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Mayavo, Crossman

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Towards the Development of a Sustainable Procurement Framework for Improved Operational Efficiency in Donor-funded Procurements in the Zimbabwean Public Health Laboratory Services

Crossman Mayavo

Student Number: 2514265

Supervisor: Dr Fanny Saruchera

A thesis submitted to the Faculty of Commerce, Law, and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the Degree of Doctor of Philosophy (PhD) in Management.

Johannesburg, 2023

DECLARATIONS

I, **Crossman Mayavo**, hereby declare that:

This study is my own work and is a true reflection of my research, and this work or any part thereof has not been submitted for any other degree at any other institution.

Where I used other information, pictures, tables, or any other data for this thesis, I acknowledged the source of information.

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I further acknowledge the role played by the respondents to this thesis, accepting to take their time to respond to my questionnaire and another's accepted to avail themselves of my interviews; I thank you.

DEDICATION

This work is dedicated to my wife and children for their support and encouragement even when things were not going according to plan, my lovely wife “Con”stance, and our wonderful children, Tavonga, Vongai, and Tinovonga Mayavo for continuously supporting me in my research journey. My further dedication goes to my mother, Esinati Mayawo; she believed in me and pushed me to always pray without ceasing.

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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 study focused on developing a sustainable procurement framework for improved operational efficiency in donor-funded procurements in the Zimbabwean public health medical laboratory services. The study aimed to examine the donor-funded procurements processes followed by the public health medical laboratory services in Zimbabwe, to establish the effectiveness of donor-funded procurements in the medical laboratory services, to examine the determinants for donor-funded procurement for public health medical laboratories in Zimbabwe, and finally to examine the moderating effect of government policy on donor-funded procurement in the public health laboratory system. The study integrates Transaction Cost Economics, Person-Situation Interaction, and Agency theories to support the research's argument. Guided by the pragmatism philosophy and the descriptive-exploratory nature of the research objectives, the research utilised mixed research methods in which 214 questionnaires were used while seven interviews were held with provincial scientists. 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 determinants of donor-funded procurement played a crucial mediating role between effective donor-funded procurement, donation requirement process, and donation recipient process. The study revealed that government policy plays a positive moderating role among the variables and effective donor-funded procurement. The Structural Equation Modelling revealed that the determinants of donor-funded procurement are the mediators among the variables and shows the direct relationship between the donation requirement, donation recipient preparation and donation implementation, and government policy as the moderator between effective donor-funded procurement and the expected procurement functions. The research findings could be of more importance as the laboratory is a crucial sub-health department that should provide accurate and reliable results for patient management, and the essential public health services entail that there should be equity in the health of all people, achievable through policies and systems that are actively promoted in the health systems. Future studies could focus on sustainable donor-funded procurement to determine how the Triple Bottom Line Approach may impact the procurement of laboratory equipment and other supporting commodities.

Keywords: *Procurement, Donor-funded procurement, operational effectiveness, transaction cost, medical laboratory*

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List of Abbreviations and Acronyms

AIDS	Acquired Immuno Deficiency Syndrome
BR	Bounded rationality
CI	Collective Impact
CDC	Centre for Disease Control
CHAI	Clinton health access initiative
CIPS	Chartered Institute of Procurement and Supply
COVID-19	Corona Virus Disease
DAC	Development Assistance Committee
DRP	Donation Requirement Process
DRPP	Donation Recipient Planning Process
DIP	Donation Implementation Process
DDFP	Determinants of Donor-Funded Procurement
EDFP	Effective Donor-Funded Procurement
EGPAF	Elizabeth Glaser Pediatric AIDS Foundation
EID	Early Infant Diagnosis
GP	Government Policy
GF	Global Fund
GDP	Global Domestic Product
GMB	Grain Marketing Board
GoZ	Government of Zimbabwe
HIV	Human Immune Virus
INCOTERMS	International Commercial Terms of international Chamber of Commerce
IQR	Interquartile Range
ISO	International Organisation for Standardisation
IT	Information and Technology
KMO	Kaiser-Meyer-Olkin
LLU	Laboratory Logistics Unit
LMIC	Low-to-Middle-Income Countries
MoFED	Ministry of Finance and Economic Development
MOH	Ministry of Health
MoHCC	Ministry of Health and Child Care
MLS	Medical Laboratory Scientist

MSF	Medicine San Frontier
NATPHARM	National Pharmaceutical Company
NGO	Non-Governmental Organisation
NHLSP	National Health laboratory Strategic Plan
NMRL	National Microbiology Reference Laboratory
ODA	Official Development Assistance
OECD	The Organisation for Economic Cooperation and Development
PDPP	Pre-donation Preparation Process
PEPFAR	U.S. Presidential's Emergency Plan for AIDS Relief
PO	Procurement Officer
PPP	Public Private Partnership
PQMD	Partners for Quality Medical Donations
PSI	Person-Situation-Interaction
PVO	Private Voluntary Organisation
SAPA	South African Philanthropic Association
SCMLT	State Certified Medical Laboratory Technician
SSA	Sub-Saharan Africa
SDGs	Sustainable Development Goals
TCE	Transaction Cost Economic
TB	Tuberculosis
UN	United Nations
UNDP	United Nations Development Programme
UNFP	United Nations Populations Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
UNIDO	United Nations Industrial Development Organisation
VL	Viral Load
WHO	World Health Organisation
ZINQAP	Zimbabwe National Quality Assurance Programme
ZiLaCODs	Zimbabwe Laboratory Commodities Distribution
ZIMSTAT	Zimbabwe National Statistical Agency

CHAPTER 1

BACKGROUND AND CONTEXT

1.1 INTRODUCTION

Globally, 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. The following section will cover the study's background, problem statement, objectives, and questions, among other issues. Finally, the introduction will also contextualize the significance of the study within the management field. The researcher focused on the background of the study and outlined the international, regional, and Zimbabwean perspectives.

1.2 BACKGROUND TO THE STUDY

1.2.1 Global Donor-Funding Level

Global health has become a multi-billion-dollar industry with many actors vested with various interests (Khan, Meghan, Liverani, Roychowdhury & Parkhurst, 2018). This has seen the introduction of various organisations to provide finances to lower and middle-income countries (LMICs) to procure goods and services that improve health systems (Landoni & Corti, 2011; Mishra, 2016). Developed nations brought forward Development Assistance Committee (DAC), which provides guidance, funding, and management to Official Development Assistance (ODA) (OECD, 2020). ODA is defined as government aid that promotes and specifically targets the economic development and welfare of developing countries (OECD, 2020), and ODA was adopted in the year 1969 and has remained the main source of health funding provided by DAC donors and bilateral and multilateral bodies. It is said that ODA accounts for over 1.5 trillion United States Dollars for the lower to middle-income countries which qualify for ODA assistance (Development Initiatives, 2020). This was meant to advance health care globally, mainly in Africa, which has been behind in meeting the health care goals and outcomes. The leading DAC funders as of the year 2020 are illustrated in table 1.1

Table 1.1: Leading DAC funders of global health

DAC country	**Amount contributed in 2020 in USD**
United States of America	35.5 billion
Germany	28.4 billion
United Kingdom	18.6 billion
Japan	16.3 billion
France	14.1 billion

Source: OECD (2021)

As of 2021, the total global health funding has hit 8.8 trillion United States Dollars. It is estimated that by 2022, it will increase by 1% to 10.059 trillion United States Dollars. Health funding has grown in the last decade, and the available data on the global scale in USD terms of global health spending as global GDP is shown in Table 1.2. However, it is worth noting

that all these efforts are being made to alleviate the world's health burden, but as noted below, the larger chunk of the funding will go to Africa. These have made the SSA relax in terms of funding their health sectors (OECD, 2021).

Table 1.2: Global Health Spending as global GDP

Year	**Amount in USD**	**% of global GDP**
2018	8.45T	10%
2019	8.5T	9.8%
2020	8.3T	10.0%
2021	8.8T	10.3%
2022	10.059T	10.4%

Source: Global Health Outlook (2021)

Despite ODA disbursing such funding to health in developing countries, Global Fund, on the other hand, has been playing a critical role in the health sector by mobilizing and funding low and middle-income countries to fight AIDS/HIV, Malaria, and TB (Global Fund, 2021) and in 2017 and 2018 alone a total of 4.3 billion and 3.1 billion United States Dollars respectively (WHO, 2020; Global Fund, 2021; OECD, 2021) was used to fund the health sector worldwide. As shown by the statistics above, donor funds contribute to and support the African continent. However, the effects of donor funding are seen as most of these SSA countries destroy economies for the health sector at a large scale. The countries are creating a culture of dependency syndrome and laziness within their territories, affecting the general populace (Moyo, 2009; Madlongwa, 2014). The other downsize of the donor funds in the African continent is that the governments neglect to provide services to the people they lead and concentrate on themselves, as witnessed by poor service delivery in various African countries (Odaro, 2014; Hangulu & Ankitola, 2017). Moyo (2009) concedes that Africa is failing to take note of the aid given due to corruption within the high ranks and files of the leaders of these countries and bureaucracy which makes approval so difficult for programmes to take place. One has to move from pole to window without success. With the high figures of monies making

their way to Africa from Europe and other continents, nothing seems to change in deliverables (Alexander, 2010; Baporikar & Randa, 2020).

1.2.2 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 harmonization between donors and governments of various countries, mainly those with poor health systems, especially the SSA. In 2018, SSA got half of the Health ODA funding, as shown in Figure 1.1.

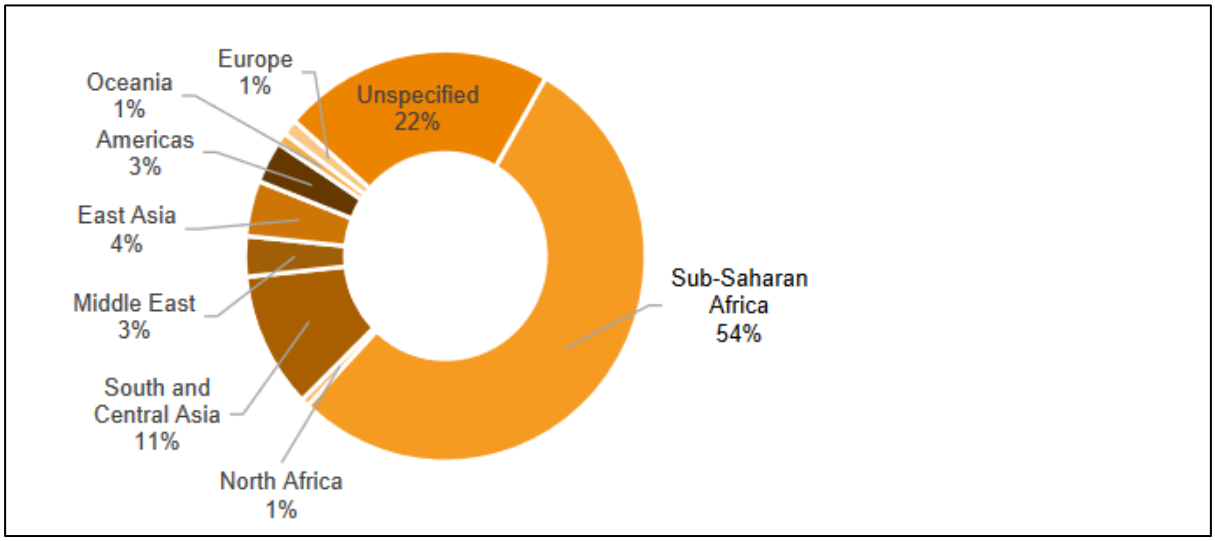


Figure 1.1: ODA to Health by region
Source: Development Initiative based on OECD (2018)

Figure 1.1 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 1.2.

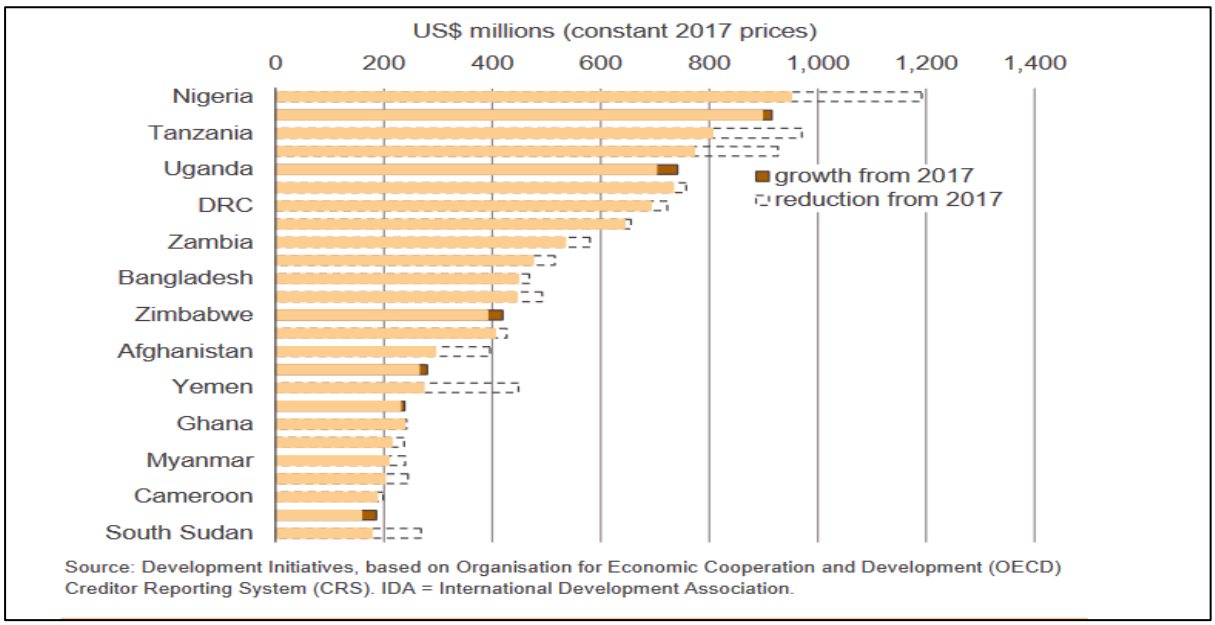


Figure 1.2: Top African and Asian beneficiaries of Health ODA
Source: Organisation for Economic Cooperation and Development (2021)

Figure 1.2 indicates the top SSA beneficiaries of the ODA health funding despite some other countries not from 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. Bilateral, Multilateral, and private Foundations contributed to the SSA health sector in 2020, and they are tabled in Table 1.3.

Table 1.3 Bilateral, Multilateral, and Private Foundations

Donors	**Amount contributed (USD)**
United States of America	6.5 billion
Global Fund	3.6 billion
Bill and Melinda Gates	2.8 billion
Global Alliance for Vaccines and Immunisation	1.9 billion
UK	1.8 billion

Source: UNICEF (2021)

In 2001, African states met in Abuja, Nigeria, known today as the Abuja declaration, to deliberate on health funding. The African Union states members agreed to 15% of the national budget for health sector funding (Abuja Declaration Report, 2001). Unfortunately, most of these African states have failed to meet the agreed targets, and still, they are failing to meet and have no further discussions concerning this matter. For me, this was just a talk show of African leaders and only benefitted from the allowances given, but no implementation was given priority, although the idea was for the good of Africa as one. According to WHO (2019) only four countries managed to meet the target, and others only managed to increase their national budget funding towards the health sector. Today, no African country managed to surpass the 15% threshold. However, those other countries that had managed to meet the 15% have decreased their health sector budget for reasons known to them.

Adding on to the Abuja Declaration (2001), the nations called on the donors to scale up their support to African countries to enable them to procure the much-needed health equipment and other requirements and combat HIV/AIDS pandemic since it was the main focus. However, as the African nations failed to meet their 15% of the national budget towards health, donors heeded the call, and they are supporting the health sectors of the same SSA states while the SSA countries fail to meet their end of the bargain (McCoy, Chandi & Sridhar, 2009). To further bring together the relationship between donors and African governments, global leaders also met in Accra, Ghana, in 2008 to discuss the Paris Declaration on Aid Effectiveness of 2005 and named it Agenda for Action. Over 80 developing nations, all OECD countries, and

over 3000 civil society organizations worldwide joined the emerging economies, United Nations, multilateral institutions, and global funds for negotiations (OECD, 2008).

It seems like all these efforts were in vain since all the efforts of these meetings did not translate into any meaningful, productive from the leaders. According to Olalere and Gatome-Munyua (2020) the African countries' failure to meet such conditions to improve their health systems is because of low inefficiencies in African countries in the collection of taxes and low GDP associated with other competing priorities which impound on health budget allocation. The researcher supports the notion of the scholars. However, the failure of African government leaders at times to provide guidance, trust, and inspire confidence in the running of the affairs of their countries are some of the reasons for the failure to meet the much talked about 15% health budget. Research has shown that from 2001 to 2015, 21 countries' health spending decreased, and it could be worse after the COVID-19 era (Olalere & Gatome-Munyua, 2020). However, since countries' spending is decreasing, the ministries of health should advocate for health systems to be adequately resourced and the resources to be used optimally. Increasing health spending and giving health priorities are some of the key feasible approaches African countries can use to increase resources for health.

The governments of African countries should know that well-resourced health provides key benefits to the nation, such as building good human capital, safeguarding the health system security from health pandemics, increasing workforce productivity, reducing poverty and inequality as well as providing employment to their citizens (Olalere & Gatome-Munyua, 2020; CDC, 2021). Resourcing the health sectors is the best way to advance Africa's healthcare sectors.

However, with donor funding finding its way into the African continent to fund the health sector without much progress, WHO (2011) prescribed four principles that guide healthcare

donations to improve donor procurement and donations in SSA countries. These include meeting the expected quality or standards of the host country, ethical consideration of the benefits the receipt obtains, compliance and conformity to the stipulated guidelines in receiving donations by the host country, and accountability.

All donations must be based on expressed needs, as they should benefit the recipient of health care to the maximum extent. Government policy and the administrative system of the recipient nation's health system should conform to all policies. The donation must meet the quality standards of the country donating failure. The recipient nation must not accept it. Lastly, communication between the donor and end-user should be communicated during and after the procurement is complete and delivered using the plan formulated by both parties. This was in addition to the other suggested prescription by WHO (2000), which pointed out that the donors should follow the pre-donation requirement process, donation recipient process, donation requirement process, and donation implementation process in every procurement process. All the above background was to try and address the SSA countries' health sector problems and other humanitarian problems.

1.2.3 Zimbabwe's socio-economic elements

The country made significant progress in its early first decade of independence (UNICEF, 2021). However, regrettably, Zimbabwe has registered a decline in social and economic indicators (UNICEF, 2021; UN Report, 2021). The challenges that have affected the country's socio-economic are prolonged economic recession, climate-induced humanitarian crisis, and political challenges, and these challenges will impede Zimbabwe from meeting the UN Agenda 2030, SDGs, and worse off, threatening to reverse the past gains of health development (UN Report, 2021). Zimbabwe remains the highest country to achieve social development in the continent, but unfortunately, it has remained stagnant or regressed over the years. Poverty was

at 70.5% in 2017 and is higher in rural areas, while the urban vulnerability is increasing due to formalization, and unemployment is said to be above 90% (Zimbabwe National Statistical Agency (ZIMSTAT), 2017). To curtail the damages, the donors have increased their focus on providing support to keep the social sectors operational, most support outside direct government. The country faces barriers to a functioning market economy based on private sector-led growth. The level of inflation, the effects of the multi-currency system on the competitiveness of exports and investments, and the unsustainable high level of external debt (World Bank, 2021).

The informal sector lacks financial support to spur growth limiting the capacity to progress and contribute significantly to economic growth (MoFED, 2021). Zimbabwe has peace, but political polarisation remains high due to historical or past conflicts not being resolved, disputed elections since the turn of the millennium, human rights abuse, lack of the rule of law, and corruption, among other issues (UN Report, 2021). The health sector remains fragmented despite donor-funded procurements mushroom and no proper government support, which eventually affects public service delivery.

With separate care or a second-provision created for Africans, Zimbabwean health care historically catered mostly to colonial authorities and expatriates. At the time of its independence in 1980, Zimbabwe adopted the idea of Equity in Health and Primary Health Care to address the health imbalances that had existed earlier (Green & Mathias, 1997; Chihaka & Dhlakama, 2009; Guliš et al., 2014). The gap between rural and urban health care supply initially shrank due to this. However, the fundamental causes of these expanding discrepancies in health care and health provision over time have been economic structural adjustment policies and changes in health policy. The effects of HIV/AIDS and restricted access to inexpensive critical health care have worsened infant and child mortality.

Part of the reason for the decline in Zimbabwe's health services sector is the growing talent gap. Only 19% of public sector employees have been on the job since 2000. Because of the unfavourable political climate, many skilled and competent health professionals departed the nation. In essence, Zimbabwe's health system's legal and policy framework does not acknowledge the right to health (Green & Mathias, 1997; Robert et al., 2022). The right to health was not specifically protected by either Zimbabwe's pre-independence constitution or its current constitution, Lancaster House. The gains made in the 1980s, which saw significant increases in child survival rates and life expectancy and were marked by adequate finance of the health system, decentralized health administration, and equity of health care between urban and rural areas, were regrettably not consolidated (Chihaka & Dhlakama, 2009; Nyazema, 2010; McQueen, Wismar, Lin, Jones, Davies, 2012; Mackenbach, McKee, 2013; Aluttis et al., 2013). Infant and child mortality has been worsened by the impact of HIV/AIDS and reduced access to affordable essential health care. For example, life expectancy at birth was 56 in the 1980s, increased to 60 in 1990, and is now about 43, and the morbidity (diseases) and mortality (death rates) trends in Zimbabwe show that the population is still affected by the traditional preventable diseases and conditions that include nutritional deficiencies, communicable diseases, pregnancy and childbirth conditions and the conditions of the new born (Nyazema, 2010; Grossi & Vakulenko, 2022). The deterioration of the Zimbabwean health services sector has also partially been due to increasing shortages of qualified personnel.

The health system in Zimbabwe has been operating under a legal and policy framework that essentially does not recognize the right to health. Neither the pre-independence constitution nor the Lancaster House constitution, which is the current Constitution of Zimbabwe, made specific provisions for the right to health. Progress made in the 1980s characterized by adequate financing of the health system and decentralized health management and equity of health services between urban and rural areas, which saw dramatic increases in child survival rates

and life expectancy, was, unfortunately, not consolidated (Olmsted et al., 2010; Mackenbach, McKee, 2013; Alemán et al., 2015; Safi et al., 2020). As of 2000, per capita health financing stood at USD 8.55 as compared to USD 23.6, which had been recommended by the Commission of Review into the Health Sector in 1997. At the beginning of 2008, it had been dramatically further eroded and stood at only USD 0.19, leading to the collapse of the health system (Chihaka & Dhlakama, 2009; Nyazema, 2010; Aluttis et al., 2013; Mackenbach, McKee, 2013). From 1980 until 1997, progress was made in the fight against both communicable and non-communicable diseases (Govender, Mcintyre, Loewenson, 2008; Nyazema, 2010; Olalere, Gatome-Munyua, 2020). However, due to issues with health transition and a lack of resources, the disease burden has now escalated, and laboratory was not part of the recognised structure of the health system until the outbreak of HIV/AIDS and a clear structure was provided in 2006 by the forming of Directorate of Laboratory Services (Min of Health and Child Care, 2010).

The health care system includes laboratory services, and laboratory tests are crucial for diagnosing, treating, monitoring, and controlling diseases. The purchase of medications has taken precedence over this aspect of the healthcare system (Green & Mathias, 1997; Thoits, 2010; *Zimbabwe Health Financing*, 2017) , and as a result, it has been ignored and disadvantaged in the competition for limited resources. The laboratory services lack the resources necessary to deliver high-quality service, and as a result, there have been difficulties with equipment and equipment accessories, and spare parts for laboratory services (Nyazema, 2010; *Zimbabwe Health Financing*, 2017). As a result of the tiered system's failure to supply the standard set of laboratory tests in support of the health delivery system at each level of healthcare, laboratory services have generally declined. Patients are now turning to the private sector for care since the costs are out of reach for the typical Zimbabwean and continue to rise (Min of Health and Child Care, 2009). As experienced medical laboratory scientists who have

graduated from the University of Zimbabwe College of Health Sciences' Department of Medical Laboratory Sciences continue to depart the nation for the region and abroad, human resources continue to be a significant concern (Govender, Mcintyre, Loewenson, 2008; Nyazema, 2010; Schaffer et al., 2022). To maintain high-quality laboratory support for curative and preventative services in the Ministry of Health and Child Care (MOHCC), strategies for employee motivation and retention should be implemented as part of the human resources for health policy and strategy to arrest the effects of lack of laboratory personnel.

1.3 PROBLEM STATEMENT

The public health medical laboratories in Zimbabwe seem to continue to receive inadequate attention in terms of resource allocation and availability despite the gravity of the need for ongoing resources in the Zimbabwean health sector and the effort that the key health players have put into health improvement (NHLSP, 2021; Dzobo, Mashe & Dzinamarira, 2021). Accurate and reliable diagnosis is the cornerstone of disease prevention. Medical laboratory services are said to be indispensable as they provide diagnostic services critical for disease management, surveillance, and health education (WHO, 2013; Farnsworth, 2020; NHLSP, 2021). It is estimated that 70% of all disease diagnosis depends on the medical laboratory, which supports the notion that laboratory results provide a scientific approach to patient management and clear drug rationalization (Marie-Paule et al., 2018; Lekan-Agunbiade & Agunbiade, 2021). According to Resource Mapping Report (2019), 64% of the Zimbabwe national health budget goes towards salary payments, leaving 36% of the total budget to carter for all other health components and laboratory is one component that is left unsupported since already it has taken as a support arm of medical health systems (NHLSP, 2021). With such a huge resource envelope going towards salaries, the larger burden of medical health laboratory commodities, distribution, laboratory sample transportation, and operational costs are left in

the hands of or pursue external funding from donors (PEPFAR Zimbabwe Operational Plan, 2020).

The government of Zimbabwe (GoZ) scrapped multi-currency in favour of the Zimbabwean dollar, which has since reduced purchase power due to inflation which has worsened the challenges for procurement and importing of medical health supplies (Houngbo et al., 2017; Jefferis, 2020). Currently, donors are responsible for the larger chunk (estimated to be 80%) of public health medical laboratory services; they are procuring laboratory test kits, a majority of medical laboratory human resources at both the central and site level, and a significant part of the logistics and supply chain since GoZ cannot adequately fund the health sector and this has been a trend or pattern indicating high dependence on foreign aid by Zimbabwe as a country (GF, 2020; PEPFAR Zimbabwe Operational Plan, 2020; Marineau & Findley, 2020). Furthermore, it has been noted that the GoZ's contribution is mainly limited to the public health workforce and infrastructure (WHO, 2018; OECD & World Bank, 2018).

Without sustainable frameworks regarding donor-funded procurements with great precision and good governance, Zimbabwe will remain affected by poor public health medical laboratory performance, procedures, and outcomes (Kanyamuna, Phiri, Kanenga & Mulonda, 2020). It is understood and noted that Zimbabwe remains behind in terms of laboratory performance due to a lack of ownership financially, which affects laboratory service outcomes (Jones, Gautier & Ride, 2021). This argument is supported by the statement in the National Health Laboratory Strategic Plan (NHLSP) (2021, p.1), which clearly states that "the health laboratory services are grossly underfunded, the inadequate systems and skills have compounded this for planning and for accounting for the limited resources invested in laboratory service delivery*"*.

This situation raises serious concerns about the sustainability of critical public health medical laboratory programs when external support ends (WHO, 2015; Magidi, 2021). However, the

role of public health medical laboratory has been seen in the diagnosis of people living with HIV/AIDS, and maintaining functional and effective public health medical laboratory services requires GoZ support, guidance, and well-laid-down strategies and policies (NHLSP, 2021) that provide financial support. Moreover, despite WHO (2000; 2011) prescribed requirements and principles, the laboratory systems in Zimbabwe remain weak without proper government support, and this research will examine the prescribed donation requirements process. Even with its critical role, primary health care depends on donor support and the government's failure to adequately fund laboratory services. No other research has been done under this scope of study since other studies focus mainly on the whole health system or hospitals.

Therefore, the public health medical laboratory system is heavily dependent upon donor-funded procurement, which relegates the public health medical systems to the donor systems, which will eventually collapse when the foreign funding procurement or funding ceases considering the foreign relationship developments between Zimbabwe and the major donor-funding countries (Chimia, 2013; Ezenduka et al., 2022; Pal, 2022). Therefore, there is a need for a donor-funded procurement framework that outlines how the donor community should be monitored since they have become a key cornerstone of medical laboratory services and health services systems at large for improved operational efficiency. Against this background, this study seeks to develop a sustainable procurement framework for improved operational efficiency in donor-funded procurements in the Zimbabwean public health medical laboratory services.

1.4 PRIMARY RESEARCH OBJECTIVES

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 public health medical laboratory services in Zimbabwe.
2. To assess the donor-funded procurement processes' effectiveness in public medical laboratory services based on the following:

- ✓ *The effect of the pre-donation planning process on the effectiveness of donor-funded procurement*
- ✓ *The effect of the donation requirement process on the effectiveness of donor-funded procurement*
- ✓ *The effectiveness of the donation recipient preparation process on donor-funded procurement in the laboratory services in Zimbabwe.*
- ✓ *The effect of the donation implementation process on the effectiveness of donor-funded procurement*

3. To determine the determinants of donor-funded procurement and their mediating effect between expected procurement functions and effective donor-funded procurement for public health medical laboratories in Zimbabwe
4. To examine the moderating effect of government policy on donor-funded procurement of public health medical laboratories.
5. To propose a framework for effective donor-funded procurement for public health medical laboratory services in Zimbabwe.

1.5 RESEARCH QUESTIONS

The primary question of this research based on the research aim was to examine the development of a procurement framework for improved operational efficiency in donor-funded

procurements in the Zimbabwean public health laboratory services. From the objectives above, this research answered the following questions:

1. How are donor-funded procurement processes followed by the public health laboratory services in Zimbabwe?

2. What is the effectiveness of donor-funded procurement in public health medical laboratory services based on the following?

- ✓ *What is the effect of the pre-donation planning process on the effectiveness of donor-funded procurement?*
- ✓ *What is the effect of the donation requirement process on the effectiveness of donor-funded procurement?*
- ✓ *What is the effect of the donation requirement process on the effectiveness of donor-funded procurement in laboratory services in Zimbabwe?*
- ✓ *What is the effect of the donation implementation process on the effectiveness of donor-funded procurement?*

3. What are the determinants of donor-funded procurement for public health medical laboratories and their mediating role in effective donor-funded procurement?

4. Why is the government policy on donor-funded procurement not mitigating the inadequate government funding in the public health medical laboratory services in Zimbabwe?

5. How can donor-funded public health medical laboratory services procurements be effectively constituted in Zimbabwe?

1.6 RATIONALE OF THE STUDY

According to the Centre for Diseases (CDC) (2021), essential public health services entail that there should be equity in the health of all people, which can be achieved through policies and systems that are actively promoted in the health systems. This research focused only on the public health medical laboratory, not the whole health aspect, which this researcher believes that the research will bring an improvement in the area under study. The research seeks to remove obstacles, systematic and structural barriers, and improve Zimbabwe's public health medical laboratory. Furthermore, the fact that donor funds impact the disease control, management, and performance measurement of medical health outcomes since the government cannot adequately fund public health medical laboratory services has necessitated this research. This study also seeks to contribute to the body of knowledge by researching how donor-funded procurement can improve operational efficiency for laboratory services, how donor funds are effectively complemented by the government, and improving on the funding model which does not wait upon the donor-funding but where domestic funding is seen to be improving.

Additionally, laboratory services are normally not researched in management aspects but in technical testing areas, making this research key. From the managerial perspective, the study provides an empirical understanding of the procedures, challenges, and corrective actions needed, to have an effective laboratory system that provides disease intervention and has the right human resources in the right place for proper administrative and structural systems. To understand further the phenomenon, there are three theories (Transaction Cost Economic, Person-Situation Interaction Theory, and Agency theory) that will assist in forming a theoretical framework for developing a procurement framework for improved operational efficiency for donor-funded procurements in the Zimbabwean public health medical laboratory services.

However, the studies that were done related to this study are mainly focusing on procurement in general or the roles of donor-funded procurement issues in international development projects (Ahsan & Paul, 2007) and challenges of donor-funded allocation and utilisation: The case of United National Children's Fund (UNICEF) Ethiopia (Tilahun, 2018) and the other study focused on effects of donor-funding on the success of community development projects in Kenya (Gachui, 2017). This research is the first of its kind to focus on improving the operational efficiency of laboratory services in Zimbabwe. The research further incorporated the WHO (2000) guidelines and principles on donating equipment and supporting ancillaries in the health sector, which has not been done in previous studies. These guidelines became some of the key variables of this study. Additionally, the study findings provide a different perspective in support of the laboratory services in Zimbabwe in improving their operational efficiency. Very little or no other studies have been done in this area, focusing on donor-funded procurement supporting laboratory services in Zimbabwe.

1.7 DELIMITATIONS OF THE STUDY

This study was delimited to the public medical health laboratories supported by donor-funded laboratory procurements. The study was further delimited to the public health medical laboratory services as influenced by resource availability from the donor community and excluded the private sector. The study was confined to the Zimbabwean health sector's district, provincial, central, and national laboratories. The tier system operated by the MOHCC includes the private sector, but for this study, the private sector is not included. The other arms of clinical care, such as primary health care, are not part of this research. This study focused only on public service medical laboratory personnel (scientists and SCMLT) and procurement officers. Additionally, the research acknowledges the sustainability issues in procurement. However, this research did not look into sustainable procurement (triple bottom approach) but focused

on the effectiveness of donor-funded procurement that seeks to improve laboratory services operations.

1.8 DEFINITION OF KEY TERMS

1.8.1 Public health medical laboratories

These are public laboratories that the Zimbabwean government runs under the governance and leadership of the Ministry of Health and Child Care and receives funding from the government and support from donors.

1.8.2 Procurement Process

It is the identification and implementation of identifiable steps by organizations or businesses to ensure they acquire goods and services to meet their requirements and achieve their organizational objectives (Public Procurement Procedures Handbook, 2013).

1.8.3 Medical Laboratory

Seyoun (2006) defined a medical laboratory as a place that is equipped with various equipment, instruments as well as reagents (chemical), and materials to perform research activities; different types of laboratory investigations use biological specimens (stools, serum, plasma, whole blood, and urine), and in this case, the medical laboratory is the one under study by the researcher.

1.8.4 Laboratory procurement framework

This initiative organises the laboratory's sustainability, including planning, monitoring, management, and evaluation of donor-funded and government-funding combined activities to improve and maintain the provision of services.

1.8.5 Donor-funded procurement

These are procurements done by foreign international donor organisations to support government programmes or departments to maximise the service users' benefit and in the case of this research, the donor-funded procurement refers to all the procurement done by the donors in support of the laboratory services achieve the laboratory's expected outcomes.

1.9 CHAPTER SUMMARY

This chapter started with the introduction to the study, followed by the background to the study looking at the global and African perspectives on how donor funds started and planned by the first world countries to assist the African countries and the socio-economic situation of Zimbabwe. The statement of the problem described the problem being researched. Furthermore, this chapter went on to state the research objectives, questions, rationale of the study, delimitation, and the definition of terms.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter's objective is to review the literature relevant to the topic under study. This section gives a brief empirical review of the literature for the proposed study. The objectives of the study are going to be looked at to fulfil the objectives of the study. The Transaction Cost Economics Theory, the Person-Situation Interaction Theory, and the Agent theory as the main theories that will be used in the proposed study. The theories are described, analysed, and justified below. In the same section, the researcher presents a brief empirical review of the literature where the gaps the proposed study seeks to cover are identified.

2.2 LABORATORY INTEGRATED TIER SYSTEM OVERVIEW

According to the NHLSP (2017) Zimbabwe's laboratory operates an integrated tier system from the district to the Central level, and it's all coordinated by the Directorate of Laboratory Services (DLS). It operates along with five levels of referral stages, as demonstrated in Figure 2.1.

