The Aid for Trade Paradox: A Mixed Methods Evaluation of Trade Costs and Agricultural Export Performance in Nigeria

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Table of Contents

List of Tables vi

List of Figures vii

List of Acronyms viii

Acknowledgement x

Abstract xi

Chapter 1 1

1. Introduction 1

1.1. Background 1

1.2. Background to Nigeria 4

1.3. Nigeria's Aid for Trade Profile 6

1.4. Trends in Nigeria's Agricultural Export Performance 9

1.5. Theoretical Framework 12

1.6. Research Questions 13

1.7. Conceptual Framework 15

1.8. The Nigerian Expanded Trade and Transport Project (NEXTT) 20

1.9. Theory of Change Framework 22

1.9.1. Theory of Change Components 25

1.9.2. Assumptions 26

Chapter 2 27

2. Aid for Trade and Nigeria's Bilateral Trade Cost: A Sectoral Analysis 27

Abstract 27

2.1. Introduction 27

2.2. Literature Review 30

2.2.1. Mechanisms of AfT Impact on Trade Costs 30

2.2.2. Empirical evidence on AfT and trade costs 32

2.2.3. Research Gaps and Contributions 33

2.3. Methodology 34

2.3.1. Data and Time Frame 34

2.3.2. Model Specification 35

2.3.3. Estimation Strategy 37

2.3.4. Diagnostic Tests for Model Assumptions 38

2.3.5. Addressing Endogeneity: Instrumental Variables Approach 39

2.3.6. Data Definitions and Sources 41

2.3.7. Robustness Checks 44
2.4. Results 44
2.4.1. Baseline Model Results 44
2.4.2. Fixed Effects Estimates 46
2.4.3. Instrumental Variables Estimation Results 47
2.5. Discussion 50
2.6. Conclusion 54
Chapter 3 57
3. Aid for Trade and Nigeria's Agricultural Export Performance. 57
Abstract 57
3.1. Introduction 57
3.2. Literature Review 59
3.2.1. Theoretical Links Between AfT and Export Performance 59
3.2.2. Global Empirical Evidence on AfT and Export Performance 59
3.2.3. Regional and ECOWAS Empirical Evidence 61
3.2.4. Differential Impact of AfT Types Components 61
3.2.5. Sectoral Variations in AfT Effectiveness 62
3.2.6. AfT Studies in the Nigerian Context 63
3.2.7. Research Gaps and Contributions 63
3.3. The Gravity Model 64
3.4. Methodology 66
3.4.1. Data and Time Frame 66
3.4.2. Model Specification and Variables 67
3.4.3. Estimation Strategy 71
3.4.4. Robustness Checks 72
3.4.5. Methodological Limitations and Future Research Directions 75
3.5. Results 75
3.5.1. Overall Impact of Total AfT on Nigeria's Exports 75
3.5.2. Disaggregated AfT Components 78
3.5.3. Regional Variations: ECOWAS Effects with Total AfT 80
3.5.4. Combined Effects of Disaggregated AfT: ECOWAS and Sectoral Analysis 81
3.6. Discussion 83
3.6.1. Sectoral Heterogeneity in AfT Effectiveness 83
3.6.2. Differential Impact of AfT Components 83
3.6.3. Regional Integration Effects on AfT Effectiveness 84
3.6.4. Trade Costs and Export Performance 84

3.6.5. Domestic Market Conditions and Binding Constraints 85
3.6.6. Implications for Policy and Research 86
3.7. Conclusion 86
Chapter 4 88
4. Hard Infrastructure Delivery in Nigeria: A Process Evaluation of the LAKAJI Corridor Component of the NEXTT Project 88
Abstract 88
4.1. Introduction 88
4.2. An Assessment of Previous NEXTT Evaluations: Methodological Limitations and Research Gaps 91
4.3. Research Questions 94
4.4. Literature Review 95
4.4.1. Trade Corridors: Beyond Infrastructure to Integration 95
4.4.2. Infrastructure Development and Institutional Barriers 96
4.4.3. Public-Private Partnerships in Trade Development 97
4.4.4. Implementation and Sustainability Challenges in Trade Facilitation 97
4.5. Methodology 98
4.5.1. Process Evaluation Framework 98
4.5.2. Data Collection Methods 103
4.5.3. Data Analysis 106
4.5.4. Validity and Reliability 107
4.5.5. Positionality and Ethical Considerations 108
4.6. Results And Discussion 109
4.6.1. Context: How has Nigeria's economic context influenced trade and transportation services along the LAKAJI Corridor? 109
4.6.2. Implementation: What strategies and approaches were employed to implement the trade and transport interventions along the LAKAJI Corridor? 112
4.6.3. Sustainability: What factors have influenced the long-term sustainability of trade and transportation improvements implemented along the LAKAJI Corridor 115
4.6.4. Implications For the Project Theory of Change 121
4.7. Conclusion 123
Chapter 5 124
5. Soft Infrastructure Development in Nigeria: Evidence from the NEXTT Project's Trade Facilitation and Export Support Components 124
Abstract 124
5.1. Introduction 124
5.2. Literature Review 128
5.2.1. Trade Facilitation and Institutional Reform in Developing Economies 128

5.2.2. Export Promotion Programs and SME Performance in Developing Countries 129
5.2.3. Research Gaps 130
5.2.4. ToC Key Components and Assumptions 131
5.4. Data Sources and Methodological Approach 134
5.5. Component Two: Trade Policy and Trade Facilitation. 136
5.5.1. Context: How did Nigeria's unique economic, political, and social contexts affect the effectiveness of the project's trade policy and trade Facilitation component? 136
5.5.2. Implementation: What specific approaches were used to provide trade facilitation support to the relevant ministries? 142
5.5.3. Sustainability: What factors helped to promote and sustain continued trade facilitation after the project's completion? 145
5.5.4. Implications for the Theory of Change 152
5.6. Component Three: Expanded Export Support 153
5.6.1. Context - What were the specific contextual factors that impacted the implementation of the Expanded Export Support component of the NEXTT project? 153
5.6.2. Implementation - What key activities and significant milestones were accomplished to ensure expanded export support? 160
5.6.3. Sustainability - To what extent have the results and outcomes of the expanded export Support component been maintained following the project's completion? 163
5.6.4. Implications for the Theory of Change 167
5.7. Conclusion 168
Chapter 6 172
6. Conclusion 172
6.1. Sectoral Heterogeneity 172
6.2. Temporal Dimensions: infrastructure time vs. quick wins 173
6.3. Regional Integration and AfT Effectiveness 174
6.4. The Role of Public-Private Partnerships 175
6.5. The Aid for Trade Paradox 175
6.6. Methodological Contributions 177
6.7. Policy Implications and Recommendations 178
6.7.1. Sector-Differentiated AfT Programming (Based on Chapter 2) 178
6.7.2 Align AfT with Regional Integration Priorities (Based on Chapter 3) 179
6.7.3 Address Institutional Fragmentation and Improve Coordination (Based on Chapter 4) 179
6.7.4 Sequence AfT Interventions Appropriately (Based on Chapter 5) 180
6.7.5 Strengthen Local Ownership and Institutional Alignment (Based on Chapter 5) 181
6.7.6 Strengthen Transparency and Programme Accountability 181
6.8. Limitations and Future Research 182
6.9. Final Reflections 183

7. References 184
8. Appendix 203
Appendix A: Summary of control variables for agricultural export models 203
Appendix A1: Control variables used in regression models reported in Table 10. 203
Appendix A2: Control variables used in regression models reported in Table 11. 204
Appendix A3: Control variables used in regression models reported in Table 12. 205
Appendix B: Participants Interview Schedule 206
Appendix B1: LAKAJI Corridor Improvement Interview 206
Appendix B2: Trade Policy and Trade Facilitation Interview 209
Appendix B3: Expanded Export Support Interview 212
Appendix B4: USAID Nigeria Interview 215
Appendix B5: Financial Services Interview with the Bank of Industry (BOI) 220

List of Tables

Table 1. Summary of Expected Variable Relationships with Trade Costs 42
Table 2. Variable Definitions and Sources 43
Table 3. Baseline Estimates of AfT on Trade Costs 45
Table 4. Fixed Effects Estimates of AfT on Trade Costs 46
Table 5. First Stage Estimates 48
Table 6. IV Estimates of AfT on Trade Costs 49
Table 7. Summary of Explanatory Variables and Expected Relationship with Agricultural Exports. 73
Table 8. Data definitions and sources 74
Table 9. Impact of Total AfT on Exports: Fixed Effects Estimates 77
Table 10. Impact of Disaggregated AfT Components on Exports: Fixed Effects Estimates 79
Table 11. Total AfT and ECOWAS Effects on Exports: Fixed Effects Estimates 80
Table 12. Combined Effects of Disaggregated AfT: ECOWAS and Sectoral Analysis 82
Table 13. OECD TFA Indicators for Nigeria for the years 2017, 2019, and 2022 150

List of Figures

Figure 1. Fuel Exports as Percentage of Nigeria's Total Merchandise Exports (2005-2021).....5
Figure 2. Annual AfT Disbursements to Nigeria (2005 – 2020) in USD Millions, current prices.....7
Figure 3. Sectoral AfT Disbursements to Nigeria (2005 – 2020) in USD Millions, current prices.....8
Figure 4. Agricultural Exports as Percentage of Total Merchandise Exports (2005-2020).....10
Figure 5. Composition of Nigeria's Agricultural Exports: Food vs. Raw Materials (2005-2020).....11
Figure 6. Conceptual Framework for AfT Impact on Nigerian Trade 17
Figure 7. NEXTT Project Theory of Change 24
Figure 8. NEXTT Geographic Focus.....89
Figure 9. LAKAJI Corridor component Channel of Impact.....102
Figure 10. Contextual factors influencing trade and transportation along the LAKAJI Corridor 109
Figure 11. Informal Checkpoints Operated by Local Residents Along Kano Expressway 111
Figure 12. Strategies and approaches for implementing trade and transportation interventions along the LAKAJI Corridor.....112
Figure 13. Factors influencing the long-term sustainability of trade and transportation improvements implemented along the LAKAJI Corridor. 115
Figure 14. Nigeria's Logistics Performance Data between 2010 and 2023 120
Figure 15. Process Evaluation ToC.....132
Figure 16. Economic, political, and social factors that influenced the effectiveness of the trade policy and trade Facilitation component.....136
Figure 17. Customs Officers Stationed by the Roadside Along Kaduna Expressway.....138
Figure 18. A Military checkpoint along the Kaduna-Kano Expressway 141
Figure 19. Approaches used to provide trade facilitation support to the relevant ministries.....142
Figure 20. Factors that have helped to promote and sustain continued trade facilitation after the project's completion.....145
Figure 21. Doing Business - Trading Across Borders Indicators for Nigeria (2014 to 2019). 151
Figure 22. Contextual factors that impacted the implementation of the Expanded Export Support component of the NEXTT project. 153
Figure 23. Broken-down trailers along the roadside. 156
Figure 24. Congestion at Apapa Port – Loaded Trucks Queued for Offloading.....157
Figure 25. Key activities and milestones accomplished to ensure expanded export support. 160
Figure 26. The extent to which results and outcomes of the expanded export Support component have been maintained following the project's completion. 163
Figure 27. Food Export Trends Data for Nigeria from 2005 to 2019.....166
Figure 28. The Aid for Trade Paradox Visualised.....176

List of Acronyms

AEO - Authorised Economic Operators

AfCFTA - African Continental Free Trade Area

AfT - Aid for Trade

ATF - Aid for Trade Facilitation

B2B - Business-to-Business

BDS - Business Development Services

BOI - Bank of Industry

BTA - Bilateral Trade Agreement

CMG - Corridor Management Group

CRS - Creditor Reporting System

ECOWAS - Economic Community of West African States

EPP - Export Promotion Programs

FERMA - Federal Emergency Road Maintenance Agency

FMITI - Federal Ministry of Industry, Trade, and Investment

GDP - Gross Domestic Product

GMM - Generalised Method of Moments

GoN - Government of Nigeria

GVC - Global Value Chain

IV - Instrumental Variable

LAKAJI - Lagos-Kano-Jibiya Corridor

LDC - Least Developed Country

LPI - Logistics Performance Index

MDA - Ministries, Departments, and Agencies

MFN - Most Favoured Nation

MoU - Memorandum of Understanding

NCS - Nigerian Customs Service

NEEP - Nigeria Expanded Exports Program

NEPC - Nigerian Export Promotion Council

NEXTT - Nigerian Expanded Trade and Transport Project

NIPC - Nigerian Investment Promotion Commission

ODA - Official Development Assistance

OECD - Organisation for Economic Co-operation and Development

OPEC - Organization of Petroleum Exporting Countries

PDF - Project Development Facility

PPP - Public-Private Partnership

REER - Real Effective Exchange Rate

SAP - Structural Adjustments Program

SME - Small and Medium-sized Enterprise

TFA - Trade Facilitation Agreement

TFI - Trade Facilitation Indicator

TIFA - Trade and Investment Framework Agreement

ToC - Theory of Change

UNCTAD - United Nations Conference on Trade and Development

USAID - United States Agency for International Development

WDI - World Development Indicators

WTO - World Trade Organization

2SLS - Two-Stage Least Squares

Acknowledgement

With profound gratitude to Almighty Allah, I present this completed thesis. Its fruition would have been impossible without the immeasurable and invaluable support of the remarkable people around me. This thesis is borne out of great resilience and was completed amidst the harshest reality I could have ever envisioned. I commenced my education from the wards of a teaching hospital as a nursing student, and then proceeded to medical school shortly after, a journey that was cut short but worth my while. Those who knew of my departure from medical school understood that it was not a matter of incapability, but rather that some things simply are not meant to be. At that moment, I resolved that I would become a doctor regardless. Perhaps not within the corridors of the hospital treating the sick, but by remedying deplorable situations. And now, here I stand.

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Abstract

This thesis analyses the impact of Aid for Trade (AfT) on Nigeria's agricultural export performance since its inception in 2005. It employs a mixed methods approach, combining econometric analyses of trade costs and exports with a qualitative process evaluation, to uncover the relationships between AfT and trade performance in Nigeria.

The first empirical chapter, Chapter 2, measures the impact of AfT on trade costs between Nigeria and its trading partners from 2005 through 2018. Using a broad measure of trade costs and an instrumental variable approach to account for endogeneity, the analysis concludes that AfT increased trade costs in Nigeria's manufacturing sector. A 1% increase in AfT corresponds to a 0.89% increase in manufacturing trade costs. However, it had no statistically significant effect on agricultural trade costs. These results reveal important sectoral variations in AfT's impact on trade costs.

The second empirical chapter, Chapter 3, uses an augmented gravity model with increasingly detailed fixed effects to analyse the impact of AfT on Nigeria's agricultural exports over the same period. The findings show that AfT had a positive impact on Nigeria's agricultural exports, with a 1% increase in AfT associated with about 0.2% to 0.4% increase in agricultural exports. Different AfT components show varying effectiveness: while economic infrastructure aid has mixed effects, productive capacity and trade policy aid show positive effects. In addition, AfT also had a greater (more positive) impact on exports within the ECOWAS regional framework. This paradox, whereby AfT increased agricultural exports despite having no significant effect on agricultural trade costs, presents an analytical puzzle that is thoroughly examined in Chapters 4 and 5.

To explore these differentiated impacts further, this study conducts a process evaluation of the USAID-funded Nigerian Expanded Trade and Transport (NEXTT) project, an important AfT project, which was implemented between 2012 and 2017. The evaluation was conducted using semi-structured interviews, document analysis, and trade data triangulation. According to the findings, hard infrastructure investments along the Lagos-Kano-Jibiya (LAKAJI) Corridor encountered significant implementation challenges, such as institutional fragmentation, corruption, and ineffective coordination. In contrast, soft infrastructure interventions, such as business development activities, resulted in immediate export gains, despite existing institutional constraints.

This study contributes to the AfT discourse in three important ways. First, it shows that AfT's impact varies significantly across sectors, implementation approaches, and regional contexts. Second, it draws attention to the critical role of regional frameworks, as ECOWAS membership appears to amplify export gains. Third, it uncovers temporal trends indicating that initial adjustment costs may temporarily increase trade costs before delivering longer-term benefits. These findings call for phased, context-specific AfT intervention strategies that work within regional structures, build on thorough institutional diagnostics, and address sector-specific requirements. The study demonstrates that context trumps resources in aid effectiveness.

Chapter 1

1. Introduction

This chapter provides an overview of the AfT initiative and explains its theoretical underpinnings. It then details Nigeria's economic history, tracing its evolution from an agrarian economy through periods of reliance on crude oil to more recent efforts at export diversification. Nigeria's economic trajectory from an agricultural powerhouse to oil dependency sets the stage for examining AfT's impact on the country's export performance. The conceptual framework section presents the pathways through which various AfT components may influence export performance. Finally, it introduces the Nigerian Expanded Trade and Transport (NEXTT) project, which is the focus of the process evaluation, and proposes a Theory of Change (ToC) for analysing the context in which the project was implemented, the activities implemented, and its sustainability.

1.1. Background

After the failure of import substitution industrialisation, many developing countries embraced multilateralism (Igwe, 2021) and shifted their development strategies to focus on trade liberalisation[1] and trade facilitation[2]. Most countries joined the World Trade Organization (WTO) to access its membership benefits, such as institutional support and facilitation of cross-border trade. The expectation was that firms from member countries would be able to access international markets (Nuruzzaman *et al.,* 2021). Business owners in Sub-Saharan Africa can benefit from trade facilitation efforts because of the increased opportunities presented by the international trading system (Sakyi and Afesorgbor, 2019).

