Urban Data Governance in Uganda

Lessons from and for Newly Created Cities

A baseline Study Report

Open Data Analytics
Data | Evidence | Effective Policymaking

UNIVERSAL INSTITUTE OF RESEARCH & INNOVATIONS

MINISTRY OF LOCAL GOVERNMENT

Authors: Johnstone Baguma & Moses Muhumuza, PhD

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Foreword

Open Data Analytics (ODA), an initiative of ToroDev and UNIRI, in collaboration with the Ministry of Local Government (MoLG) and UBOS, with funding support from the Hewlett Foundation USA, carried out a baseline study on urban data governance in Uganda's new cities in 2022. This was in a bid to enhance service delivery in these emerging cities, based on factual and efficient data governance and management systems.

Today, Uganda is urbanizing at a rate of 5.2 per annum. It is the fastest urbanizing country in Africa. And this led to the government's decision in 2020, to create fifteen more cities to be operationalized in a phased manner. However, there is a lot to be done to effectively have the cities deliver the services for which they were created; among which, include the need to understand the current data governance issues. This could only be understood by carrying out a baseline study, to establish the existing situation, and thereafter, make recommendations for the next course of action regarding evidence-based data management in such cities.

A baseline study was conducted in the sampled ten new operational cities between July and December 2022. The study was inspired by the fact there were data and/or evidence-informed gaps in the operationalization of the cities. To address these gaps, requires data and evidence for planning and formulating policies which can enhance effective and efficient service delivery in such complex urban authorities.

I would therefore, like to use this opportunity appeal to all the stakeholders in the new cities, Ministries, Departments and Agencies (MDAs) of government, to appreciate and understand the importance of data by reading this report to get knowledge that may inform the next course of actions for improved city development programs. You are all critical in this process and I wish to thank all those stakeholders who took off time to participate in this noble cause, as respondents of the study and any other support rendered to our research team.

However, I am aware that the implementation of the recommendations will come with additional work that requires additional support. I, therefore, urge all of us and development partners to continue supporting this good cause, as we aspire to model our new cities into "smart cities". The success of the next steps and the implementation of the recommendations will undoubtedly be driven by team work. All of us count in this important process.

Justinian Nuwagaba
Commissioner, Urban Administration
For: Permanent Secretary,
Ministry of Local Government (MoLG), Uganda

Acknowledgement.

Open Data Analytics (ODA), an initiative of ToroDev and UNIRI in collaboration with UBOS and MoLG would like to acknowledge the support of the following research team members who made this study a success;

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ODA and its partners are grateful to the City Planners in Uganda's ten new cities where this study was conducted. Moreover, to all our respondents at the regional, national and city-levels. You are the reason why this study was successful. We hope that the findings and recommendations herein will help to advance safe, inclusive, resilient and sustainable Cities that address the demand of the new urban agenda in Uganda and globally.

Many state and non-state institutions supported this study through the mobilization of respondents, and participation in different consultations and interviews, deserving special mention. In Uganda; Pollicy – Uganda, Development Initiatives, UN Global Pulse Kampala, Personal Data Protection Office (PDPO), ICT Department – Kampala Capital City Authority (KCCA), ACODE – Uganda, Economic Policy Research Centre (EPRC) at Makerere University, Landnet – Uganda, UN Women – Uganda Office, UNDP Digitalization Unit, Ministry of Lands, Housing & Urban Development, NEMA, Ministry of Local Government (MoLG), UBOS and SDGs Secretariat - OPM. In Kenya; the Center for Intellectual Property & Information Technology Law (CIPIT) at Strathmore University and the Global Partnership for Sustainable Development Data (GPSDD). In Tanzania; Haki Maendeleo – Dar es Salaam coordinated research activities there.

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Executive Summary

This is a report of a baseline study on urban data governance in Uganda's new cities. The study was inspired by the fact that an estimation of 50% of Africa's population is expected to live in urban centres and/or cities by 2030. Unfortunately, about 62% of those Africans currently living in cities lack quality essential services like water, health care, energy and housing (AfDB & Cities Alliance, 2022). However, a sizeable number of studies on data governance and management of sustainable data ecosystems in cities have revealed the potential of quality data to support the provision of the above quality and relevant services to city residents (Eke and Ebohon, 2020) Moreover, the UN-Habitat (2016) characterized Africa as the fastest urbanizing continent in the world - which is evident in Uganda with 5.2% annual urban growth.

The government undertook ambitious steps of elevating fifteen (15) old municipalities into new cities, with ten (10) fully operational in July 2020. However, among others, there were planning gaps in the operationalization of these cities. Addressing these gaps requires quality data and evidence for planning and formulating policies which can enhance effective, sustainable and inclusive service delivery. The need to understand current data governance issues in the created cities prompted this baseline study by ODA in collaboration with Uganda's national statistics office, UBOS, and the Ministry of Local Government (MoLG), which supervises the new cities.

The baseline study was limited to only the ten (10) new cities established and whose operations started between 2020 and 2021. These included; Mbarara, Hoima, Fort Portal, Lira, Gulu, Arua, Soroti, Mbale, Jinja and Masaka. There was also a reference to perspectives from the African continental, regional (East Africa) and national (MDA) levels. Further, within the cities, only five departments that were considered key to "smart city" modelling, were sampled; (1) Physical Planning and Housing, (2) Natural Resources and Environment, (3) Revenue Generation (4) Works and Engineering, (5) Planning, Projects and Grants.

Findings showed that the Uganda government has enacted a series of legal frameworks to guide urban data governance nationally, but not specific to city contexts, however, the practical implementation of same was largely inadequate. New cities considerably understand their context-specific niches on which specific datasets could be generated to support their unique urbanization processes. Majority of city authorities were aware of the enormous advantages of using quality data in their routine decisions and policy making, however, individual and institution capacity was weak in majority cities, endangering the building of sustainable data governance and management frameworks.

Low awareness of data security, individual privacy and mistrust, both at individual and institutional levels, demotivated data providers like residents and departmental staff within the city authorities, to cooperate in data generation and use initiatives across all new cities. Inadequate ICT infrastructure was also a limiting factor coupled with MDAs' deployment of different data systems into all new cities.

Such practices led to low motivation since such systems facilitated the scattering of available city datasets. Moreover, there was also a challenge of limited access by the city staff to such data systems controlled by different MDAs at the national level, in the event of need of datasets held/stored within such platforms. In some cities, the power dynamics/frictions between the technical and political wings also threatened effective and efficient data governance mechanisms. Inadequate cooperation and collaborations with non-state actors like CSOs and the private sector, to supplement limited resources from the government, to build sustainable data systems in new cities was also a serious challenge.

Among the key lessons learned; it was noted that much of the efforts and/or interventions of data governance were concentrated at global, continental and national levels, whereas very little was done to support sub-national/city levels, where ultimate beneficiaries/residents of data and evidence resources live. In addition, CSOs' and private sector efforts in data production were not yet adequately recognized in the national and sub-national data systems. Also, too many stand- alone data/information systems, with the majority deployed by MDAs in the new cities caused some sort of confusion and a source of demotivation to embrace data and evidence use. New cities had not yet also adequately gathered data to profile their unique niches. This made them somewhat lose focus on the on-set development of resilient cities grounded in the local context. The strategic plans for statistics/data developed with the support of UBOS in the majority of the new cities, were still on paper and, therefore, a picture of urban data governance direction was still blurred in many city stakeholders. A strong public-private partnership might contribute immensely to a sustainable solution towards establishing strong urban data governance regimes in new cities. Also, the research team learned that it was imperative to begin with organizing the available datasets and systems, by building a robust data analysis capacity, a culture of responsible data/evidence sharing mechanisms and systems interoperability. Once the foregoing is well sorted, new cities might later engage in the production of other larger sums of new datasets (big data) through the deployment of advanced Artificial Intelligence and Machine Learning technology capabilities for smart cities, among others.

Key recommendations took different dimensions from; policy formulation and review of existing ones, both at national and sub-national/city levels, dedicated regulation mechanisms with particular involvement of both UBOS and the PDPO, human capital growth/capacity building in data science, deliberate awareness campaigns on data protection, security and privacy regulations, popularizing city data strategies to improving city collaborations and partnerships for funding with CSOs, among others.

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List Of Abreviations And Acronyms

MoLG	Ministry of Local Government
UBOS	Uganda Bureau of Statistics
MDAs	Ministries, Departments and Agencies
CSOs	Civil Society Organizations
ODA	Open Data Analytics
UNIRI	Universal Institute of Research & Innovations
ToroDev	Toro Development Network
PDPO	Personal Data Protection Office
AfDB	African Development Bank
MoLHUD	Ministry of Lands, Housing & Urban Development
MoWE	Ministry of Water & Environment
MoFPED	Ministry of Finance, Planning and Economic Development
NITA-U	National Information Technology Authority of Uganda
NDP III	National Development Plan (Three)
NSS	National Statistical System
CGD	Citizens' Generated Data
FGDs	Focus Group Discussions
KIIs	Key Informant Interviews
FMIS	Finance Management Information System
PDMIS	Parish Model Development Information System
LMIS	Lands Management Information System
IRAS	Integrated Revenue Assessment System
SDGs	Sustainable Development Goals
UNDP	United Nations Development Programme

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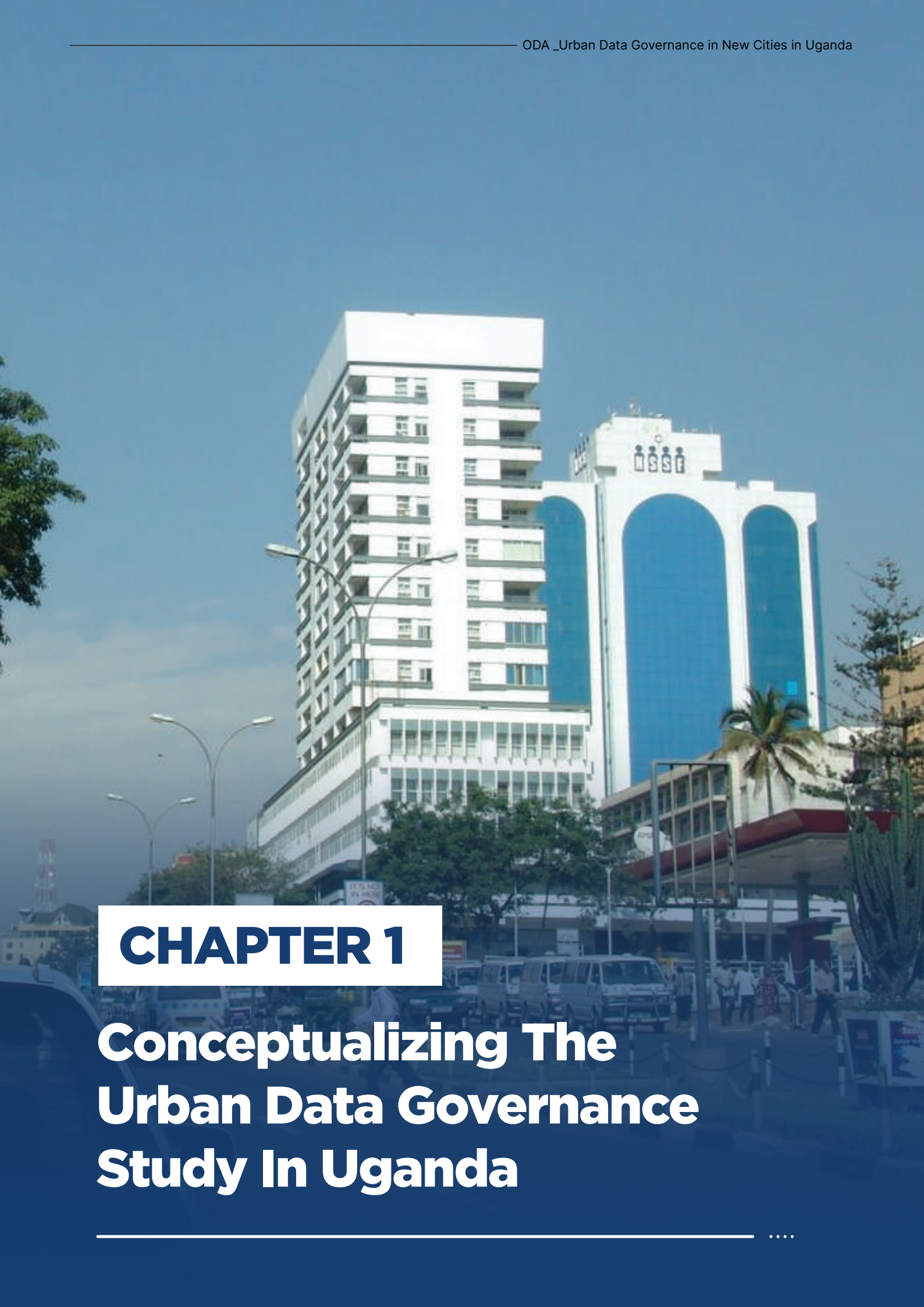


CHAPTER 1

Conceptualizing The Urban Data Governance Study In Uganda

1.1 Introduction

The World Bank (2020) has referred to "data" as the "new oil". While both data and oil have an intrinsic value, they both must be "refined" or otherwise transformed to realize their full potential. When data - as raw facts - are transformed, they become meaningful information, which later may accumulate into knowledge, expertise and/or experience for an individual or institution. "When government data are made accessible and re-usable, they enable individuals, organizations and even governments themselves, to innovate and collaborate in new ways" (World Bank, 2020). In light of the foregoing, this report details the processes, findings, lessons learned and recommendations for addressing urban data governance in Uganda's emerging cities.

For purposes of this research report, "data governance" relates to the processes of formulating and reviewing laws, policies, regulations and guidelines that target to guide the generation, analysis, storage, sharing and use of data resources in a given jurisdiction (Labhuram, 2021). On the other hand, "data management" may simply refer to the particular methods, tools, systems and other practices put in place by an institution, consistent with the existing legal framework (data governance), to gather, analyze, store, share and use data resources to achieve operational and management objectives. Overall, the main point of convergence between the above two concepts (data governance and data management) is implied in their definitions. Communities and/or jurisdictions globally are currently busy exploiting the opportunities provided by enormous data processing methods and tools in this highly innovative digital technology era. However, such jurisdictions should also be mindful of mitigating the potential misuse (insecurity, encroachment of individual privacy, digital/cyber- crimes and other societal harms) that may arise from access and use of such data resources.

Why is data governance important in the urbanization process? For example, it is expected that 50% of Africa's population will live in urban centres and/or cities by 2030. Unfortunately, about 62% of those Africans currently living in cities lack quality essential services like water, health care, energy and housing (AfDB & Cities Alliance, 2022). Nevertheless, several current studies on data governance and management of sustainable data ecosystems in cities have revealed its potential to support the provision of credible evidence to improve the quality and relevance of services to city residents (Eke & Ebohon, 2020). Moreover, the UN-Habitat (2016) characterized Africa as the fastest-urbanizing continent in the world. This is also evident in Uganda with a 5.2% annual urbanization rate (MoLHUD, 2021)

it is expected that

50%

of Africa's population will live in urban centres and/or cities by 2030.

1.2 Background of the study

Urbanization is taking root in Uganda, with a clear example of ten (10) out of fifteen (15) new strategic and regional cities approved by the Parliament of Uganda in April 2020 to operationalize in a phased manner. As of 2021, new operational cities included; 1) Arua, 2) Fort-Portal, 3) Gulu, 4) Hoima, 5) Jinja, 6) Lira, 7) Masaka, 8) Mbale, 9) Mbarara and 10) Soroti. The new cities were envisaged by the government as one way of moving to achieve the Uganda Vision 2040, through NDP III and the global SDGs number 11 of "Sustainable Cities and Communities" by 2030. The new cities in Uganda are under pressure to improve quality service provision to residents, requiring enormous resources, yet there is a gap to understand contextually specific city data governance and management issues to inform such rapid decisions on resource allocation.

Quality data is required to effectively and efficiently plan and manage routine decisions in such complex urban authorities. The need becomes even more particular in Uganda where this national urbanization policy is new and designed with strategic lenses.
Quality data and evidence are prerequisites for proper planning, provision of improved social services for the ever-increasing human populations in such new cities and revenue generation for self-reliance. Currently, the new cities to a larger extent, depend on funding from the central government. They have not yet reached the level of having developed strong local resource mobilization processes as guided by section 80 of the Local Government Act (cap 243). This is partly due to a lack of proper strategic planning premised on the absence of limited data. Moreover, as data use is required to aid mobilization of resources in new cities, its ethical use should also be regulated. It is, therefore, necessary to balance the potential use of data resources and mitigate its potential dangers to individual well-being and communities in those new cities. The foregoing sums up what ODA and partners operationally define as "Urban Data Governance".

As the Ugandan government rolls out the urbanization process to achieve Uganda Vision 2040, there is a need for UBOS and the Ministry of Local Government (MoLG), to collaborate with CSOs, the private sector and other stakeholders to implement Uganda's Plan for National Statistics Development (PNSD III), by improving urban data governance in new cities. Recent innovations for data gathering and processing supported by increased digitization have demonstrated enormous capacity to enable the rapid generation of evidence for sustainable decisions and/or policymaking processes in any public institution. Digital technology is growing so fast in the world and Uganda is increasingly following suit (Paskaleva et al., 2017). Quality statistics is no longer a luxury but a necessity. How are cities prepared to manage such data resources? Secondly, everyone virtually now is becoming a potential data producer, and National statistical offices globally and in the region are reviewing their work methods and collaborations with non-state actors (e.g. private business companies and CSOs). This wave is not only in Uganda but also in other East African countries. A typical example is of the Kenya National Bureau of Statistics (KNBS), which has embraced and enacted guidelines for "Citizens' Generate Data" as a synergy into the national statistics/data ecosystem (GPSDD, 2021). For the city settings, the buzz term "smart cities" has gained prominence

recently – a phenomenon where digital technological innovations drive the use of data to support the thriving of such city settings economically, socially and environmentally. Research on data governance to support evidence-informed smart cities' discourse has also taken shape in recent years, especially with case studies in the western developed world and parts of Asia (Paskaleva et al., 2017). There are also a few similar studies in African urban settings from Egypt, South Africa and Nigeria (Borokini & Saturday 2021).

1.3 Problem Statement

Despite the acknowledged importance of quality data resources in urban development and the necessity of an efficient data governance framework in Uganda's new cities, no specific study has been conducted to understand data governance and management in the urban settings of the country. As unique and complex communities, characterized by rapid decision-making processes to ensure the safety and well-being of residents, the availability and effective management of data and evidence are essential. Therefore, it is crucial to plan for a legitimate framework that enables the active participation of all city stakeholders in the governance and management of urban data.

Considering the current circumstances of rapid urbanization in Uganda, with an annual growth rate of 5.2 per cent and an expected 50% of the population residing in urban centers by 2030 (UN-Habitat, 2016; MLHUD, 2017; Cities Alliance, 2022), there is an urgent need to comprehend the urban data governance context. To address this need, a baseline study was conducted to generate key findings and recommendations for future evidence-informed interventions. Thus, this report presents the outcomes of the study and provides insights into the establishment of effective urban data governance in Uganda

1.4 Conceptual Framework

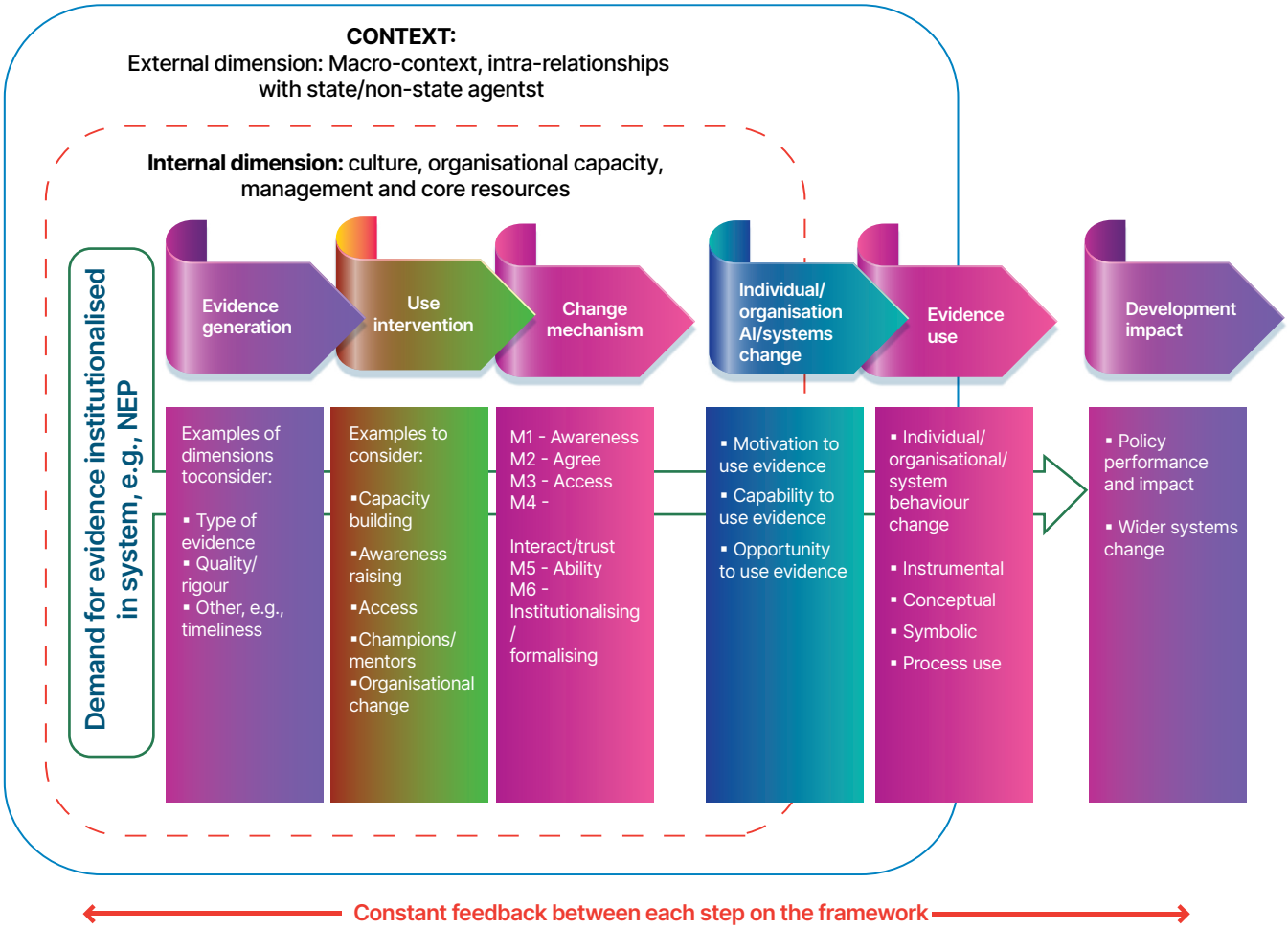
The conceptual underpinning of the baseline study on urban data governance in newly created cities in Uganda was based on Goldman and Pabari's (2021) Combined Analytical Framework/model (Figure 1.1). The central idea in the model is that, generation of data and evidence that is relevant and timely to support effective urbanization, requires a clear understanding of the macro policymaking environment. This includes an existing legal framework, building relationships and partnerships with strategic and like-minded institutions for moral, technical and funding support to emerging cities from philanthropists, non-state actors like civil society and other research institutions.