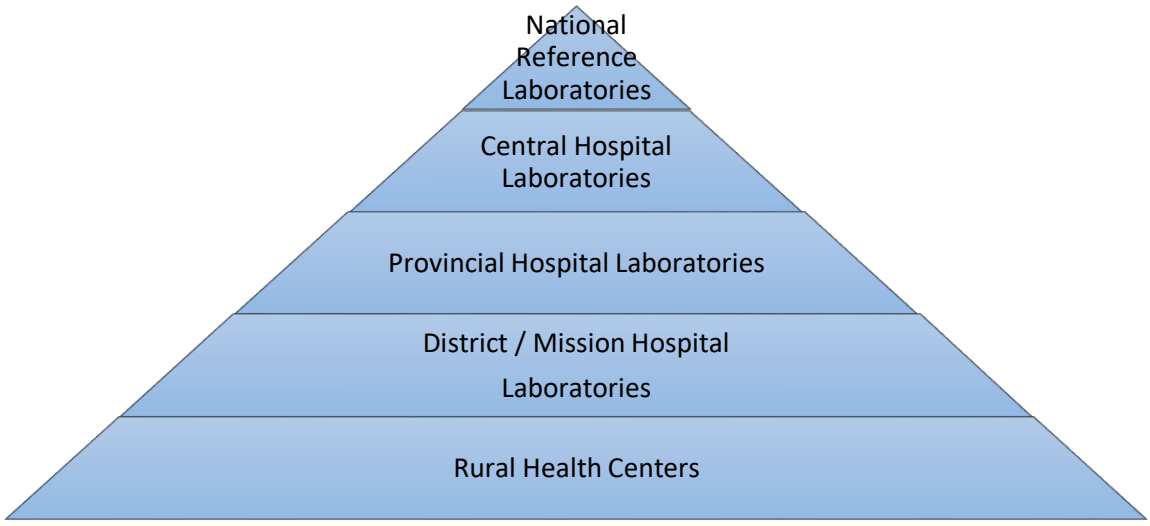


Figure 2.3: Integrated laboratory Tier System
Source: Adapted from National Health Laboratory Strategic Plan (2021)

The Provincial Laboratory scientist is responsible for laboratory activities but works under the Provincial Medical Director (PMD). The provincial medical scientist oversees the performance of lower laboratories, such as district laboratories within their provinces. District Laboratories/Mission Hospital laboratories are responsible for the lower-level laboratories, which microscopists and other staff member's. In terms of management, the system uses a top-down approach where the information and support come from the top going downwards, and reporting of information moves from down to the top of the system.

2.3 THE ROLE OF THE LABORATORY

The laboratory is a key diagnostic tool for treating communicable and non-communicable diseases, and it must be taken as any other branch of the medical practice (Ghamm, Mustafa, Nawal & Ahmed, 1999; Dza et al., 2013; Dzuke & Naude, 2017). It was indicated that laboratory services planning is vital in primary healthcare settings that must not be devoid of such service (Parker & Hwang, 1985; WHO, 1999; Rout, 2010; Mendoza-Abarca & Gras, 2019; Lassen et al., 2023). The role of the laboratory is spelt out in medical health system care, promoting the clinical diagnosis of sick people as a curative result in the health care delivery service. In addition to that, in the current set-up, the laboratory's role has been more heightened for the monitoring of the viral suppression for people living with HIV and diagnosis of HIV/AIDS (NHLSP, 2017; Adam et al. 2022).

2.4 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; Gatome-Munyua et al., 2022) . Lynch (2013) claimed that the procurement process encompasses all actions, from identifying and planning

requirements to the contract award. Figure 2.2 shows the generic procurement process' main elements probably used by the donors in procurement.

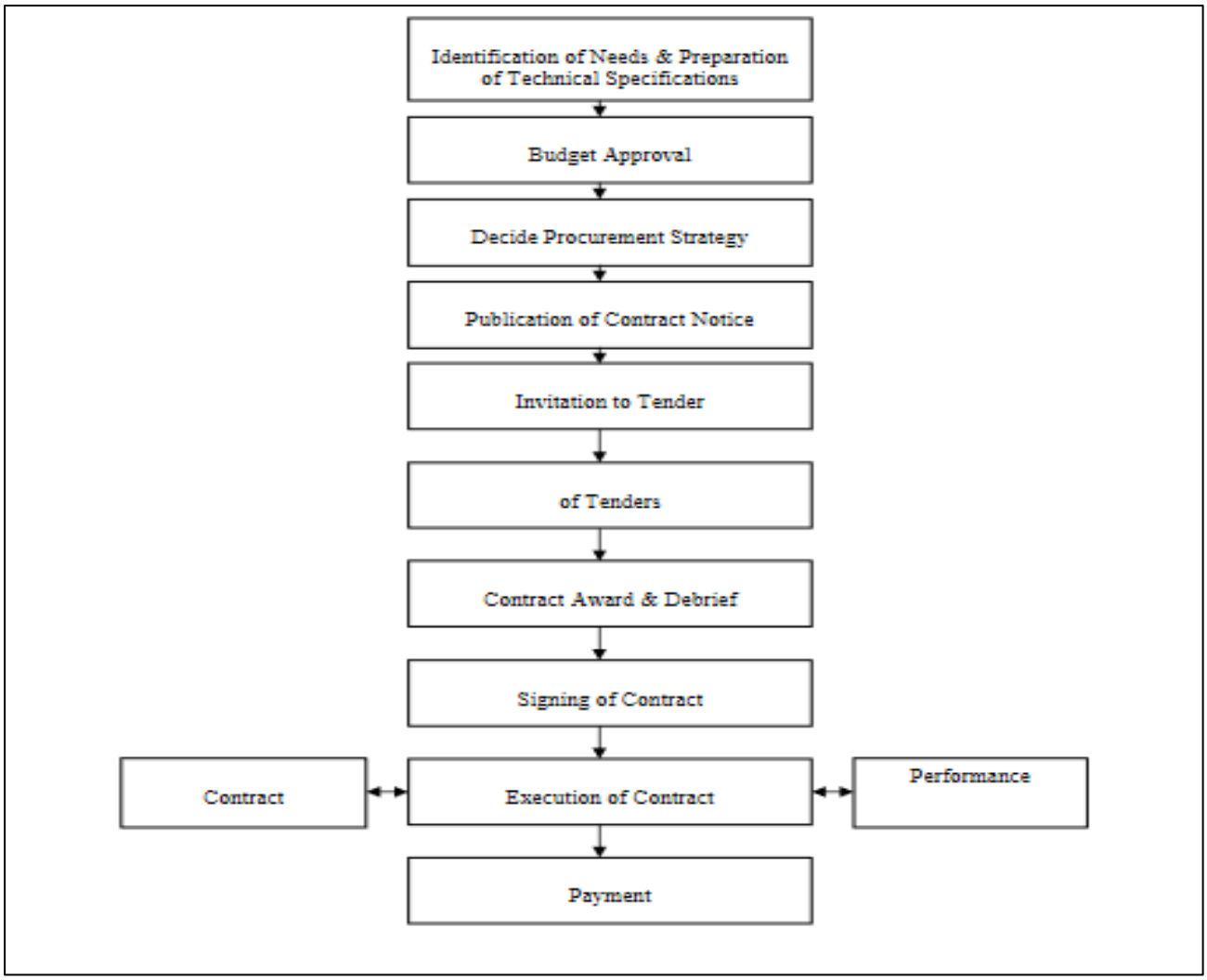


Figure 2.4: Generic Donor Procurement Process
Source: USAID Public Procurement Manual (2007)

2.4.1 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 exactly what is required in specifications for goods and services, equipment, statement of work (SOW), terms of reference (TOR) for the services (Robert et al., 2022; Schaffer et al., 2022). 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).

Unfortunately, since WHO (2000) 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 organization” (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 (Mofokeng & Luke, 2014; Ezenduka et al., 2022; Malacina et al., 2022). 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 (Kahn & Rahman, 2014; Bourguignon & Platteau, 2015; Mishra, 2016). After all the conditions for needs identification, specification preparation, and budget approval, the procurement strategy must be decided. 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 the 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 (McQueen, Wismar, Lin, Jones, Davies, 2012; Aluttis et al., 2013; Pal, 2022).

2.4.2 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 realize 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 (Chihaka & Dhlakama, 2009; Olmsted et al., 2010; Dreher et al., 2022a), 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 optimization, 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 (Kruk et al., 2012; Do & Dang, 2022; Mojumder et al., 2022). 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 and the complexity

of the donor requirements (Decarolis, Giuffrida, Lossa, Mollisi & Spagnolo, 2019; Fourie & Malan, 2020).

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 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., 2022b; Gordon, 2022). Unfortunately, the laboratory services team will be involved at a later stage 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.

2.4.3 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 the evaluation of vendors depends on the nature of the

requirements, 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 researcher argues that the prescribed figures above are too little to realize 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, in 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 in constant breakdown, and no urgency is

given to repairing. 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.

2.4.4 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, the laboratory operations depend upon the supply side- the more delays, the more problems in operations are encountered by the laboratory services (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 authorized, 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 maximize operational performance, minimize 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.

2.4.5 Donor-funded procurement challenges

World Bank Report (2017) states that poor purchasing and financial mismanagement have resulted in a large loss by donors. The same report further states that some key issues noted include delay in procurement, administration of poorly done contracts, failure to have competitiveness for contract awards, inadequate project execution, oversight, and capacity building (World Bank Report, 2016). Furthermore, the maximum number of days allowed in bidding was 100 in 2017 in Bangladesh, which increased the costs and deferred benefits. In this case, with the laboratory services to efficiently operate, 100 days before receiving goods and commodities is too much because by the time of arrival of these commodities mainly, there will be other commodities out of stock which affects the performance of the laboratory services. However, in Zimbabwe, it is not known how many days it takes to receive goods and services since the government is not concerned with the procurement process of the donors.

Furthermore, it is assumed that since the situation of Bangladesh and Zimbabwe is the same, the same donor rules may apply (World Bank, 2017; Ahsan & Kumar, 2018)

Host countries are not knowledgeable about donor rules and regulations of procurement (Ika & Donelly, 2017; Ahsan & Kumar, 2018). Accordingly, this resonates well with the abovementioned point regarding the Zimbabwe laboratory services of 2010-2013 when the then laboratory services director had problems with the Centre for Disease Control (CDC). CDC provided funding for the support of the laboratory services through the Zimbabwe National Quality Assurance Programme (ZINQAP), but eventually, the director tried to "force" ZINQAP to procure a vehicle that was not part of the cooperative agreement. This did not go down well with the CDC, eventually ending the cooperative agreement. This led to the laboratory's failure to have funding for the key staff members such as the Coordinator, the Chief Medical Laboratory Scientist, the Logistician, and the IT Manager. Fortunately, other funders, such as RTI and Global Fund, came to the rescue and took the employees on board.

2.5 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.

2.5.1 Establish Pre-donation Planning

It has been noted 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).

Moreover, since there is ever-changing technology, pre-planning adds depth to the donations because no donation, whether of equipment, reagents or any health commodity, can take the health system backwards (Bhadelia, 2016; Gates, Littlewood, Kongara, Odom & Sawicki, 2019). However, there is a need to understand all the requirements of the donation; how it will improve the health care system because not everything donated to improve the system; if not well planned, it may end up as a liability (Ajaz, 2018; International Monetary Fund, 2022).

2.5.2 Implement Donation Requirement Process

The donation requirement process increases the availability of health care because no donation is accepted for the sake of acceptance without considering the need and the gap in the public health system (Chimia, 2013; Ezenduka et al., 2022; Hamel et al., 2015; Mofokeng & Luke, 2014). 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). 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 transition away from the external financing and towards full domestic financing of the disease response, use of resources available more effectively and strengthen domestic resource mobilization" (Global Fund, 2019, p.20-21). 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). The above statement is true regarding improving the laboratory service systems. The pre-donation panning conditions must be met first as a first step in providing quality service.

2.5.3 Establish recipient preparation process

According 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 sterilization recommendation, and repair and maintenance (Malkin & Keane, 2010; Luo, 2015).

Additionally, the recipient should agree with the donor on extra costs related to the donation because the recipient should not bear such costs unless the recipient is ready for such costs. It will be unlikely if the costs are not budgeted for within the year, and in this case, normally, the government has its budgets done in such as way that if a breakdown happens within the first six months of the year, it will be difficult to virement the funds from other line items (MoFED, 2021). The case may not be a virement, but no funds for such an extra cost. For example, in 2013, MSF Belgium brought a viral load machine to the National Microbiology Reference

Laboratory (NMRL). They employed their scientists and the general hands, and the machines were properly working for three good years. Then MSF decided to donate the equipment to the NMRL. Unfortunately, the equipment's life span was not in good order, and NMRL could not meet the cost of service providers, waste management, and employees. Fortunately, the employees (scientists) were taken on board by the Global Fund (2018). However, had the NMRL exercised this requirement oversight, such type of negligence could not have taken place, but it happened because of failure to follow laid down processes that protect the recipient nation(s). Overall, NMRL is responsible for feeding the Laboratory Directorate on policy matters of laboratory concern; there was supposed to be a clear policy direction pointed out to avoid such mistakes. The cost was not meant for NMRL, but the donor should have taken care of such costs for at least two or more years or years, equivalent to the year the donor had used the equipment under NMRL.

2.5.4 Establish Donation Implementation Process

The machine has 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).

2.6 THE DETERMINANTS OF AN EFFECTIVE DONOR PROCUREMENT

Determinants are factors, conditions, or characteristics that significantly impact the system or project work when properly managed, sustained, and maintained (Milosevic & Patanakul, 2005). The determinants are considered key ways to improve the effectiveness of projects (Chan, Scot & Chan, 2004; Moeuf et al., 2020). The proposed determinants are as follows:-

2.6.1 Identify the lead donor and Collaborate

The noise has become louder over the last few years for the lead donor; the lead donor must be identified who will lead all other donors concerned in the medical laboratory field (Tsai et al., 2022). The lead donor will collaborate with other donors and work with the laboratory services logistics and the directorate to support procuring all the medical laboratory equipment, reagents, and other related consumables (Berenguer & Rashkova, 2021). It means no procurement and donation will be done without the knowledge of the lead donor, who will, in turn, communicate with the MoHCC's laboratory services. According to JICA (2013) report, there should be a collaboration between the MoHCC's laboratory services and the donors who support the laboratory services for better service delivery. Collaboration between the two institutions will give an upper hand for the provision of quality health care as well as quality testing of patients' samples.

2.6.2 Visibility of spending

The laboratory's procurement process has to allow the visibility of individual and procurement unit spending within the laboratory's suggested strategies (Rope-Ross, 2000; Watkins & Wulaningsih, 2020). The donor and the laboratory's visibility bring transparency, knowing who is spending, how much is being spent, and on what (Bushell, 2004;(Varadaraj & Al Wadi, 2021). Ownership and responsibilities have to be assigned to spend whether to individuals or

units (Kanakamedala, Ramsdell & Roche, 2003; Seetharaman, Patwa, Wai & Shamir, 2020). According to Bushell (2004) and Croom (2000), the laboratory needs to have visibility on spending, which brings on the benefits which are: audit trail in the system, planning, and budget optimization; the laboratory will understand the spending patterns, maximize buying power, informed sourcing and supplier management decisions and raise supplier performance.

2.6.3 Need for Top Management Support

Top management is defined as the degree to which the top management understands the importance of laboratory function and is personally involved in laboratory activities (Jitpaiboon & Kalatan, 2005; Al Shaar, Khattab, Alkaied & Manna, 2015). Top management consistently emphasises the importance of their support for the success of the laboratory or any activity in the organization, and the distance between the staff and the top management should be short for system improvement. The top management's responsibility is to support and instil organizational culture, values, and principles, creating synergies and compatibility between them (Foster, 1978; Yaacob et al., 2019). Accordingly, disengaged employees cost an organisation money per se per year; for example, Osborne and Hammoud (2017) researched this subject matter and discovered that US corporations alone are losing over $350billion per year due to disengaged employees who end up not motivated to work for the corporations. Unfortunately, this cannot be said about Zimbabwe since no such research has been done to determine the cost in monetary form. However, the brain drain speaks more to the failure of employees to be motivated in the workplace in the health sector.

According to Deci and Ryan (1985) self-determination theory is used to measure workers' motivational factors and relate to employee engagement, and it is noted that human behaviour and employee engagement are connected to this theory and work engagement. The leaders are expected to engage the employees to have their views and see where they have their weaknesses

and support them (Fernández-Habas et al., 2022; Witter et al., 2019). As such, worker engagement and disengagement are key drivers of employee motivation that demonstrate professional and personal behaviour (Purcell, 2014; Osborne & Hammoud, 2017). The MoHCC should engage employees at all levels for them to realise maximum employee performance, and in turn, this will motivate the workers so that there is more production. This view was supported by Blattner and Walter (2015) who pointed out that the more the employee's motivation is provided, the more the employee is satisfied with the job and gives their all for the organisation, hence more productivity for the organisation. Leaders in the laboratory system and health at large should be able to leverage and successfully engage with the employees to achieve much-needed goals. However, leaders should empower, reward, and recognise employees and build bonds within their organisational systems (Osborne & Hammoud, 2017; Kruk et al., 2012; Lusted, 2023).

2.6.4 Personnel Recruitment and Selection

Recruitment helps to create a pool of suitable experienced, qualified, and fit-for-purpose employees to ensure the selection of suitable candidates for the job, while the selection process' purpose is choosing the correct candidate to fill the vacant position in an organisation (Gamage, 2014; Busa & Nagraj, 2023; Mojumder et al., 2022; Swann, 2010). Additionally, the human resources issue has taken centre stage recently, and special attention is given to any organisation. People are very important as they give a valuable, different perspective and rare attributes to the organisational existence, and when effectively managed, a human can be a considerable asset to the institutions they serve (Djabatey, 2012; Ekwoaba, Ikeije & Ufoma, 2015; Higgisson, 2023). The National University of Ireland (2006) experiences that recruitment and selection of employees in an organisation provides a good opportunity for the organisation to represent itself in a good and favourable light. In some organisations, like in developing

countries, shortcuts are done in recruitment and selection, which bring the name of an organisation into disrepute. Biles and Holmberg (1980) and Ekwoaba, Ikeije, and Ufoma (2015) brought forward the notion that hiring the wrong people for the organisation is very costly, and there is a need to constantly review the human resources policy and planning. Gamage (2014) added that there is a positive relationship between recruitment and selection and the organisation's performance. However, implementing effective recruitment and a proper selection process positively affects organisational performance (Syed, 2012; Katou & Budhwar, 2006; Ekwoaba, Ikeije & Ufoma, 2015).

The reasons above point to the fact that laboratory services must recruit the right personnel with the right qualifications who understand how to operate the donated or procured equipment and reagents (Rout, 2010; Suleman et al., 2022). The personnel is a key element of the equation since, without the right people for the job, the matrix becomes incomplete, and the effectiveness of the laboratory system will never be witnessed. Lack of the right personnel is one of the reasons why it is believed that there is over 40% of donated or procured equipment in the Sub-Saharan Africa is laid idle because there are no proper people to use the equipment (Blue, 2012; Ardebili et al., 2021). However, hiring the right people for laboratory services is key for the organisation to achieve its intended goals. The selected employees must work well with others, and the laboratory services must ensure that the hiring process follows procedures to avoid hunching (Mamoon, 2013).

2.6.5 Logistics Management of the Laboratory Commodities

Logistics operations' reliability and supply chain predictability is becoming increasingly important and are now of major concern (ITF/OECD, 2015). The laboratory logistics department should provide quality service as it has become a driving force for logistics performance, including investment in planning and coordination between the agencies and the

government (Reis & Farole, 2012). Logistics activities include procurement, transportation, warehousing, storage, inventory management, communication, materials handling, packaging, forecasting, and handling of returned goods (Lambert et al., 1998; Stock & Lambert, 2001; Kruger & Pisa, 2017; Ezenduka et al., 2022; Mishra & Singh, 2022) and customs clearance and freight forwarding (Langley et al. 2002) The logistics have become more important now than ever as evidenced by the need to have efficiently run laboratory services hence the following suggestions;

- ✓ Laboratory services own its fleet of trucks where servicing and manpower are in the hands of laboratory services, unlike the current arrangements where the central warehouse owns the trucks and any delivery has to wait for the consolidation of orders for all the departments in the health sector. Although it's good to have that arrangement in terms of efficiency, the laboratory services come after all other departments. This is from my experience. It is expensive to run the project, but the agencies that fund the central warehouse can also fund the laboratory logistics without much hustle. It has been noted that in logistics, transport management is the single most expensive component, and proper policies must be put in place by the government, such as improving road infrastructure to avoid accidents and proper clearance of such health goods and commodities, including services that support logistics (Havenga, 2011; Korinek & Sourdin, 2011; Jhawar, Garg & Khera, 2017).
- ✓ The laboratory services can also pool funds together, as suggested in the national laboratory strategic plan (2016). This will help the laboratory have its fleet serviced without much of a challenge since they already have an administration department at the National Microbiology Reference Laboratory or the Head Office. The agencies and government funds can be resourceful for funding the drivers, assistants, and other general hands.

- ✓ The logistics department has employees that the government funds. In case of donor funds cease, there is a continuation of activities without facing difficulties. The current arrangement where all the laboratory services are employed and paid for by the agencies is dangerous and can provide the government with challenges considering the relationship between our government and the Western funders.
- ✓ The laboratory services may consider having a Public-Private-Partnership (PPP) instead of waiting for the trucks to be bought and donated to the national warehouse. This may boost the way things are done. The laboratory services will not meet the cost of servicing the trucks, drivers, and assistants. They are only billed per transportation, or each delivery is done. For example, the Grain Marketing Board of Zimbabwe (GMB) own just a few trucks, but most deliveries are done by external companies and are paid after deliveries and after having tendered their invoices.

The logistics management is done by the laboratory logistics unit housed at the NATPHARM, the central storage warehouse in the Zimbabwean health systems. Establishing this laboratory logistics unit has been said to have improved the control of the supply chain, procurement, and coordination of all laboratory supplies (NHLSP, 2021). The laboratory logistics section is responsible for quantifying, forecasting, purchasing, and distributing all consumables, including reagents and laboratory equipment (Oswali & Vasdev, 2021; NHLSP, 2021). It has been noted that logistics' role in company performance has become more and more important as it increasing increases competitive advantage (Stock & Lambert, 2001; Ajoke et al., 2019). Competitive advantages give superior service delivery across the whole laboratory services in Zimbabwe. Logistics cannot be overemphasised as it improves productivity; imagine the failure of commodities to arrive on time, poor conditions, and no test can be done, which affects the whole system.

However, the main supplies are HIV and AIDS specific, recently COVID-19 and other tests are not supported, which mostly brings the issue of stock-outs and, in some instances overstocking since the personnel is not knowledgeable about logistics management (Olmsted et al., 2010; Gatome-Munyua et al., 2022; Sarasvathy, 2022). Furthermore, the logistics area is mainly supported by donor-funders who procure goods and services, payment of allowances to drivers and assistants, logistics officers, and the store of all the donor-supported procurement. The government's only contribution is providing warehouses in all provinces. This further affects the laboratory services if the donor support ends. Figure 2.3 shows the generic logistics cycle.

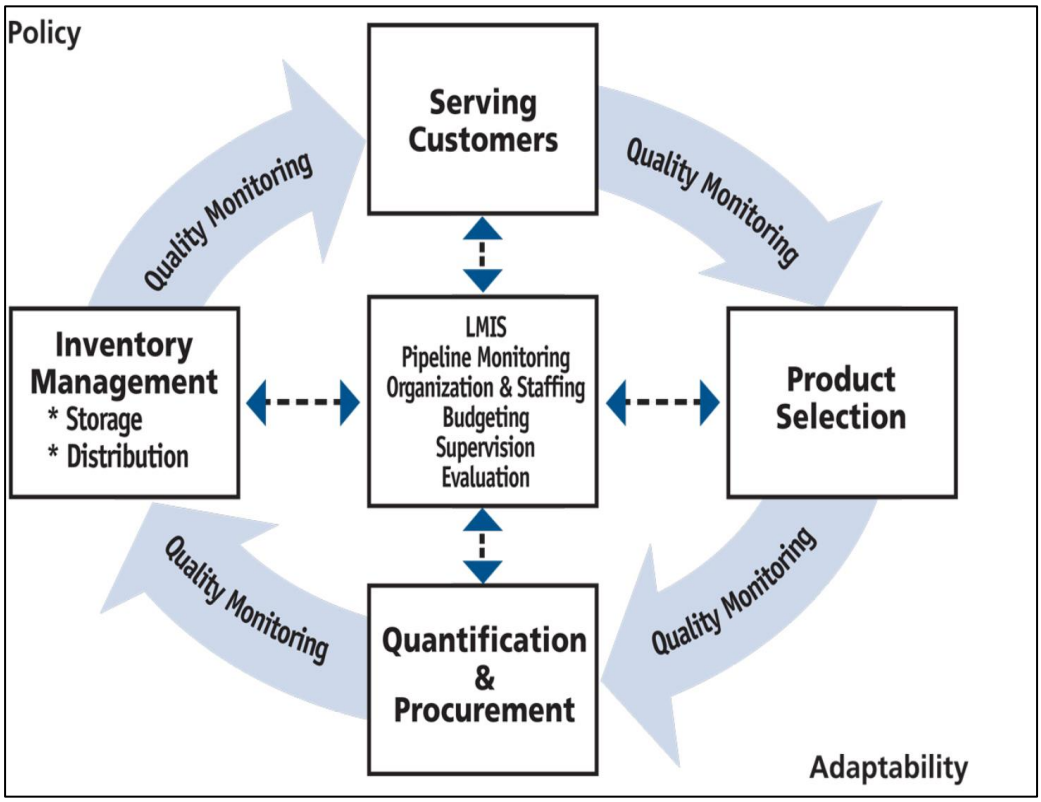


Figure 2.5: Laboratory Logistics Management
Source: Adopted from USAID (2009)

As shown in figure 2.3, there is what is known as downstream and upstream in logistics. The diagram above shows the serving customers, product selection, quantification and procurement, and inventory management which covers storage and distribution. Pipeline

monitoring is key since this area covers the organisation and staff. The pipeline helps monitor goods movement from point A to point B. Budgeting, supervision, and system evaluation are very important in logistics systems. Policies are there to support the systems put in place.

2.7 SUCCESS FACTORS OF THE DONOR-FUNDED PROCUREMENT

There are so many success factors brought about by the donor-funded procurements in the MoHCC's laboratory services, and as such, some of the few success stories are listed below.

2.7.1 Standardisation and Harmonisation of Laboratory equipment

According to the Procurement of Laboratory Item Report (2008, p. 10) "standardization and harmonization of laboratory equipment commodities was the tonic needed to be able to fund the laboratory effectively and efficiently since the laboratory items were reduced from around 2500 items to just only 300 commodities and this can be tied down according to laboratory levels". The meeting agreed that they should be a consensus on test menus, type of equipment per tier, reagents, consumables, and techniques needed. The same report above also noted that standardization and harmonisation achievements could not be disputed since from the 300 items, they were further trimmed to 185 as priority laboratory commodities, also negotiated maintenance contracts together with the purchase of reagents, there is the transfer of stock from one facility to another or central level thereby avoiding stock-outs since the commodities are manageable, logistics system can be rolled out as witnessed above on laboratory logistics system (Olalere, Gatome-Munyua, 2020; Scherz et al., 2022; Zimbizi, 2019). The laboratory also benefited from economies of scale with better prices and decreased cost of procurement (UNDP, 2021). From the standardization and harmonization process, a logistic system (ZiLaCoDs) has improved laboratory commodities' management.

2.7.1.1 Quantification of laboratory commodities

Maputo Declaration (2008) discussed and developed a list of suggested instruments needed to streamline the laboratory equipment and commodities per each level of laboratory services. Fortunately, in Zimbabwe, the donors have supported the procurement and quantification of the laboratory commodities as suggested during the Maputo Declaration of 2008 in Mozambique. Figure 2.4 shows the quantification report for 2021, stating who is funding the procurements and the gaps left unfunded.

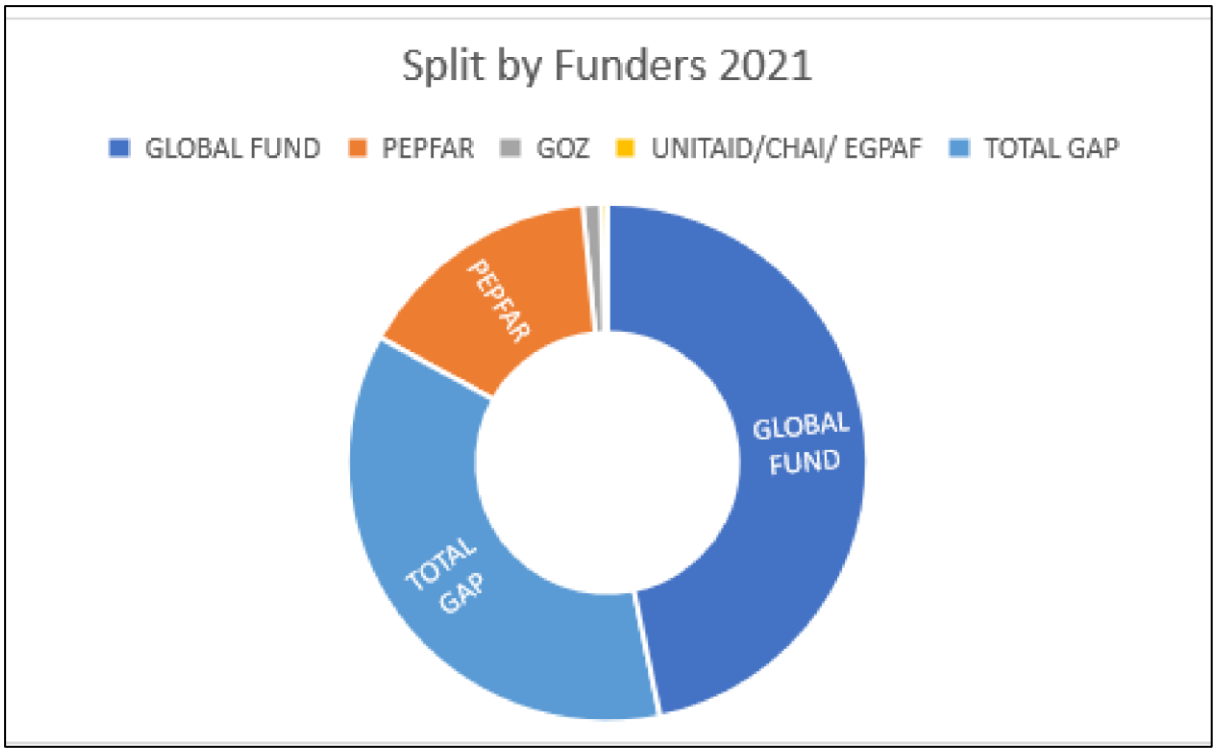


Figure 2.6: Who is Funding the Laboratory Commodities in Zimbabwe
Source: Quantification Report (2021)

Accordingly, as shown in Figure 2.4, Global Fund has become the major funder for the laboratory commodities, followed by PEPFAR and the government of Zimbabwe, which contributes just a little of the funds compared to the donors. Figure 2.5 shows in terms of percentage support for laboratory funding. With these funders' funding of this important arm of health, there is an increase in the operational efficiency of laboratory management in this

donor-funded procurement for the laboratory. Figure 2.5 shows the funding landscape analysis for the year 2021 (Quantification Report, 2021).

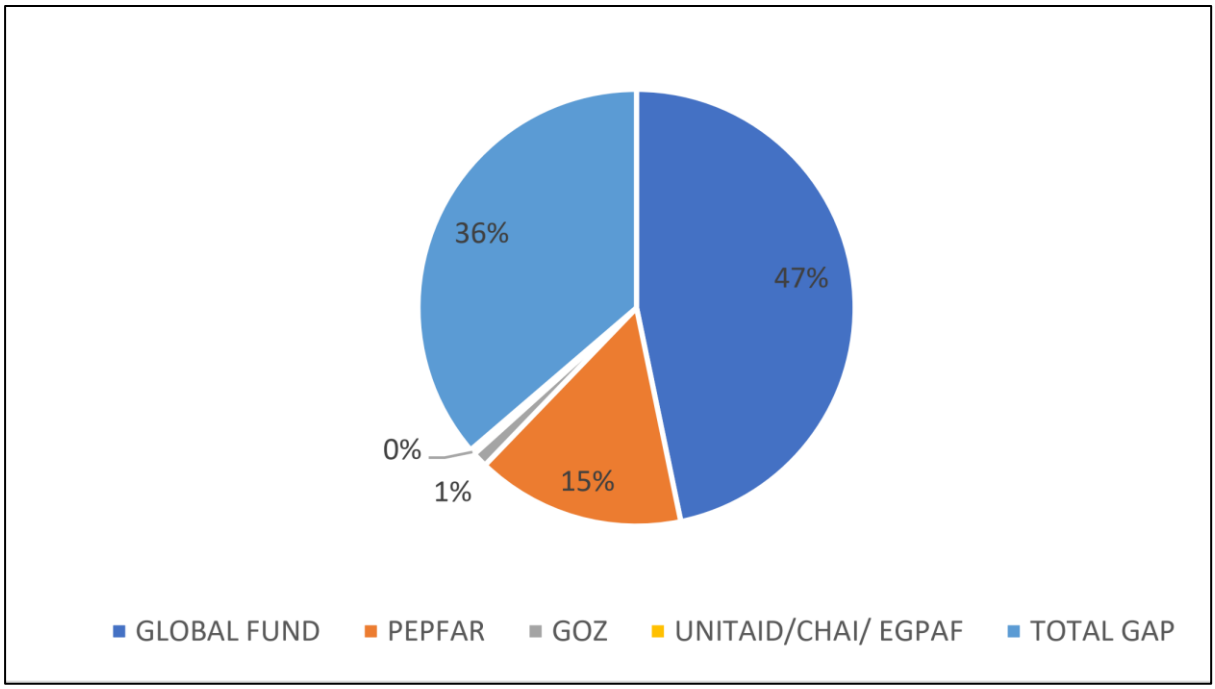


Figure 2.7: Funding Landscape Analysis for the year 2021.
Source: Quantification Report (2021)

Figure 2.5 indicates that the government of Zimbabwe only contributes 1% of the total funding for laboratory commodities. The donors are the major contributors, as Global Fund provides a staggering 47% of the total funding, followed by PEPFAR with total funding of 15%, leaving a gap of 36% unfunded gap. UNITAID/CHAI/EGPAF contributes nothing to the laboratory cause, as demonstrated above.

The same trend of failure by the government of Zimbabwe to fund the department was witnessed again in the year 2022 when the same donors provided much of the funding needed to procure the laboratory commodities. The evidence is shown in Table 2.1 in real figures.

Table 2.1: National Needs for the year 2022 Summary

	2022	2023	Total
LABORATORY NATIONAL NEEDS	**$41,436,777.77**	**$44,971,020.29**	**$86,407,798.06**
GFATM	$19,153,855.81	$10,142,111.24	$29,295,967.05
Govt	$504,833.16	$-	$504,833.16
PEPFAR	$12,049,812.11	$4,834,292.76	$16,884,104.87
UNITAID	$187,898.75	$-	$187,898.75
UNFUNDED	**$9,540,377.94**	**$29,994,616.29**	**$39,534,994.23**

Source: Quantification Report (2022)

Table 2.1 demonstrates the number of funds committed by the donors in support of the laboratory services commodities where the government provides a mere half a million dollars against the total amount of USD 41 436 777.77. Again, Global Fund and PEPFAR put the larger chunk, a combined total of USD31 203 667.92, to procure goods and services for the laboratory. Additionally, the laboratory logistics unit manages over 200 commodities (Quantification Report, 2022). However, the same report projected that in 2023, the government could not fund the procurement of the laboratory commodities, and the main funders (Global Fund and PEPFAR) are projected to fund USD 10 142 111.24 and USD 4 834 292.76, respectively. The statistics indicate that the government of Zimbabwe is not providing financial assistance to laboratory services; hence the donors have taken over the laboratory system.

2.7.2 Improved laboratory logistics system and supply chain management

The donors are funding the salaries of the LLU staff members and other benefits. NATPHARM has received so many trucks (which include cold chain and non-cold chain) from the donors for the success of the logistic system. Improved availability of stock management and

deliveries of the commodities to the various laboratory facilities with support from donors. For NATPHARM to be able to meet the demand, the donors provided new trucks (refrigerated and non-refrigerated) (UNDP Report, 2020) to support the distribution of health commodities to health facilities and improvements on cold chain storage, data loggers, and cold room compressors in the warehouse, (UNDP Report, 2021). Most laboratories are now equipped with solar power systems ensuring sustainable power for cold chain and controlled diagnostic tests and providing laboratory equipment maintenance service contracts (Tumuramye et al., 2018; Selviaridis et al., 2023;). Improved laboratory quantification and forecasting of products and procurement of these commodities have improved since the donors can fund the list of identified items.

