BUILDING OPEN DATA INFRASTRUCTURE AND STRATEGIES FOR EFFECTIVE CITIZEN ENGAGEMENT

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Abstract

   The aim of this paper is to synthesize emerging themes from the findings of three studies carried out in Kenya and Uganda in a research project dubbed the Emerging Impacts of Open Data in Developing Countries[1] (ODDC). The paper presents reviews of the emerging themes, highlights possible opportunities and challenges for building sustainable infrastructure for open data and effective citizen engagement strategies, and finally draws conclusions for possible policy debates and policy formulation. In so doing, the paper will help to highlight the emerging landscape of Open Data in Kenya and Uganda particularly with the focus on the infrastructure of data communities of civic engagement, their incentives and how this conceptions influence open data movements.

   This paper is organized around the following research questions: Does the application of open data by public institutions in, say, education and health affect their service provision to the public? What incentives drive public institutions to embrace open data: is it the need to improve service provision, or the skills and knowledge available in the public sector, the political leadership, the change in public administration policies supporting open data or available information technology? And will the desire by government officials to have real time interactions with the citizens be motivating enough for public agencies to invest in essential competencies that enable openness in government data? How about the push from other communities that are organized around the ideologies of transparency, accountability, equity, relevance and responsiveness to community needs, and effectiveness and efficiency of governance systems and processes? Does this influence the conception and implementation of open data (Gregg Brown 2010)? Lastly, how do the access to enabling information technologies supporting new frontiers for open data?

1.0. Background of the synthesis

The prevailing assumptions within open data movement are that, when government data are made freely available, it could facilitate citizen engagement, improve access to public services, and spur business innovations and responsiveness of public agencies to citizens' needs. By corollary, making available government data could stimulate public desires to engage in governance processes. In addition, it presupposes that there are supportive mechanisms for public engagement and that the engagement strategies have needed skills, knowledge and practices to draw value from open data for the citizens. Better still, what would open data mean for the advancement of social justice?

In this perspective, therefore, engagement strategies bring into focus how dispositions of individuals/institutions and their processes, values and principles influence open data movements on one hand, and on the other, the strategies for engagement and open data infrastructure have on transactions between and among various stakeholders and institutions. In other words, open data infrastructure implies an ecosystem[2] of communities of leadership (those who initiate and take lead

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[1] Available at: http://opendataresearch.org/emergingimpacts
[2] Available at: https://prezi.com/cgsepffxc2i-/open-data-ecosystem/

in making data from government agencies available – what values and principles motivate them?), supply strategies (intermediaries who draw value from open data for their publics – what motivates them?), platforms such as government portals and traditional information channels, policies facilitating the supply, competencies of public officials and social justice advocates and citizens. This ecosystem seems to steer current debates on open data towards emerging communities of data hackers such as development data community, agriculture data community, geospatial data community, health data community, natural resources data community, and data journalism community, etc. Each of this community builds into networks of civic engagement. And as the political scientist, Robert Putnam argues, "political knowledge and interest in public affairs are critical preconditions for more active forms of involvement" (2000, pg 35). Active involvement by citizen in their public affairs is a form of inclusion. Therefore, lack of the knowledge of the social political context on the part of the citizen – the rules of the game, "excludes them from the benefits of citizenship" (Sinha & Hyma, 2013, pg92).

According to African Data Consensus[3] document, data communities are groups of people who share social, economic or professional interest across the entire data value chain – data production, data management, data procession, data dissemination and data use. Therefore, if open data movement, its growth and development are configured around communities, it is important to describe what glue binds them and how open data could be revolutionizing not only the way governments govern, but also, how the rest of society transacts.

1.1. Research Problem

As debates and initiatives on open data gather momentum in developing countries, issues of what drives adoption of open data initiatives in various sectors and how it impacts on governance of societies needs deeper and broader analyses. Even though there are numerous anecdotal evidences of successful open data initiatives, and how it could influence access to public services, transparency, accountability and citizen engagement, there are sketchy attempts to link dispositions of institutions, individuals and communities' values, principles and competences to transform and motivate them to make available data or seek for and use particular forms of public data. These transformative bonds of practices, attitudes, knowledge and values could be responsible for coalescing communities of data "hackers." It can also lead to reforms in public administration bureaucracies and increase the voices of ordinary people applying the value from open data to social processes. Understanding these transactions around open data, the supply and usage could shade light on the modeling of open data infrastructure so as to become more supportive.

