

Candidate mechanisms that enable institutionalization of the Kenya Open Data Initiative

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Abstract

For years, open government data (OGD) initiatives have been implemented as a suitable tool for improving service delivery and facilitating democracy. Being an initiative that requires input from all government agencies and state corporations, proper planning of the implementation process is required. This requires formulation of supportive laws and policies, or amendment of those that restrict open access to information without breach of security. For these policies and laws to be effectively implemented, there is need for political support from the highest governing authority, which then cascades to the relevant agencies for implementation. This support needs to be continuous with supporting structures that ensure continuity even after change of government. This realisation came about after analysing the case of Kenya Open Data Initiative (KODI) implementation, which has been having inconsistent development. Some of the desired outcomes of KODI include sustainability of the initiative, service delivery improvement and formation of new public-private partnership models. Unfortunately, it has been affected by factors such as change of government, change of the constitution, and laws that prohibit publication of certain information to the public. In an attempt to resolve this challenge, this study aims at identifying the causal mechanisms that enable proper institutionalisation of this initiative. This will be achieved through the critical realism lens, as it helps in investigating both the ontological and epistemological aspects, and generalizing and predicting causes and effects.

Keywords

Open government data, mechanisms, government, critical realism

1 Introduction

On the 8th of July 2011, the government of Kenya through the Ministry of Information and Communication, Kenya ICT board and the World Bank, launched what was dubbed the 'Kenya Open Data Initiative' (KODI). This was implemented in less than a year, following a government directive with support from the office of the President. This support was critical since open government initiatives require unrelenting support and collaboration from government (The World Bank, 2011), leading to compliance and data release by the various government agencies. Prior to the launch, the teams involved were able to curate and publish more than 160 datasets in the following categories; environmental and natural resources, national accounts and inflation, agriculture, counties, education, empowerment, energy, financial sector and justice.

This initiative placed Kenya on the frontline as the first country in sub-saharan Africa and the second in the continent after Morocco to implement OGD (Kenya Open Data, 2011; The World Bank, 2011). Unfortunately, despite the momentum and goodwill the initiative had four years ago, there has been inconsistent adaption by government agencies. For instance, no new data was published in 2013. This follows reports that government ministries have been reluctant in releasing data. It could be as a result of a number of possible factors. Firstly, the official secrets act may restrict government employees from sharing official information. Secondly, the change of constitution following the implementation of a new constitution, government was restructured and devolved. These changes are still being implemented and it could be that government staff are still adjusting. Thirdly, government priorities, the government of the day may be focusing on other issues and paying little attention to the OGD initiative (Brown, 2014). This is an indication that the OGD initiative lacks the supportive structures and goodwill. Therefore, there is need to institutionalise OGD and ensure that obstacles/technicalities like the ones highlighted above are addressed.

In order to assist in resolving this challenge, this study aims at identifying the causal mechanisms that enable proper institutionalisation of this initiative. Critical realism will be the underlying philosophy. This follows the need to investigate the role of subjective knowledge held by the various actors/stakeholders, the effect of the various events on the process, and the need to locate relationships at the level of generative mechanisms which is also referred to as the domain of reality. Other philosophical approaches that were considered but found unfit for this study are positivism/empiricism and interpretivism. Positivism focuses on the domain of the empirical as it seeks to study the constant conjunction of events. This excludes subjective knowledge

which is critical for this study. Interpretivism does not focus on the ontological aspects which help in understanding the nature of the reality under investigation by generalising and predicting causes and effects (Bhaskar, 2008; Mingers, 2002; Wynn & Williams, 2012). Section 2 below will expound further on critical realism including the various domains of reality.

The following section provides a definition of OGD and a list of values required to achieve effective OGD institutionalization. This is followed by an outline of some of the challenges that governments face while trying to institutionalize Open Government Data initiatives. Some of these challenges could relate to the Kenyan context, which implies that the mechanisms used to overcome them in those contexts could also apply to the context in question. Knowledge about these values and challenges informed the formulation of candidate theories described in section 2.2.1 below.

