Evaluating the efficacy of donor-funded procurement processes in public health laboratory services

Abstract

The governments in sub-Saharan African countries seem to have failed to fund public health medical laboratory services adequately, and the donors have taken over such critical services. This paper assesses donor-funded procurement processes in Zimbabwean public health medical laboratory services. As a build-up to the assessment, the study aimed to examine the donor-funded procurement processes followed by the public health medical laboratory services in Zimbabwe to establish the effectiveness of donor-funded procurements in the medical laboratory services. The study integrates Transaction Cost Economics, Person-Situation Interaction, and Agency theories to support the research's argument. The World Health Organisation's principles and guidelines on donations of health commodities further guide the research. Guided by the pragmatism philosophy and the descriptive-exploratory nature of the research objectives, the research utilised mixed research methods in which 214 questionnaires responses were received from the medical laboratory scientists, State-certified medical laboratory technicians, and procurement officers, while seven online interviews were held with provincial scientists. Structural equation modelling (SEM) helped the researchers establish the relationships among and between the variables. The research results revealed that the donor-funded procurements processes followed by the public health medical laboratory services in Zimbabwe might be strengthened by close collaboration between the government and the donor community. The study results showed no association between the pre-donation planning process and effective donor-funded procurement. The results further established an indirect effect between the donation requirement process and effective donor-funded procurement with a positive result; the donation recipient preparation process has positive direct and indirect effects on effective donor-funded procurement.

1.0 Introduction and Background

Globally, private and public laboratories are a fundamental component of the health system in the face of emerging and re-emerging diseases and contribute directly to improving health services (National Health Laboratory Strategic Plan (NHLSP), 2017; Oswalia & Vasdev, 2021). These include both private and public laboratories. Despite the nature of the laboratory, quality, reliable and timely results from laboratory investigations remain critical elements in decision-making in all aspects of health services (Ridde & Gautia, 2017; Bachtiger, Adamson, Chow, Sisodia, Quint & Peters, 2021). Laboratory testing identifies the cause of disease and provides data for the surveillance of diseases and early detection of emerging problems to guide an effective response to health threats (Petrose et al., 2016; NHLSP, 2017). Maintaining functional and effective national public health laboratory services requires guidance, support, and regulations through well-laid-down policies and strategies (Mekonnen, 2004; World Health Organisation (WHO), 2015). The laboratories operate with minimum standard

requirements for equipment, reagents and supplies, staffing levels, and the correct required qualifications (NHLSP, 2017). On another note, urgent emergencies, like the current Corona Virus Disease (COVID-19) pandemic, call for quick donor response from suitable donors.

1.1 Sub-Saharan Africa Perspective

However, with such donor funding being distributed to various lower to middle-income countries to fight diseases, sub-Saharan Africa (SSA) remains behind in terms of meeting targets such as Sustainable Development Goals (3) (SDGs) and still is battling to meet Sustainable development goals (SDGs) target for the year 2030 (Jailobaeva, Falconer, Loffreda, Arakelyan, Witter & Ager, 2021). The governments of SSA will need to put policies in place to support donor-funded programs within their countries. For the donor funds to make progress, the world leaders in 2005 met in Paris, France, in what is known today as Paris Declaration on aid effectiveness. This declaration on aid effectiveness was said to help improve health donor coordination and harmonisation between donors and governments of various countries, mainly those with poor health systems, especially the SSA. In 2018, SSA got over half of the Health ODA funding, as shown in Figure 1.

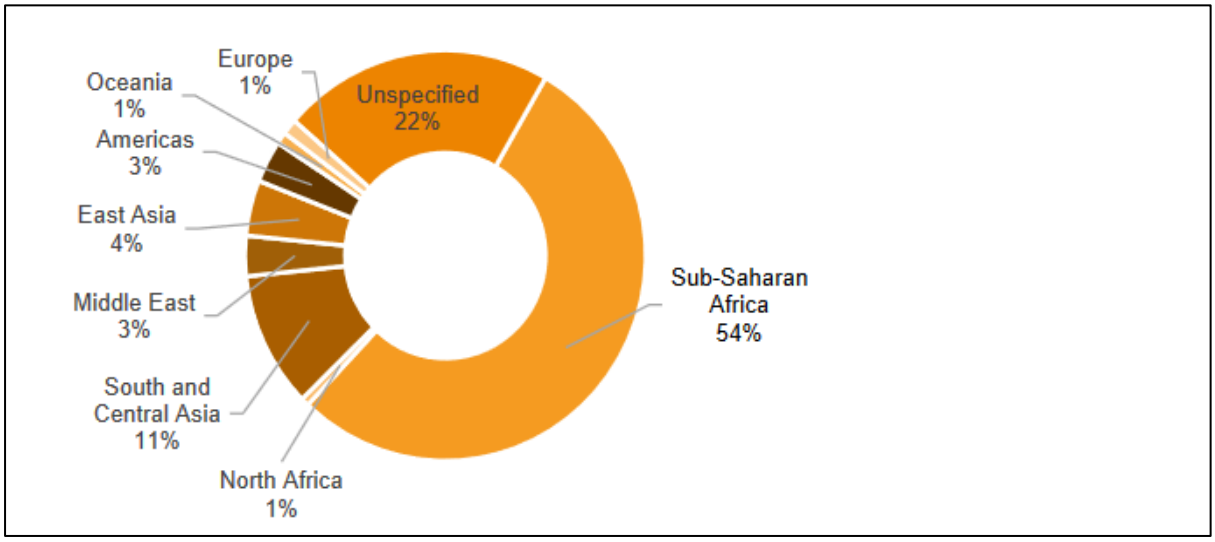

Figure 1: ODA to Health by region

Source: Development Initiative based on OECD (2018)

Figure 1 shows the Health ODA distribution for 2018, which has remained in place until 2021 and is expected to remain the same going into 2022. The SSA continues to get 54% of the total ODA health funding, which has been the norm ever since. Some of the SSA's top beneficiaries of the above donor funding are illustrated in Figure 2

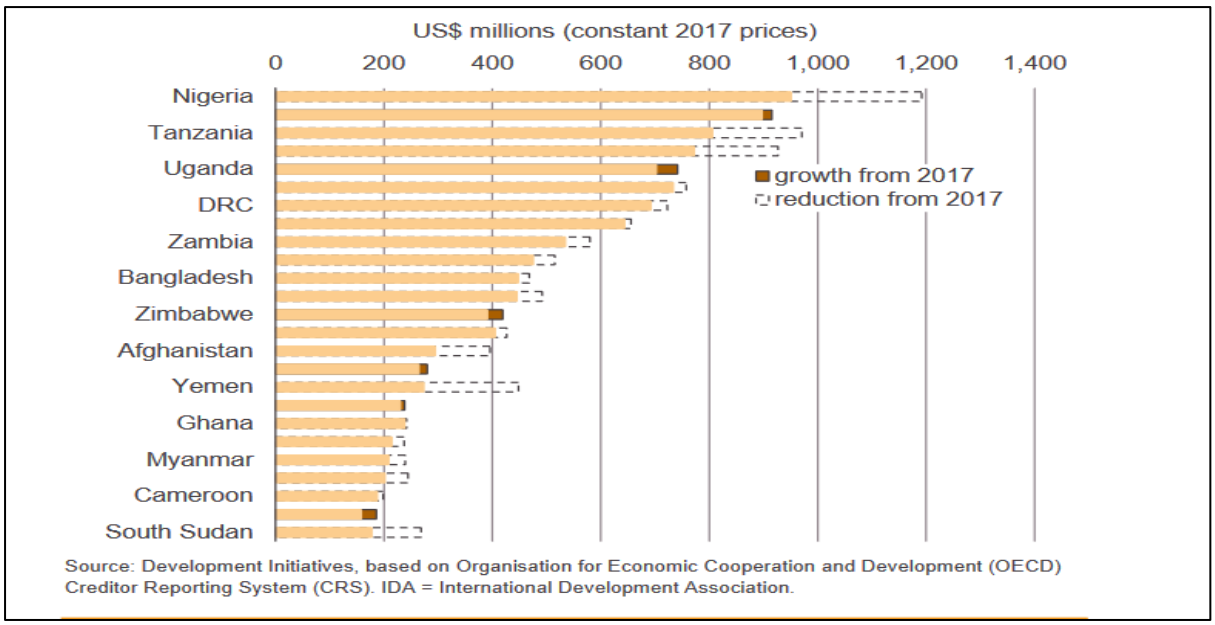

Figure 2: Top African beneficiaries of Health ODA

Source: Organisation for Economic Cooperation and Development (2021)

Figure 2 indicates the top SSA beneficiaries of the ODA health funding despite some other countries not from the SSA being included within the same category as the SSA. Nigeria tops the SSA countries with USD951 million, followed by Tanzania and Ethiopia in the 3rd place (OECD, 2021). The country (Zimbabwe) under study is the 7th ranked in terms of receiving global health funding. The above only represents the top nine SSA countries. SSA received 31 billion in 2019 and 39 billion in funding in 2020 in their health sectors to procure health goods and services and fight COVID-19.

2. OBJECTIVES OF THE STUDY

The primary objective of this research is to examine the development of a procurement framework for improved operational efficiency in donor-funded procurements in the Zimbabwean public health laboratory services. The following sub-objectives support this primary objective.

1. To explore the donor-funded procurement processes followed by Zimbabwe's public health medical laboratory services.
2. To assess the donor-funded procurement processes' effectiveness in public medical laboratory services based on the following:
    a. *The effect of the pre-donation planning process on the effectiveness of donor-funded procurement*

b. *The effect of the donation requirement process on the effectiveness of donor-funded procurement*
c. *The effectiveness of the donation recipient preparation process on donor-funded procurement in the laboratory services in Zimbabwe.*
d. *The effect of the donation implementation process on the effectiveness of donor-funded procurement.*

3 LITERATURE REVIEW

3.1 Donor-funded procurement process

The procurement process being used by the donors is not different from the general or public procurement process, which starts with the identification of needs and ends with payment of supplied goods/services after receiving invoices and delivery notes, both compared to the purchase order or contract awarded (Lynch 2013; UN Procurement Manual, 2017; Gatome-Munyua et al., 2022). Lynch (2013) claimed that the procurement process encompasses all actions, from identifying and planning requirements to the contract award. The generic procurement process elements probably used by the donors in procurement are discussed below.

3.1.1 Identification of needs and Preparation of technical Specifications

This involves requirements definition and outlining what is required and what will be purchased, gathering data, choosing the best options, and specifying what is required in specifications for goods and services, equipment, statement of work (SOW), terms of reference (TOR) for the services (UNPPH, 2006, 2017; Global Fund, 2021). Specifications, TOR, and SOW, form the basis for the solicitation and offers evaluation; they are called the "heart" of the contract and affect the whole procurement process (McCue & Gianakis, 2001; UNPPH, 2017). Unfortunately, since WHO (2000, 2011) pointed out that donor funding has to follow the requirement of the host country, this seems not to be followed, proving that the donors have agendas that do not fit the requirements of the local country system. Market research is part of the initial stages of identification of needs and technical specifications and is defined as "an activity to find suitable products and services on the market and qualified suppliers who are available to provide those products and services to the organisation" (UNPPH, 2017, p.85). Donors do not follow this practice since they plan to put it forward just for endorsement by the health leaders who do not question anything provided (Ezenduka et al., 2022; Malacina et al.,

2022; Tukuta & Saruchera, 2015; Mofokeng & Luke, 2014). However, this puts the system's whole health system in jeopardy, and this affects the whole populace.