The Analytical Model emphasizes, among others, closer interaction and trust- building between data producers and government or city authorities, to define what type of rigorous data is needed at a particular time. It also advises implementers to focus on capacity building to access and use such data/evidence. Incentives to use data/evidence in public programs/project implementation and public institutional systems, and behavioral changes that support data/evidence usage are also key to pursue. The model posits that the first step in investigating urban data governance is seeking to understand the "demand for evidence" and the last step is evaluating the "development impact" of data (see in figure 1.1).

In between the first and the last step are five critical steps for generating, managing and utilizing data and evidence in Uganda's emerging/new cities – as the case study. Each of these is influenced by external and internal contextual issues within the data ecosystem.

Therefore, this baseline study on urban data governance, focused on understanding both the external and external contexts of urban data governance in the under- resourced emerging cities in Africa, with Uganda's ten new cities established in July 2020, as a case study. For the external dimension, insights from the continental (Africa) and regional (Eastern Africa) and national (Uganda) were generated by researchers, as later detailed in chapters two and three. Indeed, as observed from figure 1.1, the internal dimension aspects of city organizational capacities, data management and core resources required for an efficient data and evidence use ecosystem were also critically examined. Moreover, three steps were critically analyzed within the internal dimension; (1) demand for evidence, (2) evidence generation, and (3) use interventions. The evidence generation is important at this moment, for it is expected to inform the next steps in sustainable data governance for smart city modelling, which include; the interventions needed, the required mechanism to cause change, individual and organizational system change, and use of findings in form of evidence generated. The above explained processes are summarized in Figure 1.1 below.

Figure 1:1 The Combined Analytical Framework. Source: Goldman & Pabari (2021, p.45)



1.5 Aim, Specific objectives and questions of the Baseline Study

1.5.1 Aim/Goal

The aim of the baseline study was to find out how data governance and management in Uganda's new cities were organized and if there was any need for its improvement to support efficient planning and routine decisions making.

Ultimately, findings might support key stakeholders (UBOS, MoLG and city authorities) with knowledge to enhance data governance (policies, regulations and guidelines/frameworks) and data management (including data collection, analysis, storage and other practices, including incentives) in the newly created cities for proper city planning and routine decisions.

1.5.2 Specific Objectives

The baseline survey was driven by the following specific objectives:

1. To determine the unique, context-specific urban data governance attributes and commitments for typical strategic tourism, natural extractives and regional city in Uganda.

2. To examine the nature of specific city authorities' routine decisions and policymaking data and evidence needs in newly created cities.

3. To identify urban data management needs for collection and analysis, storage, sharing methodologies and tools, data production cycles and data use systems in each of the new cities.

4. To evaluate how cities are enforcing data security, privacy and societal harm prevention measures in data use as prescribed by existing international, regional and national laws and regulations.

5. To make policy and practice recommendations to improve urban data governance in new cities.

1.5.3 Research questions

1. What are the unique, context-specific urban data governance attributes in newly created cities?

2. What is the nature of specific city authorities' routine decisions and policymaking data and evidence needs including completeness, disaggregation and timeliness requirements?

3. What are the practices (legal frameworks and data collection,analysis,storage and sharing methodologies, tools and activities) and stakeholders' commitments for urban governance and management in newly created cities?

4. What are the data and evidence management requirements imposed by central government ministries, departments and agencies in the newly created cities?

5. What are the specific tools/technologies, human capacity needs and other related incentives to generate real-time data resources for new cities?

6. How are the newly created cities enforcing data security, privacy and societal harm prevention measures in data use as prescribed by existing international, continental, regional and national laws and regulations.

7. What policy and practice recommendations can be advanced to improve urban data governance and management in new cities?

1.6 Scope of the study

The study targeted the ten (10) new cities declared by Uganda's Parliament in 2020 and started operations in the Financial Year 2021/2021. The knowledge generated through this baseline study is important to substantiate and mainstream future interventions based on the respective City Strategic Plans for Statistics and the third National Plan for Statistics Development (NPSD III). Specifically, the study targeted to generate knowledge to support the following sectors'/departments' data systems' key for the "smart city" piloting:

1. PhysicalPlanningandHousing,
2. Works & Engineering,
3. Natural Resources & Environment,
4. Revenue Generation,
5. Planning, Projects & Grants

1.7 Methods used to conduct the baseline study

Open Data Analytics (ODA,) an initiative of ToroDev and UNIRI, collaborated with the Uganda Bureau of Statistics (UBOS) and the Ministry of Local Government (MoLG) to undertake this baseline study. The baseline study adopted a mixed methods approach employing both quantitative and qualitative methods of primary and secondary data collection, analysis and reporting.

The target respondents generally were drawn from the East African level (from Tanzania and Kenya), national level (Ministries, Departments and Agencies (MDAs), Civil Society Organizations, UN agencies such as UN Women, UN Pulse Lab in Kampala and UNDP – Digitization Division, national level private sector players and city level politicians and technocrats (selected from each of the 10 newly created cities of Uganda). The following four methods were particularly used;

1.7.1 Systematic Review of Literature

A systematic literature review was conducted to explore existing data governance contexts in the form of legal frameworks, practices and incentives available for selected and emerging cities in Africa. The African cities included in this study were Kampala, Nairobi, Accra, Cairo and Cape Town as established cities and the emerging newly created cities in Uganda. These cities were selected since they are said to be progressing well in terms of data governance practices (Guma & Monstadt, 2021), and they ably represent the east, west, north and southern regions of Africa.

The new emerging cities in Uganda were of particular interest to this study, where Hoima and Fort Portal were used as context-specific strategic new city cases (oil/natural extractives focused and tourism development focused, respectively), to make the systematic review manageable.

The systematic review was done by using key search words in popular research databases and repositories that include; Taylor & Francis Online, Springer Link, Wiley Online and Google scholar. To establish the legal frameworks, practices and incentives available to cities, the following search words used were; “Data governance and decision making of a city” which is denoted as KS1 in the presentation of results, “Data collection and maintenance approaches for cities” which is denoted as KS2, “Routine decisions of city authorities informed by data” which is denoted as KS3, “Incentives for effective data governance and management in Africa cities” which is denoted as KS4, “Data protection and security for cities” which is denoted as KS5 and “Smart city” followed by a name of “the city”, which is denoted as KS6.

Note should be taken that the phrase “the city” as used in this study refers to the African cities of Kampala, Nairobi, Accra, Cairo, Cape Town; and the ten new emerging cities in Uganda. In addition to the online research repositories, specific published literature from African Union, East African Community and Ugandan line ministries working directly with new cities on data governance and management issues was also reviewed.

“ The systematic review was done by using key search words in popular research databases and repositories”

Online research repositories produced 148,427 search results. This was filtered down to 46,820 publications when the search was limited to a publication period of 2017-2022. On limiting the search to the subject or journals of urban affairs and management, the search results were whittled down to 217 publications. The results of all the search words and databases used, after filtering for urban and management studies, are shown in Table 1.1.

Table 1.1: Results for all search words and databases

No of publications identified							Total
Data base	**KS1**	**KS2**	**KS3**	**KS4**	**KS5**	**KS6**	
Taylor & Francis online	254	217	160	80	229	383	1323
Springer Link	321	148	80	60	123	276	1008
Wiley online library	212	168	90	74	145	256	945
Google scholar	345	223	187	102	146	560	1563
n=							4835

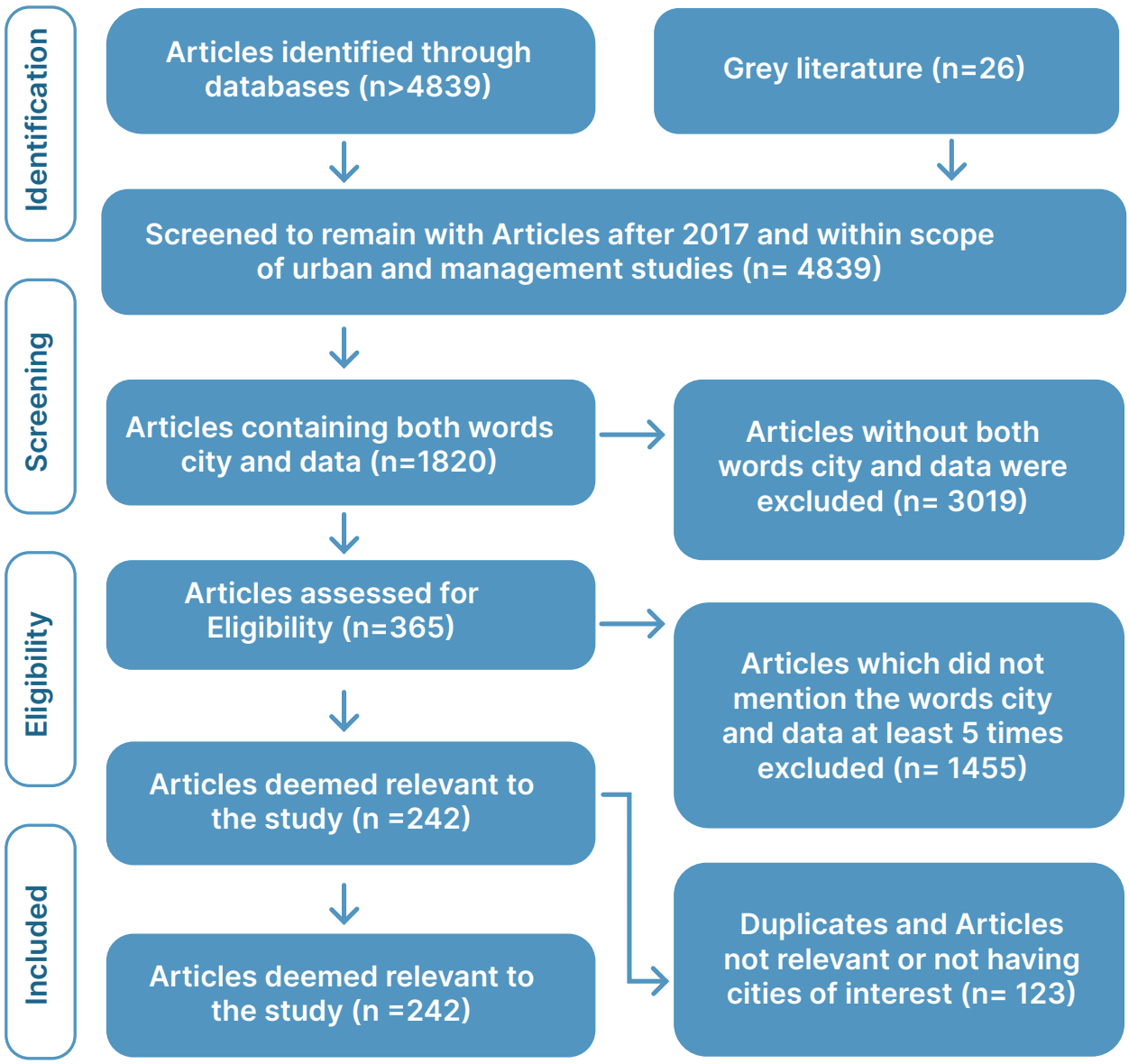
Thereafter, publications in which both words “data” and “city” were mentioned at least 5 times and publications that specified “the city” of interest to this study were identified and considered as relevant to this review. This gave a total of 64 relevant publications from Taylor & Francis Online. The overall inclusion and exclusion criteria is shown in Table 1.2.

Table 1.2: Inclusion and Exclusion criteria.

Criteria	Decision
Publication written in English	Include
Publication before 2017	Exclude
Publication not an article	Exclude
Publication not open access	Exclude
Publication subject not urban studies or management	Exclude
Publications mentioning both words "city" and "data" at least 5 times	Include
Publications mentioning both words "data" and "the city"	Include

Since there exists so much information on data governance practices within African cities that is accessible through non-peer-reviewed mechanisms, we explored city websites, blogs and newspapers for relevant grey literature. The flow chart below shows the overall process of selecting the relevant publications for this study.

Figure 1.2: Flow chart diagram for selecting articles of interest to this study



1.7.2 Self-Administered Questionnaires

This was a largely structured quantitative data collection tool. The questionnaire was developed collaboratively by ToroDev-ODA, UBOS and MoLG statisticians and/or data science specialists. Attached is a copy of the questionnaire (See Appendix 1). The questionnaire was sent for self-administration to five (5) key city departments of interest (i.e. physical planning & housing, natural resources & environment, works & engineering, revenue generation, planning, projects and grants) in all the ten (10) new cities. This helped the research team to generate quantitative data that was used to accentuate findings from the qualitative methods of investigation.

1.7.3 Key Informant Interviews (KIIs)

The Key Informant Interviews (KII) method was used to collect data from purposively sampled key informants at the East African regional level (Kenya), line MDAs, CSOs, private sector companies working on data generation and other development partners like UN agencies (UNDP, UN Women, UN Pulse Lab Kampala at the national level and newly created city level. At the city level, policy makers in the city authorities were targeted. They included the city mayor, city council members and the city executives including the city clerks. The key informant interview schedule that was used is shown in Appendix 2.

1.7.4 Focus Group Discussions (FGDs)

Thirteen (13) FGDs were conducted throughout the study. One FGD was conducted at the East African regional level in Dar es Salaam, Tanzania, two FGDs were conducted at the Uganda national level (one for each of the purposely selected MDAs and CSO) and 10 FGDs were conducted in newly created cities (one in each city). The FGD guide that was used is shown in Appendix 3.

1.8 Research Ethical Approval

The Research Ethical Approval was sought from the Makerere University, School of Public Health Institutional Review Board/Committee (IRB), which is an accredited committee by the Uganda National Council of Science & Technology (UNCST). The Research Ethics Approval Certificate is shown in Appendix 4.

1.9 Data Analysis and Quality Control

1.9.1 Data Analysis

The quantitative data collected was coded, the questions and responses were given unique variable names and entered into Microsoft Excel and analysis was done using the excel analysis tool to obtain frequencies and percentages and presented using tables and graphs.

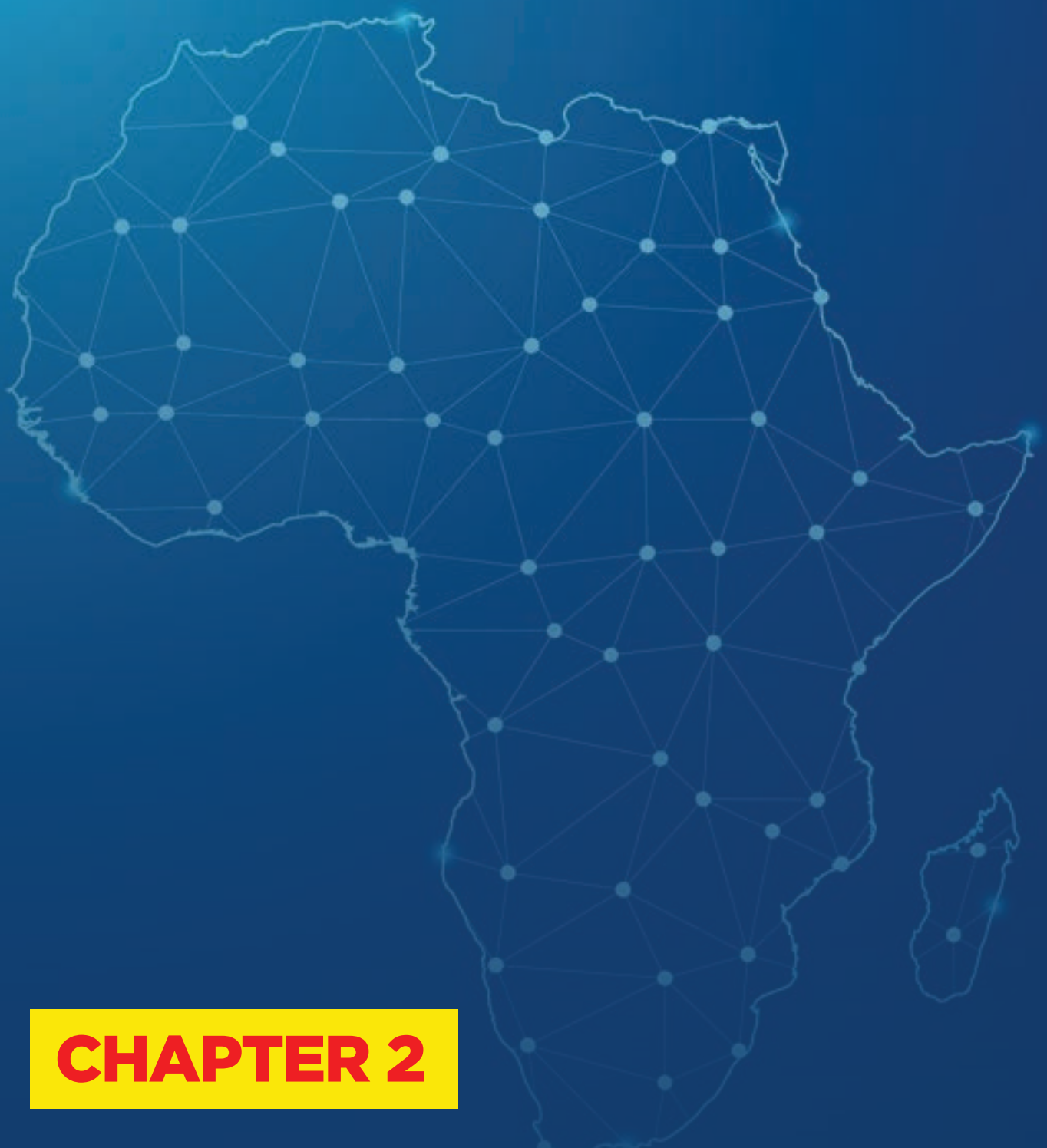
The key informants' interviews and focus group discussions data were analyzed based on a systematic coding, following the approach suggested by Bree and Gallagher (2016). In this regard, transcript data were read and re-read while noting down initial ideas. This data was broken down into meaningful sentences that formed the initial codes. Thereafter, patterns and categories were generated. Two qualitative analysis experts searched for themes in data categories, reviewed them and clearly defined or named such themes. These initially named themes were later shared with a larger data analysis team of six (6) members, including the principal investigator for review, adoption or adaption/modification of themes. Each confirmed theme was assigned an objective. The sorting was done in Microsoft Excel and then a report was written based on the themes within each baseline study objective.

1.9.2 Quality Control

All the respondents gave explicit consent to being interviewed and audio recorded during the focused group discussions. During the key informant interviews, the interviewees' responses were directly typed into the interview guide forms after their consent. Similarly, the respondents who filled the questionnaire consented and a clear briefing on the importance of the baseline was given to all participants at the start of data collection.

The interview data were anonymized in such a way as to make sure that neither the respondents nor other people they referred to during the interview can be identified. The interview data was given random codes that were used in place of the interviewee's identity. To further preserve the anonymity of the interviewees, the interviewees and other participants that contributed to the data have not been integrated into the present report. In addition, recordings and documents that facilitated the identification of respondents with their corresponding responses have been and will remain confidential and anonymized at ODA.

The correctness of data and proper communication of findings were ensured by maintaining a high level of objectivity in discussions and analyses by a joint research team of twelve (12) members. This team had access and the opportunity to give feedback on each other's analyzed sections of the study in an open-access online working report document. Further, a peer-review team of ten (10) officials at Uganda's Ministry of Local Government (MoLG) reviewed the draft report and raised their comments to the ODA research team for attention. Lastly, the second draft of the report was subjected to expert peer-review from MoLG and ACODE-Uganda, one of the key CSOs working with local governments in the country. These were at the rank of Principal Urban Officer, the Commissioner - Urban Administration and Research Fellow, respectively. Finally, a national report validation workshop was held, with participants from relevant MDAs, Development Partners/Bilateral Organizations and CSOs.



CHAPTER 2

Urban Data Governance Legal Frameworks, Practices & Incentives In African Emerging Cities: A Literature Review

2.1 Introduction

This chapter emerged from a systematic literature review that was conducted to explore existing data governance practices and incentives available for selected and emerging cities in Africa. The African cities included in this review are Kampala, Nairobi, Accra, Cairo and Cape Town, as established cities and an initial two context- specific, strategic emerging/new cities in Uganda of Hoima and Fort Portal, to make the literature review process manageable. The cities of Nairobi, Accra, Cairo and Cape Town were selected since they are said to be progressing well in terms of data governance practices (Guma & Monstadt, 2021) and they ably represent the east, west, north and southern regions of Africa. The findings from the review are outlined in the sub sections below.

2.2 Data Protection and Legal Frameworks for Cities

Important to note was the recent continental data framework policy published by the African Union (AU, 2022), as a reference point for African states to enact and implement their context-specific policies on data governance. While African countries had various existing regulations regarding personal data protection, it is only recently (2017-2022) that most countries have elaborately moved to create personal data protection acts (KDBA, 2021; UDPPA, 2019; GDPR, 2018).

On African cities, it was found that the legal frameworks for city data protection exist for Accra, Cape Town, Cairo, Nairobi and Kampala and are largely similar. This implies that emerging cities in Uganda could benchmark the useful frameworks in these established cities as they seek to strike a balance between data protection and increased openness of data access and usage.

2.3 Data Collection Methods and Incentives in Africa's Cities

Cities mainly collect data through national census data, surveys by local or national or international agencies and crowdsourcing. Over 76% of the publications reviewed on data collection methods reported the census as the main method for collecting city data in Africa. National census remains one of the most reliable methods for obtaining data from citizens. According to O'Hare (2019), census data are the backbone for a democratic system of governance and the basis for a country or city to allocate resources or funds. In addition, cities typically use estimation methods to generate vital data for planning purposes. Cities often rely on registration, surveys and administrative data sources to estimate demographic data in between censuses based on births, deaths, international migration and internal migration.

Crowdsourcing is one of the most reliable methods cities rely on to collect up-to-date data. Crowdsourced data is data provided, collected and distributed by citizens through the use of digital technologies and social media (Collinge, 2017). Crowdsourcing by use of sensory data is gathering pace in Africa. As an illustration, AirQo, (Bainomugisha, 2022) is an organization that has set itself up to use "low- cost air quality monitors designed to suit the African infrastructure, providing locally-led solutions to African air pollution challenges." Sugita and Ishikawa (2022) used sensory data techniques to collect spatial sound patterns in the city of Cairo. They argued that these sound patterns can tell the city's pulse in terms of the languages or activities taking place in various locations of the city. Shah et al. (2022) used sensory and satellite data to build a model for predicting power outages in Ghana. These examples show how cities in Africa are increasingly relying on sensory-based technology and other platforms to collect a variety of data including geospatial data (Hudson et al., 2018).

2.4 Nature of Data Collected in Africa's Cities

For African cities, the literature search results indicate that the most occurring data items were health, food and security (see Figure 2.1), reflecting the relative importance of the items to the city residents, planners and researchers (Richmond, Myers, & Namul, 2018; Donmez et al., 2017; NieKerk et al., 2020; Croese et al., 2021).

