

Digitalization of Public Sector Institutions in Zimbabwe: Towards transparent, accountable and sustainable public service delivery

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Abstract: Public sector digitalization is a strategic reform strategy that involves the adoption of digital technologies in public sector institutions to make them efficient, accountable and transparent in delivering services. Initiatives to digitalize public sector institution are often triggered by the need to address bureaucracy and related administrative malpractices associated with non-digital administrative systems. In particular, challenges such as institutionalized corruption and sluggish service delivery have amplified the need for digitalizing public sector institutions. Through a qualitative desktop review research method, this article analyses the sectoral digital governance systems that have been adopted in the public sector in Zimbabwe as part of the efforts to revamp service delivery and the management of public information as part of the efforts to achieve sustainable service delivery. The paper reveals that public sector digitalization in Zimbabwe results in reduction in public sector corruption as well as improved transparency, accountability, responsiveness and efficiency in public service delivery. The study found that the wave of public sector digitalization has reached Zimbabwe as central and local government institutions are swiftly embracing digital systems that can transform their service delivery obligations. Public sector digitalization in Zimbabwe is being pursued in line with Sustainable Development Goal 16 which obligates governments to build effective, accountable and inclusive institutions at all levels and one of the modern strategy for digitalization has been the adoption of digital systems, widely known as digitalization. In this regard, public institutions in sectors such as public finance management, the judiciary, local governance and public procurement have all adopted different digital systems that help them to transform their service delivery capabilities and improve interactions with their stakeholders. However, the digitalization of public sector institutions in Zimbabwe has faced contextual drawbacks that have dragged the progress in adopting digital systems. The paper reveals that the main drawbacks against public sector digitalization in Zimbabwe include the limited Internet connectivity to facilitate cyberspace interactions as well as the shortage of relevant devices to participate in the virtual governance world. There is substantial potential for public sector institutions in Zimbabwe to reach even greater heights in terms of full digitalization. This potential can be unlocked by committing resources towards developing Information Communication Technology infrastructure in the country, improving commitment towards digital skills amongst public sector employees and citizens as well as transitioning to reliable energy sources such as solar. The central government should adequately resource its departments to enable them to fully embrace and utilise digital systems that are relevant to their service delivery mandates.

Keywords: Digitalization, institutional transparency and accountability, public service delivery, public sector institutions, Sustainable Development Goal 16.

Introduction

The search for innovative strategies to achieve Sustainable Development Goals (SDGs) continues to dominate the agenda of governments in many parts of the world. Digital technologies are considered as pivotal in supporting the achievement of SDGs within and outside the realm of public governance (Islam et al., 2024;

Varriale et al., 2024). Thus, one of the dominating approaches towards achieving SDGs is the digitalization of public sector institutions. There is an interdependence of sustainable development digitalization and the adoption of digital systems in public sector institutions is widely regarded as one of the instruments for supporting the achievement of SDGs (Sanina et al., 2024). This paper examines how the implementation of digitalization in Zimbabwe's public sector institutions support the attainment of SDG16. The paper builds its argument on current literature which exposes how the adoption of digital systems in public sector institutions holds the potential to support SDG16 whose thrust is on key pillars of governance such as effectiveness, inclusion, trustworthiness, accountability and openness (ElMassah & Mohieldin, 2020).

Contemporary governments are embracing Information and Communication Technology (ICT) in the structures to transform their operations, and this is widely known as digital governance (Manoharan, Melitski & Holzer, 2023). The adoption of digital governance systems has resulted in the diffusion of technology use in the public sector with the primary objective being to promote efficiency in the delivery of public services, promote transparency in the operations of government departments and improve citizens' access to government information (Mahlangu & Ruhode, 2021). In particular, digital governance systems facilitate different forms of communication between government institutions and their stakeholders aligned to SDG16 which among other things, aims to build effective, accountable and inclusive institutions at all levels. Thus, in line with SDG16, when digital governance systems are effectively used, they can enhance government transparency and accountability as they help to curb cases of maladministration since citizens can monitor and track the progress of development initiatives using ICTs (Mironga & Mironga, 2022). This article appraises the opportunities and challenges associated with the adoption of digital governance systems in Zimbabwe's public institutions in sectors such as public procurement, health records management, justice delivery and local governance.