The decision has to be made to make, buy or lease, provide realistic delivery schedules, evaluate the price, and non-price considerations like sustainability and quality (Bourguignon & Platteau, 2015; Kahn & Rahman, 2014; Mishra, 2016). The procurement strategy must be decided after all the conditions for needs identification, specification preparation, and budget approval. Unfortunately, the specifications are influenced by the donors themselves to avoid local companies from participating in the tendering process since most procurements are done from the home soil of the donor (Carbonnier, 2013). Locals are invaded for failure to produce the commodities, so all the procurements are done to promote businesses in the country the donors come from, such as France, the US, and the United Kingdom, to mention a few. To make matters worse, whatever comes from France or US, the US cannot support anything that was imported or supported by a French company and vice versa, which complicates the situation if any of the donors from such countries withdraw, the machines or commodities become white elephants (Aluttis et al., 2013; McQueen, Wismar, Lin, Jones, Davies, 2012; Pal, 2022).

3.1.2 Procurement Strategy, Invitation to tender/sourcing of vendors

Procurement strategy focuses on and depends on several factors, such as the possibility of risk, timelines, the total cost of ownership, and the availability of budget (UNFPA, 2015). Most donors use such criteria to procure laboratory commodities that reduce costs, risk mitigation, and realise some savings from the procurement process. However, the major risk is left with the local system, which bears the cost of keeping expiries and disposing of such procured commodities. Donor-funded procurements strategies are based on principles of competition, fairness, transparency, integrity, economy, and effectiveness (USAID, 2011; UNFPA, 2015; GF, 2021), and accordingly, fairness, integrity, and transparent cannot be qualified because all the strategies are meant for the European countries to benefit and no benefit from the local companies or economy. It is well known that no local companies will be awarded such contracts even if they apply for such tenders from donors.

The donors also consider strategies such as cost reduction, risk management, supplier management and optimisation, green procurement, global sourcing, and total quality management (Weele, 2009; Wong, 2011; UNFPA, 2015; UNDP, 2021). Risk management is one key aspect of procurement that needs to be looked at and a proper management manual put

in place. The suppliers used by the donors must be verified, registered, have the financial means to execute their duties, and have the capacity to supply (NGO Council 2011). The supplier or companies engaged by the donors on behalf of the MoHCC should be able to stick to the procurement regulations, rules, and principles, complying with the specifications given. This means there is a need for systems to monitor the suppliers during and after the execution of the laboratory projects. Moreso, bureaucracy needs to be dealt with to avoid red-tape, which delays the procurement processes and affects the supply chain of laboratory services (Sharp, 2021). Hence qualified and experienced suppliers may avoid participating in the procurement processes due to bureaucracy, wastage and the complexity of the donor requirements (Decarolis, Giuffrida, Lossa, Mollisi & Spagnolo, 2019; Fourie & Malan, 2020; Mogotsi, Alagidede & Saruchera, 2022).

However, since the procurements are done mostly from the donor's home soil, no one knows if such practice is being followed or if it's only when they are done from a recipient nation's companies. Furthermore, invitation of vendors or sourcing of vendors is done using the available procurement strategy as pointed out by European Food Safety Authority (EFSA) (2017), Ramsay (2001), Guyana Procurement Planning Manual (GPPM) (2010), and the UNDP (2018). Moreover, the donors cannot do this without key consultations with the laboratory services, who are well-positioned to establish what is needed in the system for proper laboratory functioning. They know the level in their system where the need is using their tier system (site, district, provincial, or national level). The vendor has to be investigated by the procurement team, requested quotes, and selected using the above criteria before making the final decision (Dreher et al., 2022a; Gordon, 2022). Unfortunately, the laboratory services team will be involved later when the quotations are already sourced by the donors, which means the laboratory services may not know what criteria were or are being used. Requests for proposals, bids, or tenders have to be published once the relevant authority approves. Since the procurement is not done in Zimbabwe, no one knows whether this system is followed because, in most cases, the laboratory services will only receive procured commodities in the warehouse.

3.1.3 Evaluation and Vendor Selection

According to UNPFA (2015), the sourcing method for vendors depends on the financial limit or estimated total cost of the goods or services required; for example, UNPFA says USD5000 shop for the best value of money, USD5000-USD49 999 solicit for three minimum vendors using the informal method and USD50 000 and above use the formal method of soliciting for

vendors. UNDP (2018) stated that vendor evaluation depends on the requirements' nature, but the lowest price and highest-rated proposal using the scoring rate method, which talks of 70% technical and 30% financial, failure of the vendor is not considered. However, the argument is that most institutions and public procurements are mostly concerned with the lowest price as the benchmark without looking at quality, the purpose of use, and the life cycle; recipient nations only receive goods and commodities without knowing whether the donors followed the prescribed conditions or not (Gordon, 2022). Again, it is unclear whether those donors follow the prescribed conditions for donor support since their procurements are done outside the host nation, and the donor's host nation only receives the goods or commodities for use. This research argues that the prescribed figures above are too little to realise the economies of scale considering the costs associated with running an effective system of public medical laboratory services; therefore, bulk ordering is recommended under such circumstances.

One thing to note is that laboratory services are expensive to run, and there are known and hidden costs. For example 2016, the Global Fund bought a viral load for the National Microbiology Reference Laboratory (NMRL), supporting the whole exercise. Unfortunately, whether out of wisdom or lack of it, no research was made on the waste disposal from these machines. The waste contains cyanide and cannot be disposed of anyhow but needed to be incinerated, which becomes costly to the laboratory (NMRL alone). The donor funds cannot fund anything not budgeted for at the initial stage. The waste was one of the hidden costs to the laboratory services; now, with the failure of the government to fund the health system, the issue became a thorn in the flesh for the laboratory since the government had no money to fund it. When the money was available, it was not easy to pay since the Public Funds Management System (PFMS) would not allow payments before the service could be done and at the same time, the service provider wanted the payment upfront. However, incineration in private players is expensive since the government's incinerators are constantly broken down, and no urgency is given to repairing them. Unfortunately, the above information in this paragraph cannot be found in any written document for referencing purpose but are experienced and can be attributed to the writer of this research.

3.1.4 Purchase Requisition, Order/Contract, Payment Process, and File Records

It is well-known that donor-funded procurements have three key principles: accountability and effectiveness, efficiency, and transparency. (Brown & Hyer, 2010; Ezenduka et al., 2022). In turn, there is a need to have a good relationship between the suppliers and the funders, and it's

also a key component since this directly impacts the laboratory services department's efficiencies and total operations. In principle, laboratory operations depend upon the supply side- the more laboratory services encounter delays, the more problems in operations (Kirigia, 2018).

The creation of purchase requisition (PR) is the next step of the process once the evaluation of vendors is complete. The requisition has to be signed or approved then the purchase order (PO) is done with clear specifications as outlined in the vendor's quotation (Public Procurement Handbook (PPH) 2013). Once the supplier receives the purchase order, an agreement must be fulfilled- the supplier is liable to deliver the products based on the agreed terms and conditions. Terms and conditions have to be taken into consideration to avoid mistakes, as well as include International Commercial Terms of the International Chamber of Commerce (INCOTERMS) where necessary (United Nations Industrial Development Organisation Procurement Manual (UNIDOPM), 2018). Once the purchase order/contract is in place and authorised, it has to be sent to the selected vendor. Finally, the vendor is paid once the delivery is done and the processed records are filed. Still, the donors and the laboratory services have to ensure that all the supplies meet the conditions, the quality of commodities supplied are in good order, and the six rights of the supply chain are met (Kakwezi & Nyeko, 2010; USAID, 2011; Beroe Procurement, 2021; UNFPA, 2015; UNIDOPM, 2018; Muluh, Kimengsi & Azibo, 2019).

Contract management must follow the systematic practice of contract creation and compliance and analyse the supplier performance to maximise operational performance, minimise risks, and reduce costs (Kirigia, 2018; Muhammad, Saoula & Issa, 2019). Donors, MoHCC, and suppliers, whether local or international, should know that a procurement contract is a legal document binding among them, and a good relationship is needed between the involved parties. Payment of vendors takes several days to be effected to the suppliers; medical support is different from other support, raising the question of whether such several days taken to pay vendors will improve the laboratory systems (Adam et al., 2022). It may be good in developed nations, but not for developing nations to have such a payment period. Although I believe it reduces malpractice, inflation will have negative effects.

3.2 DONOR-FUNDED PROCUREMENT EFFECTIVENESS

Donor-funded procurement must be effective to the maximum extent possible for the recipient nation, and there should be a collaboration between the funder and the recipient nation's health system. Below are some of the sub-objectives that may assist in showing the procurement

effectiveness by the donor in the health sector. This speaks to the procurement function and the expected procurement outcomes from donor-funded procurement activities. In this case, the researchers focus on the establishment of **Pre-donation Planning Processes** (PDPP)**,** as stated that the pre-donation planning process has a significant effect on the health care system since this phase encompasses the task from donation initiation to a detailed plan, scope definition of donation, understanding of platform needed and for which tests, space availability as well as qualified technicians (Mullally, 2013; Cohen, Baretich & Gentles, 2020; Bhadelia, 2016; Gates, Littlewood, Kongara, Odom & Sawicki, 2019; Ajaz, 2018; International Monetary Fund, 2022).

Furthermore, the department must implement the **Donation Requirement Process** (DRP), which increases the availability of health care because no donation is accepted for acceptance without considering the need and the gap in the public health system (WHO, 2000; WHO, 2017;). The process of taking a donation has steps that are recommended; failure of the donation to meet such conditions, it cannot be accepted in a recipient nation's system if it does not meet quality standards in the donor's nation then, however, it cannot be accepted as a donation (WHO, 2011). According to Partners for Quality Medical Donations (PQMD) (2019), the donation requirement process has some setbacks if not properly done because the donation, especially the equipment, may burden the health system instead of improving it. The literature indicates that for the process to increase health care, including medical laboratory testing capacity, all pre-donation planning activities have to be taken into account as well as putting service contracts that cover the lifecycle of everything donated, services, and maintenance done by professional technicians (Oosting, Wauben, Madete, Groen & Dankelman, 2020).

In addition to the above, the laboratory services must establish **Recipient Preparation Process (DRPP); a**ccording to WHO (2011), the recipient has to start to prepare for the proper management of the items; if it's equipment, there should be care for the equipment, knowing the energy consumption of the equipment, and waste disposal methods required. In addition to the above, there should be site inspection and preparation, getting enough information from the donor concerning operations, installation, and equipment maintenance (Eze, Ijomah & Wong, 2020). It is valid to establish this as these variables are very important regarding equipment use. On top of that, there should be the training of personnel to operate the machine, and maintenance is one of the key important steps in preparation (WHO, 2000; Gatrad, A. R, Gatrad, S. & Gatrad, A., 2007; Williams, Kohler, Howard, Austin & Cheng, 2020). Accordingly, the service manual should contain information such as reagents type, user-

replaceable parts, operating instructions, troubleshooting, cleaning or sterilisation recommendation, and repair and maintenance (Malkin & Keane, 2010; Luo, 2015).

WHO (2000) encourages further the establish **Donation Implementation Process (DIP)**. The machines have to be evaluated to come to the effect that will determine whether the equipment or reagents will add value to the health systems. If the donation is forced without following due protocol, it will not add value to the system; this may be due to political decisions made concerning the donation (Perry & Keane, 2011; Safi et al., 2020). However, according to Perry and Malkin (2011, p. 2), donations will not improve the health system because "whilst most donations are given with the intent to strengthen health systems and improve the well-being of the populations being served, an estimated 40% of donated medical equipment in developing countries is out of service". On top of that, the system has been disadvantaged since the breakdown of equipment is costly, burdensome, and potentially detrimental to the health systems that it purports to aid (Compton et al., 2018).