In this study, the research questions focus our analysis on 'open data transactions' – that is the networks of relationships between and among communities and how open data itself connect with other civic activities – kind of data that is made available, its suppliers, the transformers of data and the users of open data. For instance, how do open data on schools performance, poverty indices and health in a particular locale connects with the quest of civic groups trying to improve levels of education standards and livelihoods of residents? In addition, as Davies, T., Perini, F., & Alonso, J. (2013, pg14) urge, "understanding the relationship between data publishers, intermediaries and 'end users' of open data is central to understanding where emerging impacts of open data are sustainable and stable, or where they are vulnerable to the loss of intermediary groups." The grasp of these

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[3] Available at: http://www.cgdev.org/sites/default/files/Africa-Data-Consensus.pdf

transactions will give insights into what "transactional capital" is created when various communities engage, which in turn propels further opening up of frontiers for public data and engagement by various stakeholders.

We therefore, argue that to understand the interplay between open data infrastructure and engagement strategies, it is important to call to attention what coalesces open data communities, what transactional capital is created and situate the suppliers of open data, the intermediaries and the users of open data with their motivations/civic values that move them to obtain and apply data to their social set-ups; and with what effects. This study conceives that if open data catalyzes the formation of networks of civic engagement, that it is important to understand the values and principles that emerge so as to optimize them for growth and development of open data infrastructure and engage strategies.

1.2. Research Objectives

The phenomenon of open data and its revolutionizing power on public affairs could represent new frontiers for communities creating and new capital for networks of civic engagement are relevant to issues and concerns a people. The general objective of this paper is to synthesize research findings of the open data case studies in Kenya's and Uganda's open data initiates. Specifically, the paper assesses what connectivity exists among open data actors that predispose them to act together. Secondly, the paper analyzes emerging themes from the studies. And thirdly, it determines from the case study findings the extent to which the networks of civic engagement are preconditions for successful open data initiatives.

The guiding questions for this synthesis is: What is the connectivity (the glue that binds open data communities) among the open data actors that predispose them for collective actions? Or rather, how do open data connect with other civic activities? The idea of "connectivity" is drawn from the concept of networks of civic engagement by Robert Putnam, which according to him, social networks have a value that benefit both individual and community (Putnam, 2000, p24). The impact, therefore, of open data could be seen from transformative elements of interests and benefits that communities draw from their networks of civic engagement. Particularly if open data could be viewed as a new frontier for community creating and capital for networks of civic engagement. Besides, this could perhaps help to explain why some initiatives around open data have not been successful. Specific questions are: To find out what connectivity/bonds exist among various open data actors? To analyze how concepts in various social-political domains could influence conception of open data? To determine the extent to which networks of civic engagement preconditions open data initiatives?

1.3. Research Methodology

This synthesis paper is descriptive, and is based on data collected from three case studies conducted in the East African region between 2013 and 2014 that studied possible emerging impacts of open data in the region. The sample consist of the most relevant findings from the studies and application in discussions.

2.0. Literature Review

The exact extent and nature of the potentials of open data are yet to be unraveled for the developing countries. For instance, how do the bearings to work for open data motivated by transparency and accountability influence the behaviors and attitudes of public agencies compared with motivations and orientations geared towards enhanced service delivery? Inversely, how are the behaviors and attitudes of users influenced when open data facilitates their access to services and decision making process? What political culture(s) emerges? Is it of networking and cooperation or of suspicion and disengagement?

Open Data could be defined as data that is freely discoverable[4], in its primary and complete form for use, reuse, and redistribution by any interested person(s) subject only to basic requirements of attribution. This definition has to be reconceived such that differences in the developing countries where, as Rahemtulla says, "the extent of government data holdings, the nature of political relationships, structures of the economy, and levels of internet access (amongst other factors)" (Rahemtulla, 2012) may differ sharply from those where the standard model of open data developed.

