprisingly, the use and participation of users is frequently low. Carter and Bélanger (2005) claim that existing open government initiatives often lack adequate incentives or provide no added value for users to make further use of them. However, the success and acceptance of open government initiatives are contingent upon the public's willingness to use and further exploit these data sets. Sharing the same views are Weinstein and Goldstein (2012) who state that governments worldwide engage in open government initiatives for making their data and related information available to the public. But the success of open government is contingent upon the public's willingness to use and exploit these data sets. Open Data Barometer [ODB] (2015) suggests that in order to increase the availability of open data and amplify the power of citizens to use this data effectively, enhance the ability of government, civil society and entrepreneurs to understand and use data effectively. Resources dedicated to building the capacity of data users both inside and outside the government are critical to maintaining a supply-demand data balance and an increase in this understanding and ability can be accomplished through trainings and adapting open data tools to local needs.

The government of Kenya availed public data via the KODI portal. Majeed (2012) reports that a year after the launch, it was noted by the former PS for the ministry of ICT that software developers, the media and the public had not used the open data portal as widely as they had anticipated. The ICT board reported that as of June 2012, it had no data on commitments from civil society groups or even government ministries to use data from the site. While new activity was triggered from the catalytic effect of the government rolling out open data portals in other departments such as the Ministry of Health, it didn't take long for domestic disillusion to be realized. The primary audience targeted by the initiative (particularly journalists and software developers) did not consume the data in the way that was originally anticipated, and most felt that high value data remained elusive (Muigai, 2014). Following the claims, it can be argued that the use of data on the KODI platform has been dismal and the quality of data is questionable.

2.5 FOI legislation and implementation of open data initiatives

The World Bank (2013) provides a readiness assessment framework for a country that wants to come up with an open data initiative. Among the requirements is a legal framework. It states that open government data programs often face resistance both from bureaucratic forces within government with a culture of secrecy, and by actors inside and outside government who have benefited from privileged access to data. Strong, sustained, political leadership is therefore important in overcoming resistance and giving cover to political and other risks from opening up government information. Open government data programs should wherever possible work within and leverage existing legal codes and policies, especially in the start-up phase. This greatly reduces the legal/policy impediments and lead times, means that the initiative can work with relevant policy experts and that any policy/legal changes needed for steady-state sustainability can be based on practical experience. Conversely, it is important to identify at an early stage actual or perceived "blockers" in order that policy or legal change can be initiated early if essential.

Under former President Daniel arap Moi (1978–2002), the government restricted the free flow of information and clamped tight restrictions on Kenya's few private radio and television networks. In addition to stifling the media, the Moi government also barred civil servants from sharing data outside the government. Tight restrictions on information sharing permeated the government. Civil servants in ministries and departments had a silo mentality and closely guarded all kinds of information. The Official Secrets Act, a holdover from Kenya's colonial era, gave the government the ostensible authority to withhold data. With more than 300 members, the Kenyan chapter of the International Commission of Jurists had campaigned for a Freedom of Information Act since 2000 and had circulated drafts in 2005, 2007 and 2011, but the act remained stuck in Parliament in 2012 (Majeed, 2012).

As of the launch of KODI in 2011, Kenya did not have a Freedom of Information (FOI) act but still went ahead to launch the initiative becoming the first in Sub-Saharan Africa. Majeed (2012) quotes one of the volunteer task force members of the KODI, "It would be nice to have a more systematic approach; have a policy; then create the structures; then the rest," he said. "But my experience is that things often do not work that way. You have to be opportunistic (p. 18)." He further quotes Ndemo: former PS for the ministry of ICT and a champion of open data who said, "In government, you seize the moment and the opportunity when you get it. How do you do it? You do the end first, and then you can put the rest in place later. You simply must deal with the why you need something, then think about [the]

how later (p. 18)." He states that instead of waiting for the passage of the Freedom of Information Act, which had languished in Parliament for more than a decade, Ndemo decided to anchor his open data initiative to the 2010 constitution, which called for the government to "publish and publicize any important information affecting the nation."

At a roundtable meeting to enrich KODI and on behalf of CSOs and other stakeholders, Ntale and Adieno (2012) note that the FOI bill 2012 and the Data Protection bill 2012 are both presented in line with Article 35 of the constitution and Articles 31 (c) and (d) of the constitution respectively. In particular, the FOI bill aims to: give effect to the right of access to information by citizens as provided under article 35 of the constitution; require public entities and private bodies to proactively disclose information they hold and to provide information on request in line with the constitution; to create a framework to facilitate access to information held by private bodies in compliance with any rights protected by the constitution and any other law; to promote routine and systematic disclosure by public service and private service on constitutional principles relating to accountability, transparency and public participation and access to information; provide for the protection of persons who release information for public interest in good faith and provide a framework to facilitate public education on the right to access this information under this Act.

Openness is not just about governments putting meaningful government data out in the public domain, but also about making the public meaningfully engage with governments through use of open government data. This requires policies that will require the observance of open government data standards and a capacity building process to ensure that the public, to whom the data is intended, are aware and able to use the data in ensuring more transparent and accountable governance (Canares, Guia, Narca & Arawiran, 2014). Also ODB (2015) states that implementing the requirement to disclose and regularly update open data in law or policy as part of a wider right to information ensures that data is available, open and accurate. At the same time, governments must work to ensure that strong privacy protections are in place and respected. It opines that high-level political commitment is key in achieving this. Similarly, Development Initiatives (2014) notes that the presence of a legal framework is a key cog in the open data ecosystem, facilitating provision of data and information to the public. Ubaldi (2013) notes that having a consistent legal framework in place is critical to facilitate government data accessibility and re-use, and to improve secure data sharing between public authorities and the wider community to improve insights, results, impact and inform better policy making.

Kwamboka (2013) cites lack of complete legislation as one of the challenges facing the KODI. She points out that Article 35 of the Kenyan Constitution states that every Kenyan citizen has a right to information but the process of getting that information is still long, painful and costly. This, she says is because the FOI bill is not law and there is nothing that binds any civil servant to freely and actively provide information. Muigai (2014) also points out the same, a phenomenon she calls the 'data hugging syndrome'. She states that on the supply side of the open data spectrum, getting data released from publishers is almost like pulling teeth. In the absence of clear policy, the initiative has been starved of its critical supply of data by the culture of data hugging. This goes to show that legislation is a great impediment to fully implementing open data and open government. Despite this set back, the initiative still lives on and open data champions are pushing for agenda. Weinsten and Goldstein maintain that while Parliament waits to debate Kenya's Freedom of Information Bill, an effort to codify transparency in law, early adopters across the bureaucracy are already taking steps to leverage open data in ways that matter to citizens. Without a legal framework in place, it was found that efforts to setup KODI were largely attributed to an open data "champion" in government, who intensely lobbied for support from the executive to birth the initiative (Development Initiatives, 2014; Ntale, Mugambe, Sabiti & Nganwa, 2014). Brown (2013) notes that before, during and after the 2013 elections, little attention was paid to the open data platform and the excitement seen around its launch quickly faded. The current president, Uhuru Kenyatta, has however, shown some interest in opening up government, reigniting hope in the revival of the initiative. The current government through their Jubilee party manifesto, pledged to increase transparency in government as well as promote information sharing within public institutions (Mutuku & Mahihu, 2014). Citizens have expectations for an effective government as the president promised to digitize government, by cleaning up and managing databases that will be stored in a secure and centralized location and which can be accessed and used by all ministries and branches of government in order to make government more efficient" (Jubilee Coalition, 2012, p.41). It is evident that one of the keys to successful implementation of KODI is legislation. Thus, the ball is in the courts of the government to see to it that there is the political will to push for the FOI bill to be law.

