The Role of Information Communication Technology to Enhance Property Tax Revenue in Africa: A Tale of Four Cities in Three Countries

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Summary

Information communication technology (ICT) is an important tool to support local governments in their efforts to more efficiently administer property taxes and other own-source revenues. Increasingly, developing countries, including those in Africa, are managing large volumes of data on taxable properties and taxpayers within the ICT environment. With reference to four African cities, this paper comments on the benefits and challenges relating to the use of ICT in the administration of property tax and other own-source revenues. Key findings of this research include: (1) the importance placed on ICT by cities to improve own-source revenue (OSR) administration; (2) ICT provides the opportunity for city councils to adopt a cashless payment system built around e-payments; (3) whilst ICT systems have only been recently introduced in Arusha City Council and Kiambu County, there is evidence that improved administration has contributed to improved revenue collections; (4) the introduction of new business processes have largely been accepted by city customers; and (5) Kitwe City Council and Ndola City Council have begun to implement ICT although there are issues with the technical support of the systems and the lack of arrangements with banks to facilitate e-payments. Furthermore, Ndola's experience confirms the risks of using an internationally-developed and maintained IT system.

William McCluskey is an Extraordinary Professor at the African Tax Institute, University of Pretoria.

Riël Franzsen is Director of the African Tax Institute and holds the South African Research Chair in Tax Policy and Governance at the University of Pretoria.

Mundia Kabinga is a lecturer at the Development Finance Centre, University of Cape Town.

Chabala Kasese is a legal officer at the Zambia Revenue Authority.

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Acknowledgements

Acronyms

COTS	Commercial 'off-the-shelf'
GDP	Gross domestic product
GIS	Geographic information systems
GoT	Government of Tanzania
ICT	Information and communication technology
IFMIS	Integrated Financial Management Information System (Kenya)
IMF	International Monetary Fund
IPRIMS	Integrated Property Rates Information Management System (Tanzania)
KCC	Kitwe City Council
KCCA	Kampala Capital City Authority
KES	Kenyan Shilling
LAIFOMS	Local Authority Integrated Financial Operations Management System (Kenya)
LGA	Local government authority
LGRCIS	Local Government Revenue Collection and Information System (Tanzania)
NCC	Ndola City Council
OCB	Office of the Controller of Budget, Kenya
OSR	Own-source revenue
PMO-RALG	Prime Minister's Office, Regional Administration and Local Government (Tanzania)
TRA	Tanzania Revenue Authority
TZS	Tanzanian Shilling
USD/US$	US Dollar
ZMW	Zambian Kwacha

Introduction

Across developing countries, large and small cities are facing the challenge of rapid and largely unplanned urbanisation (Yusuf 2013). Africa's urban population is projected to reach 60 per cent by 2050 (United Nations 2014). However, African countries lag behind their peers in developing regions elsewhere in the world (e.g. in South-East Asia) as regards infrastructure provision (World Bank 2010). Investment in city infrastructure in many African cities is inadequate. In many instances, cities have narrow fiscal bases, exacerbated by poor base coverage and weak administration. Creating a sustainable system to administer the recurrent property tax[1] and other own-source revenues (OSRs) in an efficient and cost-effective manner is essential if future city infrastructure is to be properly maintained and municipal service levels improved.

Local government authorities (LGAs) across the developing world must therefore play an increasingly important role in the delivery of basic public services. One of the fundamental problems facing LGAs in developing countries is the widening gap between local spending needs and the availability of revenue resources to address these needs. One of the main reasons for this increasing fiscal gap is the rapid growth of urban populations, which results in an increasing demand for public services and the need for new and improved infrastructure (Slack 2013). As a result, LGAs in developing countries often depend primarily on central government transfers (Smoke 2013). For fiscal decentralisation to be effective, LGAs must have sufficient access to their own tax as well as non-tax revenues (i.e. from a range of user charges and fees) (Bahl and Bird 2008). LGAs must have the capacity, the capability and the tools necessary to assess and collect OSRs effectively and efficiently. Even where the law provides for an array of OSRs, LGAs in low- and middle-income countries often do not effectively take advantage of these sources. As a consequence of weak administration, they often struggle to finance even the most basic of public services (Monkam 2010).

Information and communication technology (ICT) is viewed as an important tool to facilitate the efficient assessment and collection of property tax and other OSRs at sub-national government level (Prichard 2014). Appropriate ICT systems may present advantages for governments and taxpayers. For example, they can improve services to taxpayers (such as a range of e-services and e-payment options) so that the process of paying taxes and fees becomes simpler and faster thereby reducing compliance costs. However, ICT systems also have limitations and may present governments with problems such as overly complex processes and, if web-based, the fragility of internet connectivity (Prichard 2014).

Prior to the introduction of more automated systems of revenue collection, LGAs used manual systems supported by the use of manually written bills and receipts, as well as handwritten ledgers. Problems such as high collection costs, fraud and corruption, underpayment, revenue leakages, and inefficient data management were evident (Auditor General's Report 2017; Fjeldstad and Heggstad 2012; Fjeldstad 2006).

This paper reviews the benefits and limitations of the ICT systems utilised in four African cities, namely Arusha City Council (Tanzania), Kiambu County (Kenya), Kitwe City Council (Zambia) and Ndola City Council (Zambia). The primary question in respect of each city is whether the ICT system implemented and used indeed contributes to improved assessment and collection of property tax and other OSR. To answer this question, we used an exploratory and descriptive case study approach. We visited all four cities and conducted

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[1]   'Property tax' in this paper refers only to an annual recurrent tax on the ownership or occupation of immovable property (i.e. real estate). Defined broadly, property taxes include a variety of taxes other than recurrent taxes on immovable property, such as property transfer taxes, stamp duties, inheritance and gift taxes, recurrent taxes on movable property, as well as financial transaction taxes. These taxes are not considered at all in this paper.

semi-structured interviews with employees to obtain data and information on property tax and other OSR as well as the ICT systems used. Several city staff were interviewed including revenue accountants, chief revenue officers, revenue collectors, ICT staff and finance directors.

Arusha, with a population of about 420,000 and a relatively small total area of 267 km^2, was selected as this city introduced an ICT system, developed in Tanzania with World Bank support, in 2014. Kiambu County, a county within the greater Nairobi metropolitan area, with a population of about 1.63 million and a surface area of approximately 2,543 km^2, was chosen as it has been at the forefront in Kenya as regards the implementation of an ICT system for the collection of property tax and other OSR. Kitwe and Ndola are Zambia's second and third largest cities with populations estimated at 690,000 and 551,000 respectively. We selected these two secondary cities because of their limited utilisation of ICT. In the case of Kitwe, the ICT system was developed locally, whereas the system in Ndola was procured from an international service provider.

This paper is structured in six sections. The introduction provides some background to the research; Section 1 gives a factual outline of the property tax in each of the four cities; Section 2 provides the underpinning literature on ICT in local revenue administrations; Section 3 details the ICT in the case study countries and cities; Section 4 provides a revenue analysis; and conclusions follow in Section 5.

1 Property taxation in the case study cities

A value-based property tax system applies in all three case study countries. However, the systems differ significantly across these countries as is evident from Table 2 in Appendix 1.[2] As already stated, property tax is narrowly defined as a recurrent tax on immovable property.

In Arusha, Tanzania, the taxable object within the tax base of the property tax is buildings only. Land is excluded from the base. For properties on the valuation roll, the assessed value of buildings is determined using a depreciated replacement cost methodology. For properties not on the valuation roll, a simple flat tax is levied. Of the 80,000 properties formally recorded and taxed, some 30,272 are on the valuation roll and taxed accordingly. Increasing the number of valued properties is constrained by the high cost of undertaking valuations. A flat tax is levied on the remaining 50,000 properties. Supplementary valuations are not prepared annually (as dictated by law), further reducing the buoyancy of the already narrow tax base. Property tax constituted only 11.7 per cent of OSR in 2015/16 (see Table 3 in Appendix 2).