[1] Trade liberalisation: The process of reducing or eliminating international trade barriers such as tariffs, quotas, and non-tariff measures. It advocates for a more open and efficient trade regime based on the theory of comparative advantage, which justifies global trade liberalisation through organisations such as the WTO (Siddiqui, 2015).

[2] Trade facilitation: measures that aim to simplify and streamline international trade procedures, such as customs clearance, documentation requirements, and border controls, in order to reduce trade costs and increase efficiency (Kumari and Bharti, 2021).

Many years after joining the WTO, developing countries were still dealing with supply-side constraints such as infrastructure deficits and a lack of capital, which hindered their ability to benefit from liberal trade. This challenge led to the launching of the Aid for Trade Initiative (AfT) in December 2005 (Lee *et al.,* 2015), an initiative highly praised by scholars and practitioners in the field of trade and international development (Gnangnon, 2018). The AfT initiative is built on the premise that international trade can contribute immensely to a country's economic development.

However, many developing countries require targeted assistance to overcome the structural constraints (OECD and WTO, 2017). While multilateral trade negotiations under the Doha Development Round (which began in 2001) sought to address developing countries' concerns through revised trade rules, the progress was slow and contentious. Intellectual property rights, non-agricultural market access, and agricultural subsidies discussions did not result in outcomes that could benefit developing countries. Against this backdrop, the AfT initiative sought to up the ante by moving beyond rule-based negotiations to offer practical, targeted support for building trade capacity and infrastructure. This complementary approach recognised that while negotiations on trade rules continued, immediate assistance was needed to address binding constraints on trade performance (Hoekman, 2011). This targeted aid approach aimed to help countries overcome specific trade-related constraints, such as inadequate infrastructure, limited productive capacity, and institutional weaknesses (Lee *et al.,* 2015).

Moreover, the AfT initiative provides technical assistance to developing countries and helps them improve their trade capacities by providing funds for important investments, e.g., in key infrastructure, to maximise the benefits accruable from international trade. It pushes interventions that liberalise trade both domestically and multilaterally to foster development. Also, AfT can help developing countries adjust to the internal and external pressures that arise due to trade liberalisation and reforms (Hoekstra and Koopmann, 2011). For instance, internal adjustment costs typically result from closures of production facilities, employment losses, and losses of tariff revenue in the wake of import liberalisation. Adjustment requirements, therefore, concern the restructuring of production, labour retention, and fiscal reform (Winters *et al.,* 2004). When a country's adjustment capacities are limited, official adjustment assistance, such as AfT, may be required.

External adjustment costs, on the other hand, arise from the 'preference erosion' facing developing countries on foreign markets due to Most Favoured Nation (MFN)-based trade liberalisation, which may also justify compensation in the form of AfT. Official Development Assistance (ODA) and other official funds are used to support the AfT initiative (Alonso, 2016a), and the majority of these funds are disbursed through bilateral or multilateral agreements with donors or regional and international financial and development institutions (OECD and WTO, 2015).

AfT activities are typically classified into three main categories. The first category is productive capacity building, which involves the development of banking and financial services sectors, business and other services sectors, agriculture, fisheries and forestry sectors, industry, mineral resources, mining sectors, and tourism. The second category involves the economic infrastructure required for international trade: transportation and storage, communications, and energy. The third category addresses trade policies and regulation, which entails trade-related adjustments in terms of addressing technical barriers to trade, regional economic integration, multilateral negotiations, trade administrative management, as well as sanitary and phytosanitary measures (Lammersen and Roberts, 2015; OECD and WTO, 2015; Kim, 2019; Masunda, 2020). These three categories are aimed at helping developing countries break trade barriers and promote their international trade performance.

Between 2006 and 2017, AfT disbursements totalled $410 billion, of which $146.2 billion went to Africa, according to the WTO. Since 2006, a total of 178,141 AfT projects have been funded, of which 62,030 were implemented in Africa (OECD and WTO, 2019b). The top ten AfT donors in the world are the World Bank, the United States, the UK, Japan, the European Union, Germany, France, the African Development Bank, the Asian Development Bank, and the Netherlands. Together, these donors have contributed 82% of all AfT disbursements since 2006. However, around 95% of AfT spending goes to economic infrastructure and productive capacity, and trade policy regulation accounts for the other 5% (Kim, 2019).

Even with the substantial ODA allocated to AfT, major knowledge gaps remain about the impact of AfT, especially on its effectiveness, value for money, and accountability (Jakupec, 2016). These gaps include insufficient measurement frameworks for assessing long-term development

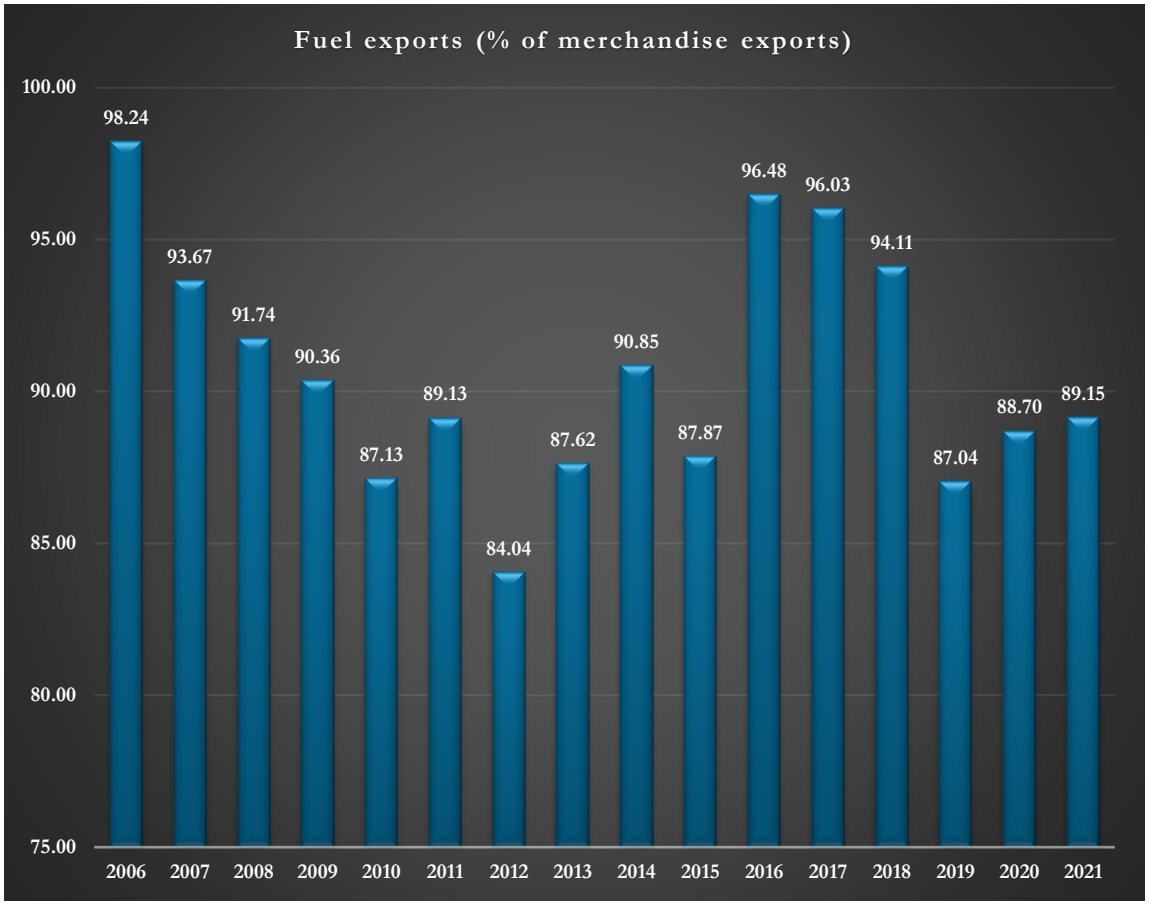
outcomes beyond immediate trade results; inadequate attention to country-specific contextual factors that influence implementation success; limited understanding of how different AfT components interact; and ineffective mechanisms for ensuring recipient country ownership. Jakupec argues that existing AfT evaluation approaches often prioritise donor reporting requirements over genuine impact assessment, resulting in insufficient attention to these gaps. He further implies that these limitations persist partly because evaluation methods have not evolved to address the multifaced nature of trade interventions, and partly due to the political economy of aid, which tends to prioritise visibility over sustainability. These gaps have far-reaching implications for both policy design and the practical implementation of AfT programmes.

1.2. Background to Nigeria

Before the discovery of crude oil, Nigeria mainly relied on the agricultural sector as a source of revenue. Nigeria was also known as the world's leading producer and exporter of major food crops, being the largest exporter of palm oil and palm kernel products, second only to Ghana in cocoa production, and third in groundnut production before gaining independence in 1960 (Osabohien *et al.*, 2019). The agricultural sector generated about 65% of the total output of the GDP, over 80% of Nigeria's export earnings, and about 50% of total government revenue in the 1960s. In the non-oil sector, agriculture alone accounted for about 35% of the Nigerian GDP and 88% of the foreign exchange income (Onakoya and Alayande, 2019). At the time, Nigeria's agricultural sector was well-known for exporting cash crops such as cocoa, rubber, hides and skins, and groundnut palm, among many others (Sertoğlu, Ugural and Bekun, 2017).

However, since joining the Organization of Petroleum Exporting Countries (OPEC) in 1970, Nigeria has relied heavily on the oil sector as its primary source of export revenue (Onafowora and Owoye, 2008). The oil sector now accounts for more than 90% of Nigeria's total exports (Adeyemi and Adewumi, 2022). Figure 1 shows Nigeria's continued reliance on fuel exports since the launch of the AfT initiative in 2005. Despite over 15 years of AfT interventions aimed at diversification, fuel exports have consistently dominated Nigeria's export profile, rarely falling below 84% of total merchandise exports. This pattern underscores the significant challenges for Nigeria's

export diversification efforts and the importance of examining AfT effectiveness in agricultural export promotion.



Source: World Bank World Development Indicators

Figure 1. Fuel Exports as Percentage of Nigeria's Total Merchandise Exports (2005-2021).

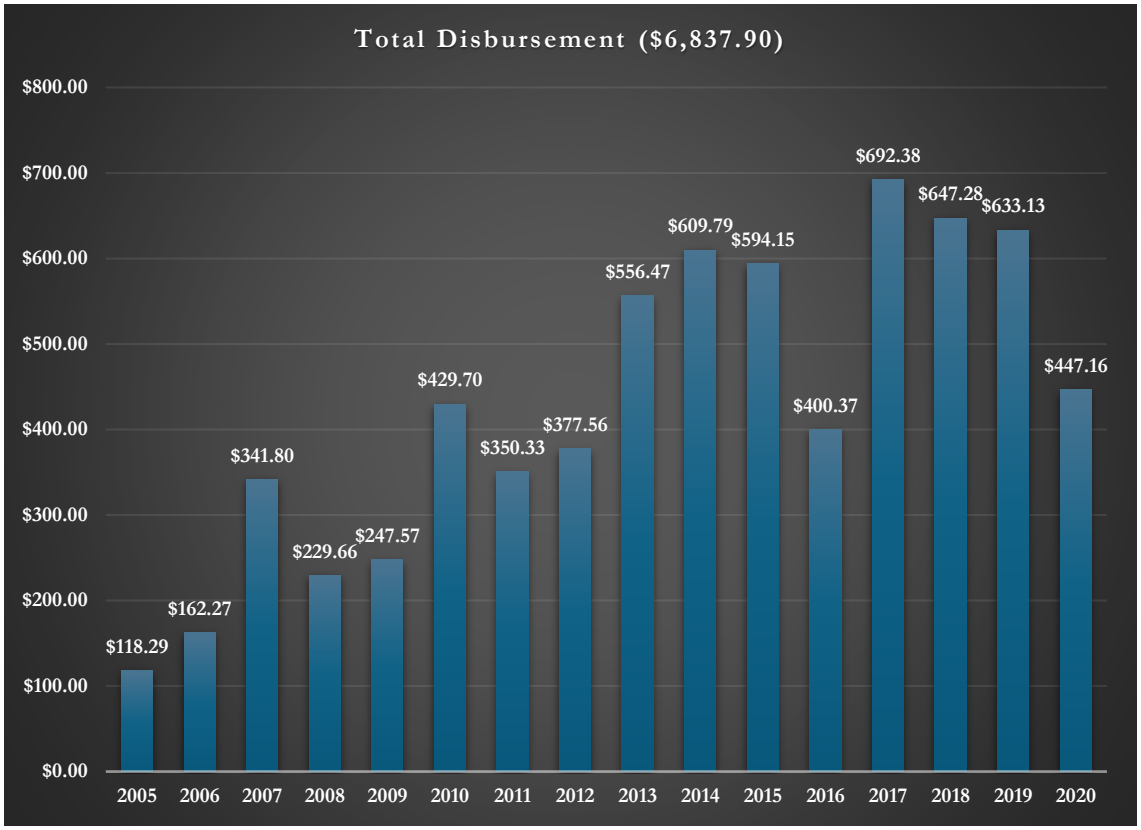
Besides the volatility of crude oil, it is exhaustible and unreliable to achieve the level of economic growth needed for sustainable development in Nigeria (Lee, Park and Shin, 2015). As the first oil crisis struck the world in early 1980, Nigeria began to seek an alternative approach to development (Mukhtar *et al.*, 2022). At the time, trade liberalisation was already becoming a popular discourse among international trade policymakers. Nigeria started to explore policies, programs, and institutions that could improve the non-oil sector's performance to ensure a stable economy. In 1986, the Structural Adjustments Program (SAP) was introduced to curtail Nigeria's overreliance on crude oil exportation for foreign exchange. The sole aim of the SAP was to restructure the economy and promote export diversification by improving non-oil exports (Adeyemi and Adewumi, 2022).

1.3. Nigeria's Aid for Trade Profile

To find a lasting solution to the pervasive economic crisis, Nigeria continued to pursue policies and strategies to reform its economy. On January 1st, 1995, Nigeria, alongside 75 other countries, joined the WTO on the day it was created. For Nigeria, the aim was first: to clearly reaffirm its commitment to the rules and disciplines of liberal trade and the multilateral trading system; second, to advance its economic and trade priorities; and third, to restate its challenges with international trade and seek technical support to better integrate its economy into the global economy (Dubagari, 2016). Leveraging its ascension into the WTO, Nigeria signed several multilateral and bilateral agreements to achieve economic growth (Osabohien *et al.,* 2021). It now ranks as one of the top 20 countries with the highest AfT commitment since 2020, and one of the largest aid recipients in Africa (OECD and WTO, 2022). Notably, the top three ODA donors to Nigeria are the World Bank ($1.166B), the United States ($651.2M), and the United Kingdom ($329.7M).

Since the AfT's inception in 2005, many projects have also focused more on achieving the AfT objectives in Nigeria through multilateral and bilateral agreements. According to the WTO, Nigeria has 16 bilateral trade agreements (BTAs), nine memoranda of understanding (MoUs), and a trade and investment framework (TIFA) with the United States (Oladipupo and Adedoyin, 2019). Today, it is the largest trader in West Africa, given its huge political and economic influence over the region (Moses, 2024), as well as strong trade relations with the Netherlands, Germany, Vietnam, India, and France, which are the main agricultural export destinations (Oladipupo and Adedoyin, 2019b).

Over the years, Nigeria has received a significant amount of AfT funding, totalling $6.8 billion between 2005 and 2020, as shown in Figure 2. The figure shows year-to-year volatility in disbursements. This fluctuation in funding raises questions about the consistency and sustainability of trade development initiatives in Nigeria over the study time frame.



