Implementing e-procurement at Zimbabwe's National Pharmaceutical Company (NatPharm): Challenges and Prospects

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Abstract: This study explores the challenges and benefits of adopting electronic procurement (e-procurement) technologies to facilitate anti-corruption mechanisms, accountability and transparency in the procurement of pharmaceuticals at the National Pharmaceutical (NatPharm) Company in Zimbabwe. Pharmaceutical corruption is a serious threat to the attainment of Universal Health Coverage. It is imperative for the Government of Zimbabwe to adopt Information Communication Technologies (ICTs) to detect and prevent corruption and fraud, thereby, addressing leakages, mismanagement and theft of medicines, thereby, improving population health outcomes. The study used a qualitative exploratory case study approach and data was gathered through documentary review. The study findings reveal that, pharmaceutical procurement is highly vulnerable to corruption at NatPharm. Bid rigging, procurement-related corruption, bribery and nepotism characterise pharmaceutical procurement at NatPharm. The study recommends the adoption of a transparent e-procurement system with open contracting and integrity pacts to reduce corruption, increase transparency and accountability at NatPharm.

Keywords: E-procurement, pharmaceutical procurement, corruption, accountability, transparency.

1. Introduction

As part of the Sustainable Development Goal (SDG) 3(b) countries around the globe are being encouraged to establish and maintain e-procurement systems for periodic monitoring of medicine availability, pricing and affordability (Writz, Horgezeil & Gray 2017). This is to ensure the wellbeing of citizens, access to safe, effective, quality and affordable critical drugs and vaccines for all (Kohler & Dimancesco 2020). E-procurement systems are thus, crucial to support policy makers and leaders working towards the attainment of SDG 3(b) targets (Writz et al., 2017). As governments seek to advance global access to medical drugs and other health related goods, there is need to deliberate on priority challenges to address (Konduri, Aboagye-Nyame, Mabirizi, Hoppenworth, Kibiria, Doumbia, Williams & Mazibuko, 2018). This includes corruption, as public procurement faces the greatest risk of corruption amongst other government functions (Shonhe, 2017). In this vein it can be argued that circumstances which lead to corruption within the procurement process are numerous, the potential for substantial financial gain from large procurement contracts is undoubtedly a facilitator. Added to the vast financial gains, the numbers of actors involved with diverse interest also make the procurement process vulnerable to corruption (Konduri et al., 2018).

Chilunjika (2021) defines corruption as: the use of public office for private gain. Klitgaard (1998) cited in Hatungimana (2020) defines corruption as the abuse of accountability and the monopoly of authority, coupled with discretion. As such corruption defies and short-circuits clearly stipulated procedures, frameworks, systems and guidelines. Corruption has a devastating effect on poor people, especially corruption in the health sector (Hussman, 2011). It fuels inequality as it skews how public resources are distributed, thus, denying poor and marginalized individuals proper access to health services and medicines. This is particularly evident in African countries where corruption has become so pervasive and institutionalised (Kohler & Dimancesco 2020). A study in Burkina Faso for example, found out that one of the main causes of death among thousands of pregnant women is due to corruption in the health sector (United Nations Development Plan, 2011). Further evidence comes from a Transparency International Report (2021) showing that corruption has significant negative effects on pharmaceutical procurement in developing countries, leading to overall poor health outcomes. Despite global anti-corruption efforts to date, pharmaceutical procurement remains highly vulnerable to corruption.

In relation to Zimbabwe, NatPharm (a not-for-profit company responsible for procuring and distributing all drugs and medical supplies to public health institutions in Zimbabwe) also faces numerous corruption challenges, including bribery, theft, fraud, falsification of information, falsified medicine and undue influence in decision making (Anti-Corruption Resource Centre, 2021). These challenges are found in a triad which are procurement, warehousing and distribution. In trying to address corruption at NatPharm, there was the introduction of e-procurement which is legally supported by the Public Procurement and Disposal of Public Assets Act (Chapter 22:23) as one of the legislative reform measures, to harmonize public procurement laws in Zimbabwe with section 315 of the Constitution of Zimbabwe, which puts emphasis on fairness, transparency, honesty, cost-effectiveness and competitiveness in the procurement function of the government. However, the operationalisation and implementation of e-procurement at NatPharm is without hurdles. Against this

background, the study seeks to: (1) Explore the nature, forms and impact of corruption in pharmaceutical procurement systems at NatPharm (2) Evaluate the benefits of e-procurement in preventing corruption risks at NatPharm and (3) Examine the challenges affecting the effectiveness of e-procurement in Zimbabwe. In light of this, the study will also proffer recommendations that health decision makers and public policy makers can adopt to facilitate the adoption and effective use of e-procurement systems, to curb corruption in pharmaceutical procurement at NatPharm, in Zimbabwe.