In Kiambu County, Kenya, the taxable object of the land rate (i.e. property tax) is land only, i.e. buildings and other improvements are excluded. The establishment of a two-tier system of government has seen fiscal decentralisation as spelt out in Article 209 and Schedule IV of the Constitution of the Republic of Kenya, 2010. The constitution explicitly assigns to the counties the power to impose property tax ('rates'), entertainment taxes and such other taxes as may be prescribed by the national government. In 2015/16 Kiambu collected only 34 per cent of the amount targeted for the property tax (OCB 2016). Furthermore, property tax constituted only 11.4 per cent of OSR in 2016/17 (see Table 5 in Appendix 2).

In Kitwe and Ndola, Zambia, both land and buildings are assessed and taxed. The 2008 main valuation roll in Kitwe was only implemented in January 2012. It expired at the end of 2015. Although the minister approved the 2014 main valuation roll in March 2016, it will likely

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[2]   For more detail on the property tax systems in Kenya, see McCluskey, Franzsen and Olima (2017); for Tanzania, see McCluskey and Franzsen (2017); and for Zambia, see Franzsen, Kabinga and Kasese (2017).

only be implemented in 2019. The last supplementary valuation roll was undertaken in 2012 and implemented in 2014. The 2014 valuation roll and all previous rolls were prepared manually. Kitwe uses limited tax rate differentiation. Property tax constituted 51.7 per cent of OSR in 2016 (see Table 7 in Appendix 2).

In Ndola, the 2011 main valuation roll is currently still in use, although a general revaluation was undertaken in 2016. The approximately 65,000 properties on the 2016 roll were valued at a cost of ZMW (Zambian Kwacha) 3 million (about US$ 300,000), or about US$ 4.60 per property.[3] Supplementary valuations are only prepared as needed. Tax rates differentiate according to property use. Property tax constituted a significant 45.1 per cent of OSR in 2015 (see Table 9 in Appendix 2).

The laws in all three countries require that (at least) taxable properties must be valued. Furthermore, these valuations can generally only be undertaken by an appropriately qualified and registered valuer. In Kenya, the law allows for a valuation cycle of ten years, but in Tanzania and Zambia, the law prescribes a general revaluation of all properties in a rating jurisdiction every five years. Valuation rolls in all three countries are often out of date as there are simply not enough qualified valuers to undertake the regular general revaluations and supplementary valuation required by law. Outdated valuation rolls have a negative impact on both the buoyancy of the tax base and the overall fairness of the property tax system.

According to Bahl and Martinez-Vazquez (2008) and Norregaard (2013), the revenue performance of property taxes is poor, averaging about 0.6 per cent of gross domestic product (GDP) for developing countries as opposed to the about 2.2 per cent average for developed countries. In African countries, the picture is generally much worse. Property taxes are insignificant as a percentage of GDP in Kenya, Tanzania and Zambia (McCluskey, Franzsen and Bahl 2017). Based on data from the International Monetary Fund (IMF 2016), property taxes amounted to 0.01 per cent in Kenya in 2012, 0.11 per cent in Tanzania in 2012 and 0.01 per cent in Zambia in 2010. As a percentage of total tax revenue, the picture is also bleak across Africa (McCluskey, Franzsen and Bahl 2017).[4] However, as a source of revenue at city level, the picture may indeed look quite different, as is evident from Kitwe and Ndola (see Tables 7 and 9 in Appendix 2).

2 ICT and local revenue administration

Public finance theory suggests that the property tax is an ideal local tax. However, it is important to remember that this tax is a 'data-hungry tax', making it a difficult and costly tax to administer properly – especially at local government level where capacity, skills and resources are often lacking. Given the data demands, the administration of the property tax lends itself to the application of modern ICT systems. ICT can be used effectively in respect of various key aspects of the property tax system, from property discovery and tax base management, valuation and/or assessment, and of course as regards billing, payment and enforcement.

Firstly, the basic unit of analysis is a parcel of land or a building, which commonly numbers in the hundreds of thousands for a taxing jurisdiction. A number of characteristics must be observed for each parcel, changes in these observed characteristics must be made annually, and a tax assessment and collection system must be part of this database. Storage and retrieval of data in real time as well as reporting are integral to the effective functioning of the

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administration. Geographic databases within geographic information systems (GIS) are becoming the norm in property tax administrations. Appropriate systems need to be designed, the quality of the raw data needs to be studied, staff must be trained to use the new system, arrangements for maintenance need to be made and of course the hardware and software need to be purchased. Although some countries are already receptive to automation and the concomitant transition costs, others may not be. Once these start-up costs are accounted for, information technology can simplify property tax administration significantly. The number of properties typically involved and the amount of data required for each property render manual inventory collection and recording a difficult task (McCluskey, Franzsen and Bahl 2017). This is particularly true for the functions of valuation, billing and collection.

Over the last 40 to 50 years, various scholars have been critical of the administration of OSR by sub-national government (Dillinger 1991; Kelly 2000). Studies have shown that weak administration has been core to the lack of revenue performance. It is contended that the administration is fundamentally weak in respect of several facets including data compilation and management, lack of transparency, reliance on manual, paper-based systems, poor billing and collection practices, and weak enforcement (Kelly 2000; Kelly and Musunu 2000; Fjeldstad 2006; McCluskey and Franzsen 2005; Moore 2013; McCluskey, Huang, Doherty and Franzsen. 2017). We agree with Kelly (2014) who states that collection is the core activity of any revenue administration. No matter how good the other administrative elements are, if the revenue cannot be – or is not – collected, the system will fail. Not surprisingly, central governments and LGAs have been looking at the use of ICT to improve their collection of OSR. LGAs need to be sufficiently modern in their utilisation of ICT to be able to operate efficiently and effectively (Garzón and Freire 2014; Mascagni, Moore and McCluskey 2014).

A fundamental problem facing LGAs that still operate manual recording and inventory systems is estimating how many property taxpayers and other customers such as business licence payers are missing from their registered rolls; how many of those who are registered are inactive; and how much revenue is foregone through non-payment and ineffective billing systems (Fish 2015; Garzón and Freire 2014). Even when taxpayers are registered in the system, complete and reliable information on their tax liabilities, tax payments made and arrears often does not exist (Garzón and Freire 2014). Furthermore, the recorded data for taxable objects (e.g. properties or businesses) and taxpayers may be inaccurate or simply incomplete – making billing, collection and ultimately enforcement challenging, if not impossible. A basic challenge for tax administrators and revenue managers is to overcome these weaknesses by using appropriate management information systems (Fjeldstad and Heggstad 2012). These systems must enable them to upgrade their institutional capacities by identifying taxpayers and the users of services, assessing their payment obligations, and ensuring accurate and timely billing, payment, and proper enforcement.

Creating a sustainable tax administration system that can administer OSRs in an efficient and cost-effective manner is a goal that many national and sub-national governments around the world share. The improvement in efficiency and the reduction of administrative and compliance costs are central issues for all revenue departments (McCluskey *et al.* 2017). The following are key objectives of developing a revenue collection system: (1) assist in raising more revenue; (2) improve internal organisation and reporting; (3) ensure greater accountability, transparency and integrity in relation to collected revenues; and (4) improve taxpayer trust and hence voluntary compliance.

