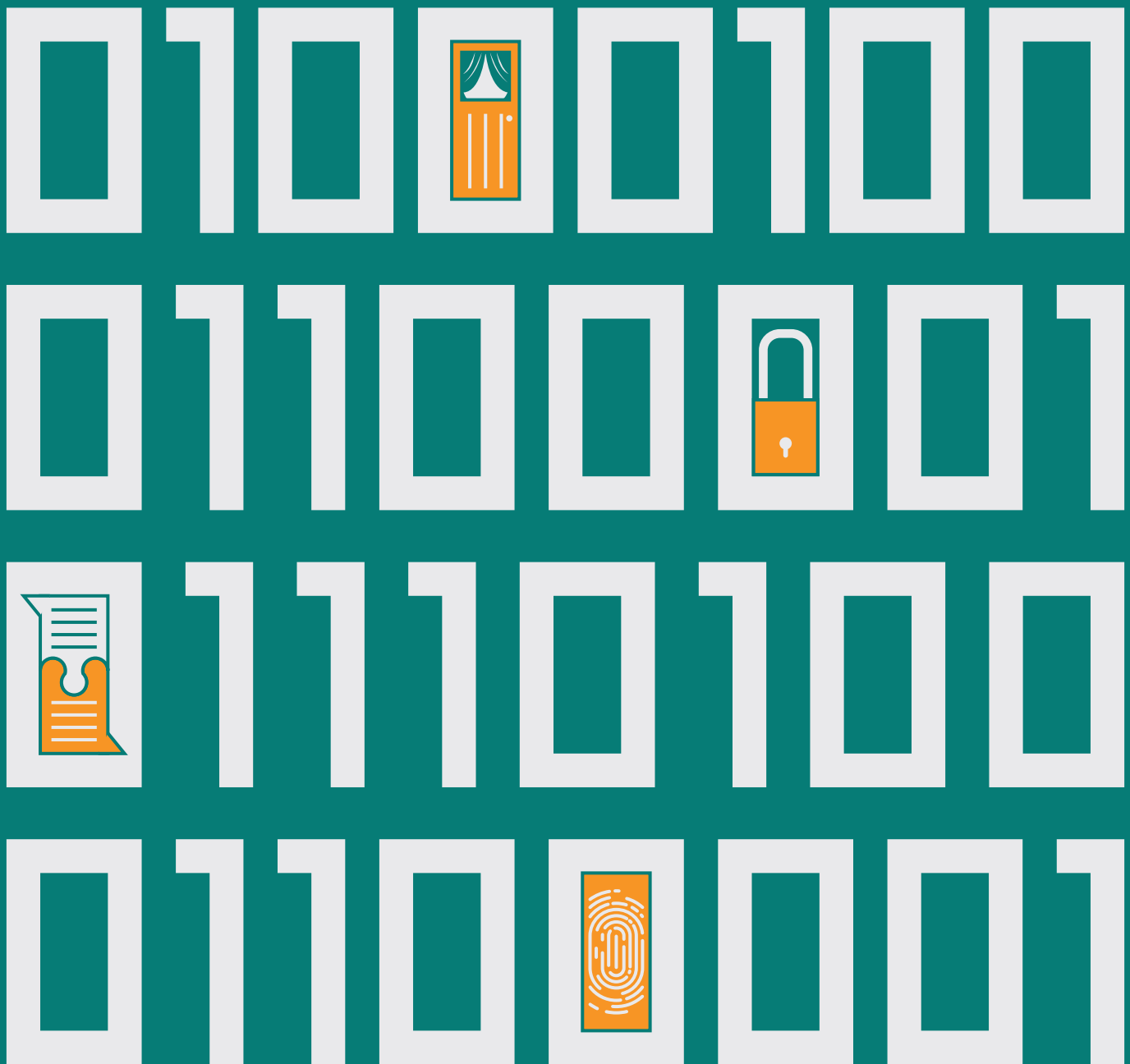


Understanding

data governance policies & practices

among public and private stakeholders in Uganda




A Case of the Economic and Labour Sector

Acknowledgements

We express our heartfelt gratitude to our funder, Ford Foundation, whose support made this project possible.

We also extend our sincere appreciation to the Uganda Ministry of Information, Communications, and Technology (MOICT), especially Amos Mpungu the Principal ICT officer, for the unwavering support throughout this study. Their guidance and assistance have significantly contributed to the success of this initiative.

We extend our profound gratitude to the participants from the eight cities, representing both the private and public entities in the economic and labour sector in Uganda. Their willingness to share expertise and experiences has been instrumental in shaping the outcomes of this study.



POLLLICY

Authors:

Bonaventure Saturday, Bonnita Nyamwire, Neema Iyer, Phillip Ayazika , and Amos Mpungu
November 2023

Suggested Citation

Saturday, B., Nyamwire, B., Iyer, N., Phillip, A., and Mpungu, A., (2023), Understanding Data Governance Policies And Practices Among Public And Private Stakeholders In Uganda: A Case of the Economic And Labour Sector.

Executive Summary

In today's rapidly evolving data-driven landscape, effective data governance is essential to maximise the value of data, mitigate risks, and reduce management costs. It encompasses processes, roles, policies, standards, and metrics that ensure efficient information usage, defining who can access data under specific conditions and how. The overarching aim of this study was to investigate understanding of data governance policies and practices among public and private stakeholders in the economic and labour sector in Uganda. To accomplish this, the study aimed to achieve three key specific objectives; firstly, to examine the experiences of stakeholders within this sector in relation to data governance policies and practices in Uganda; secondly, to investigate how these stakeholders engage with citizens in the context of data governance; and finally, to establish the extent to which gender inclusion is fostered within the data governance policies and practices of stakeholders in Uganda's economic and labour sector.

The study employed a mixed-method approach, combining qualitative and quantitative methodologies. Data collection utilised semi-structured surveys and key informant interviews, targeting individuals from various sectors across eight Ugandan cities: Mbarara, Fort Portal, Hoima, Gulu, Lira, Soroti, Mbale, and Kampala. A total of 681 participants from diverse employment backgrounds and 32 key stakeholders engaged in the formal data governance system responded to survey questions and participated in the key informant interviews respectively.

The study findings highlight several key aspects of data governance. Data in Uganda's economic and labour sector is collected by various entities, including government, research institutions, academia, and telecom companies. Data is gathered through traditional paper based and digital methods. Data storage primarily involves soft copies on digital devices, while some use cloud-based solutions, though personal device usage poses security risks. Access to data is controlled through formal processes and security measures like passwords and encryption. Data sharing occurs with third parties, sometimes formalised through agreements. A significant proportion, ninety three percent of the respondents and key informants lack awareness of data governance policies and regulations. Civic engagement in data governance activities is limited, with a few, eleven percent of respondents actively participating, indicating a gap in involving stakeholders in decision-making processes. Civil society organisations play a crucial role in advocating for sound data governance practices and raising awareness, yet integration of their data into the national system lacks a structured framework. While gender-disaggregated data collection is evident in some public and private entities, the absence of officers exclusively dedicated to overseeing gender and marginalised group data reveals a gap in prioritising gender inclusion. Challenges like limited funding for data collection, political interference, and the absence of standardised data collection systems pose significant obstacles to effective data governance. Among the key informants from the public and private entities, forty one percent of the key informants from the public and private entities, had undergone formal data governance training.

Recommendations to enhance data governance in Uganda's economic and labour sector include allocating more resources, appointing data protection officers, promoting data sharing and standardised reporting, fostering collaboration with Civil Society organisations and marginalised groups. It is also crucial to incorporate data governance in academic curricula, and providing technical assistance and capacity-building programs to the public and private entities.

Contents

ii	Executive Summary
01	List of Abbreviations
03	Introduction & Background
03	Data Protection Policies across Africa
03	Perspectives from Kenya and South Africa
04	Why Data Governance?
05	Data Governance in Uganda
06	Data governance and gender inclusivity
09	Methodology
10	Findings
11	How data governance is practised
12	Information provided to the respondents during data collection
17	Data disaggregation and gender inclusion
17	Civic engagement in data governance
20	Capacity building in Data Governance
21	Challenges encountered in data governance
22	Discussions and conclusions
24	Recommendations
25	Cited Works
30	List of key informant Interviews

List of Abbreviations

AI - Artificial Intelligence
AUDA/NEPAD - African Union Development Agency/New Partnership for Africa's Development
DHIS - District Health Information System
DPPA - Data Protection and Privacy Act
DPO - Data Protection Officer
EMIS - Education Management Information System
HMIS - Health Management Information System
ILO - International Labour organisation
LMIS - Labor Market Information System
MSMEs - Micro Small and Medium Enterprises
MUREC - Mildmay Uganda Research Ethics Committee
NGO - Non-Governmental organisation
NITA-U - National Information Technology Authority, Uganda
NSSF - National Social Security Fund
ODK - Open Data Kit
OGD - Open Government Data
PDPO - Personal Data Protection Office
POPIA- Protection of Personal Information Act
PWDs - Persons with Disabilities
SDG - Sustainable Development Goal
TIN - Tax Identification Number
UBOS - Uganda Bureau of Statistics
URA - Uganda Revenue Authority
UNCST - Uganda National Council for Science and Technology

Introduction & Background

The availability of data and advancements in data analysis technologies have brought about significant transformations in decision-making processes for governments and organisations.¹ Accessibility and utilisation of data have played a crucial role in bridging information gaps in operations of entities and strengthening the relationship between governments and its citizens.² Through the collection, processing, and analysis of data, decision-makers have gained valuable insights into complex challenges, enabling them to develop effective solutions that foster social justice and equity. The transformative potential of data-driven technologies has extended to various key sectors, including healthcare systems, financial services, education, governance, and public safety enhancing efficiency, accessibility, decision-making, ultimately benefiting society as a whole.

The growing trend of data utilisation has also brought forth risks concerning the integrity of information systems and data resources. These risks include data breaches, unauthorised access, privacy concerns, data manipulation, and the potential for misuse or abuse of personal or sensitive information.³ With the ease of information gathering facilitated by internet connectivity and digital devices, there is a pressing need for proper management and governance to prevent the risks.⁴ Failure to address these concerns through effective data governance could hinder the maximisation of data resources for the public good, economic development, gender inclusivity and labour justice.

Data governance is not only about control and data protection; it is also about enablement and crowdsourcing insights and is a requirement in today's fast-moving and highly competitive data ecosystem. As both public and private organisations have the opportunity to capture massive amounts of diverse internal and external data, they need the discipline to maximise that data's value, manage its risks, and reduce the cost of its management.⁵ Data governance is a collection of processes, roles, policies, standards, and metrics that ensure the effective and efficient use of information in enabling an organisation to achieve its goals. It establishes the processes and responsibilities that provide the quality and security of the data used across entities. Data governance defines who can take what action upon what data, in which situations, and using what methods.⁶

The development of robust data governance frameworks has been a global challenge faced by countries worldwide. This challenge has involved creating a comprehensive framework of policies, laws, regulations, and processes that govern the production and flow of data at both local and international levels. This includes establishing data governance policies that enable, guide, and hold the various stakeholders accountable for various aspects of data management, including collection, usage, storage, sharing, and protection and establishing regulators to enforce these guidelines.⁷ Additionally, the challenge also includes ensuring that data governance policies and practices reflect the needs and priorities of all individuals and communities, including those who may be most vulnerable to data-related harms.

¹ OECD. (2015). Data-Driven Innovation. Big Data for Growth and Well-Being. OECD Publishing, Paris. <https://doi.org/10.1787/9789264229358-en>

² UNCTAD, (2019). Digital Economy Report - Value Creation and Capture: Implications for Developing Countries, Geneva: UNCTAD.

³ Janssen, M., Brous, P., Estevez, E., Barbosa, L. S., & Janowski, T. (2020). Data governance: Organizing data for trustworthy Artificial Intelligence. *Government Information Quarterly*, 37(3), 101493.

⁴ Young, M., Rodriguez, L., Keller, E., Sun, F., Sa, B., Whittington, J., & Howe, B. (2019, January). Beyond open vs. closed: Balancing individual privacy and public accountability in data sharing. In *Proceedings of the Conference on Fairness, Accountability, and Transparency* (pp. 191-200).