2. Theoretical Framework and Literature Review

2.1 The Principal-Agent Theory

This study used the principal-agent theory to understand the basis of corruption in the health sector. This theory is used to describe the relationship between the provider and the public in the healthcare delivery system (Muchena, 2019). The principal (public) appoints an agent (the health provider) to provide quality goods on the principal's behalf. For example, the procurement of quality drugs and making distributions of medicine on time. The agent is also expected to provide knowledge and make decisions that will advance the choice of the principal (Hussman, 2010). For instance, adopting technologies to improve service delivery and access to information which enables the principal to hold the agent accountable for the decisions they take during the service delivery process. The principal-agent problem arises as the provider chooses to maximize his/her interests, which in many cases do not align with the public (Muchena, 2019). In this case, there is the manipulation of procurement processes to award unqualified bidders contracts to procure expensive goods and sometimes sub-standard pharmaceuticals and medical supplies for personal gain.

The theory is founded against a background which sees power struggles between the principal and the agent and an attempt is made to reduce the effects of these power dynamics, to ensure good governance and the provision of quality goods and services (Hussman, 2010). As such, this theory informs the study, in that it actually stipulates how the principal is expected to interact with the agent in conducting pharmaceutical procurement at NatPharm, where issues of e-procurement are very instrumental in promoting transparency, accountability, probity, integrity and ethical conduct and practices in the procurement of medical and pharmaceutical products. NatPharm is expected to procure and supply goods and services (pharmaceuticals) to all the public health service providers in a much more effective and efficient manner, such that there is allocative efficiency and distributive justice of the pharmaceuticals across all the public hospitals in the country.

2.2 The nature and forms and impact of corruption in pharmaceutical procurement: The African Context

According to the OECD (2019) pharmaceutical procurement is the second health sector expenditure after salary costs in most developing countries. In these countries pharmaceutical expenses account for 20% to 50% of public health budgets, yet over 40% of their population lack access to essential medicines (Onwujekwe, Agwu, Odii, Orjiakoe, Obodoechi, Nwokolo, Roy, Hutchinson, Mckee,

Balabanova 2020). This is because such large budgets are an attractive target for abuse, corruption and unethical practices (Subramanian, 2020). Corruption in pharmaceutical procurement varies from country to country, owing to the different anti-corruption measures put in place. Evidence suggests that corrupt behaviour occurs at different decision points in the procurement chain, the tendering phase is however cited as being the most vulnerable to abuse by public officials (Hussman, 2011, Onwujekwe et al., 2020).

In the pre-tendering stage, the designing of procurement requirements and needs assessment are more prone to abuse. At the tendering stage, the most vulnerable phase to corruption is the award process, followed by the evaluation stage. The types of corruption in the pharmaceutical process are similar on the African continent as these countries face similar governance problems. Weak governance systems and the lack of transparency and accountability expose these countries to higher corruption risks in the procurement and sale of essential medicines (Schipani, Cotterill & Munshi 2020). In the end, the regulation, selection, procurement, distribution and sale of essential medicines is affected, leading to poor health outcomes.

Bribery between pharmaceutical companies, their agents, frontline practitioners in hospitals and members of selection committees in the procurement chain is considered to be one of the most common forms of pharmaceutical corruption in Africa (Schipani et al., 2020). It has been noted, that many foreign and local pharmaceutical companies pay bribes to procurement selection committees to include them in bids, as well as include their merchandise in essential drug lists or to increase their chances of getting the tender. A study by Egharevba & Atikinson (2016) revealed that pharmaceutical organisations in Nigeria and Ghana pay bribes to have their products deceitfully approved in clinical trials that are meant to certify the quality of their products. A situation which undermines health security and reduces confidence in public institutions, as these products can become fatal.

Bid rigging is also cited as a common corrupt practice in the pharmaceutical procurement process on the continent. This involves procurement officers being offered kickbacks to make bid assessments favourable to some individuals and not others (Heggstad & Froystad 2011). The bidding process can also be rigged to favour individuals or companies on grounds of nepotism, which denies qualified bidders fair assessment (Mubangizi & Sewpersadh 2017). Several means are deployed by procurement officials to ensure that their preferred bidder wins the tender, including limiting the call for bids, keeping the tender a secret if possible and designing the tender so that the qualifications requested met the criteria of a preferred bidder (Heggastad & Froystad 2011, Mubangizi & Sewpersadh 2017). Another method used by corrupt procurement officers is to deliberately misplace the applications of other bidders (Onwujekwe et al., 2020).

Closely related to big rigging is bid suppression or complementary bidding. This form of corruption has been largely reported in Ghana (Heggstad & Froystad 2011, Onwujekwe et al., 2020). Bid suppression involves multiple bidders coming into an understanding to allow a single submission, where they all throw their support. After winning the process, those whose bids were shielded are offered bribes or are sub-contracted (Onwujekwe et al., 2020). This practice can result in the formation of cartels who regulate the production and prices of medicines, which runs contrary to public

interests (Myburgh, 2021). Other types of corruption which exist within the pharmaceutical procurement process in Africa include: procurement of expensive medicines, resale of medicines and medical equipment and incorrect quantification of drugs to be supplied so procurement officers and pharmaceutical companies benefit financially (Chuku, Eyong,Onyema, Eyo & Peter 2016, Mackey & Cuomo 2020).