Collecting revenue from large numbers of taxpayers is an ongoing challenge for any government, especially in developing countries (Fish 2015). There is often increasing pressure to collect more revenue with fewer resources and reduced budgets. Revenue collection departments also face customer demands for more user-friendly services, such as

easier and more convenient payment options (Bird and Zolt 2008). Understandably, tax administrations — at both the national and sub-national levels — increasingly utilise ICT. The appropriate use of ICT may present many benefits for revenue departments, including the better management of tax base and taxpayer data, faster processing of information and data, fewer resources and reduced collection costs. It also increases transparency and is therefore a powerful tool in tackling corruption and reducing the opportunities for bribery and revenue leakage. Using ICT to compile a database of information enables revenue authorities to identify and address non-compliant taxpayers (McCluskey *et al.* 2017). In addition, more comprehensive and complete databases improve the ability of councils and revenue authorities to undertake tax compliance analysis and enable more accurate revenue forecasting – both key aspects for improved budgeting.

However, ICT administration projects are often complex and expensive and it may take time to realise their benefits and savings. For example, the start-up cost of implementing a value-based property tax system or a computer-assisted mass appraisal (CAMA) system may be significant. A proper cost-benefit analysis is essential. It is therefore important for revenue departments to make the right decisions. This is particularly important in an environment where purchasing a commercial off-the-shelf (COTS) system may not suit local circumstances. The business case for the introduction of ICT to undertake mass appraisal or to improve OSR collection should be based on sound analysis and a detailed appreciation as to how and where the benefits will arise. Keen (2012) also rightly concludes that there are no quick fixes. ICT solutions must be fit for purpose and thus relate to local contexts. This may mean that simpler, more robust systems could often be more appropriate options in the short to medium term (Prichard and Fish 2017).

Previous research into the role and impact of ICT within revenue administration has revealed positive effects on revenue collection. Gidisu (2012) provides evidence on this positive effect in Ghana with the introduction of the Local Government Revenue Mobilization System (LGRMS). This is an integrated GIS and revenue mobilisation tool that can provide realistic information on the revenue potential of a local assembly and automate the revenue mobilisation processes. Similarly, in their survey of the former 175 LGAs in Kenya, Odhiambu, Mitullah and Akivaga (2005) found that the ICT system was instrumental in enhancing the prudent management of OSRs in at least some of the LGAs. Fish (2015) provides empirical evidence of how ICT created administrative efficiencies and improved revenue collection in Sierra Leone and Malawi.

In Uganda, the case of Kampala Capital City Authority (KCCA) shows best-practice examples of improving revenue administration (Kopanyi 2015, 2016). The KCCA has made significant improvements in revenue enhancement, confirming that efficient revenue collection relies on a good administration and a solid institutional framework. KCCA established the Directorate of Revenue Collection that implemented revenue automation and introduced the e-Citie programme for easy registry and payment systems and simplification of revenue processes (Franzsen and McCluskey 2017; Kopanyi and Franzsen 2018). Of course, the reforms in KCCA went way beyond ICT. Institutional reform and political buy-in at the highest level were key components of the success.

LGAs must strive to adopt resilient and sustainable IT-based revenue collection systems. In Kenya and Zambia, LGAs have a degree of autonomy that would allow them to develop their own in-house ICT solutions or acquire COTS solutions. However, these approaches come with significant risks (e.g. 'lock-in' contracts and incompatibility with other systems) and costs (e.g. licences and maintenance and upgrading charges). National government has a key role to play in preventing or minimising the development of fragmented ICT systems across LGAs to ensure interconnectivity with national budgeting and revenue monitoring systems. Ideally, central government must also provide appropriate procurement procedures and standardisation protocols given that data sharing often presents challenges. For example,

data contained in legal registers may be in the Ministry of Justice, whereas property valuation and tax administration are the responsibilities of the ministries responsible for lands or finance, or possibly LGAs. As the computerisation of land registries in African countries is gaining ground, the sharing of data should – in principle – become easier. Properly designed or tailored ICT systems may be a cure for the data sharing challenge, whereas poorly designed, incompatible systems may exacerbate data fragmentation or duplication.

3 ICT in the case study countries and cities

Most countries develop national ICT policies in recognition of the significant potential that ICT can bring in improved service delivery and governance. A national ICT policy can be seen as a mechanism to contribute effectively towards achieving national development goals (Palvia, Baqir and Nemati 2015). The absence of an overarching ICT policy can lead to poor harmonisation of initiatives, the random adoption of different systems and standards across ministries, unnecessary duplication of effort and waste of scarce resources. Whilst having a national ICT policy is a positive step, it is of equal importance that such policies should be reviewed thoroughly for effectiveness, completeness and relevance in changing dynamics.

In 2016, the Government of Tanzania (GoT) reviewed its first National Information and Communications Technologies Policy (GoT 2003) and in 2016 published the revised and updated National Information and Communication Technology Policy (GoT 2016). The GoT through this national policy recognised that ICT was a central pillar to achieving economic transformation particularly at the local government level.

Kenya first published a national ICT strategy in March 2006. The ICT strategy was revised and the National Information & Communications Technology (ICT) Policy was published in 2016 (Republic of Kenya 2016). National government has the mandate to encourage the rollout of ICT across all 47 counties in Kenya. In Zambia, the government in 2006 developed an ICT policy with the goal of improving public sector management as well as enabling efficient and effective delivery of public goods and services through the implementation of e-government systems. A number of initiatives and projects have already been undertaken by the government in the public sector, such as the implementation of an Integrated Financial Management Information System (IFMIS).

Utilising the growth in mobile subscriptions facilitates online revenue payments via mobile phone money transfer networks such as M-Pesa, Tigo Pesa, Airtel Money and Max Malipo. LGAs in Kenya and Tanzania have been at the forefront in recognising the importance of mobile money and ensuring that revenue management systems integrate mobile payments.[5] Zambia still needs to capitalise on this technology.

3.1 Arusha City Council, Tanzania

The Government of Tanzania has considered several different ICT platforms to assist local government. In 2000, the Prime Minister's Office – Regional Administration and Local Government (PMO-RALG) launched the Local Government Reform Programme with the goal of improving revenue administration systems for LGAs and enhancing local revenue administration capacities. In 2006, the Integrated Property Rates Information Management System (IPRIMS) was developed and piloted in Mtwara Mikindani Municipal Council. This followed a cooperation project between the Tanzanian Revenue Authority

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[5] In 2017, Kenya had 41 million mobile subscribers, representing about 82.5 per cent of the population of about 50 million (Chappatte 2018); Tanzania had 23 million subscribers, i.e. about 42 per cent of a population of 55 million (Reuters 2018); Zambia had 7.1 million subscribers (2017) representing about 42 per cent of about 17 million (itwebafrica.com).

(TRA) and the former Deutsche Gesellschaft für Technische Zusammenarbeit GmbH (GTZ)[6] that led to the development and introduction of integrated tax administration software for assessment and collection, known as iTAX. In 2007 IPRIMS was incorporated as a module in iTAX and piloted in five LGAs.[7] The plan was that iTAX would be implemented in all LGAs in Tanzania. Implementation stalled and only a few LGAs actually adopted this system. In the meantime, in 2005, work had been completed on the development of a local government revenue administration system that resulted in the release of a system known as Municipal Revenue Collection Manager (MRECOM). This system was rolled out to a few LGAs including the then three municipal councils in Dar es Salaam.[8]

The most recent chapter in ICT provision was the development of the Local Government Revenue Collection and Information System (LGRCIS). This was a project supported by DANIDA (the Danish International Development Agency) and the World Bank through the Tanzania Strategic Cities Project. However, a key feature of the system development is that LGRCIS is a national government-owned asset. Beginning in the 2014/15 fiscal year, eight LGAs introduced LGRCIS as pilot cases.[9] Full rollout of the system to all 189 LGAs was achieved in the 2016/17 fiscal year. In 2016, however, the collection of the property tax was centralised in the hands of TRA and in 2017 revenue from the property tax and billboard fees was centralised (Fjeldstad, Ali and Katera 2018). Despite these developments, the LGRCIS is still integral in the collection of other OSR for Tanzania's LGAs, including the service levy, hotel levy and business licences.