4.0 THEORETICAL BACKGROUND AND HYPOTHESES

The Transaction Cost Economic (TCE) theory, Person-Situation Interaction theory, and Agent theory are the three theories that are listed below to support the study**.** The three were considered to integrate and seek to understand the relationship between the donor-funded procurements and the Ministry of Health and Child Care participation in such processes. It is not an easy task, though, since there are more other theories left out of this study, and no one theory can apply to answer the challenges faced in this complex relationship in procuring public medical laboratory commodities. The TCE talks of the structure that exists for the proper organisational management and operations as well as outlining the causes of transaction costs (Coase, 1937; Williamson, 1979), putting forward key assumptions, which are bounded rationality (BR) and opportunism as major challenges, with key constructs asset specificity and uncertainty (Grover & Malhotra, 2003) that may affect the procurement of public medical laboratory commodities. BR is said to be limited to individuals.

Person-situation interaction theory is based on individual behaviours which affect the performance of donor-funded procurements and activities. For donor procurements to succeed, individuals must be goal-orientated and task-oriented. People's behaviour is affected more by the situations around the procurement than by the people around, as mentioned by Mischel (1968) and supported by Kihlstrom (2013). The Agency theory discusses the relationship between the donor and the MoHCC's laboratory services. MoHCC's laboratory services are the

"principal", and the donors are the "Agency" since they are procuring on behalf of the MoHCC. This study proposes integrating the three theories as a theoretical contribution to the study. These theoretical factors will assist in improving laboratory performance since the organisational structures are manned by people who are self-aware of their obligations to improve the health welfare of the general populace of Zimbabwe through well-supported/functioning medical laboratories. The following section speaks to the hypotheses of this paper.

4.1 Pre-donation Planning Process (PDPP)

Critics argue that donor-funded procurements influence developing countries which risk undermining their sovereignty rights (Chimia, 2013), but other views say attention given to the recipient nations by the donors is instrumental to the development of reforms in the health sector development (Weerasekara et al., 2021). Pre-donation planning processes must emphasise making the medical laboratory system effective by ensuring that all donor-funded procurement is not done before exhausting all pre-donation planning process arrangements. It is also argued that donor-funded procurement processes are slow and delay some key supplies for the laboratory due to delays in their procurement processes, and finding a strategic solution to overcome this will be helpful (Dreher et al., 2022b). However, donor-funded procurement processes influence the performance of the laboratories since there is heavy dependence on such funding (Tanag & Mundau, 2014; World Bank, 2021).

This study seeks to unravel the framework for donor-funded procurements in the Zimbabwean health Laboratory Sector. The following hypothesis is therefore drawn:

> *H1a: Pre-donation Planning Process (PDPP) has a direct relationship with Effective Donor-funded Procurement (EDFP)*

4.2 Donation requirement process and Effective donor-funded procurement

Improving health outcomes is at the core of Sustainable Development Goals (Goal 3)," ensure healthy lives and promote well-being for all ages" (WHO, 2018, p. 8). Quality improvements are about the people closest to the system being given the resources, time, permission, and skills to improve health care systems (Jones et al., 2021) through government policies that promote the public health systems or frustrate the whole progress. Donations are not done for the sake of donating, but it has to follow the laid down procedures, failure of which the donation

cannot be accepted (WHO, 2017). Health critics say the donation requirement process includes following government policies supporting variables such as education, good laboratory management, ethics, proper planning, and capacity, which are key factors contributing to improving health care (NHLSP, 2021; Ahisan & Paul, 2018).

Jabbal and Lewis (2018) argued that creating a supportive culture, building better and more relevant infrastructure, and embedded systems for education and training are critical for improving the public health medical laboratory testing capacity. The long-term whole-system approach ensures sustained improvements through active government policies (Fulop & Ramsey, 2021). Qualified technicians are required in the donation planning process to be involved in the installation and subsequence services of the machinery in the public health laboratory, and failure to have such causes delays in policy implementation. From the above arguments, the hypothesis is provided;

> H2*: The donation requirement process (DRP) has a direct relationship with public effective donor-funded procurement (EDFP).*

4.3 Donation recipient planning process (DRPP) and Effective donor-funded procurement (EDFP)

According to WHO (2000), medical equipment can only be donated when fully functional and operational at the system and sub-system levels, with a manual with the part list considered critical for the usability of the procured and donated equipment and the supporting accessories. Capacity and capability are addressed by having a coordinated approach that balances capacity and provides guidance on allocating scarce resources, scientific knowledge, and professional technical staff (UNIDO, 2021; Acheampong et al., 2021). Leaders are encouraged to establish and enhance effective corporate culture to ensure recipient nations do due processes and participate in donation success (Pathiranage et al., 2020). According to Eaton and Kilby (2015), the donation recipient planning process influences the alignment of organisational strategy, which most public health corporate managers fail to do.

Furthermore, there is a need for cultural integration in various offices as a key factor in performance. Integrating donations and quality service directly impacts organisational performance (Latif & Ulla, 2016). Public health care services such as laboratory care must be given priority. The ingredient considered for organisational performance and organisational sustainability is the donation recipient planning process, where the receiving nation does not

take anything because it's a donation to the system. When all the recipient's requirements are met, the recipient should notify the donor to assemble, package, and ship the donation (WHO, 2000; Gatrad et al., 2007; Wiliams et al., 2020). The above assertions led to the following hypothesis is provided;

> *H3: The donation recipient planning process (DRPP) positively correlates with effective donor-funded procurement (EDFP).*

4.4 Donation implementation process and Effective donor-funded procurement

The empirical studies indicate that the external environment, such as donor influence on purchasing goods and services by the multilateral donors, is in pursuit of their donor interest (Arvin & Baum, 1997; Carbonnier, 2013; Mouschoutzi & Ponis, 2022; Scherz et al., 2022). The effects of donor procurements of goods and services are that the process always benefits the donor country at the expense of the developing countries' objectives (Morrisey, 1993; Carbonnier, 2013; Victoria, 2021). Furthermore, the donor's influence is considered politically sensitive in their donor countries since they will need support to continue in the donor trajectory (Victoria, 2021). However, the donor influence may work positively for preparing proper management and implementation of procured devices and equipment by training personnel to operate the medical device (WHO, 2011; Compton et al., 2018). Furthermore, the procurement of medical laboratory devices and equipment influenced by donors has the potential to improve health care access but can do exactly the opposite, which is to have more harm than good (McDonald et al., 2019). Moreso, it is estimated that even after the influence on procurement, 40-70% of medical devices and equipment procured broke down or reagents expired due to a lack of personnel training (Perry & Malkin, 2011; Seidu et al., 2021). Therefore, the following hypothesis is proposed;

> *H4a: The donation implementation process (DIP) has a positive direct relationship with effective donor-funded procurement.*

Figure 3 shows a proposed conceptual framework based on the hypotheses discussed above and that all the constructs have existing relationships, as shown by the direction of the arrow.

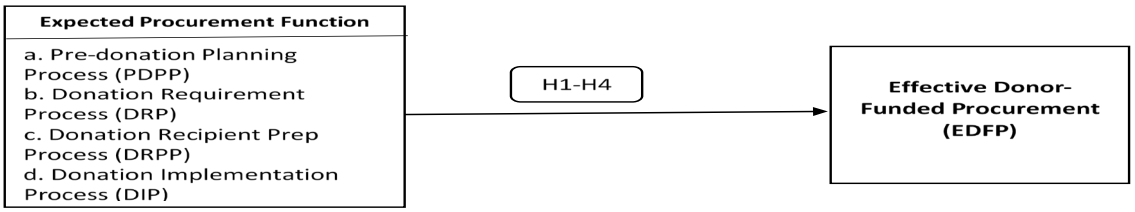

Figure 3: Conceptual Framework

Source: Authors' construct (2023)

The conceptual framework (Figure 3) envisages that the pre-donation planning process, donation requirement process, donation recipient preparation process, and donation implementation process directly affect the effectiveness of donor-funded procurement, and this is denoted by hypotheses H1-H4.

5.0 RESEARCH METHODOLOGY

Guided by pragmatism where the researchers could use both the inductive and deductive approaches and allow the use of quantitative and qualitative methods in single research to build on the strength and weaknesses of both methods (Morgan, 2007; Shannon-Baker, 2015; Jogulu & Pansiri, 2011; Cresswell & Plano-Clark, 2011). The abductive approach is associated with mixed-method research through the inter-subjectivity of this researchers' understanding based on shared meaning (Streubert & Carpenter, 1999; Larson-Hall, 2010). Furthermore, the exploratory allowed the use of hypotheses in line with this study. The researchers used Raosoftware to calculate the sample size for a quantitative method based on a 95% confidence interval and a 5% margin of error. The researchers used 50% as the distribution response. According to Bartlett, Kotrlink, and Higgins (2001), 50% is the most time-effective way to ensure the researchers reached the minimum sample size required. Therefore, the sample size for this study was 260 for quantitative and 7 interviews conducted. The researchers adopted mixed methods research, which involves mixing qualitative and quantitative methods within a single investigation (Wisdom & Cresswell, 2013; Vasileiou, Barnet, Thorpe & Young, 2018). The basic premise of this method is that it allows the integration of more synergistic and complete utilisation of data than separate quantitative and qualitative data collection and analysis (Aliaga & Gunderson, 2002; Poth & Munce, 2020; Saruchera, 2014). The researchers

also adopted the mixed method because it gave flexibility and enhanced complementarity, as with some past studies (e.g. Carroll & Rothe, 2010; Saruchera, 2014). Additionally, the mixed method collects rich and comprehensive data (Cresswell, Fetters & Ivankova, 2004; McKim, 2017).

6.0 RESULTS AND ANALYSIS

6.1 SEM Pathway Analysis

The researchers used SEM because of its ability to produce meaningful identifications of correlations between factors as its key strength (Morris, Hall & Nock, 2017). The ability of SEM to combine confirmatory factor analysis (CFA) and latent factors analysis made it preferred for this study since the researchers used regression analysis and confirmatory data analysis. CFA helped the researchers to take note of the errors during the testing process and find a way to correct the errors. SEM uses factor analysis and regression combined or path analysis (Hox & Bechger, 1999; Morgen, 2007; William, 2011). The researchers ran the SEM on Statistical Package for the Data Science (STATA) version 17. Furthermore, the researchers tested hypotheses using the SEM pathways. The following Figure 6.1 shows the SEM diagram of the relationships and pathways.

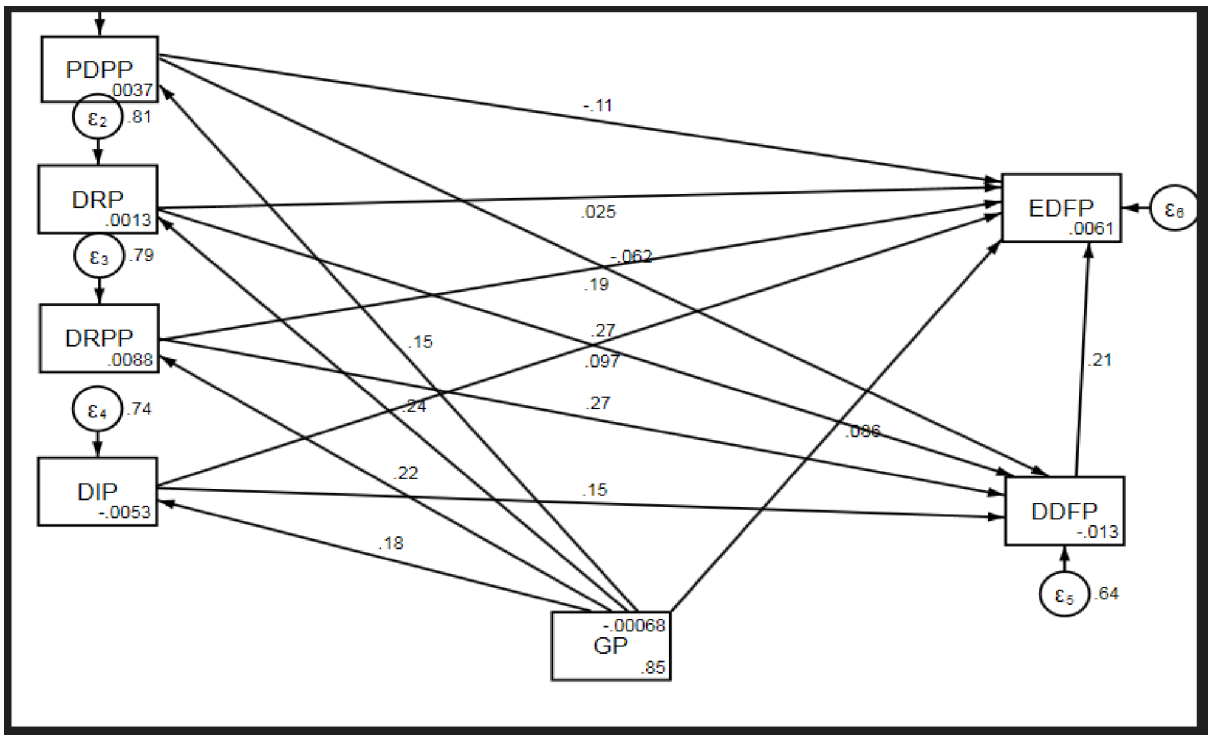

Figure 5: Structural Equation Modelling

The diagram above shows the SEM pathway for the research variables used to measure the existing relationships between and among the research constructs. Table 1 below shows the direct effects, indirect effects and total effects.