Digitalization of public sector institutions in Zimbabwe has followed a gradual increase dating back to the colonial era, wherein 1972, the Central Computing Services (CCS) was established to provide a central computer facility to all government ministries, departments and parastatals (Hikwa & Maisiri, 2014). When Zimbabwe attained its political independence in 1980, technologies continued to anchor public sector management processes albeit at a low pace (Tsvuura, Mutsau & Mbawuya, 2021). In the late 1990s and early 2000s, the use and diffusion of ICTs for national development was catapulted as there was a growing realization that some bureaucratic ills of the public sector were stemming from the manual ways of running public sector processes (Masimba & Zishiri, 2021). Higher Education Institutions (HEIs) in Zimbabwe have also started embracing digital technologies (Tsverukayi, & Poshai, 2024). In this regard, ICT-related policies such as the Science and Technology Policy of 2002 were enacted to guide the implementation of ICTs in the public sector. Institutions like the Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ), the Ministry of Science and Technology Development and the Ministry of Information Communication Technology drive the ICT adoption agenda in the public sector (Mahlangu & Ruhode, 2021). Nested in Zimbabwe's public institutions are new digital technology systems that facilitate efficient, accountable, inclusive and transparent service delivery in line with SDG16.

The emergence of the Fourth Industrial Revolution (4IR) in 2015 has created more incentives for the adoption of digital systems in Zimbabwe's public sector institutions with some new electronic government systems being introduced since then (Poshai & Intauno, 2024). Resultantly, many digital governance systems have been adopted in Zimbabwe as innovations for transforming and improving the operations of public sector institutions. This paper examines the main digital governance systems that have been adopted in different sectors of public management in Zimbabwe, to understand the utility of implementing them as well as the challenges germane to their implementation. The paper analyses how the adoption of digital systems such as the Public Finance Management system, the Integrated Electronic Case Management system, the Local Authorities Digital system and the electronic procurement system have all worked towards the achievement of SDG16 which among other things, aims to build effective, transparent, accountable and inclusive institutions.

Methodology

The study is based on a qualitative desktop research review in which secondary material is obtained from sources such as published research papers, conference papers, books and newspaper articles. These secondary sources were purposefully selected from an array of available resources based on the suitability of their content coverage on the issue of digitalization in Zimbabwe's public sector institutions. In selecting these documents, the researchers first checked the relevancy of the content by analysing the titles, abstracts or introductions of the documents. The researchers prioritized recent literature, with secondary sources published from 2014 to 2024 being selected to capture up-to-date development on the implementation of digital systems in Zimbabwe's public sector institutions. Although

efforts were made to ensure a comprehensive review of the literature, some relevant studies might have been overlooked due to language or accessibility barriers. The researchers used documentary analysis to collect data from the sampled sources through a process of data extraction. Data extraction is the systematic process of cleaning the relevant data from past studies to make new conclusions on a matter of inquiry (Büchter, Weise & Pieper, 2020). Qualitative content analysis was used to analyse the data from the secondary sources. This approach helped us to glean scholarly arguments on the digitalization of public sector institutions in Zimbabwe from various secondary sources of data.

The use of secondary sources in writing academic papers is popular, but it is often marred by biases due to the potential subjectivity associated with the selection of sources, and motivations behind interpreting the written texts. In this study, we applied a procedure to reduce internal bias in both our interpretations and in the selection of sources for review. Firstly, in order to manage potential internal bias in this study, we followed a procedure of using our research objective to filter for relevant sources from a corpus of literature on academic databases such as Scopus, Google Scholar, ScienceDirect and Web of Science. Sources that were not aligned to the research objective were not selected for review. In doing this, we reviewed the abstracts of the academic sources such as book chapters and journal articles to check their relevance to the subject matter of digitalisation of public sector institutions on Zimbabwe. Secondly, to reduce biased arguments, we used triangulation of multiple sources to verify the facts and arguments raised in the paper. This was done to ascertain the extent to which the sources correlate, which helped us in checking the validity of our interpretations and arguments which enabled us to connect elements of different secondary sources in building our arguments. Lastly, we sent our completed manuscript for external review by independent subject experts before we submitted the journal for further review. The paper was sent to two external peer reviewers who assisted with checking for analytical gaps and possible bias-causing details in the manuscript. The feedback from the reviewers helped us to further refine our paper, and adjusting our arguments to ensure that they have rigor and are free from subjectivity.

Findings and Analysis

This section presents the results study results on the utility and challenges associated with the implementation of digital systems in different public sector institutions in Zimbabwe such as the public finance management sector, the local governance sector, the health sector as well as the public records management and justice delivery sectors.