⁵ Ramsden, Edward. "7 Best Practices for Data Governance." <https://cloudbridgesolution.com/blog/data-governance-best-practices>

⁶ Talend. "Definitive Guide to Data Governance." (n.d).

⁷ Abraham, R., Schneider, J., & Vom Brocke, J. (2019). Data governance: A conceptual framework, structured review, and research agenda. *International journal of information management*, 49, 424-438.

Data Protection Policies across Africa

With calls for African countries to jump on to the current advances of data driven economies, there has been some movements towards strategies and governance policies by governments that cover data. The African Union released the “The Digital Transformation Strategy for Africa 2020–2030”.⁸ This strategy should be understood in the context of the wider and more localised data governance and digitization challenges in different African countries. Across the African continent, there are efforts to strengthen data protection policies.⁹ According to United Nations Conference on Trade and Development (UNCTAD) 2022 data, 33 African countries (61%) have existing data protection laws, 6 nations (11%) have draft bills in progress, and 10 countries lack any legislation on data protection.¹⁰

The African Union Convention on Cyber Security and Personal Data Protection (known as the Malabo Convention) was adopted by AU member states in 2014.¹¹ It sets out to provide protections for cyber infrastructure, protection of personal information, cyber security and the necessary foundations to enable an information economy across the African continent. Even though ratified in 2014, only with 15 countries ratifying it as of 15th July 2023 that is Benin; Cape Verde; Côte d’Ivoire; Congo; Ghana; Guinea; Mozambique; Mauritius; Namibia; Niger; Rwanda; Senegal; Togo; Zambia; and Mauritania. The convention touches on many aspects that can form a unified foundation for African countries to benefit from the information economy. Without ratification, we have the reality that organisations and practitioners do not have a unified view on how to deploy data tools and for some countries the reality is much worse with very lax or non-existent protections.¹²

Perspectives from Kenya and South Africa

In neighbouring Kenya, the status of data governance policies is still evolving, but the country has made significant progress in recent years. In 2019, Kenya enacted the Data Protection Act 2019 (DPA), which is a comprehensive law that regulates the processing of personal data.¹³ The DPA aligns Kenya with international data protection standards and sets out principles and requirements for the collection, storage, use, and disclosure of personal data.

In South Africa, the enactment of the Protection of Personal Information Act (POPIA),¹⁴ a process that spanned several years, has sparked public discussions about data acquisition, the protection of personal information, and the subsequent use of data, particularly when it deviates from the original purpose of its collection. While the focus is often on personal data protection, it's important to recognize that data governance encompasses a broader spectrum of human and organisational factors that data interacts with. To effectively govern this entire process, countries need a comprehensive understanding of the various stages and the roles and responsibilities of governments in relation to data scientists, as well as the responsibilities of data scientists towards the general public.

⁸ African Union. (2020). The digital transformation strategy for Africa (2020–2030). Addis Ababa. https://link.springer.com/chapter/10.1007/978-3-031-24498-8_7#ref-CR5

⁹ Vukosi M. (2023). More Than Just a Policy: Day-to-Day Effects of Data Governance on the Data Scientist. Springer EBooks, 155–177. https://doi.org/10.1007/978-3-031-24498-8_7

¹⁰ Ayalew, F.E (2023) The African Union’s Malabo Convention on Cyber Security and Personal Data Protection enters into force nearly after a decade. What does it mean for Data Privacy in Africa or beyond?. Ejil Talk. <https://www.ejiltalk.org/the-african-unions-malabo-convention-on-cyber-security-and-personal-data-protection-enters-into-force-nearly-after-a-decade-what-does-it-mean-for-data-privacy-in-africa-or-beyond/#:~:text=According%20to%20the%20United%20Nations,no%20legislation%20on%20data%20protection>

¹¹ African Union (AU). (2014). African Union Convention on Cyber Security and Personal Data Protection_African_Union._Au.int. https://au.int/sites/default/files/treaties/29560-treaty-0048_-_african_union_convention_on_cyber_security_and_personal_data_protection_e.pdf

¹² Vukosi M. (2023). More Than Just a Policy: Day-to-Day Effects of Data Governance on the Data Scientist. Springer EBooks, 155–177. https://doi.org/10.1007/978-3-031-24498-8_7

¹³ Galvin, H. K., & DeMuro, P. R. (2020). Developments in privacy and data ownership in mobile health technologies, 2016–2019. Yearbook of medical informatics, 29(01), 032–043.

¹⁴ Government Gazette REPUBLIC OF SOUTH AFRICA. (2013). https://www.gov.za/sites/default/files/gcis_document/201409/3706726-11act4of2013protectionofpersonalinforcorrect.pdf

The African continent has seen significant progress in the ICT sector, but it grapples with the dominance of major tech giants like Microsoft, IBM, Google, and Facebook whether through physical presence or the provision of cross-border services. The data governance landscape faces a substantial skills gap, especially of data management, data ethics, and privacy protection. Research conducted by Sey and Mudongo¹⁵ in 2021 underscores this lack of awareness about the importance of AI and data governance skills. The continent risks being just a source of data to build services that then are used by citizens without any local development of these services. This has been recently brought to bear with how Facebook only has 13% of its abuse team (which fights abuse on their online platforms) working on non US content, even though 90% of Facebook users are outside the US.¹⁶ This sheds light on the limited research and development activities conducted by these Big Tech firms on the African continent.¹⁷ Thus the need for concerted efforts to nurture data skills across the continent.

Why Data Governance?

Governments aim to leverage the "value creation in the information age" for economic development and growth.¹⁸ To achieve this, they recognise the need for governance over the collection, use, and flow of data, which must encompass every facet of the Data Science life cycle, which typically consists of several stages, each aimed at turning data into valuable insights and actionable outcomes.¹⁹ Historical drives towards digitisation, especially in African countries, have elevated the prominence of data governance. Governments are apprehensive that failing to seize the data opportunity could lead to missing out on another avenue for economic development. The challenge arises when tailoring data governance to the specific needs of individual countries, as inadequate governance in this sphere jeopardises the full potential of the information economy for both the public and private sectors.

This risk is compounded by the deployment of products that may not align with the values of a nation's citizens, potentially causing harm. Examples of falling short include inadequate privacy protections,²⁰ restrictions on data usage, regulation of potentially harmful data-driven products,²¹ guidelines on data sovereignty,²² and decisions on how specific data sets should be treated as public goods for sharing within or outside a country.²³

Effective data governance extends beyond the initial data creation stage; it should permeate the entire data science cycle.²⁴ Moreover, robust data governance relies on decision makers in both the public and private sectors having contextual knowledge of the Data Science cycle, including data, modelling, algorithms, and more.²⁵

¹⁵ Sey, A., & Mudongo, O. (2021). Case studies on AI skills capacity building and AI in workforce development in Africa

¹⁶ Purnell, N., Scheck, J., & Horwitz, J. (2021). Facebook employees flag drug cartels and human traffickers. The Company's Response Is Weak, Documents Show. <https://www.wsj.com/articles/facebook-drug-cartels-human-traffickers-response-is-weak-documents-11631812953>.

¹⁷ Gillwald, A., & van der Spuy, A. (2019). The governance of global digital public goods: Not just a crisis for Africa. GigaNet.

¹⁸ Nyamwena, J., & Mondliwa, P. (2020). Policy brief 3: Data governance matter lessons for South Africa.

<https://www.competition.org.za/ccred-blog-digital-industrial-policy/2020/7/28/data-governance-matters-lessons-for-south-africa>

¹⁹ Borgesius, F. Z., Gray, J., & van Eechoud, M. (2015). Open data, privacy, and fair information principles: Towards a balancing framework. *Berkeley Technology Law Journal*, 30(3), 2073–2131

²⁰ Osakwe, S., & Adeniran, A. P. (2021). Strengthening data governance in Africa

²¹ Metcalf, J., & Crawford, K. (2016). Where are human subjects in big data research? The emerging ethics divide. *Big Data & Society*, 3(1), 2053951716650211

²² Hummel, P., Braun, M., Tretter, M., & Dabrock, P. (2021). Data sovereignty: A review. *Big Data & Society*, 8(1), 2053951720982012

²³ Borgesius, F. Z., Gray, J., & van Eechoud, M. (2015). Open data, privacy, and fair information principles: Towards a balancing framework. *Berkeley Technology Law Journal*, 30(3), 2073–2131

²⁴ Ibid

²⁵ Kearns, M., & Roth, A. (n.d.). Ethical algorithm design should guide technology regulation. The Brookings Institution. <https://www.brookings.edu/research/ethical-algorithm-design-should-guide-technology-regulation>

A crucial consideration here is that regulating industries becomes more challenging when gatekeepers lack a foundational understanding of what occurs within the Data Science cycle. This becomes particularly important when contrasted with well-established regulatory bodies in certain sectors, such as finance, which typically comprise experts in the field. These financial regulators are responsible for mitigating corruption and harm by establishing best practices, limitations, and penalties for regulatory breaches.

One of the challenges posed by many contemporary data-driven products is the limited experience of decision makers involved in deploying these tools within the field. They often perceive the inner workings of these technologies as a black box that ingests data and seemingly conjures answers by magic. This highlights the necessity for fundamental regulations that guide the development of data-driven products, prompting the right questions to be asked. Moreover, it underscores the importance of fostering a collective understanding of the field that extends beyond experts to encompass the broader population.

Data Governance in Uganda

Data produced in Uganda is primarily concentrated in the economic sector (20%), followed by social and business sectors (both at 13%), health (11%), education (8%), and governance (7%).²⁶ Official sources of data contribute to 75% of the data produced within the ecosystem, underscoring the crucial role of official statistics in driving development data.²⁷ Notable official data sources in Uganda include the banks, specifically the central bank; Bank of Uganda, ministries including Ministry of Education, Health, as well as that of Finance, Planning, and Economic Development. The national statistics office, Uganda Bureau of Statistics (UBOS), contributes 40% of this data.²⁸

Methods of generating data used in Uganda are mainly surveys that contribute more than half (60%) of the data generated within the national statistical system. The other data collection forms used include census, administrative data where administrative data accounts for 30%. In terms of accessibility, approximately 90% of primary datasets are publicly accessible, either in paper or electronic format, with the majority available online. However, a significant portion (72%) of these datasets are not provided in machine-readable formats.²⁹ When data is made available in formats that are not machine readable, users cannot easily access and modify the data which then severely restricts the scope of data use.

Significant improvements have been observed in data governance practices in Uganda especially in the health and education sectors. The Ministry of Health, which is responsible for 11% of the country's data production,³⁰ has made notable progress in data management. They utilise the Health Management Information System (HMIS) and the District Health Information Systems I and II (DHIS I and DHIS II) to collect and manage data from healthcare facilities on a routine basis. This includes data on patient demographics, health outcomes, and healthcare utilisation. The DHIS II system also facilitates community data collection through Village Health Teams, who submit data to health facilities for entry into the HMIS. This comprehensive data management approach in the health sector supports evidence-based decision-making and planning.³¹ On the other hand, in the education sector, which contributes to 8% of the country's data production, the Education Management Information System (EMIS) has been deployed to collect data from schools, education offices, and other relevant entities. The EMIS captures data on student enrolment, attendance, teacher information, and infrastructure.

²⁶ Ntawiha, W., & Anderson, B. (2016). Uganda's data ecosystem Part one: A quantitative review of data production in Uganda. Development Initiatives. <https://devinit.org/wp-content/uploads/2016/05/Uganda-Data-Ecosystem-Report-Part-One.pdf>

²⁷ Ibid

²⁸ Ibid

²⁹ Kaggwa, G. (2020, February 12). HEALTH MANAGEMENT INFORMATION SYSTEM IN UGANDA. The International Agency for the Prevention of Blindness. <https://www.iapb.org/news/health-management-information-system-in-uganda/>

³⁰ Ibid

³¹ Ibid

The rise in both formal and informal employment has led to a significant increase in the volumes of data being generated in the labour and economic sector. This surge in data generation highlights the importance of effective data governance policies and practices in the sector. The increasing availability and utilisation of data in Uganda's economic and labour sector have the potential to drive social justice, equity, and economic development as well as contribute to achieving SDG 10 (Reduced Inequalities). By leveraging the data, decision-makers can make informed choices that promote fair wages, improved working conditions, and equal opportunities for all.³² Additionally, data-driven strategies can enhance transparency, accountability, and evidence-based decision-making, leading to more equitable resource allocation and effective policy implementation.³³

Uganda has made notable advancements in data governance in recent years exemplified by the establishment of the Personal Data Protection Office (PDPO) as an independent entity under the National Information Technology Authority, Uganda (NITA-U). The PDPO plays a crucial role in overseeing the implementation and enforcement of the Data Protection and Privacy Act No. 9 of 2019.³⁴ The establishment of the Personal Data Protection Office (PDPO) in Uganda has marked significant milestones in various aspects like creating an enabling environment for privacy, respectful, and ethical data sharing for social good.