Table 1: Direct Effects, Indirect Effects, and Total Effects

	Direct effects		Indirect effects		Total effects	
	Coeff (95%CI)	**P-value**	**Coeff (95%CI)**	**P-value**	**Coeff (95%CI)**	**P-value**
PDPP						
GP	0.147 (0.008 to 0.286)	0.038			0.147 (0.008 to 0.286)	0.000
DDFP						
PDPP	-0.062 (-0.184 to 0.060)	0.320			-0.062 (-0.184 to 0.060)	0.320
DRP	0.268 (0.137 to 0.400)	0.000			0.268 (0.136 to 0.400)	0.000
DRPP	0.271 (0.131 to 0.411)	0.000			0.271(0.131 to 0.411)	0.000
DIP	0.149 (0.018 to 0.282)	0.026			0.149 (0.018 to 0.282)	0.026
GP	-	-	0.141(0.076 to 0.205)	0.000	0.141 (0.077 to 0.205)	0.000
EDFP						
PDPP	-0.108 (-0.235 to 0.018)	0.094	-0.013 (-0.041 to 0.014)	0.348	-0.121 (-0.250 to 0.007)	0.065
DDFP	0.212 (0.066 to 0.358)	0.000			0.212 (0.066 to 0.358)	0.004
DRP	0.025 (-0.116 to 0.165)	0.732	0.057 (0.008 to 0.105)	0.020	0.082 (-0.058 to 0.221)	0.252
DRPP	0.194 (0.046 to 0.343)	0.010	0.057 (0.008 to 0.107)	0.023	0.252 (0.104 to 0.399)	0.001
DIP	0.097 (-0.041 to 0.235)	0.168	0.031 (-0.003 to 0.067)	0.080	0.129 (-0.011 to 0.268)	0.071
GP	0.086 (-0.047 to 0.219)	0.206	0.080 (0.023 to 0.136)	0.006	0.166 (0.032 to 0.299)	0.015
DRP						
GP	0.237 (0.104 to 0.369)	0.000			0.237 (0.105 to 0.369)	0.000
DRPP						
GP	0.217 (0.087 to 0.348)	0.001			0.218 (0.087 to 0.348)	0.001
DIP						
GP	0.183 (0.057 to 0.311)	0.004			0.183 (0.057 to 0.310)	0.004

Note p<0.005; values in parentheses are standardised estimates

Source: Author's construct (2023)

The table shows the direct, indirect and total effects of the variables under this study, which are PDPP, DDFP, GP, DRP, DIP and EDFP and further shows the Coeff (95%CI) together with the p-values of the said categorised variables. The variables assisted the researchers in finding a clearer picture of the effectiveness of the donor-funded procurement processes used in procuring medical laboratory services. The above is as demonstrated in the SEM diagram.

6.2 Hypotheses testing results

6.2.1 *H1: Pre-donation Planning Process (PDPP) has a direct relationship with Effective Donor-funded Procurement (EDFP).*

The second (2a) objective was examined to see the significance of the path coefficient in the model with the hypothesis (H1), which is the relationship between the pre-donation planning process (PDPP) and the effective donor-funded procurement (EDFP). Hypothesis 1 suggested that the pre-donation planning process is directly related to the effectiveness of donor-funded procurement. The results confirm that PDPP: 0.108 (95%CI: -0.235 to 0.018), (p-value = 0.094), which is negative and does not directly affect EDFP (β= -0.11, $p < 0.094$), thus not supporting H1. Additionally, there is a 95% confidence level that PDPP -0.013 (95%CI = 0.041-0.014), p-value = 0.348, has a negative effect on EDFP. The results confirm that the results favour the null hypothesis since the results are non-significant. The standard total effect at a 95% confidence level that PDPP: -0121 (95%CI: -0.250-0.007), $p < 0.065$. However, even though the result is positive but is insignificant.

6.2.2 *H2: The donation requirement process (DRP) have a direct relationship with public effective donor-funded procurement (EDFP).*

According to table 6.1 and figure 6.1 above, the DRP has no direct effect on EDFP (β=0.025, $p > 0.732$) and is not significant, while the indirect effect on EDFP (β= 0.097, $p < 0.020$) is significant and positively shows the relationship between the variables. The standard total effect at a 95% confidence level was found to be 0.082 (-0.058-0.221), $p < 0.252$, a result that is not positive. However, the research rejects the alternative (H2b), which states that the donation requirement process positively influences the effectiveness of donor-funded procurement. The effect of DRP: 0.268(0.137 - 0.400), $p < 0.000$ on EDFP, as mediated by the DDFP at a 95% confidence interval, shows a significant positive relationship and still

supports the (H2) and rejects the alternative since all the results are positive. This is also satisfied through standard total effects via DDFP 0.268 (0.136- 0.400), $p < 0.000$, which is positive; therefore, there is a positive relationship between DRP and EDFP as mediated by DDFP.

6.2.3 *H3: The donation recipient planning process (DRPP) has a positive relationship with effective donor-funded procurement (EDFP).*

The correlation relationship between the DRPP and EDFP is positive, as witnessed by the results shown in the structural model. DRPP ($\beta = -0.062$, $p = 0.010$) has a direct effect: 0.194 (95%CI: 0.046 - 0.343), indirect effect: 0.057 (95%CI: 0.008 - 0.107), p-value=0.023 and a total effect 0.252 (95%CI: 0.104 - 0.399) and a p-value = 0.001. All these effects were statistically significant, and even the mediated relationship shows a relationship from DRPP 0.2718 (95%CI: 0.131 - 0.411), p-value = 0.000, to DDFP and the EDFP. The relationship shown in the model concludes that DRPP has a strong relationship with EDFP. However, the correlation between the two variables supports that DRPP positively influences EDFP and rejects the alternative hypothesis.

6.2.4 *H4: The donation implementation process (DIP) has a positive direct relationship with effective donor-funded procurement.*

Table 4.10 and Figure 4.8 show a direct relationship between DIP and EDFP. The direct relationship shows DIP ($\beta = 0.27$, $p < 0.168$), and the standardised direct effect was 0.097, -0.041 to 0.235 was the estimated range of the confidence interval measured at 95%. Furthermore, the indirect effect ($\beta = 0.15$, $p < 0.168$) and the standardised indirect effect were 0.031, and the unstandardised effects were calculated at a 95% confidence interval, and the estimated range of the confidence interval was -0.003 to 0.067, and the p=value=0.080. Additionally, the standardised total effect was found to be 0.129, the estimated range of confidence interval was found to be -0.011 to 0.269 and a p-value = 0.071. Again, the relationship was mediated by DDFP and showed that 0.149 (0.018 to 0.282), p-value = 0.026. However, the results show that the relationship between DIP and EDFP is not statistically significant but becomes statistically significant through mediated relationship by DDFP hence favours the null hypothesis, meaning it has no effect.

7.0 DISCUSSION OF RESULTS

7.1 The direct effect of the pre-donation planning process on effective donor-funded procurement

This objective sought to examine the effects of the pre-donation planning processes on the laboratory system's performance, and hypothesis (H1) emerged from this objective. This hypothesis was tested to confirm the effect of the pre-donation planning processes on effective donor-funded procurement. The results (β = -0.11, p-value=0.094) established that the pre-donation planning process, which covers a detailed plan, scope definition of donation, understanding of platforms needed and for which tests, space availability, as well as the availability of qualified technicians (Mullally, 2013; Cohen et al., 2020), does not positively influence effective donor-funded procurement, as the results favoured the null hypothesis. Even though the results favour the null hypothesis, detailed work plan, scope definition of donor support, understanding of the platforms needed and for which tests, space availability, and making use of qualified technicians cannot be ignored for the success of the laboratory systems and for the donor-funded procurement to be effective. The results confirm what critics argued that donor-funded procurements influence developing countries which risk undermining their sovereignty rights (Chimia, 2013) but go against other views that say attention given to the recipient nations by the donors is instrumental to the development of reforms in the health sector development (Weerasekara et al., 2021; International Monetary Fund, 2022).

The results further argue that pre-donation planning processes do not affect the medical laboratory system's effectiveness, and the donor-funded procurement can be done before exhausting all pre-donation planning process arrangements. The results support what Weerasekara et al. (2021) also argued: donor-funded procurement processes are slow, and some key supplies for the laboratory are delayed due to delays in their procurement processes. The results are consistent with the Person-Situation Interaction Theory, which purports that a procurement employee's cognitive moral development stage affects how they approach a work-related challenge that may involve corruption as well as how they decide what is right and wrong in each situation (Trevino, 1986) and the managers and policymakers should consider making such an issue of importance compulsory to improve the performance of medical laboratory systems.

7.2 The effect of the donation requirement process on increasing the effectiveness of donor-funded procurement

Objective (2b) brought about hypothesis (H2), and the first hypothesis examined if the donation requirement process (DRP) has a direct relationship between effective donor-funded procurement (EDFP) and the hypothesis. The results confirmed that the donation requirement process does not have a positive direct relationship with affects effective donor-funded procurement as they are positive as shown by the ($\beta = 0.025$, p-value=0.732), the position which supports the argument by Oosting et al. (2020) that literature indicates that for the process to increase health care including medical laboratory testing capacity, all donation requirement planning activities have to be taken into account as well as putting service contracts that cover the lifecycle of everything donated, especially equipment, service and maintenance should be done by professional technicians. The requirement process revolves around the standards and specifications, appropriate technology- simple to operate, low energy consumption, ease to maintain, technician training, tests and calibration needed, and preventative maintenance.

The results further state otherwise from other scholars that the donation requirement process increases the health care and testing capacity of the public health medical laboratory if it is sustainable, sustainable "if countries successfully finance the disease response, use of resources available more effectively and strengthen domestic resource mobilisation" (Global Fund, 2019, p.20-21). The study results do not assert the importance of the donation requirement process; health critics say the donation requirement process, which includes following government policies and support variables such as education, good laboratory management, ethics, and proper planning as well as capacity are key factors that contribute to the improvement of health care (NHLSP, 2021; Ahisan & Paul, 2018).