2.6 Theoretical framework

This study was guided by the system and institutional theories. Systems theory is the transdisciplinary study of the abstract organization of phenomena, independent of their

substance, type, or spatial or temporal scale of existence. It investigates both the principles common to all complex entities, and the (usually mathematical) models which can be used to describe them. Systems theory was proposed in the 1940's by the biologist Ludwig von Bertalanffy (General Systems Theory, 1968), and furthered by Ross Ashby (Introduction to Cybernetics, 1956). von Bertalanffy was both reacting against reductionism and attempting to revive the unity of science. He emphasized that real systems are open to, and interact with, their environments, and that they can acquire qualitatively new properties through emergence, resulting in continual evolution. Rather than reducing an entity e.g. the human body to the properties of its parts or elements e.g. organs or cells, systems theory focuses on the arrangement of and relations between the parts which connect them into a whole. This particular organization determines a system, which is independent of the concrete substance of the elements e.g. particles, cells, transistors, people, etc. Thus, the same concepts and principles of organization underlie the different disciplines physics, biology, technology, sociology, etc., providing a basis for their unification. Systems concepts include: system-environment boundary, input, output, process, state, hierarchy, goal-directedness, and information. By opening data, a move from a traditionally closed to open systems is made. Systems theory states that these will impact the governance and feedback loops in which the government can learn from the public.

2.6.1 Moving from closed to open systems

By publicizing data, a new situation is created in which the public can use and create information through collaborative networking (Chun, Shulman, Sandoval, & Hovy, 2010). The public is outside the organizational boundaries and outside the control of the hierarchy. In fact the public becomes part of the data processing system and might process data, enrich data, combine it with other sources and might even collect their own data for example through the use of their mobile phones. This resembles a change in the traditional boundaries between public organizations and the public in which virtually anybody in the world has access to the data. The traditional system boundaries are vanishing and the system is opened. Systems theory draws attention to the important distinction between systems which are open to their environment and those which are closed (Jackson, 2003). Closed systems are much easier to manage, as they are not affected by external factors which are often unpredictable in nature. Central planning and control can be used, as there is less disruption from the environment. In contrast, the flow in open systems cannot be predefined but only guided. The opening of a system is often heralded for bringing in additional views, which has a positive

impact on its problem solving capacity (Surowiecki, 2004); and the opening of data for its use in ways that are not considered or anticipated in advance (Arzberger et al., 2004).

The notion of feedback is important in open systems and refers to the situation in which activity within a system is the result of the influence of one element on another (Jackson, 2003). The implication of the notion of feedback in systems theory is that in opening their data, governments should not simply instigate one-way communication of their data but should expect or actively solicit feedback and be able to make sense of this feedback. The opening of systems provides the opportunity for creating feedback loops in which the government can learn from the public. By embedding hermeneutics, the closed system is placed in the social context. The consequence is that the social context will also influence the (formerly) closed system. This implies that the relationship between a government and its environment is subject to change and that the government needs to accept that traditional planning and control instruments are no longer suitable. Opening a system typically requires a shift from mechanistic control to an evolutionary perspective which is dominated by self organization. New governance mechanisms, capabilities and processes are necessary for dealing with these feedback loops. The nature of the response depends on the available organizational arrangements that make a response possible (Jackson, 2003; Janssen et al., 2012).

Institutional theory, on the other hand, attends to the deeper and more resilient aspects of social structure. It considers the processes by which structures, including schemas; rules, norms, and routines, become established as authoritative guidelines for social behaviour. It inquires into how these elements are created, diffused, adopted, and adapted over space and time; and how they fall into decline and disuse (Richard, 2004). Institutional theory is used to predict that the opening of data will reinforce existing structures instead of changing them and transformation is needed to take advantage of open data.

2.6.2 Reinforcing and transforming institutional structures

Institutional theory analyzes the deeper and more resilient aspects of social structure by considering the processes by which structures become established. Institutional environments reward normative requirements of appropriateness and legitimacy and, in some cases, conformity to procedures, presentations, symbols and rhetoric (Scott, 1995). In institutional theory, ICT is perceived, implemented and used in virtue of pre-existing institutional

arrangements (sociological, cultural, legal and formal aspects) that grant stability. Stability is necessary for organizations to operate. Orlikowski (2000) argues that the development of technology is heavily influenced by the actions (including decisions) of human agents, and that technology enacts structures. This suggests that institutions might both enable and constrain the adoption of open data. The outcomes stemming from the enactment of technology are difficult to predict because of multiple and unanticipated effects influenced by rational, social, and political logics (Orlikowski, 2000). Nevertheless, institutional theory suggests that the introduction of IT does not often change institutions but rather reinforces current work practices and organizational structures (Fountain, 2001; West, 2004; Kraemer & King, 2006; Janssen et al., 2012).

In opening data to the public, public managers (and politicians) find themselves in the midst of networks that might help them to reach advantages of open data at the expense of less control. Institutional theory argues that in open systems different steering instruments are required. Outside the boundaries of government, command and control mechanisms cannot be used. Public managers find themselves confronted with having to deal with a variety of stakeholders (possibly unknown) that might help them to achieve the benefits of open data but might also be viewed as a threat if not properly handled. In open data the allocation of the roles of provider, processor, owner and maintainer complicates accountability issues. Which party is to blame when results of the processing of open data are incorrect? No one has an overview of what is done with the open data, and even having such an overview might violate the basic idea of open data. Whether the opening of data will unambiguously lead to a more transparent, interactive, open and hence accountable government, it is challenged from this perspective. Although the use of open data looks like collective accountability, it is likely that if something happens, society will expect intervention from the government and will hold it responsible (Janssen et al., 2012).

2.7 Conceptual framework

Independent variables   **Moderating variable**
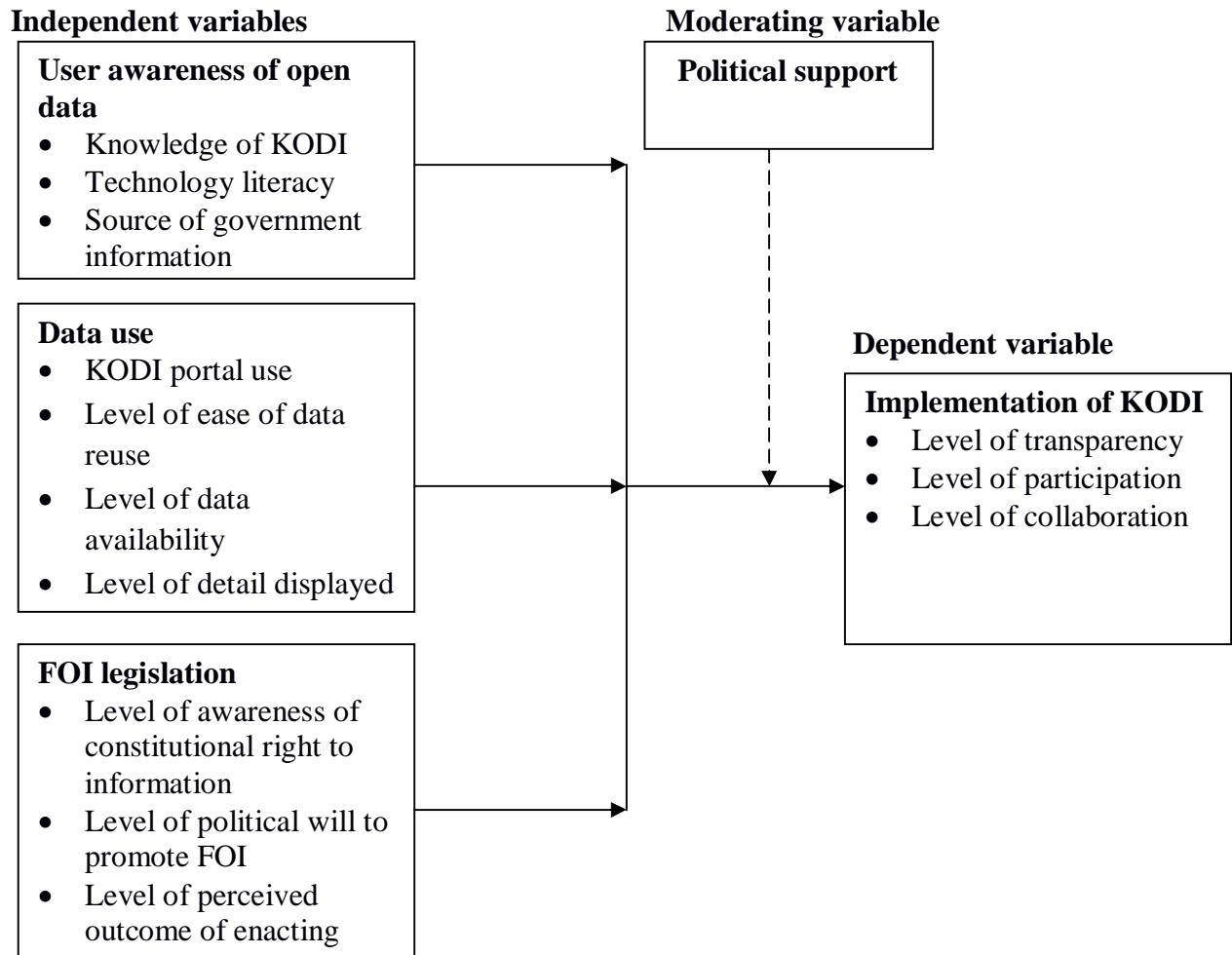
Figure 2: Conceptual Framework