In spite of these milestones, the economic and labour sector, responsible for 20% of data production in Uganda, lacks a well-developed and comprehensive data management system. Data is mainly collected and managed through labour market surveys, National Population and Housing Census, social security systems and among others, the partially developed Labor Market Information System (LMIS) by the Ministry of Gender, Labor and Social Development.³⁵ Additionally, the Uganda Revenue Authority (URA) system, has also played a vital role in data collection related to taxation, revenue figures, and other financial aspects within this sector. The lack of a comprehensive data governance system has hindered the harmonisation and interoperability of all data collection and management systems. The absence of a strong data management infrastructure can lead to issues in data governance, such as maintaining data consistency, accuracy, and compliance with data protection regulations.³⁶ A robust data management system is a fundamental component of an effective data governance framework as it ensures data quality, accessibility, and security.

Data governance and gender inclusivity

Data governance plays a crucial role in shaping inclusive and equitable societies. By integrating gender considerations into data governance frameworks, organisations and governments can work towards addressing gender biases, promoting gender equality, and ensuring the inclusion of diverse gender perspectives.³⁷ Furthermore, effective data governance practices can also contribute to achieving SDGs such as SDG 10: Reduced Inequalities and SDG 5: Gender Equality. By ensuring that data is collected and managed in a transparent, accountable, and inclusive manner, data governance can help identify and address inequalities, and promote equal opportunities for all.

³² Taylor, L. (2017). What is data justice? The case for connecting digital rights and freedoms globally. *Big Data & Society*, 4(2), 2053951717736335.

³³ Van Ooijen, C., Ubaldi, B., & Welby, B. (2019). A data-driven public sector: Enabling the strategic use of data for productive, inclusive and trustworthy governance

³⁴ Boshe, P., Hennemann, M., & von Meding, R. (2022). African Data Protection Laws: Current Regulatory Approaches, Policy Initiatives, and the Way Forward. *Global Privacy Law Review*, 3(2).

³⁵ International Labour Organization. (2020). Free Movement of Persons and Transhumance in the IGAD Region: Improving Opportunities for Regular Labour Mobility An assessment of labour migration and mobility governance in the IGAD region Country report for. https://www.ilo.org/wcmsp5/groups/public/---africa/---ro-abidjan/---sro-addis_ababa/documents/publication/wcms_743324.pdf

³⁶ Stedman, C. (2022, May). What Is Data Governance and Why Does It Matter? *SearchDataManagement*. <https://www.techtarget.com/searchdatamanagement/definition/data-governance>

³⁷ Badiee, S. (2020). Gender Data Governance and Official Statistics Counted and Visible: Global conference on the measurement of gender equality and intersecting inequalities. <https://data.unwomen.org/sites/default/files/documents/gender%20and%20intersecting%20inequalities/docs/presentations/2.8.1.%20Open%20data%20watch.pdf>

Gender data gaps are a critical aspect that intersects with data governance. Gender data gaps refer to the lack of gender-disaggregated data, which prevents a comprehensive understanding of gender dynamics and impedes evidence-based policymaking.³⁸ The absence of gender-specific data hinders the identification of gender disparities, the evaluation of the impact of policies on different gender groups, and the development of targeted interventions. Gender data is important in measuring progress towards gender equality and women's economic empowerment.³⁹

Stakeholders such as civil society, donors, and international organisations play a crucial role in advocating for comprehensive and robust data collection and dissemination to inform gender-inclusive policies and interventions focusing on the supply side of gender data, highlighting initiatives, players, and data sources at the global level. Similarly, the collection of gender data results in production of statistics on issues where inequalities exist due to gender. This emphasises the importance of collecting and analysing data related to gender identity in a suitable manner.⁴⁰ While the research study of Villa⁴¹ emphasised the supply side of gender data, such as initiatives, players, and data sources at the global level, there is limited exploration of the demand for gender data and understanding the specific needs of data users who rely on this data for decision-making. By examining the gaps and requirements from the perspective of data users, this research study aims to provide valuable insights into improving the availability and usability of gender data, ensuring that it meets the specific needs of those who rely on it, especially in the development of data-driven policies and interventions that promote gender inclusivity.

One prominent issue within data governance is the presence of gender bias. This bias can manifest in various ways, including the underrepresentation of women in decision-making roles, gendered assumptions embedded in data collection and analysis, and the perpetuation of gender stereotypes through data-driven policies and algorithms. There are inherent gender-related biases within global surveys.⁴² The biases were primarily attributed to missing data across various gender dimensions, an imbalanced and incomplete representation of population groups, and biased methods of collecting and utilising gender data.⁴³

Similarly, the limited availability and biases present in gender data collection and analysis have been highlighted in previous studies.⁴⁴ This scarcity and bias hindered effective addressing of women's needs and resource allocation. The research study by Iyer⁴⁵ revealed the neglect of collecting essential data for marginalised groups, further marginalising women within these identities. Through an examination of data utilisation practices and challenges, the significance of robust data governance frameworks in empowering women and fostering gender inclusivity in Africa is crucial.⁴⁶ Furthermore, there is a significant risk of gender biases in the data algorithm process.⁴⁷ These biases were attributed to human biases and data collection artefacts that remained concealed during the data training process. While the neglect of marginalised groups in data collection is acknowledged by Iyer,⁴⁸ it falls short in providing an in-depth exploration of the underlying reasons and potential solutions to address this issue.

³⁸ Sperber, S., Täuber, S., Post, C., & Barzantny, C. (2023). Gender Data Gap and its impact on management science—Reflections from a European perspective. *European Management Journal*, 41(1), 2-8.

³⁹ Villa, F. F. (2019, June). The landscape of gender data mapping players and initiatives by themes. *Data2x.org*; [data2x.org](https://data2x.org/wp-content/uploads/2019/11/Gender-Data-Landscape.pdf). <https://data2x.org/wp-content/uploads/2019/11/Gender-Data-Landscape.pdf>

⁴⁰ World Health Organisation (2021). Integrating gender data in health information systems: challenges, opportunities and good practices. Copenhagen: WHO Regional Office for Europe;. Licence: CC BY-NC-SA 3.0 IGO.

⁴¹ Villa, F. F. (2019, June). The landscape of gender data mapping players and initiatives by themes. *Data2x.org*; [data2x.org](https://data2x.org/wp-content/uploads/2019/11/Gender-Data-Landscape.pdf). <https://data2x.org/wp-content/uploads/2019/11/Gender-Data-Landscape.pdf>

⁴² Weber, A. M., Gupta, R., Abdalla, S., Cislighi, B., Meausoone, V., & Darmstadt, G. L. (2021). Gender-related data missingness, imbalance and bias in global health surveys. *BMJ Global Health*, 6(11), e007405. <https://doi.org/10.1136/bmjgh-2021-007405>

⁴³ Ibid

⁴⁴ Iyer, N., Nyamwire, B., & Nabulega, S. (2020). Alternate realities, alternate internets.

⁴⁵ Ibid

⁴⁶ Ibid

⁴⁷ Castaneda, J., Jover, A., Calvet, L., Yanes, S., Juan, A. A., & Sainz, M. (2022). Dealing with Gender Bias Issues in Data-Algorithmic Processes: A Social-Statistical Perspective. *Algorithms*, 15(9), 303. <https://doi.org/10.3390/a15090303>

⁴⁸ Iyer, N., Nyamwire, B., & Nabulega, S. (2020). Alternate realities, alternate internets.

By examining the specific challenges faced by minority groups in accessing and participating in data collection processes, our research study aims to contribute to a comprehensive understanding of the barriers and develop strategies to overcome them. Inclusive participation and representation are vital elements of gender-inclusive data governance. It is crucial to ensure that diverse voices, including women and marginalised gender groups, have opportunities to participate in decision-making processes and are adequately represented in data governance structures.⁴⁹ Inclusive participation enhances the legitimacy and effectiveness of data governance frameworks, as it brings diverse perspectives, experiences, and expertise to the table. Promoting gender inclusivity in data governance requires creating spaces for participation, addressing barriers to entry, and adopting inclusive and transparent decision-making processes.⁵⁰ While the literature acknowledges the significance of gender inclusivity in data governance, there remains a research gap in understanding the practical implementation and impact of gender-inclusive data governance frameworks.

The purpose of this study was to find out the understanding of data governance policies and practices among public and private stakeholders in the economic and labour sector in Uganda.

Specifically, the study aimed at the following objectives:

1. To explore experiences of stakeholders in the economic and labour sector with data governance policies and practices in Uganda.
2. To find out how stakeholders involve citizens in data governance practices.
3. To establish how stakeholders in the economic and labour sector foster gender inclusion in the data governance policies and practices in Uganda.

⁴⁹ Colaço, R., & Watson-Grant, S. (2021). A Global Call to Action for Gender-Inclusive Data Collection and Use. <https://doi.org/10.3768/rti-press.2021.pb.0026.2112>

⁵⁰ Chao, V. (2019, April 20). Gender Data and Analysis: Gateway for Inclusive National Climate Action. www.ndcs.undp.org. https://www.ndcs.undp.org/content/ndc-support-programme/en/home/impact-and-learning/ideas-and-insights_/20190/gender-data-and-analysis--gateway-for-inclusive-national-climate.html

Methodology

Through both qualitative and quantitative approaches, data was collected using a semi-structured survey and key informant interviews to understand data governance policies and practices among public and private stakeholders in the economic and labour sector in eight cities in Uganda namely; Mbarara, Fort Portal, Hoima, Gulu, Lira, Soroti, Mbale, and Kampala. Data was collected from a representative sample of workers in the formal and informal sector as well as key stakeholders in the economic and labour sector in Uganda.

The eight cities were selected because of the emerging technological innovations that drive the use of data to support the thriving of city settings economically, and socially as well as evidence-based decision making for smart cities' discourse. Additionally, governing various types of data has become an essential, albeit challenging task, since government and CSOs must justify and launch new strategies, structures, policies, and processes.

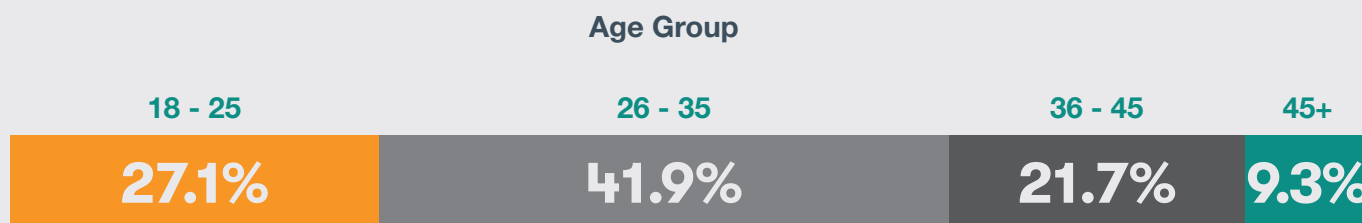
To ensure the study captured a diverse range of perspectives and experiences, we used proportionate to size sampling to distribute the sample according to the working population in the eight cities. Thus 28 of 681 interviewees were from Fort Portal, 53 from Mbarara, 29 from Hoima, 51 from Gulu, 51 from Lira, 76 from Mbale, 17 from Soroti and 376 from Kampala. Convenience sampling was used to select individuals aged 14-64 years employed in both private and public entities in the economic and labour sector within the eight cities and a total of 681 interviewees responded to questions about data governance in a survey format.

Stakeholders in the public and private sector involved in the implementation of data governance policies and practices in Uganda, including government entities, civil society organisations, telecom companies, academia, and international bodies were purposely selected to respond to key informant stakeholder interviews. A total of 32 Key informant interviews were conducted across the eight cities.