The open data movement idea originated from merging of the desire of American Scientists to share geophysical and environmental data and the application of the idea of the common good to knowledge and developments in information technology (Chignard, 2013). It later grew as a technical and political subject with the formal definition of Open Data by scientist at Sebastopol, USA, in 2007; and its consequent adoption by President Barack Obama in "The Memorandum on Transparency and Open Government" in 2009. The memorandum was meant to "establish a modern co-operation among politicians, public administration, industry and private citizens by enabling more transparency, democracy, participation and collaboration" (Bauer and Martin, 9).

Its growth has been phenomenal and it has maintained a formidable strength in the USA, UK, Australia and the Scandinavian Countries where there has been a sustained political goodwill and technical push for it. However, Asia, South America and Africa have of late been the new frontiers of open data movements. Kenya, for instance, launched Kenya Open Data initiative (KODI) having been the second African country to appropriate the initiative in July 2011 (Bauer and Martin, 13).

In both the UK and the USA, the development of OD is accredited to a small, independent but influential community of 'civic hackers.' This group repurposed government-created datasets and presented them online in more accessible and enriched formats in projects such as Josh Tauberer's GovTrack.us in the United States of America. The launch of data.gov came later in 2009 as an initiative of the US government with only 76datasets. The number of data sets grew to 1,284 in 2010 and much more after the launch of the UK site which had better quality data sets (Hogge, 8). The underlying drive in these initiatives is the economic value accrued from open data (Schwegmann Claudia, 6)

The growth of open data in the US and UK was enhanced by the involvement of three "constituencies," namely, the civil society, the 'middle layer' of professional public administrators; and top-level political leaders as Hogge has documented. The advocacy of the civil society provided the "bottom-up pressure for change" and demonstrated what possibilities were available. The 'middle

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[4]Derived from the Sunlight Foundation 2010 and the Open Development Technology Alliance. This Includes ease of finding and simplicity in of access(without technical or restrictions whatsoever be it in technical, proprietary or otherwise)

layer' of civil servants and state and federal administrators were also motivated to open government data, spotting opportunities for efficiency and for greater recognition of the work they did. The expertise of the top-level political leaders provided the much needed political impetus that dissipated institutional inertia thereby pushing the gains of the initiative on both the demand and supply sides (Hogge, 10).

An overview of the open data initiatives in the developing nations does not have a lot to show despite indications of a better future; the amount of data available, the quality and the users are far behind that of the developed nations (Schwegmann Claudia, 2). Of the 12 countries with operational open data initiative in place by February 2012 in the developing nations, only four were from Africa (Schwegmann Claudia, 2Rahemtulla). Other countries such as Tanzania, Rwanda, Nigeria and Uganda have opened up data since then and the initiative is gaining momentum. The main movers of the initiative are the government through specific ministries in collaboration with the civil society, private companies and multilateral and regional organizations such as UN bodies and the Africa Development Bank.

The push for the Open Data Initiative from the civil societies in Africa– as advocates for, providers and users of open data could be seen as one level of impact. The networks of civic engagement such as those advocating for access to information and transparency help to transform civic values in public administration to motivate governments to be more open and to provide more information. What about the grassroots, would data on the performance of their elected representative influence the way they vote in a next election? CSOs use the open data in variety of ways such monitoring budgeting processes e.g. *BudgIT* in Nigeria and the West African NGO network WANGONET. Such initiatives are often enhanced by International Budget Initiative and the Global Movement for Budget Transparency, Accountability and Participation which operates in 74 member organizations in developing countries (Claudia Schwegmann, 5). It is therefore an avenue for continued engagement for the penetration and operationalization of the initiative in the future.

The range in usage of Open Data is wide and varied in Africa from the foregoing despite the low activities exhibited. Non-governmental organizations have used government data to push for more participatory governance processes. For instance, by tracking public data on government budget and expenditures organizations such as *marsgroupkenya[5]* that collates and disseminates reports on issues of governance, constitution, corruption, budget, national debt and the judiciary have seen government taking decisions of corruption cases. In education sector, not only have data hackers developed capacity development programs such as the *Internews[6]* and *IJNET[7]* data journalism programs by also web applications like *Eduweb[8]* and *FindMySchool[9]* have used government data on the number of education institution in Kenya to develop a web portal, which helps citizens to look up and know the number of schools in each county and where they are located. The *Wazi[10]* – County Scorecard portal also innovated with the release of government data by profiling each of the 47 county governments' demographics, education levels, employment rates and households.