The donors such as CDC, USAID, and others provided financial and technical support to develop a laboratory logistic system called Zimbabwe Laboratory Commodities Distribution System (ZiLaCoDs), which is used for the management and storage, and distribution of laboratory commodities (MoHCC, 2014). The system is a forced ordering Max/Min pull system for fast-moving shelf life products and slow-moving ones, using a two-bin system. Figure 2.6 shows Zimbabwe Laboratory Commodities Distribution System Pipeline.

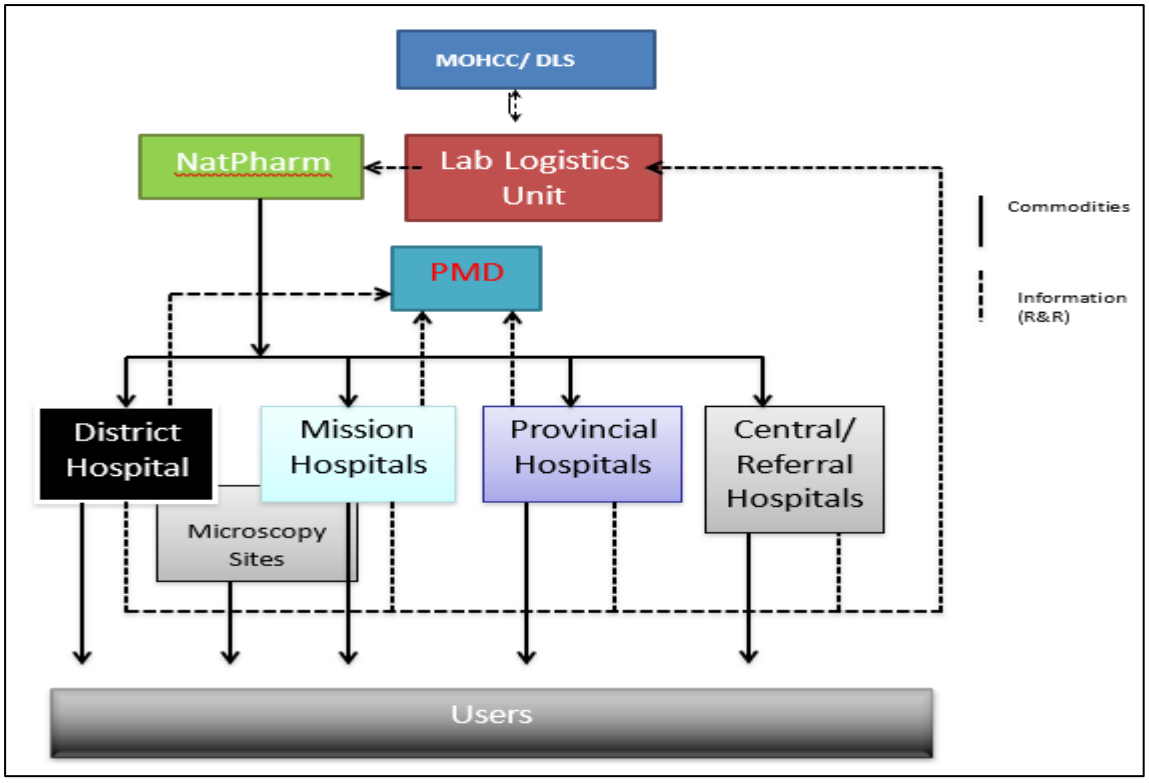


Figure 2.8: Adopted from the Ministry of Health and Child Care
Source: Job Aid Manual (2014)

Figure 2.6 diagram shows the laboratory's tier system in distributing the commodities to the various levels of the system, including the central, provincial, district, missions, and microscopy sites. The same illustrates the communication channels involved in administering these laboratory commodities. The information flows through various offices, including the districts, PMDs, and finally, to the national level.

2.7.3 Employee retention and additional HR support

The other critical success factor is the retention of critical laboratory employees. For example, at the National Microbiology Reference Laboratory (NMRL), 95% of the employees (Scientists, Data Encoders, IT) are paid their salaries by the donors such as GF and PEPFAR. Key public health laboratory sector programs are manned by donor-funded employees (EID, VL, COVID-19 testing). It has seen the laboratory improving in its performance, and 5years

back, NMRL was accredited to ISO 15189, which they have also managed to maintain (CDC, 2019) with support from PEPFAR as outlined by the British Ambassador to Zimbabwe (Melanie Robinson) on the 9th of September 2020 in her report on success factors in the year 2020. Additional HR support was recruited to support testing in Mutare and Bulawayo laboratories for VL and EID testing. An integrated sample transportation system (IST) is also created and supported by PEPFAR and GF with staff-funded salaries (MoHCC, 2019).

2.7.4 Other noted success factors

The donors have realised value for money in most of the health laboratory activities and programmes, but the challenge is said to be the underlying health systems (GF, 2019) which are however still failing, a lack of sustained improvements in the health outcomes due to poor secure political context (Kidia, 2018). In 2020, PEPFAR assisted the laboratory in various ways listed below according to (CDC Annual Report, 2019) report;

- ✓ Implementing LIMS in 13 Viral Load (VL) laboratories includes real-time patient notifications.
- ✓ VL testing of 517 015 people living with HIV.
- ✓ ISO 15189 international accreditation status to 7 VL laboratories, and one laboratory maintained its ISO 15189 status.
- ✓ Training of 75 laboratory staff in biosafety covid cases in all ten provinces.
- ✓ Implementation of data management system for 16 COVID-19 testing laboratories.
- ✓ Technical mentorship for 58 laboratories, 40 000 sample collection kits, and 8770 COVID-19 tests.
- ✓ Waste management support for COVID-19 testing laboratories.

2.8 GOVERNMENT POLICY ON DONOR-FUNDED PROCUREMENTS

Government policy is key to the improvement of the performance of public health laboratories because all the procurements, including those of donors, are guided and led by consistent policies (Mackenbach, McKee, 2013; Schaffer et al., 2022). Government policy acts as a guide on all the donor procurement activities supported by the donor country policies, which both help to align with the constitutions of the countries involved. Policies help to curb illicit deals and corruption and influence efficiencies rather than providing bottlenecks. According to OECD (2019), government policies should influence procurement of services and goods outcomes as it is used to measure the fairness, equitability of the systems in place, transparency, and cost-effectiveness. Moreover, the same policies may drive remuneration of attractive salaries to procurement officers and public health laboratory employees with the skills and qualifications required (Besley & Ghatak, 2007; Dlamini & Ambe, 2012; Ahsang & Paul, 2018; Sebitlo et al., 2022; Weerasekara et al., 2023).

However, government policy may make situations difficult since employees are not well paid, which may create circumstances that will see employees get into elicit deals and corruption and fail to follow the required procurement processes. As if the above is not enough, there must be trust between the government and the Western donors; since the turn of the millennium, the government of Zimbabwe has not been comfortable with donors that come from Western nations because they accuse them of "regime change agenda" (Chigora & Chisi, 2009). Given all the above, these political terms have affected the development of health services in Zimbabwe since the Chinese are much into mining, Agriculture, Tourism, and other sectors leaving the health sector without much support (Safi et al., 2020; Witter et al., 2019). There is a need to have trust with those international support donors and partners (PEPFAR, CHAI, World Bank, and Global Fund, to mention a few). There cannot be a favourable policy regarding donor funding in Zimbabwe.

2.9 FRAMEWORK FOR EFFECTIVE DONOR-FUNDED PROCUREMENT

The following variables must be considered for the donor-funded procurement to be effective.

2.9.1 Donor Collaboration

Donor collaboration dates back to 2005, which is one of the reasons for the Paris Declaration where, a declaration that sought to work on improving the quality of aid and the impact that the aid can bring on the table mainly to developing countries such as the country under study (Abdel-Malek & Koendors, 2011; Harbour, Hempstone, Brasington & Agha, 2021). As such, the donor nations agreed to support the harmonisation and coordination, simplify the procedures as much as possible, and avoid duplication of duties or activities by sharing much-needed information. Donor collaboration may improve the laboratory's efficiency and effectiveness in activities and procurements by minimizing duplication efforts and strategically supporting public health laboratory priorities (Harbour et al., 2021). The Working Party on Aid Effectiveness, as quoted in Harbour et al. (2021, p. 246) asserted that "coordination of donors often remains weak precisely where working towards the same goals needed the most and weak national leadership and capacity become an excuse for uncoordinated donor-driven approaches". In 2022, 17 years after the Paris Declaration, the issue of the donors' failure to collaborate failed to fade away due to reasons known to the donor countries.

The critical factors to be considered in the collaboration are to have champions and drivers, share ownership, set goals together, develop trust, and work together to develop a vision and strategy (Tumuramye et al., 2018; Areguamen et al., 2022; Gordon, 2022). Collaborations provide much-needed access to pooled resources, information sharing, and expertise which may improve performance in procuring public health laboratory goods and services using donor funds (Amaya & Lombaerde, 2021). The research done by Gibson and Mackinnon (2009) further supported that donor collaboration provides in-kind resources, technical

resources, and influence across donors. Good collaborations leverage the strength of donors, which eventually provides strong support to donor and government systems.

The other survey conducted in India by Venkatachalam and Shah (2021) supported collaborations as the way to go, as working together brings greater progress than working alone. However, there are weaknesses donor collaboration may bring that may affect procurements for the public health laboratory, such as employee differences (Jenkins, 2017), which may work against the efforts being made, and compromising is the possible answer to such scenarios. Organizational members may need to avoid tension and focus on the work at hand; organisations should fail to share the credit for progress, looking down upon those with limited financial resources, and adapting to inter-organisational and individual changes may make the collaborations take time to produce fruits. However, logistical challenges such as different fiscal cycles may affect the collaborations, as noted by Gibson and Mackinnon (2009). Venkatachalam and Shah (2021) posit that for collaboration to take shape, the three "Cs" should be put in place as follows;

- ✓ Commitment to collaboration: dealing with the challenges of collaborating and making progress on outsized goals takes a major investment in time, resources, and persistence. Furthermore, there is a need to secure anchor funders who can fund continuously for a long term, such as three or more years; such funding is not restricted.
- ✓ Clarity: communication is the bedrock of any organisation's progress; there should be clarity on what needs to be done, by who, timeframe and this should be continuously done. Talking should focus on implementing partners' commitment and how they are faring. Additionally, there is a need for transparency among the collaborative donors to reduce potential surprises or setbacks.

- ✓ Course correctness: collaborations of these donors will move from the strategising stage to implementation. Progress and results should be continuously tracked to see where changes are needed and find any signal for opportunities to learn and improve.

Table 2.2 shows topologies and an example of donor collaboration in the US in San Diego. The research in donor collaborations in the US may provide the potential models that can be adopted by the donors' international funding, including the Zimbabwe landscape in laboratory services. The Collective Impact (CI) model was developed by the FSG in the US, which adopts a well-structured methodology for addressing donor collaborations.

Table 2.2: *Collective Impact Model*

Model	**Less integrated ---------- More integrated**				
Grantcraft	Learning Network	Strategic Alignment Network	Pooled Fund		
San Diego Grantmakers	Learn	Plan	Act		
Bridgespan	Exchange	Coordinate	Co-invest	Create	Fund the funder
Examples	Global SBC Donor group Scaling Up Nutrition The Curve Community of Practice	Nigeria SBC Donor Coordination Committee and similar groups in other countries Global Partnership to End Violence Against Children	Social Norms Learning Collaborative Adolescents 360 Generation Unlimited United Nations Trust Fund to End Violence Against Women U-Report	Bernard van Leer Foundation and Conrad N. Hilton Foundation co-funding the INSEAD course on behavioural science for early childhood development	United Nations Children's Fund (UNICEF) Innovation Fund

Source: Harbour et al. (2020)

2.9.2 Coordination between Donors and Stakeholders

According to SAPA (2015), there is a need for coordination between the donor and stakeholders, mainly with their government counterparts, to have a shared vision and agreed-

on outcomes to promote the much-needed donor-funded procurements for the benefit of the general populace, which then leads to the desired changes. Accordingly, many stakeholders, including the government, implementers, and technical experts, are involved in these collaborations. In this research, the experts are the procurement officers, the medical laboratory scientists, the accountants, and the leaders in the laboratory directorate. Failure to have any of these stakeholders play the ball in their arena, the problems emanate and may hinder progress in the collaboration. Collaborations between the donors and stakeholders help in information sharing and expertise exchange. Additionally, the government's failure to coordinate with the donors provides many challenges since the governments are the biggest stakeholders and a regulator, this is one of the challenges the Paris, and Accra Declarations wanted to eliminate (Govender, Mcintyre, Loewenson, 2008; Olalere & Gatome-Munyua, 2020; Harbour et al., 2021).

Accordingly, the donors should support the government leadership despite existing differences and address their areas of concern, give them the priority they seek, and provide strategic support. However, in the Zimbabwean context, it has been found that such collaborations between donors and the public health laboratory directorate (NHLSP, 2017) have been challenging since individual donors would prefer their activities without such collaborations, which eventually affects donor-funded procurements. Moreso, the failure of the donors to collaborate with the stakeholders breaches the procurement principles of integrity and transparency (World Bank, 2019; UNDP, 2021). According to Venkatachalam and Shah (2021) it’s not so easy to plan with many stakeholders to accomplish a goal, they are respective goals that have to be agreed on, and a strategy alignment this strategy has to be agreed upon and acceptable to all stakeholders and executable, consensus to be built on and corrections done.

2.9.2.1 Effects of lack of donor and stakeholder coordination

When the donor and the stakeholder fail to coordinate, the general beneficiary, the patient, suffers. Figure 2.7 shows a typical example of failure to coordinate for the good of the nation's health systems. These goods were delivered to the National Microbiology Reference Laboratory (NMRL) from the partners who had used some of these for their projects and, after that, sent the left-overs to the national laboratory even though some of these were not laboratory specific, some were laboratory, and some were hospital specific goods. However, due to a lack of coordination and planning, there was no room to store these commodities, and they were left on the laboratory veranda for disbursement of those not expired to other hospitals that were interested in taking some for patient use.



Figure 2.9: Expired and Non expired Commodities
Source: National Microbiology Reference Laboratory (2019)

2.9.2.2 Lack of impact

The laboratory is a supporting part of the health in totality; when the stakeholders and the donors fail to coordinate, there is a failure to have an impact on the health system. The impact that needs to be seen is good service delivery and expanding testing capacity. However, Bushe (2019), supported by kissflow.com, points to the following as reasons for failure to have an impact on projects:

- ✓ Lack of resource planning- timelines not provided
- ✓ Unclear goals and objectives
- ✓ Communication gaps will be available
- ✓ Unrealistic expectations
- ✓ A lack of project leadership may arise
- ✓ Crime, corruption, and unethical practices
- ✓ Poor infrastructure
- ✓ Lack of government commitment

2.9.3 Multi-donor trust approach

Research indicates that the multi-donor trust approach improves the effectiveness of aid, which helps the recipient government in countries regarded as fragile states, and Zimbabwe is under that bracket. The impact of donor aid effectiveness has become a major policy issue that many international developments and donors prefer not to address (Muchadenyika, 2013). However, the challenge with these donors is that they prefer to use their slow procurement systems to implement public health laboratory activities. The reason for using their systems is they would not want those companies under political sanctions to benefit from these procurements (Lorber, 2021). Unfortunately, donor-managed processes lack the recipient nation's ownership and alignment as expected (Manuel, McKechnie, King, Coppin & Denney, 2012). The multi-donor

approach has been noted as one of the keys to improving the systems. Unfortunately, the discovery by this researcher is that in most African countries, Zimbabwe included, such moves fail due to political pressure within and from the donors who have their targeted approaches which are always colliding with other donors and partners (Grossi & Vakulenko, 2022).

2.9.4 Legitimacy and trust in the procurement process

The donor procurement processes should gain trust and legitimacy, which can be achieved through the execution of the processes free from corruption (OECD, 2020). The stakeholders should trust the processes, maintaining and establishing legitimacy, as this is seen as the overarching driver of reforms in the donor-funded procurement processes (Amann & Essig, 2015). Therefore, such trust and legitimacy are lacking in the donor procurement processes since stakeholders will take their processes without effects on them, but such processes affect the outcomes. All actors, both the donors and the public health laboratory leadership, should participate and understand the processes of the procurement life-cycle used; unfortunately, such processes are done and authorized by the donor's country (Gordon, 2022; Jarvis et al., 2020).

2.9.5 Bureaucracy in government procurement

Administrative systems of the host country may affect the procurement processes of the donors since there is a need for the approval of such procurements from the parent ministry of the department of such procurements are being made before the procurement process can begin (Ahsan & Paul, 2018). Decision-making takes a long, and every document passes through different offices before the final decision is made or before approval can be obtained, this slows the implementation of the procurement processes and can be manipulated by the corrupt decision-makers to their favour (William, 2017; Ahsan & Paul, 2018; Schaffer et al., 2022). However, to increase efficiency in procurement, such practices work against the efficient

performance of donor-funded procurements and the general populace who tend to benefit from such critical procurements and must be discouraged by the public health laboratory directorate and the concerned donors. Additionally, bureaucratic procedures in the host nation typically caused procurement delays, dramatically increasing the cost of funding (Ahsan & Gunawan, 2010; Carvalho, Patah & Bido, 2015). Furthermore, most host countries like Zimbabwe lack an understanding of procurement rules and regulations for donors (Parker, Dressel & Chevers, 2018; Spieske et al., 2022). However, the challenge the host countries must address is the lack of a legal framework to curtail and monitor government departments' bureaucracy, which will help improve donor-funded procurement performances.

2.9.6 Proposed Framework for improving operational effectiveness

Figure 2.8 is a diagrammatic framework for improving the operational effectiveness of medical laboratory services in Zimbabwe.

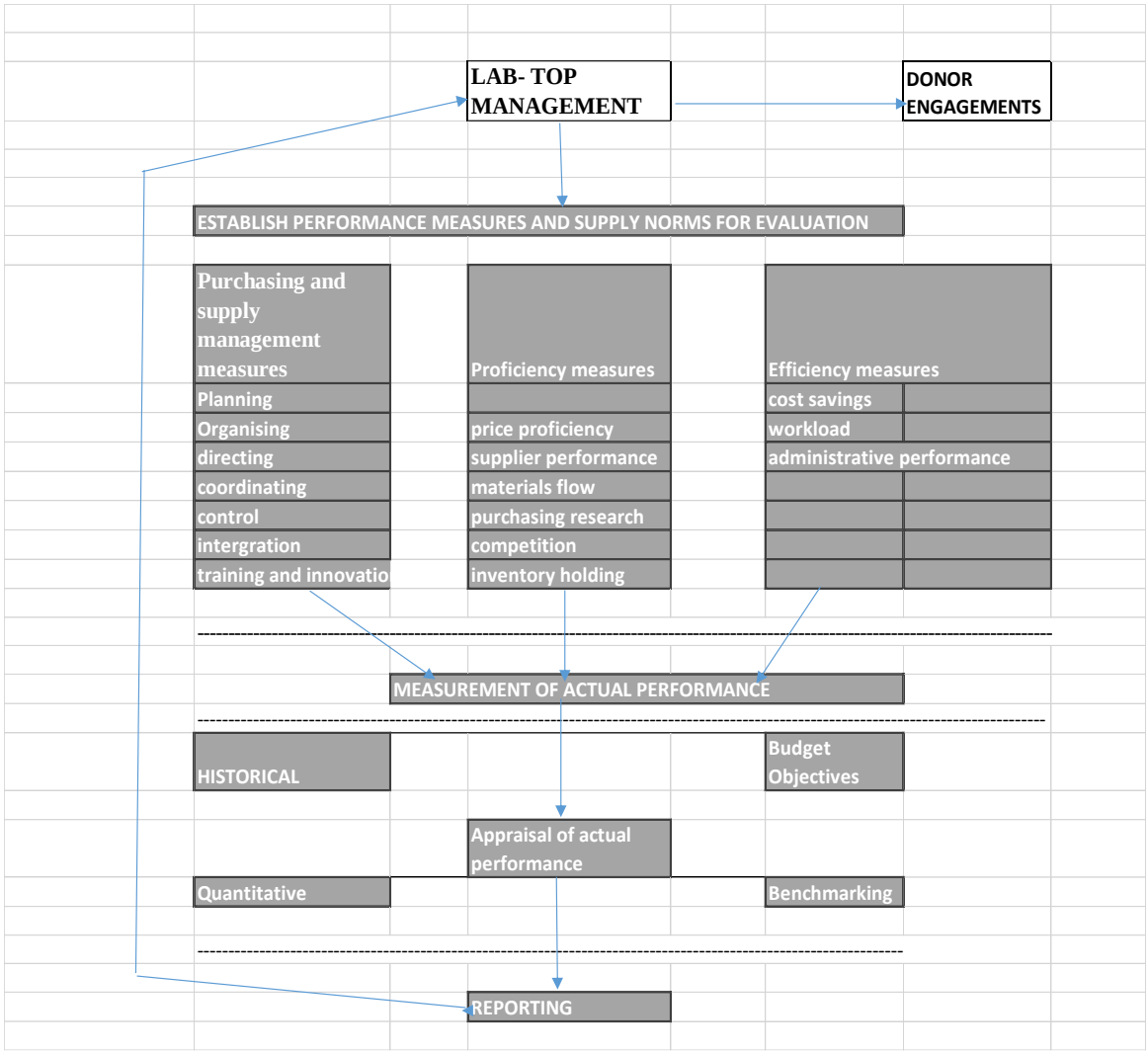


Figure 2.10: Framework for improving operational efficiency
Source: Researcher's construct (2022)

Figure 2.8 shows a proposed framework that covers performance measurement between the donor community and the laboratory services of Zimbabwe. It is possible to define performance evaluation of supply activities "as a control process consisting of systematic measurement on a quantitative basis, and subjective judgment on a qualitative basis of a critical dimension of supply chain management aimed at providing information to all functional groups linked to supply chain" (Hugo & Badenhorst-Weiss, 2011, p.27). In valuation and measuring of the above, Hugo and Badenhorst-Weiss (2011) suggested that one can make use of:

- ✓ Historical: compare the present purchasing and the supply chain of the preceding years – one can see whether there has been an improvement.
- ✓ Budget and quantitative objectives: use the budget and quantitative methods to measure performance.
- ✓ Benchmarking: making use of various donor purchasing turnaround is a helpful method of assessing supplier performance. This has the benefit of comparing the function's performance to those of other donor enterprises.

2.10 THEORETICAL AND CONCEPTUAL FRAMEWORK

The theoretical framework describes and introduces the theories supporting the research. Here, the author demonstrates an understanding of the theories and their relevance to the study, connecting this researcher to the existing knowledge (Passey, 2020). On the other hand, the conceptual framework brings together the expected relationship between the research variables. Normally, it is developed based on the literature review of the previous studies and theories available about the topic under study (Adom, Hussein & Agyem, 2018).

2.10.1 Theoretical framework

The Transaction Cost Economic theory, Person-Situation Interaction theory, and Agent theory are the three theories that are listed below to support the study**.** The researcher will expand and explain the theories to understand why these three theories were chosen to support this research.

2.10.1.1 Transaction Cost Economic (TCE) Theory

This research is anchored on Transaction Cost Economic Theory (TCE) by Coarse, who introduced this theory (Coarse, 1937) to address organizational structures (Holmstrom & Roberts, 1998; Williamson, 2002, 2005), and the key assumptions being human behaviour

which are opportunism and bounded rationality (Martin, Serra, Silva, Ferreira & Li, 2010) as well as environment-related factors (Williamson, 1979; Williamson & Ouchi, 1981; Williamson, 1985) which asserted specificity and uncertainty. TCE has been one of the most influential theories in the study of procurement and supply chain and makes a valuable contribution to understanding sourcing and predicting the success of supply chain arrangements both in theory and in practice, although it cannot alone fully explain the complexities of sourcing (Mclvor, 2009).

This theory addresses issues, including how corporations determine their boundaries, how they should manage operations, and why they exist in the first place (which is to reduce transaction costs) (Coarse, 1937, Williamson, 1979). Key assumptions (Bounded rationality (BR) and opportunism) and key constructs (Asset specificity and Uncertainty) (Grover & Malhotra, 2003; Rindfleish & Heide, 1997) state that bounded rationality is limited to individuals (Simon, 1957) and the decision-makers may desire to act rationally inside the organisation, but their capacity to acquire, retain, retrieve, and share knowledge without error is constrained (Williamson, 1985) and only limit to the extent to which rational behaviour can be conducted. This behaviour may affect the procurement processes since they cannot provide adequate funding due to rational behaviour. The donors' management may hide information about the availability of funding the laboratory services hence the importance of this theory to this study. Bounded rationality must be examined in the context of donor funds in laboratory procurement in Zimbabwe since individuals act and do according to their rationale as they represent their organizations. Since the laboratory depends on donor funding, the laboratory services need to gather more relevant knowledge and information from the donors who fund the laboratory services. BR does not mean that people are trying to be irrational; rather, people are trying to act rationally to the extent that their limited cognitive capacities and incomplete information will allow them to not make accurate decisions (Martins, Serra, Leite, Silva, Ferreira & Li,

2010; Fereira, Vieira, Cerqueira & Dickman, 2016). The donors may act irrationally regarding funding as much as they must act rationally. Their cognitive capacities may be affected and provide incomplete information to the laboratory about the procurements and funds available to support other activities.

2.10.1.2 Person-Situation Interaction Theory

The study adopted the theory by Trevino (1986). The concept emphasises how person interaction and situational factors explain how ethical decisions are made in an organisation. This theory is about trying to understand why people do what they do. An individual's moral cognitive development stage will impact how they respond to ethical situations regarding cognitions. Task-directed and goal-directed behaviour, traits such as extraversion and conscientiousness, are seen as affecting behaviour across an extremely broad range of situations, and behaviour is determined more by the properties of the situation than that of people (Mischel, 1968; Kihlstrom, 2013). Procurement employees' cognitive moral development stage affects how they approach work-related ethical dilemmas involving corruption and decide what is right and wrong in each situation (Trevino, 1986).

In addition, the manager's decision-making process in a procurement-related issue is frequently influenced by individual-related factors, situational milieu, and organisational culture. In procurement situations, people behave in various ways that may affect the performance of their duties as situations are an important variable, as supported by Kihlstrom (2013), who pointed out that person-situation interaction is more powerful than either person or situations are taken in isolation. Situations are as much a function of the person as the person's behaviour is a function of the situation (Bowers, 1973). Furthermore, these personal aspects include ego strength, field dependency, and span of control, whereas the situational milieu includes things like reinforcement and pressure from the job. Persons are part of the situation to which they

respond, or persons and situations together constitute a unified field in which behaviour occurs (Kihlstrom, 2013). This theory is used in the study because it addresses the pre-donation strategy, donation requirements, donation recipient preparedness, and donation implementation, which are the first four independent variables (WHO, 2000). The three theories assisted in shaping the proposed study.

2.10.1.3 Agency Theory

This theory is defined as a contract under which one or more people (principal) engage another person (agent), and there is now a division of labour between the agent and the principal (Jensen & Meckling, 1976). The MoHCC laboratory is the "principal", and the "agents" are the donors acting on behalf of the MoHCC's laboratory. The MoHCC prescribes and monitors the donors' work, including approving the procurement of commodities. The principal has difficulties monitoring hidden agendas, characteristics, actions, and the agent's knowledge; it will be expensive if he (the principal) monitors (Hayibor, 2012; Bosse & Phillip, 2016). The Monitoring mechanism and alignment of interests always create problems for the agent and the principal. In the context of this study, it has been noted that the monitoring mechanism between the MoHCC laboratory services and the donors has been a challenge that has affected their relationship. Furthermore, the relationship further affects the community since the donors are now the major funders of the health systems in Zimbabwe. The communities are the major beneficiaries of good health, and if the health system is in shambles, they bear the brunt of such, and decisions have to be made to protect the general populace, who are the major stakeholders.

The divergent interests' further strain the relationship between the agent and the principal, and the principal always has imperfect information about the agent's performance or contribution (Bosse & Phillip, 2016). The divergent interest in the context of this study is seen when the

agents (donors) are withholding information about their funding activities; the donors would do their work without updating the MoHCC laboratory services since their agenda is not clear to the MoHCC laboratory services but clear from their principals in the country they come from (Hoff, 2010; Donaldson, 2012). Additionally, the donors' funds go towards their administrative costs rather than supporting the services they purport to support, meaning the agents serve their interests and maximise their self-interest (Bosse, Phillip & Harrison, 2009; Hahn, 2015). Moreover, the problem of corporate governance choices of MoHCC and the behaviour of the donors (agent) where the donors increase their utility at the expense of the MoHCC (principal) increasing their funding through self-support (Jasen & Meckling, 1976; Hendry, 2002; Harris & Bromily, 2007; Wang & Guan, 2022), instead of increasing the funding for the medical laboratory services.

2.10.1.4 Integration of the three theories

In this study, three key theories, that is the economic transaction cost (TCE) and person-situation interaction (PSI) theories, and agency theory, are considered in this study to integrate and seek to understand the relationship that exists in 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 organizational 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.

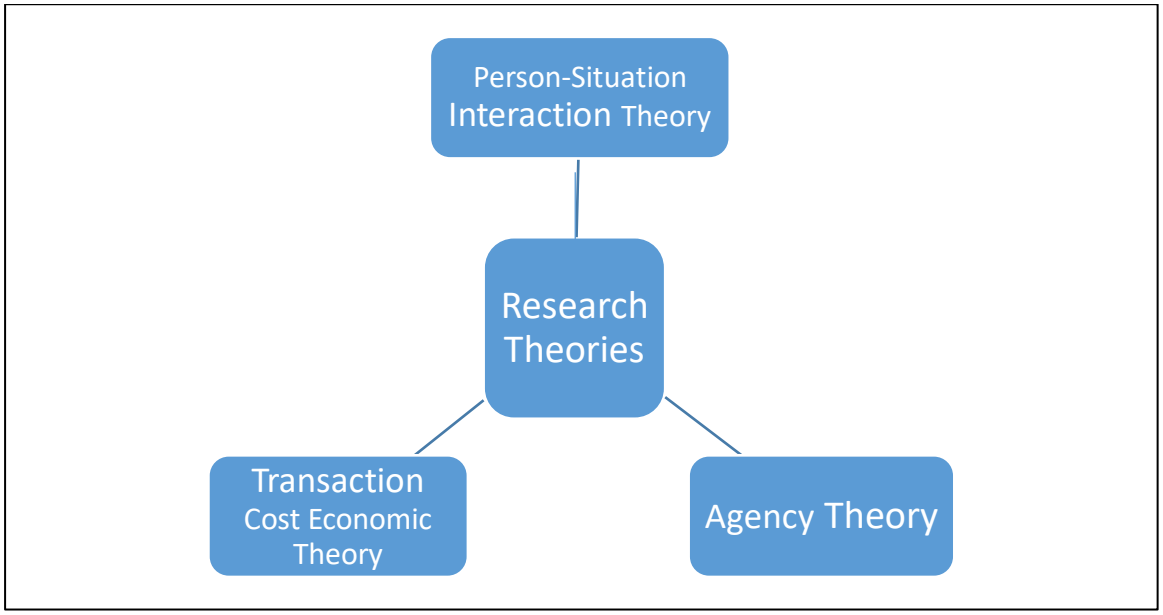


Figure 2.11: Integrated theories
Source: Author's integration of theories (2021)

Figure 2.9 above illustrates the integration of the three theories involved in this research: transaction cost economic theory, person-situation theory, and agency theory. These are this study's underpinning theories.

2.11 HYPOTHESES DEVELOPMENT AND CONCEPTUAL FRAMEWORK

2.11.1 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 emphasize 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., 2022a). 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).

Proper procurement processes, which make pre-donation planning processes a pre-requisite, open and transparent procurement will improve deliveries of the supplies for medical support. These are achieved through policies and systems actively promoted in health systems supported by donor systems. As such, the need for donor-funded procurements pinned on pre-donation planning processes and support cannot be overemphasized since Zimbabwe cannot fund its health sector adequately (Chifera, 2015; NHLSP, 2021). Pre-donation planning process brings about the specifications for the goods and services needed before the actual procurement can be done, as this can reduce risk (Queensland Government, 2018). The lack of support from the government brings to the fore that donor-funded procurements are major milestones in delivering public health medical laboratory services. 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)

2.11.2 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).*

2.11.3 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 organizational 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). For all other donations, the recipient nation must agree with the donor on the cost of such donations. It strengthens system management since no donation comes and gets priority without following national guidelines and available

systems such as storage, distribution, and management. 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).

2.11.4 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 claims are proposed;

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

2.11.5 Determinants of donor-funded procurement as a mediator

Determinants of donor-funded procurements are absolutely for the success of public health medical laboratory services. WHO (2000, 2011) and Berenguer and Rashkova (2021) alluded that the donor community should have a lead donor who coordinates the laboratory's activities and that of the other supporting donors. According to Candi (2016), sustainability cannot be overemphasised. Communication channels must be opened between the laboratory services and the donor community (Seyoun & Lian, 2018). For laboratory services systems to be successful, top management support is essential (Yaacob et al., 2019). There is no success without a proper recruitment policy that allows one to be employed based on merit and supplier consolidation to easily procure laboratory services (GF, 2019; Bush, 2004; Ardebili et al., 2021). The determinants of donor-funded procurement are discovered that they are good mediators between procurement expectation and procurement effectiveness. However, the following hypotheses are brought forward;

H5a: Determinants of donor-funded procurement positively mediate the relationship between the pre-donation Planning process and effective donor-funded procurement.

H5b: The relationship between the donation requirement process and effective donor-funded procurement is mediated by the determinant of donor-funded procurement.

H5c: Determinants of donor-funded procurement positively mediate the relationship between the donation recipient preparation process and effective donor-funded procurement.

H5d: The relationship between the donation implementation process and effective donor-funded procurement is mediated by the determinants of donor-funded procurement.

2.11.6 Determinants of donor-funded procurement and expected procurement function

The determinants of donor-funded procurement play a crucial role in support of the procurement function since there is a need to have qualified employees who are employed on merit, top management support is key, and the lead donor is very much needed to provide guidance and discuss with the laboratory leadership the available funding (Aluttis et al., 2013; Church & Naugler, 2019) and discuss the requirements that carry the laboratory forward. Additionally, the determinants of donor-funded procurement support the procurement function in that where the right skills are deployed; there is no waste of goods or services in the laboratory set-up. Proper planning makes sure that the right personnel is recruited for the right job, such as using the equipment, maintenance, and service contracts are in place; equipment is operated by qualified employees (Dza et al., 2013; Hamel et al., 2015; Mazikana, 2019; Ezenduka et al., 2022). Right personnel knows which part of the laboratory equipment is replaced by them and which is replaced by the engineers, and no forced donation comes into the system without proper channels followed. Furthermore, the electricity and water are available for use as expected in the laboratory, and the equipment works according to the manufacturer's specifications (Mani & Gunasekaran, 2018; Mouschoutzi & Ponis, 2022). However, top management support is always needed to support the employees, and sustainability issues are considered. From the issues discussed, the following hypotheses are generated;

H6a: Determinants of donor-funded procurement directly affect the pre-donation planning process.

H6b: Determinants of donor-funded procurement have a positive relationship with the donation requirement process.

H6c: There is a direct relationship between the donation recipient planning process and determinants of donor-funded procurement.

H6d: Determinants of donor-funded procurement and donation implementation process are directly related.

2.11.7 Determinants of donor-funded procurement and effective donor-funded procurement

The role of donor-funding cannot be overemphasized concerning Zimbabwe's medical laboratory services and the health sector. The real issues can be bare at the turn of the millennium when social services fell apart due to a lack of funding from the coffers of government (Kanyamuna et al., 2020). Social services are challenged. However, the state has created an enabling environment by creating the Laboratory Services Directorate, which oversees the functions of the laboratory (NHSP, 2021). The leadership enhanced recruitment criteria where medical laboratory scientists, State certified Medical Laboratory technicians are trained at absorbed into the laboratory systems (Suleman et al., 2022).

Furthermore, medical laboratory scientists are taking up some key roles and influencing decision-making, unlike before when only medical doctors used to occupy such roles. For donor-funded procurement to be effective, there is a need to prioritise public health medical laboratory services health needs (McCoy & Sridhar, 2009). Once there is a failure to meet the requirements, procuring goods and services for public health medical laboratory services cannot be considered effective.