A key objective of LGRCIS was to facilitate the move away from the previous paper-based management to digitised records. Arusha City Council fully implemented LGRCIS in the 2014/15 fiscal year. A municipality-wide core data collection exercise was undertaken to obtain information on all possible taxpayers. The data was then systematically entered into LGRCIS. The move from paper-based records to digital took approximately six months. The system was built around several components: (1) registration: to properly identify and register all (legal) taxpayers/tax subjects and objects; (2) assessment: to verify taxpayer data, cross-check and assess tax/levy/fee liabilities; (3) billing: to automate the production/printing of bills; (4) payment receipts: to enter payments in the taxpayer account and balance payments with debits; (5) enforcement: to identify delinquent accounts and organise a systematic sanction/enforcement/collection process; (6) auditing: to audit customer accounts; (7) reporting: to provide analytical reports to management regarding revenue billed and collected; and (8) budgeting: to facilitate the provision of data to support the budgeting process (PMO-RALG 2014).

Interviews with key council staff highlighted from their perspective the main advantages of LGRCIS over the previous revenue management approach. These included: (1) a more professional approach to local revenue generation and collection; (2) more efficient performance of official duties, resulting in time saving; (3) professional approach to customers and services; (4) better training and staff confidence; (5) reliable ways of paying for services (e.g. by bank transfer, M-Pesa, etc.); and (6) dependable, receipted transactions for all local services.

With the implementation of any new system and business processes, time is needed for the new practices and procedures to stabilise. Several initial problems were identified. These included the following. (1) Staff were not fully aware of what management information or reports were available from within the system, indicating a lack of system awareness and the

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[6] Now GIZ – the Gesellschaft für Internationale Zusammenarbeit GmbH.
[7] Mtwara Municipal Council; Mtwara District Council; Tanga City Council; Bunda District Council; and Kinondoni Municipal Council.
[8] MRECOM was implemented in Dar es Salaam's Kinondoni Municipal Council, Ilala Municipal Council and Temeke Municipal Council, as well as Moshi Municipal Council and Morogoro Municipal Council.
[9] Tanga City Council, Arusha City Council, Mwanza City Council, Ilemela Municipal Council, Kigoma Municipal Council, Mbeya City Council, Mtwara Municipal Council and Dodoma City Council.

need for more training. (2) LGRCIS was developed with a view to integrating GIS functionality. However, this component has not been fully operationalised. Whilst Arusha CC has a functioning GIS system, it has not been integrated as was intended. (3) The LGRCIS server is located in PMO-RALG in Dodoma. This is a centralised server that allows PMO-RALG and Ministry of Finance to access data on any local authority directly from the central server. A key problem has been system downtime due to poor internet connectivity and the lack of bandwidth. Arusha CC has no control over the main server and initially there were several instances daily when the system could not be accessed. (4) The stability of the software was problematic, with several errors due to programming faults.

LGRCIS has been fully embedded into the revenue management process in Arusha City Council. It clearly has had the desired results in improving the management of revenue sources. The approach taken by the GoT was to harmonise the procedures across all local governments. This led to the decision to adopt a national, uniform system for revenue management that all local authorities must implement. The benefits of this included cost effectiveness in providing technical support for one system as opposed to several; consistency and standardisation of training and capacity building; and facilitating performance monitoring of local government by national government. In addition, as local government staff are civil servants, moving them from one local government to another did not necessitate system retraining.

3.2 Kiambu County, Kenya

The Government of Kenya has undertaken a number of public finance management reforms aimed at enhancing accountability and transparency within national and county governments. This was mostly done in 2003 through the introduction of the IFMIS by the National Treasury. IFMIS is an information system that enables efficient resource allocation, budget formulation and execution, public procurement, revenue collection and internal and external audits (Otieno, Migiro and Mutambara 2017). It also provides an integration and interface with other relevant financial management subsystems including those in the Central Bank of Kenya and the Kenya Revenue Authority.

County governments are largely free to procure their own system for revenue administration. This has led the Office of the Controller of Budget (OCB) and Commission for Revenue Allocation (CRA) to report that the majority of counties were using fragmented ICT systems in revenue collection and management (OCB 2017; CRA 2016). To ensure some minimum level of standardisation, Article 190(2) of the 2010 Constitution requires county governments to use financial management systems that are compatible with requirements prescribed by national legislation. Whilst county governments may adopt different systems and solutions, it should be incumbent on the National Treasury to ensure elements of compatibility and standardisation of revenue collection systems used by national and county governments. As a minimum, the revenue collection and management system adopted by a county should be compatible with the IFMIS.

As part of the decentralisation efforts since 2013, county governments had to maximise the collection of their own revenues, which called for the automation of revenue collection systems. The Local Authority Integrated Financial Operations Management System (LAIFOMS), which was compliant with the National Treasury IFMIS, was a logical choice. LAIFOMS is a World Bank-funded system that was provided free of charge to the pre-2013 municipalities and, since 2013, to counties. LAIFOMS is a stand-alone platform for recording collected revenues and only caters for back-end operations, meaning that county citizens have no access to check if payments were lodged or if they have arrears. Given its limitations, the system has been prone to several problems, such as: (1) fraudulent manipulation of receipts by revenue collectors; (2) payments cannot be tracked to the LAIFOMS system as bank slips are not posted to the system, but recorded manually in a

register outside the system; and (3) lack of different modes of payment, favouring cash payments.

The issues inherent in LAIFOMS led several county governments, including Kiambu County, to procure their own in-house or COTS revenue administration systems. Kiambu began to implement its ICT system in FY2014/15. Private sector developers saw an opportunity to provide ICT-based solutions for county governments. One such developer was Strathmore University (@iLabAfrica) who developed a software solution for county revenue management called CountyPro. The system was designed as a citizen-centric, web-based e-governance solution that allowed all county departments and divisions to share information. The system has a front-end web-based portal for citizens and a back-end portal for county staff.

In addition, the system being web based allows citizens to pay online, through the new Kiambu Huduma card.[10] To counter revenue leakages, the system uses QR-coded[11] receipts that can be verified by county revenue inspectors.

Some of the benefits of CountyPro that were pointed out by county officials include: (1) reduced bureaucracy and considerably less paperwork; (2) automated reporting functions; (3) being web based means that citizens living outside of the county can make online payments for fees and licences; (4) reduced dependence on human interventions; (5) more efficient processing of payments and licence applications; and (6) increased citizen participation through transparency and access to information.

The most common problems reported with the new revenue system have been related to inadequate internet connection and downtime due to power shortages. To date Kiambu County has not invested in an independent electricity supply. There has also been a lack of connectivity between all modules within the system.

The speed of system introduction meant that many county staff had insufficient training on the various modules within the system. Linked to this is the need to deliver civic education programmes, in order to educate citizens on the new processes and procedures related to their accounts. Furthermore, there have been issues of compatibility of point of sale (POS) machines with the CountyPro software.

3.3 Ndola and Kitwe, Zambia

In Zambia, central government has mobilised initial resources to connect the Ministry of Local Government and Housing (MLGH) to all the provincial offices and councils in Zambia.

Apart from the lack of proper electronic communication between central and local government, LGAs have extremely limited ICT capabilities. A 2017 survey of 43 (of the 105) councils showed that none of the surveyed councils have yet adopted an ICT policy (Auditor General's Report 2017). LGAs have been acquiring their own locally or internationally-developed COTS revenue administration systems.