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[5] Available at: http://transparency.globalvoicesonline.org/project/mars-group-kenya

[6] Available at: https://www.internews.org/where-we-work/sub-saharan-africa/kenya/health

[7] Available at: https://ijnet.org/en/news/480

[8] Available at: http://www.eduweb.co.ke/

[9] Available at http://findmyschool.co.ke/

[10] Available at: http://censusreporter-ke.bitlever.io/

In addition, the above initiatives have created communities of programmers and entrepreneurs modeling and creating applications in "Open Innovation"[11] initiatives as attested to by the number of technology hubs available in Africa.[12] Open data has also been creatively employed by combining official open data with crowd-sourced data in the making of Map Kibera and Ushahidi. Map Kibera collates data on security, health and education in the informal settlement (of Kiberaand puts it on a visualized web map.[13]Ushahidi on the other hand develops free and open source software for information collection, visualization and interactive mapping.[14] Such crowd sourced data has been used for the advocacy of land rights in places such as Democratic Republic of Congo (DRC). The Standard Group under the *Code4Kenya[15]* initiative created *County Safety[16]* map of all crimes reported in selected local dailies including The Standard from January to August 2012.

2.1. The Missing Link

Though most of the above initiatives in African countries have taken Hogge's three-tier approach namely, the civil society, the 'middle layer' of professional public administrators, and top-level political leaders this has been criticized for its shortfalls in the growth of the Open Data Initiative in the developing countries. Rahemtulla exposes the assumption on the demand side that potential consumers would have the "willingness and the capacity" to use open government data for social and commercial value. On the supply side, he corrects the expectation that governments would be motivated and have the "endogenous" capacity to provide data for such initiatives (Rahemtulla, 2012).

His suggestion for an alternative model for the developing nations is based on the "complex interaction of multiple stakeholders" observable in the emerging ODIs. He sees a fourth tier – that of donor agencies – a necessary addition to the former conceptions with strong interactions between them and the civil society and the private sector. Thus a high-level change agent (government technocrats): provides the political push; Supporting actors (international actors such as the World Bank, civic hackers – such as Ushahidi provides administrative and managerial capacity; and the demand-side driven by the civic hackers and private ICT sector that advocate for the release of public data for the productions of services or goods with "social and commercial value". However, Rahemtulla alternative model does not expound on the extent to which the values and principles within the complex web of interactions among open data stakeholders predisposes them differently. For instance, in the civil society tier, how does the connectivity in their traditional domains such as pursuit for transparency, accountability, social justice, human rights and civic engagement predisposes them to embrace open data as another frontier for advancing the same courses? Better still how do open data influence civic activities of groups and individuals? For groups working for socials justice, how do data on poverty indices in a country, public expenditure and demographics support their course? In a study by Jesuit Hakimani Centre (2014, pg75) investigation the impact of

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[11]A process of combining internal and external ideas as well as internal and external paths to market to advance the development of new technologies. http://www.ihub.co.ke/about

[12] Available at: https://africahubs.crowdmap.com/reports/

[13]Available at: http://www.mapkibera.org/

[14]http://www.ushahidi.com/about-us

[15] An outreach initiative supporting intermediaries to work with government datasets to develop applications and services that make data more accessible.

[16] Available at: http://countysafety.code4kenya.org/

KODI, reveals that people use open government information to among other things "check the expenditure of government, enable community appreciate how their taxes are being used and compare how regions are allocated resources."

Sunlight Foundation in suggesting for model open data policies recommends that "open data should build on the values, goals and mission of community"[17]. How then does their embracing of open data change relations and culture within their sector? For countries that have launched open data initiatives, there have been pronouncements by top political leaderships on the goals and missions of open data initiatives. For instance, in KODI case, former President Mwai Kibaki while launching the KODI called on Kenyans to make use of the Government Data Portal to enhance accountability and improve governance. The former President underscored the importance of data in determining effectiveness of governments in delivering services. Therefore, the values and principles of transparency, accountability and service delivery seems to be the glue that would bind government to designing and delivering on KODI. But are these values present and motivating the top political leadership and middle level public officials to embrace open data? What conditions exist within the public administration bureaucracies that are conducive for data evolution? What about the citizens, do they have the civic competences necessary to apply open data in realizing transparency and accountability from public officers?