2.8 Explanation of the relationship between variables in the conceptual framework

Figure 2 shows the relationship between factors influencing the implementation of an open data initiative. There are three independent variables namely: user awareness of open data, data use and FOI legislation. Implementation of KODI is the independent variable. The outcome of implementing an open data initiative is an open government. The level of openness of a government is assessed using the indicators: transparency, collaboration and participation. Implementation of the KODI is dependent on user awareness of open data, data use and FOI legislation. Political support is the moderating variable.

2.9 Knowledge gap

Table 2.1: Knowledge gaps

Variable	Author and Year	Findings	Knowledge gap
User awareness of open data	Mutuku & Mahihu (2014)	Found that citizens access and use government data but know little about KODI.	This study used a descriptive survey design and a larger sample of 132 compared to 71. It concentrated on Nairobi County.
Data use	Jansen et al. (2012), Capgemini (2013)	It identified data use as a barrier to the adoption of open data. Found that data portal usability is key for a government to realize the economic benefit of open data.	There was need to explore these findings in the context of the KODI.
FOI legislation	Jansen et al. (2012)	It identified legislation as a barrier to the adoption of open data.	This study focused on FOI legislation with regard to the KODI

2.10 Summary of literature review

This chapter has dealt with the factors that influence the implementation of an open data initiative with emphasis on the KODI. Open data and open government have been fully described. It has been noted that the two are distinct and can exist independently. However, lately, with the rise of open data on the international agenda, open data and open government have been placed under the same banner. Open data is viewed as a contributor to open government. Many governments are working towards availing government data to the citizens through online data portals. User awareness of open data has been discussed as one of the factors that influences the implementation of an open data initiative. The benefits of open data are unlocked once users become aware of it and use it. It has been noted by various studies that little is known about KODI.

Data use is also highlighted as one of the factors that influences the implementation of an open data initiative. It has been observed that governments are releasing datasets online to the public. However, some researchers argue that in as much as it is important to release data, it is also important to ensure that the data is in a form that is understandable and useful to the

users. In addition, some say that the type of data released to the public matters. They opine that government should not only release data that improves service delivery but also that which will promote political accountability. The use of data was also pointed out by many researchers. They maintain that open data is of no value if it is not put to use. It was evident that data use in the KODI portal was below expectations and the quality of data provided questionable. Another factor that has been reviewed as one that influences the implementation of an open data initiative is the FOI legislation. It has been noted that legislation is key in implementing successful open data initiatives. However, Kenya remains as one of the countries without a FOI act in place. The birth of KODI is credited to the new constitutional dispensation which pushed for the right to information. Lack of a legal framework continues to be an impediment to the KODI especially when it comes to getting data from providers.

Lastly, knowledge gaps are cited. Mutuku & Mahihu (2014) found that citizens access and use government data but know little about KODI. This study used a descriptive survey design and a larger sample of 132 compared to 71. It concentrated on Nairobi County. A study by Jansen et al. (2012) identified data use as a barrier to the adoption of open data while that by Capgemini (2013) found that data portal usability is key for a government to realize the economic benefit of open data. There was need to explore these findings in the context of the KODI. Jansen et al. (2012) identified legislation as a barrier to the adoption of open data. This study focused on FOI legislation with regard to the KODI.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the main research methodology that was followed in carrying out the study. The research design, sample size and sampling procedures, target population, research instrument, validity and reliability of research instruments, data collection procedures, data analysis, ethical considerations and operational definition of variables have been discussed in this chapter.

3.2 Research Design

The study adopted a descriptive survey design. Orodho (2005) observes that descriptive survey involves collecting information about people's attitudes, opinions, habits or any variety of social issues by interviewing or administering a questionnaire to a sample of individuals. Kombo and Tromp (2006) point out that the major purpose of descriptive research is the description of the state of affairs as it exists. They further stress that descriptive studies are not only restricted to fact findings but may often result in the formulation of important principles of knowledge and solutions to significant problems and involve measurement, classification, analysis, comparison and interpretation of data. In this study, the researcher carried out an in-depth investigation to determine the factors that influence the implementation of the KODI in Nairobi County.

3.3 Target population

The study targeted KODI stakeholders namely: private sector organizations, civil society organizations, government and citizens within Nairobi County. To ensure that the population was representative, three private sector organizations in the banking and IT sector; two CSOs/ NGOs that are in partnership with the OGP; three government ministries and five organizations drawn from learning institutions and the informal sector were chosen to participate in the study.

Table 3.1: Target population

Sector	Number of organizations expected to participate in the study	Expected population size from each sector
Private sector organizations	3	40
CSOs/ NGOs	2	15
Government ministries	3	45
Citizens	5	100

3.4 Sample size and sampling procedures

3.4.1 Sample size

The researcher used random sampling and to select the sample, Krejcie and Morgan (1970) formula for determining the sample size was used.

The study used 95% confidence level, a standard deviation/ population proportion of 0.5, and a margin of error (confidence interval) of +/- 5%.

$$n = \frac{X^2 NP(1 - P)}{\left(ME^2(N - 1)\right) + \left(X^2 P(1 - P)\right)}$$

Where:

n = Sample size

X^2 = Chi-square for the specified confidence level at 1 degree of freedom

N = Population size

P = Population proportion

ME = Margin of error

$$= \frac{3.841 * 200 * 0.5(0.5)}{\left(0.05^2(200 - 1)\right) + (3.841 * 0.5(0.5)}$$

$$= 132$$

132 respondents were needed for the study.

3.4.2 Sampling procedure

Stratified random sampling was used to select the sample for the study. First, the population was divided into four different strata based on KODI stakeholders namely: private sector organizations, civil society organizations, government and citizens. A random sample was then drawn from each organization chosen to participate in the study. Each member in the population was assigned a number. Using R statistical package, the researcher drew random

numbers from all the numbers assigned. The selected members participated in the study as respondents.

3.5 Data collection instrument

The researcher used a questionnaire as the main research instrument. The research instrument used an ordinal scale, nominal and open ended questions to collect and measure the variables of the study. Part 1 of the questionnaire contained questions regarding the independent variables: user awareness of open data, data quality and use and legal framework to be filled in by the respondent while part 2 contained statements that were designed to indicate the respondents' opinion about the implementation of the KODI.

3.5.1   Pilot testing of the instrument

After being granted permission from relevant university and government authorities, a pilot study was carried out among random respondents who were not involved in the actual study. This was intended to check for ambiguity and poorly prepared items and eventually reviewing them. The questionnaires were pre-tested on a selected small sample that was not involved in the actual study and the procedures used in pre-testing them were identical to those that were used during the actual study. Pre-testing questionnaires was important because of the following reasons as described by Orodho (2005): unclear directions, insufficient space to write response, clustered questions and wrong phrasing of questions were detected; vague questions were revealed in the sense that respondents interpreted them differently and this allowed the researcher to rephrase the questions until they conveyed the same meaning to all subjects and this enhanced validity of the instrument and piloting revealed if the anticipated analytical techniques were appropriate.

3.5.2   Validity of the instrument

The validity of the questionnaires was determined by pre-testing on a small sample of respondents not involved in the actual study; responses were assessed, wrongly prepared items were reviewed and ambiguous questions rephrased thus enhancing the validity.