The results do not support the assertion by Jabbal and Lewis (2018), who argued that creating a supportive culture, building better and more relevant infrastructure, and embedded systems for training and educating are critical for improving the public health medical laboratory testing capacity. The long-term whole-system approach ensures sustained improvements through active government policies (Fulop & Ramsey, 2021). Qualified technicians are required in the donation planning process to be involved in the installation and subsequence services of the machinery in the public health laboratory. Additionally, the results validate what the literature says improving health outcomes is at the core of Sustainable Development Goals (Goal 3)," ensure healthy lives and promote well-being for all ages" (WHO, 2018, p.8). Quality

improvements are about the people closest to the system being given the resources, time, permission, and skills to improve healthcare systems (Jones et al., 2021) through government policies that promote public health systems through effective procurement.

7.3 The effectiveness of the donation recipient preparation process (DRPP) in ensuring effective donor-funded procurement (EDFP)

Objective 2c examined the relationship between the donation recipient preparation process and effective donor-funded procurement (H3). The hypothesis was tested using the structural equation model, and the results confirmed that there is a positive relationship (β = -0.062, p-value=0.010) that exists between the donation requirement process and the effective donor-funded procurement and provide that when donation recipient preparation is done correctly, there is effective donor-funded procurement and ensures public health care priority effectiveness. The donation requirement process includes energy consumption of equipment, waste disposal and disposables, site preparation, and training of personnel to operate and maintain equipment which is considered an important part of the preparation process. The study results confirm the earlier literature that stated that capacity and capability are addressed by having a coordinated approach that balances capacity and provides guidance on allocating scarce resources, scientific knowledge, and professional technical staff (UNIDO, 2021; Acheampong et al., 2021).

Additionally, in support of the study results, the literature pointed out that leaders are encouraged to establish and enhance effective corporate culture to ensure that recipient nations do due processes and participate in donation success (Pathiranage et al., 2020). According to Eaton and Kilby (2015), the donation recipient planning process influences the alignment of organisational strategy, which most public health corporate managers fail to do. The results concur with the Transaction Cost Economic Theory, which postulates to address organisational structures (Holmstrom & Roberts, 1998; Williamson, 2002, 2005). The key assumptions are human behaviour which is opportunism, and bounded rationality (Martin et al., 2010) as well as environmental characteristics (Williamson, 1979; Williamson & Ouchi, 1981; Williamson, 1985), which asserted specificity and uncertainty, and the theory tackles issues like as why businesses are formed in the first place (i.e., to reduce transaction costs), how businesses determine their borders, and how businesses should manage their operations (Coarse, 1937, Williamson, 1979).

7.4 The effect of the donation implementation process on the effectiveness of donor-funded procurement systems

Objective (2d) 's purpose was to examine the effects of the donation implementation process on the effectiveness of donor-funded procurement in the medical laboratory systems in Zimbabwe, and the hypothesis sought to examine the relationship that exists between the donation implementation process and effective donor-funded procurement which was presented as (H4). The results ($\beta = 0.27$, p-value=0.168) show no direct positive relationship between donation implementation and effective donor-funded procurement, but they are not significant enough to support the hypothesis. The results of this study support the null hypothesis and show no direct correlation between the two variables.

The results support the literature that postulated that the external environment, such as donor influence on purchasing goods and services by the multilateral donors in pursuit of their donor interest (Arvin & Baum, 1997; Carbonnier, 2013). The effects of donor procurements of goods and services are that the process always benefits the donor country at the expense of the developing countries' objectives (Morrisey, 1993; Carbonnier, 2013; Victoria, 2021). Moreso, it is estimated that even after the influence on procurement, 40-70% of medical devices and equipment procured broke down or reagents expired due to a lack of personnel training (Perry & Malkin, 2011; Seidu, Hagan, Ameyaw, et al., 2021; Safi et al., 2020), of which the literature validate the results of this objective. However, even though the results are not supporting the effects of the donation implementation process on the effectiveness of donor-funded procurement, the results found it interesting as this is a key practice that the donor's side, assembly, package, and then shipping of the commodities and on the recipient side, the responsibility is to make sure that the goods are custom cleared, local transportation of goods, unpackaging, installation, commissioning and last maintenance of the same.

7.5 QUALITATIVE FINDINGS

7.5.1 Lack of Coordination and Collaboration

The interviews show a lack of coordination and collaboration between the laboratory services and the donor community, affecting some laboratory activities that failed to take off, such as testing other diseases. The participants were asked what donors could do differently to improve operational procurement efficiency in support of public health medical laboratory services. The **M/PS/3/4** stated:

"*… Provision of lab commodities should be agreed upon between the lab services and the donors. The donor procurement of goods and services should be done together between the two parties, but I don't think this is being done, and donors are procuring on their own. Regarding the procurement of machines and the services, they are all done by the donors without laboratory services, and some are not in line with lab requirements. I believe it should be the other way round, not for the donors even if they have their monies to do things for the laboratory services, and I am not sure if any guideline is being used to manage these donors".*

Another **F/PS/5/5** echoed the same, saying, *"...Regarding the procurement of machines and the services, they are all done by the donors without the laboratory services participating in the processes, and some are not in line with lab requirements.*"

7.5.2 Operational Efficiency

Asked about what can be done to improve operational efficiency for the laboratory for such diseases that cannot be tested in the public health systems. Efficiency operations are said to be cost-effective, reducing waste, time, and money while maintaining quality and service (Craig & Condon, 1984; Thorn et al., 2017). The participants stated that the government's funding is inadequate, and the donors have their areas of interest. Even though they have become the major funders of laboratory services, they mainly focus on HIV/AIDS/TB or COVID-19. **M/PS/1/1** said,

- "*…The major challenge is that the donors focus mainly on HIV/TB and, recently, COVID-19, but they should focus on diseases like bacteria. No one is funding such areas, which makes it difficult to achieve operational efficiency, but can be achieved once the donors and the laboratory services start to work together as one unit for the sake of the patients out there who really need such services, seriousness is needed to achieve this as this is so important to support the requirements of the laboratory services."*

And **F/PS/4/5** flippantly said,

- *"The government is also not funding adequately, which worsens the situation, and we don't expect anything from the government. It has been like this for years, and things only come from the donors, but what they do is also not enough since they focus on their work plans. Achieving operational efficiency will need all the stakeholders to work together. Of course, there will be challenges here and there, but if the government and*

the donor community work together, it's easier to manage when in the first place, there is that harmony."

8.0 CONCLUSIONS AND IMPLICATIONS

The study was aimed at addressing the research objectives provided in 1 above. The questions are: To explore the donor-funded procurement processes followed by public health medical laboratory services in Zimbabwe.

To assess the donor-funded procurement processes' effectiveness in public medical laboratory services based on the following: a) *The effect of the pre-donation planning process on the effectiveness of donor-funded procurement, b)The effect of the donation requirement process on the effectiveness of donor-funded procurement, c)The effectiveness of the donation recipient preparation process on donor-funded procurement in the laboratory services in Zimbabwe and lastly d) the effect of the donation implementation process on the effectiveness of donor-funded procurement.*

The research questions were formulated based on the research objectives and were addressed by the study. The study revealed that lack of funding, lack of donor and government collaboration, coordination of related laboratory programmes, failure of laboratory services to have an interest in the procurement processes of the donor-funded activities, government's failure to fund the laboratory services adequately, no relationship exists between the pre-donation preparation process and the effective donor-funded procurement, however, the according to the literature, this is one of the most important steps where donor support has become relevant.

8.1 DONOR-FUNDED PROCUREMENT PROCESSES

8.1.1 Pre-donation planning process (PDPP)

The study established that there is no association between the pre-donation preparation process (PDPP) and effective donor-funded procurement (EDFP) (H1). However, even though the results show otherwise, the literature has shown that this is one of the most important steps need to avoid laboratory services in Zimbabwe becoming a dumping ground. The research further reveals that a detailed work plan, scope definition of donor support, understanding of platforms needed for which test, space availability, qualified employees, and technicians responsible for servicing the platforms, were agreed upon. When this is done and agreed upon, the partners move to the next stage of the planning process, the donation recipient process

(DRP). However, the research results do not support that the pre-donation planning process has no effect, and a relationship does not exist between it and effective donor-funded procurement.

The empirical data provided below confirms the assertion stated above;

- ✓ There is no direct relationship between the pre-donation preparation process and effective donor-funded procurement (β = -0.11, p-value = 0.094).
- ✓ The pre-donation preparation process and effective donor-funded procurement have no mediated relationship (β = -0.062, p-value = 0.348).

8.1.2 Donation requirement process (DRP)

The results revealed that there is no association between the donation requirement process (DRP) and effective donor-funded procurement (EDFP) (H2). However, the relationship was confirmed through the mediating and moderating variables. These are making sure that all procured equipment is functioning at the levels expected within the government systems and sub-system levels, operating and maintenance manuals are provided with clear instructions in a language known by the users, the machine is procured in line with the provided specifications, meet the health standards and is an appropriate technology (latest versions) which is simple to operate, consumes low energy, easy to maintain. The donor should ensure they conduct training for users and the technicians who will use the equipment and maintain the same. Calibration and preventative schedules should be established. Additionally, the procurement should come with all the ancillary support, including the continuous provision of reagents to avoid white elephants in the laboratory system.

8.1.3 Donation recipient preparation process (DRPP)

The research question on the effectiveness of the donation recipient preparation process was well articulated as the research results established a relationship between the donation preparation process and the effective donor-funded procurement. The relationship was further confirmed through (H3). To put it another way, rather than just procuring, laboratory services in Zimbabwe and the donor-funded initiative should actively work to create the conditions that promote value for money if donor-funded procurement is to have any real relevance. The research results conclude that energy consumption should be ascertained, waste disposal, site preparation, and personnel training to operate and maintain the equipment should all these variables be considered. Such policies may be promulgated to defend the system's function.

Effectively this will improve the operational efficiency of the laboratory systems in Zimbabwe and ensure public health care. The results below illustrate the above;

- ✓ The donation recipient preparation process has a direct relationship with effective donor-funded procurement (β= 0.062, p-value = 0.010).

8.1.4 Donation Implementation Process (DIP)

This concerns evaluating the equipment and the accompanying ancillary components, reagent supply, assembling of equipment, packaging and shipping, customs clearance, transportation, unpackaging, installation, commissioning, and maintenance. However, the results of this study established that this part is irrelevant since there is no association between DIP and EDFP (H4). The research concluded that DIP has no direct relationship with effective donor-funded procurement but only has a positive relationship through the moderating and mediating variables. Policy direction is needed from the government to inform the way forward regarding the effectiveness of the implementation because, as noted in the literature, this is an important part of the procurement process. When deliveries are done, communication is always done with the variables centred around the donation implementation process, which cannot be avoided since Zimbabwe does not assemble such equipment. Furthermore, goods and services are mostly procured from the donor's home country and delivered to the national medical warehouse. The following results indicate the above case;

8.2 Policy implications

The policymakers must not be political with laboratory matters as they are key in supporting the generality of the people of Zimbabwe; as seen during COVID-19, the laboratory became one of the key pillars of health as decisions were mainly laboratory-based. Regarding the study, the findings have shown that donor-funded procurement plays a key role in support of laboratory services. The framework from this study will help the policymakers review the current working frameworks and see how the policies can be merged in support of the laboratory services. The results guide the policymakers to ameliorate laboratory systems as they are key in detecting diseases. Reducing structural conditions that put people at risk, reducing health inequalities and supporting social services are paramount (Bhattacharyya et al., 2022; Thoits, 2010). The focus of policymakers is on strengthening the support of essential healthcare services such as laboratories and providing policies that do not curtail the procurement of goods, equipment, and services for laboratory services since the government itself cannot adequately fund such services. Policymakers can provide policies that coordinate

activities and a mechanism to monitor such activities that do not derail the gains of donor-funded procurement.