3.3.1 Kitwe

Although Kitwe City Council (KCC) has developed a revenue enhancement strategy, it has not yet developed an IT strategy. KCC uses a Windows-based, user-friendly IT programme called PalmSoft. It is a relational database that is provided by an IT supplier based in Kitwe. It does not require the internet to function. The programme is maintained and, to the extent

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10   The Huduma card is a government-owned multipurpose service and payment card that allows customers to make or receive payments. The card has a smart chip built into it whereby the cardholder's personal data can be securely stored, and the embedded chip can host multiple applications.

11   QR is an acronym for Quick Response (meaning that the code can be read quickly via the camera on a mobile phone).

required, customised by employees of PalmSoft based in Kitwe, but not within KCC. KCC pays an annual licence and maintenance fee that is subject to negotiation and some flexibility. Officials view the overall system as good value for money.

There are two distinct IT systems operated on two separate servers. Weekly backups are made, but not on a remote server. There is a Land Management System (LMS) for managing land-related matters and another system for managing the payroll. However, all the other revenue-related systems are still operated manually via paper-based processes.

KCC's customers must generally pay their dues at the KCC headquarters. The cashiers also use PalmSoft to record these payments. The vast majority of payments are made in cash. To better facilitate compliance, KCC plans to establish more satellite offices in some residential neighbourhoods. Presently there are four regional points of payment. However, for commercial properties, council officials visit the business premises to collect payment of the property tax as these customers do not want to queue at the KCC office to pay taxes. Similarly, there are no direct electronic links between KCC and any of the commercial banks in Kitwe. The council has also not yet negotiated with any of the mobile telephone operators, although there are initiatives to do so in future.

Council staff stated that the PalmSoft system has the following weaknesses: (1) it cannot produce financial statements, implying limited functionality; (2) to identify defaulters, it is necessary to work through the whole database – a tedious and time-consuming task; (3) when accounts and tax bills are generated, some tasks must still be performed manually; (4) the system is not flexible when mistakes with data inputs must be rectified; and (5) the system is slow. At the end of 2017, there was no indication that these weaknesses were going to be addressed in the short term.

3.3.2 Ndola

Ndola City Council (NCC) has not yet fully embraced ICT and has not yet developed an in-house ICT strategy. The city operates three highly fractious and functionally limited ICT systems. The first system is a payroll package system. It is supplied by a local supplier and is reportedly working well. The second system is used to manage land. The third system, acquired in 2016 from Redsoft (based in India), is an internet-based integrated land records management and automated billing and receipting system. Restricted internet access means that the software supplied by Redsoft, consisting of a combination of on and off-the-shelf software, cannot be utilised fully by council staff. The upgrades and maintenance dimensions of the land records management and automated billing and receipting systems are also internationally sourced, from Redsoft in India, which makes it exceedingly expensive and challenging to bring technicians from India to Zambia to provide training or technical support. Another challenge that constrains the utilisation of this software are the licence and maintenance fees, which are inflexible. For instance, NCC has only been able to secure three user licences, but the system requires 50 user licences to be fully functional. Another challenge has been the inadequate training and technical support provided by the overseas-based software supplier.

As a result of the utilisation of three ICT systems with limited or no interconnectivity, the administration environment in the council is still predominantly paper-based, and relies on two servers and 70 computers to service a small local area network and facilitate communication across functional departments.

The finance department is not fully computerised. This presents a major challenge as this department is therefore not properly integrated with the mapping, land records management, valuation, billing and receipting systems. The finance department uses Microsoft Dynamics for reflecting receipts of all payments for all revenue sources. Cash payments are collected

and reported on a daily basis. However, all payments are made at the civic centre: none are directly deposited into the council's bank account. Potential to maximise revenue collection exists if the council can secure an integrated non-internet-based ICT system locally, and complement this with ICT applications that allow clients to verify, pay and confirm their invoices, and link physical and online customer bank deposits to the municipal finance department.

4 Property tax and own-source revenue analysis

This section of the paper looks at revenue collection performance across the four LGAs. As a broad comparator, Table 1 depicts a per capita analysis.

Table 1 2016 Property tax and OSR per capita in USD[12]

City	Population (2017 est.)	Fiscal year	Property tax per caDita (USD)	OSR per capita (USD)
Arusha	420,000	2015/16	1.63	13.93
Kiambu	1,625,000	2016/17	1.42	12.43
Kitwe	690,000	2016	4.05	7.83
Ndola	551,000	2016	5.47	12.61

Source: Authors' own compilation.
Note: The 2017 population estimates were provided by the relevant city and county councils.

On an *a priori* basis one would intuitively expect that LGAs with better revenue administration will have better collection performance. In terms of total OSR per capita, Arusha leads followed closely by Ndola and Kiambu, with Kitwe lagging behind. However, a per capita comparison is bound to be somewhat misleading given the vastly different political, institutional, fiscal and local economic development dynamics across the four cities. As is evident from this section (read with Appendix 2), the revenue importance of specific revenue sources, such as the property tax, differs significantly across the four cities. A direct comparison of the percentage of property tax as a source of own revenue is also inappropriate given the different local fiscal architecture of the three countries as well as the cities' unique taxpayer profiles. For example, in the cases of Kitwe and Ndola, the overall contribution of only a few mining properties to the overall property tax revenue is significant.[13]

In Arusha, the LGRCIS was fully operational in FY2014/15, though parts of the system were being incrementally introduced in FY2013/14. As is evident from Table 4 (Appendix 2), total OSR collections increased in nominal terms by 227 per cent over the period FY2012/13 to FY2015/16. Property tax revenues over the same period increased by 262 per cent. The question is to what extent are these significant revenue increases due to the implementation of the LGRCIS. Discussions with council staff clearly suggest that the system played a major part in revenue growth, as did the improvements in data collection as part of a wholesale in-the-field survey that was part of the implementation of the LGRCIS.

Over the three-year period from FY2013/14 to FY2015/16 shown in Table 3 in Appendix 2, OSR in Arusha never exceeded 24 per cent of total revenue. Annually, government grants remain the most important component of local revenue for the city. From 32 sources of revenue, the service levy (based on monthly sales turnover) is the most important OSR

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[12]   The exchange rates at 31 December 2016 were used – see Appendix 4.
[13]   In the case of Kitwe, two mining properties alone (out of 48,666 properties on the 2014 valuation roll) contributed more than 23 per cent of the total property tax revenue. In Ndola, the five mining properties (out of 42,741 properties on the 2011 valuation roll) contributed more than 36 per cent of the property tax revenue.

collected in Arusha. At less than 3 per cent of total local revenue and not exceeding 12 per cent of OSR in any of the three years, property tax is rather insignificant. Its relatively poor performance can partly be attributed to low tax base coverage and a valuation roll that dates back to 2002 (despite a five-year cycle prescribed by the law). With an inflation rate that gradually decreased from 7.87 per cent in 2013 to 5.18 per cent in 2016 (see Table 12 in Appendix 3), the real growth in OSR from 2012/13 to 2015/16 was more than 180 per cent. Over the same period, the real growth in property tax revenue exceeded 210 per cent.

For county governments in Kenya, the main sources of revenue are the centrally allocated equitable share grants and conditional grants, with very limited reliance from OSRs (KIPPRA 2017).[14] In the case of Kiambu County, as is evident from Table 5 in Appendix 2, government grants collectively constituted 75.8 per cent of total revenue in FY2014/15, 76.6 per cent in FY2015/16 and 81.6 per cent in FY2016/17. Property tax (i.e. 'land rates') constituted less than 2.5 per cent of total revenue over the three-year period although it has increased in nominal (and real) terms and in FY2016/17 amounted to 11.4 per cent of OSR. Over the period FY2015/16 to FY2016/17 property tax revenue increased by some 7 per cent. Table 6 of Appendix 2 paints a rather bleak picture of Kiambu County's overall revenue performance in the period from FY2014/15 to FY2016/17. According to the OCB, it was down from FY2015/2016 due to political interference and collection and enforcement issues in respect of certain fees (OCB 2017). OSR increased by 15.5 per cent (year-on-year) in nominal terms in 2015/16, but decreased by 15.3 per cent in FY2016/17. In real terms (see Table 11 in Appendix 3 for the inflation rates in Kenya) the decrease is much worse.