Digitalization of the Public Finance Management Sector in Zimbabwe

The public finance management processes in Zimbabwe have also been digitalised through the adoption of the Public Finance Management System (PFMS). The PFMS is a computerized financial management tool used by the Ministry of Finance and Economic Development to control, monitor and supervise the expenditure activities in spending units of government online (Gwiza & Jarbandhan, 2022). The system was first introduced in 1997 as a strategy to address weak internal expenditure controls in government (Gumbodete, 2023). The PFMS fosters financial displacement in public sector institutions by improving financial reporting, fiscal transparency and accountable spending in the realm of government (Madhovi, 2020). The PFMS is designed to ensure that the spending activities in government institutions are compliant with the budgetary allocations which helps to ensure that financial resources in government institutions are used in an accountable manner. Through the PFMS, all the cash flows in public sector institutions are monitored and the books of accounts are audited on the online reporting internal control system (Chikwere, Chikazhe & Tukuta, 2023). In line with SDG16 which aims to promote institutional accountability, the PFMS regulates public expenditure by ensuring that persons and institutions entrusted with using public funds to implement public policy are accountable and transparent in their operations.

The PFMS is digitally connected to all the financial officers in public institutions so that their accounting processes are transparent, thereby providing an oversight and control function for public funds and other public resources. The system helps to ensure that public funds and resources are safeguarded and used for the intended purposes in compliance with the plans of the government (Gumbodete, 2023). The system detects deviations between spending activities and the Appropriation Act and notifies the responsible accounting officers in the Ministry of Finance and Economic Development of any spending anomalies. Thus, the system helps the Ministry to foster transparency in the use of public resources which is consistent with achieving SDG16. The PFMS was developed to curb corruption and embezzlement of public funds in the public sector (Gwiza & Jarbandhan, 2022). This helps to ensure that public funds are used solely for their intended and planned purposes, which ultimately improves service delivery.

However, the implementation of the PFMS is often marred by challenges such as poor internet connection, cyber security threats, erratic power cuts, lack of ICT illiteracy among accounting officers and a shortage of relevant gadgets

for processing financial information digitally. The PFMS monitors financial activities over the Internet, and when the Internet connection is poor or non-existent as is the case in many parts of Zimbabwe, then it becomes difficult for the system to serve its purposes. This is the case in Zimbabwe where some government departments are located in rural and remote areas with poor Internet connectivity and this makes it difficult for the system to track the financial activities by spending units in these areas. For example, the system cannot monitor the financial activities in some remote rural local authorities because of the limited Internet connection in such areas. The digital divide in the country, therefore, militates against the functionality of the PFMS. In addition, ICT illiteracy amongst some accounting officers is another challenge that can impede the successful adoption of the PFMS. Some accounting officers in government departments lack basic ICT competencies which makes it difficult for them to upload relevant financial data on the system. This makes it difficult for the system to be fully functional because it depends on data inputs from the different spending units of government located in different parts of the country.

Moreover, the extensive and erratic power cuts prevailing in the country also work against the successful adoption of the PFMS. The system requires digitally powered devices for it to be operational and without electricity, it becomes difficult for the PFMS to monitor the financial activities of spending units of government. This problem is worsened by the fact that there are some government offices in rural areas with no electricity at all, which makes the system defunct in such areas (Muparadzi, Wissink & McArthur, 2024). The shortage of ICT gadgets such as laptops and desktops in some government offices in rural areas is also another challenge because the system is a computerized platform. Furthermore, the rising cybercriminal activities in the country make the system vulnerable to hacking and other related cybercrimes, which makes government financial data susceptible to manipulation and distortions. When the system is not protected from cyber threats, financial data stored in databases can be tampered by cybercriminals, and this creates opportunities for financial irregularities and corruption. The full functionality of the PFMS is also marred by weak or non-existent Internet connectivity in many parts of the country due to the underdeveloped ICT infrastructure in the country.

Digitalization of the Public Procurement Sector in Zimbabwe

The public procurement process in Zimbabwe is one government function that has been digitally transformed through the electronic procurement system (e-procurement) adoption (Chilunjika, Chilunjika & Uwizeyimana, 2023). The adoption of the e-procurement system has created opportunities for the automation of the purchasing of government goods and services by the Procurement Regulatory Authority of Zimbabwe (PRAZ), a department formed in 2018 (Mahlangu & Ruhode, 2021). Traditionally, the procurement process was managed by the State Procurement Board, which was largely associated with bureaucratic red tape and corruption in the public tendering processes as service providers would submit their tender bids physically for consideration (Dlakuseni, Kanyepe & Tukuta, 2018). As part of the public sector digitalization drive, from 1 January 2018, the Government of Zimbabwe (GoZ) introduced the e-procurement systems, a digital innovation that introduced the electronic submission and review of bids guided by the provisions of the Public Procurement and Disposal of Public Assets Act [Chapter 22:23] (Munyede & Mapuva, 2020). The public procurement process during the SPB era was flawed and subject to corruption due to the physical handling of procurement documents.