1.1 Definition and Values of OGD

Open Government Data can be defined as “any sets of data which can be reused with no restrictions by any form of licensing or patents, data that are well structured and can be easily accessed and reused” by the public (Hoxha & Brahaj, 2011). This implies that such data becomes accessible to all and anyone can process such data to create meaningful information (Ubaldi, 2013). In order to achieve this openness, government must inevitably give-up some form of control (Janssen, Charalabidis, & Zuiderwijk, 2012; Ubaldi, 2013).

Values that are crucial to proper OGD institutionalization comprises of openness of operations, public scrutiny, clear policies, democracy, privacy, and efficiency, supportive legal framework (Huijboom & Broek, 2011; Meijer, 2012; Ubaldi, 2013). Governments and their agencies uphold these values differently, which affects how OGD gets institutionalized and consequently, the OGD outcome.

1.2 Adaption Challenges From Literature

For OGD to be implemented, a couple of changes are required within government. These changes require certain mechanisms to be enabled. These mechanisms should be able to address the challenges that could affect proper institutionalization. As illustrated in the following paragraphs, these challenges can either emanate from technology or the people who are involved in the process.

The first challenge is resistance from government agencies. In some cases, government agents “consider public information their own property and not of the citizen” leading to resistance in releasing data (Meijer, 2012). In other cases, corruption may stifle implementation. In Cameroon for instance,

government officials refused to use the e-government system which was aimed at increasing transparency (Heeks, 2005).

The second challenge arises from the complex nature of open data following its size, schematic heterogeneity, quality variations and lack of consistency (Böhm et al., 2012; Hoxha & Brahaj, 2011). This results from the fact that government has multiple agencies, which follow different standards of data presentation and also, the fact that these agencies produce different types of data, which call for different presentation styles creating a challenge for uniformity. There is also the lack of semantics, which would assist in describing the data (Hoxha & Brahaj, 2011).

The third challenge is related to the complexity of open data, which entails an attempt by government to structure and publish processed data (Robinson, Harlan, Zeller, & Felten, 2009). This often arises when the complexity that comes with the heterogeneous nature of open data is ignored (Janssen et al., 2012). It is difficult to develop sites that address the needs of all citizens. This is partly because there is lack of insight on their perspectives and needs (Janssen et al., 2012).

1.3 Outline

As an overview, this paper contains several sections. These include; an overview of the research approach and how this was applied in the study, a brief on the context-mechanism-outcome configurations and the candidate mechanisms that were identified from literature, document reviews and face-to-face interviews. This will end with a proposal of the steps involved in the realization of each of the proposed mechanisms.

2 Research approach

This study aims at identifying the context and causal mechanisms that enable proper institutionalization of the Kenya Open Data Initiative (KODI). To achieve this, critical realism is preferred. Either positivist or interpretivist approach could apply in achieving the aim of this study. However, this study seeks to achieve its aim by studying both the objective reality and the subjective interpretations of the people involved in the process.

2.1 Critical Realism

Critical realism is a research paradigm based on the notion that events should be investigated at the level of generative mechanism that occur in the real domain, not at the level of constant conjunction for regular events since establishing a constant conjunctive relationship is not sufficient (Easton, 2010; Mingers, 2002; Smith, 2006).

This perspective implies that ontology should precede epistemology. This follows the argument that theory is conceptualized from a natural generative mechanism or structure at work. Some of the postulated generative mechanisms within theory are established as real under certain conditions. Generative mechanisms - which are the ways of acting of things, result in formulation of causal laws that are analyzed as their tendencies. Tendencies are causal powers of an object that may be exercised without being experienced or observed in the outcome. Mechanisms are assumed to be independent of the events they generate, which then supports the assumption that mechanisms or structures continue to exist and act outside of the experimental context (where there is no constant conjunction of events) that enable empirical observation. If the assumption on the independence of mechanisms or structures is justified, then the notion of universality of law is sustained and the experimental activities are rendered intelligible. This implies that real structures exist independent of event patterns. These patterns motivate the need for experiments, which often a times result in misidentification of the events that cause the encountered experiences. Following this shortfall, another argument emerges that reality is stratified into three distinct domains of the real, the actual, and the empirical as illustrated in table 1 below (Bhaskar, 2008).