As shown in Table 5 (Appendix 2), total OSR has decreased from 24.2 per cent in FY2014/15 to 18.4 per cent in FY2016/17. Property tax remained rather constant, dropping marginally from 2.2 to 2.1 per cent of total revenue over the same period. It is not surprising therefore that there seems to be urgency at both central and local government levels to reduce the reliance of LGAs on central government grants and that ICT is viewed as an important tool to enhance revenues from own-revenue sources.

Property tax is the most important OSR for KCC – as is evident from Table 7 in Appendix 2. Property tax increased in importance as a percentage of total revenue and OSR, from 32.4 per cent and 40.0 per cent respectively in FY2014 to 36.3 per cent and 51.7 per cent in FY2016. Overall, OSR contributed 81.1 percent of total revenue in 2014, 57.9 per cent in 2015 and 70.2 per cent in 2016. There was a decline in total OSR in nominal terms from FY2014 to FY2015 of 7.7 per cent[15] and a further decline in FY2016 of 2.3 per cent. Property tax remains the mainstay of OSR and exceeded the amount received from government grants in FY2016.

NCC has a range of OSRs of which property tax is by far the most important – as is evident from Table 9 in Appendix 2. OSR contributed 71.0 per cent of total revenue in FY2014, 63.8 per cent in FY2015 and 78.4 per cent in FY2016. Over the same three financial years, property tax constituted 34.9 per cent of total revenue (and 49.1 per cent of total OSR), 28.8 per cent (and 45.1 per cent of OSR), and 34.0 per cent (43.4 per cent of OSR) respectively. Although there is a decline in its importance relative to other OSR terms, property tax remains the mainstay of OSR and even exceeded the amount received from government grants in FY2014 and FY2016. Revenue from licences and permits increased significantly year-on-year (even in real terms) as is clear from Table 10 in Appendix 2.

In both Kitwe and Ndola, where property tax has traditionally been an extremely important source of revenue, both as a percentage of total revenue and of OSR (see the relevant

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[14]   OSR performed poorly mainly because of delays in automation of revenue collection, cases of delays in passage of finance bills in some counties, over-projection of non-specified revenues, lack of valuation rolls to determine appropriate property rates, low compliance rates, and pilferage due to weak revenue collection systems (KIPPRA 2017).

[15]   In real terms the decline is much worse given an inflation rate of more than 10% in 2015. See Table 11 in Appendix 3.

tables in Appendix 2), and where OSR as a percentage of total own revenue is high, there may have, rather perversely, been less impetus to seek revenue enhancement from these sources – at both national and local government level.

5 Conclusions

The international literature supports the view that ICT systems are critical to revenue administration at the local government level. However, empirical evidence on this specific issue is rather weak. This working paper has attempted to provide qualitative and quantitative evidence on the importance of ICT and on whether ICT solutions improve own-source revenues, including property tax collections. Revenue staff in each of the cities largely agree that ICT is the only way to efficiently manage broad-based revenue sources including the property tax. However, it is important to recognise that ICT is a facilitation tool to support revenue collection. Revenues still have to be collected albeit through more taxpayer-friendly ICT processes. At the country level, there is a clear direction of travel in terms of LGAs being supported to improve revenue administration with ICT systems. Clearly, Kenya and Tanzania are somewhat further ahead in mobilising ICT than Zambia.

The motivation for local government to adopt ICT solutions to manage their OSR is largely based on the need to be more efficient in data management. As LGAs grow in terms of population, economic development and physical expansion, there is a commensurate increase in people engaging with local government. This engagement is primarily about the receipt of services and the payment for them either directly or indirectly. The growth in population means increases in property taxpayers, and the expansion of commerce brings growth in business licences, hotel levies, etc. Hence, there is an obvious need to have robust revenue management systems to effectively administer the local councils' revenue sources. The focus should therefore be on improving the effectiveness and efficiency of local revenue administration. The case study cities, in recognising the need to have more effective revenue administration, adopted different strategies to achieve this.

An important finding from the research highlights differences in the approach to system procurement for own-source revenue collections. In the case of Tanzania, the government has provided one national system, i.e. LGRCIS, for all LGAs. All authorities must use this system and it is controlled at the centre by PMO-RALG, with one server to support all of the activities. There are advantages in having one standardised, uniform, national system, including system support and training. The central server allows national government to draw down local authority data on revenue collection performance. In the case of county governments in Kenya, they are free to procure their own system from the private sector or develop in-house systems. This approach gives autonomy to counties like Kiambu but can create difficulties if the system is not fully compatible with the IT platform used by the National Treasury. Similarly, the local councils in Kitwe and Ndola procured the systems in use in these two cities. Clearly, both solutions can work effectively providing that the design is fit for purpose, the system is well supported from a technical perspective, and integrates with other national administrative systems.

Arusha and Kiambu have only recently implemented ICT solutions to help manage their own-source revenues. In many ways it is possibly too soon to measure the real effects that the systems are having in improving revenue administration and collections. However, the primary rationale for the implementation in each location is clear: to improve collections and to reduce revenue leakage. The need to move from a cash-based payment system to one developed on e-payments, either through mobile money or traditional bank deposits, is self-evident. The ICT solutions discussed in this paper are taking advantage of the growth in internet banking and developing platforms that can facilitate the use of electronic payment

systems such as M-Pesa. Linking revenue collection with mobile platforms and the traditional banking system has been well developed in Arusha and Kiambu but less so in the two Zambian cities. In the case of Arusha, a bank sub-office has been opened within the council offices to facilitate customer payments. Kiambu has reached service level agreements with several of the main banks to permit them to accept payments for council services.

Revenue collection staff in the case study cities have had to adapt to the new business processes being introduced. An area of some concern expressed in Arusha and Kiambu related to the need to have much more technical training on the system. In addressing these concerns for Arusha, PMO-RALG provided mass training of a range of council staff at its training institute in Dodoma. In Kiambu, the system developer provided intensive training courses. The concentration of effort was to develop a cadre of well-trained staff, the IT personnel in particular, to then act as trainers for other council staff. However, the evidence from the cities does indicate the need for continuing support, particularly when updates to the system are rolled out.

The sensitisation of customers to changes in business processes was identified as a major issue by the city councils. Awareness campaigns were developed to engage with the public to provide information on several functions including how to apply online for various business licences, how to make online payments, and how to check personal accounts and arrears. Obviously not all customers of the city councils had internet access, so accommodations had to be made to deal with their situations. The move away from accepting cash payments unless through the banks was a significant challenge for those using council services. Anecdotal evidence obtained from Arusha and Kiambu suggests that taxpayer trust and voluntary compliance increased with ICT and especially with the issuance of computer-generated bills and receipts for payments made. The increase in the transparency of council procedures with the shift from manual, handwritten processes has had a positive effect.

LGRCIS and CountyPro are web-based systems that require an internet connection that is robust and reliable. In the cases of Arusha and Kiambu there are still occasions when the internet connection is poor, leading to system downtime. The frequency of such downtimes is reducing as the councils invest in more effective systems using wide area and local area networks.

The location of the ICT service provider matters. Another important finding is that the source of the ICT systems, i.e. local ICT supplier (Arusha, Kiambu and Kitwe) versus a foreign-based supplier of ICT services (Ndola) impacts on cost and timely upgrades, improvements regarding functionality, and training. Indeed, whether the system provided is backed by national government or a private company may be an important consideration. In-house developed or COTS ICT systems that are not integrated with central government financial reporting systems are issues in all four cities. However, Tanzania is addressing this problem through the national roll out of LGRCIS. Although the revenue and administration of the property tax has been centralised in Tanzania since 2017, the LGRCIS system is still being used for all other own-revenue sources that have not been centralised.