The effectiveness of donor-funded procurement can be maintained through collaborations among and between donors and other stakeholders (Mutua & Ochiri, 2019). The effectiveness of such procurements may be achieved by giving the right priorities to the health sector. Unfortunately, as shown, there is a need to have a lead donor, but in Zimbabwe, this is one area

that remains unattended due to the nature of the arrangements where the donors are given directives from the countries they come from, and additionally, the western donors are not in good relationships with the government due to "regime change agenda" (Chigora & Chisi, 2009). Furthermore, donor funding has been valuable in laboratory services because the state has renegade from its responsibilities. Moreover, donor-funding is viewed as the most available alternative solution to medical laboratory development through funding employees, procurement of equipment and accompanying commodities, and now most laboratories are being accredited to ISO standards and increase in medical laboratory operations (Chimia, 2013; Hamel et al., 2015; Klaaren & Watermeyer, 2022; Nsikan et al., 2022). Therefore, the determinants of donor-funded procurement improve effective donor-funded procurement, and the following hypothesis is submitted;

H7: The determinants of donor-funded procurement have a direct positive relationship with effective donor-funded procurement.

2.11.8 Government policy on effective donor-funded procurement

Government policy is key to improving the performance of public health laboratories because all the procurements, including those of donors, are guided and led by consistent policies (OECD, 2017). Government policy acts as a guide on all the donor procurement activities supported by the donor country policies, which both help to align with the constitutions of the countries involved. Policies help to curb illicit deals and corruption. According to OECD (2019), government policies should influence procurement of services and goods outcomes as it is used to measure the fairness, equitability of the systems in place, transparency, and cost-effectiveness. Moreover, the same policies may make remuneration attractive to procurement officers and public health laboratory employees with the skills and qualifications required (Ahsang & Paul, 2018). The government policy moderates the determinants of donor-funded procurement, which eventually benefit public medical health laboratory services (Jarvis et al.,

2020; Rechel & McKee, 2012; Robert et al., 2022; Tsai et al., 2022). However, government policy may make situations difficult since employees are not well paid, creating circumstances that will see employees get into elicit deals and corruption and fail to follow the required procurement processes (Schaffer et al., 2022). Good procurement practices and government policies enhance service delivery within the health sector and the provision of the much-required commodities and equipment for the nation's benefit. Therefore, the following hypotheses were provided.

H8a: Government policy positively moderates the relationship between the pre-donation planning process and the effectiveness of donor-funded procurement.

H8b: The relationship between the donation requirement process and effective donor-funded procurement is moderated by government policy.

H8c: The donation recipient preparation process and effective donor-funded procurement relationship is moderated by government policy.

H8d: The government policy moderates the relationship between donation implementation and effective donor-funded procurement.

2.12 CONCEPTUAL FRAMEWORK

Figure 2.10 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.

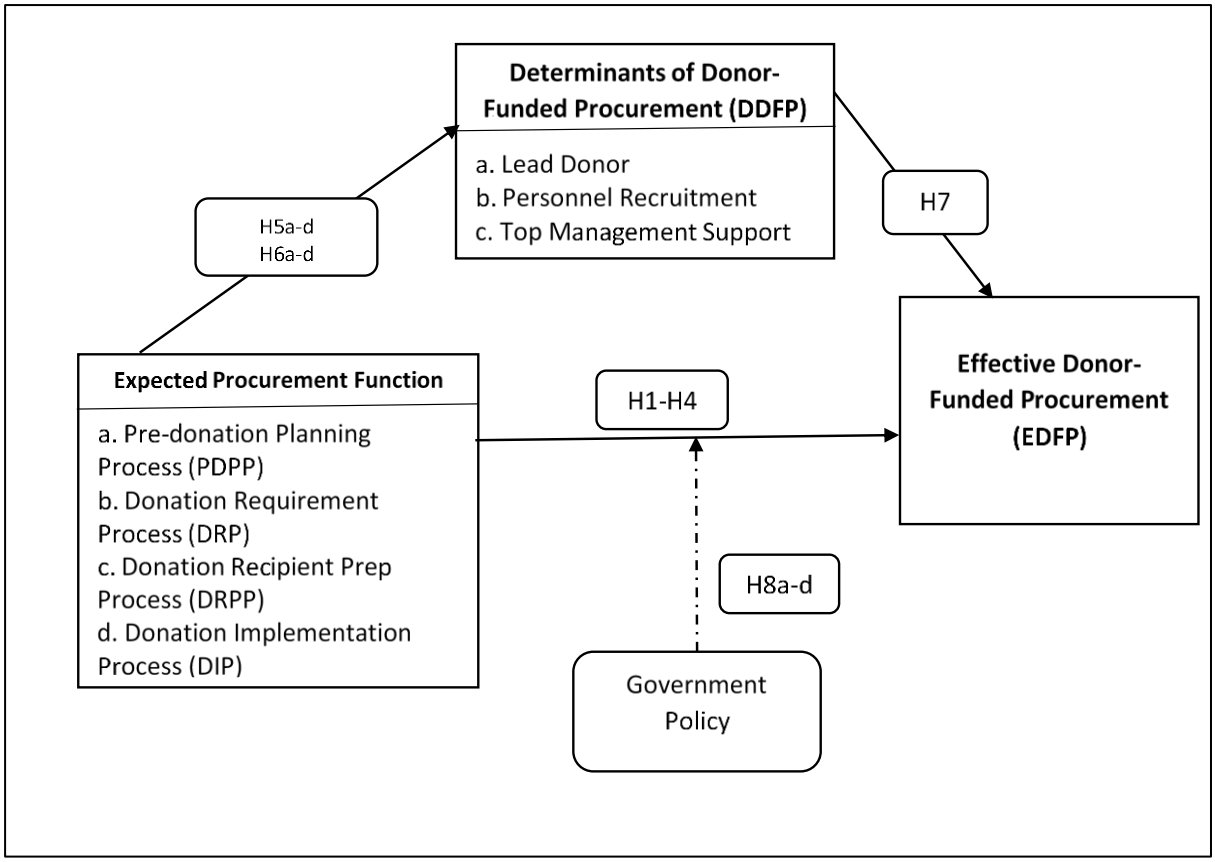


Figure 2.12: Conceptual Framework
Source: Author's construct (2021)

The conceptual framework (Figure 2.10) 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 denoted by hypotheses H1-H4. Additionally, H5 (H5a-d) indicates the relationship between donation requirement processes, donation requirement process, donation recipient preparation, and donation implementation process are all medicated by the determinants of donor-funded procurement. Furthermore, the expected procurement function and determinants of donor-funded procurement relationships are denoted by hypotheses H6 (H6a-d). H7 represents the relationship between the determinants of donor-funded and effective donor-funded procurement. Furthermore, government policy moderates the expected procurement outcome

of donor-funded procurement and effective donor-funded procurement, as shown by hypotheses H8 (H8a-H8d).

2.13 GAP ANALYSIS

Table 2.3 shows a gap analysis meant to show the literature reviewed, gaps seen, and the finding seen by the researcher.

Table 2.3: Gap Analysis table

Literature	**Gaps**	**Findings**
USAID Public Procurement Manual, (2007); Dreher et al., (2022b); Gordon (2022); Sharp (2021); Robert et al. (2022); Malacina et al., (2022); Mishra (2016); Chihaka & Dhlakama, (2009); Pal, (2022) Malan, (2020)	Procurement guidance is based only on their process, not how they procure for government institutions such as laboratory services.	-The document provides stages of procurement only and not probably since procurements are done in their own country, and goods are donated to the laboratory services and other health institutions. -contract management practices are not known to the laboratory services -long payment period and delivery of goods and services to the laboratory services to a level where goods are received with a half shelf life is expired.
Ezenduka et al., (2022); Mofokeng & Luke, (2014)	-Failure by donors to follow local regulations since they procure from their home country they come from.	-The donors are concerned about following the regulations of their funders.

UNFPA (2015); World Bank Report (2017); Ahsan & Kumar, (2108); Ika & Donelly, (2017); Chigora & Chisi, (2009); Schaffer et al., (2022); Spieske et al., (2022); Dressel & Chievers, (2018)	-Minimum procurement thresholds are too low for laboratory services to realise value. -lack of commitment from the host country when it comes to donor-funding activities -Host countries not concerned about donor rules	-Laboratory procurements are needed in large quantities to gain economic scale. -Lack of commitment may stem from corruption related to high offices being involved and some on payrolls. Bureaucracy takes centre stage in government. -Most donors funding health activities are from the West; hence, the relationship is already strained due to the regime change agenda -lack of a legal framework to support donor-funded procurement.
Weerasekara et al., (2021); Dreher, (2022a); WHO, (2011); NHLSP, (2021); Fulop & Ramsey, (2021); Tanag & Mundau, (2014); Jones et al., (2021); World Bank (2021); Berenguer & Rashkova, (2021); Seyoun & Lian, (2018); Yaacob et al., (2019); Ardebili et at., (2021).	-Pre-donation Planning Process (PDPP), Donation Requirement Process (DRP), Donation Recipient Prep Process (DRPP), pre-donation Donation Implementation Process (DIP). The gap shows that these processes are not being followed due to various reasons, determinants of donor-funded procurements, lack of collaboration, and coordination of activities.	-the finding was that most donors are being accused of undermining developing countries' sovereignty, and procurement delays caused by the donors themselves. -The issue of the laboratory's over-reliance on donor funding is a major concern -lack of government policies that support a long term system approach that ensures sustained improvements -proper structure influences organisational strategy and

		support supports donation recipient planning. -donor interests were also found to influence procurements of goods and services. -Lead donors are needed so that the laboratory and donors are always on the same page. -Collaboration and coordination of activities are not being done -lack of top leadership support and fair labour reward practices are needed to curb the brain drain of qualified employees leaving for greener pastures.

Source: Author's construct (2023)

2.14 CHAPTER SUMMARY

The chapter started with an introduction and a brief background of the public health laboratory, indicating the tier system being used. Then the researcher reviewed the literature on the donor-funded procurement processes supporting public health medical laboratories. The researcher also looked at the factors that affect the donor-funded procurement processes: procurement and contracting, the decline in funding, bureaucratic processes, and poorly recognised procurement functions. This led to the literature review on the pre-donation requirement, donation requirement, and recipient preparation, including donation implementation, which form the basis for the conceptual framework. The other objective work is on determinants of the donor-funded procurement, such as identifying the lead donor, a collaboration of stakeholders, organizational culture, and visibility of spending of the donor funds, to mention just a few.

After looking at the proposed donor-funded framework, the chapter concludes with the study's hypotheses and conceptual framework.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter covers the proposed methodological approaches of this study, the research philosophy adopted, and the research design followed by the research strategy. The researcher examined the study's population size and sample size calculations. This was followed by instrument design used to collect data and the data analysis using structural equation modelling for the quantitative method and data coding for the qualitative method. The researcher also focused on the reliability and validity of the study before concluding this chapter with ethical considerations for this study.

3.2 RESEARCH PHILOSOPHY

The study adopted a pragmatism philosophy associated with mixed methods research (Park, Artino & Konge, 2020; Biesta & Burbules, 2003). Pragmatism is defined as a "deconstructive paradigm that debunks concepts such as "truth" and "reality" and focuses instead on "what works" as the truth regarding the research questions under investigation. Pragmatism rejects the either/ or choices associated with the paradigm wars, advocates for the use of mixed methods approach in research, and acknowledges that the values of the researcher play a larger role in the interpretation of results" (Tashakkori & Teddlie, 2003, p.713). This researcher adopted pragmatism because it is associated with mixed methods research. Pragmatism allows this researcher to use both inductive and deductive approaches to answer the research questions and use both quantitative and qualitative methods in the single research to build on the strength and weaknesses of both methods (Morgan, 2007; Shannon-Baker, 2015). Pragmatism philosophy provided this researcher with a more complex understanding of the problem, which is not possible when this researcher uses a single approach (quantitative or qualitative).

However, the philosophy has weaknesses, such as being time-consuming, and the researcher must be aware of both approaches. The research will take note of these weaknesses and balance the requirements of both methods to be employed.

3.3 RESEARCH APPROACH

This researcher adopted an abductive approach that uses inductive and deductive perspectives, enabling the researcher to combine hypothesis testing and theory generation within a single study (Jogulu & Pansiri, 2011). This approach helped this researcher develop research skills and helped this researcher understand the relationships between variables and concepts, and allowed this researcher to measure various concepts of this study quantitatively and qualitatively (Cresswell & Plano-Clark, 2011). The abductive approach is associated with mixed-method research through the inter-subjectivity of this researcher's understanding based on shared meaning. The reasoning approach encourages theoretically and empirically testing intuition (Larson-Hall, 2010; Muijs, 2004). According to Walliman (2011), emerging hypotheses and explanations can be developed and tested using either qualitative or quantitative or a mixture of both methods. Wheeldon (2010) added that relying on abduction reasoning, the mixed method offers an important path to research and can produce more robust measures of the association while accepting multiple paths of meanings. Therefore, this study utilised a mixed-method approach to develop and test hypotheses, and this helped to produce multiple paths of meanings

3.4 RESEARCH DESIGN

Research design is "the procedure for collecting, analysing, interpreting and reporting data in research studies" (Cresswell & Plano-Clark, 2007, p. 58). This researcher adopted descriptive-exploratory research because they are complementary in this mixed-method research since

descriptive research design helped this researcher to deal with quantitative methods and exploratory helped this researcher to collect data on the qualitative part of this research (Streubert & Carpenter, 1999; Larson-Hall, 2010). Furthermore, the exploratory allowed the use of hypotheses in line with this proposed study. Exploratory research is described as research conducted for the researcher to get more insights, new ideas discovered, and knowledge increasing of the phenomena under study (McNabb, 2010), and this was explored through the experiences of the medical laboratory scientists and the procurement officers and SCMLTs. On the other hand, descriptive research explores and explains an individual situation and gains complete and accurate information (Akhtar, 2016). Descriptive is adopted since it protects this researcher from bias and helps this researcher maximise the study's reliability. Another key element in the research design is the time horizon which determines the time the researcher needs to complete the research (Saunders, Lewis, & Thornhill, 2012). Both descriptive and exploratory are associated with the survey research strategy adopted for this study (Morgan, 2007; Shanon-Baker, 2015).

3.5 RESEARCH STRATEGY

This study adopted the survey strategy because it allowed various methods to recruit participants, collect data and utilise various research instrumentation methods (Singleton & Straits, 2009). Furthermore, it is flexible as it allows the use of qualitative (open-ended questions) and quantitative (questionnaire) or both strategies (mixed methods) strategies (Mertens, 2009; Flick, 2011). Since this study used mixed-method research, this strategy helped this researcher to bring together the strength and weaknesses of both quantitative and qualitative methods, which allowed this researcher to understand both strategies. This researcher adopted a survey strategy as it allowed this researcher to answer the research questions and observe different contributing variables and explain the qualitative data (Salant

& Dillman, 1994). Furthermore, this adopted strategy required less investment in developing and administering the questionnaires, allowing easy generalisation of the collected data (Bryman & Bell, 2011).

3.6 RESEARCH POPULATION

According to Shukla (2020), a population is a set of all the units which possess a variety of characteristics under study and for which the findings of the research are generalised, Polit and Hunger (1993, p.37) supported by referring to the population as "an aggregate or totality of all the subjects, objects that conform to a set of specifications". Therefore, in this study, the population considered were the medical laboratory scientists, state-certified medical laboratory technicians, and procurement officers. The set specifications for eligibility were that they were working and experiencing the challenges being investigated by this study. The public health medical laboratory had approximately 170 laboratories nationwide, with an estimated 795 employees across the system. Table 3.1 shows the proposed population distribution for a quantitative method of this study.

Table 3.1: Research Population

Number of public health medical laboratories	**The approximate number of employees**
170	795

Source: AMR Report, (2017)

3.7 QUANTITATIVE SAMPLING TECHNIQUE

A sample is defined as a representative of the population chosen for a study to ensure the generalisation of the findings to the whole population (Sallant & Dillman, 1994; Shorten & Smith, 2017). The researcher used Raosoftware to calculate the sample size for a quantitative method based on a 95% confidence interval and a 5% margin of error. The researcher used 50% as the distribution response. According to Bartlett, Kotrlink, and Higgins (2001), 50% is

the most time-effective way to ensure the researcher reaches the minimum sample size required. Therefore, the sample size for this study is shown in table 3.2.

Table 3.2: Quantitative sample size

Margin of error	Confidence level	Population size (Director, all scientists, State Certified Medical Lab Technician, and Procurement Officers)	Response distribution	Sample size calculated
5%	95%	795	50%	260

Source: Author's own (2021)

3.8 QUALITATIVE SAMPLING

The researcher adopted purposive sampling (non-probability sampling) in the qualitative part of the research because the sampling technique was easy and cheap to conduct (Ackoff, 1953; Taherdoost, 2016). This technique is widely used in qualitative research because it helps the researcher to identify and select information-rich participants (Palinkas, Horwits, Green, Wisdom, Duan & Hoagwood, 2016). The participants involved in this qualitative included the Provincial Medical Laboratory Scientists or any representatives (8) and Chief Medical Laboratory Scientists or any representatives (2)(stationed at the 2 National Reference Laboratories) who are well informed of the developments in their provincial and national medical laboratory territories, and they are aware of the subject matter under study, and they meet the inclusion and exclusion criteria for participating in this study (Blankenship, 2010; Cresswell & Plano-Clark, 2011; Giri, Dawadi & Shrestha, 2021). The participants could communicate their experiences articulative and expressively and were willing to participate (Bernard, 2000; Farrockhi, 2012; Hauken, Larsen & Holsen, 2019). Moreover, this technique allowed the researcher to reach the point of saturation (Miles & Huberman, 1994; Shorten & Smith, 2017). However, the researcher will overcome the weakness of this sampling technique by triangulation and interviewing the experienced informants (Taherdoost, 2016).

3.9 RESEARCH METHODS

This researcher adopted mixed methods research, which refers to 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 utilization of data than separate quantitative and qualitative data collection and analysis. The researcher adopted this method since the study's results can be compared, and the researcher can understand the contradiction between the quantitative and qualitative results. The mixed methods allowed this researcher to give a voice to the participants and ensure that the study is grounded in the participants' experiences (Aliaga & Gunderson, 2002; Poth & Munce, 2020). This researcher also adopted the mixed method because it gives flexibility. Many study designs can be adopted and provide more information than information. Additionally; the mixed method collects rich and comprehensive data (Cresswell, Fetters & Ivankova, 2004; McKim, 2017).

Mixed-Method research allowed this researcher to have questions take centre stage and can be answered with the information presented in both numerical and narrative form, and data can be analysed by integrating statistical and thematic techniques and other unique strategies such as data conversion and or transformation (Elzerberger & Kelle, 2003; Bryman, 2006; Camic, 2021). This researcher adopted the use of mixed methods because the approach simultaneously addresses a range of confirmatory and exploratory questions with both the qualitative and quantitative approaches, and this allowed this researcher to verify and generate theory in the same study (Greene, Caracelli & Graham, 1989; Teddlie & Tashakkori, 2009). Triangulation and complimentary are key strengths of the mixed methods, which benefited this researcher (Zohrabi, 2013; Hauken et al., 2019). Table 3.3 clarifies the use of multiple data collection sources for the study.

Table 3.3: Rationale for using multiple data sources

Objectives of the study	**Multiple Data Sources**	**Justification**
1. To explore the donor-funded procurement processes followed by public health medical laboratory services in Zimbabwe.	Semi-structured interviews with the provincial medical laboratory scientists and the national reference laboratory Chiefs (leadership)(10)	This was to seek an understanding of the medical staff provincial staff and whether they understood the procurement procedures being used by the donors.
2. To assess the donor-funded procurement processes' effectiveness in public medical laboratory services based on the following: ✓ *The effect of the pre-donation planning process on the effectiveness of donor-funded procurement.* ✓ *The effect of the donation requirement process on increasing the effectiveness of donor-funded procurement.* ✓ *The effectiveness of the donation recipient preparation process in ensuring effective donor-funded procurement in Zimbabwe.* ✓ *The effect of the donation implementation process on the effectiveness of donor-funded procurement.*	Semi-structured questionnaires for scientists, procurement officers, and SCMLT (260)	This covered the quantitative part of the study as the research sought to understand the respondents' views on the effectiveness of donor-funded procurement.
3. To determine the determinants of donor-funded procurement and their mediating effect between expected procurement activities and effective donor-funded procurement for public health medical laboratories in Zimbabwe.	Semi-structured questionnaires (260) and interviews (10)	This objective was measuring both qualitative and quantitative research methods
4. To examine the moderating effect of government policy on donor-funded procurement in public health medical laboratory	Key informants' interviews with provincial medical laboratory scientists and Reference laboratory Chiefs (leadership) (10) and semi-structure questionnaire (260)	Here the researcher wanted to find out how government policy plays a role in supporting the procurement of goods and services for laboratory services.

5. To propose a framework for effective donor-funded procurement for public health medical laboratory services in Zimbabwe.	Key informants' interviews provincial medical laboratory scientists and Reference laboratory Chiefs (leadership)(10) Semi-structured questionnaires for scientists, procurement officers, and SCMLT (260)	The researcher wanted to hear the respondents' views on the importance of the framework hence measuring both quantitatively and qualitatively was very important.

Source: Author's construct (2022)

3.10 RESEARCH INSTRUMENTS

Research instruments are tools used to collect data to solve an issue being investigated (Onwuegbuzie & Johnson, 2006). This study used a structured questionnaire (Tashakkori & Teddlie, 1998; Bazeley, 2016) as the search instrument of the study.

3.10.1 Questionnaire Design

The rationale for this questionnaire design in this survey is to make it easier for the respondents to provide meaningful answers. The questionnaire collected data from the study's respondents (Taherdoost, 2020). Every section had structured questions. Questionnaires were used in this study because they are highly flexible, giving the respondents the leeway to answer in their own time, considering the likelihood of the continued COVID-19 measures, which may continue to be in place during the data collection (Taherdoost, 2020). The respondents were expected to give their views and knowledge by answering the questionnaire. The respondents needed to show their knowledge concerning the pre-donation planning processes in place, donation requirement processes used in the health sector, donation requirement processes, and the donation implementation process.

The searcher also needed to test the participants' understanding of the determinant of donor-funded procurement processes accompanied by the government policy, whether it supports the determinants of donor-funded procurement or the policies not supported. Furthermore, the questionnaire consisted of questions and statements developed based on the literature review, and a pilot study was done to improve the reliability of the measuring instrument. Each question was rated on a five-point scale (1-5), 5 being the highest score which indicates highly agree with the question or statement. The questionnaire was put in theme seven of them, which includes the Pre-donation Planning Process (PDPP), Donation Requirement Process (DRP), Donation Recipient Preparation Process (DRPP), Donation Implementation Process (DIP), Determinants of Donor-funded Process, Government Policy (GP) and Effective Donor-funded Procurement (EDFP). The statements were written to indicate the donor-funded procurement processes and their effectiveness in supporting laboratory services in Zimbabwe.

3.10.2 Interview Guide

Interviews are a popular method for gathering data in qualitative research since this approach is more concerned with explaining and understanding the phenomena under study (Labuschagne, 2003). Interviews were conducted with the various participants who are in the field of the health sector (laboratory services) in Zimbabwe, especially the Provincial Scientists (or representatives) and the Chief Medical Laboratory Scientists (or representatives) who are knowledgeable in the subject matter in this study. The researcher adopted semi-structured interviews to collect data since the interviews help to better understand and explore the research subjects' opinions and experiences to address research questions that pertain to qualitative only (Coughlan & Cronin, 2009). Furthermore, the researcher used interviews to collect data for qualitative analysis, and they are flexible and have a better response rate than emailed questionnaires. The researcher used open-ended questions for a better in-depth collection of information. Due to the COVID-19-induced environment, the researcher interviewed the

participants online (via zoom and teams or telephone, where data was a problem for internet connectivity).

The data collected helped this researcher create a knowledge gap in this research. Questionnaires were administered technologically with the use of electronic mail and WhatsApp documents. Table 3.4 shows the determinants of the research.

Table 3.4: Donor-funded procurement determinants, measurements, and effectiveness

Theme	**Question Code**	**Sample questions**	**Source (s)**
Pre-donation Planning Process (PDPP)	PDPP08 PDPP09	We get a detailed work plan from the pre-donation planning process We acknowledge that no donation may take public health backwards	Mullally (2013); Cohen, Baretich & Gentiles (2020) Bhadelia (2016); Gates, Littlewood, Kongara, Odom & Sawicki (2019)
Donation Requirement Process (DRP)	DRP02 DRP06	We coordinate the donation of goods and services together with our donors to cover gaps in the laboratory system. We know the laboratory system may become a burden if not supported by donors.	WHO (2017) Oosting, Wauben, Madete, Groen & Dankelman (2020)
Donation Recipient Planning Process (DRPP)	DRPP05 DRPP10	We believe site inspection is an important step before donation can be done. We notify the donor to assemble the equipment package and ship.	Eze, Ijoma & Wong (2020) WHO (2000); Williams, Kohler, Howard, Austin & Cheng (2020)
Donation Implementation Process (DIP)	DIP06 DIP07	We need to accept the donation of equipment accompanied by a service contract for repairs and maintenance. We need more information on user-replaceable parts and operating instructions to be availed.	Malkin & Keane (2010); Lu (2015) WHO (2017)
Determinants of Donor-funded Procurement (DDFP)	DDFP05 DDFP08	Top Laboratory leadership support donor procurement of goods and services We believe that government policy influences the harmonization of equipment used in the public health laboratory	Jitpaiboon & Kalatan (2005); Jaacob, Baroto, Kamarudin & Arifin (2019); Maputo Declaration (2008); NHLSP (2021)
Government Policy (GP)	GP04 GP09	We know that government policy is a tool that influences support for the recruitment of qualified employees. We are aware Government Policy influences the harmonisation of equipment used in the public health laboratory.	Ahisan & Paul (2018); NHLSP (2021) Fulop & Ramsey (2021).

Source: Drawn from various sources (2021)

3.11 DATA COLLECTION

Official authority was sought from the Laboratory Services Directorate in the Ministry of Health and Child Care, Zimbabwe. This authorisation was used to apply for the ethical clearance certificate from the University of Witwatersrand. Data were collected using structured questionnaires for quantitative data analysis, and emails and WhatsApp were used to distribute the questionnaires to the respondents. As for qualitative data collection, appointments for interviews with the Provincial Medical Laboratory Scientists (or representatives) (8) and the Chief Medical Laboratory Scientists (or representatives) (2) were made and granted. These interviews were electronically (Teams, Zoom) and telephonically done and recorded for transcription purposes, or where telephonic interviews were used, notes were taken down. Most importantly, the data was concurrently collected and analysed, meaning that both methods were equally treated.

3.12 DATA ANALYSIS

For quantitative analysis, this researcher adopted the Structural Equation Modelling (SEM) to analyse data because the model helped this researcher to account for causal relationships between variables and errors that emanated from the measurement of variables (Morris, Elston & Stein, 2011; Apuke, 2017). SEM is a statistical tool generally used in the behavioural sciences. It is an important tool that helps the researcher as it is interested in theoretical constructs that latent factors can represent. Latent factors are variables that the SEM cannot directly observe. The SEM helped this researcher better analyse the correlated variables' relationships.

The researcher 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 researcher used regression analysis and confirmatory data analysis. CFA helped the researcher 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 researcher ran the SEM on Statistical Package for the Data Science (STATA) version 17. Data were presented using tables and graphs after the analysis in chapter 4 of this study. Furthermore, the researcher intends to test hypotheses using the SEM pathways.

From a qualitative approach, the data were coded into themes or ideas; this is open coding which organizes raw data to try and make sense (Gill, Stewart, Treasure & Chadwick, 2008). Firstly, the data were subjected to thematic analysis patterns. These patterns were formulated using Braun and Clarke's (2006) six steps of locating, analysing, and reporting data patterns.

The researcher identified themes, patterns, and relationships from the data collected from the participants by scanning the primary data for words and phrases that the participants most use, and this researcher summarised the data by linking the research findings to the hypothesis and objectives or research questions (Dudovskiy, 2018). However, thematic analysis has possible shortcomings, such as the development of ambiguity in the corpus might not readily fall into patterns due to the uniqueness of an individual participant's experiences.

3.13 VALIDITY

Surucu and Maslakci (2020, p. 4) stated that "validity refers to whether the measuring instrument measures what is intended to measure and how well the instrument performs its function in a quantitative approach." The researcher achieved validity in this research by avoiding bias and approaching this study from an objective standpoint and ensured that the population used in this research was clearly defined so that the results were valid and generalisable. For content validity, the researcher used well-worded questions. Content validity

is expressed as how well a survey or test should measure the construct it should measure (Tahersdoost, 2016). However, in qualitative research, validity refers to the study's trustworthiness, which this researcher ensured and achieved by triangulation of data and sources and using mixed methods research (Lincoln & Guba, 1985). Triangulation strengthens the validity of this research, especially by using both the qualitative and the quantitative methods simultaneously.

The researcher ensured validity in the quantitative approach by ensuring that the questionnaire included all the constructs of the research by using CFA and exploratory factor analysis for content and construct validity to verify and ensure validity in qualitative research by being trustworthy, which brought credibility, authenticity, and transferability of the research results. Furthermore, in the qualitative approach, the researcher avoided bias and collected data, analysed and interpreted it as impartially as possible (Lynch, 1996).

3.14 RELIABILITY

In terms of search, consistency and repeatability of the measuring tool are important. Repeatability in the sense that the tests carried out are reliable when the measurements done under the same conditions will give the same results (Moser & Kalton, 1989; Huck, 2007). The researcher achieved reliability in quantitative research by piloting the questionnaire first before embarking on data collection from the research participants. The pre-trial run helped the researcher check for the instrument's effectiveness before being distributed to the study samples. Moreover, pre-trial or pilot testing is important because it helped improve the instrument. According to Robinson and Hohepa (2009), the Cronbach Alpha coefficient is the most appropriate measure of reliability, especially where the Likert scale type of questions is used.

The researcher will use Cronbach's Alpha coefficient to test the scale reliability since the researcher intended to use multiple Likert scale questions. The research ran the Keiser-Meyer-Olkin (KMO) to measure the adequacy of the sample size for each variable in the model, and accordingly, the values of KMO range from 0 to 1, and 0.8-1 shows that the sample is adequate, 0.70 to 0.79, the sample size is said to be middling, and values between 0.6 to 0.69 are called mediocre and those less than 0.6, remedial action is needed (Al Kuwaiti et al., 2016; Bartlett, 1954; Kaiser, 1958). Additionally, the Bartlette test of sphericity (Bartlett, 1954) was run to see whether factor analysis was necessary or not since where there is a significant value of the variables, factor analysis is necessary (Creamer, 2022). The Cronbach's Alpha test, as defined by Cronbach (1951), determines the reliability of the study's results. The alpha (α) varies from 0 and 1; the closer the value to 1, the higher the reliability of the scale's internal consistency. For the reliability to be acceptable, it should be 0.7 and above (Cronbach, 1951). The reliability results are shown on Table 3.5.

Table 3.5: Reliability Table

Reliability Statistics

Cronbach's Alpha	N of Items
.921	70

In the qualitative approach, reliability refers to the stability of responses from the participants to cording of data sets, and as such, this researcher enhanced reliability by having detailed notes obtained from the field as well as by using recording devices during interviews and notes written down by the researcher (Zohrabi, 2013). Triangulation also assisted this researcher in achieving the reliability of this study. LeCompte and Goetz (1982) suggested four strategies for achieving reliability in the qualitative method, low inference descriptors, multiple

researchers/participants, and peer examinations. This study utilised the fourth strategy: recording and taking notes of the interviews.

3.15 ETHICAL CONSIDERATIONS

Research ethics refers to doing what is morally, ethically, and legally right in research (Parveen & Showkat, 2017). Creswell (2003) states that the researcher must respect the rights, needs, values, and desires of the informants, and as such, this researcher respected such conditions of the participants in this research. Written consent shall be obtained before data collection from the respondents. Furthermore, the Protection of Personal Information Act (POPIA) section 27(a), which prohibits data processing of third parties without their consent, was considered. Additionally, data was collected after receiving approval from the University's ethics committee, the ethics clearance number is *H22/06/23*, and a clearance approval for data collection from the Ministry of Health and Child Care, Laboratory services Directorate, Zimbabwe. The researcher was truthful, built trust, and demonstrated an ethic of honesty, care, and integrity with all research participants. The researcher ensured data safety by keeping the collected data in a password-protected folder on a computer for five years before permanently deleting it.

In addition to the research's ethical consideration, since this research concern procurement in the donor-funded procurement and the public, this researcher needs to remind that ethical procurement also has to be adhered to by maintaining integrity, avoiding conflict of interest, and personal enrichment, ethics and compliance, fairness, complying with a legal obligation, value for money and treating all suppliers fairly and equally (Nyamah et al., 2022) are some of the key ingredients of the procurement that the donors and laboratory services are expected to provide.

3.16 CHAPTER SUMMARY

This chapter started by stating the research purpose that the researcher was using a mixed research methodology. The researcher followed by looking at the pragmatism research philosophy, which states that truth is told through science and pragmatism support mixed methods research. The abductive approach was then adopted as the research approach, which makes this researcher understand the relationships between variables and concepts of the study and produce integrated results. Furthermore, the researcher also looked at the research design (descriptive-exploratory) of the study then, followed by adopting a survey as the research strategy of the study, which is associated with deductive and inductive approaches and is said to be economical and serves time. The researcher went further to work on the population of the study and proposed the use of RaoSoftware to calculate sample size for the quantitative part of the study, and on qualitative, the researcher proposed the use of the purposive sampling method since it helps the researcher to identify informants who are information rich. Questionnaires and interviews were used as the study's instrument for data collection. Data collected was analysed using Structural Equation Modelling (SEM) and coding using Microsoft Word. The validity and reliability of the instrument were also ensured. Lastly, the researcher noted the research's ethical considerations: confidentiality, anonymity, and data management.

CHAPTER 4

PRESENTATION AND INTERPRETATION OF RESULTS

4.1 INTRODUCTION

This chapter presents the analysis, presentation, and interpretation of the results and findings of this study. A mixed methods strategy, consisting of quantitative (questionnaires) and qualitative (interviews), was used to analyse this study, and STATA was used for quantitative data analysis. The responses were analysed, the data interpreted, and the relationships among the different variables were. Furthermore, the chapter presents the analyses of the development of a procurement framework for improved operational efficiency in donor-funded procurements in the Zimbabwean Public Health Laboratory using Structural equation modelling. The descriptive analysis of the general information about the Medical Laboratory Scientists (MLS), State Certified Medical Laboratory Technicians (SCMLT), and Procurement cadres in the Ministry of Health and Child Care (Laboratory services) as respondents in this study. The researcher presents the quantitative methods approach phase first part of this chapter and lastly presents the results for the qualitative approach.

4.2 QUANTITATIVE ANALYSIS

Quantitative data was collected to establish participants' views on developing a sustainable procurement framework for improved operational efficiency in donor-funded procurements in the Zimbabwean Public Health Laboratory Services. This researcher used the data collected to determine and draw conclusions about the purchasing of equipment, including commodities, by the donor community and to debunk the notion that more procurements are done through and by the donors while the government is not doing enough to support the laboratory services

in terms of the provision of activities such as logistics, testing, and support of the part of the human resources. To achieve this, the researcher used questionnaires for quantitative data collection, and the analysis and interpretations of such are presented below.

4.2.1 Response Rate

Response rate is defined by Morton, Bandara, Robinson and Carr (2012, p. 106) traditionally as "the total number of participants who were involved in research divided by the total number who were eligible". A total of 260 participants were targeted to take part in this study. The participants were Medical Lab Scientists (MLS), Procurement Officers (PO), and State Certified Medical Laboratory Technicians (SCMLT) specialists who work in the Ministry of Health and Child care and whose duties are directly informed by the procurement of equipment, commodities, and services. The questionnaire was sent to the respondents through the use of Whatsapp platforms. Of the 260 questionnaire responses expected, only 217 were returned, translating to an 83.5% response rate. However, three observations were not complete; hence, the final sample had 214 participants, which translates to an 82% response rate which is good (Morton, Bandara, Robinson, Carr, 2012). According to Cleave (2020) and Saleh and Bista (2017), a response rate of 50% is adequate for data analysis and reporting, a response rate of 60% is good, and that of at least 70% is excellent.

4.2.2 Demographic Distribution

The descriptive statistics are presented in this section. Descriptive statistics are techniques used to describe the respondents' demographic information attributes based on the research (Gupta & Gupta, 2011). Descriptive statistics are vital in research as they are the first step to be done when conducting the research and before any inferential could be done. These include the types of variables (ordinal, nominal, ratios, and intervals) and measures of frequency, positions, central tendency, and variations or dispersions (Kaur et al., 2018).

4.2.2.1 Gender

The results indicate that the majority of the participants were male respondents. The study found that 53,7% (n=115) of the respondents were males while 46,3% (n=99) were females, as shown in the pie chart, Figure 4.1. However, the numbers shown in figure 4.1 are gender-representative and said to be unbiased. Therefore, we can conclude that there is gender balance in this research.