3.5.3   Reliability of the instrument

Reliability refers to a measure degree to which a research instrument yields consistent results or data after repeated trials (Mugenda & Mugenda, 1999). A test-retest technique was used to test the reliability of the questionnaires using the following steps outlined by Orodho (2005): the developed questionnaires were given to a few identical subjects who did not take part in actual study; the answered questionnaires were scored manually; the same questionnaires were administered to the same group of subjects after two weeks and the questionnaires

responses were scored manually and then a comparison made between answers obtained in both cases. A Pearson product moment formula was used to compute a correlation co-efficient to find out if the contents of the questionnaires were consistent in eliciting the same response every time the instrument was administered. Orodho further points out that a correlation co-efficient of about 0.8 is considered high enough to judge the instrument as reliable for the study. The researcher obtained a correlation co-efficient of 0.89 and concluded that the questionnaire was reliable.

3.6 Data collection procedures

A proper protocol was followed in the process of data collection. First, an approval for the collection of data was obtained from the National Commission for Science, Technology and Innovation in Kenya. Upon receiving the approval, the researcher visited private organizations, civil society organizations, government offices and other organizations selected to participate in the study. The researcher explained the purpose of the visit to the administration and created a rapport with the officials as well the respondents. Thereafter, the researcher administered the questionnaires and came to collect them after an agreed time period.

3.7 Data analysis techniques

The following statistics were used in data analysis. Descriptive statistics was used in presenting information collected from the study in order to describe the characteristics of information of samples by using frequency, percentage, mean and standard deviation. Inferential statistics by using Mann Whitney u-test and Kruskal Wallis test was used to compare how user awareness of open data, data use and FOI legislation framework influence the implementation of the KODI.

3.8 Ethical considerations

The researcher first obtained a research permit from the National Commission for Science, Technology and Innovation before proceeding with the research. The researcher then wrote an introductory letter to respondents which assured them that the research was purely for academic purposes. The research process and procedures used were based on voluntary informed consent and employed a valid research design with a sample selection that was appropriate for the purpose of the study. The researcher also treated the information provided by the respondents with utmost confidentiality.

3.9 Operational definition of the variables

Table 3.2: Operational definition of the variables

Research objective	Variable	Indicator	Measurement	Scale	Tools of analysis	Type of analysis
To establish the influence of user awareness of open data on the implementation of the KODI.	Independent variable	The number of people aware of the open data initiative	- Number of government outreach and education campaigns on KODI. - Press releases and announcement about open data. -Number of people who understand their need for government information.	Ordinal Nominal	- Percentage - Frequency distribution - Mean - Mann Whitney u-test	Quantitative Qualitative
To determine the influence of data use on the implementation of the KODI.	Independent variable	- The number of people aware of the open data initiative - The number of people using the KODI portal	- Number of people that have accessed the portal in a certain period of time. - Feedback on the quality of datasets. - Request for datasets. - Innovative apps to visualize data. - Data feeds about new datasets.	Ordinal	- Percentage - Frequency distribution - Mean - Mann Whitney u-test	Quantitative

To determine the influence of FOI legislation on the implementation of the KODI.	Independent variable	- A FOI act - The number of people demanding for their right to government information.	- Political support for FOI. - The level of freedom of information in the country.	Ordinal	- Mean - Kruskal Wallis test	Quantitative
	Dependent variable	-Transparency -Participation -Collaboration	- Number of people that have access to government held. information - Number of people informed of government proceedings. - Number of people engaged in public decision making and policy formulation - Number of people of organizations engaging in government through the use of innovative tools, methods and systems.	Ordinal	-Mean - Mann Whitney u-test - Kruskal Wallis test	Quantitative

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the research findings which were organized in terms of the review themes under the following sub-headings: questionnaire return rate, demographic characteristics of the respondents, user awareness of open data and implementation of open data initiatives, data quality and use and implementation of open data initiatives, legal framework and implementation of open data initiatives. It also highlights the implementation of the KODI and presents hypotheses testing.

4.2 Questionnaire return rate

Out of the 132 questionnaires issued, 130 were returned and this accounted for 98.5% of the sample which was used for data analysis.

Table 4.1: Questionnaire return rate

Category	Number of questionnaires issued	Number of questionnaires returned	Proportion of response in %
Private sector organizations	25	25	100%
CSOs/ NGOs	12	10	83.3%
Government ministries	35	35	100%
Citizens	60	60	100%

4.3 Demographic characteristics of the respondents

n=130

Table 4.2: Demographic characteristics of the respondents

Characteristics	Number	Percentage
Age		
18 – 25	43	33.1
26 – 35	53	40.8
36 – 45	27	20.8
46 and above	6	4.6
Gender		
Male	67	51.5
Female	62	47.7

Professional class		
White collar	61	46.9
Blue collar	5	3.8
Entrepreneur/ Self employed	15	11.5
Unemployed	12	9.2
Student	33	25.4
Sector		
Private	25	19.2
Government	35	26.9
NGO/CSO	10	7.7
Other	60	46.2

Although it was not part of the purpose of the study, this set of data was intended to describe demographic variables of the sample and to assess for any influence on the research findings. The demographic data consisted of age, gender, professional class and sector. The demographic characteristics of the data were analyzed using frequency and percentage. Age and gender had 1 missing value while professional class 4 missing values.

The research finding about age showed that out of 130 respondents, 33.1% which constituted 43 respondents fell in the age group between 18 – 25 years. 40.8% which constituted 53 respondents fell in the age group between 26 – 35 years. 20.8% which constituted 27 respondents fell in the age group between 36 – 45 years and 4.6% which constituted 6 respondents fell in the age group 46 years and above. The sample had more male respondents: 51.5% which constituted 67 respondents and 47.7% female, which constituted 62 respondents. With regard to professional class, 61 respondents out of the 126 which is 46.9% of the sample had white collar jobs, 5 respondents which is 3.8% of the sample had blue collar jobs, 15 respondents which is 11.5% of the sample were self employed, 12 respondents which is 9.2% of the sample were unemployed, and 33 respondents which is 25.4% of the sample were students. The result indicated that majority of the KODI stakeholders: 46.2% which constituted 60 respondents were citizens. 19.2% which constituted 25 respondents were stakeholders from the private sector; 26.9% which constituted 35 respondents were stakeholders from the government sector and 7.7% which constituted 10 respondents were stakeholders from the NGO sector.

4.4 User awareness of open data and implementation of the KODI

Table 4.3: Familiarity with the KODI

Characteristics	Number	Percentage
Familiarity with the KODI		
Yes	32	24.6
No	98	75.4

As can be seen from the table, out of the 130 respondents, 26.4% which constitutes 32 respondents are familiar with the KODI while 75.4% which constitutes 98 respondents and is the bulk of the sample are not familiar with the initiative. This shows that the awareness levels about the KODI are very low.

Table 4.4: Devices a respondent is able to access

Characteristics	Number	Percentage
Devices one is able to access		
Computer	2	1.5
Mobile phone	22	16.9
Computer and mobile phone	38	29.2
Computer, mobile phone and tablet	68	52.3

In terms of devices one is able to access; most respondents at 52.3% which is 68 respondents indicated that they were able to access all devices namely: computer, mobile phone and tablet. 1.5% which is 2 respondents indicated that they were able to access only a computer; 16.9% which is 22 respondents indicated that they were able to access only a mobile phone and 29.2% which is 38 respondents indicated that they were able to access both a computer and a mobile phone. The findings indicate that majority of the respondents are able to access computer-like gadgets.

Table 4.5: Devices a respondent is able use

Characteristics	Number	Percentage
Devices one is able to use		
Computer	6	4.6
Mobile phone	9	6.9
Computer and mobile phone	30	23.1
Computer, mobile phone and tablet	85	65.4

On the other hand, majority of the respondents at 65.4% which is 85 respondents indicated that they were able to use all devices namely: computer, mobile phone and tablet. 4.6% which is 6 respondents indicated that they were able to use only a computer; 6.9% which is 9 respondents indicated that they were able to access only a mobile phone and 23.1% which is 30 respondents indicated that they were able to access both a computer and a mobile phone. The findings indicate that majority of the respondents are able to use computer-like gadgets.