Figure 2.1 Most Common Data Items in Publications on African Cities

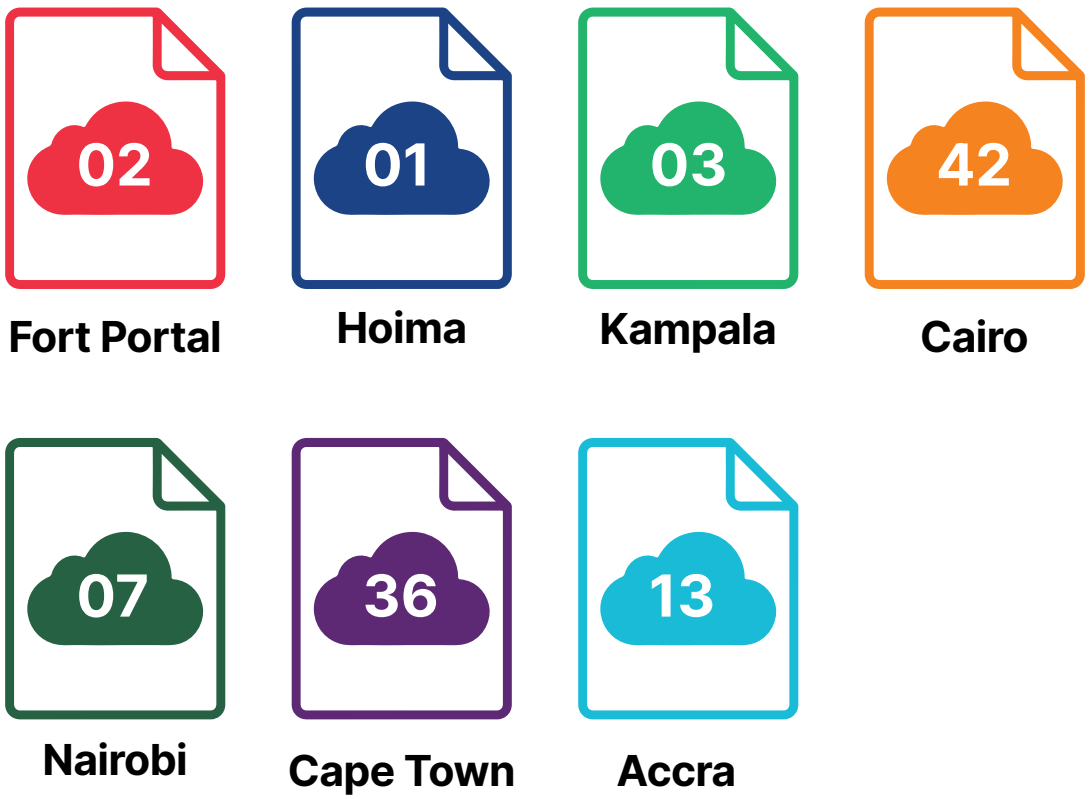
Other data items in the literature reviewed include; affordable housing, road hazards, water, environment, and transportation. Collecting this kind of data helps a city to plan for its citizens better, it can lead to a drastic reduction in the costs of running the city and reduce resource wastage. The emerging cities of Uganda ought to prepare themselves well to collect a variety of data on a well-defined regular basis on the above areas/sectors. Once the data is collected, it has to be stored and maintained well and this is explored in the next section.

2.5 Data Management Methods and Tools in Africa's Cities

The methods and tools used for data storage for city data have invariably evolved as the nature and size of available data have evolved. Traditionally, data has been stored on HDDs (Hard Disk Drive) and SSDs (Solid State Drive) and these are still useful methods of storing some types of data.

Another increasingly useful form of data processing, storage and maintenance in African cities is cloud computing. Cairo had the highest number of articles in literature mentioning cloud computing (n=12) and the relative percentages of publications mentioning cloud computing per city are shown in Figure 2.2.

Figure 2.2: Proportion of Publications Mentioning Cloud Computing



2.6 Role of Big Data in Creating a Smart City

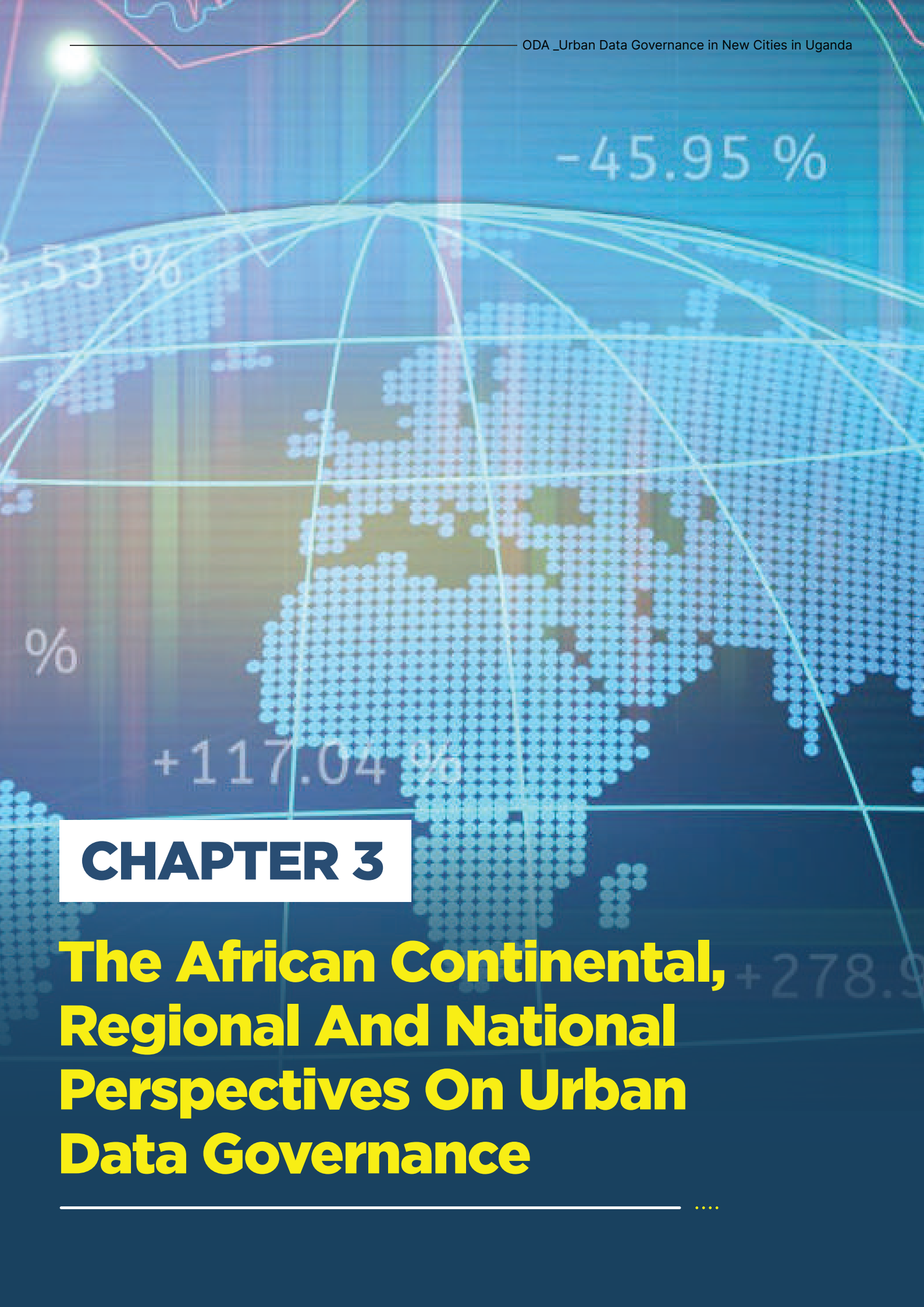
The literature reviewed found that the big volumes of structured and unstructured data generated have led to the concept of "big data". As the rate of urbanization increases at a fast pace across the world and now in Uganda, big data availability opportunities for new cities will ensue. The ability to manage big data will go a long way in actualizing the concept of turning Uganda's emerging cities into smart cities. Big data refers to the massive amount of digital data/information companies and governments collect about individual activities (Hong et al., 2022). This data is generated by traditional means (census, surveys and self-registration for services like hotels, supermarkets, etc.) Modern means via Artificial Intelligence (AI) of computers, smart phones, use of sensors embedded in city streets, buildings and transport systems. While the notion of developing the newly created cities as "smart cities" may be scorned by sceptics, Sokolowski (2018) argues that Africa, in particular, is well positioned to lead the way in smart city initiatives for the following reasons: (1) limited legacy drawbacks, (2) the rise of African middle class, (3) Intense urbanization, (4) entrepreneur mindset and (5) strong mobile connectivity. The benefits of a smart city are explained in Giest (2017) and Wang et al. (2021), and these include; efficient resource utilization; better quality of life; higher levels of transparency and openness, and, sustainable development that includes effective environment protection and waste management.

2.7 Key Conclusions from the Literature Review

The literature review above revealed that most of the digital technologies for collecting and maintaining data, including big data, in Africa cities were open source. It would be desirable for newly created cities in Uganda to adopt such technologies. Planning the cities as "smart cities" was highly recommended in the various publications reviewed.

Also, it was concluded from the review that the authorities of emerging African cities have to ensure urban growth boundaries are well-defined and also encourage vertical physical land usage. This would enable the cities to have enough spacing and that nature reserves within cities protected (Mensah, 2019). The cities needed to set up plans where they update their data on at least an annual basis. Cities should also provide extrinsic, intrinsic and reputable incentives for residents to participate in generating the data for use. Such generated data could help cities in obtaining real- time information on whether services and infrastructure have been delivered as planned by city authorities (Blaschke, 2020). Here, the residents participate in the monitoring and evaluation process.

Moreover, the cities need to develop the capacity to analyze and use data using various easy-to-use, open-source platforms, while ensuring that data protection and legal compliance are observed. To ensure that data usage is a routine practice, the emerging cities need to specifically appoint data focal officers in each department, to provide data relating to all aspects of the city dynamics for effective planning and the well-being of the city residents. It is hoped that these cities will embrace several digital technologies discussed in this literature review, to harness the power of data into building smart cities. New cities can learn from the challenges and opportunities experienced by the cities like Kampala, Nairobi, Accra, Cape Town and Cairo, while also benchmarking the data governance-led smart city initiatives of other world-established cities.



CHAPTER 3

The African Continental, Regional And National Perspectives On Urban Data Governance

3.1 Introduction

The African unique development context demands also attention to issues of Urban data governance in emerging cities. The following facts justify the need to have in this baseline study, an African continental, East African regional and national perspectives of Urban data governance. With over 1.1 billion people, Africa accounts for about 15% of the world's human population. Africa is the world's second-largest and second-most-populous continent. It has the youngest population among all the continents (EPRC, 2015). The African continent stretches from the Northern temperate to Southern temperate zones and this accounts for its diversity of ethnicities, cultures and languages.

Interestingly, Africa is presented with a contradictory dichotomy on one hand, it has rich natural resources (with a rich diversity of biological resources, mineral resources and optimum environment conditions). On another hand, it has high levels of poverty (evidenced by high levels of illiteracy, high infant and maternal mortality rates, low expectancy levels, excessive slummy urban centres/cities and high dependent on foreign aid, to mention but a few). This situation calls for an increased need for data and evidence to plan for Africa's resources, so that they can steer the social-economic development of the African countries, with Uganda as a reference case, specifically with urbanization lenses.

3.2 Africa Continental Level Perspectives on Urban Data Governance

In its influential review of the African Union Data Policy Framework (AUDPF), CIPESA (2022) reiterates the impact of "context and capacity challenges" that characterize the majority of African states and/or public authorities' data governance processes. The foregoing aspects have not yet been interrogated in the context of urban authorities' data governance, to uniquely understand whether or not such factors affect urban data governance in the emerging cities of Africa, like in the case of Uganda's new cities, recently established in 2020.

The other issues addressed in the AUDPF are collaboration and coordination on the governance of the data resources amongst different players. These may include inter - government agencies, CSOs and sub-governments including new city authorities, the private sector and other international development partner collaborations across the continent and within member states. This study interrogated and gave views based on findings, on how such collaborations and coordination mentioned in the AUDPF have the potential to improve urban data governance efforts in the emerging cities in Uganda. More so, the importance of "leveraging technology", especially the rapidly growing digitalization that has transformed how data resources are managed, is also emphasized in the continental data policy framework. An analysis of how such digital technologies are used to manage data in new cities was also conducted.

The AU Data Policy Framework emphasizes key guiding principles like ensuring trust, fairness, safety and accountability in the data governance regimes within the continent, regions, states and other sub-state authorities. Emerging cities in Uganda may employ

the same principles to generate and win the confidence of residents to support sustainable data governance regimes. This may result in optimal value delivery effects from data resources for evidence – informed urban development in new cities. Moreover, as the continental data framework aspires to be a key reference tool for the member states through their Ministries, Departments and Agencies (MDAs), this aspect also presents an opportunity for this study to assess how emerging cities in Uganda are prepared to conform to the national, regional (East Africa Community), continental and global standards, as far as data governance issues are concerned.

3.3 East Africa Regional Level Perspectives on Urban Data Governance

The findings from this study showed that the East African Community as a regional block is yet to discuss, enact and publish its data governance policy framework. If the foregoing was in place, it would guide member states on how to balance the "missed opportunities" of data use and, on the other hand, mitigate the "misuse and/or risks" that may arise from the data use. These may include cross-border data-sharing effects amongst all the seven states that make up the region, and which are already cooperating on issues of security, immigration, trade, etc. On this note, some key informants representing some civil society organizations (CSOs) in East African countries (Uganda, Tanzania and Kenya) urged that a consortium of CSOs may need to be formed in the region. Such an outfit would advance the agenda of leading the process of formulating a regional data governance policy framework for East Africa.

Nevertheless, this study found out that East African regional countries like Kenya and Uganda had already enacted laws of data protection and privacy and were in operation with national data protection and privacy offices. In Tanzania, there was a draft bill on data protection and privacy that was yet to be tabled in parliament for discussion and consideration for approval. During a focus group discussion held in Dar es Salaam, Tanzania, generally, all respondents/participants revealed that there was an urgent need for CSOs and other stakeholders in data governance issues to advocate and lobby the current government to have the bill fast-tracked. Civil Society Organizations in Tanzania and other development partners still had an opportunity to engage the government to have such laws enacted. The bill was eventually passed into law in November 2022, now awaiting operationalization like establishment of the Personal Data Protection Commission (DPC) envisaged with the same law.

At the time of conducting this study, no particular research had been conducted especially focusing on urban data governance in the Eastern Africa region. However, much work had been done in understanding the concept of citizens' generated data (CGD), especially in Kenya, championed by institutions like GPSDD, Open Institute and KNBS – the national statistics office of Kenya. The toolkit on CGD in Kenya may be adopted or adapted by new cities in Uganda, to involve residents in shaping the data and evidence of sustainable urban/city development agenda. The CIPIT at Strathmore University in Nairobi had also researched and published an influential piece of work on data governance principles (Labhuram et al., 2021), which we think are quite relevant for the context of the new emerging cities in Uganda to adopt. These principles include; organization, alignment, compliance and common understanding.

3.4 The Uganda National Level Perspectives on Urban Data Governance

Uganda has a relatively robust legal and policy regime governing its National Statistical System. The Uganda Bureau of Statistics (UBOS) Act of 1998 which established the bureau was one of the first statistics laws to be promulgated in the East African region. The Act defines the National Statistical System and the role of different stakeholders in it, the rules guiding the production and dissemination of official statistics, quality assurance and the boundaries of access to that data. However, with the current proliferation of digital technology, the term "data" is more embraced than statistics, to signify other qualitative forms of generating raw facts and processing them into evidence to guide public policy choices and routine decision-making.

UBOS's comprehensive, highly participatory, and devolved Plan for National Statistical Development (PNSD) is a five-year rolling blueprint for modernizing data and statistics in the country. It provides a framework for other MDAs, districts, civil society organizations, and, more recently, cultural institutions to develop their strategies for statistics with UBOS support, strategic plans that are supposed to be aligned with the National Development Plan.

Uganda was one of the first African countries to pass the Access to Information Act in 2005, has a Personal Data Protection and Privacy Act (2019), and has established guidelines on several elements of the data value chain, including on conducting surveys, usage and reproduction of data, microdata access, and data sharing.

The country is also a signatory to a host of regional and international protocols on data and statistics, including the Africa Data Charter, The Strategy for the Harmonization of Statistics in Africa, the UN Fundamental Principles on Official Statistics and Agenda 2063; African Union's futuristic vision for the continent's developmental transformation. Many of the principles outlined in these regional documents have been embedded in the country's policy and legal framework for data and statistics. The country has embraced the open data movement and the data revolution agenda. It has localized Sustainable Development Goals whose indicators are tracked as part of the country's monitoring and evaluation framework

Uganda has also participated in international events aimed to improve data production and use such as the annual United Nations World Data Forum, the annual Africa Statistics Week, and national ones such as the High-Level National Data Forum.

Regarding data production, a significant amount of data exists in Uganda, especially at the National level. A census is usually done every ten years with few instances of delays, and major household surveys are normally conducted on time. Most ministries and departments collect routine administrative and programmatic data, mainly with the support of donors.

Despite the progressive picture enumerated above, Uganda's national and sub- national data ecosystem still faces significant challenges. The extent to which the policies above are implemented, for example, is still limited. Some of the seemingly progressive laws and

policies are occasionally negated by some other anti-evidence laws in the country, such as the colonial-era Official Secrets Act of 1964 which is still on the law books. Also, the Public Service Standing Orders, which limit civil servants' right to release information, and the Computer Misuse Act (2011), whose enforcement is often abused and was recently amended by parliament in 2022, to make it tougher and, according to critics, more stringent and unfair to citizens.

Uganda's political economy has had a well-intentioned vision of delivering essential services closer to the population, leading to the creation of multiple MDAs and local administrative units. Unfortunately, this has led to a dramatic increase in the cost of public administration, constraining the amount of resources available for strengthening data systems, especially in key social sectors like Health, Education, Agriculture and Social Welfare. Multiple administrative units have also led to data silos, with every department creating its own data and information management systems, that end up replicating another in a different agency, wasting limited human and financial resources. The above is the context in which the cities were created and operated.

While investment in data systems has been improving over the years, it is still limited. Most data systems in MDAs, for example, are funded by donors, imperiling sustainability; some cities and districts are unable to recruit technically competent statisticians and data analysts, and data dissemination is still largely done analogue, old-school-style, through printed papers and books, except few systems in certain sectors.

The data use culture in the country, especially in government structures /agencies is still limited. Several stakeholders in the data production community express frustration at the limited demand, appreciation and use of statistics in decision making especially within the country.

The proliferation of technology and ICT infrastructure in the country, however, creates opportunities to increase data production, demand and use especially at the sub-national level. The government's rural electrification program is extending the national electricity grid to more rural areas, and an ambitious, fibre cable project (National Broadband Infrastructure – NBI) has covered all the cities and is connecting more districts and service points to the internet, databases, and other national digital infrastructure. This bodes well for the data revolution in the country in the coming years. The legal frameworks and the enabling ICT infrastructure influenced the creation of new cities in Uganda. The Map (Figure 3.1) shows Uganda's new cities.

Figure 3.1: Map showing Uganda's new strategic and regional cities which started operations in 2020 and 2021

Source: Map adapted from National Statistical Abstract, 2022; by UBOS

It is not possible to understand data governance in Uganda's new cities without understanding data governance at the national level. Similarly, it is not possible to understand data governance without understanding general governance dynamics in general (political, social and economic) as all these facets of governance are related to one another. In Uganda, politics and policy are inextricably linked, like in the majority of jurisdictions around the world. The process that led to the creation of the cities was not entirely a scientific one; based on only data and evidence, but it also had political economy considerations by the country's leadership. This was an

overwhelming consensus finding of this study, especially from KIIs and FGDs. In some cases, politics may have trumped policy/data in the decisionm-aking process that led to the cities' creation; the same way these dynamics have played a role in the creation of new districts over the years; from only 17 at independence to the current 146 under-resourced districts, including operational city authorities. Under Uganda's current law on public administrative units (Local Government Act, Cap 243), city status is equivalent to a district (Sec 4 of Local Governments Act)

One of the overarching findings of this study is that data governance in the cities, as well as other issues, is so dependent on the general state of governance at the macro (national) level. It is impossible to understand the data ecosystem of these cities without viewing it within the wider context of the country's socio-political and economic situation. Data is an integral part of the governance and decision-making of any country, and the quality of data systems is intractably linked both to political and technical decision-making, which involves resource allocation and the political will to base development decisions on quality data and evidence.
The Uganda national level urban data governance was studied at three levels: Ministries, Departments and Agencies (MDAs), Civil Society Organizations/development partners and the private sector. The sub-sections below summarize what was found at each of the levels.

3.4.1 Ministries, Departments and Agencies (MDAs) roles in urban data governance

MDAs Support to New Cities in Uganda

The MDAs support cities for data-informed planning and decision-making in several ways. Supporting cities for data management and governance in Uganda is a multi- agency undertaking. In line with Sections 95,96, 97 of the Local Governments Act Cap 243, the Ministry of Local Government (MoLG) has the overall mandate to guide, harmonize, mentor and advocate for all local governments in support of the vision of
the government to bring about socio-economic transformation of the country. It is the supervisory ministry and current caretaker of the new cities. Two major departments in the MoLG are directly charged with the cities. The first department is Urban Administration - whose role is to provide the required support and technical guidance to promote democratic guidance, advocacy, transparency and accountability in Urban Local Governments. The second Department is Urban Inspection - whose role is to assess the performance of urban local governments and check for compliance, including the new cities. Other MDAs offer direct thematic support to data management and reporting to the cities.

For example, the National Information Technology Authority of Uganda (NITA-U), through the National Backbone Infrastructure (NBI), project has extended infrastructure for internet coverage to all the new cities (NITA-U, 2021). The agency further provides technical support to the cities by designing and building websites for them to store and disseminate data and/or information resources, training city staff in using this ICT infrastructure and ensuring data is secure in all cities.

The Ministry of Finance, Planning and Economic Development (MoPED) is charged with providing funding to the cities as it does to other Local Governments, which they supplement with local revenue. The ministry trains the accounts personnel in the cities (and other Local Governments) on the required accounting standards, specifically using a chart of accounts that is based on international accounting practices. These efforts attempt to improve data management, especially on revenue data and evidence resources of policy making.

All Ugandan cities are enrolled on the Integrated Financial Management System (IFMIS) that is guided by the Public Finance Management Act of 2020. The system tracks the entire process from when the transaction is initiated until when it is cleared. The nature of reporting is usually quarterly and has stipulated timelines. Work plans of the cities are also submitted to the ministry for scrutiny and in case they need support it is given accordingly. This study assessed how this IFMIS is accessed, and used and what value it has or can deliver in finances and revenue data management in cities. It was found that IFMIS is a major data generator, analysis, storage and reporting tool that has almost eliminated the use of paper. However, more capacity building and incentivizing users in cities were still needed.

Other Ministries such as the Ministry of Lands, Housing and Urban Development (MoLHUD) have extended the Land Information System (LIS) to the cities and trained officials on how to use it to enter data on land purchases and titling, among others. However, findings showed a low uptake of the system at the city level. More capacity building and other incentives were needed, for cities to benefit from it.

The Personal Data and Protection Office (PDPO) was also established in 2021, following the enactment of the Data Protection & Privacy Act (2019). Much work on data security awareness activities was being conducted, but largely at the national level and hardly had this office extended its interventions in the new cities in Uganda. This is an area that required urgent attention.

The national statistical office, Uganda Bureau of Statistics (UBOS) had also extended support to new cities by leading a nationwide process of drafting the Plan for Statistics Strategies for each city. It was discovered by this study that about half the new cities had approved such statistics/data strategies, whereas other city councils had not yet ratified them by the time of this study. Those cities that ratified the plans, however, did not have the resources to operationalize such plans. Funding resources to raise awareness of plans among city stakeholders, building the capacity of staff including recruiting new ones and procurement of necessary tools were some of the current challenges at hand.