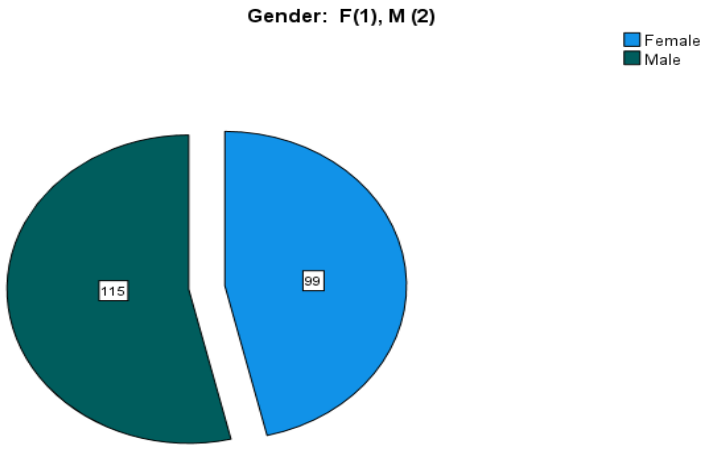


Figure 4.13: Gender Distribution

4.2.2.2 Age group Respondents

Figure 4.2 shows the age distribution of the respondents. The bar chart shows that 32 (15%) participants are in the age range of 21-30 years. The highest number of respondents are in the age range of 31-40 years, with total respondents of 91 (42.5%) and followed by the age range of 41-50 years, which has 70 (32.5%) respondents, and lastly, the age range of 51-60 years has 21(9.8%) respondents.

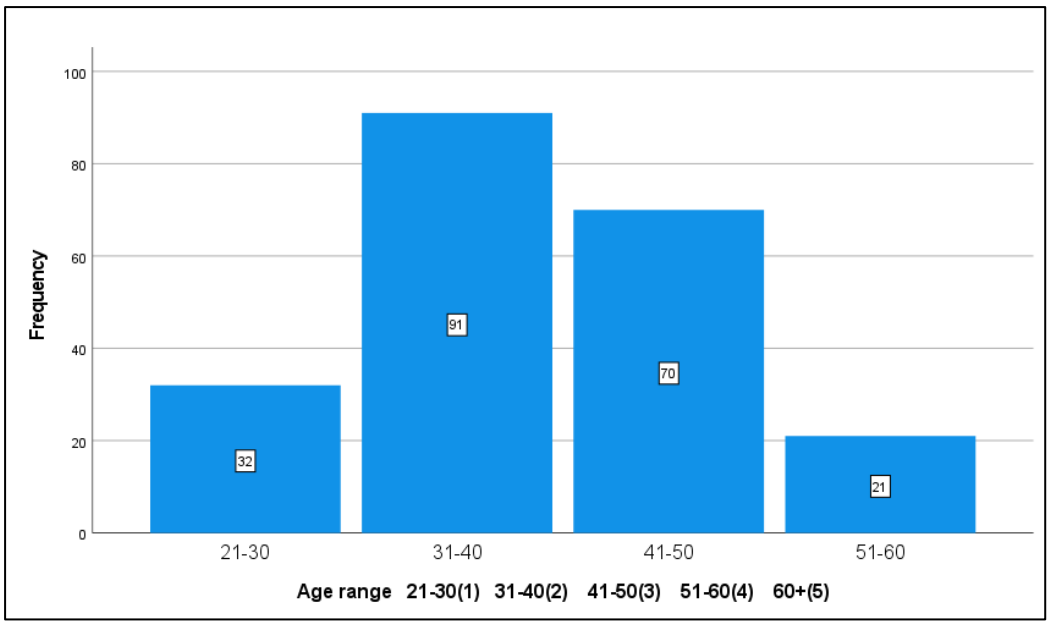


Figure 4.14: Age range distribution of the participants

4.2.2.3 Occupation

This section describes the occupation of the respondents who participated in this research. Figure 4.3 shows a bar chart for occupation distribution.

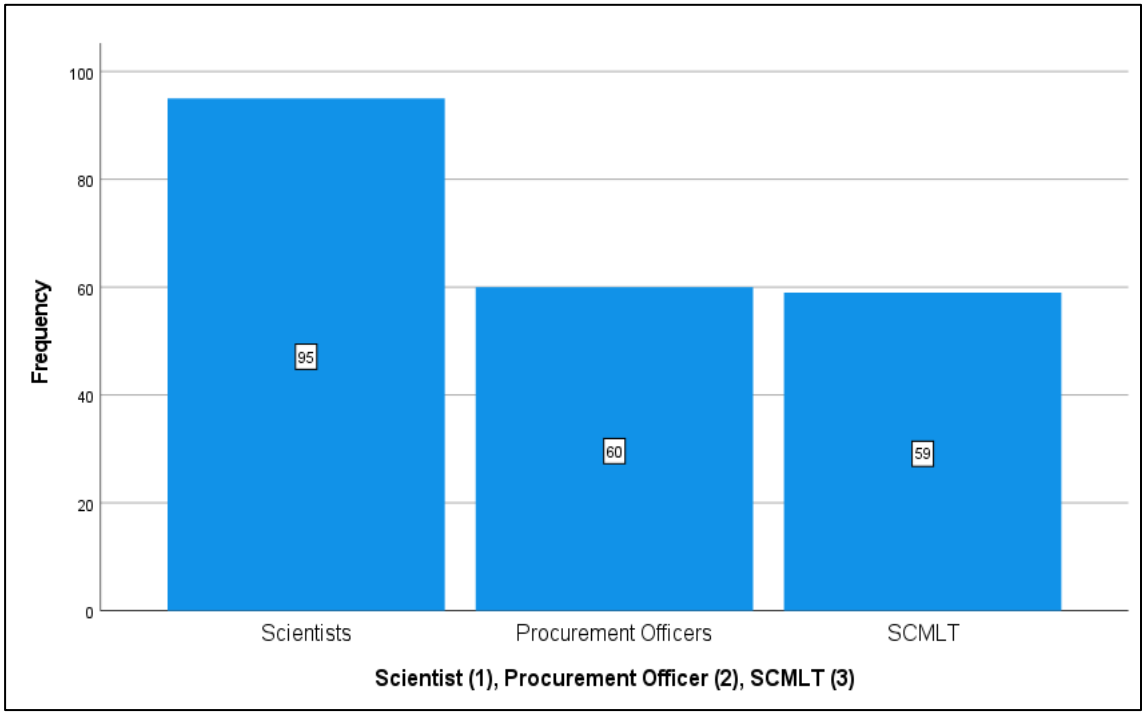


Figure 4.15: Occupation

The study participants came from the MLS, PO, and SCMLT professions. The results show that there were 44.4% (n=95) MLS who responded to this study, 28% (n=60) were PO, and 27.6% (n=59) were SCMLT.

4.2.2.4 Work Experience

The number of years of employment in the Ministry of Health and Care was captured to measure the work experience of the participants. The research findings are shown in Figure 4.4.

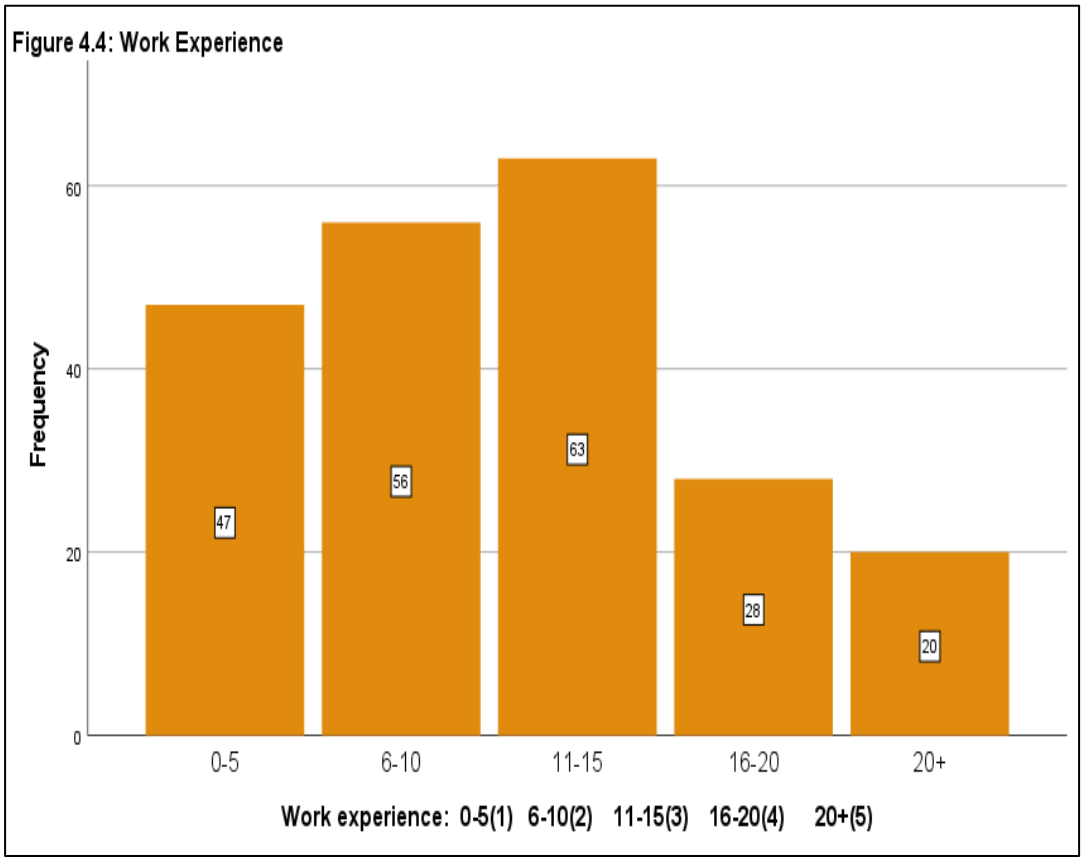


Figure 4.16: Work Experience

The results show that 22% (n=47) of the employees have a variety of employment backgrounds of 0-5 years, 26.2% (n=56) employees have work experience in the range of 6-10 years, 29.4% (n=63) employees have work experience in the range of 11-15 years and these were the majority. 16-20 years of the respondents were 13.1% (n=28), and finally, the range for those with 20+ years of experience was only 9.3% (n=20)

4.2.2.5 Educational Qualifications

The level of education for the respondents' results is presented in Figure 4.5.

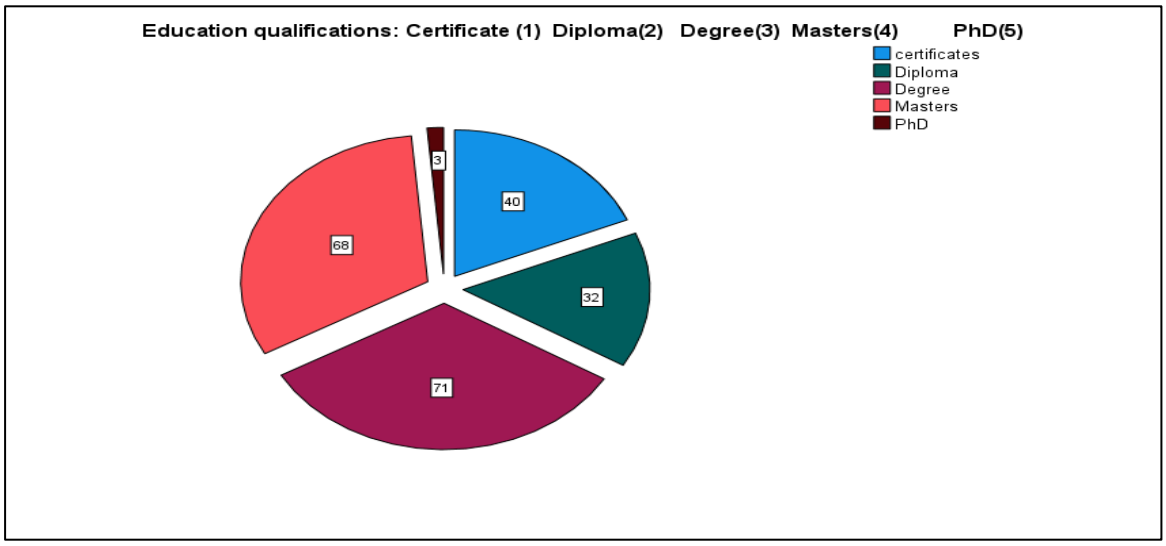


Figure 4.17: Educational qualifications

There were 18.7% (n=40) respondents who have certificates, 15% (n=32) respondents are diploma holders, the majority of the respondents are degree holders (33.1%, n=71), 31.8% respondents (n=68) have masters degrees and 1.4% (n=3) are PhD holders.

4.2.2.6 Professional Board

The registration with a professional board distribution is shown in Figure 4.6.



Figure 4.18: Professional Boards registration

The results above show that 70.1% (n=150) of the participants are registered to MLS and SCMLT professional boards, and only 4.7% (n=10) POs are registered with any procurement board with CIPS. A total of 25.2% (n=54) participants were not registered to any procurement board.

4.3 Instrument Reliability and Validity

Table 4.1 shows the average reliability measured by Cronbach Alpha, Kaiser-Meyer-Olkin, (1954) (KMO), determinant correlation matrix, and the Bartlette test of sphericity for all the constructs considered in this study.

Table 4.1: Validity, reliability, and sampling adequacy of the patient satisfaction sub-scales

Factors	**Average Cronbach Alpha (α)**	**KMO**	**Determinant of the correlation matrix**	**Bartlette test of sphericity**
PDPP	0.8668	0.863	0.006	Chi-square = 1068.617 Degrees of freedom = 45 p-value = <0.0001
DRP	0.8210	0.779	0.031	Chi-square = 726.778 Degrees of freedom = 45 p-value = <0.0001
DRPP	0.7859	0.758	0.068	Chi-square = 560.937 Degrees of freedom = 45 p-value = <0.0001
DIP	0.8039	0.784	0.039	Chi-square = 670.471 Degrees of freedom = 45 p-value = <0.0001
DDFP	0.7951	0.804	0.050	Chi-square = 619.736 Degrees of freedom = 45 p-value = <0.0001
GP	0.8133	0.765	0.024	Chi-square = 783.198 Degrees of freedom = 45 p-value = <0.0001
EDFP	0.8475	0.797	0.009	Chi-square = 991.226 Degrees of freedom = 45 p-value = <0.0001

As shown in the results, all the constructs have an average reliability above 0.7, which shows that the instrument used to collect the data had acceptable internal reliability. The internal reliability coefficient for the Pre-Donation Planning Process (PDPP) construct is 0.8668, Donation Requirement Process (DRP) has a reliability coefficient of 0.8210, the Donation Recipient Planning Process (DRPP) has a reliability coefficient of 0.7859, the Donation Implementation Process (DIP) has a reliability coefficient of 0.8039, DDFP has a reliability coefficient of 0.7951, GP has a reliability coefficient of 0.8133 and EDFP has a reliability coefficient of 0.8475.

The results show that all the constructs have sufficient average KMO values acceptable for factor analysis. The KMO coefficient for the PDPP construct is 0.863, DRP has a KMO coefficient of 0.779, DRPP has a KMO coefficient of 0.758, DIP has a KMO coefficient of 0.784, DDFP has a KMO coefficient of 0.804, GP has a KMO coefficient of 0.765 and EDFP has a KMO coefficient of 0.797.

Table 4.1 shows the determinant of the correlation matrix for all constructs were statistically significant (PDPP p-value=0.006; DRP p-value=0.031; DRPP p-value =0.068; DIP p-value=0.039; DDFP p-value = 0.050; GP p-value = 0.024 and EDFP p-value = 0.009). Additionally, Bartlett's test of Sphericity test was performed, and the results are shown in Table 4.1. The results for each construct were statistically significant with a p-value <0.0001. The results further confirmed that factor analysis is worthwhile for the data set.

4.4 The effect of the pre-donation planning process on the effectiveness of donor-funded procurement

Table 4.2 shows the frequency and percentages, median (IQR), factor loadings, and reliability coefficient for the effective pre-donation preparation process (PDPP) for effective medical laboratory system items.

Table 4.2: Frequency, Median, Factor Loading, and Alpha: Pre-donation Preparation Process (PDPP)

Statement	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)	Median (IQ R)	Factor Loading	Alpha
PDPP01: We do pre-donations meetings for improved laboratory services.	16(7.5)	32 (15)	64(29.9)	77 (36)	25 (11.7)	3(3-4)	0.6468	0.8786
PDPP02: We get specifications from pre-donation meetings for goods and services	13(6.1)	41(19.2)	42(19.6)	91(42.5)	27 (12.6)	4(2-4)	0.7267	0.8724
PDPP03: We do pre-donation planning is key for public laboratory systems	14(6.5)	26(12.1)	51(23.8)	84(39.3)	39(18.2)	4(3-4)	0.7113	0.8726
PDPP04: We do pre-donation planning as one of the essentials for public health medical laboratory success	15(7.0)	26(12.1)	47(22)	91(42.5)	35(16.5)	4(3-4)	0.7680	0.8697
PDPP05: We identify space availability during the pre-donation planning process	15(7.0)	27(12.6)	49(22.9)	90(42.1)	33(15.4)	4(3-4)	0.8195	0.8662
PDPP06: We find a mutual understanding of stakeholders during the pre-planning process.	13(6.1)	20(9.3)	60(28.0)	91(42.5)	30(14.0)	4(3-4)	0.8195	0.8662
PDPP07: We have improved laboratory systems through pre-donation planning processes	12(5.6)	15(7.0)	60(28.0)	92(43.0)	35(6.4)	4(3-4)	0.6325	0.8770
PDPP08: We get a detailed work plan from the pre-donation planning process	9(4.2)	22(10.3)	58(27.8)	104(48.6)	21(9.8)	4(3-4)	0.6525	0.8756
PDPP09: We acknowledge that no donation may take public health systems backwards	8(3.7)	14(6.5)	45(21.0)	109(50.9)	38(17.8)	4(3-4)	0.4665	0.8875
PDPP10: Platforms that are needed are examined during the pre-donation planning process	9(4.2)	17(7.9)	51(23.8)	111(51.9)	26(12.1)	4(3-4)	0.4615	0.8882

The results show that 36%(n=77) of the participants agreed that the pre-donation meetings improve laboratory services, 42.5% (n=91) agreed that they get specifications from pre-

donation meetings for goods and services, 39.3% (n=84)agreed that they do pre-donation planning is key for public laboratory systems, 42.5% (n=91) agreed that they do pre-donation planning as one of the essentials for public health medical laboratory success 42.1% (n=90) agreed that they identify space availability during the pre-donation planning process, 42.5% (n=91) agreed that they find a mutual understanding of stakeholders during the pre-planning process, 43% (n=92) agreed that they have improved laboratory systems through pre-donation planning processes, 48.6% (n=104) agreed that they get a detailed work plan from the pre-donation planning process, 50.9% (n=109) agreed that they acknowledge that no donation may take public health systems backwards and 51.9% (n=111) agreed that platforms that are needed are examined during the pre-donation planning process. The same pattern was confirmed when using the median (IQR) results. The factor loadings were estimated for each item and ranged from 0.4615-0.8195 showing a good item contribution to the construct. The item reliability coefficients (alpha (α) range from 0.8662 to the highest of 0.8882.

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

Table 4.3 provides the results for the effects of the donation requirement process on increasing the effectiveness of medical laboratory testing capacity. It shows the frequency, percentages, median (IQR), factor loadings, and alpha (α)

Table 4.3: Frequency, percentages, Median (IQR), Factor loading, and Alpha for Donation Requirement Process (DRP)

Statement	Strongly Disagree n(%)	Disagree n (%)	Neutral n (%)	Agree n(%)	Strongly Agree n(%)	Median (IQR)	Factor loading	Alpha(α)
DRP01: We create the capacity of the laboratory system by receiving donations.	7(3.3)	16(7.5)	53(24.8)	94(43.9)	44(20.6)	4(3-4)	0.5653	0.8082
DRP02: We coordinate donations of goods and services together with our donors to cover gaps in the laboratory system	9(4.2)	17(7.9)	45(21.0)	101(47.2)	42(19.6)	4(3-4)	0.6185	0.8033
DRP03: We are training technical staff to manage equipment and accessories.	5(2.3)	14(6.5)	35(16.4)	109(50.9)	51(23.8)	4(3-4)	0.6281	0.8004
DRP04: We use the scarce resources donated to the maximum benefit for the benefit of the patients	4(1.9)	7(3.3)	34(15.9)	100(46.7)	69(32.2)	4(4-5)	0.6203	0.8003
DRP05: We are guided on how to take good care of the donated technology.	2(0.9)	13(6.1)	51(23.8)	101(47.2)	47(22.0)	4(3-5)	0.6512	0.7969

DRP06: We know the laboratory system may become a burden if not supported by donors	6(2.8)	8(3.7)	36(16.8)	95(44.4)	69(32.2)	4(4-5)	0.6350	0.7961
DRP07: We improve laboratory infrastructure by receiving donations.	7(3.3)	10(4.7)	42(19.6)	99(46.3)	56(26.2)	4(3-5)	0.5460	0.8063
DRP08: In the case of equipment, we receive donations with manuals inserted in them.	1(0.5)	8(3.7)	31(14.5)	99(46.3)	75(35.0)	4(4-5)	0.5718	0.8028
DRP09: We receive unexpired reagents and other commodities when donated and in the right conditions.	4(1.9)	1(0.5)	36(16.8)	113(52.8)	60(28.0)	4(4-5)	0.5052	0.8098
DRP10: We know that donations are not forced by the donors when they do not meet the required conditions	5(2.3)	9(4.2)	46(21.5)	105(49.1)	49(22.9)	4(3-4)	0.3592	0.8240

Table 4.3 shows that 43.9% (n=94) of the respondents agree that the laboratory system creates capacity through receiving donations, 47.2%(n=101) of the respondents agree that the laboratory system coordinates donations of goods and services together with the donors to cover gaps within the laboratory sector; 50.9% (n=109) agree that the technical staff is trained to manage equipment and accessories and 46.7% (n=100) agree that the scare resources donated are used to the maximum benefit for the benefit of the patients; 44.4% (n=95) of the respondents agree that the laboratory system may become a burden if not donor-supported; 46.3% (n=99) of the respondents agree that the laboratory improves its structure through receiving donations and the same number of respondents agree that in case of equipment, manuals are received inserted in the machine box. Furthermore, 52.8% (n=113) of the respondents agree that the unexpired reagents and other commodities are received in the right conditions, and 49.1% (n=105) agree that donations are not forced by the donors when they do not meet the required conditions. The same pattern was confirmed when using the median (IQR) results. The factor loadings were estimated for each item and ranged from 0.3592-0.6512, showing a good item contribution to the construct except the ones below the cut-off point of 0.40. The item reliability coefficients (alpha (α)) range from 0.7961 to the highest of 0.8240.

4.6 The effectiveness of the donation recipient preparation process on effective donor-funded procurement

Table 4.4 shows the test results for the frequency, percentages, median, factor loading, and alpha for the donation preparation process effectiveness in supporting donor-funding procurement of laboratory goods and services.

Table 4.4: Frequency, percentage, Median, Factor loading, and Alpha (α) for the Donation Recipient Preparation Process (DRPP)

Statement	Strongly Disagree n(%)	Disagree n(%)	Neutral n(%)	Agree n(%)	Strongly Agree n(%)	Median (IQR)	Factor Loading	Alpha (α)
DRPP01: We are allowed to prepare for proper management of donated equipment and commodities.	4(1.9)	21(9.8)	54(25.2)	88(41.1)	47(22.0)	4(3-4)	0.3980	0.7796
DRPP02: We agree with the donor on the cost related to the donation.	3(1.4)	29(13.6)	75(35.0)	79(36.9)	28(13.1)	3.5(3-4)	0.4407	0.7741
DRPP03: We must not be burdened by donated equipment, commodities, or services.	4(1.9)	12(5.6)	51(23.8)	107(50.0)	40(18.7)	4(3-4)	0.3661	0.7827
DRPP04: We seek further information from the donor concerning equipment operation, installation, and maintenance.	2 (0.9)	15(7.0)	48(22.4)	100(46.7)	49(22.9)	4(3-4)	0.5238	0.7655
DRPP05: We believe site inspection is an important step before donation can be done	3(1.4)	5(2.3)	37(17.3)	97(45.3)	72(33.6)	4(4-5)	0.6354	0.7574
DRPP06: We are encouraged to take good care of all equipment in the laboratory.	4(1.9)	5(2.3)	30(14.0)	90(42.1)	85(39.7)	4(4-5)	0.5845	0.7664
DRPP07: We ascertain the energy consumption of any equipment before the actual donation is done	5(2.3)	21(9.8)	51(23.8)	89(41.6)	48(22.6)	4(3-4)	0.5984	0.7594
DRPP08: The spending of donor funds is very transparent	20(9.3)	25(11.7)	47(22.0)	78(36.4)	44(20.6)	4(3-4)	0.5341	0.7656

DRPP09: We train personnel to operate the equipment according to manufacturer's specifications	4(1.9)	3(1.4)	29(13.6)	110(51.4)	68(31.8)	4(4-5)	0.6801	0.7506
DRPP10: We notify the donor to assemble the equipment package and ship	4(1.9)	13(6.1)	60(28.0)	91(42.5)	46(21.5)	4(3-4)	0.4924	0.7726

The results show the results that 41.1% (n=88) of the respondents agree that the laboratory system is allowed to prepare for proper management of donated equipment and commodities in the laboratory, 36.9% (n=79) of the respondents agree that the laboratory management agrees with the donor on cost related to the donation; 50% (n=107) of the respondents agree that the laboratory system must not be burdened by donated goods and commodities as well as services; 46.7% (n=100) of the respondent agree that we seek further information from the donor concerning the operation of equipment, installation, and equipment maintenance; 45.3% (n=97) of the respondents agree that they believe site inspection is an important step before donation can be done to the laboratory system, and 42.1% (n=90) of the respondents agree that they are encouraged to take good care of all equipment in the laboratory.

Further results in table 4.4 above show that 41.6% (n=89) of the respondents agree that they ascertain the energy consumption of any equipment before the actual donation is done. 36.4% (n=78) of the respondents agree that the spending of donor funds is very transparent, and 51.4% (n=110) agree that we train personnel to operate the equipment according to the manufacturer's specifications. 42.5% (n=91) of the respondents agree that the laboratory system notifies the donor to assemble equipment, package, and ship. The same pattern of results was confirmed when using the median (IQR). The factor loadings were estimated for each item and ranged from 0.4407-0.6801, showing a good item contribution to the construct. The item reliability coefficients (alpha (α)) range from 0.7506 to the highest of 0.7827.

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

Table 4.5 shows the results of the frequencies, percentages, median, factor loading, and alpha of the donation implementation process in the procurement and donation of goods and services by the donors for the laboratory services in the health set-up. The like-scale questions measured the respondents' views on WHO (2000) guidelines on the support of the health sector set-up when the donors are providing support.

Table 4.5: Frequencies, percentages, median, factor loading, and alpha for Donation Implementation Process (DIP)

Statement	Strongly Disagree n(%)	Disagree n(%)	Neutral n(%)	Agree n(%)	Strongly Agree n(%)	Median (IQR)	Factor Loading	Alpha
DIP01: We know the donor should ensure donation along the way to its destination	3(1.4)	10(4.7)	64(29.9)	93(43.5)	44(20.6)	4(3-4)	0.3441	0.8047
DIP02: We accept a donation that only works according to the manufacturer's specifications only	6(2.8)	16 (7.5)	57(26.6)	102(47.7)	33(15.4)	4(3-4)	0.3406	0.8034
DIP03: We know manuals are a key component of any equipment supplied	1(0.5)	1(0.5)	33(15.4)	96(44.9)	83(38.8)	4(4-5)	0.5548	0.7887
DIP04: All the supplied equipment must be accompanied by supporting accessories	1(0.5)	5(2.3)	32(15.0)	106(49.5)	70(32.7)	4(4-5)	0.6281	0.7822
DIP05: We accept in the case of equipment used, they shall be decontaminated, and patients' information removed	3(1.4)	5(2.3)	31(14.5)	109(50.9)	65(30.4)	4(4-5)	0.6092	0.7809
DIP06: We need to accept donations of equipment accompanied by a service contract	1(0.5)	7(3.3)	32(15.0)	112(52.3)	62(29.0)	4(4-5)	0.6493	0.7773

for repairs and maintenance								
DIP07: We need more information on user-replaceable parts and operating instructions to be availed	1(0.5)	6(2.8)	30(14.0)	104(48.6)	72(33.6)	4(4-5)	0.6476	0.7788
DIP08: We accept only evaluated equipment and reagents	1(0.5)	13(2.8)	42(19.6)	94(43.9)	64(29.9)	4(3-5)	0.6384	0.7758
DIP09: We do not accept forced donations which may be politically connected without following set out guidelines	8(3.7)	10(4.7)	59(27.6)	83(38.8)	54(25.2)	4(3-5)	0.5003	0.7912
DIP10: We accept only those donations we believe add value to the public health medical laboratory system	3(1.4)	15(7.0)	51(23.8)	76(35.5)	69(32.2)	4(3-5)	0.5751	0.7819

Table 4.5 shows the results of respondents in the variables of the donation implementation process 43.5% (n=93) of the participants agree that we know donation should be insured by the donor along the way to its destination; 47.7% (n=102) of the respondents agree that we accept a donation that only works according to the manufacturer's specifications only and 44.9% (n=96) of the respondents agree that we know manuals are a key component of any equipment supplied and 49.5% (n=106) of the participants agree that all the supplied equipment must be accompanied by supporting accessories; 50.9% (n=109) of the respondents agree that the laboratory accepts in the case of equipment used, they shall be decontaminated, and patients' information removed from the machine; 52.3% (n=112) of the respondents agree that the laboratory needs to accept donations of equipment accompanied by a service contract for repairs and maintenance; 48.6% (n=104) of the research participants agree that we need more information on user-replaceable parts and operating instructions to be availed, 43.9% (n=94) of respondents agree that we accept only evaluated equipment and reagents and 38.8% (n=83)

of the respondents agree that we do not accept forced donation which may be politically connected without following set out guidelines and lastly, 35.5% (n=76) of the respondents agree that we accept only those donations we believe they add value to the public health medical laboratory system. The median confirmed the same results (IQR) tests done. The factor loadings were estimated for each item and ranged from 0.3406-0.6493, showing a good item contribution to the construct except for the variables that are less than the accepted 0.40. The item reliability coefficients (alpha (α)) range from 0.7758 to the highest of 0.8047.

4.8 The determinants of donor-funded procurement for public health medical laboratories in Zimbabwe

Table 4.6 shows the results of the tests run for the determinants of the donor-funded procurement for public health medical laboratories in Zimbabwe. The researcher sought the respondent's views on the above, and the results are populated in table 4.6.

Table 4.6: Frequencies, percentages, median, factor loading, and alpha for the determinants of donor-funded procurement

Statement	Strongly Disagree n(%)	Disagree n(%)	Neutral n(%)	Agree n(%)	Strongly Agree n(%)	Median (IQR)	Factor Loading	Alpha
DDFP01: We need a lead donor for the harmonisation of all donor procurement	8(3.7)	18(8.4)	55(25.7)	96(44.9)	37(17.3)	4(3-4)	0.5585	0.8042
DDFP02: We need a lead donor who collaborates with other donors and public health medical laboratory services	7(3.3)	18(8.4)	52(24.3)	94(43.9)	43(20.1)	4(3-4)	0.6633	0.7931
DDFP03: We need a communication channel between the donor community and MoHCC to be simplified for quick feedback	5(2.3)	6(2.8)	35(16.4)	101(47.2)	67(31.3)	4(4-5)	0.6625	0.7884
DDFP04: We need clarification of all donor-funded procurement from the lead donor	5(2.3)	11(5.1)	47(22.0)	97(45.3)	54(25.2)	4(3-5)	0.6311	0.7894
DDFP05: We are not aware/aware of the donor-funded procurement spending.	5(2.3)	12(5.6)	49(22.9)	91(42.5)	57(26.6)	4(4-4)	0.3822	0.8121
DDFP06: We acknowledge the laboratory's top management support for donor-funded procurement	2(0.9)	4(1.9)	38(17.8)	126(58.9)	44(20.6)	4(4-5)	0.4819	0.8017
DDFP07: We believe donor-funded procurement's success hinges on the laboratory's top management support	2(0.9)	7(3.3)	26(12.1)	119(55.6)	60(28.0)	4(4-5)	0.5929	0.7900
DDFP08: We know that the top management must instil an organisation culture which supports public health medical laboratory success	2(0.9)	3(1.4)	29(13.6)	115(53.7)	65(30.4)	4(4-5)	0.5419	0.7978
DDFP09: We know the top laboratory management creates synergies with the donor community, which is compatible with the laboratory systems	0(0)	5(2.3)	37(17.3)	113(52.8)	59(27.6)	4(4-5)	0.6135	0.7885
DDFP10: We need the distance between top management and staff to be shortened for the good of the public medical laboratory system	4(1.9)	0(0)	35(16.4)	99(46.3)	76(35.5)	4(4-5)	0.5054	0.8009

Table 4.6 shows the results 44.9% (n=96) the respondents agree that we need a lead donor for harmonisation of all donor procurement, 43.9% (n=94) of the respondents agree that we need a lead donor who collaborate with other donors and public health medical laboratory services, 47.2% (n=101) of the participants agree that we need communication channel between the donor community and MoHCC to be simplified for quick feedback, 45.3% (n=97) of the respondents agree that we need clarification of all donor-funded procurement from the lead donor and 42.5% (n=91) of the respondents agree that we are not aware/aware of the donor-funded procurement spending, 58.9% (n=126) of the participants agree that we acknowledge the laboratory's top management support for donor-funded procurement, 55.6% (n=119) of the respondents agree that we believe donor-funded procurement's success hinges on laboratory's top management support, 53.7% (n=115) of the respondents agree that we know that the top management must instil organisation culture which support public health medical laboratory success, 52.8% (n=113) of the respondents agree that we know the top laboratory management creates synergies with the donor community which is compatible with the laboratory systems and 46.3% (n=99) of the participants agree that we need the distance between top management and staff to be shortened for the good of the public medical laboratory system. The frequency and descriptive results were confirmed by the median (IQR). The factor loadings were estimated for each item and ranged from 0.3822-0.6633 showing a good item contribution to the construct except for the variables that are less than the accepted 0.50. The item reliability coefficients (alpha (α)) range from 0.7884 to the highest of 0.8121.

4.9 To examine the moderating effect of government policy on donor-funded procurement of public health medical laboratories

Table 4.7 shows the frequency, percentages, median, factor loading, and alpha results for a government policy's effects on donor-funded public health medical laboratories procurement.

Table 4.7: Frequency, descriptive, median, factor loading, and the alpha on the effects of government policy on donor-funded procurement.

Statement	Strongly Disagree n(%)	Disagree n(%)	Neutral n(%)	Agree n(%)	Strongly Agree n(%)	Median (IQR)	Factor loading	Alpha
GP01: We need government policy to motivate donor support	5(2.3)	6(2.8)	39(18.2)	94(43.9)	69(32.2)	4(4-5)	0.03270	0.8133
GP02: We believe government policy promotes donor-funded procurement in the public health medical laboratory services	2(0.9)	13(6.1)	47(22.0)	89(41.6)	63(29.4)	4(3-5)	0.13338	0.7725
GP03: We trust the government policy helps to curb corruption in the procurement process for all supported public health medical laboratory services.	6(2.8)	13(6.1)	53(24.8)	84(39.3)	58(27.1)	4(3-5)	0.17982	0.7721
GP04: We know government policy is a tool that influences support of recruitment of qualified employees	2(0.9)	11(5.1)	32(15.0)	111(51.9)	58(27.1)	4(4-5)	0.23747	0.7619
GP05: We know that government policy can be used to set attractive salaries to avoid brain drain.	6(2.8)	9(4.2)	37(17.3)	108(50.5)	54(25.2)	4(4-5)	0.16498	0.7657
GP06: We accept that donor-funded procurement can be frustrated by unfavourable government policy	3(1.4)	2(0.9)	34(15.9)	101(47.2)	74(34.6)	4(4-5)	0.12421	0.7790
GP07: We believe that procurement policy direction comes from consistent government policy	1(0.5)	11(5.1)	45(21.0)	105(49.1)	51(23.8)	4(3-4)	0.17880	0.7642
GP08: We know that government policy may foil/support collaborations between the public health laboratory and donors	1(0.5)	2(0.9)	37(19.3)	114(53.3)	60(28.0)	4(4-5)	0.16206	0.7694
GP09: We believe that government policy influences the harmonisation of equipment used in the public health laboratory	2(0.9)	4(1.9)	50(23.4)	109(50.9)	49(22.9)	4(3-4)	0.11042	0.7838
GP10: We know donor-funded procurements may flourish due to supportive government policy.	0(0)	3(1.4)	37(17.3)	116(54.2)	58(27.1)	4(4-5)	0.10222	0.7853

Table 4.7 show that 43.9% (n=94) of the respondents agree that we need government policy to motivate donor support, and 41.6% (n=89) of the respondents agree that we believe government policy promotes donor-funded procurement in the public health medical laboratory services. 39.3% (n=84) of the respondents agree that we trust the government policy helps to curb corruption in the procurement process for all supported public health medical laboratory services, 51.9% (n=111) of the respondents agree that we know government policy is a tool that influences support of recruitment of qualified employees, 50.5% (n=108) of the participants agree that we are aware that government policy can be used to set salaries that are attractive to avoid brain-drain, 47.2% (n=101) of the respondents agree that we accept that donor-funded procurement can be frustrated by unfavourable government policy, 49.1% (n=105) of the respondents agree that we believe that procurement policy direction comes from

consistent government policy, 53.3% (n=114) of the participants agree that we know that government policy may foil/support collaborations between the public health laboratory and donors, 50.9% (n=109) of the respondents agree that we believe that government policy influences harmonisation of equipment used in the public health laboratory and 54.2% (n=116) of the respondents agree that we know that donor-funded procurements may flourish due supportive government policy. The same results were confirmed by median (IQR) results. The factor loadings were estimated for each item and ranged from 0.0270-0.23742 and are not showing a good item contribution to the construct. The item reliability coefficients (alpha (α)) range from 0.7619 to the highest of 0.8133.