Therefore, this synthesis paper argues and positions the idea that open data is a new frontier for community making and a new capital for networks of civic engagement/transactions and it is important for building open data infrastructure and strategies for engagement.

3.0. Discussion of Emerging Themes, Opportunities and Challenges for Building Sustainable Infrastructure for Open Data and Strategies for Engagement

This section presents discussions and analysis of key findings from the three case studies, the histories of each open data initiative, the analyses of the themes from key findings, opportunities for building open data infrastructure and strategies for engagement.

3.1.Open Data Initiatives in Kenya and Uganda

Kenya
Kenya is ranked 10th largest economy in Africa while neighboring Uganda at position 17[18]. Although Kenya has made strides in several social indicators, poverty incidences remain high, 43 percent of her population lives in extreme poverty (Africa Future Paper 10).Information and communication is the fourth contributor to Kenya's gross value added growth (KNBS, 2014).

In April 2014 Kenya launched a five year National ICT Plan. The ICT plan aims to among others goals, transform government processes, services and management such as company registration and database, universal digital registration of persons, set up five centres of excellence in education and IT, set up national spatial infrastructure and asset data hub. On July 8, 2011, Kenya became the first

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[17] Available at: http://sunlightfoundation.com/opendataguidelines/examples/#goals-and-values
[18] Available at: http://opendataforafrica.org/

country in Sub Saharan Africa and second in Africa after Morocco to launch an Open Data portal[19], making key government datasets freely available to the public. The Kenya Open Data Initiative (KODI) is a national government resource that makes available public data and the goal 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. Officially Kenya joined Open Government Partnership (OGP) in April 2012[20]and committed to improve public integrity, elections management, effectively managing of public resources, and public involvement in budget preparation, improve public services, transparency and accountability, public participation in the area of essential services.

The 2010 Kenyan Constitution lays out a broader legal framework for public participation[21] and it is a central pillar in management of public affairs. And based on these constitutional provisions, Kenya at joining the OGP scored high on the open budgets and principles of access to information, but average on laws guiding disclosure of assets by elected leaders. Different from the independence Constitution, sovereign power[22] belongs to the people of Kenya and it can either be exercised through their elected representatives or directly. Even though the Constitution guarantees right to information[23] and freedom of media[24], recent amendments to information, communication and technology laws and policies seems to undermine them. For instance, in 2014 parliament passed Kenya Information and Communication (amendment) Act (KICA Act 2013), which creates a government controlled tribunal with powers to fine journalist and news media heft fines of up to US$12,000 for journalists and US$235,000 for media houses[25]. Another law under consideration by parliament if the Parliamentary Powers and Privileges Bill 2014, which among other things it seeks to limit the role of media in parliamentary matters such the provisions of Section 25[26].

The latest attempt by government to enact the freedom to information law was the publishing of Access to Information Bill, 2013[27], which is still at the stage of stakeholders' consultation. The bill provides for a proactive disclosure mechanism for public institutions under Clause 5, where public institutions are required to make publicly available details of any public works be undertaken. However, the bill does not provide for mechanisms for protecting individual privacy and the conditions for access to public data might be prohibitive as it gives the liberty to determine at what cost producer of data being looked for by the public to the supplier.

The growth of ICT sector in Kenya has given new impetus to the open data community. According to the December 2014 Quarterly Sector Statistics Report[28] there were 33.6 million mobile subscribers

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[19] Available at: Kenya Open Data Portal, https://www.opendata.go.ke/
[20] Available at: http://www.opengovpartnership.org/country/kenya
[21] Article 118 of the Constitution of Kenya
[22] Article 1 of the Constitution of Kenya
[23] Article 35 of the Constitution of Kenya
[24] Article 34 of the Constitution of Kenya
[25] Available at: http://www.kca.or.ke/index.php/news1/national-news/190-kenya-media-in-first-round-victory-over-oppressive-laws
[26] Available at: http://www.parliament.go.ke/the-senate/house-business/bills/item/1036-the-parliamentary-powers-and-privileges-bill-2014/1036-the-parliamentary-powers-and-privileges-bill-2014?start=2060
[27] Available at: http://www.cickenya.org/index.php/legislation/item/333-the-access-to-information-bill-2013#.VTuTE5P9DII
[28] Available at: ca.go.ke/images/downloads/STATISTICS/Sector%20Statistics%20Report%20Q2%202014-2015.pdf

and for data/internet services registered 16.4 million subscribers. However, mobile data subscription accounted for 16.3 million users and the total internet users in Kenya across different access modes stand at 26.1 million. Fixed Fiber optic subscriptions stands at 81,243 up from 70, 115.