The mean score was considered from the score of the answers and was classified into 5 levels to Best's (1977) criteria as follows:

$$\frac{High\ score - Low\ score}{Number\ of\ levels}$$

$$= \frac{5-1}{5}$$

$$= \frac{4}{5}$$

$$= 0.80$$

Table 4.6: Criteria for understanding the mean score

Mean scores	Level of agreement
1.00 – 1.80	Highly disagree
1.81 – 2.60	Disagree
2.61 – 3.40	Unsure
3.41 – 4.20	Agree
4.21 – 5.00	Highly agree

Table 4.7: Internet access and use and government information access

Statement	$\bar{x}$	S.D	Meaning
1. You have access to the internet.	4.49	0.77	Highly agree
2. You able to use the internet.	4.64	0.61	Highly agree
3. You have access to government information.	3.26	1.41	Unsure

Note: 1.00 – 1.80 = highly disagree, 1.80 – 2.60 = disagree, 2.61 – 3.40 = unsure, 3.41 – 4.20 = agree, 4.21 – 5.00 = highly disagree

The table indicates that the respondents highly agree that they have access to the internet with a mean score of 4.49 and a SD of 0.77. The respondents highly agree that they are able to use the internet with a mean score of 4.64 and a SD of 0.61. They however are unsure about their access to government information with a mean score of 3.26 and a SD of 1.41. The respondents strongly rated that they are able to access and use the internet.

Table 4.8: Preferred way of accessing the internet

Characteristics	Number	Percentage
Preferred way of accessing the internet		
Computer	56	43.1
Mobile phone	47	36.2
Tablet	6	4.6
Computer and mobile phone	19	14.6
Computer and tablet	1	0.8
Computer, mobile phone and tablet	1	0.8

With regard to preferred way of accessing the internet, majority of the respondents at 43.1% which is 56 respondents indicated that they prefer accessing the internet using a computer. This was followed by 36.2% which is 47 respondents who prefer to access the internet using a mobile phone; followed by 14.6% which is 9 respondents who prefer to access the internet using both a computer and mobile phone; followed by 4.6% which is 6 respondents who prefer to access the internet using a tablet and at the bottom of the list is 0.8% which is 1 respondent who prefer to access the internet using either both a computer and tablet or all devices: computer, mobile phone and tablet respectively. The findings indicate that most respondents can access the web-based KODI portal via their mobile phones or computers. The KODI should therefore tailor their website to be device friendly so that it is clear on a device of any size.

Table 4.9: Source of government information

Characteristics	Number	Percentage
Source of government information		
Mass media	56	43.1
The government printer	2	1.5
Social media	26	20
KODI portal	1	0.8
Online sources	11	8.5
Mass and social media	4	3.1
Mass media and KODI portal	2	1.5
Mass media and online sources	16	12.3
Social media and online sources	2	1.5
Mass media, social media and online sources	6	4.6
Mass media, social media, KODI portal and online sources	1	0.8
Mass media, government printer, social media and online sources	1	0.8

Source of government information contained 2 missing values. Out of the 128 respondents, 56 which is 43.1% of the sample indicate that their source of government information is mass media. 26 which is 20% of the sample indicate that their source of government information is social media; 16 which is 12.3% of the sample indicate that their source of government

information is a combination of both mass media and online sources; 11 which is 8.5% of the sample indicate that their source of government information is online sources; 6 which is 4.6% of the sample indicate that their source of government information is a combination of mass media, social media and online sources; 2 which is 1.5% of the sample indicate that their source of government information is the government printer; 2 which is 1.5% of the sample indicate that their source of government information is a combination of both mass media and KODI portal; 2 which is 1.5% of the sample indicate that their source of government information is a combination of both social media and online sources and 1 which is 0.8% of the sample indicate that their source of government information is a combination of mass media, social media, KODI portal and online sources or mass media, government printer, social media and online sources respectively.

Table 4.10: Information respondents are interested in

Characteristics	Number	Percentage
Government information respondents are interested in		
Health	4	3.1
Education	16	12.3
Governance	22	16.9
Budget allocation/ expenditure	12	9.2
Water & sanitation	4	3.1
Economic	18	13.8
Health and education	5	3.8
Health and governance	1	0.8
Health and budget allocation/ expenditure	2	1.5
Education and governance	4	3.1
Education and budget allocation/ expenditure	1	0.8
Education and water & sanitation	1	0.8
Education and economic	2	1.5
Governance and budget allocation/ expenditure	3	2.3
Governance and economic	2	1.5
Budget allocation/ expenditure and water & sanitation	1	0.8

Budget allocation/ expenditure and economic	5	3.8
Education, governance, water & sanitation and economic	2	1.5
Education, governance, budget allocation/ expenditure and economic	1	0.8
Health, education, governance, budget allocation/ expenditure and water & sanitation	1	0.8
Health, education, governance and economic	2	1.5
Health, education and governance	2	1.5
Governance, budget allocation/ expenditure and economic	2	1.5
Health, education and water & sanitation	1	0.8
Health, education, budget allocation/ expenditure and economic	1	0.8
Health, education, governance and budget allocation/ expenditure	2	1.5
Health, governance and budget allocation/ expenditure	2	1.5
Health, education, governance, budget allocation/ expenditure and economic	1	0.8
Governance, budget allocation/ expenditure, water & sanitation and economic	1	0.8
Health, education and economic	1	0.8
Health, education, governance, budget allocation/ expenditure, water & sanitation and economic	2	1.5

Information respondents are interested in had 1 missing value. The study shows that 22 respondents (16.9%) are interested in governance information; 18 respondents (13.8%) are interested in economic information. 16 respondents (12.3%) are interested in education information; 12 respondents (9.2%) are interested in budget allocation/ expenditure information while two sets of 5 respondents (3.8%) are interested in a combination of health

and education and budget allocation/ expenditure and economic information respectively. Three sets of 4 respondents (3.1%) are interested in health, water and sanitation and a combination of education and governance information. 3 respondents (2.3%) are interested in a combination of governance and budget allocation/ expenditure information. Ten sets of 2 respondents (1.5%) are interested in a combination of health and budget allocation/ expenditure; education and economic, governance and economic; education, governance, water & sanitation and economic; health, education, governance and economic; health, education and governance; governance, budget allocation/ expenditure and economic; health, education, governance and budget allocation/ expenditure; health, governance and budget allocation/ expenditure; and health, education, governance, budget allocation/ expenditure, water & sanitation and economic information respectively. Eleven sets of 1 respondent each (0.8%) are interested in a combination of health and governance; education and budget allocation/ expenditure; education and water & sanitation; budget allocation/ expenditure and water & sanitation; education, governance, budget allocation/ expenditure and economic; health, education, governance, budget allocation/ expenditure and water & sanitation; health, education and water & sanitation; health, education, budget allocation/ expenditure and economic; health, education, governance, budget allocation/ expenditure and economic; governance, budget allocation/ expenditure, water & sanitation and economic; and health, education and economic information respectively.

Other information that respondents are interested in included: security; land issues; integrity, transparency and accountability issues of state officers; art and tourism; government policy; devolution; agriculture, transport and communication. The findings indicate that different respondents are interested in diversified information from the government with the most popular being governance. Mutuku and Mahihu (2014) survey found that the respondents were interested in information related to ministries, their various programs and the services they offer such as youth fund, education, census, security, health business and training. The respondents in this study were interested in the information they selected because they are associated, work or are interested in the field. They also indicated that there was inadequate information about that field hence the reason for their choice. Security information was ranked highest among the other information requested. This might be due to the security challenges Kenya has been experiencing in the recent past.

4.5 Data use and implementation of the KODI

Table 4.11: Usage of the KODI portal

Characteristics	Number	Percentage
Usage of KODI portal		
Yes	24	18.5
No	106	81.5

Only 18.5% which constitutes 24 respondents out of the 130 that took part in the study reported to have used the KODI portal. On the other hand, 106 which is majority of the respondents (81.5%) have not used the portal. The findings indicate low usage of the portal. The results also show that out of the 32 who are aware about the KODI, only 24 have used the portal. This goes to show that awareness about the initiative will not necessarily translate in people using the portal.