Current Prices, USD Millions

Source: OECD Creditor Reporting System

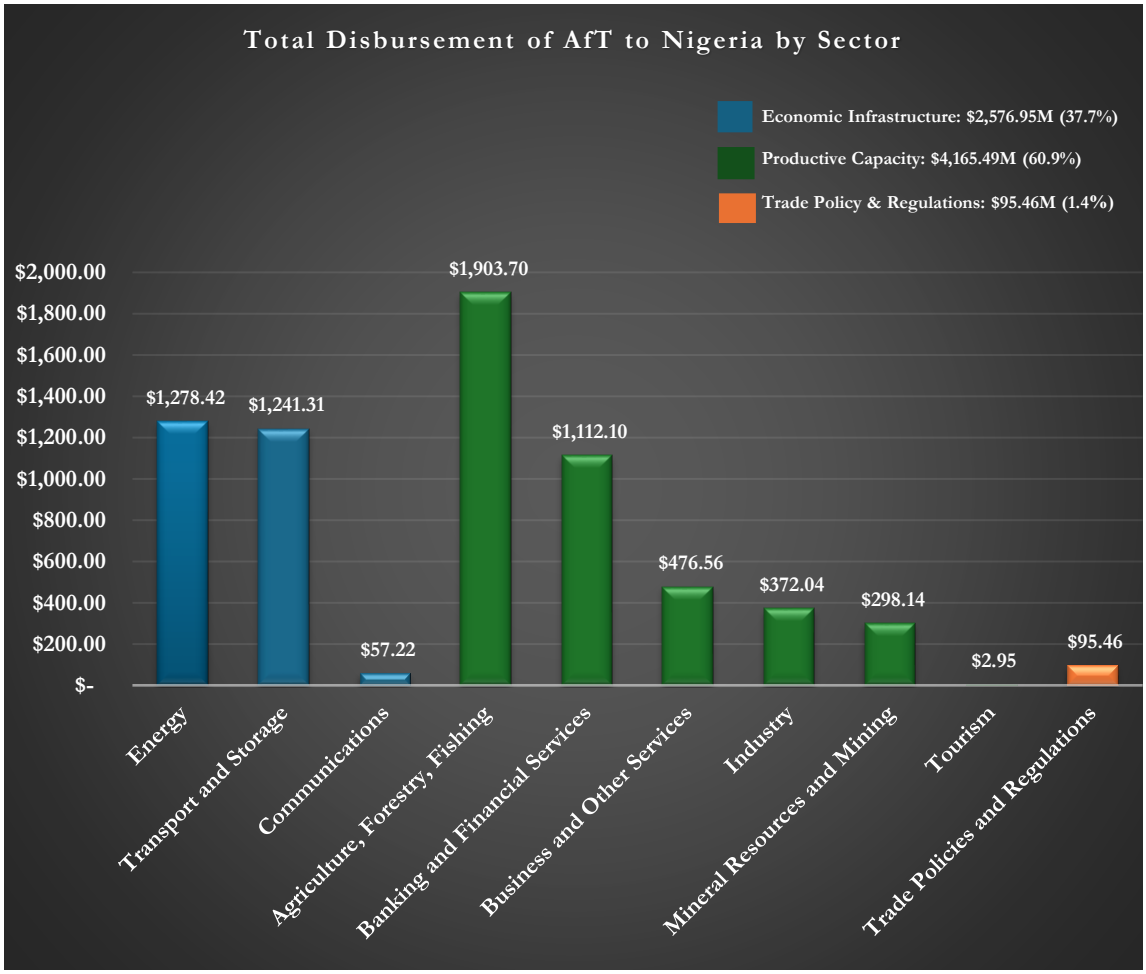
Figure 2. Annual AfT Disbursements to Nigeria (2005 – 2020) in USD Millions, current prices.

In comparison with other ECOWAS economies, Nigeria's AfT increased from USD 194.5 million in 2006 to approximately USD 825.5 million in the early 2020s. Over the same period, Ghana's AfT rose from USD 334.3 million to just under USD 500 million, while Senegal's increased from USD 208.6 million to USD 551.7 million. Côte d'Ivoire also received substantial AfT support, increasing from USD 18.7 million in 2006 to USD 248.7 million in 2018, the most recent year for which data is available (UNSD, 2024). On per capita basis, Ghana receives approximately USD 15 per capita and Senegal receives around USD 33 per capita, whereas Nigeria receives roughly USD 4 per capita. These AfT disbursements are however, reported in constant prices rather than the current price used in Figures 2 and 3.

Figure 3 presents the sectoral distribution of AfT disbursements to Nigeria between 2005 and 2020, with agriculture, energy, transportation and storage, and banking and financial services

receiving the highest proportion of funding. This allocation pattern reflects both global AfT priorities and Nigeria's specific development needs, which include productive capacity and economic infrastructure. The distribution across sectors is a useful context for determining which trade constraints have received the most attention from donors.

AfT distribution reflects current development priorities, though its allocation across infrastructure development, productive capacity, and regulatory frameworks raises important questions about investment balance. These questions include how AfT can improve coherence within broader aid strategies and better integrate trade policies with other economic sectors. This study examines these spending patterns to assess their effectiveness in promoting Nigeria's trade performance.



Current Prices, USD Millions

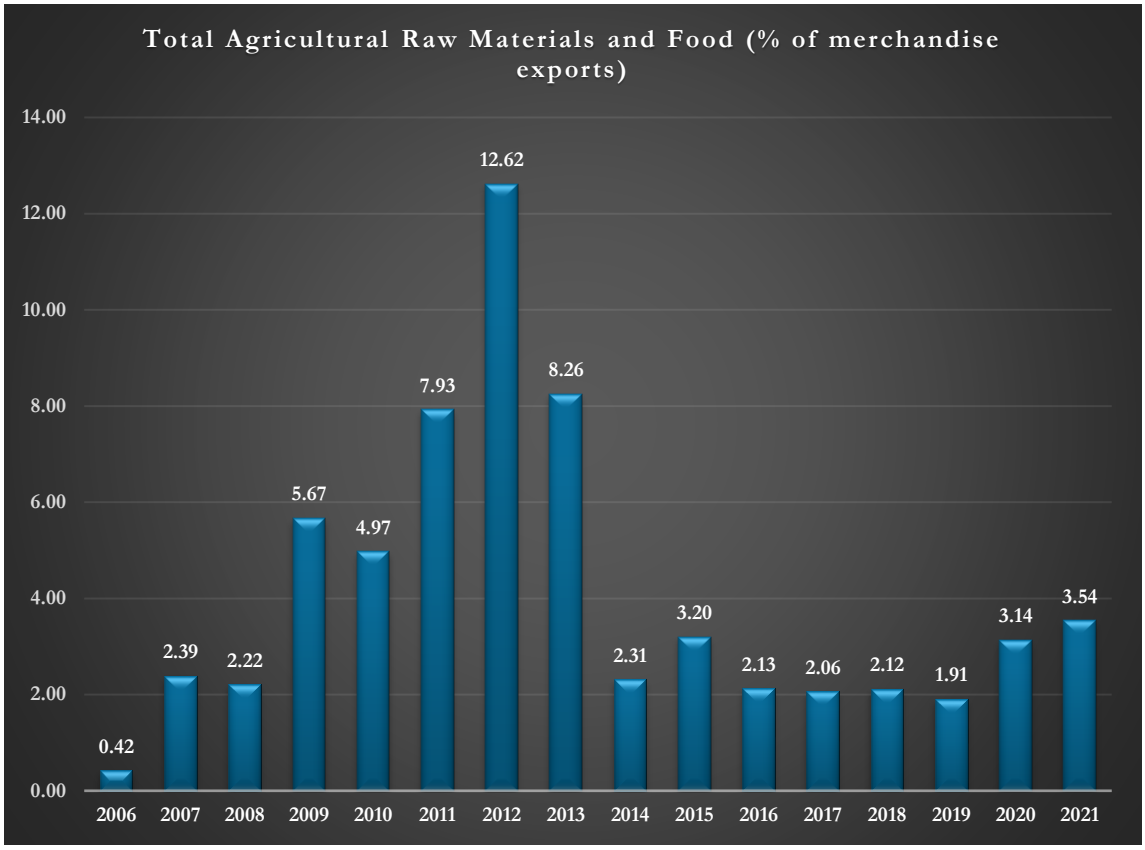
Source: OECD Creditor Reporting System

Figure 3. Sectoral AfT Disbursements to Nigeria (2005 – 2020) in USD Millions, current prices.

These AfT figures are, however, interpreted with caution due to several limitations in the underlying data. First, the OECD CRS does not capture all forms of trade-related external assistance. Most notably, it misses development finance from China, which is a major contributor to infrastructure, logistics, and industrial development across Sub-Saharan Africa. However, China does not report to the OECD-DAC. According to Regissahui (2019), South Africa received 19.04% of Chinese Foreign Direct Investment while Angola secured 29.89% of Chinese loans between 2000 and 2017. This level of Chinese involvement illustrates the substantial scale of finance that remains outside OECD reporting systems. Similarly, Strange et al. (2017) estimate that China's development finance commitments to Africa totalled approximately USD 73 billion, of which only about USD 15 billion meets traditional ODA criteria. Also, non-DAC development finance is not systematically captured in Western aid databases (Dreher *et al.*, 2018), and the OECD CRS does not provide ready-made country-level AfT totals for African recipients. Consequently, official AfT datasets may significantly understate the total trade-related support available to African economies.

1.4. Trends in Nigeria's Agricultural Export Performance

Figure 4 presents trends in Nigeria's agricultural exports as a percentage of total merchandise exports since the inception of the AfT initiative. Agricultural exports rose significantly between 2009 and 2013, peaking at 12.62% in 2012 before declining to less than 4% in recent years. This pattern raises questions about the sustainability of AfT's impact on agricultural export capacity.



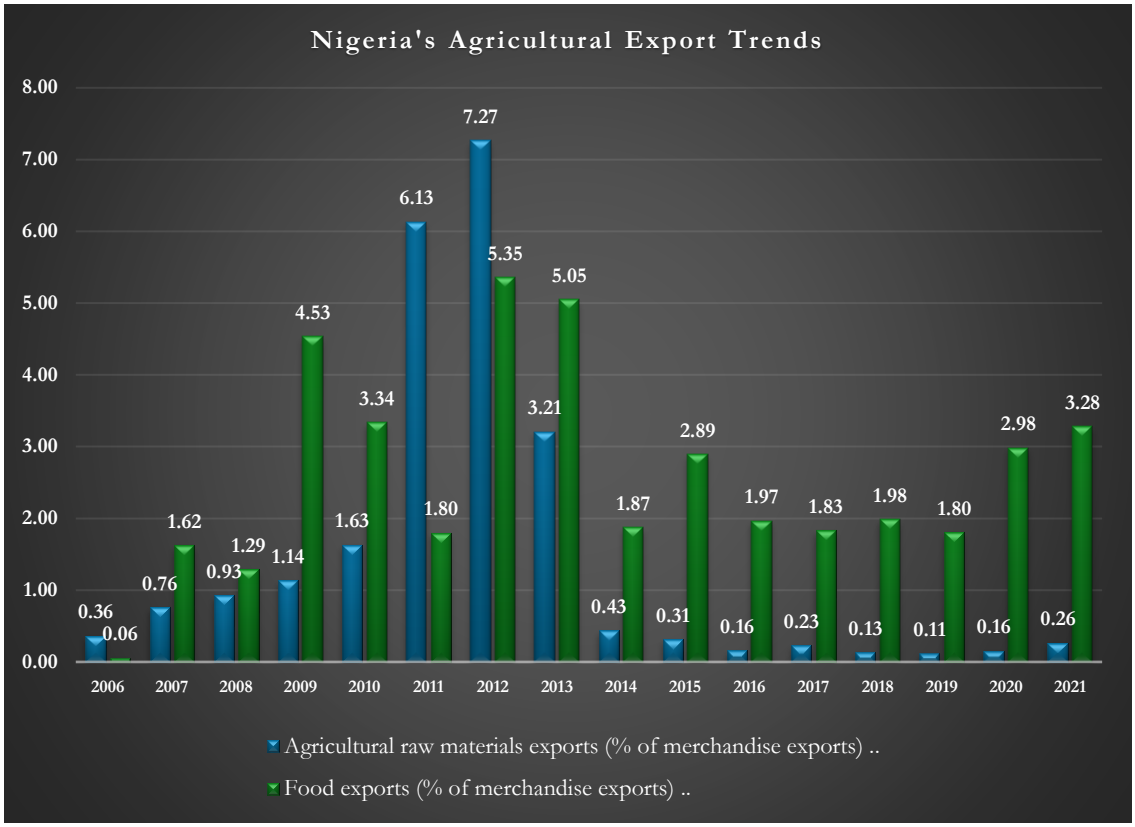
Source: World Bank World Development Indicators

Figure 4. Agricultural Exports as Percentage of Total Merchandise Exports (2005-2020).

In recent years, Nigeria's primary agricultural exports include a range of products, though accounts differ slightly. According to PWC (2019), key exports include sesame, cashew nuts, fermented and high-quality raw cocoa beans, frozen shrimp and prawns, soybeans, and natural cocoa butter. Abdullahi et al. (2021) list cocoa, spices, chilled or frozen crustaceans and invertebrate fish, vegetable oils, fruits and nuts, oil seeds, and oleaginous fruits among Nigeria's major exports.

Beyond the product composition, Nigeria's agricultural export structure presents important patterns. Figure 5 shows that food exports have consistently formed a larger portion of Nigeria's agricultural export portfolio than raw materials since 2009. This indicates some progress in value-added processing. However, when considered alongside the overall decline shown in Figure 4, it reflects only a limited structural transformation in Nigeria's export profile. This trend in agricultural exports reflects Nigeria's diversification efforts. The breakdown of agricultural exports into raw

materials and food products may help explain the trends in Nigeria's export strategy and value chain development.



Source: World Bank World Development Indicators

Figure 5. Composition of Nigeria's Agricultural Exports: Food vs. Raw Materials (2005-2020).

These export trends indicate that, despite the substantial amount of AfT disbursed to Nigeria since 2005, agricultural exports have not maintained their growth momentum beyond 2013. The higher proportion of food exports compared to raw materials points to some progress in value addition (Utuk *et al.*, 2023), but the overall contribution of agricultural exports to total merchandise exports remains small. This raises questions about the effectiveness of AfT investments in developing Nigeria's agricultural export performance, as well as whether current interventions adequately address structural barriers to trade development in this sector.

1.5. Theoretical Framework

Theoretically, the AfT initiative is based on classical and neo-classical trade theory, but it also draws from the "new" new trade theory. Classical and neo-classical trade theory posits that trade liberalisation allows for the reallocation of resources from areas of comparative disadvantage to areas of comparative advantage, enabling income to move toward a higher steady-state level (Gnangnon, 2018). David Ricardo's classical theory of comparative advantage proposes that countries benefit from trade by specialising in goods that they can produce at a lower opportunity cost than other countries (Costinot and Donaldson, 2012). Despite its age, this theory remains useful for understanding the potential benefits for Nigeria's agricultural sector, where natural resources create opportunities for export specialisation.

The Heckscher-Ohlin model extends this understanding by considering differences in factor endowments between countries. It predicts that nations will export goods that intensively use their abundant factors of production (Morrow, 2010). Nigeria, with its vast arable land and substantial labour force, demonstrates the validity of this model through its historical agricultural export success. However, these traditional theories alone cannot explain the complex patterns of global trade observed today in developing economies that are still struggling with structural constraints.

The "new" new trade theory, pioneered by Melitz (2003), further explains how AfT can promote trade by focusing on firm heterogeneity as a major factor in international trade. According to this theory, only the most productive businesses can overcome the fixed costs of exporting, such as meeting foreign regulatory requirements and establishing distribution networks. This self-selection mechanism explains why exporting firms are larger, more productive, and more likely to survive than non-exporting ones (Bernard *et al.*, 2007). The Nigerian agricultural sector exemplifies this heterogeneity, with larger, more established firms typically better positioned to export directly, whereas smaller producers frequently rely on intermediaries or local markets to export (Ajayi, 2016).

According to the "new" new trade theory, AfT interventions ought to target specific constraints at various productivity levels (Cadot *et al.*, 2015). The theory explains how financial frictions and trade costs affect export choices. Higher trade costs lead to a disproportionate decline

in the number of exporting firms relative to the volume of exports (Chaney, 2008). This implies that, in Nigeria, reducing trade costs through specific infrastructure and trade facilitation measures may be effective for increasing agricultural exports by allowing more businesses to overcome export barriers.

Trade facilitation can considerably increase the likelihood of domestic firms joining international markets by reducing trade costs, and even non-exporting local firms can develop into exporters if trade costs are considerably reduced (Sakyi and Afesorgbor, 2019). Moreover, the "new" new trade theory draws attention to market failures that may prevent otherwise productive firms from participating in international trade. According to Manova (2013), credit constraints can prevent even productive firms from entering export markets; a finding that is relevant in Nigeria's agricultural sector, where access to finance remains a major challenge.

While these theoretical frameworks explain how AfT can improve Nigeria's agricultural export performance, they must be contextualised within Nigeria's institutional environment. The success of AfT interventions is determined not only by theoretical alignment but also by their practical implementation in Nigeria's unique socioeconomic setting. These contextual governance factors are imperative to understanding AfT effectiveness in Nigeria.

1.6. Research Questions

The subject of whether aid is effective has been examined from several methodological and ideological angles. More specifically: (i) the impact of aid has been studied at the micro and macroeconomic levels; (ii) researchers have employed cross-country comparisons as well as single-country case studies; and (iii) aid effectiveness has been analysed using both qualitative and quantitative approaches (Hansen and Tarp, 2000). This study analyses the effectiveness of AfT in Nigeria by employing analytical approaches that encompass all methodological angles, excluding the cross-country perspective. From a purely AfT standpoint, impact is measured on trade, including balance of payments, countertrade, quotas, export performance measurements, export competition, trade balancing measures, etc. (Jakupec, 2016). Accordingly, this study examines the impact of AfT primarily through the lens of export performance.

Previous studies have analysed AfT effectiveness using either quantitative methods (Calì and te Velde, 2011a; Vijil and Wagner, 2012a) or qualitative approaches (Basnett *et al.*, 2012; Razzaque and te Velde, 2013). However, there has been limited research on mixed methods evaluations of AfT within a single-country context. Most quantitative analyses of AfT effectiveness rely on cross-country data, which often obscures country-specific factors (Bearce *et al.*, 2013; Lammersen and Roberts, 2015), whereas qualitative case studies frequently lack the empirical rigour needed to establish causal relationships between AfT and trade performance (Jakupec, 2016). This study addresses these methodological limitations by employing a mixed methods approach that combines econometric analysis of trade costs and export performance with a thorough process evaluation of a major AfT project. It presents a more complete picture of AfT effectiveness in Nigeria by shedding light on the processes that influenced the outcomes.