The emergence of the COVID-19 pandemic has also amplified existing corruption pressures on pharmaceutical procurement on the African continent (Schipani et al., 2020). The urgency, demand and shortages of medicines have placed new stress on African supply chains leaving them more vulnerable to abuse and corruption. According to Kohler & Wright (2020) efforts to rapidly procure urgent medicines and medical equipment require flexibility, speed and a level of discretion that further widen the risks of corruption. In light of this, the pharmaceutical companies end up taking advantage of the dire situation hence they end up short-circuiting the procurement procedures as well as deliberately flouting the procurement regulations and procedures. It is alleged that pharmaceutical companies on the continent have been exploiting shortages to demand grossly inflated prices, while the relaxation of checks and balances is feared to result in the purchase of sub-standard products (Kohler & Wright 2020). Unscrupulous politicians have also used the disruption in the supply chain to enrich themselves and their associates (Mututwa & Ufuoma 2022).

Examples of alleged pharmaceutical corruption scandals during the pandemic are many in numerous developing countries. In Brazil, it was reported that the government procured masks from a company with ties to President Bolsonaro that were allegedly 67% more expensive than the other suppliers bidding for the same tender (Kohler & Wright 2020). In South Africa it was reported that nearly R2 million were siphoned from the Department of Health through a Digital Vibes contract, meant to advance the digitalization of public institutions during the pandemic, to repay a loan for a farm owned by the country's former health minister Zweli Mkize (Myburgh, 2021). Such examples indicate how the pandemic has further exposed pharmaceutical procurement to corruption, a situation which affects the affordability and accessibility of medicines to the already suffering populace in these developing countries.

Moving on, there is a broad consensus and much anecdotal evidence that when corruption infiltrates pharmaceutical procurement, health goals are threatened (Pascheke, Dimancesco, Vian, Kohler & Forte 2018, Kohler & Dimacesco 2020, Hussman, 2011). Corruption in the procurement of drugs and medical supplies leads to frequent stock outs and cost overruns. This ultimately reduces access to essential medicines at affordable prices, especially for the poor who rely more on public healthcare (Chene 2009, Egharevba & Atikinson 2016). Studies conducted in developing countries reveal that pharmaceuticals are diverted from public health institutions for resale by medical personnel running their own private practices (Chene 2009, Onwujekwe et al., 2020). As a result of this, critical medicines become more expensive and unaffordable to millions of people specifically the poor who cannot afford to pay or bribe for medication. A report on Africa's progress towards achieving Universal Health Coverage (UHC) released at the Africa Health Agenda International Conference, indicated that less than half of Africans (52% which is about 615 million people) have access to medicines they need and that high prices and poor availability due to corruption were the major factors limiting access (Cullian, 2021). When prices of essential medicines become unaffordable to

many, the poor may completely recoil from treatment or resort to alternative treatments that can be harmful to their health and increase mortality (Catwright & Baric 2018).

Corrupt conduct in the pharmaceutical procurement processes also affects the quality of medicines. When pharmaceutical companies offer bribes to avoid or influence government regulations and quality controls it leads to the circulation of substandard or counterfeit drugs that can be useless or even harmful to citizens (Chene, 2009). A report by the United Nations Office on Drugs and Crime (UNODC 2021) estimated that up to 30% of pharmaceuticals in Africa are counterfeits. In 2005 for instance, it was reported that over 60 000 Nigerians were vaccinated with what was later discovered to be counterfeit (Kotwani, 2014). The UNODC (2021) also reported that DAKAR counterfeit anti-Malarial drugs could be responsible for over 270 000 additional deaths annually in Africa. Such situations are worsened by the fact that many developing countries have weak regulatory authorities to exert effective controls on the quality of available pharmaceuticals. Failure to put in place stringent measures to deal with this challenge may result in the flooding of counterfeit and dangerous drugs on the continent.

Corruption also undermines transparency, equity and objective judgement when awarding pharmaceutical procurement contracts (Subramanian, 2020). Kickbacks, bribes and conflict of interests result in the loss of accountability and this becomes a breeding ground for other kinds of corruption, such as inflation of supplier figures and prices, forgery and disqualification of eligible bidders just to mention a few (Pascheke et al., 2018, Kohler & Dimancesco 2020). Another consequence of corruption is that it corrodes trust in public systems (Pascheke et al., 2018). Researchers have an important role of informing the pharmaceutical sector on the best procurement practices. However, researchers may be discouraged from applying their efforts to corrupt systems as these efforts could be compromised along the way due to lack of political will (Subramanian, 2020). Similarly, potential suppliers with good intentions could be corruptly excluded from the procurement chain. This may result in these suppliers participating in corrupt behaviour in an effort to save their businesses or in them losing trust in the public system (Karombo, 2020). In the end, such situations are likely to result in an unending cycle of corruption, drug shortages, counterfeit drugs and poor health outcomes, if not dealt with effectively. In dealing with such unorthodox and unscrupulous pharmaceutical procurement risks, different nations have advocated for the adoption of e-procurement.

2.3 Preventing corruption risks in pharmaceutical procurement: The role of e-procurement

2.3.1 E-procurement in the health sector defined

E-procurement in this context is defined as the use of ICTs, especially the internet, by governments, in conducting their procurement relationships with suppliers for the acquisition of medical consumables and equipment for the benefit of the citizens (Yadav, 2015). Its origins in the health sector can be traced to the implementation of e-government reforms to transform the operations of public sector institutions from manual, paper-based systems to paperless governments (Hussman, 2010). The adoption to, what can be considered as modern forms of e-procurement, was augmented by the

establishment of the World Wide Web (WWW) Consortium in the early 1990s, which proposed international standards for internet communications (Mackey & Cuomo, 2020). E-procurement solutions implemented within the public health sector concentrate on one, or many stages of the procurement process.

