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Factors affecting adoption of green procurement in the health sector: A qualitative review of Zimbabwe's health sector

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ABSTRACT

Green procurement is one of the major topical issues that have become increasingly popular worldwide as the world embraces sustainability. Zimbabwe is one of the countries in the world that is struggling to adopt the use of green procurement in the health sector. Some identified factors affecting such adoption are lack of technology and infrastructure, training and awareness especially of the procurement officers and those in charge of the sector, policy and regulatory framework, limited supply chain, economic pressures and stakeholder engagement. The study's objective was to identify and analyse factors affecting the adaptation of green procurement practices in Zimbabwe's health sector. The study used qualitative secondary data, and three key documents were analysed in the ATLAS. ti 24. Themes were created and results confirmed the challenges faced by adopting green procurement in the health sector in Zimbabwe. The study found that economic challenges, policy and regulatory framework shortfall, limited supply chain management, lack of stakeholder engagement, technology and infrastructure shortfalls and failure to have training and awareness regarding green procurement. Policymakers should encourage collaborations and partnerships between government and industry can facilitate the sharing of knowledge, best practices and resources. Zimbabwe as a signatory to the Abuja Declaration of 2001, the country can revert to this agreement and meet the suggested 15% of the total country budget set aside only for the health sector to support the adoption of green procurement. The study recommends that the government make use of the monitoring and evaluation systems that will influence policymakers in support of green procurement. The study recommended that the government should enact policies that support sustainable procurement and training should be carried out as Zimbabwe is one of the countries that signed the Sustainable Development Goals especially goal number 3.

Introduction

Buying goods and services with less of an impact on the environment is known as "green procurement," and it has become increasingly popular across the world as sustainability has taken centre stage in many aspects. The healthcare industry uses a lot of resources and produces waste, and observing green procurement is very important. The health industry may reduce its environmental impact, advance public health, and support larger sustainability objectives by incorporating environmental factors into the procurement decision-making process. The health sector in Zimbabwe is starting to implement green procurement processes. The country has particular problems, such as a lack of good infrastructure, limited resources, and a lack of knowledge of sustainable methods in procurement. These issues are exacerbated by the need to strike a balance between cost-effectiveness and environmental stewardship, particularly in a critical area like healthcare. Additionally, the regulatory environment, stakeholder participation, and the availability of green products all have a significant impact on the procurement processes. Despite these obstacles, there is a growing acknowledgement of the need for greener procurement alternatives in Zimbabwe's health system.

The effects of climate change, resource scarcity, and environmental deterioration linked with traditional buying processes have prompted a shift towards sustainable procurement. However, the factors influencing the adoption and execution of green procurement in Zimbabwe's health sector are still underexplored and this study aims to explore factors affecting the adoption of green procurement

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in the health sector in Zimbabwe. The researcher searched the literature on green procurement in the context of the health sector in Zimbabwe without success. The nearest study focused on green procurement in the industry sector (Chari, Zivanai & Kandenga, 2016) and an additional study focused on the role of the buyer-supplier relationship in achieving economic sustainability in the private telecommunications sector in Zimbabwe (Munyimi & Chari, 2018). However, Chari and Chiriseri (2014) focused on the sustainable procurement barriers in Zimbabwe not specifically in the health sector. This has justified the need for this study considering that no research has been done in line with factors affecting the adoption of green procurement in the health sector in Zimbabwe. The next section is about the objective of the study.

This study's main objective was to identify factors affecting the adaptation of green procurement practices in Zimbabwe's health sector. The next section focuses on the literature review of the study.

Literature Review

There are various factors affecting the implementation and adaptation of green procurement practices in Zimbabwe's health sector and some of the factors are discussed below;

Economic outlook

Economic issues are among the major impediments to implementing green procurement processes in Zimbabwe's healthcare sector. The country's economy has suffered several obstacles, including inflation, currency volatility, and inadequate financial resources (Ezenduka et al., 2022; Mothupi et al., 2022; Selviaridis et al., 2023). These limits frequently lead to the prioritisation of cost over sustainability, as health institutions seek the most cost-effective choices to fulfil urgent demands. The assumption that green products and services are more expensive than conventional alternatives impedes the adoption of green procurement decision-making. Furthermore, economic constraints can limit healthcare institutions' ability to engage in sustainable technology and practices that have greater initial costs (Yemeke et al., 2023), even if they promise long-term savings and environmental benefits. The sector in Zimbabwe is mainly funded by donors (Mayavo & Saruchera, 2024) and the possibility of failure to adopt green procurement is high considering that the country is mainly donor-dependent due to economic challenges since the devaluation of the Zimbabwean dollar and the spiral inflation that took place in 2008 and later after 2013 elections to date, the country's economy has not been performing as per their neighbouring countries. Additionally, the economic constraints are not favourable for the health sector in Zimbabwe to adopt green procurement. However, the country is working towards the adaptation of such practices as they are part of the Sustainable Development Goal 3 (SDG 3) - good health and well-being signatory. This challenge has caused the country not to meet the Abuja Declaration of 2001 where all African Union (AU) member states agreed to invest 15% of their total budget towards health (Govender, Mcintyre, & Loewenson, 2008; Olalere, & Gatome-Munyua, 2020)

Lack of awareness and training

Another significant barrier to green procurement adoption in Zimbabwe's health sector is a lack of awareness and understanding of sustainable buying techniques. Many procurement officials and healthcare providers may not have the essential knowledge to assess the environmental impact of their procurement decisions (Gatome-Munyua et al., 2022; Mofokeng & Luke, 2014). This awareness gap is supported by a lack of training on green procurement principles, limiting staff's capacity to effectively apply these practices. Without proper training, procurement officers may fail to prioritise or even consider environmental factors while making purchasing decisions, most procurement officers are mainly taught how to do procurement using government methods where the focus is on getting 3 quotations, doing the comparison and awarding the tender to the cheapest company without considering the sustainable variable. This lack of awareness extends to the larger organisational culture, where sustainability may not be viewed as a crucial concern, resulting in resistance to change (Ezenduka et al., 2022; Prier et al., 2016). However, the government must consider this issue of sustainability and include it as part of the procurement requirement in the health sector and consider training as a key component that helps the health ministry to improve on green procurement.

Regulatory and policy framework

The regulatory environment influences procurement procedures in every sector. In Zimbabwe, the lack of strong laws and regulations supporting green procurement in the health sector has posed a substantial hurdle to its implementation. The Procurement Act, (2018) do not have the provision for the government sectors to implement green procurement within their departments which leaves a gap in the regulatory and policy framework. While there are basic environmental restrictions, the lack of explicit legislation mandating or incentivising green procurement in healthcare implies that there is no institutional impetus to embrace these practices which makes it difficult for procurement officers to follow when it's not prescribed by the law (Ahsan & Rahman, 2017; Alqadami et al., 2020). Furthermore, the current existing procurement legislation lacks precise criteria or recommendations for assessing the environmental impact on procurement decisions, resulting in a lack of consistent approaches across the health industry (Panganayi, 2024; Zowa et al., 2013). Reviewing the procurement policy frameworks will add support to the procurement teams to include and enforce green procurement within the supply chain across the health services. Regulatory and policy frameworks may need to be enhanced and include the provisions that make green procurement mandatory in the procurement of critical goods and services in the health sector. This will add value considering that there certain sections like in the laboratory services where dangerous waste like cyanide is produced especially in the running of Early Infant Diagnosis tests (Mayavo & Saruchera, 2024). Such measures will eventually

protect the ordinary person from such dangers of lack of sustainable procurement, where the environmental issues are not taken into consideration.