In addition, Nigeria, as one of Africa's largest economies, is a compelling case for examining AfT effectiveness. As earlier stated, Nigeria ranks among the top 20 global recipients of AfT and is one of the top 10 recipients in Africa (OECD and WTO, 2022). Despite these substantial investments, the fundamental question remains: to what extent have these investments effectively addressed structural trade barriers in Nigeria? This study explores the effectiveness of AfT in reducing these barriers and enhancing Nigeria's ability to benefit from global trade liberalisation. To assess AfT's impact in Nigeria, this study systematically examines how AfT disbursements for infrastructure development, productive capacity building, and trade policy regulations influence Nigeria's trade costs and export performance. The analysis aims to answer the question: To what extent has AfT facilitated Nigeria's agricultural export performance? To achieve this, the study focuses on three specific objectives:

1. Evaluate the impact of AfT on trade costs between Nigeria and its trading partners.
2. Evaluate the impact of AfT on Nigeria's agricultural export performance.
3. Conduct a process evaluation of the Nigerian Expanded Trade and Transportation Project (NEXTT).

Thus, the analysis is divided into four chapters that thoroughly assess AfT effectiveness in Nigeria. The first empirical chapter analyses how AfT affects Nigeria's trade costs with its trading

partners. In the chapter, I employ Novy's structural gravity methodology to examine whether AfT reduces trade costs as intended, focusing on the differences in impact between agricultural and manufacturing sectors. To mitigate potential endogeneity concerns, I use fixed effects estimation and instrumental variables approaches with lagged AfT values.

In the second empirical chapter, I use an augmented gravity model framework to analyse AfT's impact on Nigeria's agricultural export performance. I employ progressive fixed effects specifications to analyse how various AfT components: economic infrastructure, productive capacity, and trade policy and regulations, influence Nigeria's export performance. For regional comparison, I also examine AfT's impact on Nigeria's exports to the Economic Community of West African States (ECOWAS) region to explore regional trade patterns.

For the third and fourth empirical chapters, I present a detailed process evaluation of the United States Agency for International Development (USAID)-funded Nigerian Expanded Trade and Transportation (NEXTT) project. The evaluation focuses on how contextual factors, implementation strategies, and sustainability factors influenced infrastructure development, trade policies and export performance in Nigeria. In these chapters, I employ qualitative methods, such as semi-structured interviews and document analysis, to understand how the interactions of the aforementioned factors influenced AfT's success on the ground. These chapters provide a granular, micro-level analysis of AfT in Nigeria, complementing the macro-level analysis conducted in the quantitative chapters (2 and 3).

1.7. Conceptual Framework

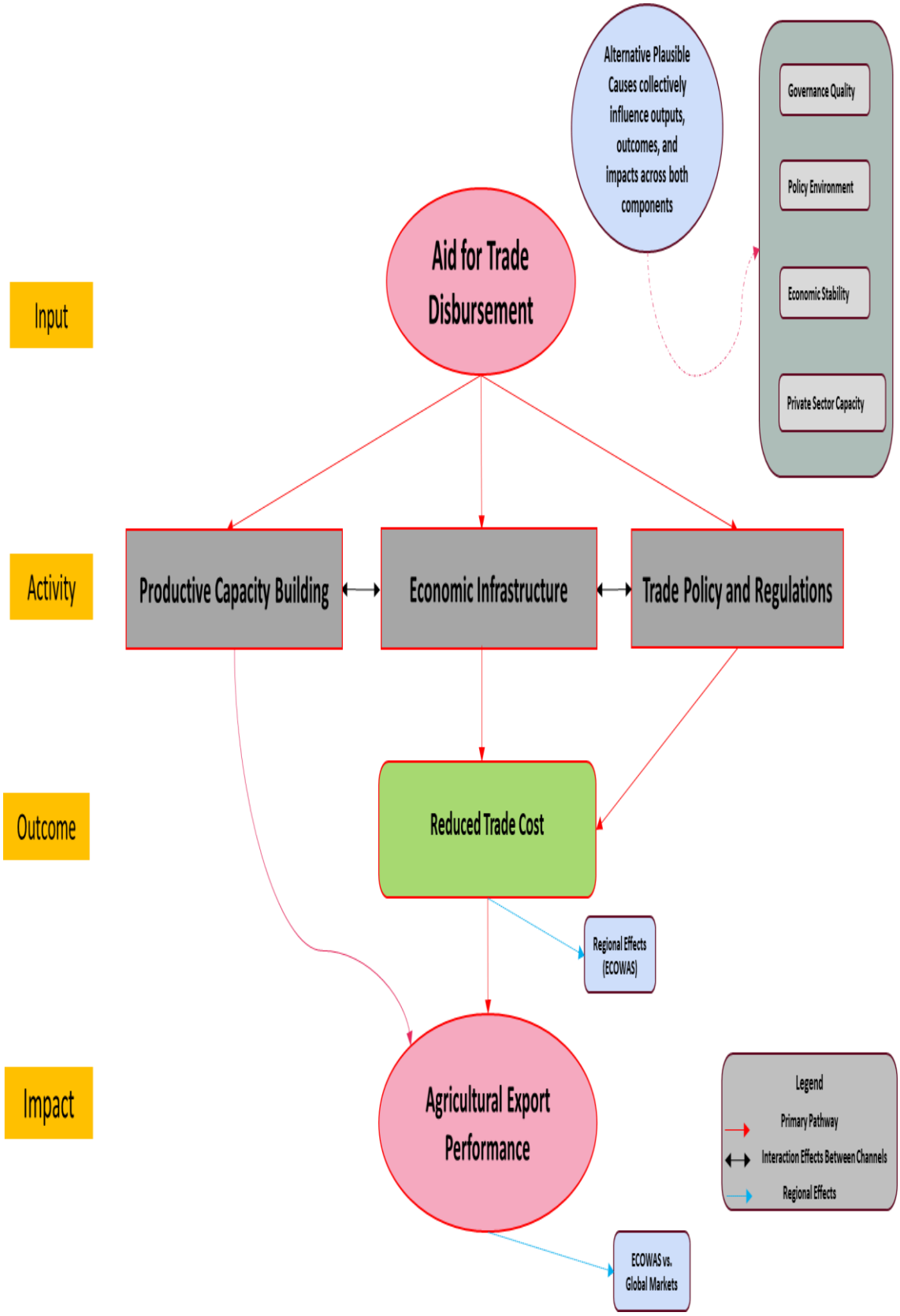
Multiple pathways exist through which AfT may affect countries' development. Through AfT, countries could: i) enhance their economic infrastructure to reduce trade costs and encourage trade; ii) enhance their productive capacity to encourage export diversification and boost productivity; and iii) improve trade policy and regulations to strengthen the institutional and policy framework for trade (OECD and WTO, 2015).

Although there is no direct cause-and-effect relationship between trade and economic expansion, numerous studies indicate that there is a positive association between increased trade and economic growth in developing countries. Zahonogo (2016) found that trade openness and economic growth in Sub-Saharan Africa are linked in a nonlinear way, with growth improving up to a certain level of openness before levelling off. Similarly, Estevadeordal and Taylor (2013) found that countries that liberalised their trade policies experienced significantly higher growth rates than those that did not. According to Winters et al. (2004), trade liberalisation, when combined with complementary policies, can help reduce poverty in developing countries. Furthermore, effective trade policies and regulations can reduce tariff volatility, resulting in a more stable environment for trade growth (Gnangnon, 2019). These findings collectively demonstrate that if countries can improve their trade capacity through appropriate interventions, they will experience higher growth and may be able to address development challenges.

To analyse how these pathways operate in practice, Alonso (2016) developed a framework that maps the channels through which AfT affects trade performance[3]. Building on Alonso's approach, I develop a conceptual framework specific to the Nigerian context (Figure 6). This framework builds upon the three AfT channels to examine their specific application to Nigerian trade performance.

The conceptual framework gives a broad outlook of how different AfT categories may influence Nigeria's trade costs and export performance through various pathways. It proposes that AfT allocated to the infrastructure channel could fund activities aimed at developing transport and storage infrastructure, as well as communication and energy infrastructure. Investments in road networks, for example, could shorten the time it takes to transport agricultural goods from farms to ports, whereas improved port facilities could accelerate loading and customs clearance procedures. These improvements could directly reduce the time and costs of trading.

[3] Alonso's (2016) framework, titled *'AfT: channels of intended impact*,' maps how Aid for Trade operates through infrastructure development, productive capacity building, and export promotion to impact trade costs and export diversification, ultimately affecting trade, economic growth, and poverty reduction.



Source: Author's elaboration

Figure 6. Conceptual Framework for AfT Impact on Nigerian Trade

Likewise, the funds allocated to the productive capacity channel might help to improve the agricultural, business, and banking sectors. While this channel may not directly reduce trade costs, it could increase production efficiency and quality standards, potentially enabling firms to produce export-ready goods. For example, farmer training programs on modern cultivation techniques and quality standards may boost export crop production. Furthermore, strengthening the banking sector could improve access to trade finance, allowing exporters to overcome working capital constraints.

Similarly, funds allocated to the trade policy and regulation channel might help with trade facilitation, negotiation, and sanitary and phytosanitary measures. These interventions could help exporters escape the regulatory bottlenecks and compliance costs. For example, streamlining customs procedures may reduce processing time and documentation requirements, whereas standardising with trading partners could eliminate the need for redundant testing and certification.

However, according to this study's framework, the three AfT channels may operate differently in how they influence export performance. Export performance could primarily be affected indirectly by economic infrastructure and trade policy and regulation through their role in reducing trade costs. For instance, improved transportation infrastructure might reduce shipping times and fuel consumption, while preferential trade agreements could lower tariffs and other regulatory barriers. All of these are components of trade costs and, as a result, might enhance export performance. In contrast, productive capacity may directly impact export performance without necessarily affecting trade costs. Investing in agricultural technology, training programs, and quality improvement initiatives could directly improve Nigeria's ability to produce export-ready goods, regardless of the costs of transporting those goods to international markets. Also, programs that assist farmers in meeting international quality standards or increasing crop yields might directly benefit export performance, regardless of trade costs.

The framework also shows how the three AfT channels interact with each other. Economic infrastructure and productive capacity go hand in hand; as roads, ports, and electricity improve, farmers and processors can work more efficiently and sell to more customers. At the same time, as businesses expand, they require better infrastructure and may even attract additional investment to build it.

Similarly, when trade rules are simplified, improved roads and ports save traders time and money, rather than cancelling out these benefits through complicated procedures (Portugal-Perez and Wilson, 2012).

However, how well these works depend greatly on contextual factors like governance quality, policy environment, economic stability, and private sector capacity. Governance quality influences how transparently and prudently resources are used. Stakeholder engagement and institutional capacity building, for instance, are essential in contexts with governance challenges. The policy environment determines whether the rules are clear and consistent. Economic stability influences cost and investment decisions. And the capacity of the private sector demonstrates how well Nigerian businesses can capitalise on these improvements (Calì and te Velde, 2011a). While my primary focus is on how AfT affects overall trade costs and agricultural exports, I also examine what occurs within the ECOWAS region and compare the results to global markets.

Moreover, the importance of non-oil exports is evident from the need to move away from overreliance on a single product export, along with its associated challenges. This includes diversifying export products, creating currency for investment, and expanding participation in international trade and markets (Chukwuma, 2018). Since export diversification takes centre stage in Nigeria's economic transformation agenda, my analysis focuses on how the agricultural sector can contribute to this goal. Specifically, I look at how AfT can improve Nigeria's overall agricultural export performance by reducing trade costs. This approach enables me to analyse whether AfT effectively addresses the structural constraints that have previously limited Nigeria's agricultural export potential, and thus its ability to reduce reliance on oil exports.

This framework directly informs the analysis in the first two empirical chapters: Chapter 2 examines how AfT affects Nigeria's bilateral trade costs, and Chapter 3 estimates AfT's impact on agricultural export performance. The next section describes how I operationalise this framework at the project level.

1.8. The Nigerian Expanded Trade and Transport Project (NEXTT)

I chose the specific AfT project to analyse by scanning the databases of the biggest donor organisations to Nigeria and screening projects aimed at sectors under the AfT categories, as well as by phrases such as "trade facilitation" and "agricultural exports" over 10 years from 2014 to 2023. This left me with USAID, which I narrowed down even more by purpose (trade facilitation). The NEXTT project was the only project activity that covered all AfT sectors, addressed the three broad AfT objectives, and met the trade facilitation goal within the time frame specified. It is also an excellent case study because it integrated all three AfT channels into a single program. The project was also active during Nigeria's 2015 economic downturn, offering a deeper understanding of how trade interventions work during macroeconomic shifts and whether they make any meaningful difference.

The NEXTT project began in 2012 with USAID providing the entire financial backing of $16,620,054. Implementation was handled by Carana Corporation (now Palladium International). Though Nigerian government agencies didn't contribute funds directly, they supported the project through non-monetary means. The Nigerian Investment Promotion Commission (NIPC) and the Nigerian Shippers' Council provided staff time, office space, and local knowledge. The project design incorporated private sector participation through various collaborative arrangements, but these partners weren't expected to provide funding to the project's budget. The project aimed to enhance Nigeria's capacity to export agricultural products such as cashews, cocoa, sesame seeds, shea, and processed foods, both within the ECOWAS Subregion and to global markets (Final Evaluation Report (2017).

ECOWAS is a regional organisation comprising 15 West African nations. It has established protocols that predate the EU's Schengen Agreement to facilitate the free movement of people, goods, and services within the region, thereby promoting regional integration and economic development (Okunade and Ogunnubi, 2018). This regional framework is a significant market for Nigeria's agricultural exports, with ECOWAS countries absorbing roughly 13% of total Nigerian exports in 2019, including significant agricultural components (AfreximBank, 2020). While

ECOWAS has natural advantages due to geographical proximity and established regional trade agreements, the NEXTT project recognised that markets in the United States and Europe provide equally important growth opportunities for high-value agricultural commodities such as cocoa and cashews. The project was designed to strengthen Nigeria's export capabilities, targeting both the ECOWAS region and the global markets.

The central goal of the NEXTT project was to improve Nigeria's trade efficiency and inclusiveness. Notably, while the evaluation reports did not go into detail about trade efficiency and inclusiveness, trade efficiency in the context of the project may refer to Nigeria's ability to facilitate the timely and cost-effective movement of goods and services across borders. In contrast, inclusiveness refers to the project's goal of equitably distributing the benefits of improved trade and transportation across various stakeholders and segments of society, such as geographical regions, socioeconomic groups, economic sectors, and stakeholder categories. It could refer to how the project established market links between beneficiaries and potential buyers, that the interventions were consistent with stakeholders' needs, and that stakeholders were likely to participate in or support similar interventions in the future.

Furthermore, the NEXTT project comprised three interconnected components: the LAKAJI Corridor component, which focused on developing "hard" and "soft" infrastructure to improve Nigeria's trade and transport competitiveness by reducing transportation costs and delays along the central trade corridor in Nigeria (Lagos, Kano, and the northern border town of Jibiya); the Trade Policy and Trade Facilitation component which aimed to enhance and streamline Nigeria's trade policies to support export activities; and the Expanded Export Support component which addressed "soft infrastructure" needs mainly to increase Nigeria's capacity to export agricultural products through targeted support and infrastructure improvements. The project's approach acknowledges the necessity of both physical infrastructure development and supportive institutional frameworks for effective trade facilitation. As implementation progressed after the 2015 oil price collapse reduced government funding capacity, the LAKAJI Corridor component increasingly explored public-private partnership approaches to sustain infrastructure development (DevTech Systems Inc., 2018).

One of the novel aspects of this study is its attempt to complement previous evaluations of the NEXTT project by assessing its alignment with the Nigerian context, its implementation fidelity, and its sustainability. While the three previous evaluations of the NEXTT project (Mid-Term Performance Evaluation Report, 2017 Project Completion Report by Palladium, and Final Evaluation Report) focused primarily on immediate outcomes, they did not explore deeper implementation processes or how institutional arrangements would sustain benefits after project completion. The NEXTT project is ideal for this analysis because of its broad scope, substantial funding, and the availability of extensive baseline data from USAID on project operations, implementation, beneficiaries, and stakeholders. Since the final review was conducted over five years ago, this study is better positioned to assess the project's long-term impact and sustainability. As a result, another review by a neutral party is essential because prior evaluations were undertaken by project stakeholders. Also, because no process evaluations have been performed on the NEXTT project, this study will add value to existing evaluations.

1.9. Theory of Change Framework

For the process evaluation, I developed a Theory of Change (ToC) framework that adapts the conceptual framework's abstract pathways into concrete project-level components. While there is no universally accepted definition for a ToC, it is commonly understood to be a description of how and why specific actions result in specific outcomes (Stein and Valters, 2012). For evaluation purposes, it provides a "results chain" of logic that links project activities to outputs, outcomes, and eventual impact (OECD, 2011).