The transition from paper records, ledgers and receipt books to digitised electronic databases will take time. For example, Arusha invested considerable effort in the collection of in-the-field core data and the entering of all information into the LGRCIS. This took a team of ten staff around six months to achieve fairly comprehensive records within the system. A similar intensive data collection and data input approach was undertaken in Kiambu.

In summary, the growth in OSRs and property tax in Arusha coincided with the implementation of LGRCIS. The administration of taxpayer records improved, billing became more efficient and comprehensive and collection efforts were strengthened. Would the results presented in Section 4 have occurred without LGRCIS? In all probability, no. In

Kiambu, the picture is less clear as to the real impact ICT has had. Revenue collections, particularly in the year following the introduction of CountyPro, were unfortunately adversely affected by political factors. Kitwe and Ndola have yet to fully implement an ICT-supported modern revenue administration system. Having said that, revenue collection per capita is at least comparable to Arusha and Kiambu. So, the question for local government in Zambia is whether revenue collections would improve if administrative systems were modernised?

It is important to appreciate that the ICT systems analysed in this paper are only a tool to administer revenue sources. They can improve transparency in revenue collections, show where problem areas are in respect of arrears and provide the basis for more efficient budgeting. They cannot, however, directly improve enforcement, which is often the critical element missing in local revenue administration. Indirectly, they may improve enforcement as LGAs with quality data may be more confident to act against delinquent taxpayers. In short: good ICT systems, coupled with effective enforcement, could be the recipe for improved collections.

Political support at national and local levels is essential (Prichard and Fish 2017), however it is often wanting in all three countries. Although national ICT policies exist in all three countries, fragmentation and incompatibility are still issues in Kenya and Zambia. In Tanzania, the rollout of the LGRCIS to all LGAs is a welcome step. However, the impact of this ICT system on local revenue mobilisation is likely to be limited by the centralisation of important revenue sources such as the property tax and billboard fees. Institutional support for ICT at the council level seems intact in Arusha and Kiambu, but is somewhat lacking in Kitwe and Ndola.

From a reform perspective, an important question that should be addressed is whether scarce resources should be allocated to improving revenue administration. Kenya and Tanzania have embraced the ICT solution with positive results. Local governments in Zambia have yet to fully adopt a revenue management system and are continuing with more traditional manual, paper-based systems. However, there is a sense that Zambia will move to an increasingly greater use of ICT.

It will take time for the real financial benefits of the implementation of ICT processes in each of the cities to become evident. It is possibly too soon to be able to definitively measure all the benefits – both tangible and intangible. However, the evidence from the city councils points very strongly to the benefits of having an ICT solution to property tax and other OSR collections.

Appendices

Appendix 1 Recurrent property taxes in the case study countries

Table 2 Summary of recurrent property taxes in Kenya, Tanzania and Zambia

	Kenya	Tanzania	Zambia
Tax base	Land value only	Building value only	Value of land and buildings
Taxpayer	Owner	Owner	Owner
Valuation			
Responsibility	LG	LG	CG; LG
Service provider	LG	LG; private sector	CG; LG
Qualifications	Certified valuer	Certified valuer	Certified valuer
Valuation cycle	10 years	5 years	5 years
Tax rates			
Responsibility for setting rates	LG	LG	LG (with some CG oversight)
Rate setting: law	Annually	Annually	Annually
Rate setting: practice	Irregular changes	Irregular changes	Mostly annually
Tax administration			
Billing	LG	CG (since 2017)	LG
Payment	Varied options	Varied options	Limited options
Enforcement	LG	Now CG (via TRA)	LG
Revenue			
Entitlement: law	LG	LG	LG
Practice	LG	CG (since 2017)	LG

Source: Compiled with reference to the country chapters in Franzsen and McCluskey 2017.
Note: CG = central government; LG = local government; TRA = Tanzania Revenue Authority.

Appendix 2 Property tax and other OSR in the four case study cities[16]

Arusha City Council

Table 3 Importance of property tax and other local revenue sources in Arusha: 2013/14-2015/16

Revenue sources	2013/2014			2014/2015			2015/2016		
	Actual (TZS '000)	% of total revenue	% of OSR	Actual (TZS '000)	% of total revenue	% of OSR	Actual (TZS '000)	% of total revenue	% of OSR
Service levy	1,927,346	4.7	21.7	1,853,432	4.2	17.8	3,231,585	6.0	25.4
Property tax (rates)	994,579	2.4	11.2	996,936	2.3	9.6	1,488,799	2.8	11.7
Hotel levy	107,293	0.3	1.2	70,920	0.2	0.7	55,406	0.1	0.4
Land rent	219,436	0.5	2.5	667,534	1.5	6.4	234,716	0.4	1.8
Licences, fees & permits	4,172,071	10.2	47.0	4,884,498	11.0	47.0	5,666,551	10.5	44.5
Other OSR	1,454,918	3.5	16.4	1,919,467	4.3	18.5	2,043,876	3.8	16.1
Total OSR	8,875,644	21.6	100	10,392,788	23.5	100	12,720,933	23.6	100
Government grants	32,202,638	78.4	-	33,874,498	76.5	-	41,183,671	76.4	-
Total revenue	41,078,283	100	-	44,267,287	100	-	53,904,605	100	-

Source: Based on Arusha CC 2017 data.

Table 4 Year-on-year nominal changes in local revenues in Arusha: 2012/13-2015/16

Revenue sources	2012/13		2013/14		2014/15		2015/16	
	Actual (TZS '000)		Actual (TZS '000)	Year-on-year %	Actual (TZS '000)	Year-on-year %	Actual (TZS '000)	Year-on-year %
Service levy	1,549,965	-	1,927,347	24.3	1,853,432	-3.8	3,231,585	74.4
Property tax (rates)	567,865	-	994,579	75.1	996,936	0.2	1,488,799	49.3
Hotel levy	176,829	-	107,293	-39.3	70,920	-33.9	55,406	-21.9
Land rent	80,418	-	219,436	172.9	667,534	204.2	234,716	-64.8
Licences, fees & permits	1,817,171	-	4,172,071	129.6	4,884,498	17.1	5,666,551	16.0
Other OSR	1,399,986	-	1,454,918	3.9	1,919,467	31.9	2,043,876	6.5
Total OSR	5,592,235	-	8,875,645	58.7	10,392,789	17.1	12,720,934	22.4
Government grants	28,619,752	-	32,202,639	12.5	33,874,499	5.2	41,183,671	21.6
Total revenue	34,211,986	-	41,078,283	20.1	44,267,287	7.8	53,904,605	21.8

Source: Based on Arusha CC 2017 data.

Kiambu County

Table 5 Importance of property tax and other revenue sources in Kiambu: 2014/15-2016/17

Revenue sources	2014/2015			2015/16			2016/17		
	Actual (KES)	% of total revenue	% of OSR	Actual (KES)	% of total revenue	% of OSR	Actual (KES)	% of total revenue	% of OSR
Property tax (rates)	189,335,395	2.2	9.0	219,948,910	2.1	8.8	235,415,270	2.1	11.4
Business permits	296,771,983	3.4	14.1	295,231,826	2.8	11.9	201,891,980	1.8	9.8
Parking fees	242,133,749	2.8	11.5	276,210,777	2.6	11.1	267,197,311	2.4	12.9
Other OSR	1,382,615,429	15.8	65.5	1,697,596,605	16.0	68.2	1,360,254,904	12.1	65.9
Total OSR	2,110,856,555	24.2	100	2,488,988,118	23.4	100	2,064,759,465	18.4	100
Government grants	6,620,000,000	75.8	-	8,142,434,235	76.6	-	9,142,003,222	81.6	-
Total revenue	8,730,856,555	100	-	10,631,422,353	100	-	11,206,762,687	100	-

Source: OCB 2015a, 2015b, 2016 and 2017.