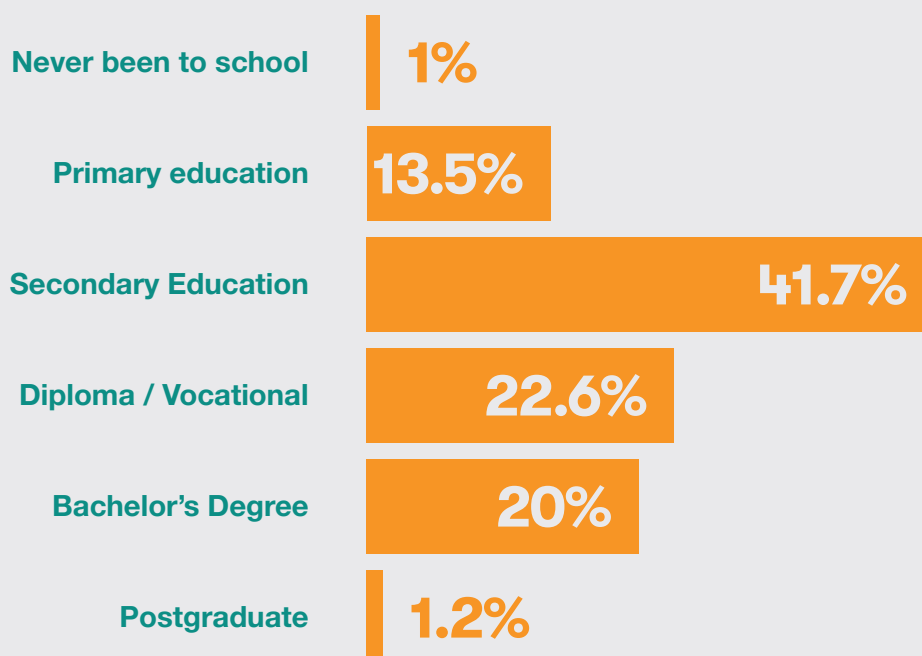
This study is funded by Ford Foundation. Ethical approval was obtained from an accredited Ethics Review Committee, Mildmay Uganda Research Ethics Committee (MUREC), and Uganda National Council for Science and Technology (UNCST). Thus all data collection procedures and data tools followed the approved protocol and data collection tools.

Findings

Demographic characteristics of the respondents N=681



Highest level of education completed



In total, 681 individuals who were either employed in the private and public sector or self-employed responded and completed a survey that was administered by trained interviewers. A majority of respondents, sixty four percent identified as female and had attained some level of education, with forty two percent having completed secondary education. There was a higher representation of female respondents in this research and this could be attributed to the method of sampling we used for this research; convenience sampling, a non-random sampling method whose sampling frame is based on people who were willing at the time and place that the interviewers were present collecting data. Moreover, twenty three percent and twenty percent had obtained a diploma and first degree qualification, respectively, indicating a notable proportion of respondents with higher education qualifications.

How data governance is practised

Data collection

Data collection within the economic and labour sector in Uganda is done by several key stakeholders who play significant roles in gathering, analysing, and utilising data to inform policies and decision-making. Based on respondents' perceptions and experiences of data collection, storage, and security, the study findings revealed that the majority of data collection, eighty five percent, is carried out by government entities, including city divisions, wards, town agents, etc, and thirty eight percent by research institutions or academia telecom companies, twenty three percent indicating their significant roles in shaping data governance practices. Furthermore, the involvement of civil society organisations, research institutions, and digital labour platforms in data collection highlights the importance of multiple perspectives and approaches in understanding and improving data governance in this sector.

Understanding the types of data collected is essential to grasp the depth of information sought from individuals in the labour and economic sector. Majority of the respondents, ninety eight percent, mentioned that data is commonly collected about information that identifies individuals such as names, age, telephone contact, sex/gender, date of birth, residence/location, email addresses, occupation details, signatures and marital status, which signifies the central role personal identification and record-keeping. Education level, next of kin, and National ID numbers, and information about parents, relatives, or dependants were additional personal data that are collected to a lesser extent, while biometrics and health status are the least commonly collected type of data since such data points are subject to a more selective data collection process.

The findings from the key informants revealed a diverse range of data types they collect in the economic and labour justice sector. Administrative data is commonly collected such as tax information, tax feedback, revenue figures, and company details, which is vital for revenue assessment and regulatory compliance. Data is also collected on staff performance, workplace conditions and human resources data which is essential for personnel management and organisational effectiveness. Furthermore, they collect data on client profiles, aiding in understanding and serving their needs effectively. This includes financial data like bank statements and reports, which are critical for financial transparency and decision-making. Data regarding beneficiaries of government initiatives such as the parish development model is collected which helps in tracking progress and improving such initiatives. Data on event participants collected also allows for effective communication and engagement with various organisations. These findings underline the significance of data collection in promoting transparency, accountability, and informed decision-making in the sector. However, there are challenges that persist in the data collection process such as data subjects being reluctant to share their information as well as collecting data from far to reach remote areas.

How data is collected from data subjects

Data collection methods are the fundamental building blocks upon which the entire foundation of data governance is constructed. Data collection methods play a pivotal role in shaping the quality and reliability of data collected in the economic and labour sector.⁵¹ A majority, eighty one percent of the respondents mentioned that data is collected from them, through traditional paper-based approaches, utilising questionnaires, focus group discussions, and manual record-keeping which signifies the need for improved digital data collection infrastructure in the data governance landscape in the sector.

⁵¹ Abraham, R., Schneider, J., & Vom Brocke, J. (2019). Data governance: A conceptual framework, structured review, and research agenda. *International journal of information management*, 49, 424-438.

Reliance on technology during data collection was mentioned by fifty nine percent, with data being recorded on phones or digital devices utilising more advanced digital data collection methods, such as Kobo Collect and ODK (Open Data Kit), to streamline their data acquisition processes. Moreover, self-interviews and observational methods like direct observation and field visits were also mentioned to be utilised but on a small scale. Documentary review was also mentioned by key informants to play a significant role in data collection, enabling stakeholders to access and analyse relevant information from various written sources.

The key informants also mentioned that data collection also involves the use of standardised templates provided by government departments, including the Ministry of Gender, Labour, and Social Development (MGLSD) and the Uganda Bureau of Statistics (UBOS). These templates contain specific fields, questions, or guidelines for gathering and organising data in a structured and consistent manner. Using such standardised templates ensures that data collection follows a consistent and regulated approach, making it easier to compare and analyse the data across different sources and over time in the sector.

Information provided to the respondents during data collection

Providing information to data subjects is crucial in data governance, as it ensures transparency and accountability in data collection and processing. It empowers the data subjects by giving them an understanding of how their data will be used and protected.⁵² Notably, details to identify the entity collecting the data and their contact information are the most commonly provided, accounting for seventy three percent of responses. Additionally, sixty eight of respondents noted that they receive information about the purposes of data processing or collection which is essential in ensuring that data subjects understand and consent to the use of their information, ultimately fostering a more ethical and responsible data governance environment in the economic and labour sector.

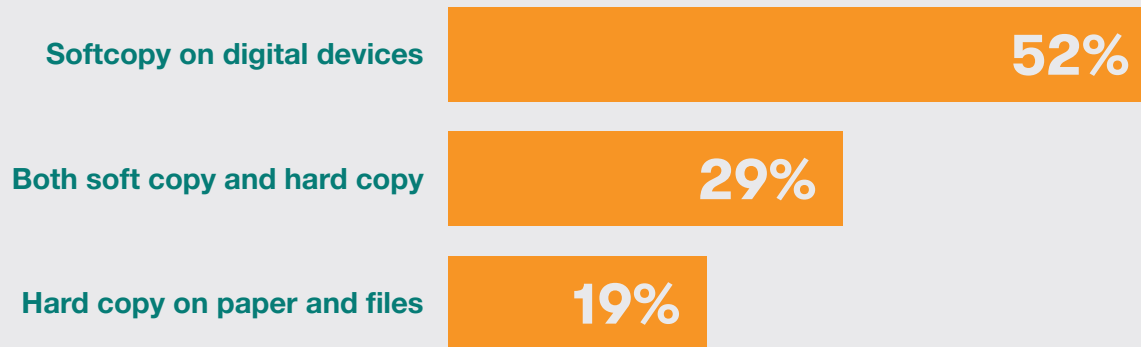
However, certain aspects of information provision, such as whether data provision is obligatory or voluntary and the level of data protection offered, receive less attention accounting for twenty six percent of the responses, which suggests that there may be gaps in the awareness and communication between data collectors and data subjects regarding these critical aspects. Failure to inform individuals about the obligatory or voluntary nature of data provision could lead to misunderstandings or hesitancy among respondents in providing data. Similarly, providing insufficient information about data protection levels leaves data subjects unaware of the security measures in place, potentially undermining their trust in the data collection process.

Data storage

The awareness of data subjects regarding the storage of their collected data plays a crucial role in data governance because it fosters trust in the data collection process which is essential for maintaining a positive relationship between data subjects and data collectors. Among the 681 respondents, sixty eight percent mentioned that they are not aware of how their collected data is stored. Among those aware, fifty two percent know that their data is stored as soft copies on digital devices, twenty nine percent know that their data is stored on both soft copy and hard copies, while a smaller percentage of nineteen percent is aware of it being stored as hard copies on paper and in files which enables data subjects to make informed decisions about sharing their information. Additionally, a minority, one percent, of the respondents is uncertain about the data storage method.

⁵² Rossi, A., & Lenzini, G. (2020). Transparency by design in data-informed research: A collection of information design patterns. *Computer Law & Security Review*, 37, 105402.

Awareness of respondents on how data collected is stored



Findings from the key informants revealed that public and private entities in the economic and labour sector store their data in Microsoft Excel sheets and Word documents, often used alongside hard copies. These formats are commonly used for ease of access and data manipulation, but they may lack the encryption and access control features necessary to protect sensitive information. Data centres, databases, as well as cloud-based storage solutions like Google Drive are also used to store data which makes it easily available to authorised users from various locations.

Data infrastructure

Data infrastructure plays a critical role in supporting data security measures, including encryption, access controls, and authentication, to protect sensitive information from unauthorised access or breaches. The study's findings from the key informant reveals the use of computers and laptops as primary tools for data storage and management within public and private entities in the economic and labour sector. Notably, one public entity hosts its data at the Uganda national data centre, utilising cloud infrastructure for storage, processing, and backup which provides confidence in capacity and security of data infrastructure. The adoption of encrypted folders within platforms like Google Drive for data storage is considered a valuable security measure by key informants, as it helps protect sensitive information from unauthorised access and potential breaches. However, the level of security provided by Google Drive, like any cloud-based service, depends on various factors, including the strength of user passwords, security settings, and the potential risks associated with online data storage.⁵³

Furthermore, entities often rely on employees' personal devices, like computers to store data, which can introduce both flexibility and security challenges. This raises risks on unauthorised access to data and also hinders access to collected data. This practice can be extremely unsafe due to the prevailing issue of computer (laptop) theft in Uganda. According to the Uganda police crime reports, there were 455 reported cases of computer (laptop) theft in 2022,⁵⁴ marking a 33% increase from the 341 cases reported in 2020.⁵⁵ Furthermore, instances of insufficient access to computers and concerns about data security especially in the public entities were mentioned by key informants which hinders the timely and efficient management of data. A key stakeholder elaborated more on this,

⁵³ Mixon, E. (2023, June). What is Google Drive? - Definition from WhatIs.com. SearchMobileComputing. <https://www.techtarget.com/searchmobilecomputing/definition/Google-Drive>

⁵⁴ Nankinga, M. (2022). The 2022 Annual Crime Report. Uganda Police Force. <https://www.upf.go.ug/download/the-2022-annual-crime-report/>

⁵⁵ Uganda Police Force. (2020). THE UGANDA POLICE 4 th Draft Annual Crime Report 2020 06 th U G A N D A P O L I C E 2020 Annual Crime Report. <https://www.upf.go.ug/wp-content/uploads/2021/04/ANNUAL-CRIME-REPORT-2020-1.pdf?x74136>

“ We lack computers to keep data; like personally, I don't have a desktop computer, so most times, I use laptops of other people of which I can say my data can be stolen, and it can't be safe. Though we are in the plans of getting one for the department, and once we get that, I imagine it will be easy to have data information kept safely.⁵⁶

Regarding network infrastructure, the findings from the key informants highlighted internet access as a crucial factor for efficient data management.⁵⁷ Public entities in the cities are faced with challenges related to poor internet connectivity which hinders data-related tasks that require online access. This was pointed out by one of the key informants who mentioned that;

“ You know, much of the work requires the internet, and yet we don't have access to the internet in this office and can only be accessed from other offices in this next administration block. But even there, the internet connectivity is very poor and so slow.⁵⁸

Inadequate internet access within public offices can severely impede the timely execution of data-related responsibilities such as data uploads, real-time data sharing with stakeholders, and accessing online resources for research and analysis.