	Real	Actual	Empirical
Mechanisms	X		
Events	X	X	
Experiences	X	X	X

Table 1. Reality Domains

The real domain comprises of the whole of reality, which consists of generative mechanisms, event patterns, and empirical experiences. The domain of the actual lacks mechanisms. The empirical domain lacks generative mechanisms and the pattern of events. Though the real and the actual domain are shown to consist of events, some of the events in these domains may not always be capable of being observed, and even when they are, observers may understand them quite differently. This creates a need for experimentation at the empirical domain. It should be noted that the conditions established by the observer during experimentation do not cause the observed results/experiences, for they are dependent on causal laws at play. Therefore, it is not possible to identify and describe the conditions underlying the observed experiences in the empirical domain, which then demonstrates the shortfalls of empirical realism/positivism and motivates the use of critical realism (Easton, 2010; Mingers, 2002).

The empirical domain could be likened to the tip of an iceberg, where only a part is visible, and it is that which we observe. However, this should not imply

that what is invisible is non-existent or unconnected to the visible (Easton, 2010). This leads to a fundamental epistemological assumption in critical realism, that no observation is infallible (Easton, 2010; Mingers, 2004). This follows the realization that, under the empirical domain, it is unlikely to make observations that will result in full understanding of the social situation in question. Also, that there is no definitive criteria to judge the “truth” of a particular explanation. Therefore, there is need for the observer to collect sufficient data that will aid in distinguishing alternative explanations of the same or a similar social situation (Easton, 2010; Smith, 2006).

These explanations are created and presented causally through the language and procedures we use ordinarily (Easton, 2010). They result in knowledge whose “truth” value is determined by scientists through consensus. This causality in explanation resulted in the principle of causality, which requires the use of the same causal idioms as other sciences (Ilkka, 1991).

2.2 Realist evaluation

In order to achieve this aim, this study will adopt the realist evaluation strategy developed by Pawson & Tilly (2007). This strategy aims at understanding how, why and when an intervention works. It helps explain why the outcome of a system varies depending on the context, which is influenced by social and cultural norms. It is based on the fundamental principle that a context triggers a mechanism, which as a result produces certain outcome. Realist evaluation assists in identifying the conditions (contexts) that are required for certain causal mechanisms to be triggered and yield certain outcome. This could be explained as understanding what happens or is required within a ‘black box’ when certain input is provided resulting in the expected outcome (Ranmuthugala et al., 2011). This relationship between Context, Mechanism and Outcome is termed as the ‘CMO configuration’.

The realist evaluation strategy involves four stages as described in Table 2 below.

Stage	Logical Reasoning	Principles, Theory & Methods
Develop candidate theories	Induction	- Explication of events - Explication of structure and experiences
Generate hypotheses	Deduction	- Deduction
Make observations	Retroduction/Abduction	- Retroduction - Triangulation/multimethods
Program specifications	Retroduction/Abduction	- Empirical corroboration
Research Paradigm: Critical Realism		

Table 2. Research framework

2.2.1 Candidate Theories

Development of candidate theories was achieved through induction. The first step involved conducting systematic search and review of literature to identify the characteristics and outcomes of OGD implementation. This was achieved by deriving explanations from literature of the events, structure and context, which helped identify the components of structure and variations of contextual influences, and potential mechanisms (Bhaskar, 2008; Smith, 2006; Wynn & Williams, 2012). This helped in formulating the contexts and potential mechanisms that enable proper institutionalization of open data initiatives. This resulted in preliminary list of CMOs that are illustrated in Table 3 below.