4.10 To propose a framework for effective donor-funded procurement for public health medical laboratory services in Zimbabwe.

Table 4.8 shows the statistical results for the test run for the effective donor-funded procurement of medical laboratory services in Zimbabwe.

Table 4.8: Frequencies, percentages, median, and alpha of the effective donor-funded procurement

Statement:	Strongly Disagree n(%)	Disagree (n(%)	Neutral n(%)	Agree n(%)	Strongly Agree n(%)	Median (IQR)	Factor Loading	Alpha
EDFP01: I understand pre-donation planning process impacts effective donor-funded procurements	6(2.8)	8(3.7)	31(14.5)	108(50.5)	61(28.5)	4(4-5)	0.7906	0.8435
EDFP02: I believe the donation requirement process improves donor-funded procurements	4(1.9)	6(2.8)	40(18.7)	109(50.9)	55(25.7)	4(4-5)	0.7243	0.8385
EDFP03: I believe establishing the donation recipient preparation process makes donor-funded procurement easier.	3(1.4)	5(2.3)	41(19.2)	107(50.0)	58(27.1)	4(4-5)	0.7121	0.8355
EDFP04: I understand donation implementation process increases donor-funded	0	3(1.4)	40(18.7)	116(54.2)	55(25.7)	4(4-5)	0.6008	0.8359

procurement effectiveness.								
EDFP05: I believe the determinants of donor-funding improve donor-funding procurement effectiveness.	1(0.5)	4(1.9)	41(19.2)	110(51.4)	58(27.1)	4(4-5)	0.5664	0.8352
EDFP06: I understand that donor-funded procurements' operational efficiency can be achieved by developing a procurement framework for public health medical laboratories.	0	6(2.8)	28(13.1)	106(49.5)	74(34.6)	4(4-5)	0.5427	0.8334
EDFP07: I understand medical laboratory systems affect effective donor-funded procurement	1(0.5)	4(1.9)	26(12.1)	120(56.1)	63(29.4)	4(4-5)	0.4484	0.8312
EDFP08: I believe medical laboratory testing capacity may impact positively effective donor-funded procurement.	1(0.5)	6(2.8)	33(15.4)	120(56.1)	54(25.2)	4(4-5)	0.1172	0.8310
EDFP09: I understand that the public health care priority influences the donor-funded procurement process	1(0.5)	10(4.7)	34(15.9)	113(52.8)	56(26.2)	4(4-5)	0.0764	0.8350
EDFP10: I understand that the medical laboratory testing systems are impacted positively by donor-funded procurement	1(0.5)	6(2.8)	22(10.3)	113(52.8)	72(33.6)	4(4-5)	0.2298	0.8412

Table 4.8 shows 50.5 (n=108) of the respondents agree that they understand the pre-donation planning process impacts effective donor-funded procurements, 50.9 (n=109) of the respondents agree that they believe the donation requirement process improves donor-funded procurements, 50.0% (n=107) of the respondents agree that they believe that the establishment of donation recipient preparation process makes donor-funded procurement easier. 54.2% (n=116) of the participants agree that they understand the donation implementation process increases donor-funded procurement effectiveness, and 51.4% (n=110) of the respondents

agree that they believe the determinants of donor-funding improve donor-funding procurement effectiveness.

Additionally, 49.5% (n=106) of the respondents agree that they understand donor-funded procurements operational efficiency can be achieved through the development of a procurement framework for public health medical laboratories, 56.1% (n=120) of the participants agree that they understand medical laboratory systems affect effective donor-funded procurement and the same number of participants agree that they believe medical laboratory testing capacity may impact positively on effective donor-funded procurement. 52.8% (n=113) of the respondents agree that they understand that the public health care priority influences the donor-funded procurement process. The same number of respondents agree that they understand that the medical laboratory testing systems are positively impacted by donor-funded procurement. The same results were confirmed using the median (IQR). The factor loadings were estimated for each item and ranged from 0.0764-0.7906, showing a good item contribution to the construct. The item reliability coefficients (alpha (α)) range from 0.8310 to the highest of 0.8435.

4.11 Effectiveness of Donor- Funded procurement

Table 4.9 and figure 4.1 show the effectiveness of the donor-funded procurement in laboratory services based on the participant's responses to the construct items. Based on the score calculations ranging from 10-50 in each construct with a reference point of 25 and the middle mark, all the variable's scores were above the reference point, which showed that the donor-funded procurement in laboratory services is considered to be effective. The median scores in all domains were above 25, and all domains had a maximum score of 50 which shows that the donor-funded procurement in laboratory services was considered effective.

Table 4.9: Donor Funding Effectiveness

Statistics	PDRP	DRP	DRPP	DIP	DDFP	GP	EDFP
MIN	10	18	20	23	23	24	25
MAX	50	50	50	50	50	50	50
p50	36	39	38.5	40	40	40	40
p25	31	35	34	36	36	35	37
p75	40	44	41	43	44	43	44

Figure 4.7 illustrates the Box and whisk graph, which explains the effectiveness of the objectives of the study.

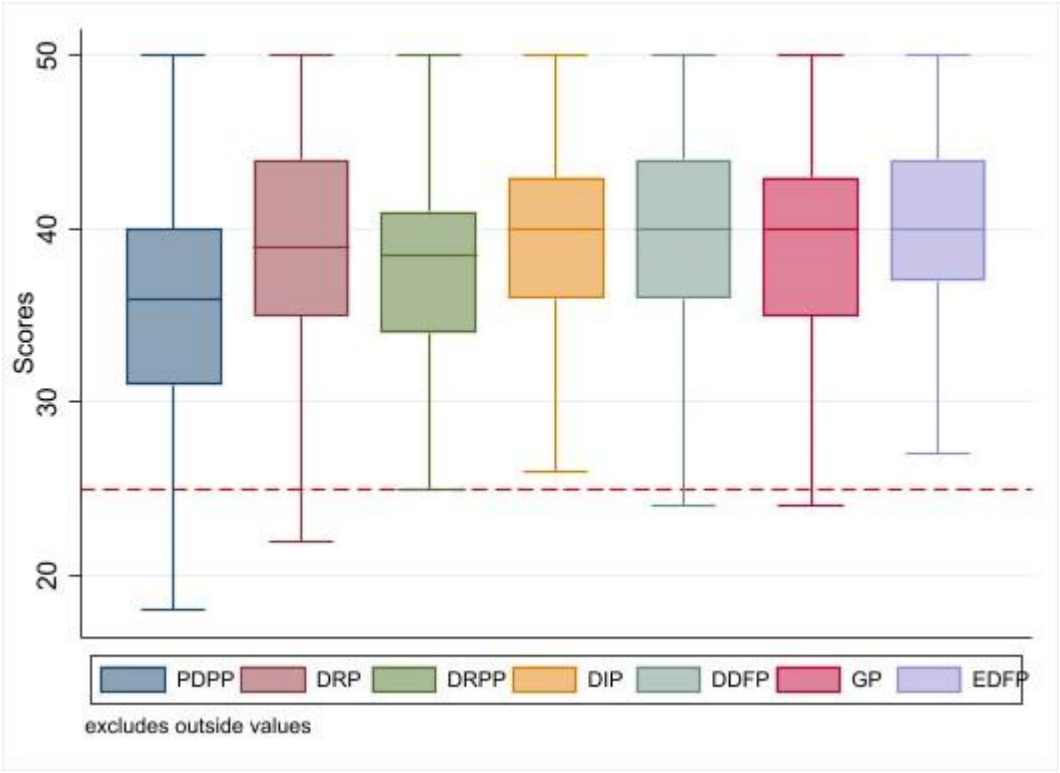


Figure 4.19: Box and whisker

Figure 4.7 shows a box and a whisker, which represents the seven domains of the effectiveness of the objectives under study according to responses from the respondents. Figure 4.7 is interpreted with table 4.9, showing the effectiveness based on a score calculation range of 10-50, the lower interquartile, middle interquartile, and upper interquartile range.

4.12 Structural Equation Modeling

Structural equation modelling is a tool that is used for data analysis to verify complex phenomena, and it formalises the structural relationships that exist in the areas of any interest (Edwards, 2009; Iacobucci, 2010; Tribhuvan Shrestha, 2021) and in this case in the development of a sustainable framework for improved operational efficiency in donor-funded procurements in the Zimbabwean public health medical laboratory services. However, after producing the structural equation model in Figure 4.8, the next stage for the researcher was to examine the hypotheses (H1-H4, H5a-d - H8a-d). The researcher used the STATA to find the constructs' relationships among the variables. The endogenous variables observed by SEM are Effective Donor-Funded Procurement (EDFP) and Determinants of Donor-Funded Procurement (DDFP). The same observed Pre-donation Preparation Process (PDPP), Donation Requirement Process (DRP), Donation Implementation Process (DIP), and Government Policy (GP) as the endogenous variables. The structural equation model measured the data using the maximum likelihood estimation method. The maximum likelihood method was chosen because it is known to be more accurate in its measurement and produces relatively accurate parameters for estimates under conditions of non-normality (Finch, West & Mackinnon, 1997). In addition to the above, observations with missing values were excluded from the model. The researcher determined the coefficient variables at a 95% confidence interval and the p-values for the direct, indirect, and total effects.

Table 4.10 and Figure 4.8 present the direct, indirect, and total effects of the main domains and the demographics of the respondents from the structural equation model for EDFP and DDFP as a mediator. Table 4.10 shows the direct effects, indirect effects, and total effects of the structural equation model with a 95% confidence interval (Coef (95%CI)) and p-values= < 0.001 to be significant. However, the research found that the relationship between the *pre-*

donation preparation process and effective donor-funded procurement (β=0.11, p < 0.094) and *donation requirement process* (β=0,025, p < 0.732), *donation implementation process* (β =0.024, p < 0.168) and *government policy* (β =0.086, p < 0.206), all these results are not relevant. The results further reveal that the *donation recipient preparation process* (β =0.062, p < 0.010) and *determinants of donor-funded procurement* (β = 0.021, p < 0.000) are all two variables with a positive effect on *effective donor-funded procurement.*

Table 4.10: Direct Effects, Indirect Effects, and Total Effects

		Direct effects		Indirect effects		Total effects	
	No of questionnaires dimensions	**Coeff (95%CI)**	**P-value**	**Coeff (95%CI)**	**P-value**	**Coeff (95%CI)**	**P-value**
PDPP							
GP	10	0.147 (0.008 to 0.286)	0.038			0.147 (0.008 to 0.286)	0.000
DDFP							
PDPP	10	-0.062 (-0.184 to 0.060)	0.320			-0.062 (-0.184 to 0.060)	0.320
DRP	10	0.268 (0.137 to 0.400)	0.000			0.268 (0.136 to 0.400)	0.000
DRPP	10	0.271 (0.131 to 0.411)	0.000			0.271(0.131 to 0.411)	0.000
DIP	10	0.149 (0.018 to 0.282)	0.026			0.149 (0.018 to 0.282)	0.026
GP	10		-	0.141(0.076 to 0.205)	0.000	0.141 (0.077 to 0.205)	0.000
EDFP							
PDPP	10	-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	10		0.000				0.004
DRP	10	0.212 (0.066 to 0.358)	0.732		0.020	0.212 (0.066 to 0.358)	0.252
DRPP	10		0.010	0.057 (0.008 to 0.105)	0.023		0.001
DIP	10	0.025 (-0.116 to 0.165)	0.168		0.080	0.082 (-0.058 to 0.221)	0.071
GP	10	0.194 (0.046 to 0.343)	0.206	0.057 (0.008 to 0.107)	0.006	0.252 (0.104 to 0.399)	0.015
		0.097 (-0.041 to 0.235)		0.031 (-0.003 to 0.067)		0.129 (-0.011 to 0.268)	
		0.086 (-0.047 to 0.219)		0.080 (0.023 to 0.136)		0.166 (0.032 to 0.299)	
DRP							
GP	10	0.237 (0.104 to 0.369)	0.000			0.237 (0.105 to 0.369)	0.000
DRPP							
GP	10	0.217 (0.087 to 0.348)	0.001			0.218 (0.087 to 0.348)	0.001
DIP							
GP	10	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 standardized estimates

4.12.1 Direct effects of the domains

The results show the domain's effect on the pre-donation planning process (PDPP). As the government policy (GP) increases by one score, there is a 0.147 (95%CI = 0.008-0.286) statistically significant direct increase in the PDPP score (p-value= 0.038). The results show the domain determinants of donor-funded procurement's (DDFP) effect on PDPP. As the PDPP increases by one score, there is a -0.062 (95%CI = -0.184-0.060) not statistically significant direct increase in the DDFP score (p-value= 0.320). Further results show the direct effect of the donation requirement process (DRP) on DDFP. As the DRP increases by one score, there is a 0.268 (95%CI=0.137-0.400) statistically significant direct increase in the DDFP score (p-value=0.000). The results further broadcast the donation recipient preparation process (DRPP) effect on DDFP. As the DRPP increases by one score, there is a 0.271 (95%CI=0.131-0.411) statistically significant direct increase in the DDFP score (p-value= 0.000). The results again show the direct effects of the donation implementation process (DIP) on DDFP. As the DIP increases by one score, there is a 0.149 (95%CI= 0.018-0.282) statistically significant direct increase in the DDFP score (p-value = 0.026).

The results further state no direct effect between effective donor-funded procurement (EDFP) and PDPP. As the PDPP increases by one score, there is a 0.108 (95%CI: 0.235-0.018) no statistically significant direct increase in the EDFP score (p-value=0.094). As the DDFP increases by one score, there is a 0.212 (95%CI: 0.066-0.354) statistically significant direct increase in the EDFP (p-value=0.000). As the DRP increases by one score, there is a 0.025 (95%CI: -0.116-0.165) not statistically significant direct increase in the EDFP score (p-value=0.732). As the DRPP increases by one score, there is a 0.194 (95%CI: 0.046-0.343) statistically significant direct increase in the EDFP score (p-value =0.010). As the DIP increases by one score, there is a 0.097 (95%CI: -0.041-0.235) not statistically significant direct increase in the EDFP score (p-value = 0.168). As the GP increases by one score, there is a

0.086 (95%CI: -0.047-0.206) not statistically significant direct increase in the EDFP score (p-value = 0.348). As the GP increases by one score, there is a 0.237 (95%CI: 0.104-0.369) statistically significant direct effect on the DRP score (p-value =0.000). As GP increases by one score, there is a 0.217 (95%CI: 0.087-0.348) statistically significant direct effect on the DRPP score (p-value =0.001). As the GP increases by one score, there is a 0.183 (95%CI: 0.057-0.311) statistically significant direct effect on the DIP score (p-value =0.004).

4.12.2 Indirect/Mediated effects

The results show the indirect effect of GP on DDFP. As the GP increases by one score, there is a 0.141 (95%CI: 0.076-0.206) statistically significant indirect effect on the DDFP score (p-value = 0.000). The results further show the indirect effects of PDPP on EDFP. As the PDPP increases by one score, there is a -0.013 (95%CI: -0.041-0.014) statistically insignificant indirect effect on the EDFP score (p-value = 0.348). The indirect effect of DRP on EDFP. As the DRP increases by one score, there is a 0.057 (95%CI: 0.008-0.105) statistically significant indirect effect on the EDFP score (p-value = 0.020). As the DRPP increases by one score, there is a 0.057 (95%CI: 0.008-0.107) statistically significant indirect effect on the EDFP score (p-value =0.023). As the DIP increases by one score, there is a 0.031 (95%CI: -0.003-0.067) statistically insignificant indirect effect on the EDFP score (p-value = 0.080). Furthermore, the results show the indirect effect of GP on EDFP. As the GP increases by one score, there is a 0.080 (95%CI: 0.023-0.136) statistically significant indirect effect on the EDFP score (p-value = 0.006).

4.12.3 Total Effects of the research domains

The total effects which were statistically significant were those for the GP on PDPP domains. As the GP increases by one score, there is a 0.147 (95%CI: 0.008-0.286) statistically significant total effect increase in the PDPP score (p-value=0.000). As the DRP increases by one score,

there is a 0.268 (95%CI: 0.136-0.400) statistically significant total effect increase in the DDFP score (p-value=0.000). As the DRPP increases by one score, there is a 0.271 (95%CI: 0.131-0.411) statistically significant total effects increase in the DDFP (p-value = 0.000). As the DIP increases by one score, there is a 0.149 (95%CI: 0.018-0.282) statistically significant total effect increase in the DDFP score (p-value = 0.026). As the GP increases by one score, there is a 0.141 (95%CI: 0.077-0.205) statistically significant total effect in the DDFP score (p-value = 0.000). As the DDFP increases by one score, there is a 0.212 (95%CI: 0.066-0.358) statistically significant total effect on the EDFP score (p-value = 0.004). As the DRPP increases by one score, there is a 0.252 (95%CI: 0.104-0.399) statistically significant total effect on the EDFP score (p-value = 0.001). As the GP increases by a score, there is a 0.166 (95%CI: 0.032-0.299) statistically significant total effect on the EDFP score (p-value = 0.015).

4.13 Government policy (GP) plays a moderating role

The results show the relationship of moderated effects for the study, and the moderator was the government policy (GP) on the pre-donation planning process (PDPP), donation requirement process (DRP), Donation recipient preparation process (DRPP), and donation implementation process (DIP). However, the results show that as the GP increases with one score, there is a 0.147 (95%CI: 0.008-0.286) statistically significant moderated effect on the PDPP score (p-value = 0.038). Furthermore, as the GP increases by one score, there is a 0.0237 (95%CI: 0.104-0.369) statistically significant moderated effect on the DRP score (p-value = 0.000). As the GP increases in the score, there is a 0.217 (95%CI: 0.087-0.348) statistically significant moderated effect on the DRPP score (p-value = 0.001). Further results show that as GP increases by one score, there is a 0.183 (95%CI: 0.057-0.311) statistically significant moderated effect on the DIP score (p-value = 0.004).

Figure 4.8 shows a pathway for the direct effect, indirect effect, and total effect of the main domains/variables of this study. Additionally, figure 4.8 speaks to the hypotheses of this study which are examined below.

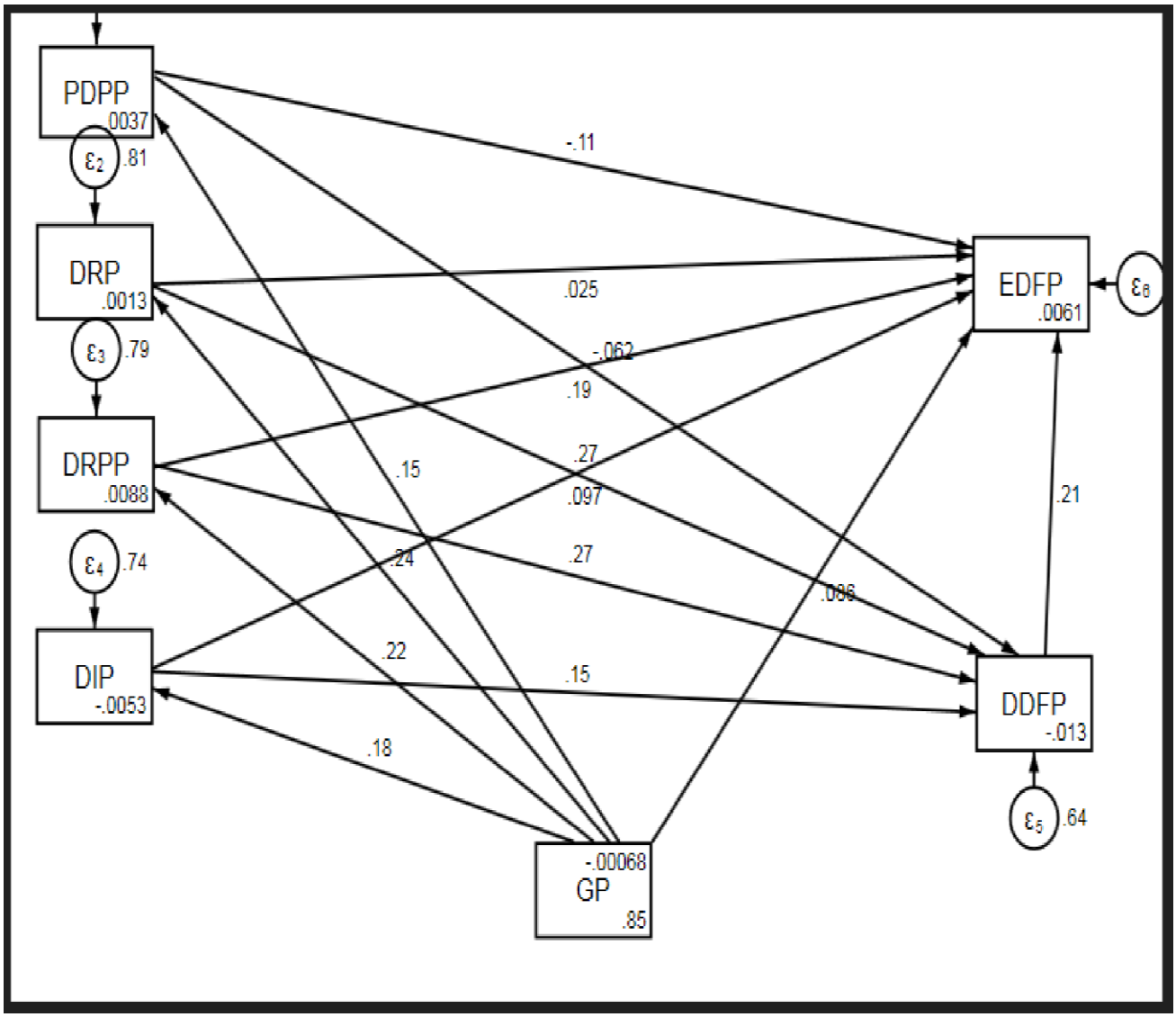


Figure 4.20: Structural Equation Pathway

As shown in figure 4.8, the structural model provides and defines the causal relationships and association between observed endogenous variables and the exogenous observed variables. The arrow depicts the researcher's hypotheses that the variables are causally related. The correlation coefficient measures the association of observed and measured variables. However,

the correlation coefficient values should be between 0 and 1 to significantly influence the relationship between variables (Edwards, 2009; Sardeshmukh & Vandenberg, 2017).

4.14 Hypotheses testing for the study

Here the researcher will use the analysed data to confirm or refute the claims made by the researcher in chapter 2 of this thesis.

4.14.1 *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 has a direct relationship with the effectiveness of donor-funded procurement. The results, as shown in table 4.10 and figure 4.8, confirms 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.

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

According to table 4.10 and figure 4.8 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 researcher 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.

4.14.3 *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 (β = -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.

4.14.4 *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 (β =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 (β = 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.

4.14.5 *H5: Mediating effects of Determinants of donor-funded procurement*

The determinants of donor-funded procurement (DDFP) (β =0.19, st/e =0.59) is an endogenous variable and directly affects the exogenous variable, as shown in Table 4.10 and Figure 4.8. The DDFP has become the mediating variable for exogenous variables and plays an important role. Hypotheses (H5a-H5d) are paramount in this study as they mediate between the independent and dependent variables. As seen in figure 4.8, PDPP has a mediated effect EDFP (β =0.19, p-value =0.348) and also shows the standardised indirect effect was 0.013(0.092 - 0.014) was the estimated range of the confidence interval measured at 95% and the results reject (H5a) for the alternative. The results further noted that DRPP (β = 0.097, p-value = 0.020) has an indirect/mediated effect on EDFP and also shows the unstandardised indirect effect was 0.057 and 0.008 - 0.105 was the estimated range of the confidence interval measured at 95% and results were positive and rejected the alternative in support of (H5b). It has been further established that DRPP (β = 0.27, p-value =0.023) has an indirect effect on EDFP and the standardised indirect effect was 0.057, and the estimated range of the confidence interval

measured at 95% was 0.008 - 0.107, and the results show that the mediated effect was positive and support (H5c). Furthermore, the results further revealed that the indirect effect of DIP (β =0.15, p-value = 0.080) through DDFP was 0.031, and an estimated range of the confidence interval measured at 95% was -0.003-0.067 and the p-value= 0.080, though the result was positive but insignificant. Hence the result rejects (H5d) for the alternative. Although this result was not measured hypothetically in this research, the mediated results further reveal that GP has a positive effect on EDFP through DDFP was 0.080, and an estimated range of the confidence interval measured at 95% was 0.023-0.136 and a p-value = 0.006.

4.14.6 *H6: The determinants of donor-funded procurement (DDFP) have a relationship with the pre-donation planning process (PDPP), donation requirement process (DRP), donation recipient preparation process (DRPP), and donation implementation process (DIP).*

The determinants of donor-funded and expected procurement functions have a relationship (H6a-d). Table 4.10 and Figure 4.8 show PDPP and DDFP's (β=0.19, p-value = 0.320) relationship is not statistically significant. The standardised direct coefficient for this study at 95% confidence interval was calculated and found to be 0.062, and the p-value =0.320, and the estimated confidence interval range measured at 95% was -0.184 to 0.060 which shows a negative result, therefore, rejecting the (H6a) and support the alternative. Additionally, the standardised direct coefficient for (H6b) revealed DRP's direct effect on DDFP (β=0.086, p-value=0.000) and the measured confidence interval was found to be 0.268, and the estimated confidence interval at 95% was 0.137-0.400. The positive results support (H6b) and reject the null hypothesis. Furthermore, the DRPP (β=0.27, p =0.000) for the direct relationship and the total direct relationship (β=0.062 p-value =0.00) and measured confidence interval was found to be 0.271, and an estimated confidence interval at 95% was 0.131-0.411, and for total effect, the measured confidence interval was 0.271, and estimated confidence interval at 95% was 0.131-0.411. The results support the (H6c) since it's positive and rejects the null hypothesis.

DIP (β = 0.15, p-value = 0.026) has a direct effect on DDFP as favoured by the measured confidence interval at 95%, which was found to be 0.149 and the estimated confidence interval was 0.018 - 0.282, of which the results are positive and favours H6d and rejects the alternative hypothesis. Furthermore, the results reveal that there is also an indirect relationship that exists between GP and DDFP. However, the result was not hypothesised; GP influences DDFP. The results show that the indirectly estimated confidence interval was 0.141, and the estimated measured confidence interval range was 0.076 - 0.205, measured at a 95% confidence interval and a p-value = 0.000, which was significant. Therefore, the indirect relationship between GP and DDFP was found to be statistically significant.

4.14.7 *H7: The determinants of donor-funded procurement direct positive relationship with effective donor-funded procurement*

The hypothesis (H7) states a positive relationship exists between DDFP and EDFP (β = 0.21, p-value=0.000). The results, as shown in Table 4.10 and Figure 4.8, confirms that the unstandardized direct effect between EDFP and DDFP was found to be 0.212 and the calculated estimated range of confidence interval at 95% was 0.066-0.358, and the p-value = 0.000, which means there is a significant relationship that exists between the two variables. Furthermore, the unstandardized total direct effect between EDFP and DDFP was found to be 0.212. The calculated estimated range of confidence interval at 95% was 0.066 -0.358, and the p-value = 0.004. Once again, the direct relationship is also significant, and therefore, the results support (H7) and rejects the alternative hypothesis.

4.14.8 *Moderation role of Government Policy*

The hypothesis (H8a) states that government policy moderates the relationship between the pre-donation planning process and effective donor-funded procurement. The PDPP (β=0.15, p-value= 0.038) and measured direct effect between PDPP and EDFP were found to be 0.147, and the calculated estimated range of confidence interval at 95% was 0.008-0.286, and the total

direct effect between the variables (β=0.086, p-value=0.000) and the calculated estimated confidence interval at 95% was found to be 0,147, and estimated confidence interval range was 0.008-0.286, a positive result and support (H8a) and rejected the alternative hypothesis.

Additionally, hypothesis (H8b) states that government policy moderates the relationship between DRP and EDFP. DRP (β=0.24, p-value=0.000) and measured direct effect was 0.237. The calculated estimated range of confidence interval at 95% was 0.104-0.369; the total effect measured confidence interval at 95% was 0.237; the estimated measured confidence interval range was 0.105-0.369, and p-value=0.000. This result is positive, there for support (H8b), and rejects the alternative. Furthermore, the DRPP (β=0.24, p-value=0.001) and the measured confidence interval at 95% were found to be 0.217, and the calculated estimated confidence interval range was 0.087-0.348 and the same with total effect with a p-value = 0.001, a result which is positive and therefore supports the notion that GP (H8c) moderate the relation with DRPP and rejects the alternative. Additionally, the DIP (β=0.18, p-value=0.004) and the measured confidence interval at 95% was 0.183. The estimated, calculated confidence interval range was 0.057-0.311. The total effect has the same results, a p-value-0.004, which is positive and support (H8d) and rejects the alternative and confirms the hypothesis.

4.14.9 Summary of Hypotheses results

Table 4.11 shows the tested hypotheses and results, which state whether the hypothesis is positive (supported) or negative (not supported).

Table 4.11: Hypotheses table results

Hypotheses	**p-value**	**remarks**
H1: Pre-donation Planning Process (PDPP) has a direct relationship with Effective Donor-funded Procurement (EDFP)->>>>	0.094	Not supported
H2*: The donation requirement process (DRP) has a direct relationship with effective donor-funded procurement (EDFP) ->>>>>*	0.732	Not supported
H3: The donation recipient planning process (DRPP) has a positive relationship with effective donor-funded procurement (EDFP).	0.010	supported

H4: The donation implementation process (DIP) has a positive direct relationship with effective donor-funded procurement->>>>	0.168	Not supported
H5a: Determinants of donor-funded procurement positively mediate the relationship between the pre-donation Planning process and effective donor-funded procurement.	0.348	Not supported
H5b: The relationship between the donation requirement process and effective donor-funded procurement is mediated by the determinant of donor-funded procurement	0.020	Supported
H5c: Determinants of donor-funded procurement positively mediate the relationship between donation recipient preparation process and effective donor-funded procurement->>>>	0.023	Supported
H5d: The relationship between the donation implementation process and effective donor-funded procurement is mediated by the determinants of donor-funded procurement	0.080	Not supported
H6a: Determinants of donor-funded procurement directly affect pre-donation planning process->>>>	0.320	Not supported
H6b: Determinants of donor-funded procurement have a positive relationship with the donation requirement process->>>>	0.000	Supported
H6c: There is a direct relationship between the donation recipient planning process and determinants of donor-funded procurement->>>>	0.000	Supported
H6d: Determinants of donor-funded procurement and donation implementation process are directly related->>>>	0.026	supported
H7: The determinants of donor-funded procurement direct positive relationship with effective donor-funded procurement->>>>	0.000	Supported
H8a: Government policy positively moderates the relationship between the pre-donation planning process and the effectiveness of donor-funded procurement->>>>	0.038	supported
H8b: The relationship between the donation requirement process and effective donor-funded procurement is moderated by government policy->>>>	0.000	supported
H8c: The donation recipient preparation process and effective donor-funded procurement relationship is moderated by government policy->>>>	0.001	Supported
H8d: The government policy moderates the relationship between donation implementation and effective donor-funded procurement->>>>	0.004	Supported

4.2 INTERPRETATION OF QUALITATIVE RESULTS

4.2. 1 Analysis of Interviews

The researcher adds to the findings and closes any gaps in the quantitative method. This approach or technique looks more likely to give more information and detailed revelations, and objectives 4 and 5 are covered by this qualitative approach. As the researcher had the time to interact with the participants, additional information was disclosed to fill in the gaps left by the

questionnaire, which is why qualitative research focuses on trying to comprehend the issue at hand more comprehensively than in a generalized approach. Interviews are viewed as the most important level of the research as it is embedded in individual experiences that support or refute the researcher′s claims. The data were coded into themes or ideas. Open coding organizes raw data to try and make sense using Microsoft Word (Gill, Stewart, Treasure & Chadwick, 2008). The researcher identified themes, patterns, and relationships from the data collected from the participants by scanning the primary data for words and phrases that the participants most use, and this researcher summarised the data by linking the research findings to the hypothesis and objectives (Dudovskiy, 2018). The themes were colour-coded using various colours according to the theme in the interview statements.

This section reflects on the results of the interviews conducted with the interviewees And it presents the analysis of their verbal responses during the interviews. The researcher noted the responses down, and some were recorded where it was possible to do so. Some could not be recorded due to data and network issues (interviewees′ side). However, the researcher was happy to have a telephone conversation with the participants and take notes for further analysis. The interviews were conducted to get first-hand information concerning the development of a sustainable procurement framework for improved operational efficiency in donor-funded procurements in the Zimbabwean Public Health Laboratory Services practices done by the funders as they support the laboratory services, and the researcher wanted to get the participants′ views and their experiences. This portion of the qualitative approach only covers objectives four and five. Other objectives were covered by the quantitative approach. Table 4.12 shows the profile of the interviewees in the qualitative part of this research.

Table 4.12 Profile of the interviewees

Factor	**Frequency**	**Percentage**
Expected interviews	**10**	
Number of interviews done	7	70,00
Interviews not done	3	30,00
Total		**100,00**
Gender of interviewee		
Female	3	42,86
Male	4	57,14
Total	**7**	**100,00**
Age Range		
21-30	1	14,29
31-40	1	14,29
41-50	1	14,29
51-60	3	42,86
60+	1	14,29
Total	**7**	**100,00**
Work Experience		
0-5years	1	14,29
6-10years	0	0,00
11-15years	1	14,29
16-20years	2	28,57
20+	3	42,86
Total	**7**	**100,00**
Qualifications of the respondents		
Diploma	0	0,00
Bachelor	1	14,29
Masters	6	85,71
PhD	0	0,00
Totals	**7**	**100,00**

Table 4.12 shows the profile of all the interviewees employed in the Ministry of Health and Child Care department of Laboratory Services as Provincial Laboratory Scientists. The expected interviews were with 10 participants. However, only seven interviews were done, which translates to 70%, and three interviews failed to take off due to the unavailability of the participants. The results further show that of the participants interviewed, 3 were females, and

4 were men. In terms of experience, the table further reveals that each participant was in the range of 0-5 years and 11-15years, 16-20 years range were 2 participants, and in the range of 20+ were 3 participants. This brings to 7 total number of those who participated in these interviews. This allowed the researcher to create themes on developing a sustainable procurement framework for improved operational efficiency in the donor-funded procurements in the Zimbabwean public health laboratory services.

Table 4.12 further points out the work experiences of the participants, which are concentrated on the high side, that is, those who have saved in the laboratory for a long time, as shown two are in the work experience range of 16-20 years and three are in the range of 20+ years of work service. Furthermore, the participants are educated; 1 has a bachelor′s degree, while 6 have a master′s degree.

4.2.2 Merged themes

The researcher identified themes, patterns, and relationships from the data collected from the participants by scanning the primary data for words and phrases that the participants and the following themes most used emerged, 1. Lack of coordination and collaboration, 2. Lack of funding, 3. Government policy, 4. Lack of transparency, 5. Unavailability of infrastructure. The participants were numbered in the form of F or M representing gender while PS representing provincial scientist, and numbers may be for an age range or work experience range as per the interview guide.

4.2.3 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 there is any guideline being used to manage these donors".*

Another **F/PS/5/5** echoed the same and said, *"...In terms of 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*."