MDAs Data Governance Expectations from New City Authorities

Every city follows reporting templates which are often specific to the MDA sending them. Tools for data collection are designed and shared with cities by separate MDAs and therefore, there is no single standardized tool(s) for data collection and analysis for cities. The Ministry of Finance Planning and Economic Development (MOFPED) uses the Program Budgeting Systems (PBS) and IFMIS for them to report through the Chief Finance Officer (CFO). The Ministry of Health has HMIS, MoLG has E- LoGREV, IRAS and others.

Reporting is done quarterly and all cities are bound by law and other regulations to submit this data routinely without fail. Sanctions have been put in place for non-compliance. The data systems include IRAS and LOGBAS (Local Government Budget Analysis System) which enables them (Local Government Finance Commission) to analyze the cities' budgets and revenue and their use is demand-driven.

The Local Government Scorecard (ACODE, 2019) rates cities on performance; and provides rewards. Timely reporting is one of the indicators and a key expectation for MDAs from the city authorities. Timely data becomes a relevant resource to inform different routine decisions and policy issues in MDAs.

The cities utilize different tools sent to them by the different MDAs, where each expects cities to use a such differentiated tool(s) to collect and analyze datasets for its own (single MDA) use. This presents challenges in terms of training needs for data collection and analysis, limited human resources and the scattering of datasets, causing demotivation among city staff. Moreover, UBOS while exercising its mandate, had developed data quality assurance guidelines as revealed below;

"UBOS is entrusted with maintaining a national statistical system and it encourages all stakeholders in the national statistical system to prioritize their data needs as well as focusing on quality and the entire statistical value chain. The bureau had developed a statistical quality assessment and satisfaction framework and tool used to assess the quality of data produced by all players". (R1, KIIs-NL).

However, the differentiated methods and tools of data collection stipulated for adoption/use in cities by respective MDAs were found not to be sanctioned or conforming to data/statistical quality assurance guidelines published by the national statistical office (UBOS). The study also captured a list of up to twenty (20) data and information systems currently available in cities. Some of these systems were found to be duplicating datasets being collected.

MDAs Enforcement of Data Security, Privacy and Societal Harm Prevention Measures.

MDAs surveyed reported that data protection was ensured and privacy measures were enforced based on whether the dataset(s) in question was public or personal. Public data was free to be accessed by anyone, say, data on projects implemented in the community, and others. Measures like data encryption, tracking of suspect IP addresses for breaches and use of registered accounts for individual access into the MDA systems. However, the majority of MDAs were not so clear and pronounced about personal data privacy policies and activities/measures in place at the time of the current study, despite the availability of the Person Data Protection Office (PDPO) that started operations in 2021.

For the private, personal data, for example, in land registration, for example, the National Land Information System (LIS) and the MoFPED IFMIS were reported to have ironclad security to avoid hacking, according to the respondents of this study. The 2019 Personal Data Protection Act has made the issue more urgent and important.

The Personal Data Protection Office (PDPO) was set up in 2021 under NITA-U to implement the law. However, given that it is still a new office, most of its work is still awareness creation at the national level. No awareness campaigns have been so far launched at the city level in Uganda, yet they are budding as key big data producers and users.

The data protection office (PDPO) also conducts virtual monthly webinars on topical issues such as cyber security among others. These are available on different media channels such as YouTube, TikTok, Instagram, Twitter and so on. City officials in charge of data management need to be facilitated to attend such informative seminars to improve data security in their cities and, therefore, a budget allocation is required for that purpose. The PDPO also requires each entity, whether public or private, to designate a data protection officer and register with that statutory office concerning the entity's data production and sharing activities.

According to the MDAs, data privacy and protection mechanisms depend on how sensitive the data is. For example, the Land Information System (LIS) holds very sensitive data and is not accessible anyhow. There are strict measures to access the system, the different actors (surveyors, cartographers, registrars, etc.). The system has controlled access at different levels. For example, computers do not have pots for external drives, so it is not easy to pick some materials.

The systems may also not allow to download of documents or even printing anyhow. Some cities' staff are aware of the data privacy and protection mechanisms because they have been sensitized by the MoLHUD.

3.4.2 CSOs' Perspectives and Roles in Promoting Urban Data Governance in Ugandan New Cities

CSOs' Perceptions and Practices on Urban Data Governance

There's a vibrant Civil Society community working on data governance and associated sectors in Uganda. From those working on open data, ICT for Development, and data systems, to those working on digital rights, internet democratization, and access to information. Civil society is playing an important role to ensure more effective data production, access and use. Many CSOs produce vital data and information that has much potential to be included in the National Statistical/Data System (NSS) since the national statistics office (UBOS) has limited funding to collect and process all required data resources on time countrywide. However, this data produced by CSOs is not yet officially recognized in the NSS and processes are underway to engage UBOS to set up and operationalize CGD – Citizens' generated Data quality assurance. More resources and/or funding are urgently required to prioritize these processes, so that data production, quality assurance and sharing between state and non-state actors is streamlined to the benefit of sustainable urbanization in Uganda. The CSO fraternity is at the heart of the SDG monitoring process in the country and the "Leave No One Behind (LNOB)" agenda.

They participate in indicator mapping, conduct SDG popularization campaigns at the local level, and in the process produce vast troves of data especially on invisible and vulnerable populations such as women and girls, people living with disabilities (PWDs), youth and children. As a result, CSOs have deep knowledge of the challenges and opportunities in Uganda's national statistical system (NSS). The Uganda Bureau of Statistics needs to embrace this goodwill from CSOs on building a stronger national statistical system, whose ripple effects can spill over and support sustainable urban data management and governance processes. Therefore, there is an urgent need for CSOs mobilization to build stronger collaboration between government and CSOs on urban data governance, and generally the Evidence-Informed Policymaking (EIP) field.

CSO/DPs Support Cities for Data/Evidence-Informed Decisions & Policymaking

A couple of CSOs and Development Partners (DPs) in Uganda are working with cities, mainly through research. The Advocates Coalition for Development and Environment (ACODE) think tank was one of the first CSOs to study the veracity of new cities after they were immediately created in 2020. CSOs collect data, process and transform it into different products such as policy briefs and other lobbying and advocacy interventions which are used by MDAs and cities in planning and decision and policymaking.

For example, UN WOMEN is supporting UBOS in several areas of data capacity building, which capacity is intended to improve data in local governments and new city authorities. POLLICY conducts capacity building and training for staff in Kampala Capital City, as an incentive for data use in decision-making and policy formulations. The Collaboration on International ICT Policy for East and Southern Africa (CIPESA) supports some cities like Kampala by collecting and sharing data with them on data security and privacy issues. Specifically, CIPESA generated data for advocacy where that data is intended to empower women to benefit from the emerging cities. SUNBIRD AI is one of the CSOs that continues to support some cities like Kampala in facilitating the translation of data/information written in English into local languages to assist the local people understand data. This innovation has facilitated access to communication and access to feedback from citizens to city councils using digital data technology. SUNBIRD AI has also an initiative to collect digital air quality assessment data in some pilot cities like Fort Portal and Kampala.

The Global Goal Champion also supported the need for the translation of policies and other important documents into local languages. This is also very important so that when people access data or government documents, they should not see such documents as foreign. Other CSOs that are contributing to data governance in one way or the other include Step-up Youth Initiative, and Evidence and Methods Lab.

Moreover, respondents from CSOs also urged that digital tools should be used in collecting data compared to manual systems largely found in cities. They asserted that data analysis should also be done using tools such as SPSS and STATA. The presentation of reports needed to be attractive and dissemination of data to be done in

various languages, and online dissemination adopted. The CSOs also indicated that data should be disaggregated in terms of male and female, age groups, economic activities, etc. Lately, data on human settlement, diseases, land ownership, transport system, and business should be collected and always updated in cities.

Nevertheless, what came out is that, largely the efforts of CSOs in data production and engagements have been mainly concentrated at the national level and some in the Kampala Capital City. Now that there are an additional 10 cities created in Uganda, there is a need for existing CSOs to expand their data governance interventions in these new cities. These complex communities coming up as cities, need urgent support to streamline their data governance and management processes for the realization of well-planned urbanization efforts, where all residents can thrive sustainably.

Lastly, cities are government entities in Uganda and, therefore, CSOs cannot have oversight over them or compel them to generate specific datasets to support their sustainable development. City authorities mainly collect administrative data that is fed into MDAs generated and administered systems. Beyond the systems' framework requirements, many times dictated to them by different line MDAs, there is currently little else cities themselves do to produce data resources. Since there are no direct mandatory reporting mechanisms between CSOs and cities, when CSOs need data from the cities they often go to the field and collect it themselves.

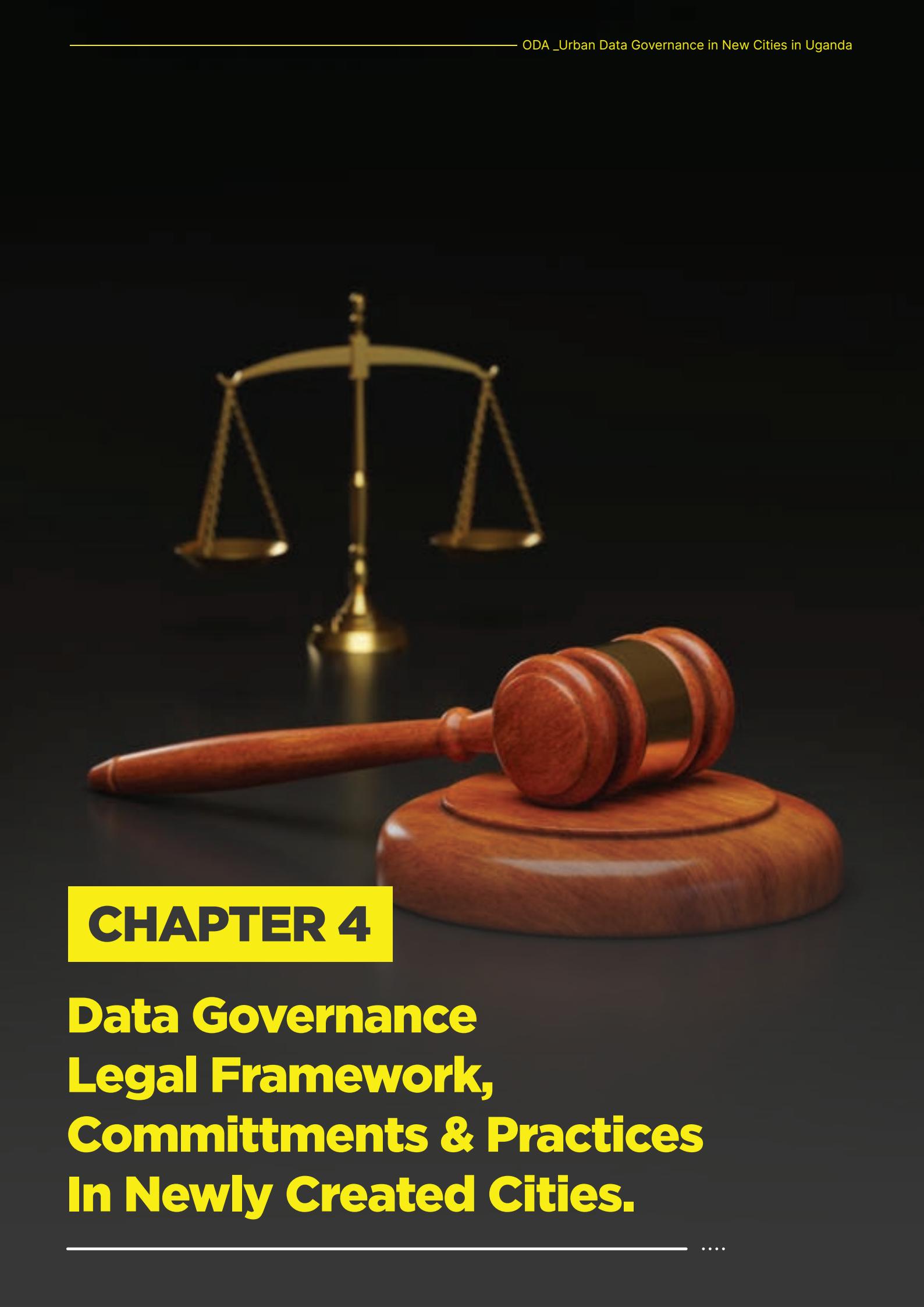
3.4.3 Private Sector Contributions to Urban Data Governance

Private sector perceptions and practices

Private companies' investments and actions are based on the profit motive. While the country's private sector such as telecoms has done a lot of infrastructure investments for data systems in Uganda, they invested in areas with characteristics favorable to their business interests. Mobile Telecommunications Network (MTN), Airtel and other companies had invested an enormous amount of money in upgrading their networks, putting up masts and underground cables to improve networks. These were mainly in urban areas like in the 10 new cities in Uganda, where their "well-to-do" customers tended to be based. However, cities and the general population have by default benefited from these services in terms of faster internet (4Gs), a potential enabler of Citizens' Generated Data (CGD), and quicker financial transactions such as through mobile money and strong telephone networks to power small business enterprises in the new cities.

The above makes the private sector a critical element/stakeholder of new cities' data governance ecosystem. Cities needed to court them and provide them with incentives to invest in their areas. The Government of Uganda had put in place an enabling environment in terms of good policies for data and IT companies and investors to thrive. The ICT Policy (2006) was found to be one of the most progressive frameworks in Uganda .

On the other hand, the analysis showed an urgent need for a strong public-private partnership intervention where city authorities, CSOs and the private sector combined synergies and/or resources to generate reliable data on the human population, markets, business output, and taxation as key for investors to decide on whether to establish a specific business in a particular city. Socioeconomic data, savings and poverty rates among other indicators are important for banks, insurance companies and other businesses to establish in cities. This data may not be collected by a single stakeholder, for it requires considerable resources.



CHAPTER 4

Data Governance Legal Framework, Committments & Practices In Newly Created Cities.

4.1 Introduction

This chapter presents findings of the critical investigation into the understanding of city-level urban data and evidence ecosystems in newly created cities in Uganda. It focuses on the dimensions of data and evidence needed by policymakers and technocrats, its quality/rigor, timeliness, granularity, completeness, disaggregation and other aspects associated with technical, infrastructural and human resources for urban data governance in Uganda's newly created cities.

4.2 Knowledge of Legal Framework and Commitments to Urban Data Governance in Uganda's new cities

The study assessed if there were any existing legal frameworks and other legitimate commitments put in place by city authorities and their partners (MDAs, CSOs and other private institutions) to promote effective data governance and management in the new cities for safe, resilient, sustainable, inclusive urbanization.

The findings revealed that several legal frameworks/laws in the form of enacted laws, policies and regulations by the Uganda Parliament and MDAs were in place, to guide data governance in the new cities. Table 4.1 shows the respondents' knowledge of the availability of these frameworks per city department;

Table 4.1: Existence of legal framework for data/statistics

Is there a Legal framework for statistics/ Data?	Yes	No
Physical Planning & Housing	2	1
Planning, Project & Grants	6	0
Revenue Generation	8	0
Works & Engineering	5	2
Natural Resources & Environment	4	10
Total	25	13

Of the respondents from key targeted sectors/departments, 64% responded in affirmative that indeed some legal frameworks guided data/statistics governance and management in the new cities, whereas 36% disagreed or were not sure of any available legal frameworks. Out of those who agreed, 72% noted that they found difficulties in applying the statistical/data legal frameworks. The reasons given included; community unwillingness to provide the right data to city authorities, lack of funds or tools to use for data governance and management activities, the inadequacy of the legal frameworks available to address some data governance issues, and understaffing for effective data governance and management tasks execution.

The prominently known legal framework among the respondents (52%) was the Local Governments Act Cap 243, and the least known was the Data Protection and Privacy Act (2019) with only 8% of total respondents agreeing they are aware of it. Others mentioned were Uganda Roads Act, National Environment/Waste Management Regulations and the Physical Planning Act (2010). The findings further showed that no single new city had put in place its localized data governance policy to domesticate national policies as yet, hence requiring support in this regard.

Generally, in terms of legitimate commitments on data governance, each new city had either a draft, or an approved Strategic Plan for Statistics (SPS) for at least the next 5 years. This work was facilitated by UBOS between 2021 and 2022. However, these strategies were not disseminated; a few city stakeholders were aware of them, including city staff. There was also no specific funding the fiscal year 2022/2023 to operationalize these data strategies. Areas of operationalization identified included staff recruitment, capacity/skills building, equipment procurement, integration of many standalone systems, awareness to sensitize city residents about the importance of data generation, establishment of a city data governance steering team/committee, etc.

“The city has not yet conceptualized the Strategic Plan for Statistics, much as it exists” (R62)
“We have a draft SPS that was reviewed by UBOS and it was discussed by TPC, it’s yet to be presented to the executive and council for approval.” (R75).

In some cities like Fort Portal, Mbarara and Hoima, respondents claimed that the strategies were merely ceremonial at the moment, and more work needed to be done on them to be legitimately owned by all stakeholders and deliver value to their cities’ development. However, in others like Masaka City, authorities were in appreciation that SPS was helpful to enable them to organize their data resources in the next five years.

“City strategic plan on data governance and management not owned; its superficial. The 5-years’ plan is only ceremonial.” (R46)

Another form of commitment was noted as collaborations for data governance between cities and the private sector were also reported in Fort Portal, Mbarara and Jinja like City Market Vendors' Associations, and Private Sector Associations. These are potential sources of data resources on economic activities, revenue generation, etc. Even some new cities like Arua in the West Nile Region, were planning to introduce and debate a data security and privacy by-law in the city council. Some excerpts of the above findings are below;

"Structures are in place for the different cases of data collection and governance e.g. a committee governing market vendors" (R45).

"We have also recommended that we come up with the ordinance in line with the national policy on data and computer misuse" (R79).

The above showed levels of commitment in cities that needed to be consolidated through the provision of incentives in the form of capacity building, funding and forms of collaborations like stakeholders' awareness raising for data generation and data protection, security and privacy.

Also, in each city, it was discovered during the study that there is a Planning, Project and Grants Department, which among others is charged with coordination and provision of required data resources to every other department that needs it. This is a commendable city structural commitment to effective data governance in the newly created cities. However, it was discovered that these departments were under-resourced, both in terms of human resource capital, equipment/tools and funding.

In a nutshell, the above finding pointed to the urgent need for new city authorities to address the legitimization and resourcing of the approval and operationalization of the city data governance and management strategic plans, either in draft or already approved. Capacity building, including sensitization of city stakeholders (residents, city staff, CSOs and private enterprises) to understand key legislations like the Data Protection and Privacy Act (2019) to guarantee protection and create confidence in city residents to privately share personal data for city planning, also required prioritization. In some cases, power dynamics affecting work relationships between technocrats and political leaders in different cities, validated the initial assumption concerning the need to deeply understand different unique contexts among each of the new cities, and devise incentives for each uniquely.

4.3 Data Production and Utilization in Newly Created Cities

Generally, in all Ugandan ten new cities covered by the study, it was found that city stakeholders understood how data could support their daily routine decisions and policy-making processes. The political leadership and planning departments in all new cities explained the data systems they were currently using and exactly how data resources were key in supporting their planning tasks during focus group discussions.

For example, in Arua City, recent collect data was used to proportionately allocate resources to the refugee residents from neighboring countries like South-Sudan and Democratic Republic of Congo (DRC).

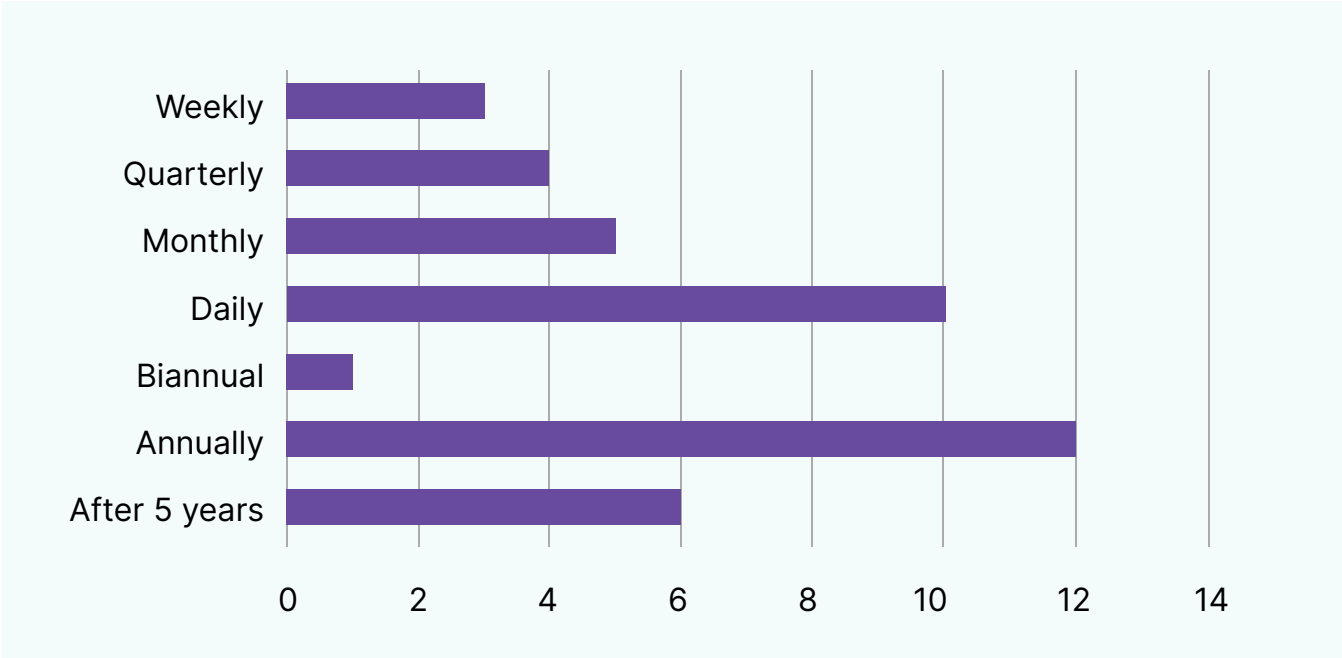
However, such data was insufficient and more support was needed to improve its collection and analysis for future use. Respondents from some other cities Hoima and Gulu explained, during key informant interviews, how data was used to inform discussions for the enactment of the Waste Management Ordinance/Law, whereas others like Fort Portal had used data produced by the IRAS system to determine/estimate where and how to collect taxes from city residents.

Generally, the study found that there were many pieces of disjointed and uncoordinated datasets. However, even the little data available was not critically analyzed and utilized enough to inform current routine decisions and policy-making based on evidence.