8.3 Theoretical implications

The study results find that determinants of donor-funded procurement (DDFP) and donation recipient preparation process (DRPP) have a direct relationship with effective donor-funded procurement (EDFP) and pre-donation preparation process (PDPP), donation requirement process (DRP), donation implementation process (DIP) and government policy (GP) all these variables have no direct relationship with the effective donor-funded procurement. The DDFP, which includes top leadership support, collaborations, personnel recruitment, and organisational culture, has been identified by prior studies they have a good impact on organisational management (Berenguer & Rashkova, 2021; Seetharaman et al., 2020; Yaccob et al. 2019; Suleman et al. 2022). Moreover, DRPP has never been researched on its impact on effective donor-funded procurement. This is the first time such a study has been done to establish the relationship in support of the laboratory services. This study's results provide new insights in that while previous studies (Ahsang & Paul, 2018; Schaffer et al., 2022) acknowledge that GP has a direct relationship with procurement effectiveness, this study established that there is no such direct relationship (p-value=0.206) that exists between the two variables.

9.0 LIMITATIONS AND RECOMMENDATIONS

The research had challenges with the data collection instrument, which missed capturing some aspects of the study since the instrument was prepared based on the conceptual framework alone, and the questionnaire did not capture objective number 1. This is not new to this research, as (Nel et al., 2017) faced similar challenges with their research instrument. Furthermore, the qualitative data collection was not recorded as proposed because the research participants did not have internet data to support the interview recordings for most participants. Furthermore, the research used one method of research, that is, qualitative or quantitative; in this research, the research was found to be using both methods in one research; this could have impacted the delay in interpreting the study results. However, this is not peculiar to this research as such challenges are clearly outlined by (Cook, Weaver, Thompson, & Weaver, 2020). Additionally, as much as it acknowledges the sustainable procurement issues, Tripple Bottom Line Approach (TBL), this study did not focus on such. This study was limited to the effectiveness of donor-funded procurement in donor-funded procurement in support of

laboratory services in the Zimbabwean context, and the study recommends that future research could focus on sustainable procurement (TBL) in donor-funded procurement.

The study recommends that there be a collaboration between and among the funders and the laboratory services. Policy direction is needed that guides the donor community on their procurements that certain thresholds of goods and services should be bought within Zimbabwe to support economic activities. Furthermore, the study recommends the recruitment of qualified technicians who services laboratory equipment. The laboratory should procure equipment that consumes low energy, is simple, easy to maintain and simple to operate, such as automated machines. The study further recommends that the laboratory services encourage the universities to increase their intakes for laboratory sciences to cab the brain drain and promote policies that avoid the abuse of scarce resources, especially after receiving donor support. The research further recommends policies that encourage pre-donation, recipient preparation, and donation implementation processes to avoid procurement of equipment, goods and services that eventually serve no purpose.

References

Abimiku, A. G. (2009). Building laboratory infrastructure to support scale-up of HIV/AIDS Treatment, Care, Prevention. In-country Experience. *American Journal of Clinical Pathology, 131*(1), 875-886.

Abdel-Malek, T. & Koenders, B. (2011). *Progress Towards More Effective Aid: What does the Evidence Show? 4th High-Level Forum on Aid Effectiveness, Busan, North Korea, 29 November to 1 December 2011*. Retrieved November 1, 2022, from http://www.oecd.org/dac/effectiveness/48966414.pdf

Abuja Declaration Report. (2001). *African Summit on HIV/AIDS, Tuberculosis and other related infectious diseases, Abuja, Nigeria, 24-27 April 2001*. Retrieved November 14, 2022, from https://au.int/sites/default/files/pages/32894-file-2001-abuja-declaration.pdf

Ackoffs, R. L. (1953). *The Design of Social Research*. Chicago: University of Chicago Press.

Acheampong, G., Owusu, M., Nkrumah, B., Obeng, B., Opare, D. A., Sambian, D. J.,…Walker, C. (2021). Laboratory capacity in COVID-19 diagnosis and the need to enhance molecular testing in Ghana. *Global Security, Health, Science and Policy*, *6*(1), 10-17.

Adams, V., Burke, N. J., & Whitmarsh, I. (2014). Slow research: thoughts for a movement in global health. *Medical Anthropology, 33*(33), 179-197.

Adams H, Morin E, Rhode S, Turner E, Golden Z., O'Neal T, Olund S, Wangsness K, Friedman D, Sanderson A, Bradshaw R, Randolph R, Robb K, Hansen K. (2022). The Vital Role of the

Environmental Laboratory as Public Health Laboratories. *Water Environment Federation Water Environment & Technology. 34*(3): 32-37

Al Kuwaiti, A., AlQuraan, M., & Subbarayalu, A. V. (2016). Understanding the effect of response rate and class size interaction on students' evaluation of teaching in higher education. *Cogent Education*, *3*(1), 1204082. https://doi.org/10.1080/2331186X.2016.1204082

Aluttis, C. A., Chiotan, C., Michelsen, M., Costongs, C., & Brand, H. (2013). *Review of Public Health Capacity in the EU: Public Health Capacity in the EU: Supplement to the Final Report*. European Commission Directorate General for Health and Consumers.

Bartlett, M. S. (1954). A further note on the multiplying factors for various chi-square approximations in factor analysis. *Journal of the Royal Statistical Society, Series B*, *16*(1), 296–298.

Barton, R., Aibinu, A. A., & Oliveros, J. (2019). The Value for Money Concept in Investment Evaluation: Deconstructing its Meaning for Better Decision Making. *Project Management Journal*, *50*(2), 210–225. https://doi.org/10.1177/8756972819827102

Bhattacharyya, H., Agarwalla, R., & Khandelwal, A. (2022). Impact of COVID-19 on child health and healthcare services. *Medical Journal Armed Forces India*, *78*(1), 3–6. https://doi.org/10.1016/j.mjafi.2021.10.006

Blevins, D. P., Ragozzino, R., & Eckardt, R. (2022). "Corporate governance" and performance in nonprofit organisations. *Strategic Organization*, *20*(2), 293–317. https://doi.org/10.1177/1476127020921253

Carroll, L. J., & Rothe, J. P. (2010). Levels of reconstruction as complementarity in mixed methods research: A social theory-based conceptual framework for integrating qualitative and quantitative research. *International journal of environmental research and public health*, *7*(9), 3478-3488.

Chagutah, T. (2023). *President Emmerson Mnangagwa urged to reject the PVO Amendment Bill bill*. Retrieved November 1, 2022, https://www.newsreportzim.com/2023/02/04/ed-urged-to-reject-pvo-amendment-bill/

Church, D. L., & Naugler, C. (2019). Benefits and risks of standardisation, harmonisation and conformity to opinion in clinical laboratories. *Critical Reviews in Clinical Laboratory Sciences*, *56*(5), 287–306. https://doi.org/10.1080/10408363.2019.1615408

Cook, L., Weaver, S., Thompson, C., & Weaver, L. (2020). Mixed methods research: Exploring complexities and challenges. *Caribbean Journal of Mixed Method Research*, *1*(1), 167–190.

Craig, A., & Condon, R. (1984). Operational Efficiency and Time of Day. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, *26*(2), 197–205. https://doi.org/10.1177/001872088402600206

Creamer, E. G. (2022). *An Introduction to Fully Integrated Mixed Methods Research*. London: Sage Publications.

Dreher, A., Fuchs, A., Parks, B., Strange, A., & Tierney, M. J. (2022a). *Banking on Beijing: The Aims and Impacts of China's Overseas Development Program* (1st ed.). Cambridge: Cambridge University Press. https://doi.org/10.1017/9781108564496

Dreher, A., Fuchs, A., Parks, B., Strange, A., & Tierney, M. J. (2022b). *Banking on Beijing: The Aims and Impacts of China's Overseas Development Program* (1st ed.). Cambridge: Cambridge University Press. https://doi.org/10.1017/9781108564496

Dza, M., Fisher, R., & Gapp, R. (2013). Procurement Reforms in Africa: The Strides, Challenges, and Improvement Opportunities. *Public Administration Research*, *2*(2), 49-60. https://doi.org/10.5539/par.v2n2p49

Edwards, J. R. (2009). Latent Variable Modeling in Congruence Research: Current Problems and Future Directions. *Organisational Research Methods*, *12*(1), 34–62. https://doi.org/10.1177/1094428107308920

Fernández-Habas, J., Fernández-Rebollo, P., Gallardo-Cobos, R., Vanwalleghem, T., & Sánchez-Zamora, P. (2022). A Farmer's Perspective on the Relevance of Grassland-Related Innovations in Mediterranean Dehesa Systems. *Forests*, *13*(8), 1182. https://doi.org/10.3390/f13081182

Gatome-Munyua, A., Sieleunou, I., Barasa, E., Ssengooba, F., Issa, K., Musange, S., Osoro, O., Makawia, S., Boyi-Hounsou, C., Amporfu, E., & Ezenwaka, U. (2022). Applying the Strategic Health Purchasing Progress Tracking Framework: Lessons from Nine African Countries. *Health Systems & Reform*, *8*(2), e2051796. https://doi.org/10.1080/23288604.2022.2051796

Gordon, R. E. (2022). *Development Disrupted: The Global South in the Twenty-First Century* (1st ed.). Cambridge: Cambridge University Press. https://doi.org/10.1017/9781108539876

Govender, V., Mcintyre, D., Loewenson, R. (2008). *Progress towards Abuja target for government spending on health care in East and Southern Africa.* Harare: EQUINET.

Grossi, G., & Vakulenko, V. (2022). New development: Accounting for human-made disasters—comparative analysis of the support to Ukraine in times of war. *Public Money & Management*, *42*(6), 467–471. https://doi.org/10.1080/09540962.2022.2061694

Hamel, D. J., Sankalé, J.-L., Samuels, J. O., Sarr, A. D., Chaplin, B., Ofuche, E., Meloni, S. T., Okonkwo, P., & Kanki, P. J. (2015). Building laboratory capacity to support HIV care in Nigeria: Harvard/APIN PEPFAR, 2004–2012. *African Journal of Laboratory Medicine*, *4*(1), 1-10. https://doi.org/10.4102/ajlm.v4i1.190

Iacobucci, D. (2010). Structural equations modelling: Fit Indices, sample size, and advanced topics. *Journal of Consumer Psychology*, *20*(1), 90–98. https://doi.org/10.1016/j.jcps.2009.09.003

Jarvis, T., Scott, F., El-Jardali, F., & Alvarez, E. (2020). Defining and classifying public health systems: A critical interpretive synthesis. *Health Research Policy and Systems*, *18*(1), 68. https://doi.org/10.1186/s12961-020-00583-z

Kaiser, H. F. (1958). The varimax criterion for analytic rotation in factor analysis. *Psychometrika*, *23*(3), 187–200. https://doi.org/10.1007/BF02289233

Kaur, P., Stoltzfus, J., & Yellapu, V. (2018). Descriptive statistics. *International Journal of Academic Medicine*, *4*(1), 60. https://doi.org/10.4103/IJAM.IJAM_7_18

Klaaren, J., & Watermeyer, R. (2022). Reforming procurement standards in order to effectively deliver public infrastructure: Rethinking the regulatory environment in post-pandemic South Africa. *South African Journal of Economic and Management Sciences*, *25*(1). https://doi.org/10.4102/sajems.v25i1.4465

Kruger, S., & Pisa, N. (2017). Anniversary 2007–2017. *Journal of Transport and Supply Chain Management*, *11*. https://doi.org/10.4102/jtscm.v11i0.340

Lewis, P., Leming, M., Frey, H. C., & Rasdorf, W. (2011). Assessing Effects of Operational Efficiency on Pollutant Emissions of Nonroad Diesel Construction Equipment. *Transportation Research Record: Journal of the Transportation Research Board*, *2233*(1), 11–18. https://doi.org/10.3141/2233-02

Mackenbach, J. P., McKee, M. (2013). *Evaluating the impact of health policies on population health in Europe, 23*(2), 195–201.