Table 4.12: KODI data characteristics

Statement	$\bar{x}$	S.D	Meaning
1. The data provided on the KODI portal is relevant, that is what you wanted.	3.52	1.04	Agree
2. It is easy to find information on the portal.	3.70	0.82	Agree
3. The dataset available free of charge.	3.64	0.79	Agree
4. The level of detail in the data released is helpful to provide insight.	3.68	0.99	Agree

Note: 1.00 – 1.80 = highly disagree, 1.80 – 2.60 = disagree, 2.61 – 3.40 = unsure, 3.41 – 4.20 = agree, 4.21 – 5.00 = highly disagree

Table 4.11 shows the KODI data characteristics that dictate the data use. All the four items fall under the agree category. The results indicate that the respondents agree that the data provided on the KODI portal is relevant with a mean score of 3.52 and a SD of 1.04. The respondents agree that it is easy to find information on the portal; the dataset available free of charge and the level of detail in the data released is helpful to provide insight with a mean score of 3.7 and a SD of 0.82, mean score of 3.64 and a SD of 0.79 and a SD of 0.64 and mean score of 3.68 and a SD of 0.99 respectively.

4.6 FOI legislation and implementation of the KODI

Table 4.13: FOI legislation

Statement	$\bar{x}$	S.D	Meaning
1. You have a constitutional right to access government information.	4.45	0.77	Highly agree
2. The government of Kenya is a champion of freedom of information.	2.91	1.14	Unsure
3. The Kenyan parliament is committed to enacting the Freedom of Information (FOI) bill into law.	3.02	1.02	Unsure
4. Having a FOI law will improve the dissemination of information thus enhance the impact of KODI in promoting an open government and general freedom of information in Kenya.	3.78	1.06	Agree

Note: 1.00 – 1.80 = highly disagree, 1.80 – 2.60 = disagree, 2.61 – 3.40 = unsure, 3.41 – 4.20 = agree, 4.21 – 5.00 = highly disagree

Table 4.12 shows that the respondents are unsure about the role of the Kenyan government as a champion of freedom of information with a mean score of 2.91 and a SD of 1.14, they are also unsure about the commitment of the Kenyan government to enact the FOI bill into law with a mean score of 3.02 and a SD of 1.02. The respondents agree with a mean score of 3.78 and a SD of 1.06 that having a FOI law will improve the dissemination of information thus enhance the impact of KODI in promoting an open government and general freedom of information in Kenya. The respondents highly agree that they have a constitutional right to access government information with a mean score of 4.45 and a SD of 0.77.

4.7 Implementation of the KODI

Table 4.14: Implementation of KODI on transparency

Statement	$\bar{x}$	S.D	Meaning
1. Opening up government data enables you to easily access government information.	4.20	0.78	Agree
2. Opening up government data enables equal access of government information by all.	3.83	1.04	Agree
3. Open data allows you to access data sources and perform analyses.	4.05	0.82	Agree
4. Opening up government data enables you to monitor the actions politicians and public administration.	3.71	0.99	Agree
5. Opening up government data gives you an improved opportunity to participate with, understand and critique government actions.	3.95	0.90	Agree
Average	3.95	0.91	Agree

Note: 1.00 – 1.80 = highly disagree, 1.80 – 2.60 = disagree, 2.61 – 3.40 = unsure, 3.41 – 4.20 = agree, 4.21 – 5.00 = highly disagree

The table shows the implementation of the KODI on transparency. The results indicate that the respondents rate the impact of the implementation of KODI on transparency at agree level on all aspects of transparency as shown by items 1 to 5. The overall mean score was 3.95 with a SD of 0.91; this implies that the respondents agree that the implementation of the KODI will result in transparency.

Table 4.15: Implementation of KODI on collaboration

Statement	$\bar{x}$	S.D	Meaning
1. Open data provides a platform for open innovation of applications and mashups in partnership citizens.	3.78	0.80	Agree
2. Opening up government data enables collaborative administration through platforms for complaints, reporting corruption etc.	3.81	0.91	Agree

Statement	x̄	S.D	Meaning
3. Open data fosters collaborative democracy through participatory budgeting, ideanation contests and interactive legislation and urban planning projects.	3.76	0.93	Agree
Average	3.78	0.88	Agree

Note: 1.00 – 1.80 = highly disagree, 1.80 – 2.60 = disagree, 2.61 – 3.40 = unsure, 3.41 – 4.20 = agree, 4.21 – 5.00 = highly disagree

The table shows the implementation of the KODI on collaboration. The results indicate that the respondents rate the impact of the implementation of KODI on collaboration at agree level on all aspects of collaboration as shown by items 1 to 3. The overall mean score was 3.78 with a SD of 0.88; this implies that the respondents agree that the implementation of the KODI will result in collaboration.

Table 4.16: Implementation of KODI on participation

Statement	x̄	S.D	Meaning
1. Opening data increases public participation in the political-administrative process.	3.85	0.97	Agree
2. Open data enables citizens to actively engage in the decision-making process of the government through online communication.	3.84	0.96	Agree
3. Open data enables citizens to articulate their opinions and interact with the public administration and parliamentarians.	3.83	0.90	Agree
4. Opening up government data enables citizens to give feedback to the government	3.99	0.85	Agree
5. Open data platforms increase the acceptance of political decisions by citizenry as they are part of the process.	3.75	1.03	Agree
Average	3.85	0.94	Agree

Note: 1.00 – 1.80 = highly disagree, 1.80 – 2.60 = disagree, 2.61 – 3.40 = unsure, 3.41 – 4.20 = agree, 4.21 – 5.00 = highly disagree

The table shows the implementation of the KODI on participation. The results indicate that the respondents rate the impact of the implementation of KODI on participation at agree level on all aspects of participation as shown by items 1 to 5. The overall mean score was 3.85 with a SD of 0.94; this implies that the respondents agree that the implementation of the KODI will result in participation.

Table 4.17: Summary of the overall implementation of the KODI

Statement	$\bar{x}$	S.D	Meaning
1. Transparency	3.95	0.91	Agree
2. Collaboration.	3.78	0.88	Agree
3. Participation.	3.85	0.94	Agree
Average	3.86	0.91	Agree

Note: 1.00 – 1.80 = highly disagree, 1.80 – 2.60 = disagree, 2.61 – 3.40 = unsure, 3.41 – 4.20 = agree, 4.21 – 5.00 = highly disagree

The table shows the summary of the overall implementation of the KODI. All the three aspects of an open government were rated at the agree level. Transparency had a mean score of 3.95 with a SD of 0.91, collaboration had a mean score of 3.78 with a SD of 0.88 and participation had a mean score of 3.85 with a SD of 0.94. The results show an overall mean score of 3.86 with a SD of 0.91, this implies that the respondents agree that implementation of KODI will result in an open government.

4.8 Hypotheses testing

Table 4.18: Awareness of open data and the implementation of the KODI

Awareness of open data	n	z	u	p-value
Yes	32	8.4716	0.0000	3.83e-31
No	98			

The hypothesis was validated at 0.05 level of significance

Table 4.18 indicates the implementation of the KODI with regard to user awareness of open data. The findings indicate that it has a statistically significant difference. The p-value for 0.000 is 3.83e-31, so the test statistic is significant at that level. The u-value is 0 and the distribution is approximately normal, therefore z-value can also be used. Since the p-value is less than the level of significance we reject the null hypothesis and accept the alternate hypothesis. This means that user awareness of open data influences the implementation of the KODI.

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Table 4.19: Data use and the implementation of the KODI

Use of open data	n	z	u	p-value
Yes	24	7.6298	0.0000	1.10e-26
No	106			

The hypothesis was validated at 0.05 level of significance

Table 4.19 indicates the implementation of the KODI with regard to open data use. The findings indicate that it has no statistically significant difference. The p-value for 0.0000 is 1.10e-26, so the test statistic is significant at that level. The u-value is 0 and the distribution is approximately normal, therefore z-value can also be used. Since the p-value is less than the level of significance we reject the null hypothesis and accept the alternate hypothesis. This means that open data use influences the implementation of the KODI.