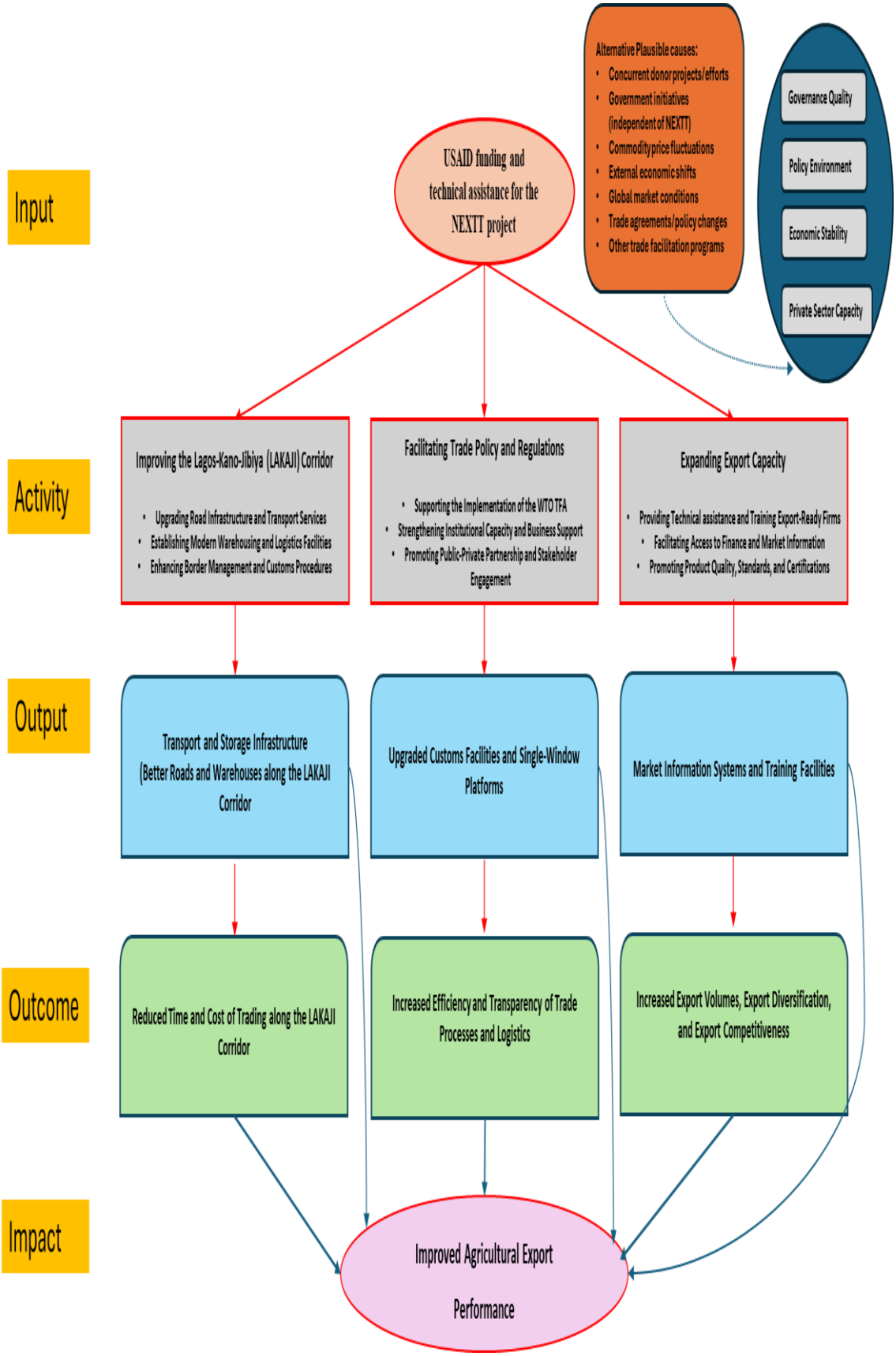
This ToC, as illustrated in Figure 7, demonstrates how the NEXTT project's interventions across the three AfT channels: economic infrastructure (LAKAJI Corridor component), trade policy and regulation (Trade Policy and Trade Facilitation component), and productive capacity (Expanded Export Support component) were designed to produce tangible results, leading to lower trade costs and improved export performance.

The framework recognises that contextual factors create the enabling environment that determines whether project interventions can achieve their intended outcomes. These include

background conditions such as political stability, institutional capacity, market infrastructure, and broader economic conditions that either facilitate or constrain project effectiveness. More importantly, this approach recognises that "alternative plausible causes" exist alongside project interventions throughout the implementation process. Unlike contextual factors, alternative plausible causes are specific interventions or events that, on their own, could produce results similar to the NEXTT project. Examples include concurrent governmental trade initiatives, overlapping donor-funded projects with similar goals, and external economic shocks such as commodity price fluctuations or exchange rate changes. This approach helps to distinguish direct project impact from these competing explanatory factors when assessing which outcomes can be attributed to NEXTT interventions versus other concurrent influences (OECD, 2011).

The OECD and WTO's (2017) AfT at a Glance report concludes that favourable global market conditions and the absence of external shocks are key for achieving the desired impact of AfT projects. When tracing backwards from observed impact to project activities, these contextual conditions, along with careful analysis of alternative plausible causes, will help understand which outcomes can be attributed to NEXTT interventions versus other concurrent factors.

Despite extensive research on the impact of AfT on trade costs and export performance, implementation processes have received comparatively less attention. Chapters 4 and 5 address this gap by examining how project components interacted, stakeholders collaborated, and interventions adjusted to changing circumstances. Notably, the NEXTT project's original documents lacked an explicit ToC framework. Based on this logic, I developed a ToC that conceptualises my evaluation by illustrating how the NEXTT project's funding was intended to assist Nigeria in building productive capacity, strengthening economic infrastructure, and improving trade policy and regulations. While other AfT projects in Nigeria may operate differently, this framework provides a structured approach to analysing the NEXTT project's implementation and outcomes.



Source: Author's Elaboration.

Figure 7. NEXTT Project Theory of Change

1.9.1. Theory of Change Components

The main components of the ToC framework include:

1. **Inputs:** The main inputs for the project are USAID funding and technical assistance, which both rely on collaboration between Nigerian government agencies, private sector organisations, and existing trade infrastructure. USAID contributed approximately $16.6 million to the NEXTT project, along with technical expertise from implementing partners such as Carana Corporation (now Palladium). These inputs were applied across all three AfT channels to support the various project activities.
2. **Activities:** The activities are organised into three main components: improving the LAKAJI Corridor (examined in Chapter 4), facilitating trade policy and regulations, and expanding export capacity (both analysed in Chapter 5). These activities address the identified constraints and opportunities in Nigeria's trade and export environment.
3. **Outputs:** The immediate tangible results expected from the project's activities include transport and storage infrastructure, upgraded customs facilities and single window platforms, market information systems, and training facilities.
4. **Outcomes:** The intermediate and longer-term effects include reduced time and cost of trading on the LAKAJI Corridor, increased efficiency and transparency of trade processes and logistics, increased export volumes, and export competitiveness.
5. **Impact:** The ultimate goal of the project is to improve agricultural export performance. This is to be achieved through lower trade costs, improved product quality, and better market access.

This TOC is the framework for the process evaluation. The components are examined in greater depth in Chapters 4 and 5, and each project component is examined through the lens of context, implementation, and sustainability.

1.9.2. Assumptions

The ToC assumes an enabling environment, as earlier discussed, which includes governance quality, policy environment, economic stability, and private sector capacity. While these factors are not directly within the project's scope of influence, they can significantly influence whether activities are successfully carried out and sustained over time. Research on aid effectiveness, trade facilitation, and export promotion in developing countries supports the view that political commitment, stakeholder coordination, and resource availability are vital for the success of AfT interventions (Hoekman and Nicita, 2011; Basnett, 2013; Shepherd, 2016).

Building on these assumptions, the ToC framework creates a structured pathway for understanding how each of the three components was expected to facilitate trade through trade cost reduction and improved export performance. The ToC also highlights the key assumptions that underpin the project's effectiveness by mapping its inputs, activities, outputs, outcomes, and impact. However, all large projects frequently encounter implementation challenges that disrupt expected pathways, especially in environments with weak institutions, policy misalignment, and infrastructure bottlenecks (Basnett, 2013; Shepherd, 2016).

Chapter 2

2. Aid for Trade and Nigeria's Bilateral Trade Cost: A Sectoral Analysis

Abstract

This chapter is the first of four empirical chapters. It establishes the framework for the remainder of the analysis by addressing the first research objective: to evaluate the impact of AfT on trade costs between Nigeria and its trading partners. Based on the conceptual framework presented in Chapter 1, this chapter examines whether AfT has effectively reduced both visible and hidden trade barriers in Nigeria by focusing on agricultural and manufacturing trade costs. It forms the empirical foundation for the export performance analysis in Chapter 3 and the process evaluation in Chapters 4 and 5.

2.1. Introduction

Despite being one of Africa's largest economies, Nigeria's export sector still grapples with numerous challenges. The country's vast agricultural potential and diverse resource base are hampered by numerous trade barriers, which increase trade costs and reduce export competitiveness. Some of these barriers include poor transportation infrastructure, inefficient port operations, cumbersome customs procedures, and inconsistent trade policies. Together, they pose numerous challenges for businesses and limit their ability to fully participate in regional and global trade (Usman, 2022). To better understand these trade barriers, this study refers to the works of Anderson and Wincoop (2003) and Novy (2013) who define trade costs as more than just tariffs. Their frameworks incorporate broader structural factors like infrastructure quality and institutional capacity that influence the cost of cross-border trade. AfT seeks to reduce these costs by improving both hard infrastructure (e.g., roads and ports) and soft infrastructure (e.g., regulatory systems and customs procedures) (Lammersen and Roberts, 2015).

AfT's impact on trade costs is likely to vary by sector. In the manufacturing sector, AfT often focuses on reducing the fixed costs related to export market entry. This involves supporting technological enhancements, guaranteeing adherence to international quality standards, and

incorporating businesses into global value chains (Vijil and Wagner, 2012; Lederman *et al.,* 2016). It can also reduce wage inequality in countries with liberalised trade policies and higher exports of labour-intensive and skill-intensive products (Gnangnon, 2020). However, even though these interventions show long-term promise, they usually necessitate substantial initial investments in equipment, workforce training, and operational changes. According to Tizhe et al. (2022), implementing operational changes in manufacturing often involves overhauling existing processes, adopting new technologies, and ensuring compliance with quality standards. This can be resource-intensive in contexts where infrastructure is underdeveloped. For example, the lack of reliable energy and transportation networks in Nigeria increases the costs of operational adjustments (Ifere *et al.*, 2022).

In the agricultural sector, AfT supports integration into global value chains (GVCs) in high-value agriculture by addressing market failures and improving logistics and infrastructure (Keane, 2013). The agricultural sector also has its challenges; perishable goods are susceptible to infrastructural deficiencies, including inadequate rural transportation networks and storage facilities, which increase trade costs (Beghin and Schweizer, 2021). Poor transport networks along key corridors, such as Lagos to Kano, raise logistics costs by about 18% above regional averages (Coste, 2014). Similarly, poor road conditions increase vehicle operating costs and travel time, and erratic power supply forces businesses to rely on costly private generators that increase operating costs and reduce export competitiveness (Obokoh and Goldman, 2016; Ifere *et al.*, 2022; Usman, 2022). AfT interventions in the agricultural sector tend to focus on basic infrastructure improvements and streamlining trade processes, which often result in faster and more visible cost reductions than in the manufacturing sector (Ahn and Lee, 2016). These sectoral differences have important implications for Nigeria's export performance where infrastructure deficits increase trade costs substantially.

Aside from infrastructure deficits, institutional barriers worsen trade costs in Nigeria. The Nigerian customs procedures are slow and overly bureaucratic, resulting in longer port dwell times and higher costs for exporters (Onuka and Oroboghae, 2020; Salawu and Ghadiri, 2022). Administrative barriers, excessive documentation, and complicated regulatory frameworks pose additional challenges for exporters. Even in the ECOWAS region, where Nigeria has preferential

trade access, non-tariff barriers tend to disrupt regional trade flows (Okunade and Ogunnubi, 2018). These trade barriers stress the need to assess how well AfT impacts trade costs in Nigeria. Hence, Nigeria's institutional environment is an ideal case study for investigating AfT's potential to address long-standing structural barriers in a large developing economy, given the country's diverse and fragmented governance structure.

Despite the growing body of research on AfT, there are considerable gaps in understanding sector-specific effects within a single country. Studies such as Calì and te Velde (2011) and Vijil and Wagner (2012) use empirical strategies that help reduce simultaneity concerns in the AfT–trade cost relationship, although these strategies do not fully address endogeneity. Sector-specific AfT–trade cost analyses within a single-country context also remain limited, especially in countries with structural features like Nigeria's oil dependence. This study aims to address these gaps by answering the following questions:

1. What is the impact of AfT on trade costs between Nigeria and its trading partners?
2. How does the effect of AfT on trade costs differ between Nigeria's agricultural and manufacturing sectors?

Based on the theoretical frameworks of the gravity model and aid effectiveness literature, this study hypothesises that:

H_1: AfT significantly reduces trade costs between Nigeria and its trading partners.

H_2: AfT has a more significant impact on reducing trade costs in the agricultural sector than in the manufacturing sector in Nigeria.

These hypotheses are tested using Novy's (2013) trade cost measure, which is based on the structural gravity model. The analysis employs instrumental variables to mitigate endogeneity concerns. Unlike conventional proxies, which only capture specific components such as tariffs or shipping costs, Novy's measure considers both observable and unobservable trade barriers, making it ideal for analysing the effects of AfT on trade costs

The rest of this chapter is organised as follows: Section 2 examines the existing literature on AfT and trade costs. In section 3, the methodology is explained, detailing the model specifications, data sources, and estimation techniques. Section 4 interprets the empirical findings and robustness tests. Section 5 discusses the results and their implications for policy and practice, while Section 6 concludes the chapter.

2.2. Literature Review

The AfT-trade cost relationship is an important area of inquiry in development economics. While previous studies have focused on various aspects of AfT effectiveness and trade performance, understanding the specific mechanisms through which AfT affects trade costs is necessary for developing effective policies and allocating AfT resources more efficiently.

2.2.1. Mechanisms of AfT Impact on Trade Costs

There are two primary pathways through which AfT could reduce trade costs: hard infrastructure development and soft infrastructure improvements. These mechanisms address distinct but related trade barriers in developing countries.

i. Hard Infrastructure Channel

One of the most direct ways that AfT can reduce trade costs is through investments in physical infrastructure. This includes funding for roads, ports, railways, and energy systems that are paramount for trade facilitation. Inadequate infrastructure increases both direct and indirect costs, such as higher transportation fees and shipment delays in developing economies (Busse *et al.,* 2012). According to Djankov et al. (2010), each additional day a product is delayed before being shipped reduces trade by more than 1%. This effect is even more pronounced for time-sensitive goods like agricultural products. These findings underscore a well-established link between infrastructure quality and trade costs, reinforcing the central role of infrastructure investment in trade facilitation strategies.

Limao and Venables (2001) created a framework that links infrastructure quality directly to bilateral trade costs. Their research analysed how geography and infrastructure affect transport costs using several datasets and a detailed infrastructure index covering road, rail, and telecommunications

density. According to the study findings, poor infrastructure can increase trade costs by 40% in coastal countries and 60% in landlocked countries. They argue that physical infrastructure is a determinant of trade costs, with inadequate systems increasing both transportation costs and delays. This reality plays out dramatically in Nigeria, where infrastructure deficiencies have far-reaching implications for trade flows. For instance, exporters encounter severe congestion, with cargo dwell times up to 475% longer than the global average in Nigerian ports (Nwokedi *et al.*, 2022). Inadequate transport networks also worsen this problem: According to Coste (2014), Nigeria's inefficient domestic transport infrastructure increases trade costs by 18% and causes shipment delays by up to 25%. Another major barrier is energy infrastructure, which forces businesses to rely on expensive private generators due to unreliable power supply (Ifere *et al.*, 2022; Usman, 2022). These infrastructure gaps together undermine Nigeria's export competitiveness and emphasise the importance of targeting AfT investments towards addressing these deficits.

ii. Soft Infrastructure Channel

The soft infrastructure channel includes initiatives that strengthen institutional capacity and facilitate trade. These intangible interventions are equally important for reducing trade costs.

Moïsé and Sorescu (2013) developed 16 Trade Facilitation Indicators (TFIs) for key policy areas under WTO negotiation. Their dataset includes 78 import-export variables and 19 transit variables that describe the regulatory frameworks and status of trade facilitation measures. Their study also includes sectoral estimates of trade costs for agriculture and manufacturing in developing countries. According to their findings, improving soft infrastructure through improved trade-related information, simplified documentation, streamlined procedures, and automated processes can reduce bilateral trade costs substantially. The magnitude of these reductions varies according to income level, with potential reductions of 14.5% for low-income countries, 15.5% for lower-middle-income countries, and 13.2% for upper-middle-income countries. The study findings demonstrate that institutional and procedural reforms are effective in reducing trade costs via the soft infrastructure channel.

However, Nigeria's regulatory environment increases trade costs through complicated procedures such as overlapping agency requirements and excessive documentation. These institutional inefficiencies create non-tariff barriers and cause border delays (Onuka and Oroboghae, 2020; Salawu and Ghadiri, 2022). Reforms in customs procedures and border management can reduce these costs for small and medium businesses (Ibeh, 2024).

2.2.2. Empirical evidence on AfT and trade costs

This literature explores three studies that have analysed the impact of AfT on trade costs. First, Calì and te Velde (2011) evaluate the impact of AfT on trade costs in 130 developing countries from 2005 to 2009. Their trade costs measure is based on the Trading Across Borders section of the World Bank's Doing Business Indicators, which includes both direct costs (fees, documents, border compliance) and time costs associated with the logistical process of importing and exporting standardised cargos. The measure also calculates the cost and time associated with document compliance, border compliance, and domestic transportation for a standardised shipment of goods. Although this measure accounts for logistics and compliance costs, it excludes broader trade barriers such as information costs and contract enforcement difficulties. The effects of specific AfT variables on trade costs are tested using a double-log specification, which controls for time-invariant country factors as well as other determinants such as income levels and governance indicators. According to the study, AfT, specifically aid for trade facilitation (ATF), significantly reduces import and export costs. Importantly, the cost-reducing effect of ATF is not solely due to a reduction in the number of documents required for importation. It also underscores that there are other channels through which AfT facilitates trade.