4.2.4 Operational Effectiveness

Asked about what can be done to improve operational effectiveness for the laboratory for such diseases that cannot be tested in the public health systems. Effective 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** jokingly 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.*"

4.2.5 Government Policy

Asked about the government policy on donor-funded procurement and the 15% Abuja declaration, which the African governments agreed upon to support health activities. **F/PS/2/3** could not mince his words,

- "*Government policies are inconsistent and let us done in most circumstances, maybe it's due to corruption, "huhori hwandisa muhurumende umu" (corruption is too much in government), and since they are the custodian of the policies, they should be able to see that their policies are implemented for the good of the patients."*

F/PS/4/5 could say this,

"...but COVID-19 has been an eye-opener. Sometimes government releases some funds to buy the commodities, or sometimes you see trucks coming with COVID-19 PPEs to the hospitals for use. Even though things are not adequate, at least something is being done; it's a positive development for us and the country. Government policy should help to improve our

infrastructure, recruitment policy should be reviewed now and then according to international standards, should guide how the procurement should be done even with these donors who just do their work, there is no monitoring of activities…."

4.2.6 Donor spending, not transparency

Donor spending is one key area that remains critical in improving the operational efficiency of laboratory services. Transparency is one of the key pillars of organisational success. It is paramount that every dollar spent is known where it is used by whom and what results, as this increases effectiveness and accountability for good development outcomes (Barton et al., 2019; Blevins et al., 2022). Transparency is critical to aid effectiveness because, without transparency, there is no coordination to achieve maximum impact. In such a way, the procurement of goods and services aligns with the requirements of the laboratory services or the ministry at large to benefit the general populace that requires the services to be availed. Accordingly, **F/PS/5/5** here says,

"Donors should get the specifications from the laboratory and allow the lab to procure them on their own. Donors must not bring their procurement plan forward only to be endorsed by the lab services but should be agreed upon between the two and every dollar known where it goes; the laboratory should be involved from the onset to the final delivery of the commodities and the services, unlike the current scenario."

4.2.7 Procurement Processes

Again, the purchasing processes of goods and services the donors are key in finding lasting solutions to the challenges of funding the laboratory services face. Without good procurement processes, it would be impossible for laboratory services operations to function. The procurement management function ensures that all goods and services are properly acquired

and businesses proceed successfully and efficiently without hindrance (Lewis et al., 2011; Seto et al., 2006). It is regarded as one of the strategic functions of any business operation that brings profitability. However, the views of **M/PS/3/5** are as follows;

"*The donors provide more funding than the government; however, none is concerned about the procurement issues from the donor's side and no follow-ups are done from the Ministry's side. We only receive most commodities through the laboratory logistics unit meaning the donors would have procured, and we are not interested in their processes but in receiving the commodities on time since they are providing much support because the government funds go directly to the health institutions which is not enough to cater for the needed requirements.*"

M/PS/5/5 had nothing much to say but to indicate that the laboratory should be guiding the processes, and here is what the participant said;

"*I think the laboratory should be involved from specifications to the final delivery of goods and services.*"

4.3 CHAPTER SUMMARY

The researcher presented the results of the study. Firstly, the researcher presented the analysed results, starting with the descriptive and then the inferential for the quantitative research method. The structural equation modelling pathway and the associated measurements were presented, and the hypotheses proposed in chapter 2 were presented. In the second phase, the analysis and presentation of qualitative research results were done using Microsoft word, codes provided (see appendix 3), the themes that came out of the analysis, and the participants' views were presented. The results of this study are discussed in the next coming chapter.

CHAPTER 5

DISCUSSION OF THE STUDY RESULTS

5.1 INTRODUCTION

The study sought to develop a sustainable procurement framework for improved operational efficiency in Donor-funded procurements in the Zimbabwean public health medical laboratory services. This chapter focuses on discussing the outcome of the results presented in the previous chapter considering the research objectives and the hypotheses. Furthermore, the researcher discusses the results considering the literature-related findings, the theoretical implications, and the proposed areas for further research at the end of this chapter.

5.2 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.

5.3 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 mobilization" (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.

5.4 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 organizational 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).

5.5 THE EFFECT OF THE DONATION IMPLEMENTATION PROCESS ON THE EFFECTIVENESS OF DONOR-FUNDED PROCUREMENT SYSTEMS IN ZIMBABWE

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.

5.6 THE MEDIATION ROLE OF DETERMINANTS OF DONOR-FUNDED PROCUREMENT

This objective sought to determine the determinants of donor-funded procurement for public health medical laboratories in Zimbabwe. This researcher provided hypotheses (H5a – H5d) for testing the mediated relationship between donor-funded procurement's determinants and the expected procurement function. However, the hypothesis measurement was done based on the domain using structural equation modelling and the results for (H5a, $\beta = 0.19$, p-value = 0.348) and H5d, ($\beta = 0.15$, p-value = 0.080) are not supported while (H5b, $\beta = 0.097$, p-value = 0.020), and H5c, ($\beta = 0.27$, p-value = 0.023) are supported. However, (H5d) is positive but insignificant in influencing the relationship. This means that the determinants of donor-funded procurement, such as coordination, visibility of donor fund spending, top leadership support, and good recruitment policies, provide and support effective donor-funded procurement. The study results agree that the lead donor, top management leadership support, personnel recruitment and selection, visibility of spending, and logistics management of laboratory commodities were some of the noted determinants that have a positive effect on effective donor-funded procurement, even though (H5a and H5d) are not supported (Rope-Ross, 2000; Watkins & Wulaningsih, 2020; Tsai et al., 2022).

The results further support the earlier literature, which states that determinants are factors, conditions, or characteristics that have a significant impact on making the system or project

work when properly managed, sustained as well as maintained and are considered key ways to improve the effectiveness of projects (Milosevic & Patanakul, 2005; Chan et al., 2004; Moeuf et al., 2020). Furthermore, according to JICA's (2013) report, there should be a collaboration between the MoHCC's laboratory services and the donors who support the laboratory services for better service delivery, which further disputes the results of an earlier study in terms of collaborations.

The results further disregard (H5a and H5d), where the mediating variable shows that there is no correlation between the two mediated variables, the literature on the visibility of spending as a determinant of donor-funded procurement which states that donors and the laboratory's visibility of spending bring transparency, knowing who is spending, how much is being spent, and on what (Bushell, 2004). Additionally, ownership and responsibilities must be assigned to spend, whether to individuals or units (Kanakamedala et al., 2003; Seetharaman et al., 2020). According to Bushell (2004) and Croom (2000), the procurer needs to have visibility on spending, which brings benefits such as an audit trail in the system, planning, and budget optimization. The laboratory and the donors will understand the spending patterns, maximize buying power, make informed sourcing and supplier management decisions, and raise supplier performance. The results sit well with the Agency theory, which postulates that divergent interests' further strain the relationship between the agent and the principal, and the principal always has imperfect information about the agent's performance or contribution (Bosse & Phillip, 2016).

Accordingly, where the relationship is positively mediated, like in (H5b and H5d), the results of this study further support the research by Osborne and Hammoud (2017) researched this subject matter and discovered that US corporations alone are losing over $350 billion per year due to disengaged employees who end up not motivated to work for the corporations and disengaged employees cost an organisation money per any given year. Top management in an

organization and the distance between the staff and the top management should be short for system improvement; the top management's responsibility is to support and instil organizational culture, values, and principles, creating synergies and compatibility between them (Foster, 1978; Yaacob, Baroto, Kamarudin & Arifin, 2019). The results revealed how important it is for the determinants of donor-funded procurement in improving laboratory performance.

5.7 DIRECT RELATIONSHIP BETWEEN DETERMINANTS OF DONOR-FUNDED PROCUREMENT AND EFFECTIVE DONOR-FUNDED PROCUREMENT

The objective was to examine the influence of the determinants of donor-funded procurement on effective donor procurement. The hypothesis (H7) evaluated the correlation between the factors influencing donor-funded and effective donor-funded procurement. However, the results supported that the relationship exists as provided by the direct effect ($\beta = 0.21$, p-value = 0.000) and total effect (p-value = 0.004). The study results further agree that the lead donor, top management leadership support, personnel recruitment and selection, visibility of spending, and logistics management of laboratory commodities were some of the noted determinants that have a positive effect on effective donor-funded procurement (Bushell, 2004; Varadaraj & Al Wadi, 2021).

Accordingly, the results of this study further support the research by Osborne and Hammoud (2017) researched this subject matter and discovered that US corporations alone are losing over $350billion per year due to disengaged employees who end up not motivated to work for the corporations and disengaged employees cost an organisation money per any given year. Top management in an organization and the distance between the staff and the top management should be short for system improvement; the top management's responsibility is to support and instil organizational culture, values, and principles, creating synergies and compatibility

between them (Foster, 1978; Yaacob et al., 2019). The results revealed how important it is for the determinants of donor-funded procurement in improving laboratory performance. The literature on the visibility of spending as a determinant of donor-funded procurement states that donors and the laboratory's visibility of spending bring transparency, knowing who is spending, how much is being spent, and on what (Bushell, 2004). Additionally, ownership and responsibilities must be assigned to spend, whether to individuals or units (Kanakamedala et al., 2003; Seetharaman et al., 2020). According to Bushell (2004) and Croom (2000), the procurer needs to have visibility on spending, which brings benefits such as an audit trail in the system, planning, and budget optimization. The laboratory and the donors will understand the spending patterns, maximize buying power, make informed sourcing and supplier management decisions and raise supplier performance.

5.8 THE MODERATION ROLE OF GOVERNMENT POLICY

The objective was to examine the moderating effect of government policy on donor-funded procurement for public health medical laboratories in Zimbabwe. The researcher came up with the hypotheses (H8a-H8d), and all hypotheses (H8a-H8d) are supported, which talks about government policy (GP) moderates the pre-donation preparation process (PDPP) (β=0.15, p-value = 0.038) donation requirement process (DRP) (β=0.24, p-value =0.000), donation recipient planning process (DRPP) (β=0.22, p-value = 0.001) and donation implementation process (DIP) (β=0.18, p-value = 0.004) and the effectiveness of donor-funded procurement. The research results show that government policy moderates these variables and shows positive relationships. The study's positive results accept that government policy has a role in supporting the effectiveness of donor-funded procurement. This assertion is supported by the views held by the OECD (2019) that government policies should influence procurement of services and goods outcomes as it is used to measure the fairness, equitability of the systems in place,

transparency, and cost-effectiveness. Moreover, Ahsang and Paul (2018) postulate that the same policies may make remuneration attractive to procurement officers and public health laboratory employees with the required skills and qualifications.

When the government policy is inconsistent, there is no control, and as seen by the positive results of this study, donors and procurement agents behave in a way that suits their agenda (Sebitlo et al., 2022; Weerasekara et al., 2023). As stated by OECD (2019), government policy acts as a guide on all the donor procurement activities supported by the donor country policies, which both help to align with the constitutions of the countries involved. Policies help to curb illicit deals and corruption and influence efficiencies rather than providing bottlenecks. The results further speak to the decision-making that takes a long time. Every document passes through different offices before the final decision or approval can be obtained. This slows the implementation of the procurement processes and can be manipulated by corrupt decision-makers in their favour, and such policies are anti-progress (William, 2017; Ahsan & Paul, 2018; Schaffer et al., 2022). However, to increase efficiency in procurement, such practices work against the efficient performance of donor-funded procurements and the general populace who tend to benefit from such critical procurements and must be discouraged by the public health laboratory directorate and the concerned donors.

Additionally, the host nation's bureaucratic procedures typically caused procurement delays, dramatically increasing the cost of funding (Ahsan & Gunawan, 2010; Carvalho et al., 2015). Furthermore, most host nations, like Zimbabwe, are unaware of donor procurement rules and procedures (Parker et al., 2018; Spieske et al., 2022). However, the challenge the host countries must address is the lack of a legal framework to curtail and monitor government departments' bureaucracy, which will help improve donor-funded procurement performances.

5.9 FURTHER FINDINGS AND IMPLICATIONS

5.9.1 Government procurement staff not registered with procurement boards

The research found that most procurement cadres working in the Ministry of Health and Child care in Zimbabwe are not registered with any procurement board such as CIPS, which is risky regarding ethics adherence. The only available control is the government statutes such as public service regulations and the Public Procurement and Disposal of Public Asset Regulations, 2018. These statutes cannot affect ethical standards for individual procurement cadres; hence, difficult to monitor and curtail illicit behaviours. However, the policies should be enforced for people who work in such sensitive specialities to be regulated by the law.

5.9.2 Government policy is key

The researcher discovered that government policy is key in donor-funded procurement because, although in some cases, it was hypothesised in this research, it appears that it has a direct, indirect, and total effect relationship with determinants of donor-funded procurement. Additionally, the government policy went on to have an indirect relationship with effective donor-funded procurement. While the structural equation modelling provided these relations, it is important to note that such relationships were not hypothesised in this research. Nonetheless, this demonstrates the significance of government policy in procurement, regardless of whether it is public or donor-funded (Mojumder et al., 2022). This study has no different results in this regard. Government policy has implications in that it stands as the role modelling of donor and government activities, and failure to have consistent government policies leads to illicit deals, failure to curtail corruption, and failure by the donors to provide the services they purport to be provided in the country hence the patients are the most affected under such circumstances.

5.9.3 Determinants of donor-funded procurement

The research further reveals that the determinants of donor-funded procurement influence the relationships between it and the donation requirement process, donation recipient planning process, and donation implementation process. The structural equation modelling results confirm that they are all supported except for the pre-donation planning process, which has a negative result. This shows that the determinants also play a significant role in the procurement of laboratory goods and commodities, as the recruitment of qualified staff, top leadership support, and provision of lead donors influence the requirements of donor support. The determinants have shown that they are the tonic needed for sustainable donor-funded procurement in Zimbabwe's medical laboratory sector funding. The results confirmed that they have a role to play both in the donor community and the laboratory community, that is, good recruitment practices, top leadership support to employees, and selection of lead donors who lead discussions from the donor community and the laboratory sector. This also does not spare coordination and collaboration to avoid duplication of activities in the same funding area as key determinants.

5.9.4 Pre-donation Planning process

The research brought to the fore that the results do not support the pre-donation planning process as exhibited by the always negative results. H1, where the hypothesis sought to find if a relationship exists between it and effective procurement, results are negative, and mediation with determinants of donor-funded procurement also produced a negative result. However, the research results further (H6a-H6d) were not hypothesised in this research, but it has shown that (H6a) is the only one not supported and (H6b-d) are all supported. This means that the relationship influences the procurement of goods and services for laboratory services in Zimbabwe and should be considered in decision-making. This shows that the guidelines

provided by WHO (2000) can potentially improve health services, especially laboratory services in Zimbabwe, if the policymakers consider such guidelines and principles.

5.10 PROCUREMENT PROCESSES FOLLOWED BY DONOR-FUNDED PROCUREMENT

The researcher engaged with the qualitative data, generating the following sub-headings. Further discussion was done based on the study's first objective, which spoke to procurement processes followed by the donor-funded procurements done for the laboratory services. 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 effectiveness in support of public health medical laboratory services. Effective 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.

Donor spending is one key area that remains critical in improving the operational efficiency of laboratory services. Transparency is one of the key pillars of organisational success. It is paramount that every dollar spent is known where it is used by whom and what results, as this increases effectiveness and accountability for good development outcomes (Barton et al., 2019; Blevins et al., 2022). Transparency is critical to aid effectiveness because, without transparency, there is no coordination to achieve maximum impact. In such a way, the procurement of goods and services aligns with the requirements of the laboratory services or the ministry at large to benefit the general populace that requires the services to be availed.

Again, the purchasing processes of goods and services by the donors are key in finding lasting solutions to the challenges of funding the laboratory services face. Without good procurement processes, it would be impossible for laboratory services operations to function well (Do & Dang, 2022; Kruk et al., 2012; Mojumder et al., 2022). The procurement management function ensures that all goods and services are properly acquired and businesses proceed successfully and effectively without hindrance (Lewis et al., 2011; Seto et al., 2006). It is regarded as one of the strategic functions of any business operation that brings profitability.

5.11 CHAPTER SUMMARY

The chapter discussed the research's findings linking them to the literature review available in Chapter 2 on developing a sustainable procurement framework for improved operational efficiency in donor-funded procurement in the Zimbabwean public health laboratory services. The research results discussed concerned the causal relationships and their influence on effective donor-funded procurement (EDFP). The variables are the pre-donation preparation process (PDPP), donation requirement process (DRP), donation recipient preparation process (DRPP), donation implementation process (DIP), determinants of donor-funded procurement (DDFP) as the mediator, and government policy as the moderator on donor-funded procurement and effectiveness of donor-funded procurement. The coming chapter will emphasise the research findings, provide conclusions drawn, study implications, and recommendations, and propose further areas of research and conclusion and study limitations provided.

CHAPTER 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter outlines what the researcher discussed and wrote in the previous five chapters of this thesis. In addition, this chapter provides implications of the study, recommendations, and suggestions for further research are also proposed based on the findings in Chapter 4 and discussed in Chapter 5 as the researcher sought to answer the research questions of this study.

6.2 SUMMARY OF THE THESIS REPORT

The study sought to develop a sustainable procurement framework to improve donor-funded procurements' operational efficiency in the Zimbabwean health laboratory services. In addressing the provided topic, the researcher went on to provide the background of the research in **Chapter 1**, the background that described how the sub-Sarahan African countries benefit from the donor funds that are distributed in support of health services, and Zimbabwe is one of the fund's beneficiaries, however, the health sector including the laboratory services remain in serious challenges, as noted that government funds are not provided as expected, their funds are on paper only. Despite much progress made in improving medical laboratory services in Zimbabwe, the country is witnessing some progress due to donor-funded procurement, while the government has not been able to provide adequate funding. The same chapter provided this thesis with the statement of the problem, which led to the following objectives,

1. To explore the donor-funded procurement processes followed by public health medical laboratory services in Zimbabwe.
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 increasing the effectiveness of donor-funded procurement.*
c. *The effectiveness of the donation recipient preparation process on donor-funded procurement laboratory services in Zimbabwe.*
d. *The effect of the donation implementation process on the effectiveness of donor-funded procurement.*

3. The determinants of donor-funded procurement and their mediating effect between expected procurement activities and effective donor-funded procurement for public health medical laboratories in Zimbabwe.
4. To examine the moderating effect of government policy on donor-funded procurement of public health medical laboratories.
5. To propose a framework for effective donor-funded procurement for public health medical laboratory services in Zimbabwe.

The research questions of this study also stemmed from the above objectives.

In **Chapter 2** of this study, the researcher did a literature review based on the above objectives and operationalized the study on donor-funded procurement by looking at the donor procurement processes, followed by the laboratory services in procuring goods and services for the laboratory. The study provided the steps the donor community uses in their procurement processes. As provided by WHO (2000) and revised in 2011 (principles and guidelines), the researcher systematically reviewed literature that related to the requirements for donations in the health sector as prescribed by the same especially looking at the provision of equipment for testing in the laboratory and health sector at large. The literature proves that there is a lot of work to be done as some 40-70% of the equipment provided in the African countries by the

donors became white elephants due to lack of training, lack of government funding to support the repair, waste management, lack of technical knowhow on maintenance of such equipment and lack of reagents to support the system. The researcher also reviewed the literature on the determinants of donor-funded procurement, such as organisational culture and top laboratory leadership support to both employees and the donor community.

Multiple sources emphasised that leadership, lead donor, collaborations, recruitment of qualified employees on merit, and coordination are the tonic needed for the success of donor-funded procurement in support of laboratory services in Zimbabwe (Djabatey, 2012; Ekwoaba, Ikeije & Ufoma, 2015; Foster, 1978; Yaacob, Baroto, Kamarudin & Arifin, 2019; Berenguer & Rashkova, 2021). Furthermore, the literature on government policy as a key variable in support of procurement, employee recruitment, and support to the laboratory operations, other studies reiterated that without consistent government policy, donors might continue doing the same things but not don't get different results. The researcher also proposed a framework that would assist the laboratory services in monitoring the performance of the donor community. Finally, the theories, that is Transaction Cost Economic Theory (Coarse, 1937), Person-Situation Interaction Theory (Trevino, 1986), and Agency Theory (Jensen & Meckling, 1986) and the conceptual frameworks were provided in support of this research, and hypotheses to test the theories of this study were proposed.

Chapter 3 of this thesis provided the methodology of the study. The researcher utilised the mixed research method (quantitative and qualitative methods) and adopted the pragmatism philosophy, which sought to deconstruct the paradigm that debunks concepts such as "truth" and "reality," as addressed by Tashakkori & Teddie (2003). The researcher used a questionnaire and interviews to collect data for this study. The research went on to run a Cronbach's Alpha to confirm the reliability and internal consistency of the study instruments used to address the objectives of this study. The reliability test was found to be 0.885, a high

internal consistency and reliability level, also considering the Likert scale type of questionnaire. The other point of concern that the researcher considered in this section of the study was the ethics part of the research; that is, the research should be ethically conducted. Requests were made to the Ministry of Health and Child Care, laboratory services directorate. Authority was granted (see Appendix 5), and the University of the Witwatersrand Ethics Committee granted ***Ethical clearance number H22/06/23*** (see Appendix 6).

Furthermore, consent was also sought from the participants; the researcher assured them of anonymity, confidentiality, privacy, and respect for their rights. Also included was the newly promulgated POPIA ACT. The researcher used STATA (version 17) to analyse the collected data for quantitative and Microsoft Word for qualitative data analysis.

In **Chapter 4,** the researcher presented the analysed results; tables, graphs, and pie charts were used throughout the presentation. The structural equation model for the quantitative study was presented in its domain form to support the improved operational efficiency of the laboratory services in Zimbabwe. The researcher provided qualitative analysis and presented the results.

In Chapter 5 of this thesis, the researcher discussed results presented in chapter 4 guided by the research's objectives, as the researcher discussed the development of a sustainable procurement framework for improved operational efficiency in donor-funded procurements in the Zimbabwean public health laboratory services. This was based on the key study variables *Pre-donation planning process (PDPP), donation requirement process (DRP), donation recipient preparation process (DRPP), donation implementation process (DIP), government policy (GP), determinants of donor-funded procurement (DDFP), and effective donor-funded procurement (EDFP)*. The study results concur that GP stands as the moderating variable between expected procurement function variables and effective donor-funded procurement; instead, determinants of donor-funded procurement were found to be the mediating variable,

and government policy variable in the conceptual framework was confirmed as a moderating variable between expected procurement functions (PDPP, DRP, DRPP, and DIP) and effective donor-funded procurement.

Chapter 6 of this thesis provides this research's overview of the study's results addressing the research questions provided in Chapter 1 of this thesis. Furthermore, the researcher emphasises the research's findings and provides a conclusion based on the findings, recommendations, and suggestions for further research that are proposed and provided below.

6.3 CONCLUSIONS

The study was aimed at addressing the research questions provided in chapter one of this thesis. The questions are as follows: 1. How are donor-funded procurement processes followed by the public health laboratory services in Zimbabwe? 2. What is the effectiveness of donor-funded procurement in public health medical laboratory services based on the following; (a) What is the effect of the pre-donation planning process on the effectiveness of donor-funded procurement? (b) What is the effect of the donation requirement process on increasing the effectiveness of donor-funded procurement? (c) What is the effectiveness of the donation requirement process in ensuring effective donor-funded procurement in the laboratories in Zimbabwe? (d) What is the effect of the donation implementation process on the effectiveness of donor-funded procurement? 3. What are the determinants of donor-funded procurement for public health medical laboratories and their mediating role in effective donor-funded procurement 4. Why is the government policy on donor-funded procurement not mitigating the inadequate government funding the public health medical laboratory services in Zimbabwe? 5. How can donor-funded procurements for public health medical laboratory services be effectively constituted in Zimbabwe?

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.

6.3.1 Donor-funded Procurement Processes

The research demonstrated that there is not much interest in the acquisition of commodities and services; the laboratory services only receive the goods and services specifically from the logistics department for use, where government funding is involved, the funding goes directly to government departments, in most cases, the funding is not adequate to cover much. During COVID-19, the government did its deliveries not using the available laboratory distribution channels. This means no collaboration exists, and such a double structure is costly to the government and the donors instead of collaborating in deliveries. Accordingly, the study further established that procurement from the donor's side is done from the donor's home country, and eventually, economically, the host country benefits nothing, as the host country meets even the cost of customs clearance. This means the host government may need to develop a policy directing the donor community to buy goods and services with a certain local threshold to improve the country economically and provide jobs for the local laboratory suppliers with some foreign currency incentives.

6.3.2 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, H5a, and H6a). 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.

Furthermore, the relationship does not exist again through the moderating role of determinants of donor-funded and also no relationship on determinants of donor-funded procurement. The pre-donation planning process only has a positive relationship with effective donor-funded procurement through the moderating variable (H8a). 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 ($\beta = -0.11$, p-value = 0.094).
- ✓ The pre-donation preparation process and effective donor-funded procurement have no mediated relationship ($\beta = -0.062$, p-value = 0.348).
- ✓ The moderated (GP) relationship exists between the pre-donation preparation process – effective donor-funded procurement ($\beta = 0.15$, p-value =0.038).

6.3.3 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 (i.e., H5b, H6b, and H6b). For every procurement that should be done by the donor community in support of the laboratory services in Zimbabwe, when it relates to equipment, donation requirement process conditions must be considered, and the determinants and government policy should also be considered. This means that all the conditions of the donation requirement process should be met, and failure, no procurement should proceed.

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. DRP's relationship with effective donor-funded procurement is only moderated and mediated, as shown by the results below;

- ✓ Determinants of donor-funded procurement mediate between the donation requirement process – effective donor-funded procurement relationship (β =0.097, p-value =0.000).
- ✓ Government policy moderates between the donation requirement process – the effective donor-funded procurement relationship (β= 0.24, p-value = 0.000).

6.3.4 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, H5c, H6c, and H8c). 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).
- ✓ The donation recipient preparation process has a positive mediated relationship with effective donor-funded procurement (β= 0.27, p-value =0.023).
- ✓ The donation recipient preparation process has a positive moderated relationship with effective donor-funded procurement (β =0.22, p-value = 0.001).

6.3.5 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 not relevant since there is no association between DIP and EDFP (H4, H5d,) and the results confirmed through (H6d and H8d) and (H6d) is a positive

relationship with determinants of donor-funded procurement, and H8d was a moderated by government policy. 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;

- ✓ The donation implementation process has a mediated relationship with effective donor-funded through determinants of donor-funded procurement (β=0.15, p-value = 0.026).
- ✓ The donation implementation process has a moderated relationship with effective donor-funded procurement (β = 0.18, p-value = 0.004).

6.3.6 Determinants of donor-funded procurement (DDFP) as a mediator

The study established that the determinants of donor-funded procurement are important and that identifying a lead donor and collaborating with stakeholders, visibility of donor funds spending, needs for top laboratory leadership support, personnel recruitment, and logistics management are some key determinants of donor-funded procurement. The determinants have shown that they are good mediators between the expected procurement function and effective donor-funded procurement. If taken seriously, these determinants would provide the most wanted impetus to laboratory services. Top leadership support is one of the keys needed to support both the employees and the donor-funded activities. This was supported by the study results showing that DDFP positively influences effective donor-funded procurements. The

research has found that all determinants improve the laboratory services systems and are taken forward. The study results further noted that DDFP is a mediating variable in this study which means that these variables further influence the determinants of donor-funded procurement. In light of the findings of this study, the researcher added that Zimbabwe's government should foster a climate that will allow donor-funded procurement to thrive. The following results substantiate the above;

- ✓ Determinants of donor-funded procurement mediate donation requirement process-effective donor-funded procurement relationship (β =0.097, p-value= 0.020)
- ✓ Determinants of donor-funded procurement mediate donation recipient preparation process – Effective donor-funded procurement relationship (β = 0.27, p-value = 0.023)

6.3.7 Moderating Effect of Government Policy

The study revealed that government policy is a blueprint that guides donor-funded procurement (H8a-H8d) and assists in driving better remunerations to attract the right skills and qualified employees in procurement and laboratory testing, such as scientists, SCMLT, and others who push the agenda forward. However, the government of Zimbabwe's policies is anti-Western donors due to the “regime change agenda” and political terms that have generally affected the laboratory and health sector's development. Furthermore, the study found that the government policy does not provide the lost trust between the donors and the government. Additionally, the study found that corruption, unethical practices, and lack of government commitment are some challenges that Zimbabwean government policy is failing to curtail. Policies help to curb illicit deals and corruption and influence efficiencies rather than providing bottlenecks.

Furthermore, the government policy should provide a legal framework that can monitor the administrative systems that take a long time to approve the requirements for further procurement processes as the bureaucracy drastically increases over time, thereby increasing

the cost of funding. The study's findings also demonstrate a positive relationship between the factors determining successful donor-funded procurement and those factors. The researcher concluded that based on the research results, government policy should be proactive in support of the general populace who benefits from such procurement policies such that the laboratories perform above the current scenarios where donors are not held responsible for supporting the laboratory system and the policy should compel adequate funding that brings in confidence in the laboratory systems. The results below confirmed the above argument;

- ✓ Government policy moderates the pre-donation preparation process – effective donor-funded procurement relationship (β= 0.15, p-value =0.038).
- ✓ Government policy moderates the donation requirement process –effective donor-funded procurement relationship (β =0.24, p-value = 0.000).
- ✓ Government policy moderates donation recipient preparation process – effective donor-funded procurement relationship (β = 0.22, p-value =0.001).
- ✓ Government policy moderates the donation implementation process – effective donor-funded procurement relationship (β = 0.18, p-value = 0.004).

6.3.8 Framework on effective donor-funded procurement

The research finds out that the laboratory services would improve their operational efficiency if they consider having a lead donor, donor collaboration, coordination between the government and the donors and stakeholders, making use of a collective impact model, lack of a legal framework to deal with monitoring and evaluation of donor support and eventual evaluation. Additionally, the research established a need for purchasing and supply management where planning, directing, organising, coordinating, integrating, and training and innovation are needed. In support of the above, the study reveals that proficiency measures are

needed, that is, price, supplier performance, purchasing, research, competition, inventory holding, and laboratory services inventory holding is perfect.

Additionally, the research found that laboratory services and donors should implement what is known as an efficiency measure where cost savings, workload, and administrative performance are at the centre of procurement processes. Moreover, the research established that measuring actual performance using historical and budget objectives, then an appraisal of actual performance using both quantitative and benchmarking would improve the operational efficiency of the laboratory services in Zimbabwe. After the above, the reporting of results to the laboratory leadership. The study results further support the above as they are positive. This means that the donor-funded procurement is effective, as also witnessed by the fact that the scores produced by the results are above the cutting point of 25, which means that the donors are doing a great job supporting the laboratory services in Zimbabwe.

6.4 CONTRIBUTION OF THE STUDY TO THE BODY OF KNOWLEDGE

The study focused on developing a sustainable procurement framework for improved operational efficiency in Zimbabwean health laboratory services. The studies that were done related to this study are mainly focusing on procurement in general or the roles of donor-funded procurement issues in international development projects (Ahsan & Paul, 2007) and challenges of donor-funded allocation and utilisation: The case of United National Children's Fund (UNICEF) Ethiopia (Tilahun, 2018) and the other study focused on effects of donor-funding on the success of community development projects in Kenya (Gachui, 2017). This research is the first of its kind to focus on improving the operational efficiency of laboratory services in Zimbabwe. The research further incorporated the WHO (2000) guidelines and principles on donating equipment and supporting ancillaries in the health sector, which has not been done in previous studies. These guidelines became some of the key variables of this study.

Additionally, the study findings provide a different perspective in support of the laboratory services in Zimbabwe in improving their operational efficiency.

Very little or no other studies have been done in this area, focusing on donor-funded procurement supporting laboratory services in Zimbabwe. Where such studies have been done, they focus on the technical area as laboratory services are one health component that is so specialised and complicated. It is very rare to find any management studies. The study further contributed by providing a different type of structural equation modelling which focuses only on domains, not the huge expanded model as shown below;

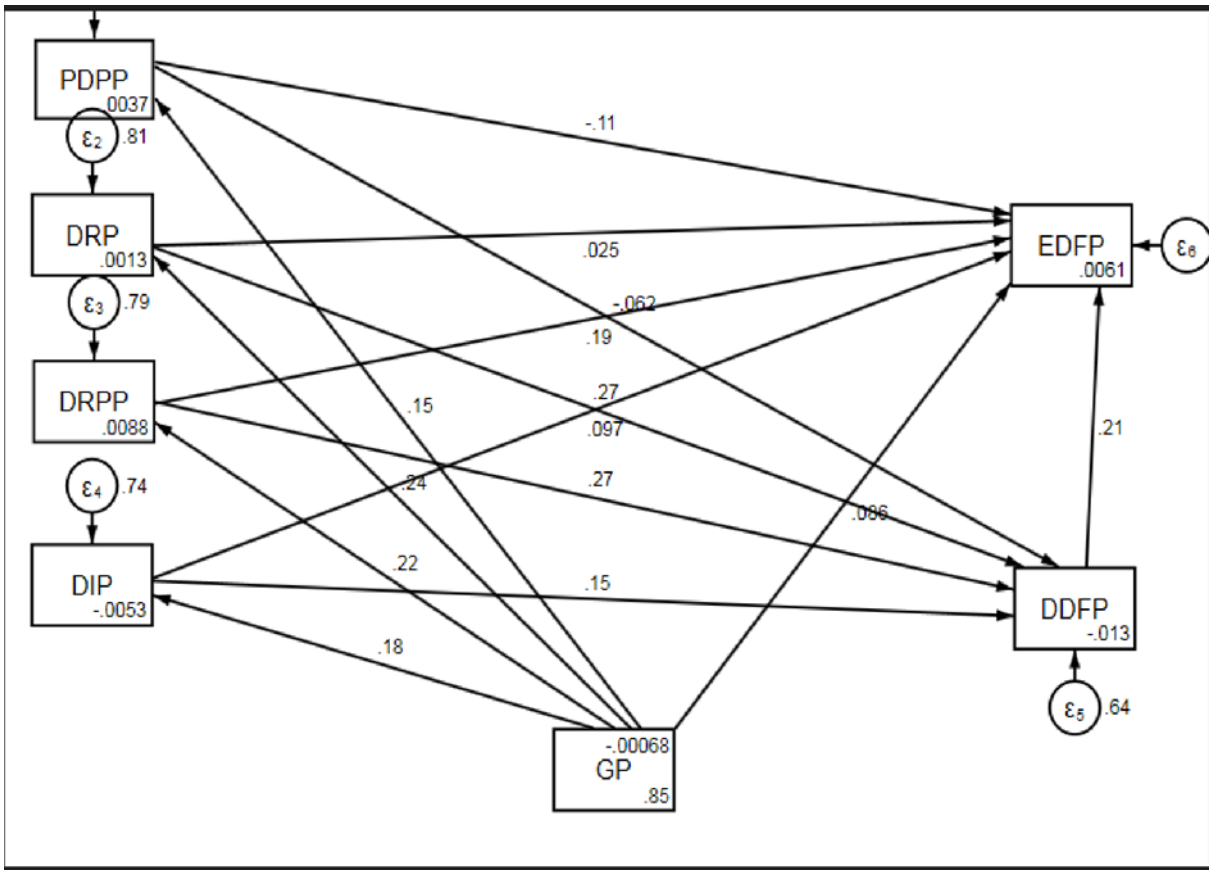


Figure 6.21: Tested Structural Equation Model

The structural equation modelling above summaries the key variables of this study, which include the *pre-donation planning process (PDPP), donation recipient process (DRP), donation requirement preparation process (DRPP), donation implementation process (DIP),*

government policy (GP) and the determinants of donor-funded procurement (DDFP). The other key discovery is that DDFP was accepted as the mediator of this research and GP as a moderator for this study.

6.5 RECOMMENDATIONS

6.5.1 Donor-funded Procurement Processes

- ✓ Collaborate in funding the laboratory services and share responsibilities on who does what so that there is no duplication of funding.
- ✓ Collaborate in goods distribution since the Zimbabwe logistics systems are in place, which every player can ride on, to cut the distribution cost.
- ✓ Government should provide adequate funding to the laboratory services as safety nets in case some major funders withdraw from funding the same. Refer to Table 2.1 and Figure 2.5 in Chapter 2 for a clear view.
- ✓ Policy direction is needed that guides the donor community on their procurements that certain threshold of goods and services should be bought within Zimbabwe as a way of supporting economic activities

6.5.2 Pre-donation preparation process (PDPP)

- ✓ The procedure should include incineration and related costs should be included in the budget for laboratory support.
- ✓ Recruit qualified scientists and procurement cadres, including the equipment technicians who will service the laboratory equipment.
- ✓ Platforms must be discussed at each level of the tier system of the laboratory, not forced on the system, as this is against the principles and guidelines.