Table 4.20: FOI legislation and the implementation of the KODI

Level of influence of FOI legislation on KODI	n	x^2 chi-square	H	p-value
Highly agree	41	129	134	5.43e-028
Agree	37			
Unsure	39			
Disagree	9			
Highly disagree	4			

The hypothesis was validated at 0.05 level of significance

Table 4.11 indicates the implementation of the KODI with regard FOI legislation. The findings indicate that it has a statistically significant difference. The p-value for 134 is 5.43e-028, so the test statistic is significant at that level. The p-value, which is based on the Chi-square distribution with 4 degrees of freedom, is less than 0.05. The value of the test statistic H is greater than the chi-square tabulation. Since the calculated statistic is greater than the chi-square tabulation and the p-value is less than the level of significance we reject the null hypothesis and accept the alternate hypothesis. The null hypothesis was rejected, concluding that there is strong evidence that the expected values in the five groups differ. This means that FOI legislation influences the implementation of the KODI.

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gives a summary of the research findings in terms of the study objectives, discussion, conclusions and recommendations. The conclusions were drawn from the study findings and several recommendations made by the researcher. Suggestions for further research have been incorporated in this chapter.

5.2 Summary of findings

The purpose of this study was to investigate the factors that influence the implementation of the Kenya Open Data Initiative in Nairobi County. A descriptive survey design was used as the research method and a questionnaire was developed and used as the key instrument. Descriptive statistics: frequency, percentage, mean and standard deviation was used in presenting information collected from the study in order to describe the characteristics of information of samples. Mann Whitney u-test and Kruskal Wallis test were used in comparing the user awareness of open data, open data use and FOI legislation with regard to implementation of the KODI. The population of study comprised organizations that are KODI stakeholders: private sector organizations, civil society organizations, government and citizens within Nairobi County and the sample size was 132 respondents. Questionnaire return rate was 98.5% which constituted 130 respondents.

Out of the 130 respondents, 19.2% were from the private sector, 26.9% were from government institutions, 7.7% were from the NGO/CSOs and 46.2% were citizens. The sample had more male respondents at 51.5% compared to female respondents at 47.7%. 33.1% of the respondents were aged between 18 – 25 years; 40.8% of the respondents were aged between 26 – 35 years; 20.8% of the respondents were aged between 36 – 45 years and 4.6% of the respondents were above 45 years of age. Almost half of the respondents at 46.9% had white collar jobs; 3.8% had blue collar jobs; 11.5% were self employed; 9.2% were unemployed and 25.4% were students. In terms of awareness about KODI, only 24.6% of the respondents were familiar within the initiative while 75.4% were not familiar. The respondents highly agreed that they had access and could use the internet with a mean score of 4.49 and 4.64 respectively. The respondents were however unsure about their access to

government information hence rating the item with a mean score of 3.26. When it comes to the source of government information, mass media is the most popular at 43.1% followed by social media at 20%, KODI ranks last as a source of government information at 0.8%. Only 18.5% of the respondents have used the KODI portal while 81.5% have not used the portal. All the 4 items on data characteristics were given a mean score of between 3.41 and 4.20 meaning that the data quality is generally good. The respondents are highly aware of their constitutional right to government information and gave a mean score of 4.45 to the item. They agree that having a FOI law will improve dissemination of information by rating the item with a mean score of 3.78. They are   however unsure about the role of the Kenyan government as a champion of freedom of information and parliament's commitment to pass the FOI bill into law with a mean score of 2.91 and 3.02 respectively.

The respondents agree the implementation of KODI will foster transparency, collaboration and participation with a mean score of 3.95, 3.78 and 3.85 respectively. Overall, the respondents agree that the implementation of KODI will result into an open government with a mean score of 3.86. The findings indicated that implementation of KODI with regard to user awareness of open data was statistically significant with a p-value of 3.83e-31 and a u-statistic of 0. It also indicated implementation of KODI with regard to open data use was statistically significant with a p-value of 1.10e-26 and a u-statistic of 0. It also indicated implementation of KODI with regard to a legal framework was statistically significant with a p-value of 5.43e-028 and an H-statistic of 134.

5.3 Discussion

The research findings indicate that the awareness levels about the KODI are very low. The findings corroborate Mutuku and Mahihu (2014) baseline survey and a report by Kapchanga (2013) which found that citizens new little about the KODI. A reasonable explanation of these results could be the treatment of KODI as a technology conversation involving experts in the field which resulted in other stakeholders being left out. Another explanation could be the lack of community participation at the onset of the project as well as lack of massive campaigns after the launch of the initiative. Majority of the respondents are able to access and use computers, mobile phones and tablets. This can be attributed to an influx of affordable gadgets in the market which makes them easily accessible hence majority of the respondents are able to learn how to use them. They are also able to access and use the internet. This could be due to fact that most are able to access and use computer-like gadgets. It could also

be due to cheap access to the internet in cyber cafes as well as telecommunication providers. This indicates that given the KODI domain, the respondents will be able to access the KODI portal. They are however unsure whether they have access to government information;

low awareness about the KODI could explain this. This is a surprising finding considering that the KODI is meant to make government information easily accessible yet even with the availability of the portal, the respondents are not certain they have access to government information. The findings show that mass media is most popular, followed by social media when it comes to getting government information while KODI is ranked last. A survey by Mutuku and Mahihu (2014), found that media was the most popular of information though at 75% followed by online sources at 54%. This study found that social media comes second; this could be attributed to the popularity of social media platforms such as twitter, facebook, instagram through which people share important information about the government. This finding is deemed worrying given that KODI is meant to be the prime source of government information. This could be attributed to the low awareness about the initiative. It could also be attributed to respondents not being certain of where to find government information. Hypothesis result indicates that user awareness of open data has a statistically significant difference. This means that user awareness of open data influences the implementation of the KODI. The finding corroborates other researches: Kapchanga (2013), Mutuku and Mahihu (2014) and Muigai (2014) that indicate that user awareness of open data has an influence on the implementation of an open data initiative.

The findings indicate low usage of the portal. The results also show that out of the 32 who are aware about the KODI, only 24 have used the portal. This goes to show that awareness about the initiative will not necessarily translate in people using the portal. Jannssen et al. (2012) note that open data on its own has little intrinsic value; the value is created by its use. The low usage of data on the portal means that the stakeholders may fail to realize the potential returns of the initiative. The results corroborate a report by Kapchanga (2013) and studies by Brown (2013) and Majeed (2012) that reported low traffic on the KODI portal as a result of low usage. This can be attributed partly to lack of awareness about the initiative or it could also be that the respondents don't see why they need the information on the portal hence they see no need of using the portal. Another probable reason is the culture of complacent with government and its activities; hence a passive approach when it comes to matters concerning the government. Hypothesis result indicates open data use has a statistically significant difference. This means that open data use influences the implementation of the KODI. The

research findings corroborate Carter and Belanger (2005), Jansen et al. (2012) and Weinstein and Goldstein (2012) who state that the success of open government is contingent upon the public's willingness to use and exploit datasets.

Ntale and Adieno (2012) and Kwamboka (2014) note that Article 35 of the new constitutional dispensation gives citizens the right to information. The findings show that the respondents are highly aware of their right to access government information. The respondents are also sceptical about the government championing freedom of information and enacting the FOI bill into law. This can be attributed to the FOI bill languishing in parliament for decades as noted by Majeed (2012) study. The respondents agree that having a FOI law will improve the dissemination of information thus enhance the impact of KODI in promoting an open government and general freedom of information in Kenya. This is in line with the Institutional theory (Scott 1995) which predicts that opening up government data will reinforce existing structures. Open data in Kenya calls for enacting of a FOI act which will make release and access to data easier. The respondents agree that implementation of KODI will result in an open government. According to Janssen et al. (2012), open data should result in open government in which the government acts as an open system and interacts with its environment. The findings agree with the study, as the respondents are of the opinion that opening up government data will promote transparency, collaboration and participation between citizens and government. This could be attributed to the fact that before, the government had been closed up and mostly allowed interaction with citizens during election periods. By providing information that can give insight about the government, the respondents might now be holding the opinion that the government is becoming more open. This is also in agreement with the Systems theory (von Bertalanffy, 1958) which states that real systems are open and interact with the environment. By opening up government data, a move from a traditionally closed to open system is made (Jansen et al., 2012). Hypothesis result indicates open data use has a statistically significant difference. This means that FOI legislation influences the implementation of the KODI. This corroborates other researches by: Development Initiatives (2014), Ubaldi (2013), Kwamboka (2013) and World Bank (2013) that indicate that the presence of a legal framework is critical for an open data ecosystem to thrive.