Limitations in the supply chain management

Zimbabwe is a country which is a landlocked country bordered on all sides by Botswana (Southwest), South Africa (south), Zambia (Northwest), and Mozambique (Eastern) (African Bank Group, 2017). This background makes this factor influencing green procurement uptake in Zimbabwe as there is no availability of green products and services in the market and relies heavily on the importation of health goods and commodities from other countries such as South Africa, China and other European countries (Dzuke & Naude, 2015; Ezenduka et al., 2022; Simba et al., 2017). This eventually causes the prices of such goods and services expensive for the health sector to afford to consider green procurement. Additionally, the procurement departments focus on the prices and avoid extra costs since already duty and transport costs have to be taken care of (Elsbernd et al., 2022; Kumurya, 2015; Safi et al., 2020). The country's supply network for sustainable goods is undeveloped, leaving healthcare professionals with few options. This shortage might make it difficult to source environmentally friendly products, especially in isolated or rural places where supply chain constraints are more pronounced (Bilan, 2023; Xie, 2024). Furthermore, a lack of demand may prevent providers from being properly prepared or incentivised to offer green products, prolonging a cycle in which restricted supply and low demand reinforce one other. Due to a dearth of local businesses creating green commodities for health, such goods are frequently imported, which can raise costs and complicate procurement processes and decision-making (Mani & Gunasekaran, 2018; Rechel & McKee, 2012). Figure 1 below provides a summary of the supply chain management-related challenges.

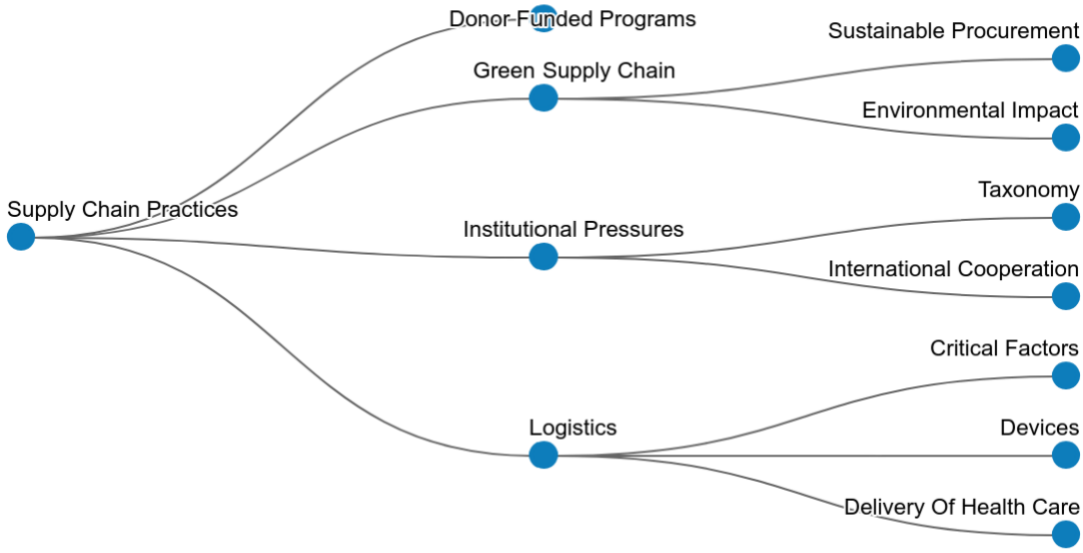

Figure 1: Supply Chain Challenges; *Source:* Author's construct (2024)

Stakeholder engagement

Effective stakeholder participation is critical to the effective implementation of green procurement strategies. Key stakeholders in Zimbabwe's health sector, including government agencies, donor communities, healthcare providers, suppliers, and the community, have not been adequately engaged (Church & Naugler, 2019; Robert et al., 2022). This lack of coordination and communication can lead to a fragmented approach to green procurement, with initiatives being isolated and lacking the support required for widespread adoption. Engaging stakeholders is essential for achieving consensus, generating awareness, and cultivating a shared commitment to sustainability. Without this participation, initiatives to implement green procurement may encounter resistance or apathy, weakening their effectiveness (D'Aquino et al., 2019; Witter et al., 2019). The major stakeholders which are employees are demoralised due to poor working conditions which further hampers the use of sustainable methods in their workplace. There is a need for the government to engage and remunerate all employees such as doctors, nurses, medical laboratory scientists and all the support staff members.

Stakeholders are the major players who make all things happen and have to be engaged and consulted before any implementation can take place, this makes change over to green procurement of goods and services easy as well as providing technical expertise that is much needed especially in a health set-up (Asiedu et al., 2021; Malacina et al., 2022). Additionally, political will is a key component driver of the adaptation of green procurement in the various sectors of government including the health sector. Additionally, stakeholder engagement improves stakeholder participation and performance and fosters a sense of belonging and value for a stakeholder (Mhlanga, 2022; Rejeb et al., 2024). The stakeholders' engagement is important in the sense that it increases the

commitment and dedication of the stakeholders to see the success of the expected goal of green procurement. According to research, engaging the stakeholders in the health sector helps the workplace environment and the expected challenges faced, and may lead to an informed decision-making process that is capable of producing positive outcomes for the Ministry of Health and Child Care in Zimbabwe (Mayavo, 2024). It is always important for the health sector to consider the interests of stakeholders in the decision-making process- if the stakeholders are satisfied, the sector may create sustainable positive performance in the long term and increase procurement performance (Abu Haija & Alrabba, 2017; Elasto et al., 2023; Fortuna et al., 2020)

Technological and infrastructure challenges

The adoption of green buying practices in Zimbabwe's health industry is further hampered by technology and infrastructure issues. Many Zimbabwean healthcare institutions have out-of-date infrastructure that may make it difficult to apply sustainable practices (Dzuke & Naude, 2015; Mazikana, 2019; Simba et al., 2017). For example, energy-efficient technology, waste management systems, and eco-friendly materials may necessitate infrastructural modifications that are not viable given current limits (Safi et al., 2020; Tsai et al., 2022). Furthermore, the lack of access to trustworthy data and technology for assessing the environmental effect of purchase decisions hinders efforts to implement green practices. These issues are especially apparent in rural locations, where healthcare institutions may struggle to meet basic infrastructure requirements, making green buying practices an even lower priority (Carragher & Goggins, 2024; Sinsky et al., 2016; Wong et al., 2021).