Prior to illustrating the preliminary CMOs, the following describe the understanding that helped identify context, mechanisms and outcomes in this study. Context consists of the setting that open data initiatives operate in. This includes the characteristics that define this setting, which are derived from identifiable events, connections within these events, objects, object attributes, rules and relationships and causal powers. Mechanisms, which are ways of acting of things, are what produce the observable associations between entities within the context of study. They provide a plausible explanation as to how various (social) aspects lead to the observable associations, in other words, how input is associated and transformed into output (Bhaskar, 2008). Outcome is the resultant change, which is facilitated by the activation of the various institutionalization mechanisms. These outcomes are linked to the expected outcomes of the open data initiative.

<p>Context</p> <ul style="list-style-type: none">• OGD initiatives are funded by public sector through taxes• Government is not interfered to act on behalf of society to manage data risks which include quality and errors• There is only one source of data for either the public or government agencies.• Citizens are adopting crowdsourcing and thus becoming active data producers• Government is creating sustainable channels for citizen and civil society engagement• A strong sense of community between government agencies, citizens and the private sector• Collective learning and intelligence by encouraging emergence of more advanced features• OGD is accessible free of charge• All government agencies are working collectively as a team to produce OGD• Common understanding of OGD across government agencies• Effective legal framework to support OGD• Political leadership in support of OGD• Regional OGD initiatives which encourage member countries to develop and implement OGD policy• Clear outline of the responsibilities of each stakeholder and the process layout for each activity• Clear outline of the process involved for each activity especially curating of data and feedback channels• Structured education and training for government practitioners especially on how to curate data through guidelines, workshops and conferences• Availability of resources to support competitions, app contests and boot camps targeting the developer community
<p>Mechanisms</p>

<ol style="list-style-type: none"> 1. Enforcement of Law and Policy - publication of data, privacy of government agents, copyright, disclosure policies. 2. Skill management - training on how to curate and publish data, handover, maintain low turnover, clear roles and responsibilities, and collective learning. Red flags include; high staff turnover, poor handover, inadequate training, inadequate staff, lack of clear roles and responsibilities. 3. Government commitment – dedicated, qualified, and well equipped staff, goodwill, government structures specific to OGD. Resistance could be evidenced from either of the following: Failure to appoint a dedicated government agency to solicit datasets from other government agencies, lack of government structures specific to OGD, goodwill. 4. Efficiency - release of data, clear processes (what next), clear roles. 5. Data Quality – good data takes less time to convert to machine-readable format, meta-data provisioning, open-standards format. Poor quality is characterized by increase in time to convert to machine-readable format, and lack of uniform data standards across government agencies. 6. Transparency and accountability – not withholding data/releasing tampered data, clear policies on the publication and use of data, openness of operations. Security and confidentiality – if lost, results to loss of trust & goodwill. 7. Crowdsourcing – The public becoming active data producers. Some data will have to be sourced from the public. For instance: potholes on the roads. 8. Stakeholder engagement – Identify and engage with the stakeholders and identify their needs. For instance, in Kenya the role of KNBS in the open data project needs to be understood especially when it comes to publication of data by the various government agencies. 9. Communication –awareness campaigns, engagement platforms where the public including developer communities’ views on OGD can be heard and addressed. 10. Adequate & reliable resources – infrastructure acquisition, technical support, adequate staff capacity, funding to support boot camps and innovation. Resources must not be delayed/ inadequate/ inconsistent. Cost of data is inversely proportional to access.
<p>Outcomes</p> <ol style="list-style-type: none"> 1. Reliable OGD – timely, accurate, machine readable, open-standards 2. Democratic participation – Information derived from OGD 3. Transparency and accountability - Improved government integrity 4. Improved public service delivery – More and better services at reduced costs of access. Reduced transactional costs within government. Increased number and quality of public services. Information to support policy and improve efficiency. 5. New revenue models – This is as a result of increased innovation and competition in the private sector. 6. New public-private partnership models – collaboration between government agencies and other agencies such as donors and researchers.

Table 3. Preliminary list of CMOs from literature

Using the list of preliminary CMOs, CMO configurations were formulated. As observed in Table 4 below, not all the mechanisms were included. This was as a result of insufficient content describing the associated context and outcome, and also the realization that some mechanisms were related in which case we merged them.