4.3.1 Data production cycles

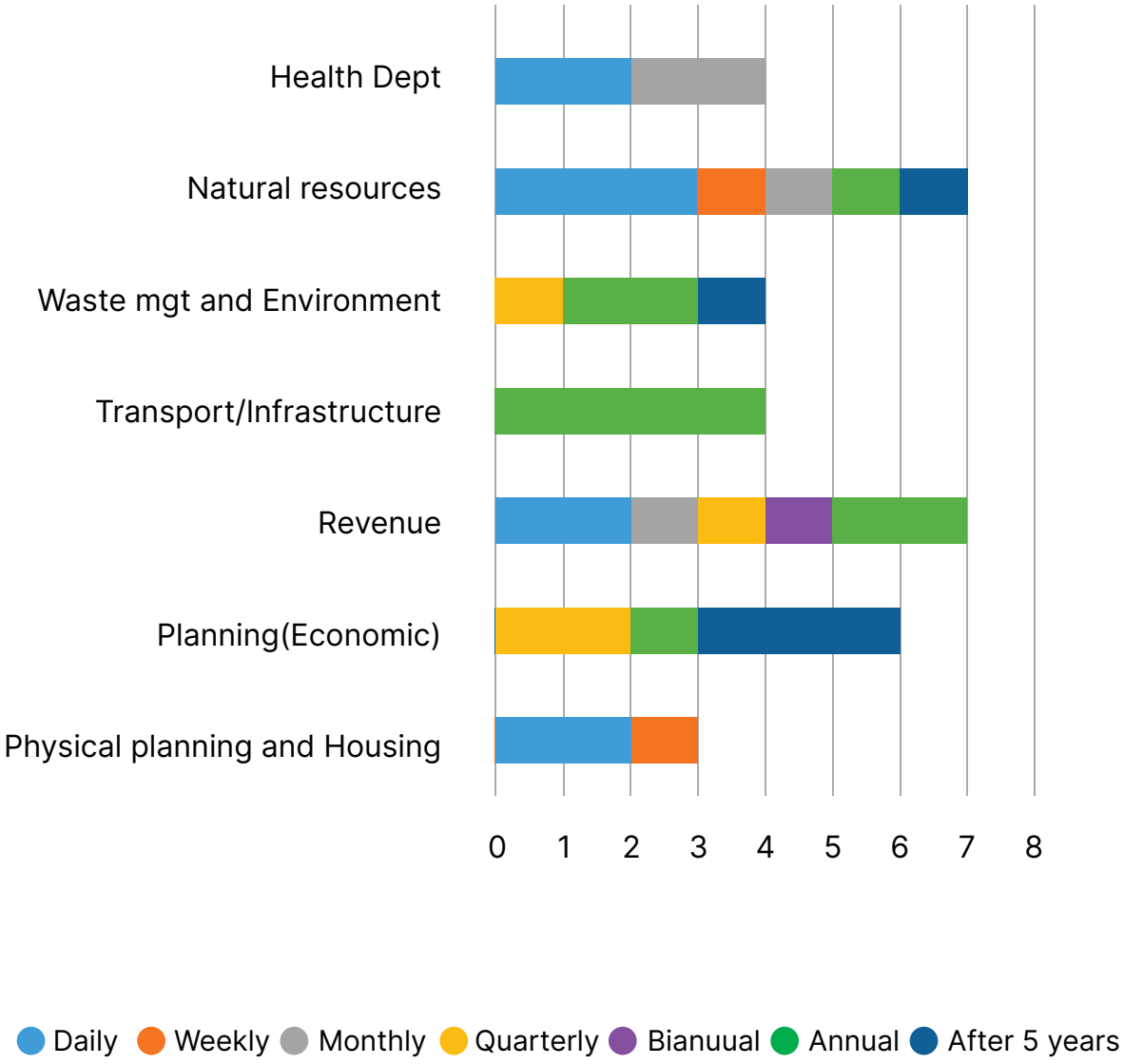
In newly created cities, the data production cycle is regularly dependent on the type of statistics or data required at a particular time. Findings further showed that different datasets are collected at differing intervals; weekly, monthly, quarterly and annually (see Figure 4.1) and shared with stakeholders like city political leaders,
technocrats and line MDAs. Also, majority of respondents (see figure 4.1) revealed that data was mainly generated annually. For example, the Integrated Revenue Assessment System (IRAS) data required daily basis capture, whereas the Parish Development Model Information System (PDMIS) and Program Based System (PBS) data were generated quarterly. Annual surveys were also done, especially the annual revenue assessments, which help to determine revenue performance and enable the designing of appropriate plans to attract investments, to improve collections. The property evaluation data is generated and updated every 5 years by the physical planning department. These reports were presented to the city council and sector committees.

Figure 4.1: General frequency of data collection across the new cities



However, deeper analysis of research data showed that there was glaring evidence of a lack of uniformity in the frequency of data collection across cities or departments, except for transport infrastructure (Figure 4.2). For example, focusing on one Department of Natural Resources and Environment, the respondents in the different cities gave varied responses as; Arua (Weekly), Fort Portal (After 5 years), Gulu (Daily), Hoima (Daily), Lira (Monthly), Mbale (Daily) and Mbarara (Annually). There is a need to ensure uniformity in the various data governance and management processes across departments and cities, so that credibility of this data can be guaranteed from all stakeholders in the data ecosystem.

Figure 4.2:
Responses on frequency of data collection across departments in new cities



4.3.2 Data capture or generation

The pie chart of Figure 4.3 shows that the practice of data capture is 72% manual compared to 28% automatic.

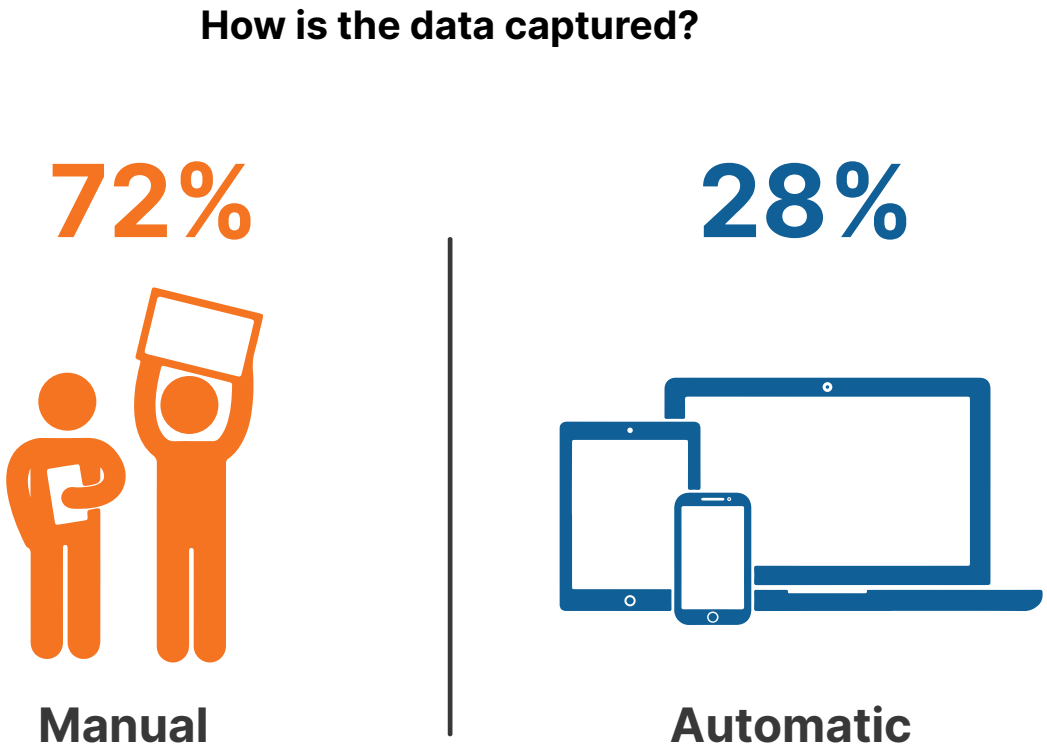


Figure 4.3: Mode of capturing data by various new cities' departments

The captured data is mostly stored in both hard and soft copies on computers, external drives, emails and servers hosting systems like the IRAS. Data security is by the use of passwords for soft copies and security guards to protect hard copies.

4.3.3 Data Sources

To understand the consensus on preferred urban data collection and analysis methodologies and tools, data production cycles and data use systems in each of the new cities, we analyzed the current sources, tools and persons responsible for data collection and processing. The results are presented in Figure 4.4

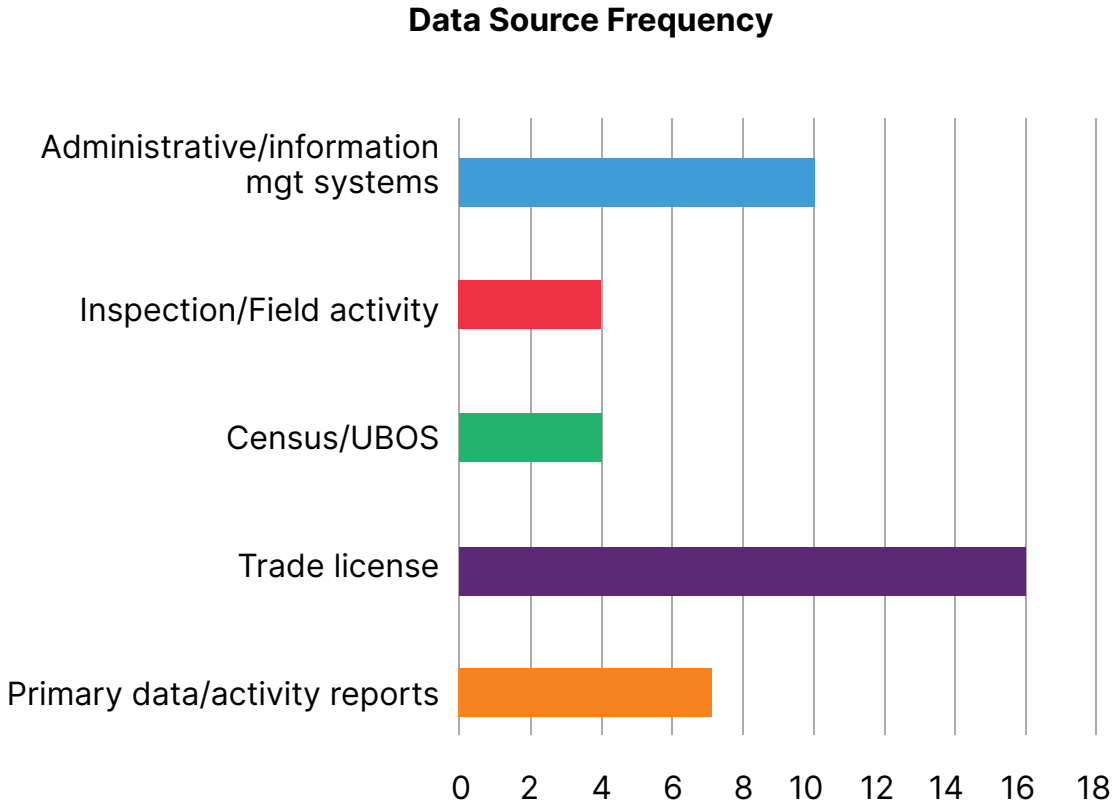


Figure 4.4: Data Sources

Figure 4.4 above indicate that new cities mainly obtain data through inspection/field activities, followed by administrative/information management systems, primary data/activity reports, UBOS/Census and through trade licenses.

It was further revealed by the focus group discussions that cities rely on processed data and projections generated by UBOS and other relevant MDA data systems, produced on annual basis. Community engagements are conducted, for example, the Barazas, budget conferences and field reports are effectively utilized to generate required data resources for planning and routine decision making within cities. The Planning, Projects and Grants Department relies on data got from other heads of departments to aggregate overall city datasets. Town agents collect data on business, especially revenue collection.

4.3.4 Data analysis

Several methods as well as analysis tools frequently used by emerging cities in Uganda were also identified during the baseline study. Findings revealed that the Excel tool (28%) was frequently utilized compared to other tools. Information Systems deployed by line MDAs (17%) were also relatively used, unlike other software including Archcad/Autocad (6.5%), Epi Info (4%), SPSS (10%) STATA (4%), Manual (6.5%), and reports (8%) respectively. It was, however, realized that a significant proportion of respondents in studied city departments (13%) don't analyze data using any method or tool.

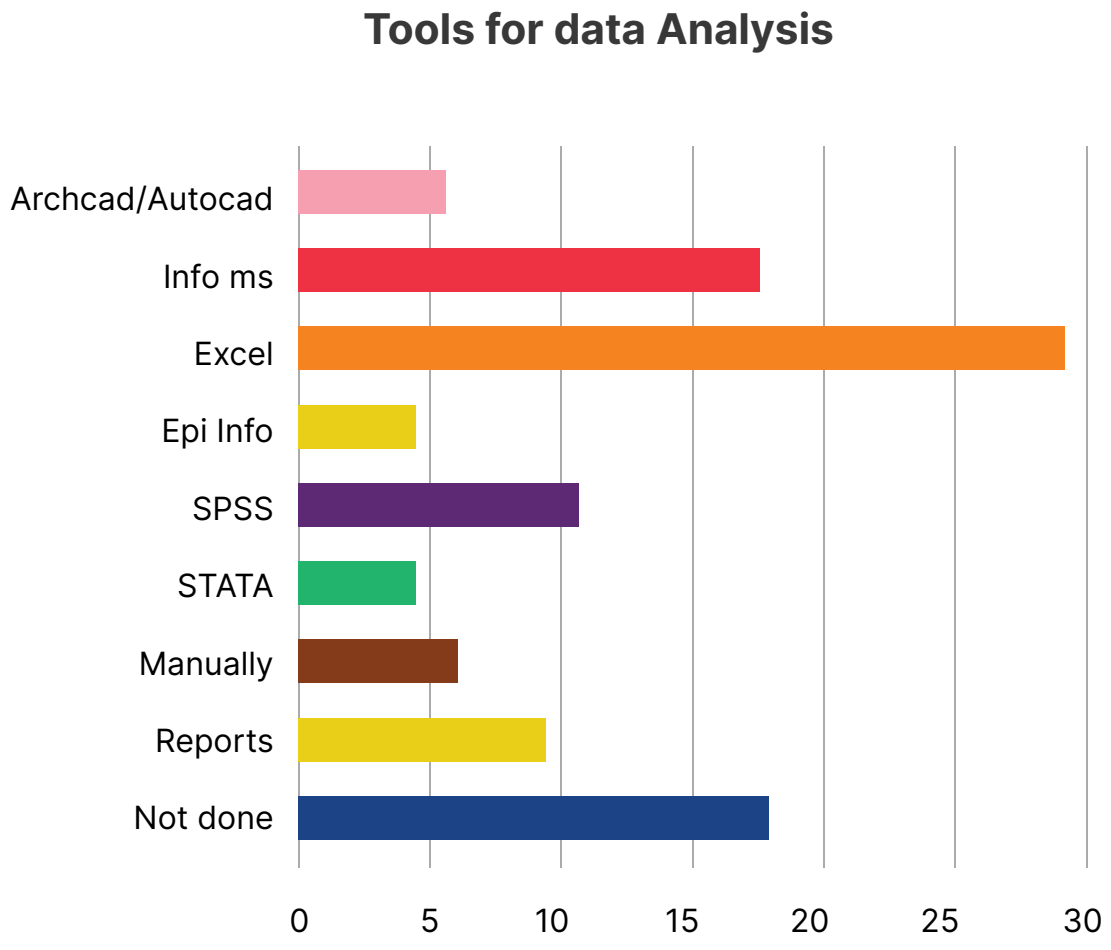


Figure 4.5: Tools for data analysis in cities - Info MS = (DHIS, EMIS, IRAS, PBS, GIS)

The focus group discussions corroborated the above finding on data analysis, that the Excel tool was largely used among the available data analysis technologies. It was mainly used for administrative data analysis to generate frequency tables and it was reported to be user-friendly to the departments. Offline tools designed in Excel are used by other departments that do not have online systems. It was also reported that other software used to analyze data included Stata, SPSS, R, Epi-Data, QGIS and AutoCAD for spatial data. The statisticians were the experts in analyzing the data using the mentioned software, especially in the health and planning departments. The rest of the departments which did not have information system platforms deployed were using Excel files to store their data. However, were those which still stored their data in paper files completely without any electronic or digital analysis.

4.3.5 Data management systems available in Uganda's new cities

Even though the dominating response was the non-availability of "city owned" database/MIS used in the departments targeted by the study, many systems being used in some departments were reported. Among the mentioned systems included the Integrated Personnel Payroll System (IPS), Integrated Data Management System (IDMS), Global Positioning System (GPS) used for picking coordinates and generating road inventories, e-LOGREV used for collection of local revenue data, as well as Integrated Revenue Assessment System (IRAS), which collects information on city revenue sources, assessments and whoever has paid. The Integrated Financial Management System (IFMS) is the main system of the Uganda government finances, through the Ministry of Finance, Planning and Economic Development (MoFPED) used to cover public sector financial processes daily. Program Budgeting System (PBS) was also reported to support the budgeting process of the cities.

The findings also showed that some systems were undergoing transition from manual, whereas others were ineffectively utilized, due to expensive licenses. Some data systems were recently introduced and uptake was still low in the new cities. For example, the Urban Management System (UMS) was supposed to collect data on construction taking place and land-related issues in cities. However, it was reported to be ineffectively used and the license was expensive to acquire for the new cities.

However, it was noted that much as data was collected and disaggregated, it was not analyzed from the cities. There were also no or few and computers in the majority of the offices, to efficiently capture and store the data in the new cities. Manual systems existed but were not effective and efficient for use in several city departments, which reduced performance in service delivery. Additionally, City websites (as data management tools) existed but were not regularly updated.

Moreover, the study revealed that there was no systems coherence. Data generated was not shared with the city by MDAs, which controlled such systems. There was no systems' interoperability and collaboration, harmony or coordination of data systems among different departments in the new cities. For example, it was reported that most data collected by UBOS, the Health Ministry (HMIS), among others, went to the centre (MDAs), but did not return to the new city councils to support their own routine decisions and policymaking efforts. Data management systems that are in existence were largely centralized and did not enable cities to retrieve datasets they submitted into such central systems for their use locally.

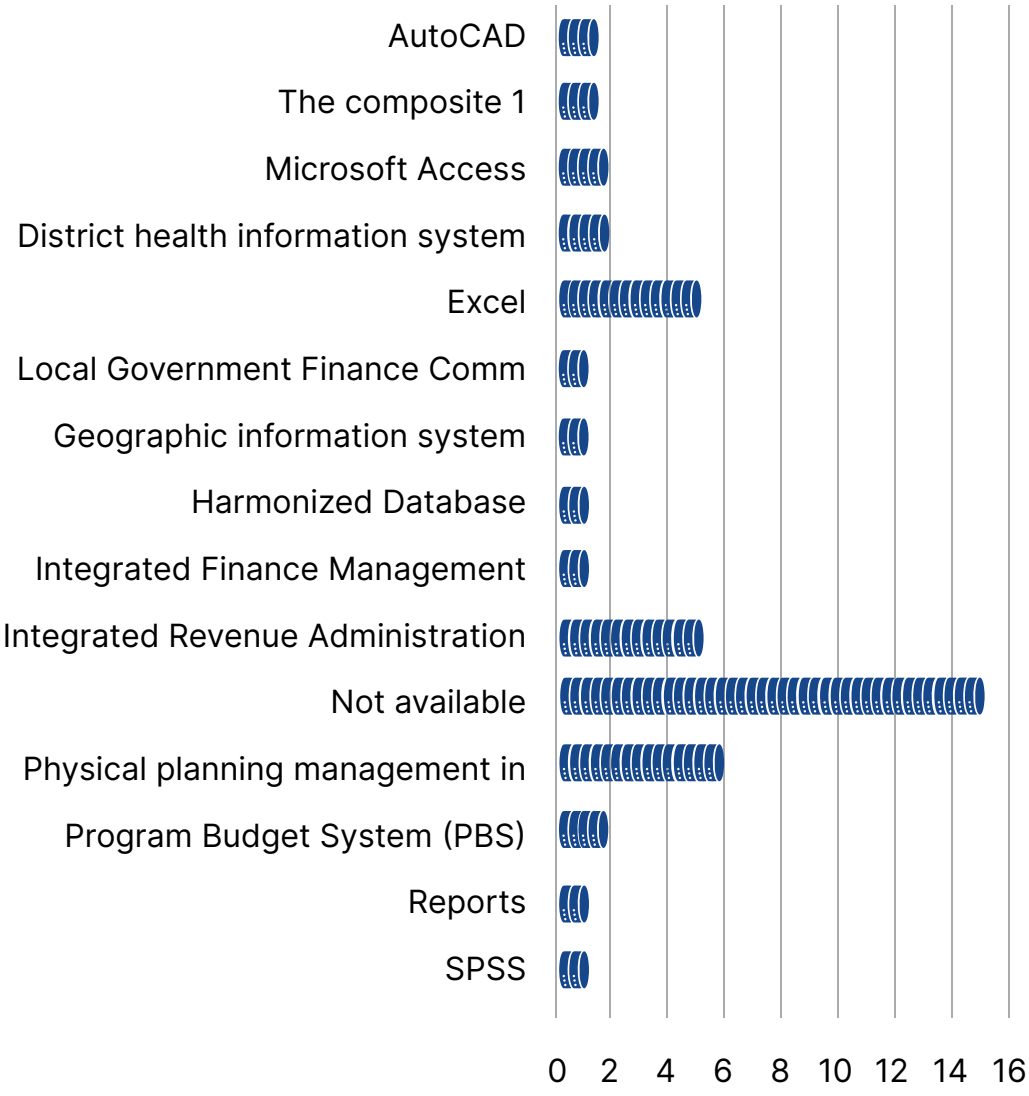


Figure 4.6 Databases Management Systems used by city departments

4.3.6 Data Management infrastructure in newly created cities

The adoption of new technologies across the national and sub-national statistical/data systems is a slow process. Few offices have adequate IT equipment and connectivity. At the city level, findings showed that statistics and planning departments still worked with very slow internet speeds, old computers and erratic power supplies. The technical capacity of staff is often inadequate – a challenge which is common in all sectors. National offices do have basic IT facilities and the necessary software, but statistical units in MDAs and most city offices still lack basic IT tools– yet that is where most of the administrative data come from. The National IT Authority (NITA) national data/internet transmission backbone and e-government infrastructure, aims at improving internet performance throughout Uganda. NITA is also introducing district centres to narrow the digital divide in rural areas and improve access to online information. The Project (NBI/EGI) Started in 2007, and it was expected to end in 2011, but it is still going on in a phased manner, due to funding and other contextual challenges (NITA-U, 2021).

The project is aimed at connecting Ministries and Government Departments (MDAs) to the main e-Government Network in Uganda. This is done to create an efficient government by simplifying procedures, bringing transparency, accountability and making timely information available to citizens. The objectives of the project are to: (1) establish a National Backbone Infrastructure (NBI) with high bandwidth data connection in major towns of Uganda and, (2) connect all Government Ministries, Departments and Agencies (MDAs) in a single wide area network; establish a government data center, and establish district information centers. The expected outputs after the project are: (1) all government ministries connected, (2) e-government implemented, (3) an optic fibre backbone transmission cable set up across the country (2,294km), (4) District information centers established to improve communication, (5) improved service delivery by government ministries, and (6) reduced cost of communications (NITA-U, 2021).

Since its rollout, thousands of kilometres of fibre optic cable have been constructed and many MDAs, cities and other service delivery points, such as schools and hospitals, border points and revenue offices have been connected to the internet and other services. However, a 2019 report by the Uganda's Office of Auditor General (OAG), indicated that though connected to the backbone, many beneficiaries are not effectively utilizing the facilities at their exposure, which compels the government to continue spending huge sums of money on other alternative services. The report reveals that out of a total of 445 sites connected to the national backbone infrastructure, 76 are not utilizing the available services at all (OAG, 2019). This is due to several factors including officials' reluctance to using technology as it eliminates incidences of malpractice, lack of enabling equipment, among others.

Figure 4.7: Map of Uganda showing current coverage of NITA's National Backbone Internet Infrastructure

Source: NITA-U 2019 Notes: Coverage of the NBI as of December 2017 Green is completed, blue to be implemented FY 2018/19 Maroon is underfunding review.

The findings show that all the new cities are covered with NITA'a backbone internet infrastructure. The number of Desktops, Laptops, GPS and other equipment used per city is shown in Table 4.4.