The purpose of the e-procurement system in Zimbabwe is to enable an online supplier-client exchange framework that facilitates the tendering process on the Internet (Intauno et al., 2024). The system helps to ensure that there is transparency in the public procurement process, and this resonates with the efforts to achieve SDG16 which is anchored on ensuring that institutions maintain highest levels of openness or transparency in their operations. In this arrangement, the government is the client and the suppliers are the various providers of goods and services to public sector institutions (Mahlangu & Ruhode, 2021). Yevu et al., (2022) also argue that the e-procurement system has four intertwined design features which are electronic sourcing (e-sourcing), electronic tendering (e-tendering), electronic auctioning (e-auctioning) and electronic informing (e-informing). In Zimbabwe, e-sourcing involves the formal process in which the PRAZ specifies the eligibility of potential suppliers while e-tendering includes the gathering of bids from prospective suppliers through the online submission system (Chilunjika et al., 2023). E-auctioning involves the formal negotiation of contracts between PRAZ and successful bidders, while e-informing is the general exchange of information between PRAZ and suppliers, including information on who has won the tender.

The e-procurement system was introduced to bring operational convenience to the Procurement Regulatory Authority of Zimbabwe as it streamlines the public procurement process by reducing operational costs and curbing procurement delays (Mahlangu & Ruhode, 2021). In line with the pursuit of institutional effectiveness and efficiency as enshrined in SDG16, the system makes it easier for the state procurement authority to interact with suppliers. In addition, the e-procurement system also enables the timely dissemination of information in the procurement value chain as supplies

will know what to upload when submitting bids when to upload and will get their feedback on the tendering review process on the online system (Munyede & Mapuva, 2020). The adoption of the e-procurement system helps to curb procurement corruption and enhance transparency in the public procurement process, which also buttresses accountability in the procurement thereby rebuilding trust and confidence in the public procurement process, which reflects good governance. The need to achieve institutional transparency under the e-procurement systems is aligned to the achievement of SDG16 which emphasise that institutions must ensure that their operations are free from deceit. Tied with this is the reduction in the operation costs as the PRAZ will reduce the printing of submitted procurement documents since they are available as soft copies on the e-procurement system where they can be retrieved anytime (Dlakuseni et al., 2018).

However, the successful adoption of the e-procurement system in Zimbabwe is marred by several challenges such as poor Internet connectivity, resistance to change and cybersecurity threats. The main challenge is the limited Internet access for some procurement participants due to the digital divide prevailing in Zimbabwe (Munyoka, 2020). Research has shown that many parts of Zimbabwe are experiencing poor Internet connectivity due to underdeveloped ICT infrastructure (Poshai & Vyas-Doorgapersad, 2023). Thus, some participants in the public procurement value chain may not have adequate Internet connectivity to upload their bids on the e-procurement system or to trace the proceeds of their bids on the submission portal. In addition, poor Internet connectivity creates disincentives for the successful adoption and use of the e-procurement system in Zimbabwe. In addition, resistance to institutional change is another challenge to the adoption of the e-procurement system in Zimbabwe. For instance, there is a high likelihood that some public procurement officers who have benefited from the paper-based submission of bids by corruptly awarding contracts to undeserving bidders and suppliers will resist the adoption of the e-procurement system as they see such an initiative as a threat to their corrupt activities (Mahlangu & Ruhode, 2021).

Furthermore, the lack of ICT skills by the participants in the public procurement value chain can also deter the implementation of e-procurement systems as this system requires ICT competencies for users to navigate. The possibility of technical failures and system breakdown also constitutes another challenge associated with the adoption of the e-procurement system in Zimbabwe. Some bidders may miss deadlines if the e-procurement system is experiencing system faults and this affects their chances of being considered in the tendering process. The network challenges discussed above can also create challenges for suppliers to upload their bidding documents on the e-procurement system. In some cases, it is possible that the devices used by the suppliers are not compatible with the e-procurement system and in this case, it becomes difficult for them to upload their bids on the system. The rising cybersecurity attacks in Zimbabwe also mar the successful use of digital systems (Munyoka, 2020). For example, service providers may be uncomfortable with using the e-procurement system as they may feel threatened by cyberspace vulnerabilities such as hacking and identity theft. Therefore, the fear of cyber-attacks drags the successful adoption of the e-procurement system in Zimbabwe.