5.4 Conclusions

The study revealed that there was low awareness about the open data initiative in Kenya. The study found out that there is a significant relationship between user awareness of open data and the implementation of the KODI. This means that user awareness of open data influences and the implementation of the KODI.

The study also revealed that the usage of the portal is very minimal and that awareness about the initiative does not necessarily translate in usage of the portal. The hypothesis result showed that there is a significant relationship between open data use and the implementation of the KODI.

The research findings indicate that the respondents agree that having a FOI law will improve the dissemination of information thus enhance the impact of KODI in promoting an open government and general freedom of information in Kenya. It is also shows a significant relationship between a FOI legislation and the implementation of the KODI. The findings also indicated that the respondents agree that opening up government information will result in an open government that fosters transparency, collaboration and participation between government and citizens.

5.5 Recommendations

Following the conclusions, the following are recommendations for KODI:

1) There is very little awareness about the open data initiative. Thus, the KODI should enhance support for civic education on open data, its availability and use.

2) The KODI should enhance collaborations and partnerships between stakeholders within the open data ecosystem. This will ensure that all stakeholders are equally aware about the initiative and its potential benefits when put into use.

3) User awareness of open data does not necessarily translate to using the open data portal. Thus, the users should not only be told why they need the data but should also be shown why they need the data through actionable user experience. This will enhance their chances of using the portal.

4) While noted it did not hinder the setup of KODI, the enactment of an access to information law is needed to provide a policy framework for data provision and use, and safeguard the initiative.

5.6 Suggestions for further research

1) Since the research covered only Nairobi County, there is need to carry out a similar research in other parts of the country because different geographical locations have distinct characteristics.

2) There is also need to carry out research on other factors that might influence the implementation of an open data initiative that were not covered in this study namely: financing, demand for open data, and national technology skills and infrastructure.

3) Research can also be carried out to determine the impact of KODI on the level of openness in the Kenyan government.

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APPENDIX ONE

RESEARCH QUESTIONNAIRE

Please note that the information you will provide is for the purpose of a research study and it will be treated with utmost confidentiality.

Part 1

Demographic factors
Please fill in the following information in the spaces provided or indicate with a tick [√] where necessary.

1. Age   ………………… years

2. Gender
Male [ ]   Female [ ]

3. Professional class

White collar [ ]   Blue collar [ ]   Entrepreneur/ Self employed [ ] Unemployed [ ]
Student [ ]

4. Sector

Private Sector [ ]   Government [ ]   NGO/CSO [ ]   None [ ]

User awareness of open data

5. Are you familiar with the Kenya Open Data Initiative (KODI)?

Yes [ ]   No [ ]

6. Which of the following devices and their related applications are you able to access?

Computer [ ]   Mobile phone [ ]   Tablet [ ]   All [ ]

7. Which of the following devices and their related applications are you able to use?

Computer [ ]   Mobile phone [ ]   Tablet [ ]   All [ ]

Note: 1 = highly disagree, 2 = disagree, 3 = unsure, 4 = agree and 5 = highly agree.

Statement	Level of agreement				
	1	2	3	4	5
8. You have access to the internet.					
9. You able to use the internet.					
10. You have access to government information.					

11. What is your is preferred way of accessing the internet?

Mobile phone [ ]   Computer [ ]   Tablet [ ]

12. What is your source of government information?

Mass media [ ]   The government printer [ ]   Social media [ ]   KODI portal [ ]
        Online sources [ ]

13. What government information are you interested in?
Health [ ]   Education [ ]   Governance [ ]   Budget allocation/
expenditure [ ]   Water & Sanitation [ ]   Economic [ ] Other (specify)……...

....

Why are you interested in the information indicated?

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Data quality and use

14. Have you ever used the Kenya Open Data Initiative portal (www.opendata.go.ke)?

Yes [ ]   No [ ]

If your answer to question 14 is yes, kindly answer questions 15 – 22.
Note: 1 = highly disagree, 2 = disagree, 3 = unsure, 4 = agree and 5 = highly agree.

Statement	Level of agreement				
	1	2	3	4	5
15. The data provided was sufficient to create computer or mobile applications.					
16. It was easy to find information on the portal.					
17. The dataset was available free of charge.					
18. The level of detail in the data released is helpful to provide insight.					

Legal framework

Note: 1 = highly disagree, 2 = disagree, 3 = unsure, 4 = agree and 5 = highly agree.

Statement	Level of agreement				
	1	2	3	4	5
19. You have a constitutional right to access government information.					
20. The government of Kenya is a champion of freedom of information.					
21. The Kenyan parliament is committed to enacting the Freedom of Information (FOI) bill into law.					
22. Having a FOI law will improve the dissemination of information thus enhance the impact of KODI in promoting an open government and general freedom of information in Kenya.					

Part 2
Implementation of KODI
The statements below are designed to indicate your perception on how the implementation of KODI by opening up government data will contribute having an open government: one that is transparent and fosters participation and collaboration.
Read carefully and indicate with a tick [√] against the appropriate answers.

Note: 1 = highly disagree, 2 = disagree, 3 = unsure, 4 = agree and 5 = highly agree.

Statement	Level of agreement				
	1	2	3	4	5
Transparency 1. Opening up government data enables you to easily access government information.					
2. Opening up government data enables equal access of government information by all.					
3. Open data allows you to access data sources and perform analyses.					
4. Opening up government data enables you to monitor the actions of politicians and public administration.					
5. Opening up government data gives you an improved opportunity to participate with, understand and critique government actions.					
Collaboration 1. Open data provides a platform for open innovation of applications and mashups in partnership citizens.					
2. Opening up government data enables collaborative administration through platforms for complaints, reporting corruption etc.					

3. Open data fosters collaborative democracy through participatory budgeting, ideanation contests and interactive legislation and urban planning projects.					
Participation 1. Opening data increases public participation in the political-administrative process.					
2. Open data enables citizens to actively engage in the decision-making process of the government through online communication.					
3. Open data enables citizens to articulate their opinions and interact with the public administration and parliamentarians.					
4. Opening up government data enables citizens to give feedback to the government.					
5. Open data platforms increase the acceptance of political decisions by citizenry as they are part of the process.					

APPENDIX TWO

LETTER OF INTRODUCTION

<div align="right">

P.O. BOX 372 – 00100,

Nairobi.

30th June 2015.

</div>

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: PERMISSION TO CARRY OUT RESEARCH

I am a post graduate student at the University of Nairobi pursuing Masters of Arts in Project Planning and Management. I am carrying out a research study titled: Factors influencing the implementation of the Kenya Open Data Initiative: A case of Nairobi County. I would wish to conduct research in your organization. The research is strictly for academic purposes and the data collected will be treated with utmost confidentiality.

I would be grateful if you accord me permission to undertake the research in your organization.

Yours Faithfully,

Christine Oyatsi.

APPENDIX THREE

RESEARCH AUTHORIZATION LETTER

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9ᵗʰ Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No.

Date:
30ᵗʰ June, 2015

NACOSTI/P/15/3847/6530

Christine Nabwire Oyatsi
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *"Factors influencing the implementation of the Kenya Open Data Initiative: A case of Nairobi County,"* I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for a period ending **6ᵗʰ November, 2015.**

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

SAID HUSSEIN
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.

National Commission for Science, Technology and Innovation is ISO 9001: 2008 Certified

APPENDIX FOUR

RESEARCH PERMIT

THIS IS TO CERTIFY THAT:
MISS. CHRISTINE NABWIRE OYATSI
of UNIVERSITY OF NAIROBI, 0-100
Nairobi, has been permitted to conduct
research in *Nairobi County*

on the topic: *FACTORS INFLUENCING
THE IMPLEMENTATION OF THE KENYA
OPEN DATA INITIATIVE: A CASE OF
NAIROBI COUNTY*

for the period ending:
6th November, 2015

Permit No : NACOSTI/P/15/3847/6530
Date Of Issue : 30th June, 2015
Fee Recieved : Ksh. 1000

....
Applicant's
Signature

....
Director General
**National Commission for Science,
Technology & Innovation**