Uganda

Uganda's population is estimated to be 31,656,865 million people (World Bank 2009a). In 2008, 13per cent of the population was urban with the remaining 87per cent rural (World Bank 2009a).The Uganda's 2012/13 National Household Survey (UNHS) indicates that absolute poverty has continued to fall, from 24.5% in 2009/10 to 22.2% in 2012/13, consolidating gains made in this sphere over the past two decades. However the 2013 National Millennium Development Goal Progress Report indicates that only Goal 4 (reducing child mortality), Goal 6B (universal access to HIV/AIDS treatment) and Goal 6C (reversing the incidence of malaria and other major diseases) are on track to be achieved. The economy of Uganda is ranks 17th largest in Africa. Among the largest contributors to gross domestic product are agriculture, hunting, forestry and fishing cumulatively 24.1% and wholesale, retail trade, hotels and restaurant, 23.8%.[29]

Uganda is among few first African countries to enact a law on Right to Information (RTI), the Access to Information Act of 2005. And in the recent past some government departments/ministries such as the office of the prime minister launched *AskYourGovernment*[30] have followed with initiatives that aim at allowing citizens to not only access information from public institutions, but also send in direct requests to for information from government. The web portal lists[31] government departments and ministries that information can be requested from. In addition, the portal has also published the names of government agencies including the police department, health ministry, lands ministry and that information has been requested from by citizens and made available them.

According to a joint research[32] by Development initiatives (Devinit) and Development Research and Training (DRT), Uganda has attempted to promote access to public services including information by adopting extensive decentralization in the 1990s. Other government initiatives to promote openness in public administration included the establishment of institutions such as the office of Auditor General, the Inspector General of Government (IGG), the Budget Monitoring and Accountability Unit of the Ministry of Finance, Planning and Economic Development. As of June 2014 according to Uganda Communication Commission (UCC) there were 19.5 million of telecom subscribers[33] and at least internet reaches 20% of the population.

In government, according to the National Information Technology Authority-Uganda (NITA) *E-Government Survey Draft Report 2012* only 20 institutions have IT strategic plans, 5 have e-records policy, and 52% of government staff have access to computers and only 32% have ICT training. While 22% of central government institutions offer services or information to end users that can be accessed using a mobile phone and mobile phone penetration rate in the country is at 51% according

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[29] Uganda Economic Outlook Report 2014 (AfDB): Available at: http://www.africaneconomicoutlook.org/en/

[30] Available at: http://askyourgov.ug/

[31] List of public agencies one can make a request for information: Available at: http://askyourgov.ug/body/list/all

[32] Lwanga-Ntale, etal (2014) *Understanding How open data could impact resource allocation for poverty eradication in Kenya and Uganda. Kampala, Uganda*

[33] *Telecom Subscribers and Penetration Data, June 2014*: Available at: http://www.ucc.co.ug/data/qmenu/3/Facts-and-Figures.html

to the Uganda Communications Commission.[34] Besides, in February 2015 the government of Uganda officially launched an Open Data Readiness Assessment (ODRA) study to review the country's state of play of Open Government Data (OGD). In 2011 Uganda was among six African countries initially invited to participate in OGP. The ODRA study aims to develop an action plan that provides recommendations for the government on how to implement a national open data initiative.