Data Access

Data access controls who can retrieve and use data in organisations, ensuring that only authorised individuals or entities can access and use the information while protecting it from unauthorised access. It involves setting rules, permissions, and user roles to maintain data security and integrity.⁵⁹ Findings revealed that the process of data access in the public and private entities is often managed by specific individuals or departments responsible for data protection such as the administrator or programs officer in the private entities. This process typically involves hierarchy and authorization by supervisors or higher authorities such as the Commissioner General, or the Town Clerk for the case of some public entities. One of the key informants explained the data access protocol, stating that,

“ To gain access, one is required to draft a formal letter addressed to the town clerk, who is the technical authority, requesting permission. The town clerk then evaluates the purpose for which you need access to the data to avoid incidences of data misuse. Even political leaders, while they may assume direct access to the data in the public entities, are directed to follow the formal procedure by writing to the town clerk.⁶⁰

This process ensures that the data request is authentic and aligns with the intended purpose and that it is accessed for legitimate purposes.

Data protection officers (DPO) play a critical role in implementing and maintaining data protection measures and practices, ultimately helping to uphold data governance standards in organisations.⁶¹ One out of thirty two key informants mentioned that their organisation has a Data Protection Officer who works with a committee that comprises of the Chief Technology Officer, and a Senior Compliance Manager to oversee data storage, management, and disposal procedures and maintains a direct link to the national data protection office, ensuring compliance and accountability in data handling. This collaborative approach aims to collectively manage and ensure the integrity of data governance processes.

⁵⁶ Government Entity, Key Informant Interview 3

⁵⁷ Civil society, Key Informant interview 7

⁵⁸ Government Entity, Key Informant Interview 14

⁵⁹ Hou, Y., Garg, S., Hui, L., Jayakody, D. N. K., Jin, R., & Hossain, M. S. (2020). A data security enhanced access control mechanism in mobile edge computing. *IEEE Access*, 8, 136119-136130.

⁶⁰ Government Entity, Key Informant Interview 1

⁶¹ Šidlauskas, A. (2021). The role and significance of the data protection officer in the organisation. *Socialiniai tyrimai*, 44(1), 8-28.

Public and private entities without a specific data protection officer typically distribute data governance responsibilities among different staff within their organisation that include Human Resource personnel, IT officers, records officers, statisticians, and economic planners, with each staff addressing specific aspects of data management. This highlights the adaptability of existing personnel in handling data-related matters. Additionally findings also revealed that data access is subject to security measures. Passwords and encryption are used to protect data from unauthorised access and password management policies are enforced to ensure data security in the private and public entities. Only specific individuals or authorised users have access to certain data. Twelve out of thirty two key informants mentioned that the security measures for access to hard copies of data, particularly in office environments where physical records are stored in cabinets, access to physical data records is controlled and restricted through the use of locks and keys with the exception of a few entities where hard copies of collected data on paper documents and registers is still stored in boxes and large synthetic bags piled on office floors.⁶² Paper storage is vulnerable to a multitude of threats including fire and water damage, theft and loss of the data and data breaches, but also keeping track of data on hard copies is quite a challenge.⁶³ This calls for capacity building on managing offline data and records securely.

Data Sharing

Data sharing is a critical aspect of data governance enabling the flow of information between entities, organisations, and departments.⁶⁴ This practice is governed by various agreements and protocols, which dictate the terms and conditions of sharing data with external partners or collaborators in the economic and labour sector. Public entities engage in data sharing with third parties, including line ministries, departments, and implementation partners within the cities. More formalised Memoranda of Understanding (MOUs) exist between certain public entities and other government bodies like the Uganda Bureau of Statistics thus offering a more regulated framework for data sharing, enhancing transparency and accountability.⁶⁵ However, private entities oftentimes rely on informal arrangements, which are often influenced by the preferences and requirements of funding sources. One key informant provided insights into the informal nature of many data sharing mechanisms and described a scenario where data sharing often occurs through ad-hoc means, such as phone calls, email communications, or text messages.⁶⁶ In cases where formal agreements are not in place, entities rely on verbal agreements or even logbook recordings as a means of acknowledging data exchanges with external parties.⁶⁷ While informal arrangements may be suitable in some cases, they lack structured protocols and legal clarity, leaving the responsibilities of data sharing largely undefined.

Data governance strategies

Data governance strategies play a pivotal role in ensuring the effective and responsible management of data within an organisation or a broader context. These strategies provide a framework for how data is collected, processed, stored, shared, and protected. They define the rules, responsibilities, and policies governing data-related activities. Thirty four percent of the key informants mentioned that they have a documented data strategy or a code of conduct that outlines the principles, guidelines, and procedures for handling data. Nine out of nineteen entities that we studied in this research acknowledged the importance of such frameworks but face challenges like staffing constraints, limited infrastructure as well as financial resources. In the absence of internal strategies, public entities rely on external guidelines from bodies like UBOS and the Ministry of Finance, Planning and Economic Development to manage their data. However, there are entities that have put in place comprehensive data governance strategies, incorporating detailed policies that address various aspects of data handling such as data privacy, security, retention, disposal, and more as one of the key informants elaborated,

⁶² Private entity Key Informant Interview 1

⁶³ Public entity Key informant Interview 6

⁶⁴ Janssen, M., Brous, P., Estevez, E., Barbosa, L. S., & Janowski, T. (2020). Data governance: Organizing data for trustworthy Artificial Intelligence. *Government Information Quarterly*, 37(3), 101493.

⁶⁵ Government entity, Key informant interview 10

⁶⁶ Private entity Key Informant Interview 2

⁶⁷ Government entity, Key informant interview 14



We have a privacy policy on our website, outlining what data our app collects, how it's used, data retention periods, and how data subjects can access their information. Internally, we have a well-defined HR manual handling employee data, an IT Security Policy to fortify our system's safety, and a Due Diligence Policy ensuring information accuracy and identity verification. Our Data Retention Policy helps us monitor legal requirements for data retention.⁶⁸

Regarding the trustworthiness and reliability of data, seventy two percent of the key informants employ several measures to ensure the trustworthiness and reliability of their collected, processed, and stored data. These include physical data collection methods from individuals to enhance data accuracy. Stakeholder engagement and field visits are employed for data verification, ensuring that the information collected is credible. Data quality assurance teams play a vital role in reviewing data returns and aligning them with established standards, thus maintaining data integrity. However, while these measures are in place, several challenges were mentioned, including limited staff to collect data and manage it as well as limited financial resources to facilitate effective implementation of these practices.⁶⁹

Moreover, regulatory guidelines provide a framework for data reliability, while collaboration with telecommunication companies helps verify key identifying factors, such as phone numbers. City authorities have also adopted a proactive approach to address incomplete data by revisiting data sources to request missing information which also poses hurdles related to privacy and data security.⁷⁰ These collective strategies are integral in upholding the accuracy, completeness, and integrity of the managed data, which, in turn, fosters trust and reliability in data-driven decision-making processes within the labour and economic sector.

Awareness of respondents on how data collected is stored



Data governance laws/policies/regulations/ethical standards

Data subjects' awareness of data governance policies, laws, and regulations in Uganda plays a pivotal role in ensuring the effective implementation of data protection and privacy measures. When data subjects are well-informed about data governance policies, laws, and regulations, they are better equipped to understand their rights and responsibilities concerning their personal data. This awareness empowers them to make informed decisions when sharing their data and to hold data controllers and processors accountable for complying with established guidelines. However, the findings of the study revealed a significant gap in data subjects' awareness, with a substantial ninety three percent of the survey respondents not aware of data governance policies in Uganda. Additionally, key informants from various cities demonstrated a similar lack of awareness regarding data protection policies both at the national and international levels, often conflating data governance policies with cyber security laws and regulations, such as the Computer Misuse Act and laws concerning VPNs, Facebook, and internet shutdowns. Effective data governance is contingent upon a deep understanding of the policies and principles that guide the responsible handling of personal data and this misunderstanding could hinder the development of robust data protection frameworks.

⁶⁸ Digital labour platform, Key Informant interview 23

⁶⁹ Government entity, Key Informant interview 30

⁷⁰ Government entity, Key informant interview 10

We asked participants about the registration or licensing of stakeholders involved in data governance processes, as it plays a vital role in ensuring responsible and secure data management practices. Key informants we spoke to viewed this as a means to promote ethical data handling, prevent data misuse, and establish a framework for tracking and accountability in the event of data-related issues.⁷¹ However, varied perspectives were expressed concerning the entity authorised to process data. Certain key informants favoured exclusive government agency control due to concerns about the authenticity of civil society organisations (CSOs),⁷² while others put forward a hybrid approach, combining government agencies and CSOs to optimise available resources.⁷³ The endorsement of registration or licensing mechanisms indicates a growing awareness of the importance of responsible data handling among the private and public entities. They see these measures as instruments to safeguard against data misuse and to promote ethical data sharing.

Data disaggregation and gender inclusion

Gender-disaggregated data contributes to a more equitable and responsive data governance framework, ultimately leading to more effective and fair policies and programs. It also helps in identifying the unique needs and challenges faced by different gender groups, enabling more targeted interventions and promoting inclusivity.⁷⁴ Concerning the concept of gender - disaggregated data, forty seven percent of the key informant participants demonstrated familiarity and highlighted the incorporation of gender aspects into their data collection processes. For example, in the tax education division, gender aspects are considered when tracking individuals who have been sensitised on tax education, with data readily available for females and males. This indicates a recognition of the importance of gender-disaggregated data in tailoring services. Similarly, organisations collect gender information when individuals sign up for their services, although they reported a slightly lower female uptake which highlights potential disparities in access to these services between genders. Public and private entities also collect such gender data periodically, with intervals ranging from yearly to every three months. This periodic collection can provide insights into changes over time and is valuable for adaptive policy adjustments.

Furthermore, the absence of officers exclusively dedicated to overseeing gender and marginalised group data in any of the public and private entities surveyed reveals a gap in the prioritisation of these crucial data categories. While a few entities have designated community-based officers for the youth, people with disabilities, or marginalised communities, the evident lack of comprehensive data management skills in these roles underlines the importance of capacity building in handling gender and marginalised group data.

Civic engagement in data governance

Civic engagement plays a crucial role in data governance, ensuring that decision-making processes are inclusive, transparent, and accountable where data-driven insights derived from citizen participation contribute to the formulation and implementation of effective data governance policies and programs.⁷⁵ Regarding civic engagement in data governance activities and discussions out of 681 respondents, the majority, accounting for eighty nine percent have not participated or been consulted in any data governance activities or discussions and only eleven percent have engaged in such activities. Data governance activities they have engaged in include data collection, data sharing highlighting the significance of transparent data dissemination, data processing emphasising the importance of data refinement and analysis, data collaboration underscoring the value of cooperative efforts in data initiatives and finally data privacy and security demonstrating a commitment to safeguarding sensitive information in the data governance landscape.