Current technologies such as blockchain help the health sector in storing patient data without using paper and the data would be secure thereby enhancing green procurement. Technology has been used in healthcare in towns, cities and other personalised medicine electronic health records, monitoring and evaluation of programmes (Nsowah et al., 2024; Wang et al., 2021). Additionally, Artificial intelligence provides a major shift in health systems management. Technology and good infrastructure ensure that patients get good care and data is kept secure for patients which supports the adoption of green procurement (Subrata et al., 2021; Thimbleby, 2013). Furthermore, good infrastructure and technology support green procurement through patient care management hence the need for the MoHCC to use technology and upgrade infrastructures as a way of improving the use of sustainable procurement. Green procurement integrated with technology and good infrastructure enhances more effective and efficient healthcare delivery (Jain et al., 2023; Shipu Debnath, 2023; Tomar et al., 2023). Table 1 below shows a summary of the challenges, the description and the sources;

Table 1: Summary of challenges, description and sources

Challenges	Description	References
Economic outlook	Inadequate financial support, currency volatility, high costs of eco-products	(Yemeke et al., 2023) (Mayavo & Saruchera, 2024)
Lack of awareness and training	Lack of understanding about green procurement	(Gatome-Munyua et al., 2022; Mofokeng & Luke, 2014)
Regulatory and Policy Framework	The absence of robust green procurement policies	(Ahsan & Rahman, 2017; Alqadami et al., 2020)
Supply chain inefficiencies	Logistical disruptions and medicine shortages	(Dzuke & Naude, 2015; Ezenduka et al., 2022; Simba et al., 2017)
Stakeholder engagement	No consultation with stakeholders	(Church & Naugler, 2019; Robert et al., 2022)
Technological and infrastructural challenges	Lack of current technologies such as blockchain and out-of-date infrastructure	(Jain et al., 2023; Shipu Debnath, 2023; Tomar et al., 2023); (Nsowah et al., 2024; Wang et al., 2021)

Source: Author's construct, (2024)

Research and Methodology

The study made use of a qualitative secondary data analysis method where secondary data was collected from the Ministry of Health and Child Care (MoHCC) national Health Strategy 2021-2025 which was coded as NHS21-25, including the national health laboratory strategic plan 2017-2021which was coded as NHLSP17-21. For the sake of triangulation, the researcher added another document which is MoHCC's Zimbabwe Health Intervention Strategic Plan 2021-2026 which was coded as ZHI21-26 (Alexander, 2022; Ferrando & Lorenzo-Seva, 2018; Kinn & Curzio, 2005). These strategies and plans could provide enough information concerning the issues to do with green procurement in the health sector of Zimbabwe. Additionally, the documents two documents (NHS21-25 and NHLSP17-21) are of different periods to find if there is consistency in terms of green procurement and the other reason why these documents were used in this study. Furthermore, the ZHI21-26 document was selected on the basis that the Ministry of Health and Child Care does not influence their activities as it is a sort of non-governmental organisation. Data was coded and put into themes as recommended by Braun and Clarke, (2006). Data was analysed using ATLAS.it 24 and themes were developed and analysed data was presented under the result section.

Findings

The findings of the study indicate that the documents used for data analysis are relevant in this study as shown by Figure 1 below. The study results show that all the suggested themes, that is, training and awareness, technology and infrastructure, stakeholder participation, regulatory and policy framework, limited supply chain and lastly economic outlook, are all supported by the documents used for data analysis. These documents were coded as ZHI21-26, NHS21-25 and NHLSP17-21. To the left of Figure 2, there are themes and to the right, they are the documents used for data analysis, each document contributed significantly to the results of the study as shown with the various colours mainly blue, yellow, red, pink and brown and linked to each source and theme.

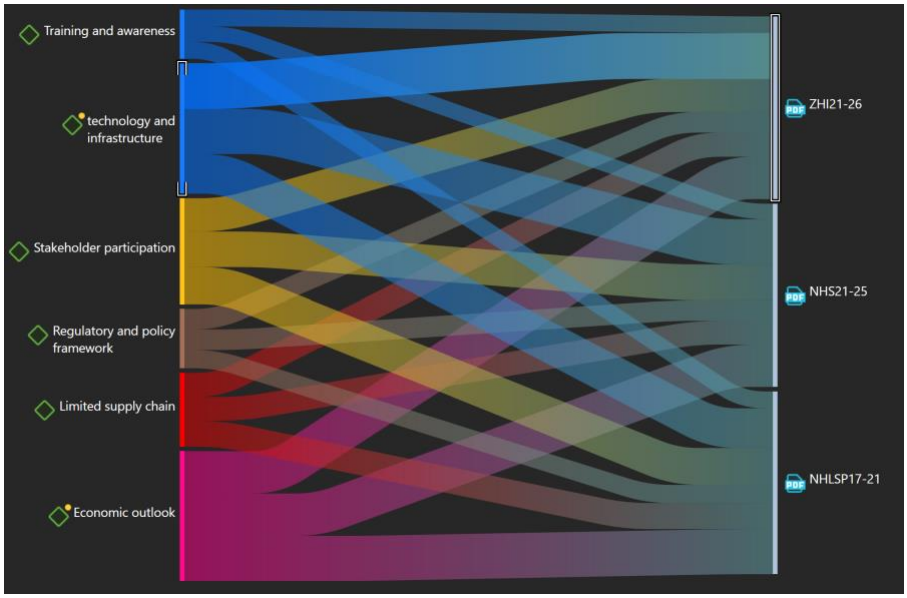

Figure 2: Themes and data sources**;** *Source:* Author's construct (2024)

Figure 3 shows the themes created in ATLAS. Ti version 24 and the documents used for data collection and analysis show the relative percentages and the number of quotes from each document used to support the results of the study. Additionally, the table above shows the tables also provided the total number of quotes and all the relative percentages add up to 100%. This table is in support of the results provided in Figure 2 above. The next section is a discussion of the results.

	NHLSP17-21 Gr=118		NHS21-25 Gr=396		ZHI21-26 Gr=166		Totals	
	Absolute	Column-relative	Absolute	Column-relative	Absolute	Column-relative	Absolute	Table-relative
• Economic outlook Gr=365	223	24,63%	211	23,29%	210	23,16%	644	23,69%
• Limited supply chain Gr=206	128	14,18%	118	13,02%	119	13,16%	366	13,45%
• Regulatory and policy framework Gr=171	91	10,07%	101	11,15%	103	11,32%	295	10,85%
• Stakeholder participation Gr=299	183	20,15%	176	19,43%	165	18,16%	523	19,24%
• technology and infrastructure Gr=377	196	21,64%	224	24,72%	226	25,00%	647	23,79%
• Training and awareness Gr=136	85	9,33%	76	8,39%	83	9,21%	244	8,98%
Totals	906	100,00%	906	100,00%	906	100,00%	2718	100,00%

Figure 3: Themes created in the ATLAS.ti 24 and documents used for data analysis

Discussion

The study results are discussed below and the quotes from the various sources were used and the themes are also projected and provided in every discussion. The researcher didn't provide much of the discussion between the quotes but only provided them and gave supporting evidence from the literature at the end of every theme. The next section talks about the economic outlook.

Economic outlook

The analysis is based on the created themes and codes of the data analysed using ATLAS.ti v24.