Busse et al. (2012) build on this work by analysing the impact of various AfT categories on trade costs using data from 99 developing countries from 2004 to 2009. In addition, they use the Trading across Borders sub-indicator and a fixed effects model with instrumental variables to account for endogeneity. However, their focus was on the monetary costs of importing and exporting a standardised container of goods. They include all official fees associated with completing procedures for importing and exporting goods, such as document costs, administrative fees for customs clearance

and technical control, customs broker fees, terminal handling charges and inland transportation in their trade cost calculation. They also exclude tariffs and trade taxes and instead focus on the transaction costs of trade procedures. The findings revealed that Total AfT and ATF have a negative impact on trading costs. That is, AfT directed at improving regulatory frameworks and reducing bureaucratic inefficiencies can largely reduce trade costs.

Similarly, Tadesse (2019) evaluates how AfT and infrastructure affect bilateral trade costs in African economies from 2002 to 2011. The study is notable for using a more complete measure of trade costs developed by Arvis et al. (2013) who use the structural gravity model to estimate bilateral trade costs from observed trade flows. These metric captures all the factors that influence the cost difference between exports and imports, including not only direct transportation and border costs, but also indirect costs such as information, contract enforcement, legal and regulatory, and local distribution costs. The study analyses how both AfT (using OECD data) and infrastructure quality influence total trade costs using Donaubauer et al. (2018) transport, energy, ICT, and financial infrastructure indexes. Their findings indicate that increased AfT inflows consistently reduce trade costs, though the effects vary by source and region. That is, AfT is more effective both in countries receiving larger AfT inflows from sources and with better infrastructure. In addition to that, the study concludes that bilateral AfT frequently has a greater impact than multilateral AfT, but infrastructure quality reduces this effect. Also, infrastructure improvements in Africa reduce trade costs by 0.264% in Madagascar and 0.103% in Togo. Hence, coordinating bilateral and multilateral AFT inflows and focusing on infrastructure development could boost AfT effectiveness.

2.2.3. Research Gaps and Contributions

There are several gaps in the existing literature on the relationship between AfT and trade costs, especially for large, oil-dependent economies such as Nigeria. Most studies examine AfT effects at an aggregate level and do not distinguish between agricultural and manufacturing trade costs, even though these sectors are likely to respond differently to AfT interventions. In addition, previous work often focuses on total AfT rather than considering the relative contributions of its main components.

As a result, the specific channels through which different types of AfT align with sector-level trade costs remain unclear in country-specific contexts.

This chapter contributes to addressing these gaps by conducting a disaggregated analysis that separates agricultural and manufacturing trade costs using Novy's comprehensive trade cost measure. This measure captures a broader range of trade frictions than traditional indicators and makes it possible to assess how AfT relates to variations in sectoral trade costs within Nigeria's trade environment. By focusing on a single country, the chapter also offers insights into how AfT interacts with domestic economic structures and policy conditions that may not be evident in cross-country analyses.

The empirical approach follows established strategies in the AfT literature by using internal instruments and fixed effects to reduce simultaneity concerns. However, given the difficulty of identifying instruments that are fully exogenous, the results should be viewed as indicative associations rather than definitive causal effects. The contribution is therefore a careful and context-specific examination of how AfT correlates with sectoral trade costs in Nigeria. This perspective adds to the growing literature on heterogeneous AfT effects and helps clarify how different AfT components relate to trade costs in a large developing country.

2.3. Methodology

Using Novy's (2013) trade cost measures, this study examines the impact of AfT on Nigeria's bilateral trade costs in various sectors (agriculture and manufacturing) and how these costs manifest in different geographical contexts.

2.3.1. Data and Time Frame

This study uses annual data from 2005 to 2018, covering a 13-year period. The timeframe was chosen for two reasons. First, it is consistent with the availability of detailed bilateral trade cost data from the ESCAP-World Bank Trade Cost Database. Second, it covers the period after the AfT initiative was launched in 2005. The trade cost dataset contains measures of Nigeria's bilateral trade

costs with 198 partner countries which are disaggregated into total bilateral trade costs, agricultural sector trade costs, and manufacturing sector trade costs.

Novy's (2013) methodology is preferred to traditional trade cost measures for several reasons. The first advantage is its comprehensiveness. Novy's measure includes both observable costs (such as transportation and tariffs) and unobservable costs (due to information asymmetries, contract enforcement challenges, and regulatory burdens) that lead to variations between export and import costs (Anderson and Wincoop, 2003). Another advantage is its solid theoretical foundation; the structural gravity model of trade, which effectively aggregates various types of trade costs into a single comprehensive metric (Jacks *et al.,* 2011). The methodology considers sector-specific variation and heterogeneity by calculating trade costs by sector. It also enables detailed analysis of how AfT impacts different sectors (agriculture and manufacturing sectors) (Arvis *et al.*, 2013). Finally, this approach also stands out as it captures time variation effectively. Unlike slowly changing institutional or infrastructure measures, Novy's methodology identifies year-to-year variations in trade barriers. This measure gives more information on changing trade conditions (Calì and te Velde, 2011b; Cirera and Winters, 2015).

2.3.2. Model Specification

The analysis uses two main specifications to examine the relationship between AfT and bilateral trade costs:

i. Baseline Specification

$$tc_{jt} = \beta_0 + \beta_1 d_j + \beta_2 GDP_t + \beta_3 GDP_{jt} + \beta_4 AfT_t + \beta_5 REER_t + \beta_6 ECOWAS_j + \beta_7 contig_j + \beta_8 lang_j + \beta_9 WTO_{jt} + \varepsilon_{jt} \quad (1)$$

where tc_{jt} represents bilateral trade costs between Nigeria and partner country j in year t, d_j is bilateral distance, GDP_{jt} is partner country GDP per capita, AfT_t is AfT flows to Nigeria, GDP_t is Nigeria's GDP per capita, $REER_t$ is Nigeria's real effective exchange rate, $contig_j$ and $lang_j$ are dummy variables for contiguity and common language, WTO_{jt} indicates partner country's WTO membership status, and $ECOWAS_j$ is a dummy variable indicating whether the trading partner is a member of the

Economic Community of West African States (ECOWAS), taking the value of 1 if the partner country is an ECOWAS member and 0 otherwise. This variable captures the potential impact of regional trade integration on bilateral trade costs.

ii. Fixed Effects Specification:

$$tc_{jt} = \beta_0 + \beta_1 GDP_t + \beta_2 GDP_{jt} + \beta_3 AfT_t + \beta_4 REER_t + \beta_5 WTO_{jt} + \delta_j + \varepsilon_{jt} \quad (2)$$

where δ_j represents partner country fixed effects that capture all time-invariant characteristics specific to each trading partner.

Both specifications are estimated separately for: total trade costs (tc_tot_{jt}), agricultural trade costs (tc_ag_{jt}), and manufacturing trade costs (tc_mf_{jt}).

The hypotheses being tested through these specifications are:

1. H_1: AfT significantly reduce bilateral trade costs between Nigeria and its trading partners.

$\beta_4 < 0$ in equation (1) and $\beta_3 < 0$ in equation (2). I expect this effect to be negative and statistically significant across all trade cost measures employed in the analysis.

2. H_2: The impact of AfT in reducing trade costs is more pronounced in the agricultural sector compared to the manufacturing sector.

When comparing the AfT coefficients across sector-specific regressions, I expect the magnitude of the effect to be larger (more negative) in agriculture than in manufacturing, such that $\beta_4(ag) < \beta_4(mf)$ for equation (1), or $\beta_3(ag) < \beta_3(mf)$ for equation (2).

In theory, agriculture should show stronger responses to AfT due to specific characteristics of Nigeria's trade landscape. The stronger responsiveness of agriculture to AfT stems from sector-specific infrastructure deficits and market characteristics as discussed in Chapter 1. Farmers face challenges from poor storage options, degraded rural roads, and slow border processing for their perishable (Moïsé and Sorescu, 2013; Onwude *et al.*, 2022). These constraints cause huge waste, with some agricultural products losing up to 40% of their value after harvest. When AfT supports better infrastructure, trade procedures, and supply chain optimisation, exporters can record quick benefits through reduced waste and improved market access.

Manufacturing, however, is likely to respond differently to similar interventions. This varied response might be because industrial production involves deeper structural issues that take longer to resolve (Cirera and Winters, 2015). For instance, factories require sustained investment in production facilities, worker skills development, and clearer regulatory systems before becoming internationally competitive. While AfT can contribute positively to manufacturing development, these improvements may happen only gradually compared to the agricultural sector's immediate benefits from basic infrastructure upgrades.

A disparity in response rates between sectors could also result from technological gaps. Agricultural exports can benefit significantly from simple improvements in storage, transportation, and customs efficiency. Manufacturing success, on the other hand, is dependent on the implementation of sophisticated technology and compliance with complicated international quality requirements (Ronett *et al.,* 2019; Gnangnon, 2020). This primary distinction means that agricultural trade barriers can be reduced more quickly with targeted AfT support, whereas manufacturing requires more extensive and time-consuming transformation to achieve comparable trade cost reductions.

2.3.3. Estimation Strategy

This analysis begins with model specification tests to guide the choice between fixed and random effects estimators. To assess whether the regressors are correlated with the individual effects, a Hausman test is conducted under the null hypothesis of no correlation. The test strongly rejects the null hypothesis ($\chi^2 = 164.36$, $p < 0.001$), indicating that fixed effects estimation is more appropriate, as random effects would yield inconsistent estimates.

To reduce concerns about potential endogeneity between AfT and trade costs, a two-stage least squares approach is explored. The aim is to mitigate simultaneity rather than fully resolve it. This approach is further detailed in Section 2.3.5. The joint significance of the models is then assessed. Results indicate strong overall significance under the fixed effects specification, with $F(4,132) = 8.45$ ($p < 0.000$) for manufacturing trade costs and $F(4,85) = 9.63$ ($p < 0.000$) for agricultural trade costs.

In terms of explanatory power, within R-squared values of 0.066 for manufacturing and 0.093 for agriculture indicate that the model captures a modest share of the variation in trade costs within countries. Though these values reflect relevant within-country variations, they also imply that other unobserved factors may influence trade costs beyond the current model specification.

More diagnostic tests and checks for heteroskedasticity and serial correlation are discussed in Section 2.3.4.

2.3.4. Diagnostic Tests for Model Assumptions

Systematic diagnostic testing of model assumptions supports the use of cluster-robust standard errors across model specifications. The Breusch-Pagan/Cook-Weisberg test is applied to check whether residual variance depends on the values of independent variables.

The baseline (pooled) model demonstrates significant heteroskedasticity, with test results showing $\chi^2(1) = 55.01$ ($p < 0.0000$) for total trade costs and $\chi^2(1) = 36.38$ ($p < 0.0000$) for manufacturing trade costs. The agricultural trade costs model shows weaker evidence of heteroskedasticity, with $\chi^2(1) = 2.80$ ($p = 0.0945$). Heteroskedasticity is also present in the fixed effects specifications, though to a lesser extent than in the baseline model. The fixed effects results show significant test statistics for total trade costs ($\chi^2(1) = 55.01$, $p < 0.0000$) and manufacturing trade costs ($\chi^2(1) = 36.38$, $p < 0.0000$), providing strong evidence of heteroskedasticity.

These findings indicate that the assumption of homoskedastic errors is violated in both baseline and fixed effects models. it is necessary to implement cluster-robust standard errors, clustered at the partner country level, to account for heteroskedasticity and potential serial correlation within clusters.

Cameron and Miller (2015) explain how this approach addresses both heteroskedasticity and potential serial correlation over time within countries. Similarly, Bertrand et al. (2004) describe accepted econometric practices for panel data that inform this choice. This method enables arbitrary correlation patterns within clusters while maintaining independence across partner countries (Stock and Watson, 2008). Anderson and Yotov (2012) underline the importance of using robust inference via clustering in gravity models, stating that ignoring heteroskedasticity can result in biased trade

effect estimates. Egger and Tarlea (2015) further stress the value of multi-level clustering in analyses of bilateral trade, considering exporters, importers, and time. This methodological approach enables accurate calculation of standard errors and confidence intervals for trade-cost estimates. In this study, clustering at the partner country level is appropriate given the structure of the data.

2.3.5. Addressing Endogeneity: Instrumental Variables Approach

One methodological limitation of this study is the possibility of endogeneity and omitted variable bias since trade costs may influence AfT allocation. Endogeneity is a major concern in cause-and-effect analysis (Zaefarian *et al.*, 2017). It occurs when the independent variable of a predictive model correlates with the dependent variable's error term and produces observably skewed results (Hill *et al.*, 2021). Endogeneity is a common issue in gravity models, and more prevalent in trade facilitation and policy research (WTO and UNCTAD, 2012).

Instrumental variable approaches, like the two-stage least squares (2SLS), are commonly used to address endogeneity issues (Wilms *et al.*, 2021). This approach relies on instruments that affect the endogenous independent variable but have no direct effect on the dependent variable (Cunningham, 2021). However, the hardest part is finding suitable instruments, which is a common challenge with the instrumental variable approach (WTO and UNCTAD, 2012).

Given the difficulty of identifying fully exogenous instruments for AfT, this chapter follows Calì and te Velde (2011) and Busse et al. (2012) by using lagged AfT as an internal instrument to mitigate simultaneity concerns. However, internal instruments do not fully resolve endogeneity, as donors often allocate AfT based on past or anticipated conditions, and because trade costs and unobserved shocks tend to be persistent. The estimates presented here should therefore be viewed as indicative correlations rather than fully identified causal effects.

To explore the potential influence of endogeneity, a 2SLS specification is estimated following (Vijil and Wagner, 2012; Pettersson and Johansson, 2013; Martínez-Zarzoso *et al.,* 2017). The first stage regresses current AfT flows on their lagged values and exogenous controls, while the second stage replaces AfT with its fitted values:

First Stage:

$$AfT_t = \beta_0 + \beta_1 AfT_{t-1} + \beta_2 AfT_{t-2} + \beta_3 d_j + \beta_4 GDP_{jt} + \beta_5 GDP_t + \beta_6 REER_t + \beta_7 ECOWAS_j + \beta_8 contig_j + \beta_9 lang_j + \beta_{10} WTO_{jt} + \delta_j + \theta_t + u_{jt} \quad (3)$$

Second Stage:

$$tc_{jt} = \beta_0 + \beta_1 AfT\hat{}_t + \beta_2 d_j + \beta_3 GDP_{jt} + \beta_4 GDP_t + \beta_5 REER_t + \beta_6 ECOWAS_j + \beta_7 contig_j + \beta_8 lang_j + \beta_9 WTO_{jt} + \delta_j + \theta_t + \varepsilon_{jt} \quad (4)$$

Where $t\text{-}_1$ and $t\text{-}_2$ denote 1- and 2-year lags, respectively, $AfT\hat{}_t$ is the fitted value derived from first-stage regression, δ_j represents partner country fixed effects, θ_t is the time fixed effects, and ε_{jt} and u_{jt} are the error terms.

i. Why Lagged AfT Values?

Using one-year lags of explanatory variables can help reduce reverse causality when it's hard to find valid instruments for policy variables like regulatory quality (Busse *et al.,* 2012). Likewise, lagged AfT values offer both theoretical and empirical justification as instruments. Previous aid allocations frequently influence current aid distribution due to institutional frameworks and multi-year programming cycles (Aboushady *et al.,* 2024). Lagged values are not affected by current trade costs; hence, they satisfy the exclusion restriction required for valid instruments. While this study addresses endogeneity using a formal IV approach, the rationale for employing lagged AfT values is consistent with the strategy of Calì and te Velde (2011) and Busse et al. (2012). Lagging helps to reduce simultaneity concerns (where current AfT allocations might affect trade costs and trade costs might also influence current AfT allocations) and strengthen causal inference in the absence of ideal instruments.

ii. Instrument Validity

The first stage results indicate that the lagged AfT variables have predictive strength. The second lag of AfT ($AfT_{(t-2)}$) has a significant predictive strength (coefficient = 0.202, $p < 0.001$), while the first lag ($AfT_{(t-1)}$) shows no significant effect (coefficient = -0.001, $p = 0.897$). The excluded instruments have an F-statistic of 1682.19 ($p < 0.001$), significantly higher than the standard threshold

of 10 for relevant instruments. These results suggest that weak instrument concerns are less likely. However, as with most internal instruments, the possibility of remaining endogeneity cannot be ruled out, and the estimates should therefore be interpreted with appropriate caution.

However, despite addressing major endogeneity issues, the IV approach has some limitations. When trade costs span multiple periods, previous AfT values may have an impact on current trade costs, potentially jeopardising exclusion criteria. The analytical framework addresses this by incorporating fixed effects for partner countries and years, as well as extensive control variables that account for both static and time-varying bilateral factors (Cunningham, 2021).

The IV models also have significant explanatory power, with R-squared values of 0.798 for aggregate trade costs, 0.746 for manufacturing sector costs, and 0.775 for agricultural costs. These findings, combined with robust initial-stage diagnostics, indicate that the IV method effectively manages endogeneity while maintaining significant explanatory power.

2.3.6. Data Definitions and Sources

The expected relationships between key variables and trade costs are grounded in both theoretical frameworks and empirical data from previous studies. These details are shown in Table 1. Also, this study uses multiple databases to construct a rich panel dataset spanning 2005-2018. The variables, their descriptions, and sources are detailed in Table 2.