⁷¹ Digital labour platform, Key Informant interview 23

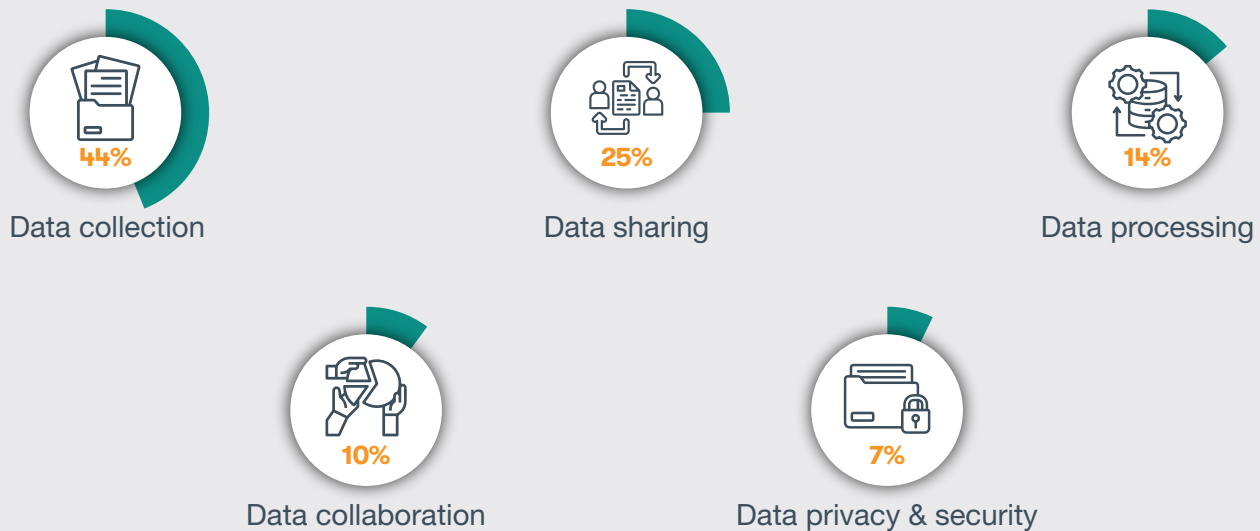
⁷² Government entity, Key Informant interview 30

⁷³ Academia, Key informant interview 11

⁷⁴ Appel, D., Badiee, S., Fyles, N., Miller, A. R., & Rubinstein, M. (2023). Leveraging Data for Gender Equality: Lessons from IDRC Data Initiatives.

⁷⁵ Cho, A., Byrne, J., & Pelter, Z. (2020). Digital civic engagement by young people. UNICEF Office of Global Insight and Policy.

Data governance Activities/ discussions that respondents have participated in



Key informants we spoke to from both public and private entities acknowledged involvement of data subjects in activities and discussions as shown in the table above. For instance, public and entities like the Ministry of Finance, NSSF, URA, were mentioned as some of the entities that are closely associated with engaging data subjects to verify their personal data as well as update it, sharing with them additional information departments have collected from data subjects. These interactions facilitate direct engagement with data subjects and help address their queries and concerns.⁷⁶ Furthermore, key stakeholder informants mentioned platforms like the e-citizens portal that allow for individuals to access government services and information, thus promoting transparency and openness, knowledge production and exchanges, capacity-building initiatives as ways of engaging citizens in various aspects of data governance.⁷⁷ There are channels which are used to engage citizens in data governance practices that were mentioned during the interviews including media channels, dialogues, events, podcasts, and toolkits.⁷⁸

Organisations have adopted innovative approaches, such as using media channels to educate data subjects about data governance. Through dialogues, events, podcasts, and toolkits, they aim to empower individuals with knowledge and promote a culture of responsible data stewardship. Additionally, data subjects through Barazas are involved in validation of data and budget allocation conferences with the aim of providing them with a clear understanding of how resources are allocated and to foster an open exchange of information with them. A key stakeholder participant elaborated more on this

“ We conduct Barazas to promote transparency and accountability. During these Barazas, we share information about the plans of the city, execution of projects, the results achieved, and the challenges we face especially in data governance activities. These discussions take place in the presence of Local Councils leaders, representatives from the police, the RDCs office, and security officials as well as the general public.”⁷⁹

Such civic engagements promote a collaborative approach to data governance that make citizens increasingly become aware of their rights and responsibilities as well as increased public trust in data governance institutions and processes.⁸⁰

⁷⁶ Government entity, Key informant interview 15

⁷⁷ Government entity, Key informant interview 25

⁷⁸ Civil society, Key Informant interview 29

⁷⁹ Government entity, Key informant interview 32

⁸⁰ Bainomugisha, A., Muyomba-Tamale, L., Muhwezi W., W., Cunningham, K., Ssemakula, E.,G., Bogere, G., Mbabazi, J., Asimo, N., Atukunda, P. (2017). Local Government Councils Scorecard Assessment 2016/17: Civic Engagement: Activating the Potentials of Local Governance in Uganda, Kampala, ACODE Policy Research Series No.83

Engaging citizens to rectify data inconsistencies plays a role in ensuring data accuracy and completeness. However, the survey findings indicate that this practice is relatively minimal. Although data subjects have the right to access their personal data as indicated in section 24 of the Uganda Data Protection and Privacy Act 2019, a substantial seventy two percent of the respondents were unaware of their right to update, rectify, or delete their personal data in cases of inaccuracies or incompleteness. This highlights a significant gap in raising awareness among data subjects about their rights, potentially hindering data accuracy and overall data quality.

Online portals that allow data subjects to login and update their personal information have been established by some entities like the Uganda Revenue Authority and National Social Security Fund (NSSF). Additionally, support emails were mentioned to be provided for data subjects to request changes or updates to their data. This ensures that data subjects have the opportunity to rectify any inaccuracies in their personal data.⁸¹

Role of civil society organisations in data governance

Civil society organisations play a crucial role in data governance within labour and economic justice in Uganda. Key informants highlighted that one of the primary roles of CSOs in this domain is advocacy and lobbying for the implementation of sound data governance practices and policies. CSOs actively campaign for the inclusion of marginalised groups, particularly digital platform workers, who often find themselves underrepresented in data collection initiatives.⁸² These CSOs work towards ensuring that government-developed data governance policies and frameworks are comprehensive and take into account the perspectives of these marginalised communities.

Furthermore, it emerged that CSOs are instrumental in advocacy and raising awareness about critical data governance issues such as the importance of responsible data handling, data privacy, data security, transparency in data collection and processing, and the rights of data subjects. CSOs are regarded as pivotal actors in elevating public consciousness on topics related to data governance, owing to their direct interaction with the general populace and various sectors, including those pertaining to gender-related matters.⁸³ This proactive role in advocacy and awareness-raising contributes to a more inclusive and informed approach to data governance in the labour and economic sector.

In addition to advocacy and awareness-raising, twenty eight percent of the key informants revealed that CSOs fulfil a vital role in safeguarding data use so as to prevent the misuse of data for purposes that infringe upon individuals' rights.⁸⁴ CSOs also bring unique socio-economic insights to the table since they collect data on employment and labour market insights, income inequality, poverty and social welfare, entrepreneurship and small Businesses e.t.c, thereby complementing government-generated data and addressing areas that may have been overlooked otherwise.⁸⁵ Moreover, it was noted that CSOs actively engage in sensitization, and enforcement of activities related to data governance. CSOs also work in close cooperation with government agencies to provide training and expertise in data collection, management, and utilisation, leading to improved data system quality and efficiency, reduced duplication, and enhanced citizen service delivery.⁸⁶ These efforts are aimed at supporting the adoption of robust data governance practices within government structures.

⁸¹ Government entity, Key Informant interview 4

⁸² Civil society, Key Informant interview 5

⁸³ Civil society, Key Informant interview 16

⁸⁴ Civil society, Key Informant interview 8

⁸⁵ Government entity, Key informant interview 20

⁸⁶ Civil society, Key Informant interview 9

Integration of data collected by civil society organisations, academia, and international bodies into the national data system

The integration of data collected by civil society organisations, academia, and international bodies into the national data system plays a pivotal role in bolstering the comprehensiveness and accuracy of the national data landscape. This process enhances the richness and diversity of data sources, allowing for a more holistic understanding of various aspects of society and the economy.⁸⁷ A few CSOs, academia and international bodies were said to engage with government departments through networking to share data they collect.⁸⁸ However, there are limited mechanisms through which data collected by civil society organisations, academia, and international bodies are integrated into the national data system, at the parish, city, and national levels in Uganda as revealed by the findings. The limited integration of CSO data into the national data systems is due to the absence of a standardised data collaboration and integration framework among CSOs, academia, international bodies, and government entities. As a result, data collected by these organisations is often not shared with the government.⁸⁹ Instead, data sharing sometimes occurs through public-private partnerships or for the purpose of identifying individuals or entities.⁹⁰ This means that the government may not have access to important data that could be used to inform policy and decision-making.

Capacity building in Data Governance

Capacity building in data governance plays a vital role in equipping individuals and organisations with the necessary knowledge and skills to manage data effectively.⁹¹ Forty one percent of the key informants from the public and private entities, had undergone formal data governance training and they mentioned UBOS, universities like Ndejje University, CSOs like Defender's Protection Initiative building their capacity on some data governance aspects. However, they were aware of organisations and entities providing training in data protection and security such as Milima Cyber Academy and Enabel.⁹² The training encompassed a few topics, including data protection, data quality assessment, data management, and the methodologies for conducting pilot census surveys.

Webinars, radio talk shows, and Twitter spaces are popular platforms for ongoing training and discussions related to data governance, data protection, cybersecurity, and data analysis.⁹³ These platforms allow individuals in the public and private entities to stay up-to-date on best practices and emerging trends in the field.

While specific data governance training programs might not be widespread, the key respondents anticipated forthcoming training opportunities.

⁸⁷ United Nations System. (2023). United Nations System 4 May 2023 Advance Unedited Version CEB Chief Executives Board for Coordination High-Level Committee on Programmes (HLCP). https://unsceb.org/sites/default/files/2023-05/Advance%20Unedited%20-%20International%20Data%20Governance%20%E2%80%93%20Pathways%20to%20Progress_1.pdf

⁸⁸ Civil society, Key Informant interview 17

⁸⁹ Civil society, Key Informant interview 19

⁹⁰ Government entity, Key informant interview 18

⁹¹ Abraham, R., Schneider, J., & Vom Brocke, J. (2019). Data governance: A conceptual framework, structured review, and research agenda. *International journal of information management*, 49, 424-438.

⁹² Government entity, Key informant interview 12

⁹³ Civil society, Key Informant interview 21

Challenges encountered in data governance

Several challenges in data governance in both the public and private sectors were highlighted as shown in the table below

Challenge	Description
Limited Funding	There is limited funding available for data governance processes, especially for proper data collection. This includes constraints in acquiring essential resources such as fuel for field vehicles, adequate manpower, and materials like paper for questionnaires. The insufficiency of resources has resulted in low data collection coverage.
Lack of Data Protection Officers and Qualified Personnel	Bureaucratic recruitment processes have contributed to the absence of data protection officers at the city level. The use of unqualified and unskilled personnel for data collection compromises data quality. Properly trained and skilled individuals are essential for accurate data gathering.
Lack of Awareness about national and international data governance policies	There is a lack of awareness for both participants from the public and private entities regarding data governance policies in Uganda and the international policies to which Uganda subscribes. Key stakeholders highlighted the contentious nature of some policies, such as the Computer Misuse Act, which complicates the data governance landscape.
Political Interference	Political interference was noted as a challenge, with some individuals seeking to manipulate data for political gains. This interference threatens the integrity and reliability of data collected.
Limited Equipment and knowledge	There is limited equipment and knowledge to facilitate data collection, analysis, and storage. Issues include a shortage of computers, limited knowledge of software tools like SPSS, and a lack of infrastructure for data storage.
Data Silos	Data consolidation is limited among government departments and with Civil Society organisations academia and international frameworks. Systems often operate independently, resulting in data silos and a lack of data sharing and collaboration.
Civic Space Shrinking	The shrinking of civic spaces, including limitations on civil society activities, has adverse effects on data governance processes, particularly in terms of advocacy and awareness-raising efforts about effective data governance policies and practices.
Lack of standardised data collection and reporting systems	There is absence of standardised data collection and reporting systems. Different public and private entities and departments often have their own ways of collecting and reporting data, leading to inconsistencies. These inconsistencies create a problem because data reported in one system might not match the format or criteria used in another. As a result, the data can become inaccurate and unreliable.

Discussions and conclusions

In light of the study findings pertaining to data governance practices, data collection methods, stakeholder involvement, data types collected, and mechanisms for data access, it is evident that the economic and labour sector in Uganda features diverse data management practices and associated challenges and opportunities. The presence of Data Protection Officers (DPOs) in select public and private entities indicates a proactive stance towards data protection. Having dedicated officers responsible for data protection shows a commitment to safeguarding data and ensuring compliance with relevant laws.⁹⁴ However, the finding that there is a lack of awareness of data governance policies and laws implies that there is a gap in understanding these regulations, and efforts should be directed towards raising awareness and promoting compliance with data governance legal standards.