6.5.3 Donation requirement process (DRP)

- ✓ Ensure that all the procured equipment and services provided are working at each systems level and sub levels, including providing the operating and maintenance manuals.
- ✓ Specifications of equipment, goods, and services should come from the laboratory services but from the donor community or individual donors since the laboratory services are the custodians of the system, and they know where gaps are in their systems, and they know what type of support is needed.
- ✓ Equipment should be procured that are low energy consumers, simple, easy to maintain, and simple to operate.
- ✓ Training of scientists and technicians on operating and servicing the machines and the ancillary components.
- ✓ Establish the calibration and preventative schedules for the procured equipment.
- ✓ Provide continuous supply of reagents and other commodities related to the piece of equipment procured.

6.5.4 Donation recipient preparation process (DRPP)

- ✓ Ascertain energy consumption requirements, waste disposal, and site preparation should be done before any procurement can be affected.
- ✓ Train the personnel that will operate the equipment and the support staff who clean, stock management, and technicians.
- ✓ Equipment maintenance schedule must be readily available and should be harmoniously followed all the time to avoid breakdowns.
- ✓ Promote policies against the abuse of scarce resources, especially after receiving donor support.

6.5.5 Donation Implementation Process (DIP)

- ✓ Evaluate equipment and reagents before any procurement could be done both by the government and donors.
- ✓ Avoid storage costs when the goods are shipped duty-free, or funds for clearance should be provided on time as a cost-saving measure and for getting value for money.
- ✓ Implement all the requirements of the DIP as the study shows that they influence effective donor-funded procurement.
- ✓ Policies should be promulgated centred on the donation implementation process of the laboratory services and health sector.
- ✓ Fulfil donation requirements, since the research results have indicated that some of the requirements for the donations are not being fulfilled, the laboratory services in partnership with their donor counterpart should consider this, and all the donation prerequisites be done such that the systems are improved and well supported.

6.5.6 Determinants of donor-funded procurement (DDFP)

- ✓ Train laboratory and donors on their roles in support of the laboratory system
- ✓ Select lead donors from the donors who support the laboratory services who will work with the laboratory management.
- ✓ Encourage collaboration and coordination of funding and ideas when implementing laboratory-related activities. This eventually avoids duplication of duties
- ✓ Determinants of donor-funded procurements found by this study are a catalyst for effective donor-funded procurement.
- ✓ Create a conducive environment that supports donor support to flourish for the general populace's good and provides a strong monitoring mechanism.
- ✓ Government should provide favourable policies for employees to flourish and pay market-value salaries to avoid shortcuts in testing people’s specimens.

- ✓ Visibility of laboratory services on social media platforms (Twitter, Facebook) to create demand for the services they offer, as this is done in other countries

6.5.7 Government Policy (GP) on Donor-Funded procurement

- ✓ Enact policies that support and attract skilled employees in the laboratory since the study indicates that the laboratory is the backbone of any health system.
- ✓ Treat all donors equally without looking at the home country of the donors, as the research shows that Western donors do much better in terms of support that Eastern partners.
- ✓ Enact policies and legal frameworks that strongly cut bureaucracy and unethical practices and enforce commitment within the government structures.
- ✓ Provide policies that support good procurement practices at all levels of the laboratory and donor systems.
- ✓ Enact government policy that makes all universities that train laboratory scientists increase their intake numbers from 25 per intake to at least 50.
- ✓ Remove political statements that curtail productive relationships within the laboratory and health sector.
- ✓ Avoid politicising donor support as is the case and take full advantage of such support to improve the general health service conditions in Zimbabwe.

6.5.8 Framework on effective donor-funded procurement

- ✓ Promote collaboration between and among the donor community on its own and with the government. This research would recommend collaborations to be central in providing quality laboratory and general health service delivery services.
- ✓ Provide policies that make monitoring mechanisms to donors who support the laboratory services mandatory.

- ✓ Establish purchasing and supply management, proficiency measures, efficiency measures, and actual performance, as these are critical variables to measure the performance of both donors and laboratory services.
- ✓ The study reveals that a framework is needed in support of the laboratory services; this focuses on the visibility of spending, collaborations, coordination, procurement processes, supporting of laboratory staff as well as incorporating the donations principles and guidelines.
- ✓ Policymakers should ensure that every gain should be sustained by providing financial assistance. All accredited laboratories in quality management systems must maintain those feet.

6.5.9 Further recommendations from the participants' perspectives

- ✓ Donors should provide funding for laboratory services and monitoring mechanisms for the funds' use.
- ✓ Donors should get the specifications from the laboratory services, unlike the current situation where the donors only forward their scope of work for authorisation from the laboratory and Ministry of Health leadership. Laboratory services should be involved in needs identification, specifications, and final delivery.
- ✓ Space is needed in the laboratory. Currently, the space is no longer enough the scope of work is expanding. Therefore, the government and the donors should focus on renovating some of the laboratories to improve and increase space, and further, the infrastructure should meet international standards, such as having a unidirectional flow of work and meeting TB testing standards.
- ✓ Involve everyone in the procurement of equipment; the current scenario, as mentioned by the participants, is that the donors do their procurement without input from the laboratory services, which works against the harmonisation strategy adopted by the

laboratory services in trying to minimise cost related to commodities needed to make the equipment functional at optimum level.

- ✓ The focus should be on all disease patterns, unlike the current scenario where the focus is mainly on HIV/AIDS, TB, and Malaria, and other diseases are left out of funding such as bacteriology and others.
- ✓ Funding of logistics from the government side is needed because there is no funding from the government; donors fully fund the laboratory logistics system from procurement and commodity storage costs to distribution costs.

6.5.10 Procurement processes

- ✓ The researcher recommends a call for collaboration and coordination between the laboratory services, the donor community, and the donor community supporting the laboratory services.
- ✓ The researcher recommends that for operational effectiveness to occur, procurements by donor community must include the laboratory services from specifications up to the final procurement stage.
- ✓ Additionally, the donors must provide transparency in the spending of the funding supporting the laboratory services.
- ✓ Procurement processes include local suppliers not only from outside Zimbabwe since most of the donors procure from the country they come from, not the host countries.
- ✓ The guidelines must be provided to eliminate to improve effectiveness in procurement by the donors.

6.6 METHODOLOGY IMPLICATIONS

The researcher used two methods in one research: mixed method research, which provided a glimpse of understanding of the study's phenomena. Mixed Methods research has shown some good strengths that any researcher can utilise. Therefore, the researcher implores future

researchers to consider using this method as it explains the issues under study. The method provides a broader understanding of research problems in a different context than only using quantitative or qualitative approaches alone. Although mixed method research has some barriers, it provides skills that a researcher develops that can motivate the researcher to widen and extend the understanding of the method (Creswell & Plano Clark, 2011).

6.7 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. The results further prove that the determinants of donor-funded procurement are important: top leadership support, recruitment of qualified personnel, and coordination of laboratory activities. The government must consider the support from these donors and avoid interference like the provision of draconian law such as the Amendment of Private Voluntary Bill (PVO), H.B 10, 2021, and this amendment seeks the creation of the

Registrar's Office of PVO with powers to cancel PVO licenses, rejection of PVO registration with no judicial recourse against any decision and rendering the current Non-Governmental Organisational (NGO) not registered as PVO illegal according to Chagutah (2023). However, this research has provided evidence that there are gains that the laboratory services have gained, and there is a need to protect such gains through policies that support the donors. These NGOs were the major contributors in support of human rights, such as the health sector, which includes laboratory services and instead of the government strengthening the policies in support of the PVO and the NGOs, they are rendering them useless, which means the future could be bleak for the medical laboratory services and the health sector at large.

6.8 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.

However, GP plays a key role as a moderator, and this is another contribution of this study to the body of knowledge since the variables (PDPP, p-value =0.038, DRP, p-value =0.000, DRPP, p-value=0.001 and DIP, p-value=0.004) have a positive impact on EDFP and the GP has been discovered by this study that although there is no hypothesis to that effect, it has an indirect relationship through DDFP. The research further established that DDFP mediates (H6a-d) between DRP, p-value=0.000, DRRP, p-value =0.000, and DIP, p-value=0.026. All these variables have positive mediating results except for PDPP, which has a negative result (p-value =0.320). The above results provide theoretical implications for this study as they add new insights and imply that the laboratory services can operate effectively and efficiently once the above variables are considered.

The results of a surprise are those of the PDPP, which has no direct relationship with effective donor-funded procurement, which (WHO 2000, 2011) recommended such variable as one of the important components needed for any donation of what sort to be taken into account in such of the health sector, laboratory included especially when it comes to equipment provision. GP has been seen to be paramount in advancing the effectiveness of donor-funded procurement and improving the operations of laboratory services. The procurement framework, where suitable workers are hired, the appropriate technicians, and top executives have a crucial role in fostering motivation among the workforce and stakeholders must consider the determinants of donor-funded. Furthermore, coordination and collaboration between the laboratory and the donor community are needed to avoid duplication of activities.

6.9 LIMITATIONS OF THE STUDY

The researcher 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 researcher used one method of research, that is, qualitative or quantitative; in this research, the researcher 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 and 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 the next study could focus on sustainable procurement (TBL) in donor-funded procurement.

6.10 PROPOSAL FOR FUTURE RESEARCH

This study focused on developing a sustainable procurement framework for improved operational efficiency in donor-funded procurements in the Zimbabwean public health laboratory services from an exploratory point of view. The researcher provided evidence that can assist in alleviating the procurement dilemma faced between laboratory services and donor-funded procurements. The research findings could be of more importance as the laboratory is a crucial sub-health department that should provide accurate and reliable results for patient management, and the essential public health services entail that there should be equity in the health of all people, which can be achieved through policies and systems that are actively promoted in the health systems, hence this study that focuses on laboratory services. Future studies could focus on sustainability procurement on donor-funded procurement.

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Appendix 1: Questionnaire: Research instrument

This research topic is "Towards the development of a sustainable procurement framework for improved operational effectiveness in donor-funded procurements in the Zimbabwean Public Health Laboratory services". Your views are required for this researcher to complete this research. The researcher will do the best to make sure that every respondent is anonymously treated. The researcher assures you of confidentiality. Your honest answers are kindly requested, and this researcher is thanking you for your participation.

SECTION A: Demographic

1. Gender ☐ F (1) ☐ M (2) ☐ other (3)
2. Occupation (1) ----------
3. Age Range: 21-30(1) ☐ 31-40(2) ☐ 41-50(3) ☐ 51-60 (4) ☐ 60+(5) ☐
4. Work experience: 0-5(1) ☐ 6-10(2) ☐ 11-15(3) ☐ 16-20(4) ☐ 20+(5) ☐
5. Education qualifications: Diploma(1) ☐ Degree(2) ☐ Masters(3) ☐ PhD(4) ☐
6. Any professional board you are registered on (1) ----------

SECTION B

This section requires answers based on a scale: 1=Strongly disagree (SD), 2= Disagree (DA), 3=Neutral (N), 4= Agree (A), 5=Strongly Agree (SA).

Please indicate the extent to which you agree with the below statement: Pre-donation planning process (PDPP)	**SD**	**DA**	**N**	**A**	**SA**
PDPP01: We do pre-donations meetings for improved laboratory services.	1	2	3	4	5
PDPP02: We get specifications from pre-donation meetings for goods and services	1	2	3	4	5
PDPP03: We do pre-donation planning is key for public laboratory systems	1	2	3	4	5
PDPP04: We do pre-donation planning as one of the essentials for public health medical laboratory success	1	2	3	4	5
PDPP05: We identify space availability during pre-donation planning process	1	2	3	4	5

PDPP06: We find mutual understanding of stakeholders during pre-panning process.	1	2	3	4	5
PDPP07: We have improved laboratory systems through pre-donation	1	2	3	4	5
PDPP08: We get a detailed work plan from pre-donation planning process	1	2	3	4	5
PDPP09: We acknowledge that no donation may take public health systems backwards	1	2	3	4	5
PDPP10: Platforms which are needed are examined during pre-donation planning process	1	2	3	4	5

SECTION C

This section requires answers based on a scale: 1= Strongly disagree (SD), 2= Disagree (DA), 3=Neutral (N), 4= Agree (A), 5=Strongly Agree (SA).

Please indicate the extent to which you agree with the below statement: Donation Requirement Process (DRP)	**SD**	**DA**	**N**	**A**	**SA**
DRP01: We create capacity of the laboratory system through receiving donations	1	2	3	4	5
DRP02: We coordinate donation of goods and services together with our donors to cover gaps in the laboratory system	1	2	3	4	5
DRP03: We are training technical staff to manage equipment and accessories.	1	2	3	4	5
DRP04: We use the scarce resources donated to the maximum benefit for the benefit of the patients	1	2	3	4	5
DRP05: We are guided on how to take good care of the donated technology.	1	2	3	4	5
DRP06: We know the laboratory system may become a burden if not supported by donors	1	2	3	4	5
DRP07: We improve laboratory infrastructure through receiving donations.	1	2	3	4	5
DRP08: In case of equipment, we receive donations with manuals inserted in them.	1	2	3	4	5
DRP09: We receive unexpired reagents and other commodities when donated and in right conditions.	1	2	3	4	5
DRP10: We know that donations are not forced by the donors when they do not meet required conditions	1	2	3	4	5

SECTION D

This section requires answers based on a scale: 1= Strongly disagree (SD), 2= Disagree (DA), 3=Neutral (N), 4= Agree (A), 5=Strongly Agree (SA).

Please indicate the extent to which you agree with the below statement: Donation Recipient Preparation Process (DRPP)	**SD**	**DA**	**N**	**A**	**SA**
DRPP01: We are allowed to prepare for proper management of donated equipment and commodities.	1	2	3	4	5
DRPP02: We agree with the donor on cost related to the donation.	1	2	3	4	5
DRPP03: We must not be burdened by the donated equipment and commodities as well as donated services.	1	2	3	4	5
DRPP04: We seek further information from the donor concerning the operation of equipment, installation, and equipment maintenance.	1	2	3	4	5
DRPP05: We believe site inspection is an important step before donation can be done	1	2	3	4	5
DRPP06: We are encouraged to take good care of all equipment in the laboratory.	1	2	3	4	5
DRPP07: We ascertain energy consumption of any equipment before the actual donation is done	1	2	3	4	5
DRPP08: The spending of donor funds is very transparent	1	2	3	4	5
DRPP09: We train personnel to operate the equipment according to manufacturer's specifications	1	2	3	4	5
DRPP10: We notify the donor to assemble equipment package and ship	1	2	3	4	5

SECTION E

This section requires answers based on a scale: 1= Strongly disagree (SD), 2= Disagree (DA), 3=Neutral (N), 4= Agree (A), 5=Strongly Agree (SA).

Please indicate the extent to which you agree with the below statement: Donation Implementation Process (DIP)	**SD**	**DA**	**N**	**A**	**SA**
DIP01: We know donation should be insured by the donor along the way to its destination	1	2	3	4	5
DIP02: We accept the donation that only works according to manufacturer's specifications only	1	2	3	4	5
DIP03: We know manuals are a key component of any equipment supplied	1	2	3	4	5
DIP04: All the supplied equipment must be accompanied by supporting accessories	1	2	3	4	5
DIP05: We accept in the case of equipment used, they shall be decontaminated, and patients' information removed	1	2	3	4	5
DIP06: We need to accept donation of equipment accompanied by service contract for repairs and maintenance	1	2	3	4	5
DIP07: We need more information on user-replaceable parts and operating instructions to be availed	1	2	3	4	5

DIP08: We accept only evaluated equipment and reagents	1	2	3	4	5
DIP09: We do not accept forced donation which may be politically connected without following set out guidelines	1	2	3	4	5
DIP10: We accept only those donations we believe they add value to the public health medical laboratory system	1	2	3	4	5

Section F

This section requires answers based on a scale: 1= Strongly disagree (SD), 2= Disagree (DA), 3=Neutral (N), 4= Agree (A), 5=Strongly Agree (SA).

Please indicate the extent to which you agree with the below statement: Government Policy (GP)	**SD**	**DA**	**N**	**A**	**SA**
GP01: We need government policy to motivate donor support	1	2	3	4	5
GP02: We believe government policy promote the donor-funded procurement in the public health medical laboratory services	1	2	3	4	5
GP03: We trust the government policy helps to curb corruption in the procurement process for all supported public health medical laboratory services.	1	2	3	4	5
GP04: We know government policy is a tool that influences support of recruitment of qualified employees	1	2	3	4	5
GP05: We are aware that government policy can be used to set salaries that are attractive to avoid brain-drain.	1	2	3	4	5
GP06: We accept that donor-funded procurement can be frustrated by unfavourable government policy	1	2	3	4	5
GP07: We believe that procurement policy direction comes from consistent government policy	1	2	3	4	5
GP08: We know that government policy may foil/support collaborations between the public health laboratory and donors	1	2	3	4	5
GP09: We believe that government policy influences harmonisation of equipment used in the public health laboratory	1	2	3	4	5
GP10: We know that donor-funded procurements may flourish due supportive government policy.	1	2	3	4	5

Section G

This section requires answers based on a scale: 1= Strongly disagree (SD), 2= Disagree (DA), 3=Neutral (N), 4= Agree (A), 5=Strongly Agree (SA).

Please indicate the extent to which you agree with the below statement: Determinants of donor-funded procurement (DDFP)	**SD**	**DA**	**N**	**A**	**SA**
DDFP01: We need a lead donor for harmonisation of all donor procurement	1	2	3	4	5
DDFP02: We need a lead donor who collaborate with other donors and public health medical laboratory services	1	2	3	4	5
DDFP03: We need communication channel between the donor community and MoHCC to be simplified for quick feedback	1	2	3	4	5
DDFP04: We need clarification of all donor-funded procurement from the lead donor	1	2	3	4	5
DDFP05: We are not aware/aware of the donor-funded procurement spending.	1	2	3	4	5
DDFP06: We acknowledge the laboratory's top management support for donor-funded procurement	1	2	3	4	5
DDFP07: We believe donor-funded procurement's success hinges on laboratory's top management support	1	2	3	4	5
DDFP08: We know that the top management must instil organisation culture which support public health medical laboratory success	1	2	3	4	5
DDFP09: We know the top laboratory management creates synergies the donor community which is compatible with the laboratory systems	1	2	3	4	5
DDFP10: We need the distance between top management and staff to be shortened for the good of the public medical laboratory system	1	2	3	4	5

Section H

This section requires answers based on a scale: 1= Strongly disagree (SD), 2= Disagree (DA), 3=Neutral (N), 4= Agree (A), 5=Strongly Agree (SA).

Please indicate the extent to which you agree with the below statement: Effectiveness of donor-funded procurement (EDFP)	**SD**	**DA**	**N**	**A**	**SA**
EDFP01: I understand pre-donation planning process impacts effective donor-funded procurements	1	2	3	4	5
EDFP02: I believe donation requirement process improves donor-funded procurements	1	2	3	4	5
EDFP03: I believe that the establishment of donation recipient preparation process makes donor-funded procurement easier.	1	2	3	4	5

EDFP04: I understand donation implementation process increases donor-funded procurements effectiveness.	1	2	3	4	5
EDFP05: I believe the determinants of donor-funding improves donor-funding procurement effectiveness.	1	2	3	4	5
EDFP06: I understand donor-funded procurements operational efficiency can be achieved through the development of a procurement framework for public health medical laboratory.	1	2	3	4	5
EDFP07: I understand medical laboratory systems have effect on effective donor-funded procurement	1	2	3	4	5
EDFP08: I believe medical laboratory testing capacity may impact positively on effective donor-funded procurement.	1	2	3	4	5
EDFP09: I understand that the public health care priority influences donor-funded procurement process	1	2	3	4	5
EDFP10: I understand that the medical laboratory testing systems is impacted positively by donor-funded procurement	1	2	3	4	5

Appendix 2: Interview guide: Research instrument

This research is concerned with Donor-funded procurements in the Zimbabwean Public Health Medical Laboratory services. Your views are required for this researcher to complete this research. The researcher will do his best to make sure that every respondent is anonymously treated. The researcher assures you of confidentiality. Your honest answers are kindly requested, and this researcher is thanking you for your participation.

SECTION A: Demographic

1. Gender ☐ F (1) ☐ M(2) ☐ other(3)
2. Occupation (1) ----------
3. Age Range: 21-30(1) ☐ 31-40(2) ☐ 41-50(3) ☐ 51-60 (4) ☐ 60+(5) ☐
4. Work experience: 0-5(1) ☐ 6-10(2) ☐ 11-15(3) ☐ 16-20(4) ☐ 20+(5) ☐
5. Education qualifications: Diploma (1) ☐ Degree(2) ☐ Masters(3) ☐ PhD(4) ☐
6. Any professional board you are registered on (1) ----------
7. What can the donors do differently to improve procurement operational efficiency in support of public health medical laboratory services?
8. Do you think donor-funded procurements are being done to improve public health medical laboratory services?
9. Do you think these donor-funded procurements follows the WHO (2000;2011) guidelines and principles?
10. Are the determinants of procurements such as organisational culture improves donor-funded procurements performance?
11. The laboratory services receive funding for procurement from government and donors, who do you think provides more funding to improve operational efficiency of the laboratory services?

12. In your view, how do you think donor-funded procurement for laboratory support can be improved?

Thank you.

Appendix 3: Final Qualitative data analysis

Data set from interviews	Coding the data
Donors must partner with Ministry for specific activities that they support all the other programmes. Ministry must provide all the needs of the lab services. Quantification forecasting must be led by the government instead of the donors who are always leading- forecasting normally uses historical data. Procurement of lab commodities and services must be centralised within the Ministry of lab services instead of the donor leading the procurements as is the case now. Donors do their procurements and donate to the Ministry. Specifications are not defined by the lab services/Ministry but by the donors themselves. They by-pass and do procurement on their own without input from the Ministry.	No donor and lab collaboration Government support Government policy Effective donor procurement Specifications, procurement processes Organisational culture Specifications Donation requirement process Government policy
Ministry must define the specifications and quantities then the donor put the money in a pool. Use of centralised procurement advantages- economies of scale, reduce storage cost, plan of shipment, good distribution planning and cutting of the distribution costs, and reduction of parallel structure. They only do programme-related activities other than covering the whole lab eg Viral load testing. Involve the lab services management other than them coming up with their own operation plans. Other areas of lab testing are far much behind eg bacteriology. The donor should do engagement with the lab services before they can come up with their own targets and work plans. What is on the ground and in the main offices are different. Donors may be interested in HiV only, leaving out funding for malaria, and biochemistry. Other aspects of the laboratory are left out. In terms of 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	logistics, storage, control, planning Lack of collaborations Government policy no holistic approach no engagement/collaboration work plans, targets lack of comprehensive coordination organisational culture, information dissemination lack of planning and lack of funding government policy on funding transportation of sample lack of coordination selective funding of laboratory services no space availability space unavailable Lack of proper infrastructure No space available

Machines services are not done-spare parts are not easily available. COVID-19 has been an eye opener, at times government releases some funds to buy the commodities or sometimes you see trucks coming with COVID-19 PPEs to the hospitals for use, even though things are not adequate but at least something is being done, it's a positive development for us and the country at large. Government policy should help to improve our infrastructure, recruitment policy should be reviewed now and then according to international standards, should guide how the procurement should be done even with these donors who just do their work, there is no monitoring of activities. Sample transportation is not funded. The lab covers so many aspects and most of those are not funded. The donors must focus on providing more space since it has become a problem- now using a container for Tb testing instead of a building. Infrastructure is needed in the province. 3VL machines have taken up most of the space since the machines are big. The provision of lab commodities should be agreed upon between the lab services and the donors. Government policies are inconsistent and let us done in most circumstances, maybe its due to corruption, "huhori hwandisa muhurumende umu" (corruption is too much in government), and since they are the custodian of the policies they should be able to see that their policies are implemented for the good of the patients. Donor procurement of reagents and services should be in consultation with the lab services. Challenge of procurement of machines and services that are not in tendon or compatible with the lab requirements. The lab should lead the donors in everything including procurement, not the other way round The donor procurement of goods and services should be done together between the 2 parties, but I don't think this is being done and donors are procuring on their own. In terms of the	No collaboration between laboratory and donors No coordination organisation culture Top leadership support lacking Top laboratory leadership support Procurement strategy Lack of pre-donation requirement process White elephant Policy direction/government policy Coordination, collaboration Top leadership support Lead donor WHO (2000/2011) not being followed Government policy Lack of collaboration and coordination

procurement of machines and the services, they are all done by the donors without the 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 there is any guideline being used to manage these donors.	
No, because they are not supporting all diseases. Yes, the donors are there to improve the lab services. Yes, but it could more support Yes, but they can do more to improve the lab support. I believe so since they are putting in their funds to support, however, the donor can do more. The donors should support the whole lab cycle unlike what is happening now that they support certain disease-specific eg TB, HIV. The donors are expected to do more to improve the laboratory support, yes they are supporting but not to the expected level. The major challenge is that the donors come with their own focus and mainly HIV/TB and recently COVID-19, but they should focus on diseases like bacteria, no one is funding. The government is also not funding adequately which further worsens the situation. The major challenge is that the donors come with their 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 *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.*	Top leadership support Importance of donor support , More funding support from the donors Improving laboratory performance Holistic approach Holistic approach Top leadership support Operational efficiency Top lab leadership support Holistic approach Government policy
No implementation is being done by the lab services. Pre-donations- machine compatibility, electricity, space, backup technical teams. Reagents procurement as said in question 7 not	Donation preparations not done

being done according to all the processes. Machines become a liability in the laboratory. Huge donations are scrutinized by the government. Assumed that maybe they are being done but he hasn't seen that being done in this province- meaning no implementation of the guidelines and principles. The principles and guidelines are not being implemented in the province. The principles and guidelines are not being followed in the province (didn't want to authoritatively say so but this is not being done). Maybe they do with the HQ lab services but I haven't seen that in this province. We only see machines deployed from the suppliers or through the lab logistics unit in Harare. As far as I am concerned, I haven't seen such things happening, maybe it's done at the high level at HQ. The government is also not funding adequately which further 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 own 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. We only receive machines, reagents, and other commodities from the laboratory logistic unit in Harare after sending out our monthly returns. I think if these guidelines and principles are followed they will improve the lab in so many aspects because at times we receive machines that are not compatible with our lab. These are key aspects provided by the WHO towards guiding health support not to accept everything even if they will not work. There is an issue of value addition and WHO is guiding the health sector to add value to their systems.	Government policy No transparency No pre-donation requirement Pre-donation, electricity, space, technical teams available Lack of coordination Lack of top leadership support Government policy Leadership support No guidelines and principles followed No pre-donation, . Top leadership support Lack of coordination Lack of coordination Donor funding No operational efficiency Top leadership support Organisational culture Procurement strategy Operational efficiency Employee recruitment Top leadership support Government policy
Donors do their own procurement processes without laboratory involvement. Limit on how to procure certain things needed in	Lack of coordination

the lab. Yes, determinants are good for increasing donor-funded procurement performance if well implemented. Making use of different regulations between the donor and the government. Trust between the lab services and the donors is lost. It affects positively or negatively depending on what is needed. Political aspect- hostile nations where the donors come from will have their own perception- hence heavy scrutiny but those from all-weather friends will not be under any heavy scrutiny. Yes they improve the lab services and donor procurement performance Donors will need to get direction from the lab services/ministry. Yes, they improve donor procurement performance. These determinants may need to be provided. Yes, they improve donor procurement performance. Lack of these determinants in the lab systems Yes they improve donor-funded procurement. The challenge is the donors do their own procurements. lack of trust between the lab services and the donors affects the performance. the challenge of different regulations are applied in procurement, donors have their own and government has its own procurement regulations. Political scrutiny depends on the donor. If allowed to flourish, these determinants are good since they improve laboratory support as well as good working conditions for all employees Good working relations are good with our donors, this will help all our patients. Laboratory and the donors have the challenge of trust which works against laboratory performance. Our government should be flexible, unfortunately, some donors are well received but others have no good relations with the government on top there	Lack of spending transparent Organisational culture Top leadership support Procurement strategy Personnel recruitment Government policy Trust Collaboration Government policy Lack of trust Leadership Donor support Leadership Collaboration Coordination Organisational culture Top leadership support Procurement strategy Personnel recruitment Lack of top leadership support Coordination Collaboration Lack of trust No transparent in spending Employee support Collaborations Good leadership Government policy Trust, lack of collaboration Government policy
Central government is improving in terms of funding may be due to covid-19. They are now able to buy reagents for testing.	Government funding

Donors have their specific areas although they are supporting directly their areas of interest. Donors are complementing the government's efforts. I think that the government provides 90% of the funding and the donors 10% of the funding. The government is providing more support since they have the building, employees, land, and training of the personnel. Not too sure who is putting much money but the participant thinks is the government but has not to scale. The central government has improved may be due to covid-19. I think both the government and the donors provide equal funding unfortunately, the donors have their areas of focus. But I suppose the government although we receive our commodities through the lab logistics unit means that the donors are funding these and they are procuring on behalf of the government. *The donors provide more funding compared to the government, however, none is concerned about the procurement issues from the donor's side, and no follow-ups are done from the Ministry's side, we only receive most commodities through the laboratory logistics unit meaning the donors would have procured and we are not interested in their processes but receiving the commodities on time since they are providing much support because the government funds go directly to the health institutions which is not enough to cater for the needed requirements.* The central government has much of its support towards employee retention, salaries, allowances, and building maintenance. The donors provide more funding compared to the government, however, the donors have their focus on areas such as HIV/TB and other areas that are left exposed. Most commodities come through the laboratory logistics meaning the donors are providing much support because the government funds go to the health institutions.	Lack of holistic approach Government funding Government funding Employee retention Personnel training Government funding Donor funding Government funding Donors funding Donor funding Donor funding Employee support and retention Infrastructure Salaries Donor funding Lack of coordination Lack of leadership Donor funding Lack of coordination

Donors can assist in the quantification and forecasting areas. State in their programmes that procurement will be done centrally and allow the government to do the procurement. Donors should provide the money and monitor only as their core business. They do consult but to some extent since they focus on their own areas of support. No adequate lab participation in their procurement activities. Yes, they can be improved, looking at the issues mentioned before. The government provides 90% of the support taking into consideration land, staffing, maintenance, consumables, training, sustainability, transportation, and quality management. The donors should involve the lab in whatever they want to procure (provincial scientists and the directorate) Donors should get the specifications from the laboratory and allow the lab to procure them on their own. Donors must not bring their procurement plan forward only to be endorsed by the lab services but should be agreed between the two every dollar known where it goes, *t*he laboratory should be involved from the onset to the final delivery of the commodities, unlike the current scenario. I think the donor can improve by making sure that they focus on all diseases of specific concern such as bacteriology, not the current setup of only focusing on HIV/COVID-19, and TB. I think the laboratory should be involved from specifications to the final delivery of goods and services. The government policy should seen to be working to guide the donors on matters of importance.	Donor support Lack of Coordination Government policy Financial control Lack of leadership support Lack of coordination Lack of collaboration Government funding Training Staff support Infrastructure Quality management Sustainability Transportation/logistics Coordination and Procurement strategy Government policy Policy direction

Key: Coordination and Collaborations: Blue (M/PS/3/4, F/PS/5/5) Government Policy: Red (F/PS/2/3, F/PS/4/5), No spending transparency: Purple (F/PS/5/5), Operational Efficiency: Green (M/PS/1/1, F/PS/4/5) and Procurement Processes: Orange (M/PS/3/5, M/PS/5/5)

F or M/PS/1/5=Gender/provincial scientist/age range/work experience range.

Appendix 4: Final Codes merged into themes

Government policy	**Collaboration and Coordination**	**Lack of transparency**	**Operational Efficiency**	**Procurement Processes**
Organisational culture organisational culture, Government policy Government policy organisation culture Top leadership support lacking Top laboratory leadership support Top leadership support Top leadership support Trust Employee support Top laboratory leadership support Lead donor and coordination support Lack of top leadership Leadership support	Lack of collaborations Lack of coordination Lead donor No donor and lab collaboration Specifications, procurement processes Lack of collaborations Specifications, no collaboration Specifications Lack of collaborations parallel structures Lack of coordination Lack of coordination no engagement collaboration work plans, targets lack of comprehensive coordination no holistic approach information dissemination lack of coordination No collaboration between laboratory and donors No coordination Lack of coordination Lack of Collaborations Lack of coordination	Lack of spending transparent Lack of trust Lack of trust Procurement strategy No transparent in spending Trust Donor support Donors funding Donor funding Donor funding Donor funding Donor funding Donor support Quantification Forecasting Training Staff support Lack of trust	funding Employee retention Employee support and retention Infrastructure Salaries Sustainability support Government policy Leadership support Employee recruitment Government policy Unavailability of space Government support Lack of government support lack of planning and lack of funding government policy on funding transportation of sample selective funding of laboratory services no space availability space unavailable Lack of proper infrastructure No space available Procurement done not according to laid down procedures Policy direction technical teams available	Specifications Lack of donation requirement Donation implementation Process Donor funding Effective donor procurement Effective donor funded procurement Effective donor funded procurement Lack of pre-donation planning process Donation requirement process Pre-donation process Procurement strategy Lack of pre-donation requirement process No pre-donation, donation requirement process, Procurement strategy donation recipient preparation, donation implementation No pre-donation requirement Pre-donation Electricity Space.

Appendix 5: MoHCC Clearance letter

Telephone: +263-4-790039
Telegraphic Address:
"MEDICUS", Harare
Fax: +263-4-720119/702293
Telex: MEDICUS 22211ZW

ZIMBABWE

Reference:
Ministry of Health and Child Care
P O Box CY1122
Causeway
HARARE

14 April 2022

Attention: Mr C. Mayavo

Dear Sir

RE: PERMISSION TO COLLECT RESEARCH DATA FROM THE LABORATORY SERVICES STAFF MEMBERS IS GRANTED FROM THE MINISTRY OF HEALTH AND CHILD CARE, ZIMBABWE.

Your authority to collect data from the Laboratory services staff members has been granted by the Ministry of Health and Child Care, Zimbabwe. This permission is specially meant for **Crossman Mayavo (Student Number 2514265), studying for a Ph.D. in Management in the faculty of Commerce, Law and Management in Business School at the University of the Witwatersrand.**

The title of your research is, "**Towards the development of a sustainable procurement framework for donor-funded procurements for improved operational efficiency in the Zimbabwean public health laboratory services".**

Please let me know if you require any further information.

Kind regards,

DIRECTOR LABORATORY SERVICES
SECRETARY FOR HEALTH AND CHILD CARE
22 APR 2022
P.O. BOX CY 1122, CAUSEWAY
HARARE, ZIMBABWE

Dr. R. Simbi
Director: Laboratory Services, Zimbabwe
Ministry of Health and Child Care

Appendix 6: Clearance Certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Mayavo

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H22/06/23**
PROJECT TITLE	Towards the Development of a Sustainable Procurement Framework for Improved Operational Efficiency in Donorfunded Procurements in the Zimbabwean Public Health Laboratory Services
INVESTIGATOR(S)	Mr C Mayavo
SCHOOL/DEPARTMENT	Wits Business School/
DATE CONSIDERED	24 June 2022
DECISION OF THE COMMITTEE	Approved Risk Level: Minimal
EXPIRY DATE	21 July 2025

DATE 22 July 2022 **CHAIRPERSON** _____
(Professor J Watermeyer)

cc: Supervisor : Dr F Saruchera

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University. Unreported changes to the application may invalidate the clearance given by the HREC (Non-Medical)

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to submit an amendment of the protocol to the Committee. **I agree to completion of a regular progress report. For Minimal and Low studies, this is due annually on 31 December. For Medium and High Risk studies, this is due twice annually on 30 June and 31 December.**

Signature _____ Date 22/07/2022

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

Appendix 7: Language Editing Memorandum

EDITING CONFIRMATION

To whom it may concern:

This memo serves to confirm that the manuscript/research project detailed below has been language-edited and/or proof-read.

Regards,

-IETS-

IET Innocent *(Cert. Lang. Ed.)*
Language Editor

****

Manuscript Title:

Towards the Development of a Sustainable Procurement Framework for Improved Operational Efficiency in Donor-funded Procurements in the Zimbabwean Public Health Laboratory Services

Author:

Crossman Mayavo

Issued on:

27/02/2023

Disclaimer:
The editor/proofreader makes no claim as to the accuracy of the manuscript contents nor the objectives of the author. While all possible efforts have been made to ensure the text as edited is readable and grammatically correct, the author(s) have the option to accept or reject suggestions and trackable changes made to the document before submission.

*** Professional Editors ***

sarchcot@gmail.com