These solutions range from the simplest forms of electronic journals (e-journals), or portals that provide tender notices to more complex solutions, such as electronic-tendering, electronic-catalogue, electronic-marketplace and electronic-auction (Bulet & Yen 2020). In many developing countries public health sector organisations mainly use e-journals as they are easy to use and require minimum financial and technology-related resources (Mackey & Cuomo 2020). Depending on how the system is built, the tender information is not just permanent, but public – a significant consideration where accountability and transparency are policy objectives (Naidoo et al., 2018). In simpler terms, e-procurement represents a paradigm shift in public pharmaceutical procurement as it acts as an information hub to support government planning, decision making and improves the performance of routine tasks like transaction processing, monitoring and enforcement of regulatory compliance, in order to tackle bad governance and corruption.

2.4 Benefits of e-procurement in curbing pharmaceutical corruption

Advances in ICTs offer promising opportunities to curb corruption in pharmaceutical procurement. Increased transparency is a distinctive characteristic of e-procurement systems and also a key driving factor in their potential to tackle corruption and fraud in pharmaceutical procurement processes (Yadav, 2015). E-procurement systems are credited for digitalizing writeable, readable, searchable and storable data for pre-bidding, bidding, award and post award stages and processes (for example, issuing a request for proposals/ tenders, pricing tenders and award decision making). For that reason, these systems have been lauded for being feasible avenues to increase transparency and combat bid rigging in the public sector (Mackey & Cuomo 2020). Open access to e-procurement information can also increase compliance to public procurement guidelines and laws by generating audit trails (Naidoo et al., 2018). This empowers and allows members of the public to scrutinize decisions and actions of public officials under broader transparency and accountability activities, such as e-government and open government initiatives (Hidalgo, Orrit& Juan 2010).

Beyond increased accountability and transparency, researches conducted on e-procurement also recognize the ability of this system to integrate novel computational scientific methods to enable automation of procurement data (Hidalgo et al., 2010). E-procurement systems have the ability to store electronic information fields with great detail on procurement transactions or decisions thus making it easier to detect abuse or fraud in tender competitions. A study by Smith & Flanegin (2004) on the use of e-procurement in the healthcare industry concluded that by implementing these systems, operational processes will be automatized and decentralised, while strategic procurement processes will be centralized which results in higher supply chain transparency. Moreover, the automation of pharmaceutical processes means suppliers and buyers can transact in real time through the use of the internet, resulting in convenience and efficiency.

E-procurement solutions also have the ability to integrate fraud detection and anti-counterfeiting technologies (Mackey & Cuomo 2020). Reviewed literature revealed that Auto Data Identification

and Data Capture (AIDC) technologies facilitated by e-procurement systems are useful and effective in tracking pharmaceuticals throughout the supply chain (Aktins, Sener & Russo 2021; Mackey & Cuomo 2020). AIDC systems are a collection of different technologies including bar codes, radio-frequency identification (RFID), magnetic stripes and smart cards operating together in an auto-mated way to recognize objects, collect information from them and then input them into computers, all components that lend well to procurement chain track and trace solutions (Mackey & Cuomo 2020). To date, AIDC technologies have experienced varying levels of adoption and implementation in the pharmaceutical supply chain, with bar codes being their most popular solution. Sophisticated features of AIDC technologies, such as RFID, are however, less popular, mainly due to the higher costs associated with their installation and use (Mackey & Cuomo 2020). Our review, however, did not uncover specific empirical studies of the success of such technologies in developing countries. This is because such technologies have not yet been fully embraced, due to poor ICTs infrastructure, power shortages, lack of ICT skills and lack of political will to adopt and implement such sophisticated technologies.

3. Methodology

The study used an exploratory case study design, as the implementation of e-procurement, is still relatively new in Zimbabwe's public health sector and therefore, the current phenomenon of e-procurement in pharmaceutical companies has not been previously studied in depth. This is in line with Lucas, Fleming & Bhosale (2018) who stipulate that an exploratory research is often used when the issue one is studying is new or when investigating an issue that has not previously been studied in depth. A qualitative research methodology was employed in the collection and analysis of data in this research. Qualitative methods allow for an in-depth exploration and description of the issues of interest (Hennik, Hutter & Biley 2010), which in the case of this study revolves around the adoption of e-procurement to facilitate anti-corruption mechanisms, accountability and transparency in public sector pharmaceutical procurement. NatPharm was purposively selected for this study as it is the sole appointed agent for procurement, storage and distribution of medical products in Zimbabwe's public hospitals; as such it is a critical cog in the public health system. This study is an extensive review of both primary and secondary literature.