The study revealed a disparity in the adoption of gender considerations within data collection practices among the private and public entities. While some entities are actively incorporating gender considerations into their data collection procedures, there is a noticeable gap as certain entities do not collect any gender-disaggregated data. This divergence in data collection practices highlights a disparity in the integration of gender-related information among different organisations. Additionally, the absence of dedicated officers overseeing gender-related data highlights the need for capacity building in this area. Scholars such as Srinivas⁹⁵ noted the pivotal role of gender-disaggregated data in the pursuit of gender equality and well-informed policymaking. This type of data serves as a crucial tool for policymakers, enabling them to identify and address gender-based disparities effectively. To foster gender-responsive policies, it is imperative for policymakers to incorporate gender-disaggregated data at every stage of the policy-making process.⁹⁶ Without comprehensive gender data, policymakers may lack the necessary insights to develop gender-sensitive interventions.

The low level of civic engagement in data governance activities in the economic and labour sector in Uganda, reflects a broader challenge in many public and private entities in Uganda. Barbero and McLaren⁹⁷ underlined the crucial role of citizen involvement in data governance, with a focus on promoting transparency, accountability, and data quality. When individuals have a meaningful say in how their data is utilised, it results in the establishment of more trustworthy and trusted data systems, ultimately fostering fairness and sustainability within data ecosystems. However, a significant portion of the survey respondents reported limited engagement in data governance discussions and activities. This discrepancy shows the need for concerted efforts in raising awareness and creating mechanisms that facilitate citizen participation in various aspects of data governance, including discussions surrounding data collection, sharing, processing, collaboration, and privacy.

⁹⁴ Mahieu, R., Van Hoboken, J., & Asghari, H. (2019). Responsibility for Data Protection in a Networked World: On the Question of the Controller, Effective and Complete Protection and Its Application to Data Access Rights in Europe. *J. Intell. Prop. Info. Tech. & Elec. Com. L.*, 10, 84.

⁹⁵ Srinivas, H. (2023, September). Gender Inclusive Policy Making. Policy Analysis Series E-196. [www.gdrc.org](http://www.gdrc.org/gender/gender-inclusive-policy.html#:~:text=Gender%2Disaggregated%20data%20is%20data). <http://www.gdrc.org/gender/gender-inclusive-policy.html#:~:text=Gender%2Disaggregated%20data%20is%20data>

⁹⁶ Government entity, Key informant interview 22

⁹⁷ Barbero, M., & McLaren, J. (2023, April). Governing data to benefit people: Decision-making that builds trust and accountability | Global Partnership for Sustainable Development Data. www.data4sdgs.org. <https://www.data4sdgs.org/governing-data-benefit-people-decision-making-builds-trust-and-accountability>.

OECD⁹⁸ emphasised the importance of harmonising data systems and fostering cooperation between different data stakeholders. This cooperation is vital because data is often collected by multiple organisations for different purposes. When these stakeholders collaborate, they can avoid duplication of efforts, share resources, and collectively address complex data-related challenges. For instance, government agencies, academic institutions, and civil society organisations may collect data on similar topics, and by working together, they can ensure that their efforts are complementary rather than redundant. Additionally, the findings revealed that the laws and regulations governing data sharing were seen as essential in facilitating the integration process. that clear legal frameworks are necessary to ensure data protection, privacy, and security while enabling seamless data sharing. However, the varying extent of data integration and the existence of separate datasets also raise questions about interoperability and data standardisation. Snowden⁹⁹ advocated for standardised data formats and interoperable systems to enhance data integration at both the national and international levels. This can lead to more comprehensive and reliable data for evidence-based policymaking.

The findings related to training and capacity building in data governance underscore the importance of continuous learning and professional development in this field. The study's results revealed that some key informants have received formal data governance training, often from reputable sources like the Uganda Bureau of Statistics and some Ugandan Universities. However, the fact that several respondents had not received formal training suggests potential gaps in knowledge and expertise in data governance practices. Janssen¹⁰⁰ emphasised the need for well-trained individuals who can navigate the complexities of data governance, data protection, data quality, and data management.

Enhancing data governance practices in Uganda's economic and labour sector requires a concerted effort to address these challenges and promote responsible and ethical data management. The study's findings provide valuable insights into data governance practices in Uganda's economic and labour sector on the importance of gender-disaggregated data, civic engagement, data sharing and integration, and training in data governance. Addressing the identified challenges and gaps can contribute to more effective and transparent data governance processes, ultimately benefiting both policymakers and the wider community.

⁹⁸ OECD. (2021). EFFECTIVENESS ISSUES IN DEVELOPMENT CO -OPERATION FOR DATA AND STATISTICS Issues paper prepared by the OECD Development Co-operation Directorate for the Global Partnership for Effective Development Co-operation (GPEDC) on the scope and potential for more effective support to data and statistics 2 . https://www.effectivecooperation.org/system/files/2021-11/Issues%20Paper%20-%20Effective%20Support%20for%20Development%20Data_GPEDC_FINAL.pdf

⁹⁹ Snowden, D., Tontos, V. M., Handegard, N. O., Zarate, M., O' Brien, K., Casey, K. S., Smith, N., Sagen, H., Bailey, K., Lewis, M. N., & Arms, S. C. (2019). Data Interoperability Between Elements of the Global Ocean Observing System. *Frontiers in Marine Science*, 6(2296-7745). <https://doi.org/10.3389/fmars.2019.00442>

¹⁰⁰ Janssen, M., Brous, P., Estevez, E., Barbosa, L. S., & Janowski, T. (2020). Data governance: Organizing data for trustworthy Artificial Intelligence. *Government Information Quarterly*, 37(3), 101493.

Recommendations

Government Entities

The government should allocate more resources to support data governance processes in the various cities. This includes providing adequate funding for proper data collection, data management, equipment, and materials. Adequate financial support will help overcome limitations in resource availability and improve data management processes.

To ensure the protection of data and compliance with data governance policies, the government should appoint data protection officers at the city level. These officers should be responsible for overseeing data management and control.

Government entities should be encouraged to share data and collaborate with Civil Society organisations, academia and other stakeholders. This can be facilitated through the development of data sharing agreements and protocols to break down data silos.

Implement standardised data reporting systems to address data inconsistencies. This will ensure that data collected is accurate, reliable, and consistent across different levels and departments in the cities.

Civil Society organisations

CSOs should foster collaboration with government agencies, academic institutions, and international bodies to pool their data resources and expertise. Engaging in joint research and analysis efforts to derive actionable insights from the pooled data, with a focus on addressing critical issues in Uganda, such as economic disparities, gender inequality. Collaborative data initiatives can focus on including marginalised and underrepresented groups in the data governance processes. This will in turn promote inclusivity and ensures that the data reflects the diversity of the population. CSOs can play a crucial role in advocating for the inclusion of these groups in data initiatives.

Academic Institutions

Academic institutions should review and enhance their curricula to incorporate data governance, data ethics, and data protection principles. This entails developing and offering courses on data governance, data privacy, and related topics within relevant academic programs. These curricula should cater to students across disciplines, equipping them with essential data governance skills that they can implement in workplaces.

International Bodies and Development Partners

Provide technical assistance and capacity-building programs to strengthen the skills and knowledge of Ugandan institutions and individuals involved in data governance in the public and private entities. This includes training in data collection, analysis, privacy protection, and ethical data handling

Cited Works

Abraham, R., Schneider, J., & Vom Brocke, J. (2019). Data governance: A conceptual framework, structured review, and research agenda. *International journal of information management*, 49, 424-438.

Appel, D., Badiee, S., Fyles, N., Miller, A. R., & Rubinstein, M. (2023). Leveraging Data for Gender Equality: Lessons from IDRC Data Initiatives.

ARTICLE 19 Eastern Africa , Kenya ICT Action Network , & Pollicy. (2021). Unseen Eyes, Unheard Stories Surveillance, data protection, and freedom of expression in Kenya and Uganda during COVID-19. <https://www.ecoi.net/en/file/local/2050315/ADRF-Surveillance-Report-1.pdf>

Badiee, S. (2020). Gender Data Governance and Official Statistics Counted and Visible: Global conference on the measurement of gender equality and intersecting inequalities. <https://data.unwomen.org/sites/default/files/documents/gender%20and%20intersecting%20inequalities/docs/presentations/2.8.1.%20Open%20data%20watch.pdf>

Bainomugisha, A., Muyomba-Tamale, L., Muhwezi W., W., Cunningham, K., Ssemakula, E.,G., Bogere, G., Mbabazi, J., Asimo, N., Atukunda, P. (2017). Local Government Councils Scorecard Assessment 2016/17: Civic Engagement: Activating the Potentials of Local Governance in Uganda, Kampala, ACODE Policy Research Series No.83.

Barbero , M., & McLaren, J. (2023a, April). Governing data to benefit people: Decision-making that builds trust and accountability | Global Partnership for Sustainable Development Data. www.data4sdgs.org. <https://www.data4sdgs.org/governing-data-benefit-people-decision-making-builds-trust-and-accountability>. This paper outlines the Global Partnership for Sustainable Development Data's (Global Partnership's) thinking on accountable data governance based on engagement with our network of more than 700 partners from academia, the public sector, the private sector, nonprofit organizations, and multilateral organizations from all over the world. It includes practical reflections of use to practitioners and decision-makers interested in developing new and better approaches for governing data to benefit people.

Barbero, M., & McLaren, J. (2023b, April). Governing data to benefit people: Decision-making that builds trust and accountability | Global Partnership for Sustainable Development Data. www.data4sdgs.org; Global Partnership for Sustainable Development Data. <https://www.data4sdgs.org/governing-data-benefit-people-decision-making-builds-trust-and-accountability#:~:text=In%20contrast%2C%20when%20people%20have>

Birhane, A., Kalluri, P., Card, D., Agnew, W., Dotan, R., & Bao, M. (2021). The values encoded in machine learning research. *arXiv preprint arXiv:2106.15590*.

Boshe, P., Hennemann, M., & von Meding, R. (2022). African Data Protection Laws: Current Regulatory Approaches, Policy Initiatives, and the Way Forward. *Global Privacy Law Review*, 3(2).

Castaneda, J., Jover, A., Calvet, L., Yanes, S., Juan, A. A., & Sainz, M. (2022). Dealing with Gender Bias Issues in Data-Algorithmic Processes: A Social-Statistical Perspective. *Algorithms*, 15(9), 303. <https://doi.org/10.3390/a15090303>

Chao, V. (2019, April 20). Gender Data and Analysis: Gateway for Inclusive National Climate Action. www.ndcs.undp.org. <https://www.ndcs.undp.org/content/ndc-support-programme/en/home/impact-and-learning/ideas-and-insights/20190/gender-data-and-analysis--gateway-for-inclusive-national-climate.html>

Cho, A., Byrne, J., & Pelter, Z. (2020). Digital civic engagement by young people. UNICEF Office of Global Insight and Policy.

Christine, D. I., & Thinyane, M. (2021). Citizen science as a data-based practice: A consideration of data justice. *Patterns*, 2(4), 100224. <https://doi.org/10.1016/j.patter.2021.100224>

Colaço, R., & Watson-Grant, S. (2021). A Global Call to Action for Gender-Inclusive Data Collection and Use. <https://doi.org/10.3768/rtipress.2021.pb.0026.2112>

DLA Piper. (2023). Data Protection Officers in Germany - DLA Piper Global Data Protection Laws of the World. www.dlapiperdataprotection.com.
<https://www.dlapiperdataprotection.com/index.html?t=data-protection-officers&c=DE>

ESCAP, U. (2020). Inequality in Access to Information and Communication Technologies (ICTs) in East and North-East Asia and South- East Asia. <https://repository.unescap.org/bitstream/handle/20.500.12870/3511/ESCAP-2021-PB-Inequality-Access.pdf?sequence=1&isAllowed=y>

Galvin, H. K., & DeMuro, P. R. (2020). Developments in privacy and data ownership in mobile health technologies, 2016-2019. *Yearbook of medical informatics*, 29(01), 032-043.