Malacina, I., Karttunen, E., Jääskeläinen, A., Lintukangas, K., Heikkilä, J., & Kähkönen, A.-K. (2022). Capturing the value creation in public procurement: A practice-based view. *Journal of Purchasing and Supply Management*, *28*(2), 100745. https://doi.org/10.1016/j.pursup.2021.100745

Mani, V., & Gunasekaran, A. (2018). Four forces of supply chain social sustainability adoption in emerging economies. *International Journal of Production Economics*, *199*(1), 150–161. https://doi.org/10.1016/j.ijpe.2018.02.015

Mazikana, A. T. (2019). Reducing Contract Management Challenges in Public Sector Procurement in Zimbabwe. *SSRN Electronic Journal, 10*(1), 33-40. https://doi.org/10.2139/ssrn.3443938

McQueen, D. V., Wismar, M., Lin, V., Jones, C. M., Davies, M., & World Health Organization. (2012). *Intersectoral governance for health in all policies: structures, actions and experiences*. World Health Organization: Regional Office for Europe.

Mishra, R., & Singh, R. K. (2022). A systematic literature review on supply chain resilience in SMEs: Learnings from COVID-19 pandemic. *International Journal of Quality & Reliability Management*. *Vol. ahead-of-print*. https://doi.org/10.1108/IJQRM-03-2022-0108

Mogotsi, K., Alagidede, I., & Saruchera, F. (2022). Applying lean thinking for disaster responses: The case of philanthropic organisations. *International Social Science Journal, 72*(244), 287-319.

Mofokeng, M., & Luke, R. (2014). An investigation into the effectiveness of public entities' procurement practices. *Journal of Transport and Supply Chain Management*, *8*(1), 1-7. https://doi.org/10.4102/jtscm.v8i1.136

Mojumder, A., Singh, A., Kumar, A., & Liu, Y. (2022). Mitigating the barriers to green procurement adoption: An exploratory study of the Indian construction industry. *Journal of Cleaner Production*, *372*(1), 133505. https://doi.org/10.1016/j.jclepro.2022.133505

Mouschoutzi, M., & Ponis, S. T. (2022). A comprehensive literature review on spare parts logistics management in the maritime industry. *The Asian Journal of Shipping and Logistics*, *38*(2), 71–83. https://doi.org/10.1016/j.ajsl.2021.12.003

Nel, E., Rich, E., Morojele, N., Harker Burnhams, N., Petersen Williams, P., & Parry, C. (2017). Data collection challenges experienced while conducting the international alcohol control study (IAC) in Tshwane, South Africa. *Drugs: Education, Prevention and Policy*, *24*(5), 376–383. https://doi.org/10.1080/09687637.2016.1226774

Nsikan, J., Affiah, E. A., Briggs, I., & Koko, N. (2022). Sustainable supplier selection factors and supply chain performance in the Nigerian healthcare industry. *Journal of Transport and Supply Chain Management*, *16*(1). 1-9. https://doi.org/10.4102/jtscm.v16i0.633

Olalere, N., Gatome-Munyua, A. (2020). *Public financing for health in Abuja: 15% of an elephant is not 15% of a chicken*. Addis: Africa Renewal.

Olmsted, S. S., Moore, M., Meili, R. C., Duber, H. C., Wasserman, J., Sama, P., Mundell, B., & Hilborne, L. H. (2010). Strengthening Laboratory Systems in Resource-Limited Settings. *American Journal of Clinical Pathology*, *134*(3), 374–380. https://doi.org/10.1309/AJCPDQOSB7QR5GLR

Pallas, S. W. (2015). Response to donor proliferation in Ghana's health sector: a qualitative case study. *Bull World Health Organ, 93*(1), 11-18.

Park, D., Bahrudin, F. I. V., & Han, J. (2020*).* Circular reasoning for the evolution of research through a strategic Construction of Research methodologies*. International Journal of Qualitative and Quantitative Research Methods, 8*(3), 1-23.

Parker, D. W., Dressel, U & Chevers, D. (2018). Agency theory perspectives on public-private partnerships: *International development project. International Journal of Productivity and Performance*, *67*(2), 239-259

Parveen, H. & Showkat, N. (2017*).* Research Ethics*. Media and Communication studies, 11*(2),1-13

Pathiranage, *Y. L. (2019).* Organisational Culture and Business Performance: An Empirical Study. *SSRG International Journal of Economics and Management Studies, 6*(6), 1-11.

Pathiranage, Y.L., Jayatilake, L. V. K, & Abeysekera, R.(2020*).* A literature review on organisational culture towards corporate performance. *International Journal of Management, Accounting and Economics, 7*(9), 522-537.

PEPFAR Country Operational Plan. (2020*). Community COP20 Zimbabwe, Community Priorities, COP20, 1-20.* Harare: PEPFAR Regional Office.

Penrose, K. (2014). *Work experience manual for Victira Secondary Schools*. Retrieved November 11, 2022, from https://myfuture.edu.au/career-articles/details/what-are-the-benefits-of-work-experience#ref1

Petrose, L.G., Fisher, A. M., Douglas, G. P., Terry, M. A., Muyla, A., & Chawani, M. S. (2016*).* Assessing Perceived Challenges to Laboratory Testing at Malawian Referral Hospital*. Am J Trop Med Hyg, 94*(6),1426-1432.

Policy Brief, (2019*). The Zimbabwe Healthcare Financing Landscape.* Harare: Government Printers.

Polit, D., & Hunger, B. (1993*).* Nursing Research: Principle and Method, (6th ed.). Philadelphia: Lippincott Company.

Poth, C. & Munce, S. E. P. (2020). Commentary- Preparing today's researchers for a yet unknown tomorrow: Promising practice for a synergistic and sustainable mentoring approach to Mixed Methods learning*. International Journal of Multiple Research Approaches, 12*(1), 56-64

Punch, K. F. (2005*). Introduction to Social Research- Quantitative and Qualitative Approaches.* London: Sage.

Purcell, J. (2014). Disengaging from engagement*. Human Resources Management Journal, 24*(1), 241-254

Queensland Government, (2018*). Department of Housing and Public Works: Planning for significant procurement.* Queensland: Office of the Chief Advisor-Procurement.

Ramsay, J. (2001*).* Purchasing's Strategic irrelevance. *Journal of Purchasing and Supply Chain Management, 7*(4), 257-263

Rechel, B., & McKee, M. (2012). *Preliminary review of institutional models for delivering essential public health operations in Europe*. Copenhagen: WHO Regional Office for Europe.

Resource Mapping Report (2019). *Resource Mapping Report.* Harare: Ministry of Health and Child Care, Zimbabwe.

Rindfleisch, A., & Heide, J.B. (1997). Transaction cost analysis: past, Present and future applications. *Journal of Marketing, 61*(4), 30–54.

Robson, V. M. J., & Hohepa, M. (2009*).* School Leadership and Student Outcomes: Identify what Works and Why Best Evidence synthesis iteration. *(BES), ISB 978 0 7903 3265 9.*

Robert, E., Zongo, S., Rajan, D., & Ridde, V. (2022). Contributing to collaborative health governance in Africa: A realist evaluation of the Universal Health Coverage Partnership. *BMC Health Services Research*, *22*(1), 753. https://doi.org/10.1186/s12913-022-08120-0

Rout, S. K. (2010). Health Sector Reforms in Orissa: The Disconnecting Paths. *Journal of Health Management*, *12*(3), 305–325. https://doi.org/10.1177/097206341001200306

Safi, M., Bertram, M. L., & Gulis, G. (2020). Assessing Delivery of Selected Public Health Operations via Essential Public Health Operation Framework. *International Journal of Environmental Research and Public Health*, *17*(17), 6435. https://doi.org/10.3390/ijerph17176435

Saleh, A. & Bista, K. (2017). Examining Factors Impacting Online Survey Response Rates in Educational Research. *Perceptions of Graduate Students*. *13*(29), 63–74.

Sarasvathy, S. D. (2022). *Effectuation: Elements of Entrepreneurial Expertise*. Edward Elgar Publishing. https://doi.org/10.4337/9781839102585

Sardeshmukh, S. R., & Vandenberg, R. J. (2017). Integrating Moderation and Mediation: A Structural Equation Modeling Approach. *Organisational Research Methods*, *20*(4), 721–745. https://doi.org/10.1177/1094428115621609

Saruchera, F. (2014). *Determinants of commercialisation of technological innovations in developing economies: a study of Zimbabwe's research institutes* (Doctoral dissertation). Pietermaritzburg: UKZN.

Sam. D.P., & Sam, A.G. (2011*). Research Methodology.* Delhi: Kalpaz Publication.

Sanchez, A. A., Aragon, M. I. B., & Sanz, V. R. (2003). Effects of training on business results. *The International Journal of Human Resources Management, 14*(6), 956-980.

Sardeshmukh, S. R., & Vandenberg, R. J. (2017). Integrating Moderation and Mediation: A Structural Equation Modeling Approach. *Organisational Research Methods*, *20*(4), 721–745. https://doi.org/10.1177/1094428115621609

Saunders, M., Lewis, P., & Thornhill, A. *(2007). Research methods for business student* (4th ed.). New York: Financial Times Prentice Hall.

Seyoum, B., & Lian, Y. (2018*).* Market performance implications of modularisation: Evidence from global auto firms operating in China*. International Business Review*, *27*(4), 852–866*.*

Schaffer, L. M., Oehl, B., & Bernauer, T. (2022). Are policymakers responsive to public demand in climate politics? *Journal of Public Policy*, *42*(1), 136–164. https://doi.org/10.1017/S0143814X21000088

Scherz, M., Wieser, A. A., Passer, A., & Kreiner, H. (2022). Implementation of Life Cycle Assessment (LCA) in the Procurement Process of Buildings: A Systematic Literature Review. *Sustainability*, *14*(24), 16967. https://doi.org/10.3390/su142416967

Seto, E., Chagpar, A., Roach, C., & MacDonald, A. (2006). Usability Evaluations as Part of the Procurement Process: Case Study of Hospital Point of Care Carts. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, *50*(10), 1095–1098. https://doi.org/10.1177/154193120605001020

Skolozdra, R. B. (2012*). How Smart Laboratory Design and Layout Ensure Optimal Procedures, Workflow, Cooperation and Production. Retrieved 12 June 2021, from https://www.labmanager.com/lab-design-and-furnishings/it-s-all-in-the-planning-how-smart-lab-design-and-layout-ensure-optimal-procedures-workflow-cooperation-and-productivity-15697.*

Shukla, S. (2020*). Research Methodology and Statistics.* Ahmedabad: Rishit Printers.

Shukla, S. (2020*). Concept of Population and Sample: How to Write a Research Paper? Indore, M. P., India. Conference Paper.*

Shorten, A. & Smith, J. (2017). Mixed Methods Research: Expanding the evidence base. *Evidence-based Nursing 20*(1), 74-75. *https://dox.doi.org/10/1136/eb-2017-102699*

Simchi-Levi, D., Kaminsky, P. & Simchi-Levi, E. (2009). *Designing and managing the supply chain.* Boston: Mcgraw Hill.

Simon, H. A. (1957). *Models of Man.* New York: Wiley.

Singh, K. (2007). *Quantitative Social Research Methods. Sage Publishing. London*.

South African Philanthropy Association (2015). *Learning and working together: A framework for donor collaboration*. Johannesburg, South Africa.