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[16] Due to rounding, totals in some tables may not correspond precisely with the sum of the separate figures.

Table 6 Year-on-year nominal changes in local revenues in Kiambu: 2014/15-2016/17

Revenue sources	2014/15 Actual (KES)		2015/16 Actual (KES)	Year-on-year %	2016/17 Actual (KES)	Year-on-year %
Property tax (rates)	189,335,395	-	219,948,910	16.2	235,415,270	7.0
Business permits	296,771,983	-	295,231,826	-0.5	201,891,980	-31.6
Parking fees	242,133,749	-	276,210,777	14.1	267,197,311	-3.3
Other OSR	1,382,615,429	-	1,697,596,605	22.8	1,360,254,904	-19.9
Total OSR	2,110,856,555	-	2,437,593,952	15.5	2,064,759,465	-15.3
Government grants	6,620,000,000	-	8,142,434,235	23.0	9,142,003,222	12.3
Total revenue	8,730,856,555	-	10,580,028,187	21.2	11,206,762,687	5.9

Source: Based on *County Budget Review and Outlook Paper*, 2016 and 2017.

Kitwe City Council

Table 7 Importance of property tax and other revenue sources in Kitwe: 2014-2016

Revenue sources	2014 Actual (ZMW)	% of total revenue	% of OSR	2015 Actual (ZMW)	% of total revenue	% of OSR	2016 Actual (ZMW)	% of total revenue	% of OSR
Property tax (rates)	23,870,185	32.4	40.0	27,067,586	28.5	49.1	27,829,454	36.3	51.7
Other local taxes	426,308	0.6	0.7	392,675	0.4	0.7	292,698	0.4	0.5
Fees & charges	18,644,519	25.3	31.2	16,956,054	17.8	30.8	16,756,587	21.8	31.1
Licences	201,076	0.3	0.3	213,698	0.2	0.4	40,516	0.1	0.1
Levies	1,814,870	2.5	3.0	1,416,539	1.5	2.6	2,800,596	3.7	5.2
Permits	1,213,115	1.6	2.0	1,569,731	1.7	2.8	2,037,797	2.7	3.8
Charges	13,491,471	18.3	22.6	7,248,751	7.6	13.2	3,554,577	4.6	6.6
Other own revenues	5,417	0.0	0.0	228,366	0.2	0.4	515,019	0.7	1.0
Total OSR	59,666,961	81.1	100	55,093,400	57.9	100	53,827,244	70.2	100
Government grants	13,937,294	18.9	-	40,039,053	42.1	-	22,894,473	29.8	-
Total revenue	73,604,255	100	-	95,132,453	100	-	76,721,717	100	-

Source: Based on KCC 2017 data.

Table 8 Year-on-year nominal changes in local revenues in Kitwe: 2014-2016

Revenue sources	2014 Actual (ZMW)		2015 Actual (ZMW)	Year-on-year %	2016 Actual (ZMW)	Year-on-year %
Property tax (rates)	23,870,185	-	27,067,586	13.4	27,829,454	2.8
Other local taxes	426,308	-	392,675	-7.9	292,698	-25.5
Fees & charges	18,644,519	-	16,956,054	-9.1	16,756,587	-1.2
Licences	201,076	-	213,698	6.3	40,516	-81.0
Levies	1,814,870	-	1,416,539	-21.9	2,800,596	97.7
Permits	1,213,115	-	1,569,731	29.4	2,037,797	29.8
Charges	13,491,471	-	7,248,751	-46.3	3,554,577	-51.0
Other own revenues	5,417	-	228,366	4,115.7	515,019	125.5
Total OSR	59,666,961	-	55,093,400	-7.7	53,827,244	-2.3
Government grants	13,937,294	-	40,039,053	187.3	22,894,473	-42.8
Total revenue	73,604,255	-	95,132,453	29.2	76,721,717	-19.4

Source: Based on KCC 2017 data.

Ndola City Council

Table 9 Importance of property tax and other revenue sources in Ndola: 2014-2016

Revenue sources	2014			2015			2016		
	Actual (ZMW)	% of total revenue	% of OSR	Actual (ZMW)	% of total revenue	% of OSR	Actual (ZMW)	% of total revenue	% of OSR
Property tax (rates)	**25,165,155**	**34.9**	**49.1**	**25,165,155**	**28.8**	**45.1**	**30,041,034**	**34.0**	**43.4**
Bill boards	8,494,704	11.8	16.6	10,882,598	12.5	19.5	19,288,998	21.8	27.9
Licences & permits	3,576,257	5.0	7.0	4,442,171	5.1	8.0	6,329,331	7.2	9.1
Other fees & charges	14,045,307	19.5	27.4	15,265,940	17.5	27.4	13,538,992	15.3	19.6
Total OSR	**51,281,423**	**71.0**	**100**	**55,755,864**	**63.8**	**100**	**69,198,355**	**78.4**	**100**
Government grants	20,912,550	29.0	-	31,630,490	36.2	-	19,081,749	21.6	-
Total revenue	**72,193,974**	**100**	**-**	**87, 386,354**	**100**	**-**	**88,280,104**	**100**	**-**

Source: Based on NCC 2017 data.

Table 10 Year-on-year nominal changes in local revenues in Ndola: 2013-2016

Revenue sources	2013		2014		2015		2016	
	Actual (ZMW)		Actual (ZMW)	Year-on-year %	Actual (ZMW)	Year-on-year %	Actual (ZMW)	Year-on-year %
Property tax (rates)	**23,757,730**	**-**	**25,165,155**	**5.9**	**25,165,155**	**0.0**	**30,041,034**	**19.4**
Bill boards	910,306	-	8,494,704	833.2	10,882,598	28.1	19,288,998	77.2
Licences & permits	2,609,174	-	3,576,257	37.1	4,442,171	24.2	6,329,331	42.5
Other fees & charges	16,181,701	-	14,045,307	-13.2	15,265,940	8.7	13,538,992	-11.3
Total OSR	**43,543,826**	**-**	**51,281,423**	**17.8**	**55,755,864**	**8.7**	**69,198,355**	**24.1**
Government grants	24,051,499	-	20,912,550	-13.1	31,630,490	51.3	19,081,749	-39.7
Total revenue	**67,595,325**	**-**	**72,193,974**	**6.8**	**87,386,354**	**21.0**	**88,280,104**	**1.0**

Source: Based on NCC 2017 data.

Appendix 3 Annual inflation rates for Kenya, Tanzania and Zambia

Table 11 Average annual inflation rates

Year	Kenya	Tanzania	Zambia
2013	5.72	7.87	6.98
2014	6.88	6.13	7.81
2015	6.58	5.59	10.11
2016	6.32	5.18	17.87

Sources: Kenya: www.statista.com/statistics/451115/inflation-rate-in-kenya/
Tanzania: www.statista.com/statistics/447617/inflation-rate-in-tanzania/
Zambia: www.statista.com/statistics/457704/inflation-rate-in-zambia/

Appendix 4 Exchange rates for Kenya, Tanzania and Zambia

Table 12 Exchange rates at 31 December 2016

Country	Currency	USD	Amount
Kenya	Kenyan Shilling (KES)	1.00	KES 102.22
Tanzania	Tanzanian Shilling (TZS)	1.00	TZS 2,174.00
Zambia	Zambian Kwacha (ZMW)	1.00	ZMW 9.96

Source: www.xe.com/currencytables/?from=USD&date=2016-12-31

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