Table 4.2: Digital Equipment in New Cities in Uganda

	Desktop	Laptops	GPS	Others
Arua	12	18	0	0
FP	10	3	0	2
Gulu	11	10	1	5
Hoima	13	6	0	3
Jinja	12	5	0	1
Lira	12	10	2	6
Masaka	12	6	0	5
Mbale	7	4	0	0
Mbarara	14	4	1	1
Soroti	8	5	1	2
Total	**111**	**61**	**5**	**25**

Desktops and laptops were deemed inadequate, with less than 20% of respondents across various departments and cities believing that they were adequate. Moreover, the capabilities of the above equipment were not assessed to guarantee capacity of collecting and processing larger volumes of datasets in the new cities.

4.3.7 Comprehensiveness of available datasets in newly created cities

Datasets on city development programs and projects are still inadequate. For example, in the transport sector. There is no proper data on taxis and other transport automobiles moving in and out of the cities, the number of kilometers of roads paved, the length of gravel surface roads and those under community service. The number of bridges which are timber made, metallic, box culverts, pipe culverts as well as river banks that have been degraded is not also clearly collected and analyzed. The data
on state of water quality in surrounding rivers to support national and city grids, the amount of waste/rubbish generated per new city is also absent. Generally, inadequacy in the comprehensiveness of data resources generated by each of the targeted

departments/sectors was found to be a major setback to the maximum exploitation of the opportunities provided by data and evidence in new cities' planning and decision-making. More so, the available data resources generated by each department in the new cities were in silos, with limited interoperability, causing data accessibility and sharing challenges.

4.4 Available Incentives for data governance in new cities in Uganda

Data-related support that exists in the newly created cities is mainly from the line ministries and related agencies such as the Ministry of Local Government, URA, UBOS, UCC, Ministry of Water and Environment (MoWE), Office of the Prime Minister (OPM), NITA-U, and Ministry of ICT (MoICT). This support is mainly in the form of sporadic or irregular training, and supply of data management systems like IRAS and PDMIS to cities, with limited local ownership and participation in the designs and development of such systems. However, this mode of sporadic/one-off training is insufficient to nature a sustainable data governance and management regime in new cities. Training and continuous on-job capacity-building activities and data stewardship needed to be embedded in the data governance practices of new cities, as a form of incentive to the staff and other stakeholders, including residents. Respondents also explained that public-private partnerships were needed to explore other forms of incentives and capacity building like exchange tours in established Africa cities and beyond for benchmarking, annual dialogues and/conferences with experts in smart cities to discuss process of Uganda's new cities through application of digital technologies, among others.

Generally, cities have very limited existing public-private partnerships that are directed towards data governance. They have only partnerships with the Ministry of Local Government and other agencies. However, some few cities, departments had some partnerships for example, the Department of Natural Resources and Environment in Gulu City, had partnerships with NGOs like Triple FI, FITNA and UMCDF, that supported them mainly in training.

4.5 Availability of technical staff and existing capacity gaps

There's a growing turnover trend of staff in the new cities due to lower pay and sometimes harsh working conditions - extrinsic and intrinsic motivation challenges. Like other local governments and districts, cities struggle to recruit staff, especially for highly technical and specialized areas in Uganda, like data science and statistics. Despite high levels of unemployment in general, graduates of data science/analytics, statistics and other science and mathematical areas tend to have high demand in the private sector and NGOs where they are offered better pay and other career growth opportunity, and any other intrinsic motivation offers.

Until recently, the beginning salary for a district/city statistician, for example, according to the civil service salary scale was U4, a gross pay of about UGX721,000 per month (about $200). Personal specifications for this position included; an Honors Bachelor's Degree in Statistics or Applied Economics, from a recognized Institution. This individual was expected to have data gathering, analytical and communication skills, among other competencies. The duties include: collecting, analyzing and storing data, producing statistical reports, appraising development projects, organizing and implementing national surveys, providing technical support on statistical matters to local government

When districts and cities fail to find technically qualified people in data science and statistics, they downgrade academic requirements and end up hiring economists, or social scientists. This affects the quality, quantity and other attributes of data across the whole data value chain in the district.

Some cities, as a result, have the position of statistician vacant. Others have deployed economists or had crash-course training of their existing staff in general data collection and management and appointed them as data focal persons. Recently, the government enacted a policy of boosting salaries for science teachers and other science professionals in the public service. Because statisticians are considered scientists, their salaries were boosted to about UGX 4 million ($1,080) from UGX 721,000 ($200) per month. However, this has created another conundrum. This amount put these officers at far higher salaries than their seniors. For example, a city planner who is the supervisor of a statistician earns far less. That has made some cities and districts drag their feet in hiring statisticians to avoid this conundrum.

Even more urgent, is the position of IT Officer. Very few cities have this important position filled to become a smart city, it needs such professionals on their staff. Those cities that have IT Officers have better online visibility, websites and data sharing and use practices. The Ministry of ICT had planned to roll out countrywide recruitment of IT Officers, but due to a lack of resources, only a handful of cities that can pay the official with local resources have hired them. Most cities maintain information officers, who are not as technically competent in ICT issues as IT Officers would.

Because statisticians are considered scientists, their salaries were boosted to about UGX 4 million ($1,080) from UGX 721,000 ($200) per month.

NITA-U has been conducting training in web administration and management for cities and districts but most cities given that they are new still have no websites or those that do, and they are poorly administered. The training targets technical officers in charge of websites (IT and Information Officers).

The human capacity needs were assessed by analyzing the approved positions and whether they are filled or not. These needs were assessed through a questionnaire that was administered to different people within each of the cities and the results are illustrated in Figure 4.8 below.

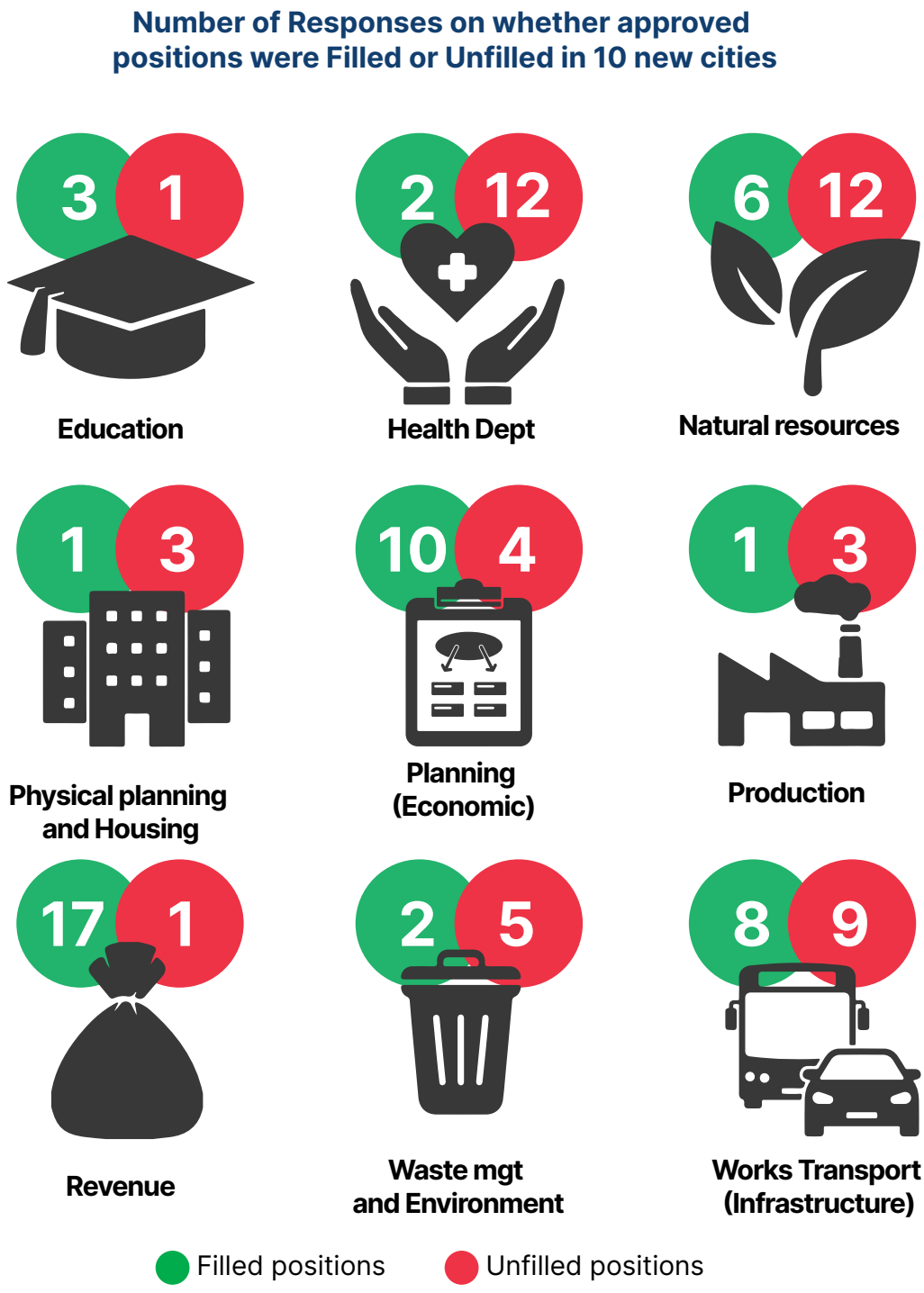


Figure 4.8: Approved positions and whether they are filled or not per department

On the figure, it can be observed that 50% of the staff positions across the various departments were not yet filled in all cities by the time this study was conducted. Perhaps because the studied cities are still new, and the public service recruitment process in Uganda normally tends to be so bureaucratic, taking a long time to complete than in the private sector institutions. This suggests that either the staff in these cities are overworked or some work is not done, including data management. This situation affects service delivery and data governance in particular. The above also is coupled with the inadequate tools and systems for data governance by those few staff on the ground. More so, the need to integrate or link together data systems from all the departments, would make data utilization and management more efficient and more regularly applied.

The number of filled positions according to cities was also analyzed to find out the cities with the biggest number of unfilled positions. The results are illustrated below;

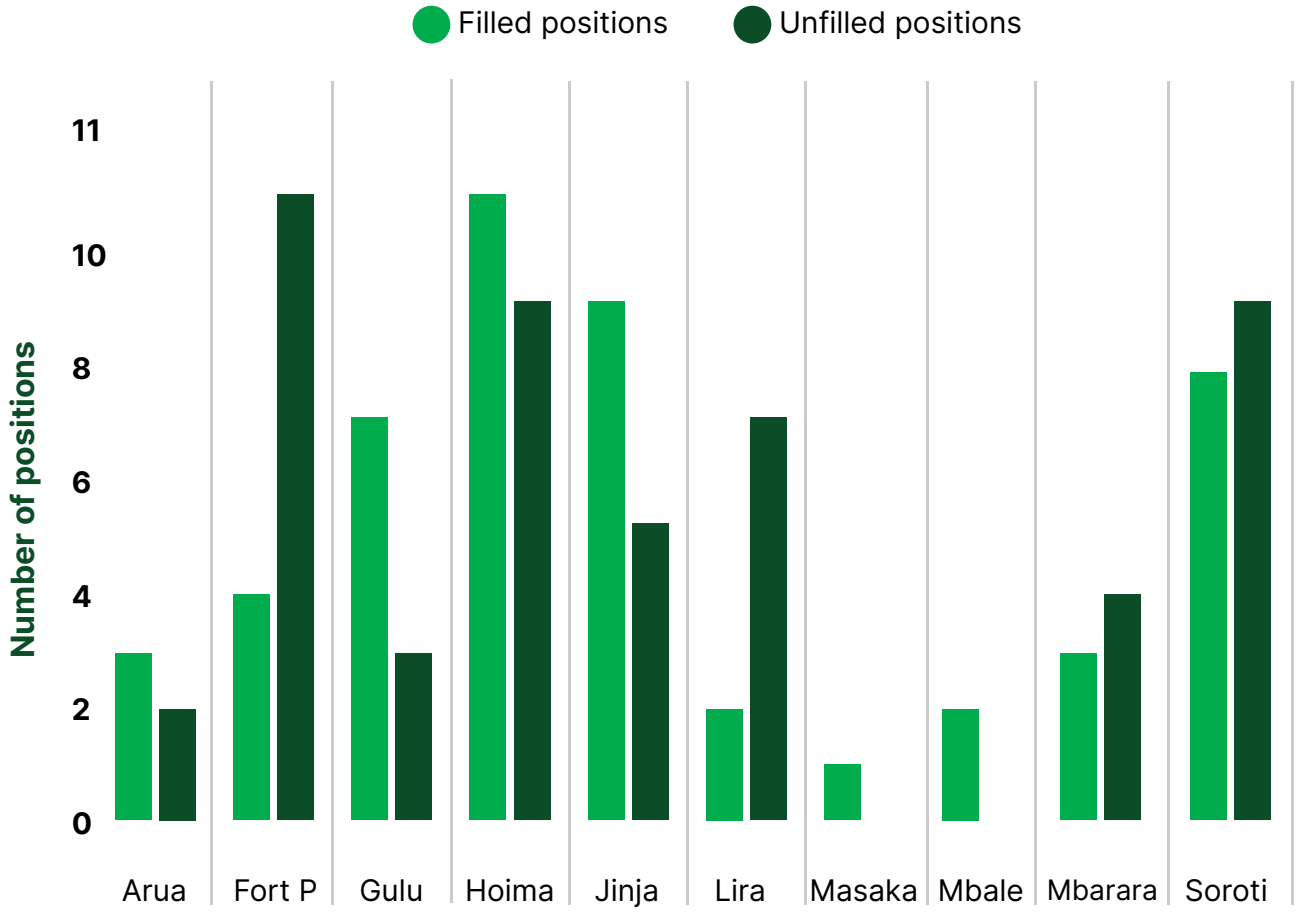


Figure 4.9: Approved positions and whether they are filled or not per city

Figure 4.9 suggests that Fort Portal, Lira and Soroti had more unfilled positions than filled positions among the respondents. Masaka and Mbale cities have no unfilled positions. But the filled positions are still few compared to other cities. This may be due to the limited number of respondents from the cities.
Furthermore, the availability of a designated officer handling statistical matters in the departments was assessed. The results are illustrated in Figure 4.10.

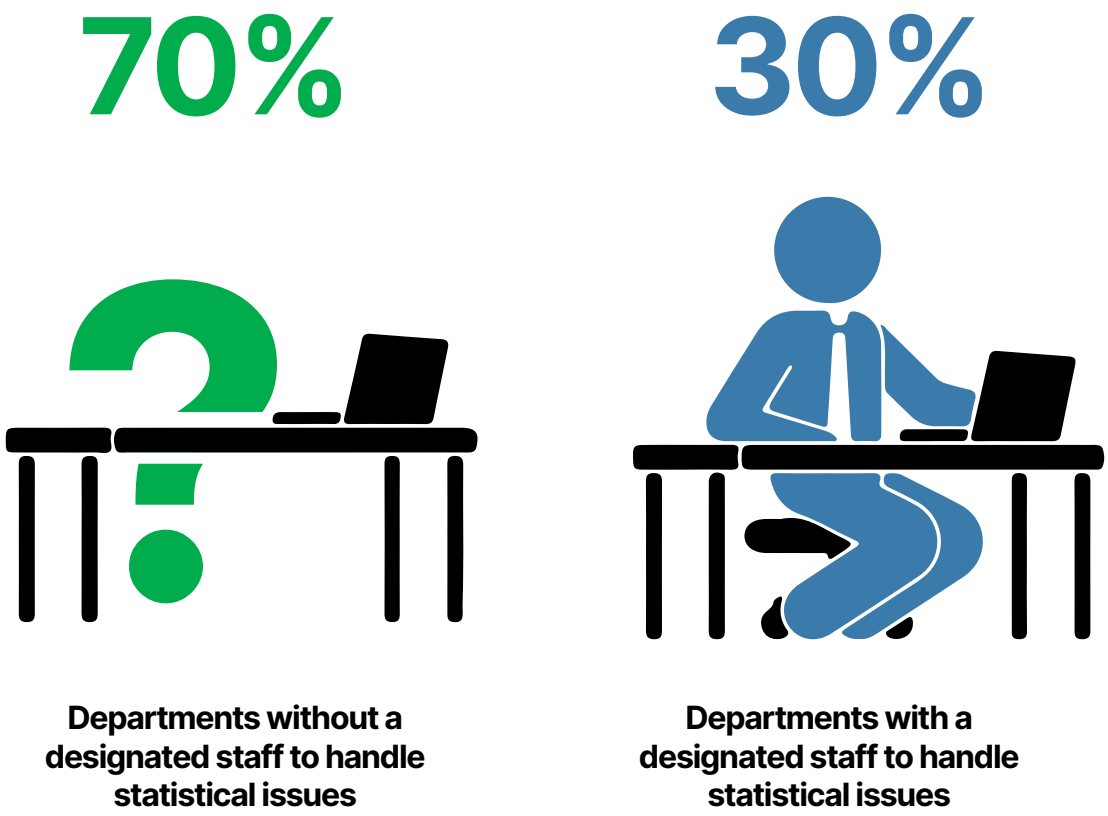


Figure 4.10: Designated officers for handling statistical matters

More so, findings revealed that most departments especially works and transport, natural resources, waste management and environment do not have a designated officer for handling statistical matters in their departments.

Furthermore, inadequate data analysis of existing datasets, due to limited skills, tools and funding resources in cities was also identified as another key gap that needs urgent attention, as depicted in Figure 4.11. Data analysis challenges were a result of other variables in the new cities' current data ecosystems; limited human resource skills, unavailability of required equipment for data analysis, and other extrinsic and intrinsic incentives like limited funding, demand and usage of evidence in planning and decision making, etc.

Figure 4.11: Word cloud of areas of data management that require capacity development

4.6 Existing Challenges for Data Governance & Management in Uganda's New Cities

The main challenges for data governance and management were also analyzed and the main challenges reported are shown in the pie chart of Figure 4.12.

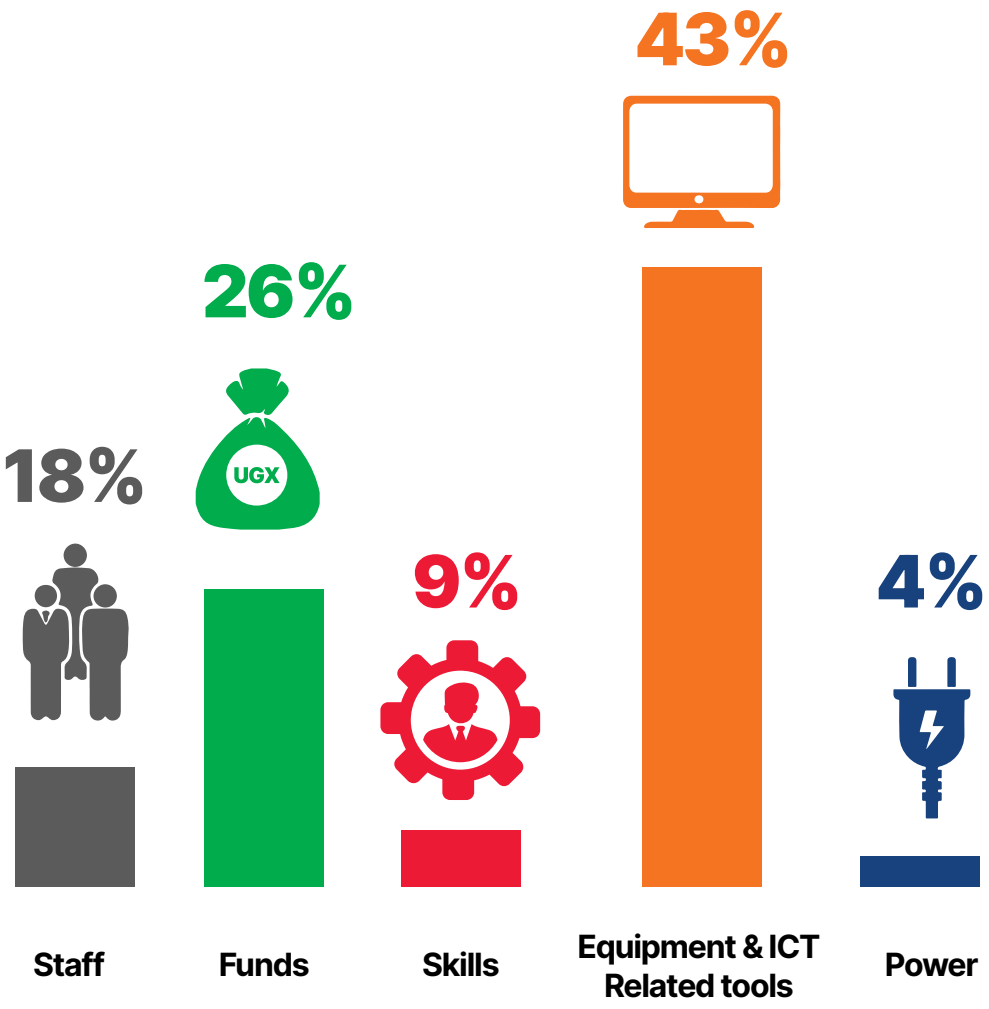


Figure 4.12: Main challenges affecting data management in the departments

On Figure 4.12, inadequate data management equipment and related tools was mentioned as the main challenge facing data production and management, followed by insufficient funding. For example, weighbridge equipment was specifically mentioned as one of those needed to collect transport infrastructure wear and tear data in new cities. Power infrastructure was mentioned but only in the northern region.

More challenges were highlighted from the FGDs and KIIs. The availability of so many stand-alone data/information systems used by different departments in the new cities was seen as a challenge by respondents, that needed urgent attention to address. During KIIs and FGDs respondents decried the imposition of some systems on them by MDAs, yet at the same time, they were not given direct access to manipulate data entered in those system platforms for their city advantage. The was a call to ToroDev and collaborating partners to devise data systems integration efforts in all the new cities.

4.7 A snapshot of Uganda's strategic cities: Hoima and Fort Portal

To articulate in this study some uniqueness of some of emerging cities in Uganda, this study gives a glimpse of Hoima and Fort Portal as strategically earmarked cities, that may need urgent attention to be modelled into data-enabled "smart cities.
Hoima city is strategically earmarked by the Government of Uganda to be developed as an "Oil City", due to the recent discovery and planned oil extractions to begin in 2025. Heavy and unique infrastructure is currently being developed in and around Hoima City; including an International Airport, first-class road constructions, and a booming hotel and hospitality industry, to mention, but a few. On the other hand, Fort Portal City was also strategically earmarked for "tourism" development in the Uganda Vision 2040 national master plan/strategy. For example, how are these two special context cities prepared to align data governance and data management practices to their specific niches and model into smart cities?