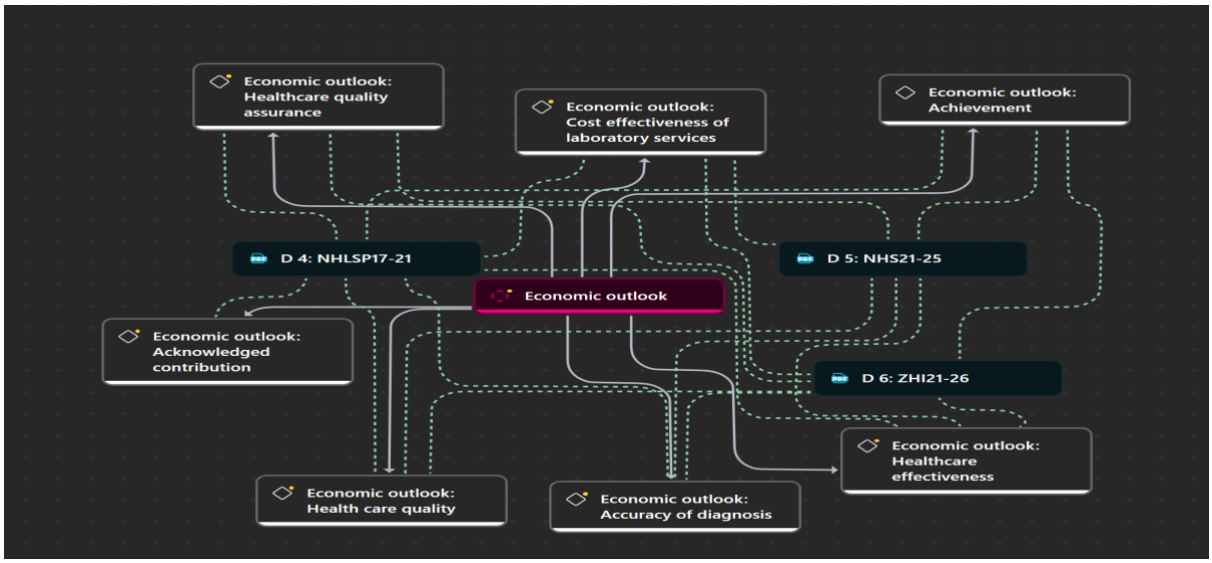

Figure 4: Economic Outlook

Figure 4 above shows the economic outlook of the health department in Zimbabwe and the affiliated issues as per the data analysis done using ATLAS.ti version 24. When the economic outlook is well there is a healthcare quality assurance, cost-effectiveness of laboratory services, and the contribution of the health care is acknowledged by the citizens. Additionally, there is results state that there is health effectiveness, health care quality and accuracy of disease diagnosis are important. All these variables mentioned above are interlinked as shown in Figure 4. However, the economic outlook of Zimbabwe is poor and the country relies heavily on donor-funded procurements and health support hence, the data quoted below from various sources supports the notion as per data analysis done in the ATLAS.ti version 24.

"The value of laboratory services is often overlooked despite its vital contribution to the provision of cost-effective quality health care. Laboratory results provide the only scientific approach to patient management allowing the clinician to make accurate diagnoses and rationalize drug use. It is estimated that 70% of all diagnoses depend on the laboratory". 4:2 p 3 in NHLSP17-21

"There has been significant effort to improve and strengthen the quality of health laboratory services in Zimbabwe. However, there are still many challenges to be addressed such as operating with a limited budget, inadequately staffed laboratory facilities, inadequately maintained equipment, and inadequate supplies." 4:20 p 8 in NHLSP17-21

"Only donor-supported services such T.B, and early infant diagnosis of HIV, have clearly defined and functional referral systems that run from the lowest level to the central or national level. However, there have been recent efforts to build an integrated sample referral system to address this gap". 4:44 p 13 in NHLSP17-21

"Only 35 percent of hospitals can provide CEmOC and only 55 per cent can provide comprehensive surgical care". 5:272 p 68 in NHS21-25

"Strategic Intervention 3.5.1.5: Increase investment on tertiary, quaternary and quinary care service delivery commensurate with cost of service delivery". 5:274 pp 68 – 69 in NHS21-25

*"The Total Consumption Poverty Line (TCPL) for Zimbabwe stood at $5,770.64 per person in May 2020 4This means that an individual required that much to purchase both non-food and food items as of May 2021 in order not to be deemed poor. This figure is 450% higher than the figure of $1,284 for March 2020. This highlights the increase in costs of goods over this period".*6:50 p 12 in ZHI21-26

"The pandemic and government policies to contain the disease will affect production levels across all sectors—although a partial easing of border closures may help. The industrial and mining sectors are equally faced with reduced competitiveness, low commodity prices, and interruptions in electrical service that disrupt output. The problems are exacerbated by debt distress and arrears, and low international reserves that can cover less than one month of imports. Zimbabwe's economic situation will remain challenged in 2021, although the foreign exchange reforms, especially the weekly Forex auctions, introduced in June 2020 could create price stability and create room for modest economic recovery". 6:70 p 15 in ZHI21-26

According to various authors, they noted that the country's economic outlook is one major concern that affects the adoption of green procurement methods in the health sector in Zimbabwe. The country's economy has suffered several obstacles, including inflation,

currency volatility, and inadequate financial resources (Ezenduka et al., 2022; Mothupi et al., 2022; Selviaridis et al., 2023). These limits frequently lead to the prioritisation of cost over sustainability, as health institutions seek the most cost-effective choices to fulfil urgent demands. However, the country is working towards the adaptation of such practices as they are part of the Sustainable Development Goal 3 (SDG 3) - good health and well-being. This challenge has caused the country not to meet the Abuja Declaration of 2001 where all African Union (AU) member states agreed to invest 15% of their total budget towards health (Govender, Mcintyre, & Loewenson, 2008; Olalere, & Gatome-Munyua, 2020). The next focus of the discussion of results was on the policy and regulatory framework.

Policy and regulatory frameworks

The policy and regulatory frameworks are some of the bottlenecks found not to be favourable for the adoption of green procurement in Zimbabwe's health sector. Favourable policy and regulatory frameworks encourage the use of green procurement methods. Below is Figure 5 which speaks to this theme as provided for by the ATLAS.ti data analysis.