AfT is generally expected to reduce trade costs by improving infrastructure and institutional capacities (Calì and te Velde, 2011; Busse *et al.,* 2012). However, the effects vary across sectors based on their unique constraints and adaptation capacities. GDP per capita for both Nigeria and its trading partners is associated with better trade infrastructure and operational efficiency, which in turn implies reduced trade costs (Portugal-Perez and Wilson, 2012; Arvis *et al.*, 2013). Distance, however, tends to increase transport and logistics costs for farm products with limited shelf life (Li and Beghin, 2012; Novy, 2013; Disdier *et al.,* 2015).Regional integration and institutional quality are also expected to reduce trade costs. ECOWAS membership, for instance, is expected to reduce trade costs through standardised procedures and the removal of barriers, although its effects may vary by sector. While

agricultural trade costs have been reduced under ECOWAS, this has not been the case for the manufacturing sector (Adeyinka *et al.*, 2024). Similarly, WTO participation is expected to reduce trade costs through procedural standardisation and improvements in trade facilitation in heavily regulated sectors (Francois and Manchin, 2013). According to de Melo et al., (2024), implementing the Trade Facilitation Agreement (TFA) measures can reduce customs wait times substantially, with a decrease of 3.7 days for imports and 1.9 days for exports.

Table 1. Summary of Expected Variable Relationships with Trade Costs

Variable	***Expected Relationship***	***Rationale***
AfT Total (lAfT_tot)	Negative	Enhanced trade facilitation and infrastructure
Partner GDP per capita (lgdpcap_d)	Negative	Better trade infrastructure and procedures
Nigeria's GDP per capita (lgdpcap_o)	Negative	Improved domestic trade capacity
Real Exchange Rate (lreer)	Positive	Currency appreciation may increase costs
Distance (ldist)	Positive	Higher transportation and logistics costs
Contiguity (contig)	Negative	Lower transportation barriers
ECOWAS membership (ecowas_d)	Negative	Regional integration benefits
Common language (comlang_ethno)	Negative	Lower communication barriers
WTO membership (wto_d)	Negative	Standardised procedures

Table 2. Variable Definitions and Sources

Variable Label	*Description*	*Source*
ltc_tt	Natural logarithm of total bilateral trade costs between Nigeria and partner country. Comprehensive measures including both observable and unobservable trade barriers	ESCAP-World Bank Trade Cost Database
ltc_ag	Natural logarithm of agricultural sector bilateral trade costs	ESCAP-World Bank Trade Cost Database
ltc_mf	Natural logarithm of manufacturing sector bilateral trade costs	ESCAP-World Bank Trade Cost Database
lAfT_tot	Natural logarithm of total Aid for Trade disbursements to Nigeria. The sum of all AfT components in current US$ millions	OECD CRS
ldist	Natural logarithm of the weighted distance between Nigeria and partner country. Calculated using city-level data to account for the geographic distribution of the population (in kilometres)	CEPII
lgdpcap_d	Natural logarithm of partner country's GDP per capita. Measured in constant 2015 US$	World Bank WDI
lgdpcap_o	Natural logarithm of Nigeria's GDP per capita. Measured in constant 2015 US$	World Bank WDI
lreer	Natural logarithm of Real Effective Exchange Rate. The trade-weighted average of bilateral exchange rates adjusted for relative price levels (2010=100)	World Bank WDI
ecowas_d	Binary variable for ECOWAS membership (1=member, 0=non-member)	Author's construction
contig	Binary variable indicating whether countries share a border with Nigeria (1=shares border, 0=no shared border)	CEPII
comlang_ethno	Binary variable indicating whether countries share a common ethnolinguistic language with Nigeria (1=yes, 0=no)	CEPII
wto_d	Binary variable for WTO membership (1=member, 0=non-member)	WTO

2.3.7. Robustness Checks

To ensure the reliability of the findings, multiple estimation methods and evaluation standards are employed. Each model begins with basic OLS calculations, which are then extended to more rigorous fixed effects specifications. This stepwise approach helps to identify the potential influence of unobserved factors at the country or bilateral level. Additionally, separate analyses for aggregate, agricultural, and manufacturing trade costs allow evaluation of whether relationships persist across economic sectors, highlighting the varied sectoral impact of AfT. To account for potential heteroskedasticity and autocorrelation in the error terms, robust standard errors are clustered by partner country. The consistency of the key findings across specifications, notably the sign and significance of the AfT variables, gives confidence in the results.

2.4. Results

This section presents and interprets the regression results. The analysis moves from baseline specifications to fixed effects and instrumental variables (IV) estimation.

2.4.1. Baseline Model Results

The baseline model (Table 3) examines the impact of total AfT on Nigeria's trade costs across different sectors: total trade costs (column 1), manufacturing trade costs (column 2), and agricultural trade costs (column 3).

According to the estimates, AfT has a positive and statistically significant relationship with total (0.11) and manufacturing (0.13) trade costs, both at the 1% level. A 1% increase in total AfT is equivalent to a 0.11% increase in total trade costs and a 0.13% increase in manufacturing trade costs. These results are not only statistically significant but also economically significant as they indicate that, contrary to expectations, AfT increases trade costs. The results also refute the null hypothesis (H_1) that AfT would significantly reduce trade costs. Instead, it increased trade costs in the manufacturing sector while having no significant effect on agricultural trade costs. It also rejects the second hypothesis (H_2), that the impact of AfT in reducing trade costs is more pronounced in the agricultural sector compared to the manufacturing sector. Instead, manufacturing trade costs respond

more to AfT than agricultural trade costs, even though the effect is in the opposite direction.

Table 3. Baseline Estimates of AfT on Trade Costs

	(1) Total	(2) Manufacturing	(3) Agriculture
laft_tot	0.11***	0.13***	0.05
	(0.03)	(0.04)	(0.05)
ldist	0.21***	0.23***	-0.03
	(0.07)	(0.08)	(0.09)
lgdpcap_d	-0.15***	-0.14***	-0.03
	(0.03)	(0.03)	(0.04)
lgdpcap_o	-0.20***	-0.03	-0.25***
	(0.07)	(0.08)	(0.07)
lreer	0.51**	0.42*	0.37
	(0.22)	(0.25)	(0.22)
ecowas_d	-0.31***	-0.42***	0.09
	(0.11)	(0.13)	(0.20)
wto_d	-0.14	-0.21**	0.05
	(0.09)	(0.10)	(0.10)
contig	-0.23*	-0.22	-0.16
	(0.14)	(0.15)	(0.24)
comlang_ethno	-0.06	-0.00	-0.20**
	(0.08)	(0.09)	(0.10)
R-squared	0.223	0.241	0.082
Observations	1351	1216	713

* p < 0.10, ** p < 0.05, *** p < 0.01

For the control variables, distance (ldist) has a positive and significant effect on total (0.21) and manufacturing (0.23) trade costs, which is consistent with the gravity model predictions. Partner country GDP per capita (lgdpcap_d) has a negative and significant relationship with total (-0.15) and manufacturing (-0.14) trade costs, indicating that trading with more developed countries is more cost-effective for Nigeria. Nigeria's GDP per capita (lgdpcap_o) has a negative and significant effect on overall (-0.20) and agricultural (-0.25) trade costs. This suggests that domestic economic development also plays a role in trade cost reduction. As expected, the real effective exchange rate (lreer) has a positive and significant effect on total trade costs (0.51), indicating that currency appreciation leads to higher trade costs. Institutional factors like ECOWAS membership (ecowas_d) have a negative

effect on total (-0.31) and manufacturing (-0.42) trade costs, while WTO membership (wto_d) shows a negative effect on manufacturing trade costs (-0.21), pointing to the importance of regional integration and multilateral trade agreements in facilitating trade.

2.4.2. Fixed Effects Estimates

The fixed effects model helps reduce omitted variable concerns by accounting for unobserved partner-country characteristics.

Table 4. Fixed Effects Estimates of AfT on Trade Costs

	(1) Total	(2) Manufacturing	(3) Agriculture
laft_tot	0.13***	0.19***	0.00
	(0.03)	(0.04)	(0.04)
lgdpcap_d	-0.12**	-0.27***	0.01
	(0.05)	(0.07)	(0.07)
lgdpcap_o	-0.32***	-0.18**	-0.26***
	(0.06)	(0.07)	(0.07)
lreer	0.66***	0.68***	0.40**
	(0.19)	(0.23)	(0.20)
wto_d	0.00	0.00	0.00
	.	.	.
R-squared	0.065	0.066	0.093
Observations	1351	1216	713

* p < 0.10, ** p < 0.05, *** p < 0.01. All specifications include partner country fixed effects.

Here, the magnitudes of the effects of lAfT_tot are greater than those in the baseline model, but they remain positive and statistically significant for total trade costs (0.13) and manufacturing trade costs (0.19). A 1% increase in total AfT results in a 0.13% increase in total trade costs and a 0.19% increase in manufacturing trade costs, after accounting for unobserved partner country characteristics. The results support the finding in the baseline model that AfT may increase trade costs. In the same vein, the effect on agricultural trade costs is statistically insignificant (0.00), also consistent with the baseline model.

However, the control variables in the fixed effects model differ from those in the baseline model in some ways. lgdpcap_d continues to have a negative and significant effect on total (-0.12)

and manufacturing (-0.27) trade costs, although the magnitude is larger in the manufacturing sector. This indicates that when unobserved partner characteristics are considered, the trade cost-reducing effect of partner country GDP is more pronounced in the manufacturing sector. lgdpcap_o continues to have a negative and significant effect on trade costs across all sectors: total (-0.32), manufacturing (-0.18), and agricultural (-0.26) trade costs, with total trade costs being the most affected. This reinforces the consistent role of domestic economic development in reducing trade costs, even after accounting for partner country fixed effects.

Interestingly, lreer now exhibits a positive and significant relationship with trade costs across all sectors: total (0.66), manufacturing (0.68), and agricultural (0.40) trade costs, with manufacturing displaying the largest coefficient magnitude. This indicates that currency appreciation translates into higher trade costs within the manufacturing sector. When compared to baseline estimates, the fixed effects model reveals that exchange rate fluctuations exert a considerably greater influence on trade costs than previously indicated.

2.4.3. Instrumental Variables Estimation Results

The IV approach comprises two stages: the first stage measures the instruments' validity and strength, while the second stage estimates the effect of AfT on trade costs using the predicted AfT value from the first stage.

i. First Stage Results

Table 5 presents the first-stage regression of the IV estimation, which examines the relationship between the lagged values of AfT (instruments) and current AfT disbursements.

The second-year lag (lAfT_tot_lag2) shows a positive and statistically significant coefficient at the 1% level (0.20) and indicates that a 1% increase in AfT disbursements from two years prior corresponds to a 0.20% increase in current AfT disbursements. This finding suggests that AfT effects manifest more clearly over longer time horizons rather than immediately. In contrast, the first lag (lAfT_tot_lag1) has a negligible and statistically insignificant effect (-0.00), demonstrating that the immediate past year's disbursements have virtually no effect on current AfT levels. The results justify the exclusion of the first lag from the instrumental variable set. Moreover, the F-statistic for the

excluded instruments is extremely high (1682.19), surpassing the commonly used threshold (10) for powerful instruments. This confirms that the second lag of AfT is a strong, valid, and reliable instrument for current AfT disbursements.

Table 5. First Stage Estimates

	(1) laft_tot
laft_tot_lag1	-0.00
	(0.01)
laft_tot_lag2	0.20***
	(0.01)
ldist	3.74
	(6.57)
lgdpcap_d	0.29***
	(0.05)
lgdpcap_o	0.30***
	(0.01)
lreer	0.60***
	(0.03)
ecowas_d	10.84
	(17.46)
wto_d	3.72
	(4.93)
contig	8.19
	(12.97)
comlang_ethno	3.53
	(4.75)
R-squared	0.542
Observations	2150
F-statistic(excluded instruments)	1682.19

* p < 0.10, ** p < 0.05, *** p < 0.01

Also, the lgdpcap_d (0.29) and lgdpcap_o (0.30) both have positive and significant coefficients, meaning that increased AfT disbursements foster economic development in both partner countries and Nigeria. The finding supports the notion that developed countries tend to allocate more resources to AfT. lreer has a positive and significant coefficient (0.60), indicating that currency appreciation leads to higher AfT disbursements. i.e., a stronger domestic currency may encourage more AfT inflows. Other control variables, such as ldist (3.74), ecowas_d (10.84), wto_d

(3.72), contig (8.19), and comlang_ethno (3.53), have no statistically significant effect on AfT disbursements. Therefore, these factors have no significant impact on the allocation of AfT resources in Nigeria.

ii. Second Stage Results

Table 6 presents the second-stage results of the IV estimation, which uses the predicted values of AfT from the first stage to estimate the impact on trade costs.

Table 6. IV Estimates of AfT on Trade Costs

	(1) Total	(2) Manufacturing	(3) Agriculture
laft_tot	0.47***	0.89***	-0.24
	(0.10)	(0.11)	(0.15)
ldist	0.13	-0.42	37.93***
	(7.05)	(7.97)	(10.33)
lgdpcap_d	-0.10*	-0.22***	0.06
	(0.06)	(0.08)	(0.10)
lgdpcap_o	-0.36***	-0.31***	-0.16**
	(0.06)	(0.07)	(0.08)
lreer	0.21	-0.18	0.58**
	(0.21)	(0.25)	(0.24)
ecowas_d	-1.39	-3.64	42.64***
	(18.65)	(21.06)	(11.44)
wto_d	0.14	0.68	-16.47***
	(0.83)	(0.93)	(4.48)
contig	-1.05	-2.73	74.53***
	(13.85)	(15.63)	(20.26)
comlang_ethno	-0.38	-1.08	20.61***
	(5.03)	(5.67)	(5.67)
R-squared	0.798	0.746	0.775
Observations	1191	1070	644

* p < 0.10, ** p < 0.05, *** p < 0.01. Robust standard errors clustered at partner country level.

lAfT_tot is positive and statistically significant for total trade costs (0.47) and manufacturing trade costs (0.89), both at the 1% level. This means that a 1% increase in AfT disbursements causes a 0.47% increase in total trade costs and a 0.89% increase in manufacturing trade costs, after accounting for the potential endogeneity. These effects are significantly larger than those found in the baseline model. They also buttress the counterintuitive findings that AfT may inadvertently

increase trade costs in the manufacturing sector. For agricultural trade costs, the coefficient on lAfT_tot is negative but not statistically significant. This shows that AfT disbursements have no significant effect on agricultural trade costs, like in the baseline model.

Conversely, the control variables differ significantly from the baseline model. ldist has a larger, positive, and more significant effect on agricultural trade costs (37.93), indicating that geographical distance is a more important determinant of trade costs for agricultural products. lgdpcap_d still has a negative and significant effect on total (-0.10) and manufacturing (-0.22) trade costs only, while lgdpcap_o has a negative and significant effect on trade costs across all categories: total (-0.36), manufacturing (-0.31), and agricultural (-0.16), like in the baseline model. lreer has a positive and significant effect on agricultural trade costs only (0.58). Therefore, currency appreciation is associated with higher trade costs for agricultural products. More so, ecowas_d (42.64), contig (74.53), and comlang_ethno (20.61) all have a large, positive, and significant effect on agricultural trade costs. Conversely, wto_d has a significant negative effect on agricultural trade costs (-16.47), indicating that membership in these multilateral trade agreements helps to reduce agricultural trade costs. Therefore, the larger magnitudes of the IV estimates compared to the baseline model imply that endogeneity may have reduced the measured effects in the baseline model.

2.5. Discussion

The analysis reveals a counterintuitive relationship between AfT and trade costs in Nigeria. They show that rather than reducing trade costs as conventional wisdom implies, there are unexpected patterns that challenge existing assumptions about the immediate impact of AfT. Perhaps the most interesting finding is that AfT appears to increase rather than reduce trade costs in the short term. While agricultural trade costs aren't significantly affected, manufacturing trade costs increase by 0.89% for every 1% increase in AfT. The findings show sector-specific responses to AfT, which may be influenced by structural characteristics and unobserved time-varying factors.

This section examines three potential explanations for these counterintuitive findings: implementation challenges and transition costs during trade reforms; competitiveness problems

arising from real exchange rate appreciation; and potential omitted variable bias in the empirical analysis.

2.5.1. Implementation Challenges and Transition Costs

First, the positive relationship between AfT and trade costs does not necessarily indicate policy failure but may point to the substantial adjustment requirements of trade reforms. According to Hallaert (2010), the structural changes that accompany trade reforms can lead to unsustainable economic, social, and political costs. Trade gains and adjustment costs emerge at different times and require proper sequencing and flanking policies (Hallaert, 2012). Also, when manufacturing firms implement new systems and standards, they incur considerable transition costs before efficiency gains materialise. Modernising quality control systems and manufacturing processes demands significant investments in equipment, training, and organisational restructuring (Reyes, 2011; Tizhe *et al.,* 2022; Yang *et al.,* 2024).

Additionally, the costs of standardising processes across locations are compounded by extensive training needs and organisational changes. Often, the result manifests as gradual operational improvements rather than immediate implementation of efficiency gains (Linderson *et al.,* 2024). Moreover, inadequate infrastructure increases both direct and indirect costs, which can initially worsen during upgrade periods (Busse *et al.,* 2012). Larger, technology-intensive sectors face steeper adjustment curves when implementing AfT reforms and require upgrades across manufacturing, supply chains, and quality control systems (Mishrif and Hammad, 2024). Even when constrained by inadequate infrastructure, the introduction of new standards can initially raise operational costs, though long-term benefits may ultimately justify these investments (Rosiawan *et al.,* 2019). This pattern reflects how implementation effectiveness varies considerably by intervention type and timing, with infrastructure-related AfT significantly boosting export growth while the overall impact of AfT remains less significant (Calì and te Velde, 2011b).