The authors conducted a non-structured literature search in PubMed, Google Scholar and Scopus databases, and the internet in general, to obtain useful and scientifically backed evidence on prospects and challenges associated with the adoption of e-procurement in the pharmaceutical sector to facilitate anti-corruption mechanisms, accountability and transparency. There is a dearth of data on e-procurement in Zimbabwe's public health sector as the system is still in its infancy stages; as such data for Zimbabwe (NatPharm) was gathered through a review of grey literature, journal articles, official websites, government reports, and newspaper articles. Whilst the use of documentary review in a study like this is prudent, caution should be taken in the fact that not all crucial documents can be readily available.

Some documents especially those containing statistical evidence are classified and accessibility was rather blocked, due to the Official Secrecy Act which govern public sector entities, including NatPharm in Zimbabwe. The fact that information was prohibited is likely to hinder the credibility

of data that are collected; in enhancing the credibility of the data, the authors made sure that they used sources that were available in public platforms, like government reports, newspapers, journal articles and other public documents from international development agencies, like the World Health Organisation among others. In light of this, the authors made sure that they do not simply "lift" words and passages from available documents that they used in their study. Rather, they established the meanings of the information and its contribution to the issues being explored.

Furthermore, the authors looked at the authenticity, credibility, accuracy and representativeness of e-procurement documents that were selected. Data gathered were analysed using the thematic approach, where emerging issues were grouped in a manner to ensure that they were discussed simultaneously. This type of analysis focuses on the recognition of patterns within data, coding them and constructing categories that speak of the prospects and challenges of e-procurement as a measure to facilitate anti-corruption mechanisms, accountability and transparency in the procurement of pharmaceuticals at NatPharm. The rationale behind this, was to ensure that findings were an objective reflection of the public pharmaceutical procurement system in Zimbabwe.

4. Discussion of Findings

4.1 The health commodity procurement system in Zimbabwe

The Ministry of Health and Child Care (MHCC) has the overall mandate of providing quality, accessible and safe healthcare in Zimbabwe. Coming to the issue of pharmaceutical procurement, the government has put in place a two-tier system. The first tier is the National Pharmaceutical Company (NatPharm), a not-for-profit company, responsible for the procurement and distribution of all medicines, surgical consumables and reagents required by public hospitals and municipal clinics (Shonhe, 2017). In cases where there are drug shortages at NatPharm, public health institutions are allowed to go to tender for these products, in line with the provisions of the Procurement Act and Regulations 171 of 2002. This is the second tier. The study brought to light that this procurement system portrays a semi-autonomous position, in that there is the involvement of NatPharm and public hospitals in making pharmaceutical purchases. Normally the first tier precedes the first tier. It is in most accentuating circumstances and instances like acute drug shortages and when the NatPharm has a serious backlog, and is seriously overwhelmed, that public health institutions are permitted to autonomously make the procurements for pharmaceuticals, outside the scope of NatPharm.

4.2 Corruption challenges at NatPharm

According to the 2021 Corruption Perceptions Index report by the Transparency International, Zimbabwe is ranked number 157 out of 180 countries in terms of corruption (Transparency International 2021). It can also be noted that, with such a very high corruption margin, public health programmes and activities, such as pharmaceutical procurement cannot be successfully implemented as scarce resources are drained off. A situation that deprives the marginalized and poor, access to affordable and quality healthcare. As the key player in public pharmaceutical procurement, NatPharm is not

immune to corruption and its effects as witnessed in many of Zimbabwe public health institutions. Data gathered from reviewed literature, revealed that NatPharm faces several corruption challenges, including bribery, bid rigging, embezzlement, fraud, falsification of data, falsified drugs, and undue influence in decision-making. Such corrupt behaviour occurs at different decision points in the three key parts of NatPharm's operations in particular, procurement of drugs and medical equipment, warehousing or inventory of pharmaceuticals and distribution.

In regards to the procurement stage, the study noted that bid rigging is the most common unethical practice being conducted at NatPharm. In light of this, the study cited a number of procurement contracts that have been allegedly awarded through nepotism, bribery and extortion of procurement officials including a US$60 million tender which was awarded to a Hungary-registered company by the former Minister of Health Obadiah Moyo without going through the proper procurement process (Cagne-Acoulon, 2020). It is also alleged that Drax International, a company which was less than two weeks old and not registered with the Procurement Regulatory Authority of Zimbabwe (PRAZ), was awarded a US$60 million tender. According to a report by the Anti-Corruption Resource Centre (2021), the company and individuals who were benefiting from this tender were closely linked to the president of Zimbabwe; Emmerson Mnangagwa. Hence, they enjoyed political support and protection from the top echelons of the national political matrix.

Apart from winning the tender through its proximity to power, Drax International also overpriced their products (Mututwa & Ufuoma 2022, Cagne-Acoulon 2020). According to Mututwa and Ufuoma (2022) Drax won a tender to supply 5040 units of N95 masks at a unit Cost of US$ 28 per unit, 15 000 COVID-19 test kits, at a unit price of US$34 and 3740 protective clothing units, at a unit cost of US $90, respectively. As Karombo (2020) established, the masks cost an average US$5 per unit, or less, with suppliers in Dubai, where Drax was registered while protective clothing units cost US$30. Therefore, the fact that a tender was allowed to sail through the Treasury without any red flags, alludes to political connections behind the company (Gagne-Acoulon, 2020; Karombo, 2020). Such corrupt conduct in the procurement process, results in critical medicines and supplies becoming more expensive and unaffordable to many poor Zimbabweans, thus, impeding the attainment of SDG 3.