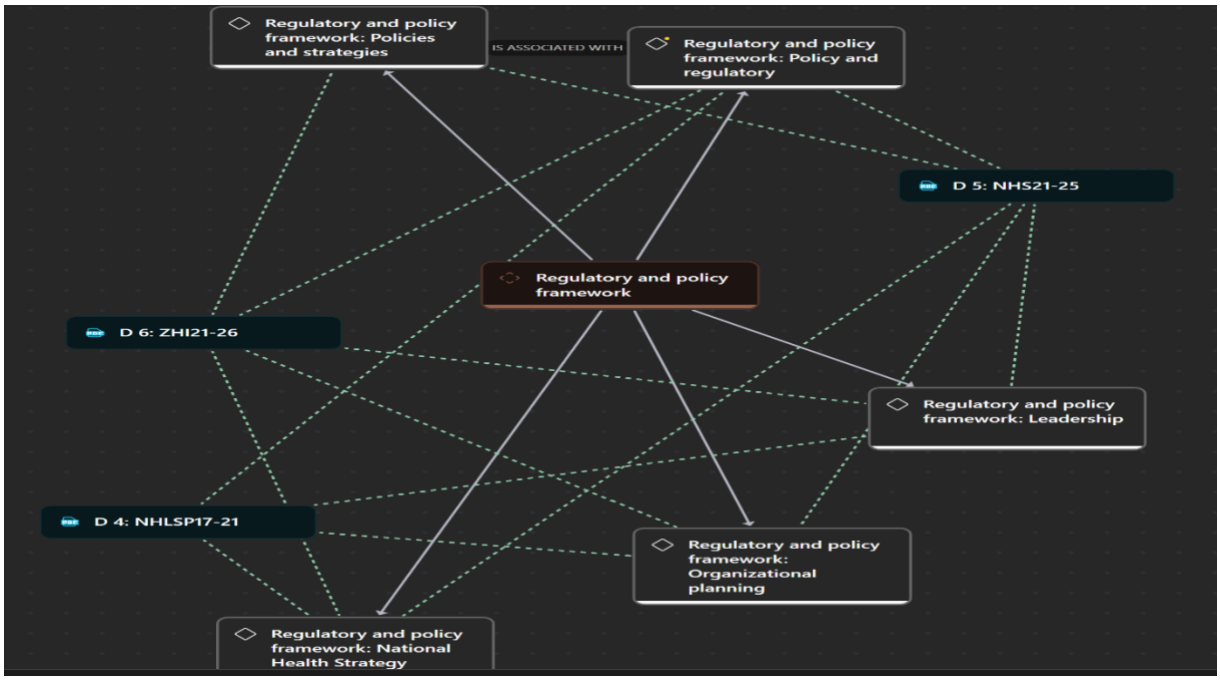

Figure 5: Interlinked issues with regulatory and policy frameworks (2024)

Figure 5 shows the results of the study related to regulatory and policy framework which are policies and strategies, policy and regulatory, leadership, national health strategy and organisational planning. These were merged sub-themes into the main category of regulatory and policy framework as one of the components that was found to work against the adoption of green procurement in the health sector in Zimbabwe. The quotes below from the data sources are in support of the position that this theme is considered one of the short legs of green procurement in Zimbabwe's health sector. The following data quotes support the argument of the regulatory and policy theme from the three sources used to integrate data.

"Verticalization of programs, poor accountability, and bad corporate governance across all levels. Inadequate access to health services, inadequate food and nutrition and lack of access to clean water, good hygiene and sanitation." 6:88 p 19 in ZHI21-26

"Regarding barriers to activities, the Ministry has authority to interfere in internal affairs, through suspension of all or any of the members of the PVO's executive committee where "it is necessary or desirable to do so in the public interest". 6:137 p 28 in ZHI21-26

"There is selective application of law by governmental authorities resulting is some CSOs being targeted. Donor / Funding Environment Some of the key points issues relating to the funding environment in Zimbabwe are, due to the economic situation in the country, Zimbabwe relies on donor aid for almost all the important facets of human development." 6:137 p 28 in ZHI21-26

The HIV and AIDS Strategy for the Informal Economy 2017-2020—which includes sex work as one of eight target sectors—ensures that partnerships with the private sector and key CSOs are established to increase and expand HIV integrated service delivery points, (NACP 2019a). 5:71 p 25 in NHS21-25

The results are in agreement with the literature that says the current existing procurement legislation lacks precise criteria or recommendations for assessing the environmental impact on procurement decisions, resulting in a lack of consistent approaches across the health industry (Panganayi, 2024; Zowa et al., 2013). Reviewing the procurement policy frameworks will add support to the procurement teams to include and enforce green procurement within the supply chain across the health services. Regulatory and

policy frameworks may need to be enhanced and include the provisions that make green procurement mandatory in the procurement of critical goods and services in the health sector. This will add value considering that there certain sections like in the laboratory services where dangerous waste like cyanide is produced especially in the running of Early Infant Diagnosis tests (Mayavo & Saruchera, 2024).

Limited supply chain

The following is Figure 6 which shows the results and the themes merged in support of the limited supply chain theme and the neighbours which affect the use of green procurement in the health sector in Zimbabwe**.** The diagram was created through the use of ATLAS.ti version 24.

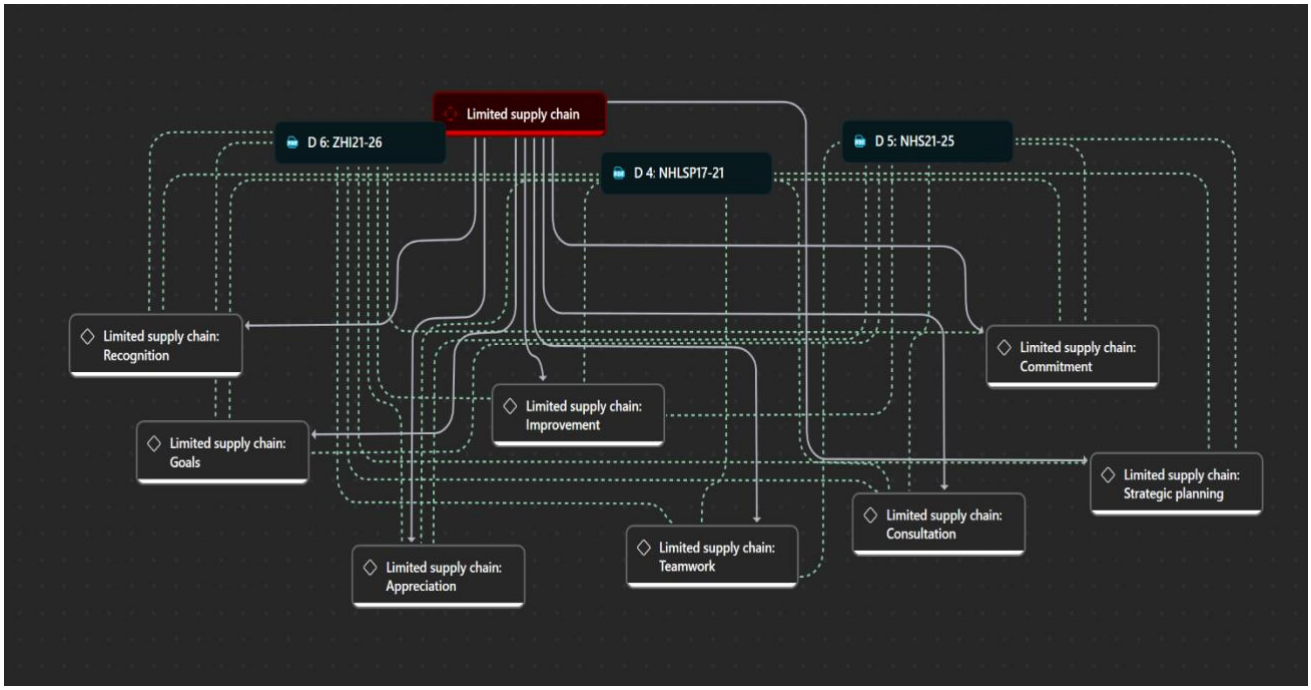

Figure 6: Limited supply chain themes and the neighbours; *Sources:* Author's Construct (2024)

Figure 6 provides a glimpse of the links that exist between the limited supply chain and the neighbours which came out as one of the challenges facing the health sector in Zimbabwe. The diagram shows the links and the association of the variables such as strategic planning, consultation, recognition, commitment, appreciation of the health systems and teamwork. These issues are some of the variables that affect the use of green procurement in the health sector. The quotes below from various sources were integrated in support of the theme produced.