The ACODE report recommends setting up industries and infrastructure that harness the full potential of these cities, where the proposed cities have a locational advantage, such as tourism (Mbabazi & Kirungyi, 2020). The report further adds that additional policy autonomy and funding for local governments like emerging urban centres/cities like Hoima and Fort Portal were also necessary. To what extent are these cities set up to fulfil their potential in line with the niche labels they carry? The fact that these cities are newly created implies that they will meet a lot of teething problems, but this should not be construed as a disadvantage. Therefore, more in- dept studies may be needed in the near future specifically focusing on such special niche emerging cities in Uganda. For example, Shahraki (2022) advises that it is better to plan and design the tourism complexes (or oil complexes) in the early stages of the master plan of such cities. The tourism master plan must report the general interests, natural and cultural values, existing and planned buildings, and road and railway projects, which are significant for tourism development. On top of these, the land use policy for the city must account for all facets of the tourism complex as shown in Table 4.3

Table 4.3: Land use policy for tourism complexes. Source: Shahraki (2022)

Username	Per Cent
Camping	5%
Residential including hotels, villas etc.	20%
Total economic and commercial activities and sales of handcrafts	10%
Tourism and hospitality	10%
Administration and management of the complex	2%
Educational	2%
Health and Medical	6%
Sports such as golf, soccer, volleyball, tennis, etc.	10%
A network of streets and squares	25%
Green space	7%
Telecommunication facilities and urban equipment	3%
Total Land of Tourism Complex	**100%**

As Table 4.3 shows, a tourist city must have a lot of recreation activities, camping, green spaces and a well-coordinated infrastructure of hotels, streets, residential buildings and health facilities. In addition, the website “Cities: Skylines” states that the ability to attract more tourists to a city is raised by high land value, use and unique buildings, such as buildings based on achieved milestones or unique history, statues and towers. Planned walking and bus tours in a clean city are an added advantage to attracting tourists. Fort-Portal designation as a tourism city was mainly due to; its mostly cool weather averaging 180 Celsius; is a beautiful nearby scenery made up of over 50 crater lakes, valleys, flowing rivers and streams (Ashaba, 2020). It is also well located near the major national parks in western Uganda and its neighborhoods have reasonable forest cover. The city should incorporate data governance in its decision-making regarding its land use policy and other plans to increase both local and international tourism that caters to its specific tourism complex features.

It is worth noting that Fort Portal City has developed a draft five-year Strategic Plan for Statistics with support from UBOS, to increase capacity in the production, development and dissemination of statistical results (Fort Portal SPS, 2021). Moreover, the plan envisages boosting skills and capacity to produce and package data for evidence-based planning and decision-making, with financing from the central government, local revenue and development partners. The plan's Strength, Weaknesses, Opportunities and Threats (SWOT) analysis indicates that, whereas there is top management support and experienced staff to handle statistics, key weaknesses include poor IT equipment and a lack of a centralized or integrated database/system. As a result, the city struggles to have up-to-date data on fields such as; residents' economic performance levels, number of plots in the city, developments - those plots build for residential, those specifically for rentals, water coverage, wetlands, rivers, forests and other land use. The plan proposes a need to; undertake regular training of staff, carry out routine data collection exercises and have harmonized database and management information systems.

Nevertheless, this study noted that the plan is not clear on how routine data collection and processing will be carried out. The plan also needs to opt for Citizens' Generated Data (CGD) methods and tools, since they tend to be cheaper in the long run. The foregoing could be potentially grouped into three key frameworks along which such a city can build its robust data ecosystem; (1) data management framework, (2) technological infrastructure framework, and (3) human capital development framework. Explicit data protection, security and privacy mechanisms and production of data specific to the city's tourism niche, need to be incorporated into the plan. Further, during the Focus Group Discussions (FGD) and Key Informant Interviews (KIIs) in Fort Portal City, respondents were able to express the urgent need for data collection, analysis and storage on land use, wetlands and other natural resources that are of tourism potential. More so, the number of tourists who visit the city on a daily, weekly and monthly basis, the number of hotels and bed/accommodation capacity data were also needed. A robust tourist data system was requested to be supported by ODA and collaborating partners on the urban data governance program.

For Hoima City, there are numerous advantages of it being designated as an oil city. The city is the biggest urban center closest to the Albertine Graben oil wells, which have at least 1.4 billion barrels of recoverable oil (PAU, 2022). Although oil extraction is expected to begin in 2025, already, a lot of activities in and around Hoima city such as the construction of a second largest International Airport in Uganda, the upgrading of city roads and connecting roads to tarmac (CAA, 2022), the building of new hotels are taking place. The revenues of the city and the country at large will also increase drastically once oil extraction and exportation begin in 2025. However, (Johnston et al., 2019) warn of the potential numerous health hazards usually suffered by residents of areas near oil extraction. Hoima City should, therefore, set itself up to benefit from increased revenues and infrastructure from the anticipated oil business, while planning to minimize the associated health, slum habitations and other related criminal hazards. Lastly, we take note that Hoima City too has developed a 5-year Strategic Plan for Statistics. The plan is largely similar in design to that of Fort Portal City. Respondents decried it being unfunded and not popularized among all city stakeholders.

CHAPTER 5

Conclusions, Lessons Learned & Recommendations

5.1 Conclusion

Urbanization is taking root in Uganda with already 10 new cities established by Parliament and operationalized by 2021. This process was envisaged by the
government as one way to move to achieve Uganda Vision 2040, through NDP III and the global SDGs number 11 of "Sustainable Cities and Communities" by 2030. The new cities in Uganda are under pressure to improve the quality of services provided to residents, requiring enormous resources, yet there is a gap to understand contextually specific city data governance and management issues to inform such rapid decisions.

This study has revealed that across cities in Africa just as it is typical in Uganda cities, most of the technologies for collecting and maintaining data including big data are open source. Planning the cities as Smart cities is highly recommended in the various publications reviewed. In pursuit of this, administrators of emerging African cities have to ensure urban growth boundaries are well defined and also encourage vertical physical land usage so that the cities have enough spacing and that nature reserves within cities are protected. To plan the newly created cities as smart cities, one needs to learn from the challenges and opportunities experienced by the cities like Kampala, Nairobi, Accra, Cape Town and Cairo, while also benchmarking the data governance-led smart city initiatives.

With the AU Data Policy Framework's key guiding principles like ensuring trust, fairness, safety and accountability in the data governance regimes within the continent, regions, states and other sub-state authorities, emerging cities in Uganda may employ the same principles to generate and win the confidence of residents to support sustainable data governance regimes. This may result in optimal value delivery effects from data resources for evidence–informed urban development in new cities.

Nevertheless, this study found out that East African regional countries like Kenya and Uganda had already enacted laws of data protection and privacy and were in operation with national data protection and privacy offices. At the time of conducting this study, no particular research had been conducted especially focusing on urban data governance in the Eastern Africa region. However, much work has been done in understanding the concept of citizens' generated data (CGD), especially in Kenya, championed by institutions like GPSDD, Open Institute and KNBS – the national statistics office of Kenya.

Uganda has a robust legal and policy regime governing its National Statistical System. This has also been reviewed from time to time to meet the dynamic nature of the population's needs. The Uganda Bureau of Statistics (UBOS) Act of 1998 which established the bureau was one of the first statistics laws to be promulgated in the East African region. The Act defines the National Statistical System and the role of different stakeholders in it, the rules guiding the production and dissemination of official statistics, quality assurance and the boundaries of access to data. The national statistical office, Uganda Bureau of Statistics (UBOS) has also extended support to new cities by leading a nationwide process of drafting the Plan for Statistics Strategies for each city. It was discovered that about half the new cities had approved such statistics/data strategies, whereas other city councils had not yet ratified them by the time of this study.

The MDAs support cities for data-informed planning and decision-making in several ways. Supporting cities for data management and governance in Uganda is a multi- agency undertaking. As a political mother ministry and current caretaker of the new cities, the Ministry of Local Government (MoLG) has the overall mandate to guide, harmonize, mentor and advocate for all local governments in support of the vision of the government to bring about socio-economic transformation of the country.

Data privacy and protection mechanisms depend on how sensitive the data is. For example, the Land Information System (LIS) holds very sensitive data and is not accessible anyhow. There are strict measures to access the system, and the different actors (surveyors, cartographers, registrars, etc.). The system has controlled access at different levels. For example, computers do not have pots for external drives, so it is not easy to pick some materials. The systems may also not allow downloading documents or even printing anyhow. Some cities' staff are aware of the data privacy and protection mechanisms because they have been sensitized by the MoLHUD

There's a vibrant Civil Society community working on data governance and associated sectors in Uganda. From those working on open data, ICT for Development, and data systems, to those working on digital rights, internet democratization, and access to information. The Civil Society is playing an important role to ensure more effective data production, access and use. Many CSOs produce vital data and information that has much potential to be included in the National Statistical/Data System (NSS), since the national statistics office (UBOS) has limited funding to collect and process all required data resources promptly countrywide. However, this data produced by CSOs is not yet officially recognized in the NSS and processes are underway to engage UBOS to set up and operationalize CGD – Citizens' generated Data quality assurance.

Private companies' investments and actions are based on the profit motive. While the country's private sector such as telecoms has done a lot of infrastructure investments for data systems in Uganda, they invested in areas with characteristics favorable to their business interests. Mobile Telecommunications Network (MTN), Airtel and other companies had invested an enormous amount of money in upgrading their networks, putting up masts and underground cables to improve networks.

At the city level, several legal frameworks/laws in the form of enacted acts by the Uganda Parliament were in place to guide data governance issues (in general terms) in the new cities. Generally, in all new cities in Uganda, the study found that city stakeholders understood how data could support their daily routine decisions and policy-making processes. The political leadership and planning departments in all new cities explained the data systems they were currently using and exactly how data resources were key in supporting their planning tasks during focus group discussions.

In newly created cities, the data production cycle is regularly dependent on the type of statistics required. Data is collected periodically, that is weekly, monthly, quarterly and annually and shared with stakeholders like politicians and MDAs. The captured data is mostly stored in both hard and soft copies on computers, external drives, emails and servers e.g. IRAS or DHIS. Data security is by the use of passwords for soft copies and security guards to protect hard copies.

Cities mainly obtain data through inspection/field activities, Administrative/information management systems, primary data/activity reports, UBOS/Census and through trade licenses. Several methods as well as analysis tools frequently used in data production were also identified during this baseline study, excel was the most frequently utilized. Some information management systems included Integrated Personnel Payroll System (IPS), Integrated Data Management System (IDMS), GPS used for picking coordinates and generating road inventories, e-LOGREV used for collection of local revenue data as well as Integrated Revenue Assessment System (IRAS), which collects information on city revenue sources, assessments and whoever has paid.

All the new cities are covered with NITA-U's backbone internet infrastructure. Desktops and laptops were deemed inadequate in 80% of the newly created cities. Data on many aspects is still inadequate. For example, in the transport sector. There is no proper data on taxis moving in and out of the cities, the number of kilometers of roads paved, the length of gravel surface roads and those under community, the number of bridges which are timber made, metallic, box culverts, pipe culverts as well as river banks that have been degraded, the state of water quality in rivers and the amount of waste/rubbish generated per new city.

Generally, cities have no existing public-private partnerships that are directed towards data governance, they have only partnerships with the Ministry of Local Government and other agencies.

Fifty (50%) of the staff positions across the various departments are not filled in all cities. This suggests that either the staff in these cities are overworked or some work is not done; this situation affects service delivery and data governance in particular. Most departments especially works and transport, natural resources, waste management and environment do not have a designated officer for handling statistical matters in their departments.

Lack of gadgets/data equipment was mentioned as the main challenge facing data production and management, followed by insufficient funding. The weighbridge equipment was specifically mentioned as one of the key pieces of equipment needed to collect data. Power infrastructure was mentioned but only in the northern region.
Each new city has its unique aspects and special attention is needed for specific data governance needs. For instance, Fort Portal is a designated tourism city and Hoima is a designated oil city and each of its data governance needs to be planned uniquely.

5.2 Key Lessons Learned from the Study on urban data governance

1.The concentration of DataGovernance (DG) Interventions at continental and national levels with a dearth of efforts at sub-national/city level:

ToroDev/ODA and other partners are learning that much of the work on data governance has been concentrated at the continental and national level interventions. At the regional (East African) level, efforts were minimal and the region urgently needed to enact a domestic DG policy framework. In Uganda, much work is at the national level and some work in the Kampala capital city (data protection, privacy and security awareness and advocacy, translation of audio data into other languages through AI, etc.), with a dearth of similar work spread in the other urban settings countrywide. However, this work now needs to be expanded to other new cities, to have a real impact of DG on citizens - who are ultimate sources of data and/or information that national governments use to design and implement development interventions to benefit them. The question is, how much resources and other synergies does it require? Which CSOs and other state agencies can collaborate to lead this process and what strategies need to be put in place?

2. CSOs' data production efforts lack uptake in the National Data System: :

CSOs are playing a big role in data production, but the uptake of such resources into Uganda's national statistics system is limited. The formalization of a quality assurance framework by UBOS and other stakeholders that can regulate the uptake of CSOs or citizens' generated data (CGD) is long overdue. Also, the goodwill of CSOs in data production for sustainable development, including efficient urbanization need to be urgently embraced by the government, since such organizations access a sizable amount of resources that can supplement limited public resources.

3. Too many stand-alone data systems by MDAs with limited interoperability:

MDAs desire new cities to centralize and/or streamline their data systems and governance frameworks, yet each of these MDAs is inclined to deploy their separate system platforms to collect and process data resources for their use. The question is, can the same MDAs accept to integrate their different standalone systems into a single platform for effective and efficient data sharing? Can these MDAs currently working with cities agree to standardize data collection methods and tools to be used at the city level? Can they agree to formulate a harmonized/integrated urban data governance framework for all cities in Uganda?

4. Uganda's new cities need to profile unique niches through dedicated data production strategies:

Largely, this study also revealed that new cities were involved in collecting administrative data dictated by system requirements of the line MDAs. Initiatives like profiling contextual datasets and/or information that articulate each city's specific niches were lacking. The Uganda Vision 2040 and the National Development Plan II and III give context of the need for elevation and/or creation of new cities in the country. Some of the cities were for strategic reasons like industrialization promotion, natural extractives exploitation, tourism and regional trade development, among others. However, on the ground, such city aspirations were not reflected in the current data production practices.

Therefore, questions arose out of this study; how can the new cities be supported to develop while aligning with their strategic reasons for creation? What resources are needed to support such new city development alignments? What approaches could be employed? For example, could the piloting of an industrial or a tourism or a natural extractive city or cities work, so that other new cities can learn from piloted ones to develop their respective niches?

5. CSOs could have substantial resources for cities to tap into to improve data governance regimes:
We also learnt that CSOs needed to deliberately work closely with new cities on data production. This will increase opportunities for incorporating quality data resources in routine decision and policy making. Cities are government entities in Uganda and, therefore, CSOs cannot have oversight over them. City authorities mainly collect
administrative data that is fed into MDAs generated and administered systems. Beyond the systems' framework requirements, many times dictated to them by different line MDAs, there is currently little else cities themselves do to produce data resources. Since there are no direct mandatory reporting mechanisms between CSOs and cities, when CSOs need data from the cities they often go to the field and collect it themselves. What if before going to the field to generate data CSOs approach new cities and request for joint data collection and also include in their budgets a facilitation of teams from the city authorities? Would this approach increase ownership and acceptability of generated datasets?

6. Urgent Need of Building a Strong PPP – Public Private Partnership on City Data Governance and Management:
Analysis showed an urgent need for a strong PPP intervention where city authorities, CSOs and the private sector combined synergies and/or resources to generate consistent reliable data on human population changes, markets, business output, and taxation as key for investors to decide on whether to establish specific business types in a particular city. Socioeconomic data, savings, and poverty rates among other indicators are important for banks, insurance companies and other businesses to establish in cities. This data may not be collected by a single stakeholder, for it requires considerable resources.

7. No new city had enacted a localized Data Governance (DG) policy:
The findings show that no single new city has put in place its localized data governance policy to domesticate national policies as yet, hence requiring support in this regard. A DG policy is a key framework to guide how data resources should be generated, analyzed, stored/protected, shared, and used to power investments and manage the order in the new cities. The balance between exploiting the opportunities of "missed use of data", while mitigating the dangers of "misuse of data" can only be well articulated in a localized/contextualized DG policy of a city.

8. Prioritizing ownership and capacity building to implement the City Data Strategies:
It was discovered from the baseline study that at least each of the 10 new cities had either a draft or approved data strategy for 5 years by the city council.

However, adequate awareness and mobilization of stakeholders in the new cities were not done in the drafting of these important documents. Many respondents, for example, expressed ignorance of the availability of such plans in some new cities. Others had failed to be approved by the city councils due to disagreements on the drafting between technical teams and political wings. Those new cities that had managed to approve such plans were frustrated by the fact that they did not have the resources and human capacity to operationalize them.

9. The national statistical office (UBOS) needs stakeholders' support to operationalize the data quality assurance framework in new cities:

The study found that even though UBOS had a legal mandate of maintaining a National Data/Statistical System and coordinating with government MDAs and other development partners on the same, a lot of loopholes that exposed such a system to inefficiency still existed. Guidelines/framework on data quality published by UBOS was not operationalized in many MDAs, including new cities. This compromised the trust, credibility and reliability of datasets produced by such agencies and cities. Moreover, the funding analysis of UBOS by the government, over the last 10 years, revealed the inadequacy of funding resources to the bureau, to address all the data/statistical quality challenges in all MDAs and local governments. Any credible engagements by stakeholders with UBOS for support in this regard might be a worthy contribution to addressing data quality assurance issues both in MDAs and new cities.

10.Before rushing into generating more big datasets, there is a need to first systematically organize what is currently available in cities:

With testimonies of how some datasets have supported planning for resources, say for refugee residents in Arua City to the enactment of waste management laws/policies in some cities, the potential uses for data was considerably understood. Therefore, there was a clear need to streamline existing data systems and policies in new cities, through intensive capacity building in data governance policies' formulation, implementation and evaluation. Also, orientation and training on the use of different platforms to generate, analyze, store and/protect and share existing datasets was a priority. These capacity- building efforts needed to be continuous, not sporadic or one-off events, as the case was, supported by different MDAs. Capacity building may also take the form of supporting the setting of time-bound, metrics-oriented goals for city departments, trust-building activities between different city departments on data sharing, exchange visits and benchmark activities between cities horizontally and vertically.

"There was a clear need to streamline existing data systems and policies in new cities"

5.3 Limitations & further areas of research

This study was a baseline and largely exploratory. Future studies may be done after reasonable interventions of data governance and management have been implemented in Uganda's new cities to determine if new or similar findings can emerge. These further studies may take approaches of cross-sectional or longitudinal designs if the research desires to find out the impact of time on influencing data governance and management interventions in the city authorities/public sector institutions. Other studies may also target a deep analysis of the functionality, acceptance, use and value delivery of several or some specific data and/or information systems mentioned in this current study. Such studies may reveal more insights that can help to improve data management systems and practices in Uganda's new cities.

The level of city residents' awareness of inherent risks in data sharing and their rights to data privacy may be another area of attention for future studies, for it was not adequately handled by the current study. Further researchers may also get interested in assessing the scope of coverage and applicability of the existing data governance laws and their implication on the emerging cities in Uganda and the Eastern Africa region, in general. A detailed study of the uniqueness of the earmarked strategic cities like tourism and natural extractives/oil to reveal the specific data value chains, enablers and any best practices, may also be of interest for future researchers in urban data governance in Uganda and the region.

5.4 General Recommendations of the Study

5.4.1 Strengthen Resources' Mobilization & Appropriating a Budget for Establishing City Data Ecosystems

The baseline survey revealed the challenge of limited funding for data governance at new city levels. In this regard, all cities recommended that a specific budget for statistics needs to be established to support data activities such as data collection, data security and protection, data updates, data management systems, specialized training and data sharing. With the funding from the government being small and limited to only administrative data, the need for external funding through partnering with non-state actors like CSOs is a requisite for all cities. Nevertheless, all cities showed commitment to partnerships that could supplement the existing resources geared towards data governance.

5.4.2 New Cities Need to Prioritize a Human Capital Development Framework for Urban Data Governance targeting Smart City Modelling

As noted from the FGDs at the city level, each city department deals with data, but there is no focal person at each department to manage this data, apart from the health department which has a biostatistician. With this, a data focal person per department was recommended by most of the cities. Data science skills innovations need to be established and supported in each city.
These may even include competitions to reward key innovations locally made to support data and evidence generation.

Also, the city structure has one position for a statistician who is overwhelmed with the city-level statistics. So, an adjustment in the city structure to allow more positions of statisticians/data scientists is recommended. Similarly, the establishment of a separate unit/department of statistics and/or data at the city level to handle specifically city statistics at all levels is relevant. Cities also recommended a national secretariat to manage national data.

5.4.3 Build a Centralized Data Management System & an Integrated Technological Infrastructure Framework

Cities reported that in some sectors, there is data collected periodically. For example, revenue data, roads and other works infrastructure and housing construction data. However, they lack a centralized/integrated data bank or system and a robust technology framework to enable easy access, sharing and use of such data resources. Moreover, there were no established, agreed and monitored methods and tools for uniform data collection, analysis, storage and sharing.

With these challenges existing, respondents recommended a central comprehensive or integrated automated data repository or system that combines all sub-systems and can be shared across all departments at the city level. This would eradicate the challenge of moving from one department to the other looking for data, ease data sharing and retrieval, with robust security and privacy measure in place. The city data center or portal for each new city was, therefore, recommended. The respondents also recommended a single system that could link all government MDAs - departments, ministries and agencies with cities and MoLG could pursue coordination of this matter with fellow MDAs.

Modern digital data collection equipment and ICT infrastructure layout is highly required by the city for proper data management. Tools such as GPS, smartphones, laptops, computers, a robust internet connectivity, satellites, digitalized street maps, and weighbridge machines for accurate waste measurements since now it is just based estimations, are among those urgently required by emerging cities in Uganda. Other specialized equipment, for example, tools for waste management through predictions like sensors installed on collection points and specialized environment conservation spatial data infrastructure, are key and were recommended for deploying in new cities.

5.5 Specific policy recommendations

5.5.1: Need for the Establishment of a National Urban Data Governance Technical Working Group

After stakeholders finding out that several MDAs were interested and generating a lot of data resources from new cities, for planning purposes at national and local levels, it is recommended that an inter-agency national urban data governance technical working

group be established to promote and control the quality of such data resources through, am others, fundraising, standardization of methods and tools, development of evidence use indicators for new cities, monitoring, evaluation and learning. Such a steering committee of experts could also handle issues of data interoperability. A national platform might also support urban data resource mobilization efforts. The Ministry of Local Government (MoLG) to coordinate this technical working group, due to the fact this it currently supervises the new cities.

5.5.2: Establishment of City Data Governance Steering Committees

Respondents expressed the need for a data governance steering committee for each new city comprised of representatives from technical, and political wings and the residents to be operationalized in the new cities to offer an oversight role. This would be actualized through constant monitoring, quarterly or bi-annual and annual evaluation activities to determine set outcomes of data and evidence use. The office of the City Town Clerk was recommended to coordinate the activities of the steering committee in each of the newly established cities.

5.5.3: Need to Review City Physical Plans for better digital data management

The study established the need to update and advance city physical planning standards to meet global standards, especially the generation and use of geo-spatial, satellite and sensory data. Also, revenue data seems to be manipulated, especially that which is related to physical plans and developments, and effective data governance guidelines/policies are needed to address such breaches that deprive city revenue growth. The national Data Governance Technical Working Group (DG-TWG) housed at MoLG, collaborating with relevant MDAs like Ministry of Lands, Housing and Urban Development (MoLHUD), NITA-U and others, was recommended to develop such standards to adopted/adapted by all new cities.

5.5.4: Enactment of City Context-Specific Data Governance Policies

Cities need to come up with by-laws that localize national and regional policies/laws. For example, regulations about data protection and security to prevent inhibition/demotivation of citizens from sharing data for effective city planning but also to prevent societal harm, procedures for data management, among others. The foregoing, should be an assignment of the city data governance steering committees. Respondents also recommended awareness campaigns on data protection laws at national and city levels by the PDPO, in collaboration with other state and non-state institutions like UN Pulse Lab Kampala, ODA and others. At city level, awareness campaigns on existing laws on data protection and personal privacy were also recommended. Cities were advised to seek collaborations with PDPO and other CSOs to raise awareness of residents about the same.