When the appropriate procurement procedures are not followed, opportunities are created for other types of corruption to occur during other procurement stages, besides tender awarding. It can also be argued that corruption also occurs during the post award stage at NatPharm and this includes false invoicing and the alteration of tender agreements. Kotwani (2014) identifies the sole authority of government to regulate pharmaceutical procurement as one of the main drivers of such conduct. To this effect, it can be noted that in the absence of effective oversight from private citizens or Civil Societies, and independent bodies, public procurement officers can manipulate invoices and alter tender agreements, thus, creating an opportunity for these individuals to benefit financially. This is supported by the Principal-Agent theory, which denotes that without effective oversight, systems agents can abuse their powers without detection or fear of prosecution.

Furthermore, deliberate errors in the stocking of pharmaceuticals and medical supplies, and withholding their distribution were also cited as common forms of corruption in warehousing at NatPharm. In 2019 the Parliamentary Portfolio Committee on Health and Child Care condemned

NatPharm of negligence and misconduct in executing its inventory responsibilities (The Guardian, 2019). A report compiled by the committee in 2019 revealed that NatPharm had tonnes of expired drugs in their warehouses, while public hospitals were facing shortages. In that same year, doctors and nurses had embarked on a strike citing incapacitation, due to lack of drugs and medical supplies. Patients with simple conditions, such as appendicitis and diabetic foot ulcers were allegedly going for days without antibiotics, resulting in further complications and sometimes deaths (The Guardian, 2019).

Pharmaceutical shortages have vast implications for patients and led to loss of lives. As such, negligence and misconduct at NatPharm is detrimental to millions of Zimbabweans who depend on public health institutions. To make matters worse, there are allegations of improper handling of these expired medicines. In this regard, the study is concerned with the improper handling of expired medicines at NatPharm. The study established that, here are allegations that senior procurement personnel at NatPharm are selling expired drugs to private pharmacies instead of destroying them, as stated by section 90 of the Public Procurement and Disposal of Public Assets Act, which requires the disposal of all obsolete, surplus and unserviceable assets.

It is thus, important that the Ministry of Health and Child Care and the Medicines Control of Zimbabwe conduct periodical visits to NatPharm, to ensure and supervise the proper disposal of these expired drugs. Failure to dispose expired drugs results in pilferage which poses numerous dangers to the unknowing Zimbabweans (Ncube, 2019). Furthermore, the Chairperson of the Parliament Portfolio Committee on Health and Child Care; Dr Ruth Labode blamed corruption during the distribution chain of medicines as one of the reasons of drug shortages in Zimbabwe (Transparency International, 2021). Corruption during the distribution stage occurs when drugs and medical supplies are stolen and sold on the black market or kept for private use. For example, in 2006 five doctors and five other individuals including three security guards were arrested on allegations of scheming to steal drugs worth billions of dollars from NatPharm (Reliefweb, 2006). This case resonates with other cases that have been reported in many African countries such as Kenya, Nigeria and Ghana who all have poor internal controls and have lost millions worth of pharmaceuticals due to theft.

According to Musau (2022) in March 2022 for instance, the Global Fund's anti-graft unit revealed the rot at Kenya Medical Supplies Authority (a government agency) after discovering that 908 000 mosquito nets, 1.1 million condoms and Tuberculosis drugs worth USD$100 000 had been stolen from its warehouse and allegedly resold on the black market. Weak internal controls make these government agencies vulnerable to theft, leaving public hospitals without lifesaving drugs. To reduce these leakages and corruption, as well as ensure competitive tendering, public pharmaceutical procurement should thus be conducted through the use of effective procurement infrastructures, such as e-procurement (Shonhe 2017). In the next sub-sections, the study discusses the adoption of e-procurement at NatPharm and the benefits associated with this system as an anti-corruption measure.

4.3 The adoption of e-procurement at NatPharm to curb corruption

The study also established that a number of initiatives have been implemented at NatPharm, to address risks in pharmaceutical procurement in Zimbabwe, over the past years. However, they noted that despite the introduction of these initiatives, the institution is still facing challenges, when carrying out its mandate as the procurement vehicle of the MHCC. To eradicate corruption and increase transparency and accountability the institution has in the past five years tried to develop a sound internal procurement system based on the Public Procurement and Disposal of Public Assets (PPDPA) Act of 2017. This Act enables the adoption of e-procurement systems, which was not previously granted in the country's old procurement laws. To date, NatPharm has partially adopted e-procurement in some of its operational areas to address systemic challenges related to data collection, information processing, reporting and decision making, to support effective procurement. In line with the provisions of the PPDPA Act, NatPharm has also established a procurement review committee, which evaluates the whole procurement process by analysing e-procurement information and its tipoff whistleblowing system. This electronic system will ensure that procurement information is available to all stakeholders-suppliers, bidders, buyers and citizens just to mention a few, thereby enhancing transparency, efficiency and credibility of the procurement process.