Georgiou, A., Magrabi, F., Hyppönen, H., Wong, Z., Nykänen, P., Scott, P., Ammenwerth, E., & Rigby, M. (2018). The Safe and Effective Use of Shared Data Underpinned by Stakeholder Engagement and Evaluation Practice. *Yearbook of Medical Informatics*, 27(01), 025–028. <https://doi.org/10.1055/s-0038-1641194>

Gillwald, A., & van der Spuy, A. (2019). The governance of global digital public goods: Not just a crisis for Africa. *GigaNet*.

Government Gazette REPUBLIC OF SOUTH AFRICA. (2013). https://www.gov.za/sites/default/files/gcis_document/201409/3706726-11act4of2013protectionofpersonalinforcorrect.pdf

Hou, Y., Garg, S., Hui, L., Jayakody, D. N. K., Jin, R., & Hossain, M. S. (2020). A data security enhanced access control mechanism in mobile edge computing. *IEEE Access*, 8, 136119-136130.

Hummel, P., Braun, M., Tretter, M., & Dabrock, P. (2021). Data sovereignty: A review. *Big Data & Society*, 8(1), 2053951720982012

International Labour Organization. (2020). Free Movement of Persons and Transhumance in the IGAD Region: Improving Opportunities for Regular Labour Mobility An assessment of labour migration and mobility governance in the IGAD region Country report for. https://www.ilo.org/wcmsp5/groups/public/---af-rica/---ro-abidjan/---sro-addis_ababa/documents/publication/wcms_743324.pdf

Iyer, N., Nyamwire, B., & Nabulega, S. (2020). Alternate realities, alternate internets.

Janssen, M., Brous, P., Estevez, E., Barbosa, L. S., & Janowski, T. "Data Governance: Organizing Data for Trustworthy Artificial Intelligence. ." *Government Information Quarterly*

Janssen, M., Brous, P., Estevez, E., Barbosa, L. S., & Janowski, T. (2020). Data governance: Organizing data for trustworthy Artificial Intelligence. *Government Information Quarterly*, 37(3), 101493.

Kaggwa, G. (2020, February 12). HEALTH MANAGEMENT INFORMATION SYSTEM IN UGANDA. The International Agency for the Prevention of Blindness. <https://www.iapb.org/news/health-management-information-system-in-uganda/>

Kassen, M. (2022). Open data governance and its actors. Springer International Publishing.

Kiberu, V. M., Matovu, J. K., Makumbi, F., Kyoziira, C., Mukooyo, E., & Wanyenze, R. K. (2014). Strengthening district-based health reporting through the district health management information software system: the Ugandan experience. *BMC Medical Informatics and Decision Making*, 14(1). <https://doi.org/10.1186/1472-6947-14-40>

Mahieu, R., Van Hoboken, J., & Asghari, H. (2019). Responsibility for Data Protection in a Networked World: On the Question of the Controller, Effective and Complete Protection and Its Application to Data Access Rights in Europe. *J. Intell. Prop. Info. Tech. & Elec. Com. L.*, 10, 84.

Matsiko, A., & Kersting, N. (2023). The integrity of digital policies and political participation in Uganda: a tale of dissent and digital repression?. *Commonwealth & Comparative Politics*, 61(1), 2-29.

Metcalfe, J., & Crawford, K. (2016). Where are human subjects in big data research? The emerging ethics divide. *Big Data & Society*, 3(1), 2053951716650211.

Mixon, E. (2023, June). What is Google Drive? - Definition from WhatIs.com. *SearchMobileComputing*. <https://www.techtarget.com/searchmobilecomputing/definition/Google-Drive>

Mudongo, O. (2021). Africa's expansion of AI surveillance-regional gaps and key trends.

National Labour Force Survey. (2021). Main Report. Uganda Bureau of Statistics. https://www.ubos.org/wp-content/uploads/publications/11_2022NLFS_2021_main_report.pdf

Ntawihwa, W., & Anderson, B. (2016). Uganda's data ecosystem Part one: A quantitative review of data production in Uganda. *Development Initiatives*. <https://devinit.org/wp-content/uploads/2016/05/Uganda-Data-Ecosystem-Report-Part-One.pdf>

Nyamwena, J., & Mondliwa, P. (2020). Policy brief 3: Data governance matter lessons for South Africa. <https://www.competition.org.za/ccred-blog-digital-industrial-policy/2020/7/28/data-governance-matters-lessons-for-south-africa>

OECD. (2015). *Data-Driven Innovation. Big Data for Growth and Well-Being*. OECD Publishing, Paris. <https://doi.org/10.1787/9789264229358-en>

OECD. (2020). *Good Practice Principles for Data Ethics in the Public Sector ACKNOWLEDGEMENTS*. <https://www.oecd.org/gov/digital-government/good-practice-principles-for-data-ethics-in-the-public-sector.pdf>

OECD. (2021). *EFFECTIVENESS ISSUES IN DEVELOPMENT CO -OPERATION FOR DATA AND STATISTICS* Issues paper prepared by the OECD Development Co-operation Directorate for the Global Partnership for Effective Development Co-operation (GPEDC) on the scope and potential for more effective support to data and statistics 2 |. https://www.effectivecooperation.org/system/files/2021-11/Issues%20Paper%20-%20Effective%20Support%20for%20Development%20Data_GPEDC_FINAL.pdf

Osakwe, S., & Adeniran, A. P. (2021). *Strengthening Data Governance in Africa*.

Purnell, N., Scheck, J., & Horwitz, J. (2021). Facebook employees flag drug cartels and human traffickers. The Company's Response Is Weak, Documents Show. <https://www.wsj.com/articles/facebook-drug-cartels-human-traffickers-response-is-weak-documents-11631812953>.

Purwanto, A., Zuiderwijk, A., & Janssen, M. (2020). Citizen engagement with open government data: Lessons learned from Indonesia's presidential election. *Transforming Government: People, Process and Policy*, 14(1), 1-30.

Ramsden, E. (2022, December 14). *7 Best Practices for Data Governance*. [Cloudbridgesolution.com](https://www.cloudbridgesolution.com).

<https://cloudbridgesolution.com/blog/data-governance-best-practices>

Rossi, A., & Lenzini, G. (2020). Transparency by design in data-informed research: A collection of information design patterns. *Computer Law & Security Review*, 37, 105402.

Sey, A., & Mudongo, O. (2021). Case studies on AI skills capacity building and AI in workforce development in Africa.

Sharp, D., Goodwin, S., Anwar, M., & Bartram, L. (2020). Engaging Citizens in Data Governance in Net Zero Precincts. https://researchmgt.monash.edu/ws/portalfiles/portal/327795618/327795553_oa.pdf

Sidlauskas, A. (2021). The role and significance of the data protection officer in the organisation. *Socialiniai tyrimai*, 44(1), 8-28.

Snowden, D., Tsontos, V. M., Handegard, N. O., Zarate, M., O' Brien, K., Casey, K. S., Smith, N., Sagen, H., Bailey, K., Lewis, M. N., & Arms, S. C. (2019). Data Interoperability Between Elements of the Global Ocean Observing System. *Frontiers in Marine Science*, 6(2296-7745). <https://doi.org/10.3389/fmars.2019.00442>

Sperber, S., Täuber, S., Post, C., & Barzantny, C. (2023). Gender Data Gap and its impact on management science—Reflections from a European perspective. *European Management Journal*, 41(1), 2-8.

Srinivas, H. (2023, September). Gender Inclusive Policy Making. Policy Analysis Series E-196. [www.gdrc.org. http://www.gdrc.org/gender/gender-inclusive-policy.html#:~:text=Gender%2Ddisaggregated%20data%20is%20data](http://www.gdrc.org/gender/gender-inclusive-policy.html#:~:text=Gender%2Ddisaggregated%20data%20is%20data)

Stedman, C. (2022, May). What Is Data Governance and Why Does It Matter? *SearchDataManagement*. <https://www.techtarget.com/searchdatamanagement/definition/data-governance>

Taylor, L. (2017). What is data justice? The case for connecting digital rights and freedoms globally. *Big Data & Society*, 4(2), 2053951717736335.

UG-4IR-Strategy (2020) Uganda's National 4IR Strategy—A Continental 4IR Hub That Enables a Smart and Connected Ugandan Society. Retrieved on May 19th 2023 from <https://ict.go.ug/wp-content/uploads/2020/10/Executive-Summary-Ugandas-National-4IR-Strategy.pdf>

Uganda Bureau of Statistics. (2022, June). Revised_Subcounty_population_2015_2030_146_Districts. [Ubos.org; Uganda Bureau of Statistics. https://www.ubos.org/wp-content/uploads/statistics/Revised_Subcounty_population_2015_2030_146_Districts.xlsx](https://www.ubos.org/wp-content/uploads/statistics/Revised_Subcounty_population_2015_2030_146_Districts.xlsx)

Uganda Police Force. (2020). THE UGANDA POLICE 4 th Draft Annual Crime Report 2020 06 th U G A N D A P O L I C E 2020 Annual Crime Report. <https://www.upf.go.ug/wp-content/uploads/2021/04/ANNUAL-CRIME-REPORT-2020-1.pdf?x74136>

Uganda Police Force. (2021). CRIME. <https://www.upf.go.ug/wp-content/uploads/2022/05/ACR2021.pdf?x89335>

Umezuruike, C., Nwankwo, W., & Kareyo, M. (2017). Implementation challenges of health management information systems in Uganda: A Review. *development*, 4(7).

UNCTAD, (2019). Digital Economy Report - Value Creation and Capture: Implications for Developing Countries, Geneva: UNCTAD.

United Nations System. (2023). United Nations System 4 May 2023 Advance Unedited Version CEB Chief Executives Board for Coordination High-Level Committee on Programmes (HLCP).

https://unsceb.org/sites/default/files/2023-05/Advance%20Unedited%20-%20International%20Data%20Governance%20%E2%80%93%20Pathways%20to%20Progress_1.pdf

Van Ooijen, C., Ubaldi, B., & Welby, B. (2019). A data-driven public sector: Enabling the strategic use of data for productive, inclusive and trustworthy governance.

Villa, F. F. (2019, June). The landscape of gender data mapping players and initiatives by themes. Data2x.org; data2x.org. <https://data2x.org/wp-content/uploads/2019/11/Gender-Data-Landscape.pdf>

Vukosi Marivate. (2023). More Than Just a Policy: Day-to-Day Effects of Data Governance on the Data Scientist. Springer EBooks, 155–177 https://doi.org/10.1007/978-3-031-24498-8_7

Weber, A. M., Gupta, R., Abdalla, S., Cislighi, B., Meausoone, V., & Darmstadt, G. L. (2021). Gender-related data missingness, imbalance and bias in global health surveys. *BMJ Global Health*, 6(11), e007405. <https://doi.org/10.1136/bmjgh-2021-007405>

World Bank. (2021). Individuals using the Internet (% of population) - Sub-Saharan Africa | Data. [Data.worldbank.org. https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=ZG](https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=ZG)

World Health Organisation (2021). Integrating gender data in health information systems: challenges, opportunities and good practices. Copenhagen: WHO Regional Office for Europe;. Licence: CC BY-NC-SA 3.0 IGO.

Young, M., Rodriguez, L., Keller, E., Sun, F., Sa, B., Whittington, J., & Howe, B. (2019, January). Beyond open vs. closed: Balancing individual privacy and public accountability in data sharing. In *Proceedings of the Conference on Fairness, Accountability, and Transparency* (pp. 191-200).

List of key informant Interviews

Private entity Key Informant Interview 1
Private entity Key Informant Interview 2
Government Entity, Key Informant Interview 3
Government entity, Key Informant interview 4
Civil society, Key Informant interview 5
Government entity, Key informant interview 6
Civil society, Key Informant interview 7
Civil society, Key Informant interview 8
Civil society, Key Informant interview 9
Government entity, Key informant interview 10
Academia, Key informant interview 11
Government entity, Key informant interview 12
Government entity, Key informant interview 14
Government entity, Key informant interview 15
Government entity, Key Informant interview 16
Civil society, Key Informant interview 17
Government entity, Key informant interview 18
Civil society, Key Informant interview 19
Government entity, Key informant interview 20
Civil society, Key Informant interview 21
Government entity, Key informant interview 22
Digital labour platform, Key Informant interview 23
Government entity, Key informant interview 25
Government entity, Key informant interview 27
Civil society, Key Informant interview 29
Government entity, Key Informant interview 30
Government entity, Key informant interview 32