Digital innovations in the Local Government sector in Zimbabwe

Local government institutions in Zimbabwe are also implementing digitalization through the adoption of the Local Authorities Digital System (LADS). The LADS has been introduced under the stewardship of the Urban Councils Association of Zimbabwe in partnership with the Harare Institute of Technology (LADS Africa, 2022). The LADS is a computerized information management system used by local authorities such as the Mutare City Council and the Bulawayo City Council to improve communication with stakeholders and residents on matters of governance and service delivery (Moyo-Ndlovu, 2022). For example, the LADS enable local authorities to facilitate processes such as the application and payments of residential stands without the need for physical submission documents. Applicants on the council housing waiting list cannot use the LADS to monitor the progress of their applications and renew their annual housing application subscriptions (Chikwanha, 2021). Since the LADS was introduced in the Mutare City Council, the housing waiting list has always been up to date and corruption in the allocation of residential stands has been curbed (Bande, 2023).

The LADS was also introduced to allow residents to check and pay for their utility bills online or remotely without the need to visit council offices (Bande, 2023). This can enable local authorities to increase their revenue as residents have the convenience of paying in any place (Moyo-Ndlovu, 2022). In 2020 for example, the Mutare City Council increased its revenues from 35% to 72% because of the use of the LADS (Chikwanha, 2021). This helped the council in clearing all salary arrears, paying all statutory obligations and resuming capital-intensive projects such as servicing residents' stands and rehabilitation of the city's water treatment plants (Bande, 2023). The system has the potential to create greater convenience in local governance by allowing public management processes to be done using technology (Mutisi, 2023). The adoption of the LADS has also significantly improved the urban planning process as it allows city

planners to obtain valuable insights on planning priorities from multiple stakeholders who submit their views online. The LADS has helped to achieve SGD16, which among other things, emphasise the need to build efficient and effective institutions.

The LADS is an effective customer relations management system as it improves information exchange between local authorities and citizens, which empowers residents to participate in governance processes (Matasva, 2022). The LADS comprise a digital Enterprise Resource Planning (ERP) mechanism used to automate expenditure estimation, control and financial reporting which all contribute towards prudent local government financial management and budgeting (Urban Councils Association of Zimbabwe, 2022). In addition, the LADS is used to manage information on council leases, cemetery spaces and council debtors which all contribute to effective local governance (Chidakwa, 2021). In this regard, the LADS help to improve accountability in resource allocation and use within local authorities in Zimbabwe. The LADS also make council records accessible to the employees with the click of a button without the need to search for physical files (Commonwealth Local Government Forum, 2021). Employee access to data through the LADS enables remote working which enhances organisational productivity without the need for physical meetings.

The main challenges militating against the implementation of the LADS, however, are the lack of relevant ICT infrastructure for use by council staff and the lack of robust cyber security systems for data privacy. Some council staff share laptops or desktops due to device shortages and this makes it difficult for every staff member to effectively use the LADS. Given that cybercrime is on the rise in Zimbabwe (Poshai, Intauno & Chilunjika, 2023), most residents are not prepared to share their data on the LADS because of the fear of cyber victimisation. Local authorities in Zimbabwe currently do not have strong security systems to protect the LADS database with residents' data. The LADS should have additional encryption features to curb cases of hacking and related cybercriminal activities. Resistance to change by some council staff due to a lack of ICT skills is also another challenge faced in the implementation of the LADS in Zimbabwean local authorities. Another challenge is the lack of user awareness as some citizens do not know what the LADS is and how it is used. It is difficult to introduce a new local government system before comprehensive user awareness campaigns are conducted to orient prospective users about the system's use.

Local authorities in Zimbabwe are also vying for the introduction of smart city models. The 41R has triggered the adoption of various technology-driven management practices in the public sector, and one of the common ones is the Smart City concept. The smart city concept refers to the use of Information and Communication Technology (ICT) to increase the efficiency and the sharing of information between the public and Local Government (Matamanda, 2022). The introduction of smart city models is consonant with efforts to enhance institutional effectiveness as embedded in SDG16. The incorporation of Information and Communication Technology (ICT) is also meant to improve the quality of service provision offered by a local authority to the citizens (Bandaiko & Nutifafa-Arku, 2023). Smart city initiatives enhance service delivery through the deployment of ICTs (Shava & Vyas- Doorgapersad, 2021). In Zimbabwe, the idea of adopting smart cities is still emerging and their implementation can be undermined by challenges such as underdeveloped ICT infrastructure, unreliable Internet connectivity and extensive power cuts.