Accordingly, NatPharm has made efforts through donor support and development partners to upgrade ICT systems and improve logistics and supply chain management which have seen the tracking of delivery vehicles, receipt and invoicing systems being done electronically (Anti-Corruption Resource Centre, 2021). NatPharm has also put in place vendor onboarding and management, market research, requisition information (in the form of e-informing, e- sourcing, e-tendering and e-ordering components), online transactions and vendor catalogues, spending analytics among others in its e-procurement process. As such, there is the electronic management of the requisition creation process, creation of a request for proposal among other aspects. The e-procurement system at NatPharm has also made it possible for electronic data interchange which streamlines billing and order logistics by transmitting and storing messages and information in the pharmaceutical procurement process (Simfoni 2022). The automation of the pharmaceutical procurement process at NatPharm lessens the potential for human mistakes, removes bottlenecks, delays and obstacles. Additionally, e-procurement at NatPharm leads to significant cost-saving opportunities through both initial and ongoing efficiency gains, process optimisation which produces immediate and long-term reductions (Simfoni 2022; Chilunjika, Intauno, Uwizeyimana & Chilunjika 2022).

4.4 The benefits of implementing e-procurement at NatPharm

4.4.1 Transparency and Accountability

The study revealed that e-procurement at NatPharm is set to improve transparency in its operations. Mackey & Cuomo (2020) define transparency, as the degree to which access to government information is made available. Understanding how procurement decisions are made requires information about the procedures followed and the criteria used by procurement officials to reach those decisions. This requires disclosure of the information which e-procurement systems can make avail-

able. The findings suggest, that the adoption of e-procurement systems at NatPharm has the potential to bring to light patterns and outliers which may expose tender manipulation, kickbacks or nepotism happening during the procurement process. In this context, transparency can thus, be understood as NatPharm making pharmaceutical procurement information publicly available through digital platforms, so that its actions and decisions are visible and understandable to citizens who can in turn hold it accountable.

The study also identified accountability as a benefit of adopting e-procurement at NatPharm. Accountability is the mechanism that makes institutions or individuals answerable or responsive to the communities they serve (Mubangizi & Sewpersadh 2017). Accountability in pharmaceutical procurement matters because it helps to ensure that procurement officials or institutions like NatPharm answer to those who will be affected by the decisions or actions they take (Hidalgo et al., 2010). Through the use of e-procurement systems, procurement officials are forced to account for their decisions as information on procurement chains are made available to the public, thus reducing corruption and other abuses. E-procurement systems will also help stakeholders to monitor whether NatPharm is complying with set standards and procedures allowing for sanctions to be imposed when corruption is found.

4.4.2 Open Contracting

Open contracting is also a benefit of e-procurement, and it is a method used to identify and fix problems within government contracts, by engaging players outside of the government, such as citizens and organisations from the private sector (Naidoo, Naidoo & Ambe 2018). This is done by publishing information on government tenders and ensuring this information is available to all. What makes Open Contracting effective, is the Open Contracting Data Standard. This is an International Standard that promotes transparency and accountability in the procurement process which includes planning, tender award and implementation through the use of a common data model (Mackey & Cuimo 2020). The standard was established to improve transparency in the tender process and to allow for a more comprehensive analysis of tender information by more users (Naidoo et al., 2018). Open contracting at NatPharm enables and advances the creation of accessible and responsive data for the analysis of who is buying what, from whom and at what price? Additionally, it also provides data on bids and bidders who were not selected for the contract which also increases transparency.

4.4.3 Efficiency

Over and above, NatPharm has benefited from e-procurement since it creates access to shared data and integrate vendor catalogues with contract management, to ensure that every order for products and services is placed with the best vendor at the best price, with the greatest terms and incentives-all while avoiding the risk of maverick spending or invoicing fraud (Simfoni 2022). This all emanates from the creation of touchless workflows for all the important tasks complete with routing contingencies for approvals. This therefore, removes bottlenecks, obstacles, and unnecessary human error thus, increasing the overall efficiency while lowering expenses and waste.

4.5 Challenges affecting the effectiveness of e-procurement at NatPharm

4.5.1 Lack of ICT infrastructure

This study found out that there is a lack of ICT infrastructure that supports e-procurement in Zimbabwe. It was also established that NatPharm does not have enough supporting technologies in place to build a comprehensive e-procurement system. This is supported by Shonhe (2017) who states that, infrastructural issues are dominating the research on e-projects in all organisations, including in the health sector in Zimbabwe. Similarly, Chikuni (2016) noted that, lack of adequate ICT infrastructure in the country is one of the key reasons behind the failure of many public IT projects. ICT infrastructure is therefore, seen to be a fundamental factor if e-procurement systems are to flourish in developing countries like Zimbabwe.

4.5.2 Inadequate funding

The study established that e-procurement systems are high maintenance, and the combination of high internet costs, the absence of high-speed internet connectivity, unreliable and inadequate electricity supply challenge the successful implementation of e-procurement systems at NatPharm. The Ministry of Health and Child Care, as the parent ministry that houses NatPharm, is faced with the lack of financial resources to equip its institutions with modern technologies, because of little budgetary allocations by the Ministry of Finance (Furusa & Coleman 2018). The study found out that the Ministry of Health and Child Care is usually allocated funds below the Abuja target and the sub-Saharan Africa average of 15% and 11.3%, respectively (Chilunjika, Zimano & Chilunjika 2022; Muzvidziwa-Chilunjika & Chilunjika 2021). As such, NatPharm has to rely on donor funds from its development partners, such as Global Fund, United Nations Development Programme (UNDP) and World Bank, to implement ICT projects. However, many of these donors withdrew their services, due to constrained budgets during the COVID-19 pandemic, thus, stalling the installation of a cutting-edge e-procurement project at NatPharm (Transparency International, 2021).