Mechanisms	Events	Real Objects People/Systems	Object Attributes	Rules & Relationships	Causal powers Conditions/ Pressures	Outcome
Efficiency	- Creation of more effective methods of collection, management, distribution and use of data - automation	- Public sector - Private sector (beneficiaries of more efficient public service) - Computer systems that result from automated processes - Computer applications that render and manipulate OGD to create value	- Open and transparent	- Better utilization of resources - Reduce transaction costs in operations - Create more effective methods of collection, management, distribution and use of data - automation	- Vision of a more efficient government	- Generate economic value.
Transparency	- Create an open and transparent government	- Public sector - Private sector	- Open and transparent	- Open access to government data	- Promise of openness - Technical connectivity and governance - Political leadership	- Reduced corruption - Reduce poverty
Innovation	- Supply data as a service	- Public sector - Private sector - Computer applications that render and manipulate OGD to create value	- Open and transparent - Innovative capabilities	- Openness and technical availability of data	Transformational effects resulting from provision of OGD - Openness and technical availability of data - Generate economic value. Examples: Netherlands - 400% increase in turnover for private sector re-users, 250% increase in high-end users, a rise in the use activity of re-users of 300% and an increase of over €35 million on corporate tax returns (deVries, 2012).	
Participation	- Crowd-sourcing activities. Engage the public to inform	- Public sector - Private sector - Social practices	- Openness	- Openness - Sharing resources and ideas - Access to open data	- Positive effects of scale where openness and sharing enable value generation - Social value.	- Improved citizenship and collaborative behavior through crowdsourcing

	government solutions and decision-making.				This could be what drives individuals and organizations to share their resources without direct monetary reimbursement. - Engagement platforms between government and citizens	activities. Examples: natural disaster incidents, such as hurricane Katrina and the earthquake in Haiti (Lee and Kwak, 2011).
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Table 4. Preliminary CMO configurations

The second step involves conducting of interviews with the key stakeholders. The interview questions are guided by the preliminary CMO configurations in table 4 above. Interviews are being conducted with key stakeholders from the following institutions: the Kenya ICT Authority, which is under the Ministry of Information and Communication Technology (ICT); Kenya National Bureau of Statistics, which is under the ministry of Devolution and Planning; The World Bank Kenya which has been instrumental in funding and providing expertise to KODI; the Open Institute – Kenya, a private consulting company that has partnered with the government since the inception of KODI. Additional data was provided by some of these stakeholders in the form of reports, previous meeting minutes and system logs. The outcome of these interviews and the preliminary CMO configurations from literature review acted as input to the hypotheses phase described below.

2.2.2 Hypotheses

Formulation of hypotheses was achieved through deduction. This involves rephrasing the Context, Mechanisms & Outcomes (CMO) configurations formulated in section 3.2.1 as hypotheses for testing in section 3.2.3 (Ranmuthugala et al., 2011). Table 5 below describes the candidate CMOs that potentially enable proper institutionalization of KODI.

Candidate Mechanisms	Events	Real Objects People/Systems	Object Attributes	Causal powers Conditions/ Pressures	Outcome
Law & Policy Reinforcement	<ul style="list-style-type: none"> - Obtain support from the President - Establish and implement a legal framework and policies on right of access to information, confidentiality, exceptions to openness, and intellectual property rights - Implementation of 	<ul style="list-style-type: none"> - President - Cabinet Secretary ICT - Cabinet Secretary Devolution & Planning - ICT Authority - Kenya National Bureau of Statistics - Government agencies 	<ul style="list-style-type: none"> - Clear understanding of the aims and objectives of KODI - Individual commitment 	<ul style="list-style-type: none"> - Support from the President - Proactive disclosure policies - Devolved decision-making - Shared vision on KODI - Organizational cohesion – commitment from the entire government. 	<ul style="list-style-type: none"> - Political leadership in support of KODI - Adequate budget allocation - Implementation of formulated law and policy by government agencies and state corporations - Sustainability of KODI - Reduced data