"There have been several economic policy changes over recent years in Zimbabwe, which have meant that CSOs have to continually adjust how they bring funds into Zimbabwe and how they purchase with them. There has been an ongoing cash crisis which has negatively affected project performance and turnaround times for procurements. Local Z$ price fluctuations for goods make it difficult for CSOs to plan and budget for activities and procurements ahead of time". 6:69 p 15 in ZHI21-26

"The pandemic put pressure on strained public resources, the World Bank Zimbabwe Economic Update notes, exacerbating implementation challenges, severely affecting service delivery in health, education and social protection. These are key areas where ZHI aims to provide support." 6:110 p 23 in ZHI21-26

The following points to the fact that Zimbabwe heavily rely on imported consumables and disruption was much felt during COVID-19 period,

"Impact on the economy – exports, imports, local industry. The HIV and TB response in Zimbabwe relies heavily on imported consumables, test kits, and medicines. In the COVID-19 era, supply chain activities have been disrupted due to the closure of borders and grounding of cargo ships and flights. This has significantly affected the availability of ARVs and other commodities resulting in stock ruptures." 6:113 p 24 in ZHI21-26

"Service readiness is hampered by inadequate basic amenities including water and power, essential medicines and medical supplies, basic precautionary measures including Infection Prevention and Control, diagnostic facilities and basic equipment." 5:274 pp 68 – 69 in NHS21-25

The above results are supported by the various authors who pointed out that a limited supply chain is one of the challenges faced by the health sector. This background makes this factor influencing green procurement uptake in Zimbabwe as there is no availability of green products and services in the market and relies heavily on the importation of health goods and commodities from other countries such as South Africa, China and other European countries (Dzuke & Naude, 2015; Ezenduka et al., 2022; Simba et al., 2017). This eventually causes the price of such goods and services expensive for the health sector to afford to consider green procurement. Additionally, the procurement departments will focus on the prices and avoid extra costs since already duty and transport costs have to be taken care of (Elsbernd et al., 2022; Kumurya, 2015; Safi et al., 2020). The country's supply network for sustainable goods is undeveloped, leaving healthcare professionals with few options. This shortage might make it difficult to source environmentally friendly products, especially in isolated or rural places where supply chain constraints are more pronounced (Bilan, 2023; Xie, 2024).

Stakeholder engagement

The diagram (Fig. 7) below shows the results of stakeholder engagement as one of the challenges affecting the adoption of green procurement in the health sector in Zimbabwe.

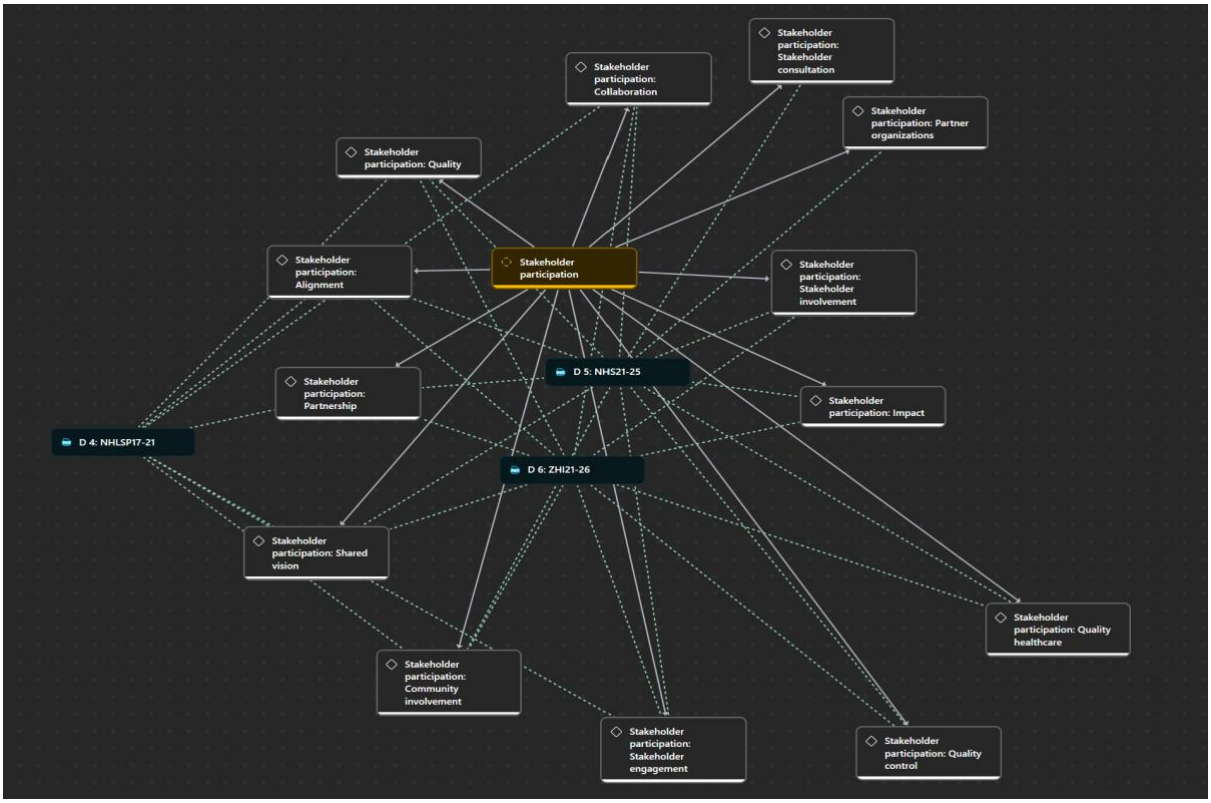

Figure 7: Stakeholder participation**;** *Source:* Author's Construct (2024)

Figure 7 shows the results of the data analysed for the stakeholder's engagement as a factor affecting the adoption of green procurement in Zimbabwe's health sector. The supporting quotes are shown below;

"Continuous engagement and communication with staff and stakeholders meant problem solving has taken place soon after problem identification to allow for continuity of operations." 6:38 p 10 in ZHI21-26

"*Shortage of qualified personnel due to brain drain and the current freeze on recruitments. Low staff morale and motivation due to poor working conditions. Repurposing of health care workers from other essential services to COVID-19 o Medical staff anxiety and burnout especially in the face of COVID-19 pandemic."* 6:86 p 19 in ZHI21-26

"Linkages between the laboratories at different levels remain weak because of lack of focal persons at Provincial and District level. The DLS sometimes has an overwhelming task of directly interfacing with the more than 170 labs in the country which severely limits top supervision and technical support to these lower facilities. This also overwhelms the limited staffing at Directorate that currently consists of the Laboratory Director, Deputy Laboratory Director, TB Focal person and the Logistics Coordinator." 4:39 p 12 in NHLSP17-21

"Despite high PNC coverage, there is minimal adherence by health facilities to the national post-natal care guidelines which stipulate that postnatal mothers and babies should be monitored in a health facility for at least 72 hours." 5:55 p 20 in NHS21-25

"The development of the Zimbabwe Health Laboratory Strategic Plan (NHLSP) involved the participation of stakeholders at different stages of the consultative process. In particular, the consultative process included planning meetings and review of key documents." 4:6 pp 3 – 4 in NHLSP17-21

Stakeholders are the major players who make all things happen and have to be engaged and consulted before any implementation can take place, this makes change over to green procurement of goods and services easy as well as providing technical expertise that is much needed especially in a health set-up (Asiedu et al., 2021; Malacina et al., 2022). Additionally, political will is a key component driver of the adaptation of green procurement in the various sectors of government including the health sector. Additionally, stakeholder engagement improves stakeholder participation and performance and fosters a sense of belonging and value for a stakeholder (Mhlanga, 2022; Rejeb et al., 2024).