5.6 Specific Practice and Incentives' Recommendations

5.6.1 Need for a Data Governance & Management Advocacy Framework

The study established that there is a need for vigorous urban data governance advocacy through sensitization and orientation of staff and residents at the city level on data use by agencies like the Personal Data Protection Office (PDPO), UBOS and the NITA-U. Also, there is a need to incentivize available staff on data management. Attitude and mindset change on data use by city staff need to be prioritized. For example, data-use retreats and bench-marking exercises might support this endeavor. Also, putting in place a "city data use framework/policy" on how users should access various data and their sources could generate interest and desire to utilize such data by the respective staff. Furthermore, city residents from which data is collected need to be sensitized on the role of data in service delivery so that they can easily provide required data whenever they are reached, with explicit assurances on protecting their privacy.

5.6.2 Need to devise a feedback and data sharing mechanism for data subjects by cities & MDAs.

The study findings indicated that MDAs collect data from the city level but no feedback is given - at least in time. It is recommended that UBOS and others should share findings at the city level to allow easy access to relevant data for decision- making in such complex urban communities. Similarly, the respondent recommended the development of IT data-sharing tools to enable easy access to data. Also, it was recommended that technocrats at the city level be encouraged to share data and timeliness in data sharing. Moreover, respondents recommended the appropriate sharing of city reports. For example, reports from technocrats be copied to politicians, and political heads like mayors be given access to the financial data systems of the city.

5.6.3 Need for an improved working co-existence mechanism between political and technical leaders in new cities

All stakeholders that deal with data and those that require data needed to work together in harmony. This would allow proper data governance and management. As noted from the findings in some cities, there were tendencies of tension between the politicians and the technocrats in a few cities, on matters of data sharing which affected decision-making and service delivery. It is recommended that building a strong bond between these two groups is key for data governance through constant interactions. This can be done through proper sensitization, and policy debates on data use at the city level for politicians to easily access relevant city data from technocrats.

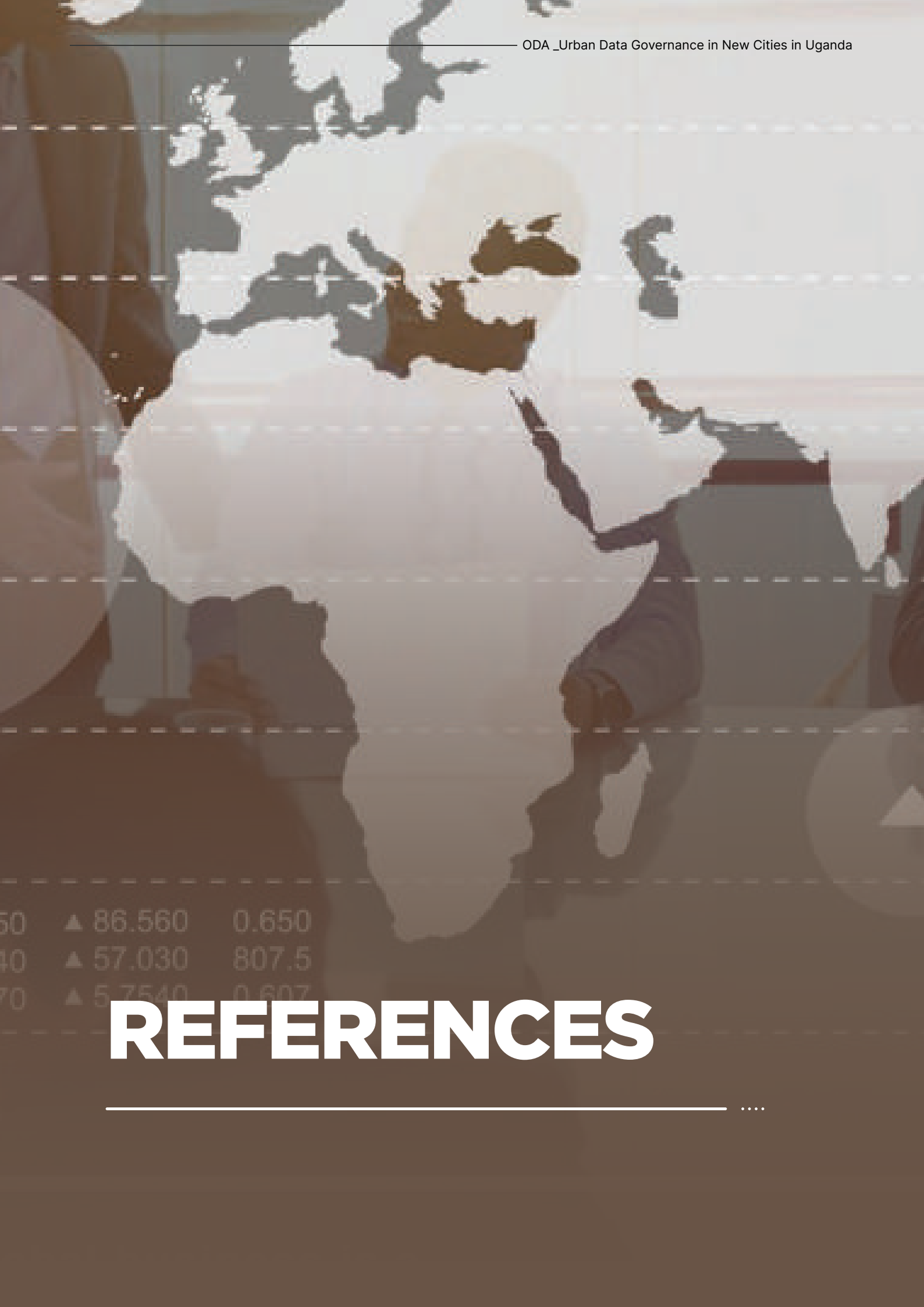
5.6.4 Need for national urban data standardization and Indicators of evidence used in new cities

The data collection and sharing need to be harmonized, and standard indicators in line with National Development Plan (NDP III) priorities on data and evidence use required to be developed for cities to follow.

5.6.5 Incentive through training and capacity building of staff and policymakers on data governance and management issues

The need to make data a priority, and conduct routine on-job training to enable easy adaptation to new digital technologies, changes in office roles, and support. UBOS is advised to revive its training activities and support cities with technical skills in data production. Capacity building for policymakers/councils on city governance is also urgently needed, like organizing benchmarking activities on other cities which performing well in urban data governance and management for sustainable smart city modelling within the region, continent and beyond. Another form of capacity building recommended on public-private partnerships building for cities to tap into the data governance resources that could be available at CSOs and private sector profit-making companies. The office of the City Town Clerk was identified to lead this process on training and capacity building.

There is a need for continuous training on the use of existing systems. Respondents revealed that they had some skills but these skills were not enough and needed to be improved. It was recommended that such training could start with town agents since they collect field data and enforce policies and regulations.



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APPENDICES

Appendix 1

Quantitative Data Collection: Questionnaire

Introduction

Recent innovations for data gathering and processing supported by increased digitization have demonstrated enormous capacity to enable rapid generation of evidence for sustainable decision and/or policymaking processes in any public institution. Technology is growing so fast in the world and Ugandan urban centers/cities cannot be left behind. Quality data is no longer a luxury but a necessity. How are cities prepared to manage such data resources? Secondly, everyone virtually now is becoming potential data producer, and National Statistical Offices like UBOS are reviewing their work methods and collaborations with non-state actors (e.g. private business companies and CSOs).

The new cities in Uganda are on pressure to improve quality services provision to residents, requiring enormous resources, yet there is a gap to understand contextually specific city data governance and management issues to inform such rapid decisions. Quality data resources are required to effectively and efficiently plan and manage routine decisions in such complex urban authorities. The need becomes even more particular in Uganda where national urbanization process is new and designed with strategic lenses.

Purpose of the Baseline Study

The overall objective is to support key stakeholders (UBOS, MoLG and cities) with knowledge that will enhance data governance (policies, regulations and guidelines) and data management (methods of work and practices) in the newly created cities for proper city planning and routine decisions.

1. Determine the unique, context-specific urban data governance attributes (incentives, practices and commitments) like for a typical tourism, natural extractives and new regional cities.
2. Understand the general consensus on preferred urban data collection and analysis methodologies and tools, data production cycles and data use systems in each of the new cities.
3. Examine the nature of specific city authorities' routine decisions and policymaking data and evidence needs including completeness, disaggregation and timeliness requirements.
4. Assess data and evidence management requirements, including specific tools/tech, human capacity needs and other related incentives to generate real-time data resources for new cities.
5. Evaluate how cities are enforcing data security, privacy and societal harm prevention measures in data use as prescribed by existing international, regional and national laws and regulations.
6. Make policy and practice recommendations for sustainable urban data governance in Uganda's new cities.

Targeted Respondents

This study is targeting City departments responsible for: housing and physical planning, transport/infrastructure, waste management and environment conservation, city local revenue

mobilization, and statistics. Therefore, this tool is to be administered to heads of departments or a member of the statistics committee in the responsible city department.

Instructions for completing this Tool-

1. This tool elicits for information on data governance from three aspects: systems, individuals and organizational
2. This tool should be completed by a member from the responsible department
3. Information provided should pertain to the whole department
4. This is a self-administered tool, but should be completed in the presence of the City Officer responsible for statistics, to provide clarification as may be required
5. On completion of the tool, the research team will visit each City an in consultation with the City Statistician/Planner will convene a Focus Group Discussion to clarify any issues that may arise.

Operational Definitions of Key Terms:

a) ***Data Governance:*** *a system of decision rights and accountabilities for information-related processes, executed according to agreed-upon models which describe who can take what actions with what Data/information, and when, under what circumstances, using what methods (DGI)*
b) ***Data:*** *raw facts measured or observed on a phenomena that are collected as a source of information and processed to form statistics*
c) ***Statistics:*** *means any quantity collected as a summary of processed data*
d) ***Data Management:*** *entire statistical process from the identification of needs, to the decision to collect or compile data, through to providing advice to the user*

Assurance for Confidentiality

All the responses provided will be treated with maximum confidentiality. The data will be analyzed to produce aggregates that will in no way reveal the identities of the respondents.

Respondent's Contact Details

Name of the City: ……

Name of the Department: ……

Name of the Respondent: ……

Designation: ……..

Telephone Contact: ……..

E-mail Address: ……

Date of Completion: ……..

PART ONE: SYSTEMS FOR DATA GOVERNANCE & MANAGEMENT

1.0 LEGAL/DEVELOPMENT/GUIDING FRAMEWORK FOR DATA GOVERNANCE & MANAGEMENT IN THE DEPARTMENT

1 Is there a legal framework guiding data/statistical production in your department?

Yes	
No *<<Skip to 5>>*	

2 If yes, is it a component of the LG Act? *State the exact section/name of the legal frameworks, etc*

……
……
……
……

3 Have you had difficulties applying the legal framework?

Yes	
No *<<Skip to 5>>*	

4 If Yes, what are the difficulties?

……
……
……
……

5 What development frameworks/policies guide data/statistical production in your Department?

No.	Name of the Framework/policy	Statistics/Indicators/data

6 What Guidelines/Manuals do you follow in managing data in your department?

No.	Guidelines/Manuals	Statistics/Indicators/Data

2.0 DATA MANAGEMENT PROCESS

7 Please list the main users of your departmental data/statistics

No.	User	Broad area of statistics	What they use them for

8 What are the known sources of data managed in and for your Department?

No.	Name of the Source	Broad area of Statistics/data	Primary tool used to capture data (*)	Person (s) responsible for Data provision	Person (s) responsible for Data collection
1.	*e.g. Landfill*	*Solid waste data*	*City data collection form*	*Secretary, XXX landfill Co. Ltd*	*Division Sanitation Assistant*

*Obtain a photo copy of the tools mentioned

9 How is data captured from the sources?

No.	Broad Area of Statistics	Mode of capture (Manual/Automated)	Frequency of data collection	Mode of delivery to the City Centre

10 When data are transmitted to the City Centre, how are they managed? Describe the process followed in terms of: action taken/how it's done, persons involved and software/channel used

a) Initial data validation/editing/cleaning/checks

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b) Data capture/software

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c) Data storage

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d) Data back-up

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e) Data security

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f) Data validation

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……
……

g) Data Analysis

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……
……

h) Quality Management (e.g. assessment, reviews, audits, etc)

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i) Dissemination and mode

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……

j) Ethical Considerations

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……

k) Data archiving

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……

l) Evaluation

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……
……

11 What are the existing databases/MISs that you use in managing data in your department?

Name of the Database/MISs	**Information/Data /Statistics Covered**	**Level of functionality** (High, Medium, Low)	**Date of installation in this City**	**Date of last review/ update**

12 How are the existing databases/MISs that you use in managing data in your department secured as a way of personal data protection?

……
……
……

13 State the number of computers/gadgets/devices in use for departmental work including statistics

Gadget	**Number in use**	**Is it adequate (Yes/No)**
Desktop computers		
Laptop		
Tablets		
GPS devices		
Other specialized devices *(list them)*		

14 Please state the main challenges affecting data/statistical production in your department?

……
……
……

15 Please state the main challenges affecting data governance and mangement in your department?

……
……
……

16 Please suggest any feasible strategies to improve data governance and management in this City?

……
……
……

PART TWO: INDIVIDUALS FOR DATA GOVERNANCE IN THE CITY

1. What are the technical staffing positions in your Department?

No.	Approved Position	Is it Filled (Yes/No)

2 Do you have a designated officer for handling data/statistical matters in your Department?

Yes *<<Skip to 4>>*	
No	

3 If No, how are data/statistical matters handled in your department?

……
……
……

4. If Yes in 2, does the officer have the requisite skills to handle data/statistical matters in the following areas: *Tick the most applicable*

No	Stage	High Skill	Medium Skill	Low Skill
	Determination of user needs			
	Design of data collection tools			
	Data collection			
	Data processing and analysis			
	Report writing			
	Dissemination of statistics			
	Monitoring the use/impact of statistics			

6. What other specialized technical areas does your department have the requisite skills/capacity to manage data/statistics in that department?

No.	Specialized Area	Statistics/Data produced

7. In what areas of data management does your department require capacity development?

……
……
……

8. Do you have any member in this department nominated on the City Statistics Committee?

Yes	
No	

9. To what extent is the Statistics Committee functional in this City?

Not functional	Less functional	Functional

10. Are you aware of the following concepts as used in new trends in data management?

Concept	Aware (Yes/No)
Citizen generated data	
Big data	
Open data	
Personal Data Protection and security	
Data Governance	

PART THREE: ORGANIZATIONAL DATA GOVERNANCE

1.0 STAKEHOLDERS FOR STATISTICAL/DATA PRODUCTION IN CITIES

1 Who are the stakeholders on statistical/data matters, for your department?

	Stakeholder	**Type of the stakeholder** (Producer, Financier, Implementing Partners, User, etc.)	**Level of Stakeholder Influence on the Department** (High, Medium, Low)	**Challenges in working with the stakeholders**

2 What are the existing statistical collaborations between your Department and other Departments, other Cities, line MDAs. *This should be in terms of nature of collaboration, key data/statistics mediating the collaboration, and level of formality*

City Department

……
……

Other Cities

……
……

Line MDAs

……
……

2.0 FUNDING FOR STATISTICS/DATA RESOURCES

3 What are the known source of funding (UGX) for statistical/data management?

Source	**Amount released for last FY**	**Amount for this FY**	**Intervention**
GoU-CG transfers			
GoU-City revenue			
Development Partner1			

Development Partner2			
Development Partner3			

3.0 DATA DEMANDED BY THE CITY

4 Please list the major/broad areas of data/statistics/indicators currently demanded from your department, by the City

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……

……
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……
……

5 Please list the statistics/indicators required for the running of the City/Department, but are not available.

Broad Statistics/ Indicator	Level of detail required	Purpose/reason for demanding	Reason for unavailability
Solid waste generated	*Tonnage generated by division*	*Deployment of garbage trucks*	*No tools to measure quantity*

6 What are the current data/statistical products in your Department (*Report where statistics are published, reports, abstracts etc*)

Product	Frequency of production	Last date of production	Mode of dissemination

4.0 QUALITY CONSCIOUSNESS IN DATA MANAGEMENT

7 Please rate the quality of statistics/data that your department is currently producing and are used by the City:
Rate (4 = High Quality, 3= Acceptable, 2= Medium, 1= Low Quality)

Indicator/ Data/ Statistics	**Accessibility**	**Relevance** *(Concepts, City Plans)*	**Accuracy** *(Completeness, Reliability, Consistency)*	**Timeliness** *(Punctuality, Frequency)*	**Interpretability** *(Meta data, comparability)*	**Coverage** *(disaggregation, inclusion)*

THANK YOU FOR YOUR COOPERATION

Appendix 2

Key Informants Interview Guide

Section A: Interview Questions for Central Government (MDAs) Key Informants

Name of the Informant ……

Designation……

MDA/Institution……

Contact……

Date of Completion……

Ask the following Questions

1. Describe the nature of technical support provided by your MDA/office to govern and manage data to the line Department in the Ugandan Cities?

2. Are there any reporting arrangements/data flow systems that exist between your MDA and line Department in the Cities? If yes, describe them. (in terms of policy requirement, implementation modalities, timelines, type of reports, information requirements, flow mechanisms)

3. If reporting requirements exist, what broad areas of information/data are required by this MDA?

4. Are the City Departments able to provide all the required information/data for reporting? How effective are the reporting mechanisms and tools?

5. Any form of incentives you envisage that that can improve data management city level in order to improve the mandate of your MDA?

6. What additional information/data is required by your office but the City authorities cannot provide?

7. Suggest any possible strategies that should be devised to improve the data governance and flow mechanisms between this MDA and the line City Department.

8. Are there data privacy and protection mechanisms in place or that you envisage should be put in place, in order to effectively govern data well?

Section B: Interview Questions for City Level Key Informants (Policy Leaders)

Name of the Informant: ……

Designation: ……

City: ……

Contact: ……

Date of Completion: ……

Ask the following Questions

1. Describe the nature of relationship/engagements between your office and the technical office responsible data for *e.g .physical planning*

2. Are there any information/data needed by your office from the *e.g. department*, in order to execute your roles effectively? If yes, what are those data/informational requirements?

3. What are the mechanisms/arrangements in place to ensure that your office obtains information/data from the responsible technical departments?

4. Are the mechanisms described in above effective? What should be done to improve them?

5. What suggestions can you give to improve data governance in your city?

Appendix 3

BASELINE STUDY OF URBAN DATA GOVERNANCE IN UGANDA
Focus Group Discussion (FGD) Guide for CSOs

Brief introduction

This tool is intended to capture data from the participants selected from CSOs. Some of the target CSOs include: Uganda National Academy of Sciences (UNAS), CIPESA, ACODE, POLLICY, Unwanted Witness and Pulse Lab-Kampala, etc. The interviewer should first introduce to the participants the purpose of the baseline study and how the findings will be utilized.

Focus Group Discussion Guide Questions

7. How does your CSO support cities to have data informed planning and decision making?

*[**Probe to find out**: Nature of support regulations in place for the cities, Nature of commitments on data access and use, existing collaborations between your CSO and the MDAs/City, Telecom companies, Radios, LCs) use, availability of Data Quality framework at City level and mechanisms of validation and incorporation of CGD (public and private) in government official data]*

8. What data does your CSO expect the city authorities to rely on in routine decisions and in proposing policy reforms?

*[**Probe to find out**: Data Completeness (name, age, location, education level, occupation, marital status etc.), Data granularity (short-term/rapid response data, medium use data and long-term use data), Data disaggregation (female, male, youth, children/infants, household leadership, income levels, transport usage trends, taxation trends, business types, etc.) and Data collection, analysis methodologies and tools (traditional versus digital or both]*

9. What incentives does your CSO provide to Cities to utilize data for governance and stewardship?

*[**Probe to find out**: Incentives to use data (staff capacities/skills, availability, simplicity, demanded by policymakers, its mandatory, its prestigious, it's digitized, career development, complexity of city services provision, etc.]*

10. What policy recommendations would your CSO make for effective urban data generation, management and utilization to inform policies in newly created cities.

*[**Probe to find out:** The specific incentives and/practices needed to be in place to model a sustainable context specific urban data governance regime, the synergies available and those needed between national and subnational data governance processes, influences and priority interventions that should be put in place, and lessons the MDAs have from elsewhere especially from regional players in Eastern Africa in influencing/presenting lessons for urban authorities in Uganda to learn from about sustainable data governance]*

11. What other comments would you like to give on behalf of your CSO concerning urban data governance?

Appendix 4

MAKERERE UNIVERSITY
SCHOOL OF PUBLIC HEALTH RESEARCH ETHICS COMMITTEE
W/23/45 Muhumuza

CLEARANCE CERTIFICATE **PROTOCOL NUMBER H100303**

PROJECT:	For a baseline study of urban data governance in Uganda.
INVESTIGATORS:	Prof. M. Muhumuza
DEPARTMENT:	Toro Dev.
DATE CONSIDERED:	2.8.2022
DECISION OF THE COMMITTEE:	Provisionally approved
NOTE:	

Unless otherwise specified, this ethical clearance is valid for 1 year and may be renewed upon application

Date: 23.8.2022 Chairperson

cc: Supervisor

>>
>>
>>>>>>>>>>>>>>>>>>>>>>>>

DECLARATION OF INVESTIGATOR(S)
To be completed in Duplicate and one copy returned to the secretary of the committee.

I/We fully understand the conditions under which I am/we are authorized to carry out the above mentioned research and I/We guarantee to ensure compliance with these conditions. Should any departure be contemplated from the research procedure, as approved, I/we undertake to resubmit the protocol to the committee. **I/we agree to a completion to a yearly progress report**.

Signature

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

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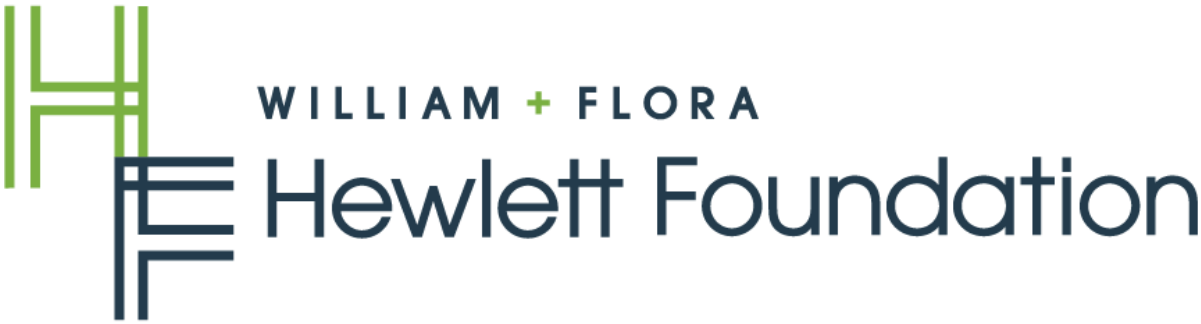
was generously funded by the Hewlett Foundation USA.



Contents detailed in this report are solely attributed to the authors.

For more information, please contact;

ODA - Open Data Analytics, an initiative of ToroDev & UNIRI
Plot 125 Mutesa II Road Ntinda, Kampala - UGANDA
E-mail: admin@opendata-analytics.org
Web: https://www.opendata-analytics.org