Digitalization of the Public Revenue Mobilization Sector in Zimbabwe

In 2015, the Zimbabwe Revenue Authority (ZIMRA) launched the digitalization process through the adoption of the electronic tax filing system (e-filing) which is an integrated revenue mobilization platform used to facilitate tax filing online (Mpofu, 2023). Users must register on the platform for them to be able to file their tax returns on the portal via the link <http://efiling.zimra.co.zw> (Mapakame, 2023). The ZIMRA uses this e-tax filing platform to receive tax applications, update existing taxpayers' registration details, subscribe to new services or tax heads, submission of returns, send queries and requests, check on account status and generally get updates on new changes in procedure and legislation. The platform simplifies and quickens the process of filing tax returns making the tax management process more convenient to citizens and businesses. The system allows registered users to file or pay returns for Income tax, Value Added Tax (VAT), Pay as You Earn (PAYE) as well as Customs and Excise duty since it is linked to the bank account of the user (Musiiwa, 2020). The system also allows users to track their tax transactions online which puts the payer in control of their tax affairs (Mapakame, 2023).

The introduction of electronic services has increased efficiency through e-payment systems and e-tax filing, hence, in this way, the government can provide to efficiently provide goods and services. The e-tax filing platform can be accessed on the ZIMRA website. Before the adoption of the e-tax filing system, ZIMRA officers would capture all tax-related data submitted manually into the system for further processing (Zimbabwe Revenue Authority, 2023). The system enhances accuracy in the filing of tax information which makes ZIMRA more efficient. In addition, the system only accepts complete tax data which reduces the submission of incomplete tax returns (Jemiluyi & Jeke, 2023). The system also allows taxpayers to submit their documentation remotely over the Internet which makes it convenient for

them to meet their tax obligations. This helps to enhance effectiveness in revenue collection which resonates with SDG16 which encourages governments to invest in building effective institutions. The e-tax filing system also enables the instant monitoring and evaluation of tax revenue by the ZIMRA which lightens the workload and reduces operational costs such as the cost of processing, storing and handling tax returns (Mapakame, 2023).

In addition to the e-tax filing system, ZIMRA also uses the Electronic Customs Clearance System (e-customs) which is an Internet-based system where clearing agent and registered companies submit their clearance documents electronically (Zimbabwe Revenue Authority, 2023). All the supporting documents should be scanned and submitted as attachments online as ZIMRA uses the Automated System for Customs Data (ASYCUDA) with the bill of entry which simplifies, automates and speeds up customs clearance and processing. This digital system helps to reduce long queues at the country's ports of entry (Musiiwa, 2020). It also reduced the corruption associated with the physical interfaces between ZIMRA immigration officers and traders which helps to achieve institutional transparency as enshrined in SDG16. The system also allows citizens and exporters to clear their goods faster, which avoids unnecessary delays associated with the compilation of physical documents (Mapakame, 2023).

In addition, the e-customs clearance service also helps in the prevention and suppression of smuggling, improved responsiveness and flexibility, faster delivery time, improved information transparency, secure storage of data to minimize the risk of data loss and immediate access to up-to-date information (Jemiluyi & Jeke, 2023). The main benefits that come from the e-customs system are the modernization of the customs departments and the reduction of illicit trade associated with the physical clearance systems. This helps to enhance institutional transparency which is one of the key pillar targets for achieving SDG16. In addition to the e-customs, in October 2023, the ZIMRA introduced another digital tax management platform called the Tax and Revenue Management System (TaRSM) which is a digital platform for facilitating taxpayer registration, tax return/payment management, tax refunds management and debt management (Zimbabwe Revenue Authority, 2023). The TaRSM is promotes convenience in the taxation process which helps the ZIMRA to improve its overall operational efficiency and effectiveness.