Stein, C. M., Morris, N. J., Hall, N. B., & Nock, N. L., (2017). Structural Equation Modeling. *Methods Mol Biol. 1666*(1),557-580. *doi: 10.1007/978-1-4939-7274-6_28. PMID: 28980265.*

Spieske, A., Gebhardt, M., Kopyto, M., & Birkel, H. (2022). Improving resilience of the healthcare supply chain in a pandemic: Evidence from Europe during the COVID-19 crisis. *Journal of Purchasing and Supply Management*, *28*(5), 100748. https://doi.org/10.1016/j.pursup.2022.100748

Suleman, S. A., Turner, T. P., Suleman, M. A., & Elwahed, H. (2022). Virtual recruitment—Should this be the future for dental core training? *British Dental Journal*, *233*(10), 841–844. https://doi.org/10.1038/s41415-022-5210-x

Surucu, L. & Maslakci, A. (2020). Validity and Reliability in quantitative research. *BMIJ*, *8*(3), 2694-2726.

Susan M.B. Morton, Dinusha K. Bandara, Elizabeth M. Robinson, Poly E. Atatoa Carr. (2012). *In the 21st Century, what is an acceptable response rate? 36*(2), 10–108.

Stock, J. R., & Lambert, D. M.(2001). *Strategic logistics management; Fourth Edition. Boston: McGraw-Hill International Editions.*

Susan M.B. Morton, Dinusha K. Bandara, Elizabeth M. Robinson, Poly E. Atatoa Carr. (2012). *In the 21st Century, what is an acceptable response rate? 36*(2), 10–108.

Syed, Z. J. W. (2012). Universalistic perspective of HRM and organisational performance: meta-analytical study. *International Bulletin of Business Administration*, 13.

Taherdoost, H. (2016). Sampling methods in Research Methodology: How to choose sampling technique for Research: *International Journal of Academic Research in Management (IJARM)*, *5*(2), 18-27.

Taherdoost, H. (2020). Validity and reliability of the Research Instrument: How to test the Validation of the Questionnaire/Survey in a Research. *International Journal of Academic Research in Management (IJARM), 5*(3), 28-36.

Tanga, P. T. & Mundau, M. (2014*).* The Impact of Donor-funded community empowerment projects on Poverty Alleviation in Zimbabwe. *Journal of Perspectives on Global Development and Technology,13*(1), 465-480.

Tashakkori, A., Teddlie, C. (1998*). Mixed Methodology: Combining Qualitative and Quantitative Approaches. Thousand Oaks, CA: Sage.*

Tashakkori, A., & Teddlie, C. (2003*). Handbook of Mixed Methods in Social and Behavioural Research.* Thousand Oaks, CA: Sage.

Teddlie, C. & Tashakkori, A. (2006). A General Typology of Research Designs featuring Mixed Methods. *Research in the Schools*, *13*(1), 12-28.

Terzi, C., & Posta, I. (2011*). Procurement Reforms in the UN System. Joint Inspection Unit. Geneva.*

Thoits, P. A. (2010). Stress and Health: Major Findings and Policy Implications. *Journal of Health and Social Behaviour*, *51*(1_suppl), S41–S53. https://doi.org/10.1177/0022146510383499

Thorn, J., Coast, J., & Andronis, L. (2017). *Reviewing the Literature Systematically: Interpretation of the Expected Value of Perfect Information*. London: SAGE Publications Ltd. https://doi.org/10.4135/9781526423528

Thurik, R. & Wennekers, S. (2004). Entrepreneurs, small businesses and economic growth. *Journal of small business and Enterprise, 11*(1), 140-149.

TolaData (2019). *5 reasons why M&E is good for NGOs*. Retrieved from https://www.toladata.com/blog/why-is-monitoring-evaluation-good-for-ngos/

Tukuta, M., & Saruchera, F. (2015). Challenges facing procurement professionals in developing economies: Unlocking value through professional international purchasing. *Journal of Transport and Supply Chain Management, 9*(1), 1-9.

United Nations Procurement. (2006). *Practitioner's Handbook.* Retrieved August 12 2022, from https://www.ungm.org

United Nations Procurement. (2017*). Revised Practitioner's Handbook.* Retrieved August 12 2022, from https://www.ungm.org

United Nations Development Programme (2020*). The impact of UNDP-managed Global Fund investments in procurement and supply chain systems in Zimbabwe.* Harare: UNDP, Zimbabwe.

United Nations Development Programme. (2018*). Procurement manual.* Harare: UNDP, Zimbabwe.

United Nations Populations Fund. (2015*). Policy and Procedures for Regular Procurement.* Retrieved August 12 2022, from *https://www.unfpa.org/*

United Nations International Children's Emergency Fund. (2015). *Donors and Partners*. Retrieved August 12 2022, from https://www.unicef.org/zimbabwe/partners-and-donors.

United Nations International Children's Emergency Fund. (2020). *Zimbabwe Health Budget Brief*. Harare: UNICEF, Zimbabwe

United Nations Industrial Development Organisation. (2018). *Procurement Manual*. Viena:n UNIDO, Austria.

United Nations Industrial Development Organisation. (2021). *Laboratory policy: A guide to Development and Implementation*. Retrieved August 12 2022, from https://www.unido.org/sites/default/files/files/202104/LP_publication_22042021_FINAL.pdf

United Nations Report. (2021). *The Sustainable Development Goals*. Retrieved August 22 2022, from https://unstats.un.org/sdgs/report/2021/The-Sustainable-Development-Goals-Report-2021.pdf

UNICEF. (2021). *The resources on the Sustainable Development Goals*. Retrieved August 22 2022, from https://www.unicef.org/sdgs/resources

United States Agency for International Development, (2009). *Strategies for Strengthening Laboratory Supply Chains*. Viena: USAID, Austria.

United States Agency for International Development. (2007). *Public Procurement Manual: Guidelines for conducting Public Procurement Procedure*. Viena: USAID, Austria.

University of Ireland. (2006). *Recruitment and selection procedures*. Maynooth, Ireland: National University of Ireland.

Vasdev, K. (2021). Emerging and re-emerging infectious diseases- past, present and beyond. *MOJ Biology and Medicine, 6*(1), 1-4.

Vasileiou, K, Barnet, J., Thorpes & Young, T. (2018). Characterising and justifying sample size efficiency in interview-based studies: systematic analysis of qualitative health research over a 15-year period. *BMC Medical Research Methodology, 18*(1), 148. *https://doi.org/10.1186/s12874-018-0594-7*

Venkatachalam, P. & Shah, K. (2020). *Philanthropic Collaboratives: The Power of Many*. Bridgespan Group. Retrieved December 12, 2022, from

https://www.bridgespan.org/insights/library/philanthropy/philanthropic-collaboratives-in-india

Witter, S., Chirwa, Y., Chandiwana, P., Munyati, S., Pepukai, M., & Bertone, M. P. (2019). The political economy of results-based financing: The experience of the health system in Zimbabwe. *Global Health Research and Policy*, *4*(1), 20. https://doi.org/10.1186/s41256-019-0111-5

Weerasekara, D. T., Disaratna, V., Withanage, K. T., & Perera, B. A. K. S. (2021). Procurement management in the foreign-funded construction projects implemented in Sri Lanka. *International Journal of Construction Management, 2021*(1), 1-13. DOI: 10.1080/15623599.2021.1956674

Weele, A .J. (2009). *Purchasing and Supply Chain Management: An Analysis, Strategy, Planning and Practice.* London: Cengage Learning Business Press.

William, C. (2011). Research Methods*: Journal of Business and Economics Research (JBER), 5*(3), 1-10.

Williams, M. J. (2017). The Political Economy of Unfinished Development Projects: 836 Corruption, Clientelism, or Collective Choice*? American Political Science Review 111*, *837* (4), 705-723.

Williams, D. B., Kohler, J. C., Howard, A., Austin, Z. & Cheng, Y. (2020). A framework for the management of donated medical devices based on perspectives of frontline public health care staff in Ghana. Medicine Access @ Point of Care, DOI: 10.1177/2399202620941367: 1-12.

Williamson, O. (1975). *Markets and hierarchies: Analysis and Antitrust Implications. New York: The Free Press,*

Williamson, O., (1979). Transaction cost economics: The governance of contractual obligations. *Journal of Law and Economics*, *22*(2), 233-261.

Williamson, O. (1985). *The Economic Institution of Capitalism: Firms, Markets, Relational Contracting*. The Free Press, London

Williamson, O. (1989). Transaction cost economics. In: R. Schmanlensee & R. Willig (eds.), Handbook of Industrial Organization, Amsterdam, *Elsevier Science, 1*(1), 136-82

Williamson, O. (1993). Opportunism and Its Critics*. Managerial and Decision Economics, 14*(2), 97-107.

Williamson, O., & Ouchi. W. (1981). *The Markets and Hierarchies program of research: Origins, Implications, Prospects. In Joyce, W. & Van de Ven, A. (eds) Organisation design. New Design.* New York: Wiley.

Williamson, O. (2002). The theory of the firm as governance structure: from choice Of contract. *Journal of Economic Perspectives, 16*(3), 171-195.

Williamson, O. (2005). The economics of governance. American Economic Review, Papers and Proceedings, *95*(1), 1-18.

Wong, W. (2011). *Sourcing strategies. A case study in the construction industry (Master's Thesis, The Norwegian University of Science and Technology). Retrieved from* https://hdl.handle.net

World Bank Report (2016*). Open Knowledge.* Geneva: The World Group.

World Bank (2016). *Public Procurement Reform Project II- International Development Association Proper Paper.* Geneva: The World Group.

World Bank (2017*). An overview of the World Bank Group's work in Bangladesh. The World Group.* Retrieved March 14, 2022, from *http://www.worldbank.org/en/country/bangladesh.*

World Bank, (2021*). Global Procurement Partnership Multi-donor Trust Fund.* Retrieved March 14, 2022, from *https://www.worldbank.org/en/programs/global-public-procurement-multi-donor-trust-fund#2*

World Health Organisation. (2008). *Guidance for the Development of National Laboratory Strategic Plans.* Geneva: WHO.

World Health Organisation. (2008). *Maintenance manual for laboratory equipment*,(2nd Ed.) Geneva.

World Health Organisation. (2008*).* Consultation on technical and Operational recommendations for Clinical laboratory testing harmonisation and standardisation. WHO, US Centers for Disease Control and Prevention, *American Society for Clinical Pathology, 12*(1), 120-130.

World Health Organisation. (2011). *Procurement Resource Guide*. Geneva: WHO.

World Health Organisation, (2013). *Research for universal health coverage*: World health report. New Ypir: WHO.

World Health Organisation. (2015). *Health in 2015 from MDGs to SDGs,* Geneva: WHO.

World Health Organisation. (2015). *Guidance for establishing a National Health Laboratory System. Regional Office for Africa.* Brazzaville: WHO.

World Health Organisation. (2018*). Monitoring Health for the SDGs, sustainable development goals, World Health Organisation*. Retrieved March 12 2022, from http://apps.who.int/iris/handle10665/272596.

World Health Organisation. (2020). *Country Cooperative Strategy (2016-2020), Zimbabwe.* Harare: WHO.

Yaacob, R., Baroto, M. B., Kamarudin, S., Arifin, N. (2019). Moderation effects on Top Management Support on the Relationship between customer Reference Marketing and Marketing Performance. *International Journal of Academic Research in Business and Social Sciences*, *9*(7), 1263-1297

Zarina, A., Zawawi, E. M. A., Yusof, K. & Aris, N. M. (2014). Determining critical success factors of Project Management Practice: A conceptual framework. *Procedia; Social and Behavioural Science, 153*(1), 61-69.

Zimbabwe National Health Financing Strategy, (2016*). Resourcing Pathways to Universal Health Coverage*. Harare: Government Printers.

Zimbabwe National Statistical Agency, (2017). *Poverty, Income, Consumption and Expenditure Survey Report*. Retrieved November 1, 2022, from https://catalog.ihsn.org/catalog/9250

Zimbizi, G. (2019). *Zimbabwe HealthCare Financing Landscape* (Policy Brief). Harare: Government Printers.