3.2. Key findings of the surveys

1.1.1. The research report by iHUB titled *Understanding the Impacts of Kenya Open Data Applications and Services* (iHUB Report, 2014) set out to study and assess the implementation and impacts of initiatives that use data from Kenya Open Data Initiative's (KODI) portal (opendata.go.ke). The following key findings are reported:
  ➢ *Citizens do access and use government data, but know little about KODI.*
  ➢ *Low quality of the available data is hinders its usage and limits its value.*
  ➢ *Well-designed and implemented intermediary technology can enhance access and usability of open data.*

1.1.2. The research report by Jesuit Hakimani Centre, *Open Government Data for Effective Public Participation* (JHC Report, 2014) sought to investigate the impact of Kenya's open data initiatives and how it is assisting marginalized groups and communities to access essential social services such as health and education. The study found out that:
  ➢ *Kenyan citizens do seek and use government information in different domains of their lives and that more and better government information is fundamental to enhancing effective public participation in the marginalized areas covered in this study.*
  ➢ *There is a mismatch between the data citizens want to have and the data the*
  ➢ *Kenya portal and other intermediaries have provided.*
  ➢ *Most people go to local information intermediaries such as the local administrators' offices, worship centres and community centres instead of going directly to the government data portals and that there are few connections between these intermediaries and the wider open data sources.*
  ➢ *Currently the rural communities are much less likely to seek out government information and the kinds of data needed to support service delivery in Kenya may be different from those needed in other places in the world.*

1.1.3. The joint research report by Development initiatives (DI) and Development Research and Training (drt), *Understanding How open data could impact resource allocation for poverty eradication in Kenya and Uganda (DI & drt Report, 2014) that sought* to trace the evolution of the open data movement in the two countries and to assess the role that this movement plays in accountability and the equitable allocation of financial resources for the eradication poverty. The following key issues emerged:
  ➢ *Both Kenya and Uganda have multiple stakeholders such as media, academia, civil society groups, and government departments involved in data collection, cleaning, supply, storage, management and use.*

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[34] NITA *E-Government Survey Draft Report, 2012: Available at: www.nita.go.ug/sites/default/files/publications/NITA-U%202012%20E-Gov%20Report%20Summary.pdf*

> ➢ *There is no clear connection between opening up government data and resources allocation to different sectors of society, particularly those working to reduce poverty.*
> ➢ *Each country in study emerged to have an ecosystem unique to its specific country context,*
> *political economy and social factors. This is dependent on the level of technolo gy, the involvement and participation of stakeholders such as academia and CSOs in the development process.*
> ➢ *There are*
> *gaps, attributable to lack of policy and a negative attitude towards opening up, which slowed down progress that brought some efforts to a premature end.*

In the three studies it clearly emerges that government data/information is sought and used by different sections of population and each country open data initiatives are uniquely emerging. In both countries there seems to be a disconnect between data communities and the ordinary citizens, this fact could be illustrated by the inability of citizens not being aware of open data initiatives and not being able to link the open data to their civic activities. Studies in developing countries on open data initiatives have overly concentrated on standards and technologies that make it possible, and less focus has been on competences (attitudes, knowledge, values and principles) and the social ties that existing between and among communities that conditions how open data could influence other social goals. How for instance, could we understand the influence of open data on solidarities of communities, that is the "social infrastructure" (Putnam, pg 154), which might anchor individuals and communities in the culture of participation?

The question we still have to grapple with is whether making government data/information publicly available could make people civically engaged or certain conditions have to pre-exist for that to happen. Further, we need to broadly investigate the political culture (what attitudes and behavior open data movement produce of civic communities and groups?) of open data communities, so as to understand how open data impact on other organized civic activities such voting, paying tax, etc.
As per the AU consensus document, the concept of community seems to be the organizing terminology of data revolution in Africa. As such investigations are need to understand how the evolution of open data communities will be a key frontier for mobilizing the "previously unreached groups" (Putnam, pgp174) in our contexts.

3.3.Emerging themes

3.3.1. *Open Data as a fomenter of collective action*
The linkages between and among open data communities and civic activities such as voting, community mobilization, clean ups, volunteer corps, community meetings and public demonstration are key in understanding the impact of open data. These activities go beyond volumes of data sets being made available by public authorities to how data helps build communities and collectivizes them for action. For instance in the research by Jesuit Hakimani[35] investigating the impact of open

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[35] Jesuit Hakimani (2014) *Open Data for Effective Public Participation:* Available at:
http://www.jesuithakimani.net/index.php/2012-12-14-15-46-58/publications/viewdownload/3-our-publications/20-open-government-data-for-effective-public-participation-2014

data on marginalized communities in Kenya, some respondent indicated that after accessing information from public institutions, they took up the matters with the relevant authorities. This finding could be seen through the kinds of information/data citizens sought such as number of schools, health facilities, number of scholarships or amount of cash allocated to a given electoral district. In other cases, such as government data on school performance, groups of citizens organized discussion fora with the youth on issues related to their future education plans. In both cases, the interviewees noted that the government information they got helped them to become more knowledgeable and as a result to make more informed decision.