However, ZIMRA faces some challenges in the effective implementation the e-tax filing and the TaRMS and the e-customs system. The main challenge associated with these digital platforms is poor Internet connectivity in the country. For example, there is a need for a strong Internet connection for the users to upload their data on both the e-customs and the e-tax filing systems, but due to the digital divide in the country, this is not possible all the time and this can inconvenience the users. Poor countrywide Internet network connectivity, therefore, renders both systems less effective. This is compounded by extensive power cuts being experienced in Zimbabwe which makes it easy for traders to connive with immigration officers to smuggle goods or under-invoice some goods (Muleya, 2021). In addition, the effective use of these and other digital systems in Zimbabwe is marred by limited ICT resources such as computers and related smart devices at some of the country's revenue collection points (Munyoka, 2020). Without relevant ICT devices at ZIMRA revenue collection points and tax management offices, these digital systems become inoperable.

In addition, resistance to change is another barrier to the adoption of the digital systems in ZIMRA as some tax officers are not yet ready to fully accept the changes that come with the digital systems, given that they might have been benefiting from the corrupt tax collection systems that the institution has been using since its establishment in 2001. The new system can expose its corrupt activities consequently, hence the possibility of resisting its implementation. Furthermore, the two systems are also affected by technical crashes or systems faults which makes it difficult for the users to upload their documents. The implementation of the systems is also undermined by the perceived high risk of cyberattacks against the users. Some users will resist any system that makes them vulnerable to attacks on cyberspace. Another challenge is the lack of user awareness, as some taxpayers are still not aware of the two digital systems.

Digitalization of the Records Management in Zimbabwe's Public Health Sector

Public health delivery institutions such as hospitals and clinics in Zimbabwe have made significant strides to digitalize their information and records management system by adopting the electronic health (e-health) administration system. This system is used to capture and store hospital and medical records (Chilunjika & Chilunjika, 2023). For example, hospitals such as Mpilo referral hospitals in Bulawayo have introduced an electronic system which is currently used for accounting purposes (Masuku & Ngulube, 2020). Previously, hospital administrative offices were running short of storage cabinets as they were suffocated with files (Furusa & Coleman, 2018). The move to adopt the electronic health administration system is to do away with the use of physical files which is outdated (Chikomba, Rodrigues & Ngoepe, 2021). Physical storage of medical records makes it difficult for hospital administrations and medical practitioners to retrieve important records when needed (Matavire, 2016). Since the system was adopted, the hospital's records management and reporting burden has been lessened. The Ministry of Health and Child Care is also working with the Chitungwiza Hospital to launch an electronic health system (e-health) for capturing patients' demographics

and managing patients' accounts and other clinical records (Mukumba, 2014). When fully implemented, the e-health system will enable patients to remotely schedule their appointments or consultations with their doctors, which is convenient for them (Mhembere, Kabanda & Vuningoma, 2020).

The digitalization of health delivery institutions is not only for hospitals in urban areas but for those in rural areas as well. In this regard, the Ministry of Health and Child Care in Zimbabwe is also working in collaboration with the UNDP to implement a District Health Information System (DHIS) as part of the digitalization of health delivery institutions in rural parts of the country (Matavire, 2016). Under this initiative, the Esigodini District Hospital has embarked on a digital overhaul of its records through the electronic health records system which renders paper-based records obsolete (Masuku & Ngulube, 2020). The DHIS seeks to improve health information management in rural areas including the mobile pre- and post-natal tracking of pregnant mothers (Khumalo, 2019). In addition, the DHIS improves the collection and processing of data that is useful for planning, monitoring and summative evaluation of the health systems in Zimbabwe's rural communities (Chidhau, Mutizwa & Muzama, 2021). In line with the pursuit of SDG16 which thrives to improve institutional efficiency, the DHIS system also lowers administrative burdens as it enables medical practitioners and hospital administrators to access patients' records in an efficient and coordinated way as they use it in making informed medicinal decisions.

However, the implementation of both the electronic health administration system and the District Health Information System is affected by poor Internet connectivity in Zimbabwe which is a consequence of underdeveloped ICT infrastructure. Internet access is the key factor for the e-Health system to function, and when the Internet connection is poor as is the case in most parts of Zimbabwe, then there is a high likelihood that the system will not be fully functional (Chilunjika & Chilunjika, 2023). However, the two systems are also vulnerable to cybercriminal activities such as hacking or unauthorized breaches of databases with sensitive and private information for patients. Investing in ICT development is therefore a prerequisite for the successful adoption and use of both the electronic health administration system and the District Health Information System in Zimbabwe. There is also a need to create strong firewalls to avoid cyber-attacks on the databases that store important medical records.