	<ul style="list-style-type: none"> law & policy - Control publication and use of data using copyright laws and disclosure policies. - Protect government agents privacy - Devolve decision-making. Allows stakeholders a stronger say in choices of government programs and services. It also supports proactive disclosure. 	<ul style="list-style-type: none"> - State corporations - Civil society 		<ul style="list-style-type: none"> - Availability of resources to implement formulated law and policy 	<ul style="list-style-type: none"> hoarding and release of tampered data
Coordination and Capacity Building	<ul style="list-style-type: none"> - Monitor & report on open data projects - Facilitate skill and resource acquisition - Create awareness on the essence of open data - Educate on OGD laws and policies - Educate on proactive disclosure of OGD. This entails releasing data without waiting for specific data requests from the public 	<ul style="list-style-type: none"> - Cabinet Secretary ICT - Cabinet Secretary Devolution & Planning - ICT Authority - Government agencies - State corporations - Civil society 	<ul style="list-style-type: none"> - Aware of skills and resources gap - Adequate understanding of associated technologies - Ability to resolve data publication, access and integration complexities 	<ul style="list-style-type: none"> - Availability of skills and resources to empower staff - Adequate allocation of funds - Efficient expenditure approval channels - Ability to influence change in government agencies and state corporations 	<ul style="list-style-type: none"> - Timely publication of open data - Increased corporation between government agencies and state corporations - Reinforced value for users - Improved public service delivery - Accurate reporting of open data projects
Advocacy	<ul style="list-style-type: none"> - Organize conferences & boot camps - Partner and engage with civil society - Conduct informative sessions aimed at: increasing public interest & preparedness; appreciating the value of crowd sourcing; changing the attitude of public officials on openness; ensuring stakeholder buy-in - Monitor progress on OGD projects 	<ul style="list-style-type: none"> - Cabinet Secretary ICT - Cabinet Secretary Devolution & Planning - ICT Authority - Government agencies - State corporations - Civil society 	<ul style="list-style-type: none"> - Credibility and impartiality - OGD awareness - Aware of emerging issues including challenges and opportunities - Ability to monitor progress on existing OGD projects 	<ul style="list-style-type: none"> - Ability to influence change in government agencies and state corporations - Availability of expertise and resources for advocacy 	<ul style="list-style-type: none"> - Increased stakeholder awareness & support - Sustaining and strengthening the image of KODI - More OGD users - Increased public-private partnership models -Faster OGD bottleneck resolution

Table 5. Candidate mechanisms that enable institutionalization of KODI

2.3 Observations

This step involves testing the candidate mechanisms. This involves a round of interviews using semi-structured questions that will be formulated around these mechanisms. This will help identify the CMO configurations that occur

with regularity (Ranmuthugala et al., 2011). This process is based on retroduction, which entails proposing and testing the existence of several hypothetical causal mechanisms together with their underlying elements and contextual elements (Easton, 2010; Wynn & Williams, 2012). The interviews are still ongoing and the transcripts are yet to be analyzed.

2.4 Program specification

Program specification will be achieved through empirical corroboration, which entails reviewing, validating and refining the proposed theories and potential CMO configurations using the empirical observations made in the previous stage (Easton, 2010; Popper, 2014; Ranmuthugala et al., 2011; Wynn & Williams, 2012). This step is still pending and will be conducted once the observations step is concluded.

3 Discussion

From the analysis, it is proposed that there are three self-reinforcing candidate mechanisms in the institutionalization process. This discussion starts by analyzing these mechanisms based on Hedstrom and Swedberg (1998) typology of social mechanisms. This is followed by a description of the proposed steps to activate each of the proposed mechanisms.