Therefore, from the motivations that drive people to seek for public information, one could deduce the linkage between individual's civic activities and small groups collective actions. Further motives and values of civic engagement could be scoped out the information/ data individuals found useful. In the research, many respondent found data on health, education and devolved funds useful. Besides, the usefulness of the government information made available could be interrogated against the initials goals of the open data initiatives. For instance, in the KODI case, through public pronouncements, the initial goal of the initiative was to improve performance in service delivery and help citizens hold their government to account.

3.3.2. Capacity Development is key to Growth of Open Data Initiatives

These studies establishes that there is lack of key competences among stakeholders to draw value from the data made available. For instance, in the study by DI and drt, respondents could not see the link between open data on resource allocation and programs aimed at alleviating poverty (pg 22). Developing competences of various stakeholders is critical to enhance their civic skills, knowledge and attitude for "social participation" (Putnam, pg 186). More so, the existing capacity development initiatives such as data journalism training for media personnel provided by NGOs[36] and private institutions have not found space within mainstream training schools. These kinds of competence enhancement programs mainly target a small group of actors such as practicing journalist while missing out on other key stakeholders – government agencies generating data, transparency and accountability advocates, graphic designers and visualizations techies, civil society groups and public administrators. As already inferred, open data movement is community based, which requires hackers to work collaboratively. Therefore, it will be important to develop and institutionalize the values and principle of open data through capacity development program targeting various actors for then to draw deeper meanings and value.

4.0. Conclusions and Recommendations

The impacts of Open Data in developing countries as revealed by the three studies are not apparent and sufficiently theorized. However, looking at available literature, several issues can be observed. Firstly, the emerging open data movements in developing countries are organized around communities of data hackers domiciled specific professional fields. In as much as communities of data hackers forms a critical networks of civic engagement, the values and principles (the connectivity) that drive them are not apparent. Scoping out these motivations will be critical for envisioning a sustainable and all inclusive infrastructure for open data movements. For instance, what values and principles would inform the strategies to make certain that communities residing in remotest parts of Sub-Saharan Africa have not only the access to information/data on where basic

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[36] Available at: https://www.internews.org/where-we-work/sub-saharan-africa/kenya/health

services such as healthcare, education bursaries, job opportunities, data on when planting seasons are on, data on drought, data where herders can get hay or data on where farmers can sell their farm produce, but also necessary competences on how to apply open data to their other civic activities. Therefore, the open data ecosystem ought to be configured around the emerging political culture of data communities.

Secondly, and more critical are the platforms and formats of access. Largely, discourses on open data have been synonymous with online portals. The fanfare that characterized launching of online data portals, end with a handful of data enthusiasts. However, as we face the realities in developing nations, majority of citizens do not only lack necessary competences to apply open data to their existential realities, but also stable, affordable and accessible open data infrastructure. Even in places when the open data initiatives have had footprint, the cost of such connections have been largely private. Therefore, we would suggest that governments legislate to have Open Public Broadcasting Service, where demand driven open data can be made available to the grassroots. The current model of open data being promoted in majority of developing nations is not responsive to the needs of the people. The much hyped data hacks by developers is far removed from the people residing in remote locale. Here majority of people still use traditional information/data platforms such as notice boards (where data on available services are published).

Thirdly, if data is to empower citizen participation, then the relevance and timeliness of data are critical elements to consider. As it is now, open data (in government, private companies and NGOs) movement is dependent on individual goodwill. There are no explicit frameworks (legal and capacity) that ensures timely release of usable data. Therefore, there is need to establish structures that will ensure availability of data that is demanded by the citizens in formats and platforms that are accessible to different categories of people.

Finally, the values and principles that drive open data movements need to be identified, developed and enculturated within and among open data communities. For instance, just as open data depends on the political economy of a society, the goals behind a country's open data initiatives underpins how those in the delivery chain view and act. The ecosystem of open data ought to reinforce the motivations behind countries' desire to make publicly available government data. For these motivations have implication on how the infrastructure will form.

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