Technology and infrastructure

The diagram (Fig. 8) below shows the results of the technology and infrastructure obstacles to the adoption of green procurement.

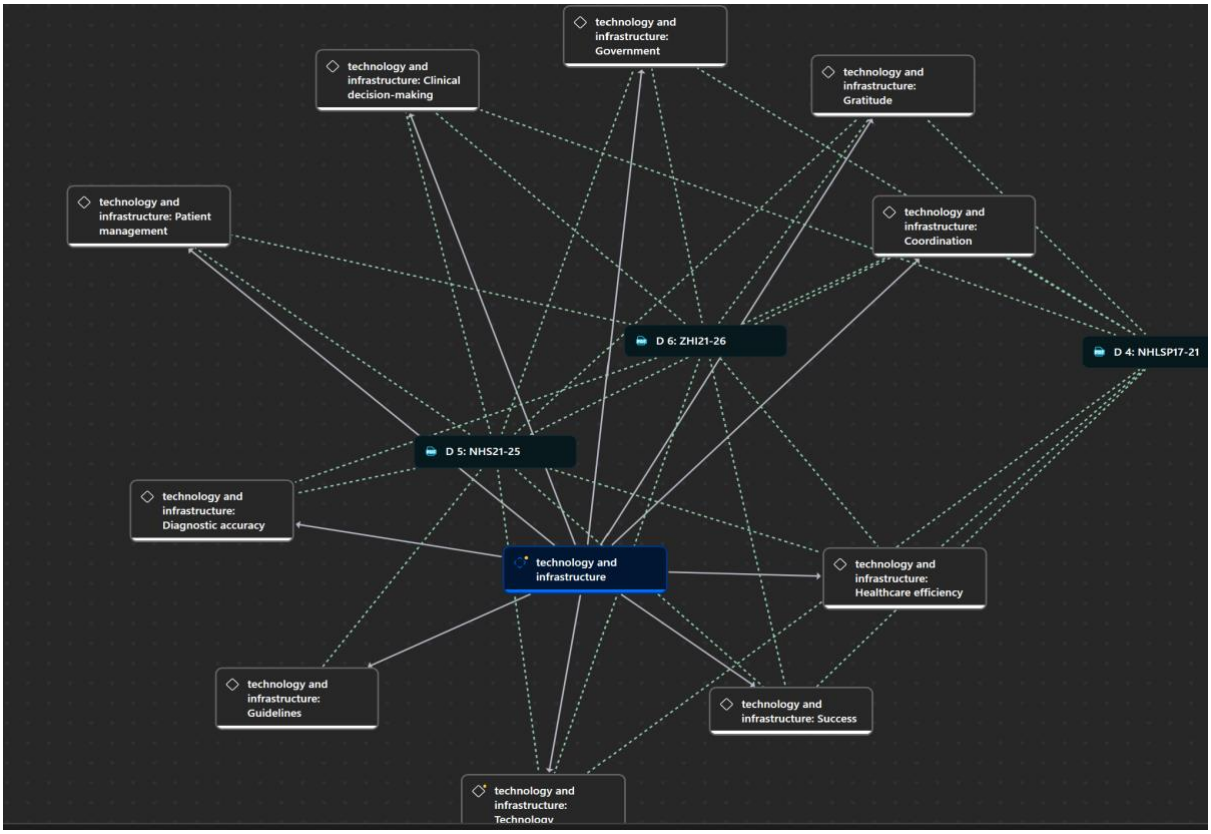

Figure 8: Technology and Infrastructure data analysis; *Source:* Author's Construct (2024)

The study results above (Fig. 8) show the data analysed for the technology and infrastructure as a factors affecting the adoption of green procurement in the health sector in Zimbabwe. The data below shows quotes that support the results of the study.

"This implies facilities do not meet people's expectations. Designated district hospitals should be capacitated so that they can do Caesarean Sections, Laparotomy, and treat open fractures at a minimum, the so-called Bellwether surgical conditions." 5:274 pp 68 – 69 in NHS21-25

"Dilapidated infrastructure and medical equipment, chronic shortages of essential medicines and commodities." 6:86 p 19 in ZHI21-26

"Limited infrastructure & equipment for the isolation and management of severe cases; porous borders; inadequate Personal Protective Equipment (PPE) and testing capacity 3. Disruption of essential services (movement restrictions, re-purposing of staff, lab equipment; disruption in service delivery due to inadequate PPE). More than 4,300 health care workers were infected." 6:111 p 24 in ZHI21-26

"Procure IT Hardware and infrastructure for the operation of the electronic LIS. DLS & Funding Partners Results of the pilot study Roll out the LIS to laboratories based on the work plan DLS & Funding Partners Laboratories using Electronic LIS." 4:115 p 41 in NHLSP17-21

"To reduce the burden of oral health diseases in the community. Oral health conditions have a high prevalence and low mortality. We do not have baseline data as the last National Oral Health Survey was conducted in 1995. According to WHO estimates, Zimbabwe has 38.2% unmet oral disease burden with dental caries contributing 25.9%." 5:250 p 64 in NHS21-25

"The health facility density for metropolitan provinces is 0.2 and 0.4 health facilities per 10,000 people in Harare and Bulawayo respectively, with most provinces around 1.6 while the National Average is 1.1. This is well below the country's target of 2 health facilities per 10 000 people." 5:46 p 18 in NHS21-25

"…, there are no District Hospitals in Harare and Bulawayo, resulting in primary care facilities referring patients requiring secondary level care to quaternary institutions. Lack of appropriately skilled human resources, medicines or equipment results in incapacity by lower-level facilities across the country and results in unnecessary referrals" 5:47 p 18 in NHS21-25

Many Zimbabwean healthcare institutions have out-of-date infrastructure that may make it difficult to apply sustainable practices (Dzuke & Naude, 2015; Mazikana, 2019; Simba et al., 2017). For example, energy-efficient technology, waste management systems, and eco-friendly materials may necessitate infrastructural modifications that are not viable given current limits (Safi et al., 2020; Tsai et al., 2022). Furthermore, the lack of access to trustworthy data and technology for assessing the environmental effect of purchase decisions hinders efforts to implement green practices. These issues are especially apparent in rural locations, where healthcare institutions may struggle to meet basic infrastructure requirements, making green buying practices an even lower priority (Carragher & Goggins, 2024; Sinsky et al., 2016; Wong et al., 2021). The next section focuses on training and awareness results.

Training and Awareness

On the training and awareness front, the results are in agreement with the literature that this is one area which affects the adoption of green procurement in Zimbabwe's health sector.