3.1 A typology of social mechanisms

Hedstrom and Swedberg (1998) found the need to understand how changes in the macro-level events or conditions affect the behavior of individual actors, and how a group of individuals interact through various actions to generate macro-level outcomes. This resulted in three categories of mechanisms; situational mechanisms (macro-micro) – individuals are exposed to a social situation that influences their actions, action-formation mechanisms (micro-micro) – individuals generate specific actions based on a combination of desires-beliefs-and action opportunities, and social-technical/ transformational mechanisms (micro-macro) – individuals interact in certain actions with each other resulting in collective outcome which can either be intended or unintended.

This study identifies three candidate mechanisms; law and policy reinforcement, advocacy and coordination and capacity building. Each of these, as described in table 5 above, entails individuals interacting with one another resulting in collective outcome – either intended or otherwise, depending on the mechanism at play. This implies that these mechanisms qualify as social-technical mechanisms. For instance: Law and policy reinforcement mechanism results in sustainability and improved transparency and accountability at a national level; advocacy mechanism results in new public-private partnerships; and the coordination and capacity building mechanism results in improved public service delivery.

3.2 Steps required to activate mechanisms

The *law and policy reinforcement mechanism* results in sustainability and improved transparency and accountability at a national level. This comprises of the following steps: Facilitate inclusion of all government agencies and state corporations in strategic planning. Collectively develop and implement appropriate laws and policies. Secure political leadership to influence policy and decision-making. Secure adequate budget allocation, which guarantees sustainability of the project. Resolve cases of resistance. This mechanism feeds on the other two mechanisms. It benefits by gaining understanding on how the various laws and policies are being implemented in ongoing open data projects, and its effectiveness with the aim of improving them through amendments and formulation of new laws and policies.

The *advocacy mechanism* results in new public-private partnerships. This comprises of the following steps: Increase stakeholder awareness and support. Monitor progress of open data projects. Identify possible and existing challenges. Urge authorities to address identified challenges. Engage with independent volunteers to use or develop open data applications. This mechanism also feeds from the other two mechanisms as follows: Law and policy reinforcement mechanism helps identify the key activities and provide strategic guidance on how to handle issues as they arise. Coordination and capacity building mechanism assists in providing needed skills and resources, and advisory on open data projects.

The *coordination and capacity building mechanism* results in improved public service delivery. This comprises of the following steps: Facilitate training and resource provisioning. Monitor and report the progress of open data projects. Resolve access and integration complexities. Ensure timely publication of data. Encourage cooperation between government agencies. This mechanism also feeds from the other two mechanisms as follows: Advocacy mechanism helps identify possible or existing challenges following their interaction with stakeholders, and also identification of new or potential users that require capacity building. Law and policy reinforcement mechanism assists in understanding how to carryout the various activities and base the stated laws and policies to formulate procedures for all open data activities.

The last two steps of the realist evaluation strategy, namely; observation and program specification are yet to occur. These are useful since they will help identify the CMO configurations that occur with regularity through retrodution and empirical corroboration. As a result, it will be possible to identify the CMO configurations that need to be enabled to facilitate proper institutionalization of KODI.

4 Conclusion

For an OGD initiative to succeed, it needs to be institutionalized. Institutionalization within government is not easy as some of the existing structures are bound to change as others are introduced. For this change to happen, some mechanisms need to be activated. This can be achieved more easily if the required mechanisms have been identified and the actors involved are willing to activate them. These mechanisms assist in identifying and forming the required supportive structures, which helps in ensuring continuity of the initiative even when there is a change in certain dynamics such as change in government. This study investigated the Kenya Open Data Initiative (KODI), which has had very inconsistent development. Following an inductive and deductive process, three candidate mechanisms were identified. These include; law and policy reinforcement, coordination and capacity building, and advocacy. These mechanisms have the potential to create the right environment for the KODI implementation and institutionalization. Formulation of the right environment entails creating enabling structures, and discontinuing disabling ones. This implies that once these mechanisms are enabled, the goals and objectives of this initiative will be realized. However, it is important to note that these are candidate mechanisms, which will need to be tested through retrodution. Even though these mechanisms are context specific, they could also apply to other countries similar to Kenya, in terms of the political and governance structures.

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