4.5.3 Lack of ICT skills and training

The study also identified that lack of ICT skills and knowledge was a hindrance in the adoption and use of e-procurement at NatPharm. The findings agree with Samusodza (2016) who stated that a lack of IT skills and failure to train users prevents institutions from effectively using new technologies. This is due to the fact that the adoption of new technologies in institutions require skilled employees capable of managing and understanding such technologies. New systems, such as e-procurement, present a lot of challenges to the users, hence, the need for proper training before the actual implementation.

4.5.4 Security and privacy concerns

Lack of requisite governance frameworks, capacity and political will for addressing ethical issues, such as data ownership, consent to use and security of information are recurrent challenges which appear in many ICT studies in Zimbabwe (Chikuni 2016, Samusodza 2016). ICTs are vulnerable to

security and privacy breaches which negatively impact their adoption in the health sector. As such, ICTs in the health sector can suffer from hacking/IT-related incidents which are the most prevalent forms of attack behind healthcare data breaches, followed by unauthorized internal disclosures, theft of paper records and electronic equipment containing sensitive information and improper disposal of Protected Health Information (PHI) and electronic Protected Health Information (e-PHI) (She, Zarour, Alenezi, Sarkar, Agrawal, Kumar & Khan 2020). This has become a major lure for the misappropriation and pilferage of healthcare data, as well as an impediment to the full implementation of the digital pharmaceutical procurement systems.

4.5.5 Political interference

The study established that political interference has a bearing on the implementation of anti-corruption measures at NatPharm. There are allegations that board members and the management at Nat-Pharm have been suspended, or even fired, when they tried to follow established rules or ignored informal instructions and political pressure (Transparency International 2021). An example of political interference at NatPharm came in February 2021, when the Minister of Health and Child Care dissolved the NatPharm board and fired managers without providing clear reasons, a disrupting move, just as the nation was fighting to contain the COVID-19 pandemic (Mututwa & Ufuoma 2022). Such overarching political interference at NatPharm, in which informal pressures override formal rules, undermine anti-corruption efforts in the organisation.

5 Conclusion and Recommendations

As presented in the study, corruption is a serious threat to the attainment of Universal Health Coverage. Procurement related corruption occurs after the bidding process, stocking and recording of medical supplies. Fortunately, the adoption and use of ICTs in pharmaceutical procurement can fortify the fight against corruption. The study revealed that e-procurement has the potential to increase transparency, accountability and combat corruption in pharmaceutical procurement, as demonstrated by the development of sound internal control systems. Additionally, e-procurement has also enhanced the security in the warehouses at loading, making receipts and invoicing. These changes have not only reduced the theft of medicines, but also improved the efficiency and robustness of the logistics of the e-procurement system. While challenges, such as lack of resources, security concerns and lack of ICT skills exist that may hamper the full implementation and effectiveness of e-procurement at NatPharm. This study recommends that the government should come up with sustainable ways to fund ICT projects at NatPharm, invest in employee training and put in place a transparent e-procurement system at NatPharm, with open contracting and integrity pacts, which help reduce unconscious bias, errors as well as corruption.

The study therefore, proffered some recommendations that health decision makers and public policy makers can adopt to facilitate the adoption, and effective use of, e-procurement systems, to curb corruption in pharmaceutical procurement.

- There is also need reinvigorate and fortify a transparent e-procurement system at NatPharm, with open contracting and integrity pacts, which help reduce unconscious bias, errors as well as corruption. E-procurement implementation should be done holistically so that it permeates all the sectors and facets of NatPharm and public hospitals in Zimbabwe.
- Given the existing economic challenges in Zimbabwe, there is a need for the government to come up with sustainable funding strategies, to raise funds for the full implementation of a comprehensive e-procurement system at NatPharm. The government should also engage development partners to provide them with the much-needed technical support and financial resources, to facilitate the full implementation of e-procurement architecture at NatPharm.
- There is need for the NatPharm to continuously train and develop its employees, to enable them to become techno-literate. Technological illiteracy of employees will remain a stumbling block to e-procurement implementation at NatPharm. Building the capacity of the current employees will go a long way in enhancing the uptake and full implementation and operationalization of e-procurement.
- The government should investigate red flags exposed by e-procurement systems and stiffly punish culprits involved in corruption. Government commitment in punishing perpetrators of procurement corruption at NatPharm will actually serve as a deterrent to the would-be offenders. This will also go a long way in promoting sustainable and transparent e-procurement practices and systems at NatPharm.
- Policy makers in Zimbabwe should establish conducive environments, in which e-procurement systems can flourish. This could be accomplished by putting in place policies and guidelines that govern the use of e-procurement technologies, so as to curb data breaches and information theft.

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