The Digitalization of the Justice Delivery Sector in Zimbabwe

The judiciary system in Zimbabwe is also undergoing substantive digitalization through the adoption of the Integrated Electronic Case Management System (IECMS). The IECMS was introduced by the Judicial Service Commission of Zimbabwe in 2022 to modernize and digitally transform justice delivery in the country (Chingarande, 2022). The move to adopt the IECMS is to remove the paperwork associated with the administration of court cases and court records. The IECMS has already been launched in the Constitutional Court, Commercial Court, Constitutional Court, the Administrative Court and the Labour Courts (Mtudza, 2023). The system is designed to manage the case lifecycle from the initial filing of a court case to the passing of a judgment and appeals (Poshai & Vyas-Doorgapersad, 2023). The IECMS enables litigants to track the progress of their cases online instead of going to court physically. The IECMS integrates all institutions and participants involved in the justice delivery process in Zimbabwe and these include all courts, the Zimbabwe Republic Police (ZRP), the Ministry of Justice, Legal and Parliamentary Affairs, the Zimbabwe Prisons and Correctional Services, legal practitioners, judges and citizens (Mtudza, 2023).

The IECMS seeks to improve the operational efficiency of justice delivery institutions and reduce the accumulation of case backlogs. This is in line with achieving SDG16 which emphasise the need to build efficient institutions at all levels. The system is also designed to promote the safety of justice delivery information which is stored in the database, and helps to prevent loss and physical damage of case files (Mtudza, 2023). The IECMS was introduced to improve judicial transparency as it allows litigants to follow their cases on the online portal, which helps to improve confidence in the judiciary system (Muparadzi & Mukonza, 2024). In terms of system configuration, the IECMS has seven design features which are case management, content management, virtual hearing, e-payment, e-service delivery, e-calendar and the legal research option (Mtudza, 2023).

The case management feature allows for the tracking of the case life cycle while the content management enables court administrators to store and manage case files and documents electronically (Mtudza, 2023). The online tracking of cases eliminates delays and improves transparency in the adjudication of court cases (Chingarande, 2022). The IECMS is a major stride towards achieving SDG16 as it helps to provide access to justice for all. For example, the virtual hearing feature is designed to allow online court sessions regardless of the location of the litigants. Court fees can be paid through the e-payment platform while case documents and files can be uploaded through the e-service delivery feature (Mtudza, 2023). The e-calendar feature allows the participants in the litigation process to schedule the judicial review process. The e-calendar also automatically notifies the participants of important scheduled dates and developments in the case lifecycle (Poshai & Vyas-Doorgapersad, 2023). The legal research feature is a central legal

data repository with judgements, statutes and case law which can all be used by legal practitioners and judges in the adjudication and defence process.

While the IECMS can transform justice delivery in Zimbabwe, the implementation of the system is affected by several challenges. The main of these challenges is poor Internet connectivity. Some of the courts and areas where participants and litigants are located may not have a strong Internet connection for them to participate in the virtual court sessions. It is also possible that some courts may not have the relevant ICTs to conduct virtual hearings which further dents the implementation of the IECMS (Poshai & Vyas-Doorgapersad, 2023). An additional challenge to the implementation of this system is that some participants in the litigation process may be computer illiterate making it difficult for them to navigate the system's digital requirements. Moreover, some judicial officers may resist the system to maintain the corrupt benefits associated with the physical handling of court files. Another challenge to the adoption of the IECMS is the lack of awareness amongst the users.

Conclusion

The global digitalization wave which is triggered by the 4IR has influenced public sector institutions in Zimbabwe to embrace technology to improve their operations. The adoption of ICTs in Zimbabwe's public sector institutions has been pursued to enhance transparency, efficiency and general transformation in the management of public information which are all aligned with the need to achieve SDG16 whose thrust is to achieve efficient, effective, transparent and accountable institutions. However, public sector institutions in Zimbabwe are confronted with some challenges against their full digitalisation. The main of these challenges include the soaring cybersecurity threats in the country, underdeveloped ICT infrastructure leading to poor Internet connectivity, shortage of ICT gadgets, persistent electricity outages, ICT illiteracy amongst some citizens and public sector employees, high Internet data tariffs in the country as well as general resistance to change from analogue to digital systems. These challenges have created a major obstruction to the successful adoption of digital systems in the public sector. Subsequently, public sector institutions in Zimbabwe are yet to fully digitalize, as they continue to blend manual and digital systems in their operations. Regardless of these challenges, the digital systems appraised above demonstrate the Government of Zimbabwe's commitment to digitalising the public sector.

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