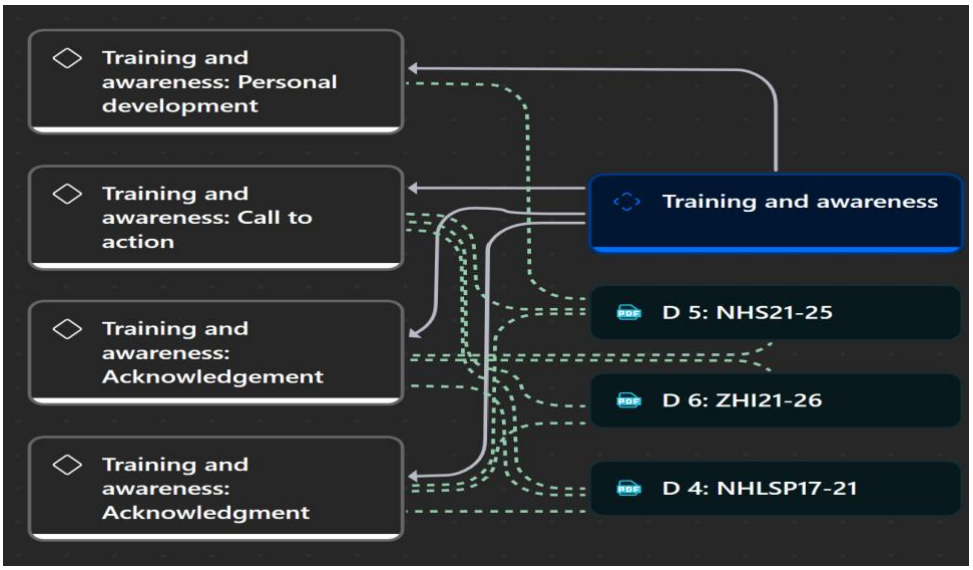

Figure 9. Training and Awareness; *Source:* Author's Construct (2024)

The data (Fig. 9) which was analysed in the ATLAS.ti v24 from the three documents used for the results have shown that there is a lack of acknowledgement, call to action and personal development. So training and awareness an important steps in the right direction for the health sector to consider such that green procurement can be practised no matter the situation prevailing in the country. The data presented below presents the quotes from the three sources of data,

"This must follow the principle that these levels are there to support the lower levels. However, these higher levels could be allowed to offer referral services beyond what is in the package, but on a full cost recovery basis. This is because they have responsibility for training and research and at the same time require additional funds to run their operations." 5:268 p 68 in NHS21-25

"Access to remote learning amid school closures was limited in rural areas, especially for poor households. Less than 30% of school going children in rural areas engaged in education and learning during pandemic-related school closures, compared with 70% for urban children (Zimstat, Rapid PICES phone survey July 2020). Following re opening, outbreaks have been reported in some schools." 6:112 p 24 in ZHI21-26

"Men are also reported to be engaging in Crystal Meth popularly known as "Mutoriro or Guka Makafala". There is limited knowledge on drug abuse management in Zimbabwe. Public psychosocial services are also limited. The current approach to HIV response in Zimbabwe is highly bio-medicalised and there are very little psychosocial interventions for PLHIV. Scaling up psychosocial support in the communities would potentially ease the pressure on health workers at facility level". 6:118 p 25 in ZHI21-26

"While the law recognises women's right to property, inheritance and divorce, many women lack awareness of their rights and are often vulnerable to all sorts of exploitations putting them at risk of HIV. In rural Zimbabwe, most women are marginalized and are not economically empowered and sometimes are prohibited from accessing sexual reproductive health services". 6:126 p 26 in ZHI21-26

"The pre-service training curricula need to be revised and standardised to meet the country's needs in terms of technology changes and new concepts. Laboratory associations are not yet visible in Zimbabwe and therefore there are no opportunities to train, motivate and improve ethical standards of their members." 4:49 p 13 in NHLSP17-21

It has been stated that procurement officials and healthcare providers may not have the essential knowledge to assess the environmental impact of their procurement decisions (Gatome-Munyua et al., 2022; Mofokeng & Luke, 2014). This awareness gap is supported by a lack of training on green procurement principles, limiting staff's capacity to effectively apply these practices. This lack of awareness extends to the larger organisational culture, where sustainability may not be viewed as a crucial concern, resulting in resistance to change (Ezenduka et al., 2022; Prier et al., 2016). However, the government's role is key in making sure that the health sector has overcome these challenges and the study proposes that the government should allow the health sector to make use of public-private partnerships to leverage the expertise of the industry that knows the current infrastructure and technology requirements to meet the current trends in the health sector. Furthermore, the government could increase employee salaries to be comparable to the regional and international standards to avoid the brain drain of key stakeholders such as qualified employees such as nurses, procurement officers, and medical laboratory scientists. The study further proposes that the government can make use of collaborations with various key institutions knowledgeable about green procurement, within regional and international institutions.

Policy implications

By exploring the perspectives of various stakeholders, including healthcare providers, procurement officers, policymakers, and suppliers, the study seeks to uncover the challenges and opportunities associated with green procurement. The objective is to provide insights that can inform policy development, enhance awareness, and promote the integration of sustainable procurement practices in Zimbabwe's health sector, ultimately contributing to environmental sustainability and improved public health outcomes. Additionally, policymakers should establish regulations that mandate green procurement practices in the health sector and this should define what constitutes green procurement providing guidelines for compliance. Furthermore, the government should introduce incentives to support the adoption of sustainable procurement in the health sector and beyond. Furthermore, the policymakers should ensure that training and resources are provided as essential elements of the health sector in Zimbabwe. Capacity building programmes to support procurement officers with the knowledge and tools necessary for sustainable development.

Furthermore, policymakers should advocate for awareness campaigns to increase the health sector's knowledge on the adoption of sustainable procurement, hereby laying bare the importance of using green procurement methods. Additionally, policymakers should encourage collaborations and partnerships between government and industry can facilitate the sharing of knowledge, best practices and resources. Zimbabwe as a signatory to the Abuja Declaration of 2001, the country can revert to this agreement and meet the suggested 15% of the total country budget set aside only for the health sector to support the adoption of green procurement. Moreso, Zimbabwe is also a signatory to Sustainable development Goals, and political will can further strengthen the use of green procurement. Lastly, the policymakers should establish monitoring and evaluation mechanisms that may help to identify the best practices and challenges that can inform policies and a culture of accountability within the procurement circles in the health sector.

Conclusion

The study concluded that the health sector of Zimbabwe may need to improve to deal with challenges affecting the adopting the use of green procurement. The country's adoption of green procurement is hinged upon improving stakeholder engagement, supply chain, training and awareness, and economic outlook which is affected by sanctions and mismanagement of the economy by the government. Additionally, there is a lack of proper infrastructure and technology. Health infrastructure and the use of technology are important as they allow the use of telemedicine, and data of patients may be kept in the cloud and can be retrieved for future use anytime. The results further show that political will is another important aspect that may bring about the use of green procurement in the health sector. Where political will is invested in sustainable issues, policies are put in place to support the use of green procurement. Although Zimbabwe is a landlocked country and finds the adoption of green procurement in the health sector expensive, there is a need for the government to put policies in place in support of sustainable procurement.

However, the study recommends that the government should work on motivating employees to avoid brain drain and make sure that sustainability is taken seriously. Additionally, the study recommends that policies are put in place supported from the top, that is, the President and the minister concerned with green procurement in the health sector. The study further recommends that training should be provided to the procurement officers and other relevant departments to increase awareness of the need for green procurement methods in the health sector. Additionally, the study recommends that the government make use of the monitoring and evaluation systems that will influence policymakers in support of green procurement. In terms of technology and infrastructure, the government of Zimbabwe should collaborate with international and regional collaborators to learn how technology and infrastructure systems can

be adopted and implemented to support the use of green procurement. Furthermore, the government should consider the stakeholders' views and communicate with them for the sake of sustainable procurement to be adopted without much hindrance.

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Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.
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