Conversely, the agricultural sector, with simpler value chains and lower technology requirements, showed greater resilience to transition costs. This lower impact could reflect agricultural businesses' need for fewer adjustments and lower implementation costs due to fewer

intermediaries and simpler processes. It also makes them less vulnerable to the implementation pressures observed in the manufacturing sector (Uddin and Oserei, 2019).

Based on this sectoral contrast, the manufacturing sector's stronger response to AfT, as evidenced in the counterintuitive increase in trade costs, may reflect its operation in more sophisticated value chains with stricter regulatory requirements (Yang *et al.,* 2024). these firms must implement more rigorous operational changes when adapting to the new standards and procedures that accompany trade-related adjustments (Reyes, 2011). According to Bond (2008), shifting resources from import-competing industries to exportable sectors after trade liberalisation creates substantial adjustment costs. These adjustment costs in the manufacturing sector can reduce the present value of trade gains by 14-42%, with full labour market adjustment potentially taking five years or more (Dix-Carneiro, 2014).

2.5.2. Competitiveness Problems Due to Real Exchange Rate Appreciation

These counterintuitive results may also reflect competitiveness challenges arising from aid-induced real exchange rate appreciation. Aid inflows have systematic adverse effects on a country's competitiveness, reflected in lower relative growth rates of exportable industries. This occurs through real exchange rate appreciation, which raises production costs and reduces the short-term profitability of manufacturing (Rajan and Subramanian, 2011).

Furthermore, empirical evidence from Nigeria supports this mechanism. For instance, Kareem and Kareem (2015) identified a disconnect between increasing aid inflows and agricultural export growth, suggesting possible inefficiencies in translating aid into improved export performance. Large AfT inflows may contribute to currency appreciation that undermines export competitiveness in manufacturing, where price competition is crucial. This mechanism could explain why the manufacturing sector shows the strongest positive response to AfT on increased trade costs, as it is the most vulnerable to exchange rate-induced competitiveness losses.

In contrast, the agricultural sector's more neutral response may reflect its different exposure to exchange rate effects. Agricultural exports often benefit from factors beyond pure price

competitiveness, such as seasonal timing, quality standards and established regional trade relationships that provide some insulation from exchange rate fluctuations (Mao *et al.,* 2021).

2.5.3. Omitted Variable Bias

While the fixed effects model accounts for time-invariant unobserved characteristics, it may not fully capture time-varying institutional changes that affect AfT effectiveness. Institutional quality is a major determinant of AfT effectiveness, suggesting that variations in governance capacity over time could significantly influence outcomes (Hühne *et al.,* 2014). Changes in governance quality, administrative efficiency, or overall aid coordination over time could interact with AfT flows in ways the model does not account for (Rajan and Subramanian, 2008).

This endogeneity challenge has been recognised in the literature, leading several studies to employ instrumental variable approaches to address potential endogeneity between aid and trade performance. Researchers acknowledge that the relationship between AfT and trade performance is not straightforward and possibly bidirectional (Vijil and Wagner, 2012b; Pettersson and Johansson, 2013). These unobserved factors may contribute to the counterintuitive increase in trade costs. For instance, if AfT disbursements coincide with periods of declining institutional capacity or increasing bureaucratic inefficiency, the aid may fail to achieve its intended objectives of trade facilitation. Similarly, if aggregate aid flows create coordination challenges or resource allocation distortions, they could generate unintended consequences such as short-term inefficiencies or regulatory bottlenecks.

Additionally, the possibility of omitted variable bias is particularly relevant given Nigeria's institutional environment and the challenges of coordinating multiple development interventions. Time-varying factors such as changes in customs procedures, shifts in regulatory enforcement, or variations in administrative capacity could all influence how effectively AfT translates into reduced trade costs.

Ultimately, the potential influence of unobserved heterogeneity in governance quality and institutional capacity remains a major limitation of this analysis. Variations in how AfT is administered, including differences in transparency and fund management practices, may affect programme outcomes in ways not fully captured by the models. Future AfT evaluations could benefit

from including governance-related variables or investigating methods that better account for institutional differences between countries and sectors.

2.6. Conclusion

In this chapter, I evaluate the impact of AfT on trade costs between Nigeria and its trading partners. The findings challenge conventional expectations about AfT effectiveness. It reveals important sectoral variations and highlights the nuanced relationship between AfT and trade performance in large developing economies.

By and large, AfT appears to increase rather than reduce trade costs in the short term, with pronounced sectoral differences. The manufacturing sector shows the strongest response - a 1% increase in AfT corresponding to a 0.89% increase in manufacturing trade costs when using instrumental variables estimation. In contrast, agricultural trade costs remain largely unaffected by AfT. These counterintuitive findings were explained through the lens of implementation challenges and transition costs during trade reforms, competitiveness problems arising from aid-induced real exchange rate appreciation, and potential omitted variable bias.

Geographical and institutional factors significantly influence the AfT-trade costs relationship across sectors. Distance affects agricultural trade costs due to the perishable nature of products, while ECOWAS membership reduces trade costs primarily in manufacturing (Nordås and Piermartini, 2004; Disdier and Head, 2008). Notably, WTO membership reduces agricultural trade costs while having minimal impact on manufacturing, suggesting that multilateral trade agreements help mitigate adjustment costs in specific sectors (Francois and Manchin, 2013; Beverelli *et al.,* 2015). This variation underscores that institutional structures are paramount when developing trade interventions (Vijil and Wagner, 2012; Hühne *et al.,* 2014), and effective trade facilitation must address both geographical realities and institutional frameworks simultaneously.

From a methodological standpoint, the significant differences between baseline and instrumental variables estimates call attention to the importance of accounting for endogeneity when evaluating AfT effectiveness. Simple methods may substantially underestimate AfT's true impact on

trade costs (Cadot *et al.,* 2014; Martínez-Zarzoso *et al.,* 2017). This study contributes to the AfT literature by employing Novy's (2013) trade cost measure, which captures both observable and unobservable trade barriers - a clear advantage over traditional metrics focusing narrowly on tariffs or shipping costs. The integration of this measure with sector-specific analysis, considering Nigeria's unique economic structure and institutional environment, reveals aspects of AfT effectiveness that more general approaches might miss.

These findings carry significant implications for future program design and implementation. Donors should anticipate short-term increases in trade costs, especially in manufacturing, suggesting that transition support or phased implementation may be required to help firms manage adjustment costs (Collier and Venables, 2007; Cirera and Winters, 2015; Erdogan, 2017; Brazys *et al.,* 2020). The observed sectoral differences call for strategies that address each sector's specific implementation challenges and capacity constraints (Brenton and von Uexkull, 2009; OECD and WTO, 2017). Rather than viewing temporary inefficiencies as failures, they should be understood as necessary investments in long-term development capacity. The temporal dimension of AfT effectiveness indicates that adjustment costs must be incorporated into initiative design from the outset, acknowledging that long-term effects may differ substantially from short-term impact (Hynes and Holden, 2016; Mishrif and Hammad, 2024).

However, several important limitations warrant consideration. While the fixed effects model accounts for time-invariant unobserved characteristics, it may not fully capture time-varying institutional factors, such as changes in governance quality or aid coordination effectiveness over time (Rajan and Subramanian, 2008). These unobserved factors may interact with AfT flows in ways that contribute to increased trade costs. Variations in how AfT is administered, including differences in transparency and fund management practices, may affect programme outcomes in ways not fully captured by the models. The temporal scope of the analysis presents another limitation, as more research is needed to determine whether the observed short-term cost increases persist or reverse over time (Busse *et al.,* 2012; Hühne *et al.,* 2014). Future AfT evaluations could benefit from including governance-related variables and employing multi-country analyses that incorporate interaction terms between AfT and country-specific characteristics.

Ultimately, these findings challenge simplistic narratives about AfT impact and underscore the significance of tailored approaches to trade facilitation (Vijil and Wagner, 2012b; Ghimire, Mukherjee and Alvi, 2013). More broadly, the research reframes how AfT effectiveness should be evaluated by acknowledging the nonlinear processes that occur when countries adapt to new standards and requirements. The emphasis on institutional quality in shaping AfT's impact provides important insights for both researchers and practitioners. Coordinating both hard and soft infrastructure improvements, along with strategic attention to sectoral and regional contexts, may enhance AfT effectiveness.

As I proceed to Chapter 3, I build on these findings to analyse the impact of AfT on Nigeria's agricultural export performance, exploring how the trade cost mechanisms identified here translate into actual export outcomes.

Chapter 3

3. Aid for Trade and Nigeria's Agricultural Export Performance.

Abstract

This chapter addresses the second research objective of the thesis, which is to assess the impact of AfT on Nigeria's agricultural export performance. Building on the trade cost analysis presented in Chapter 2, this chapter shifts the focus from trade barriers to trade outcomes by examining how AfT has influenced agricultural export performance over time. The analysis investigates whether different AfT components: economic infrastructure, productive capacity, and trade policy and regulations, affect agricultural exports in distinct ways. It also considers the potential role of regional integration by examining whether Nigeria's membership in ECOWAS affects the effectiveness of AfT in the agricultural sector.

3.1. Introduction

AfT aims to strengthen developing countries' trade capabilities; however, its effectiveness varies by sector and context (Calì and te Velde, 2011; Hühne *et al.,* 2014). Although AfT has the potential to improve export performance through infrastructure development (Vijil and Wagner, 2012), the precise mechanisms linking these interventions to sector-specific export performance are still debated. Building on Chapter 2's findings, this chapter analyses AfT's impact on Nigeria's agricultural export performance. The earlier finding that AfT has no statistically significant effect on agricultural trade costs but has a positive effect on manufacturing trade costs forms the basis for the analysis of export response patterns examined in this chapter.

Understanding the relationship between AfT and export performance requires a good grasp of its specifics and contextual sensitivity. According to Brenton and von Uexkull (2009), targeted AfT can significantly improve export performance in sectors where countries have a clear comparative advantage. Similarly, a recipient country's productive capabilities and institutional frameworks are big determinants of AfT effectiveness (Gnangnon, 2019). Nigeria's agricultural sector exemplifies this challenge, as issues like perishability and adherence to quality standards can mitigate the impact of

AfT (Olusegun *et al.*, 2024). Considering Nigeria's efforts to diversify its export base from crude oil to agriculture, understanding how AfT affects agricultural exports is both timely and policy-relevant. These arguments explain how the trade cost effects identified in Chapter 2 may affect agricultural export performance.

This chapter contributes to the larger research question, "To what extent has AfT facilitated Nigeria's agricultural export performance?" The question is analysed at multiple levels: First, it assesses the overall impact of AfT on Nigeria's agricultural exports from a macroeconomic standpoint. Second, it disaggregates AfT into its three components (economic infrastructure, productive capacity, and trade policy and regulations) to determine how each component affects export performance. Third, it evaluates the differential impact of AfT on exports to ECOWAS and non-ECOWAS countries, as well as compares the effects of AfT on agricultural exports with those of other sectors (minerals and manufacturing sectors).

In line with the objective of this chapter, the following hypotheses are proposed:

H_1: AfT has a positive and significant impact on Nigeria's agricultural exports.

H_2: The impact of AfT varies across different AfT categories (economic infrastructure, productive capacity, and trade policy and regulations), with economic infrastructure expected to have the largest effect.

H_3: The effect of total AfT is greater on agricultural exports to ECOWAS countries compared to non-ECOWAS countries.

The remainder of the chapter is organised as follows. Section 2 examines the relevant literature on AfT and agricultural exports. Section 3 discusses the theoretical framework underpinning this study. Section 4 discusses the methodology, which includes data, model specifications, and estimation techniques. Section 5 presents the empirical findings, and Section 6 discusses them. Finally, Section 7 concludes the chapter.

3.2. Literature Review

This section reviews the theoretical and empirical foundations that link AfT to export performance. It begins with the conceptual channels through which AfT can influence trade outcomes and then synthesises the empirical evidence in three tiers: global studies, regional/ECOWAS evidence, and Nigeria-specific studies. The final subsection outlines the research gaps addressed by this chapter.

3.2.1. Theoretical Links Between AfT and Export Performance

AfT can influence export performance through several theoretical channels. First, improvements in economic infrastructure like transport, energy and communications reduce trade costs and help firms access international markets more easily (Limao and Venables, 2001; Calì and te Velde, 2011; Portugal-Perez and Wilson, 2012). Second, when AfT targets productive capacity, it enhances both the quality and quantity of exportable goods by supporting value chain development, agricultural productivity and manufacturing capabilities (Volpe *et al.,* 2008). Third, AfT that focuses on trade facilitation and regulatory reform reduces administrative burdens, streamlines border procedures, and improves standards compliance, which affects both the extensive and intensive margins of trade (Dennis and Shepherd, 2011; Hoekman and Nicita, 2011; Helble *et al.,* 2012). These mechanisms collectively explain the pathways through which AfT may influence export outcomes across different sectors.

3.2.2. Global Empirical Evidence on AfT and Export Performance

A growing body of empirical evidence suggests that AfT contributes to export expansion in developing countries. Vijil and Wagner (2012) conducted a two-step empirical analysis to assess the impact of AfT on export performance. To account for endogeneity, they estimate a log-linear export supply function with Two-Stage Least Squares (2SLS). The study constructs an infrastructure index using variables such as road length and telecommunications, which is normalised by surface area. According to the study, a 10% increase in per capita infrastructure aid results in a 2.34% increase in

the exports-to-GDP ratio, or a 2.71% reduction in trade barriers. Data sources for the study include the World Trade Indicators, Doing Business reports, and geographical variables.

Building on this, Hühne, et al., (2014) employ a gravity model to analyse the influence of AfT recipient country exports from 1990 to 2010. The data sources include WDI, the Centre d'Études Prospectives et d'Informations Internationales (CEPII) database, and the OECD-DAC's International Development Statistics. According to the study, AfT increases recipient countries' exports to donor countries as well as recipient countries' imports from donor countries. The effect on exports generally outweighs the effect on imports, especially for trade facilitation and regulation.

In the same vein, Pettersson and Johansson (2013) employ a gravity model to examine the bilateral aid and export relationships between 184 countries from 1990 to 2005. Their research indicates that bilateral aid has a positive impact on exports for both donors and recipients, suggesting that AfT reduces the effective cost of distance between trading partners. The results imply that AfT has a significant impact on exports through infrastructure investments, whereas technical assistance appears to have a direct but more modest impact on trade. In addition, the aid-trade relationship is strong for donor exports to Sub-Saharan Africa and recipient exports of strategic materials, showing the varying effects of aid across regions and export compositions.

Furthermore, Bearce et al. (2013) use a country-year statistical unit, as opposed to the traditional country-pair-year unit in gravity models, to reflect the idea that AfT aims to increase overall exports rather than specific bilateral trade relationships. In order to prevent potential endogeneity bias, they apply a 2-year lag to the AfT variable and utilise data from the Trade Capacity Building Database of the United States government. Their primary focus was on US AfT allocations from 1999 to 2008. The study's findings indicate that a $1 increase in US AfT leads to a $69 increase in recipient countries' exports two years later. The export effect is not limited to the US market; it is more noticeable in less developed, landlocked, and remote countries.

3.2.3. Regional and ECOWAS Empirical Evidence

Within Sub-Saharan Africa, several studies show that regional arrangements can amplify the export-enhancing effects of aid by harmonising standards, reducing non-tariff barriers and improving corridor efficiency.

Shepherd and Wilson (2009) examine African regional blocs and find that improvements in trade facilitation, many of which are supported by AfT, significantly increase intra-regional trade. Portugal-Perez and Wilson (2012) also note that regional regulatory reforms can interact with AfT to reduce trade costs more effectively than isolated national interventions.

Within ECOWAS specifically, trade facilitation remains uneven, but studies highlight the role of regional protocols in shaping export outcomes. ECOWAS member states experience higher intra-regional trade responses when improvements in infrastructure and border procedures are coordinated regionally (Saygili *et al.,* 2018; Takpara, 2021). Although these studies do not explicitly examine AfT, they point to the institutional environment in which AfT operates and suggest that regional commitments may strengthen the transmission of AfT into export performance.

Despite Nigeria's central role within ECOWAS, there is limited empirical work that directly links AfT to export performance within the ECOWAS framework. This gap is noteworthy given Nigeria's substantial participation in regional trade and the potential for ECOWAS-related institutions to shape AfT outcomes.

3.2.4. Differential Impact of AfT Types Components

AfT effectiveness varies depending on the kind of intervention implemented. According to Calì and te Velde (2011), even though the overall impact of AfT is not significant, infrastructure-related AfT significantly boosts export growth. Their research uses data from 100 developing countries from 2002 to 2007 to determine how AfT affects exports. To address endogeneity and temporal effects, they use the Generalised Method of Moments (GMM), Instrumental Variable (IV), and Fixed Effects (FE) estimators. Export data are sourced from the World Development Indicators

(WDI), while supplementary data are obtained from the International Monetary Fund (IMF) and the OECD Development Assistance Committee's Creditor Reporting System (OECD-DAC CRS).

Martínez-Zarzoso et al. (2017) assess the impact of AfT on export performance using panel quantile regression and panel data. The study examines the effects of AfT on various export quantiles. 162 countries are included in the data, which spans the years 2000 - 2011 and is derived from sources like the Worldwide Governance Indicators Project, the Creditor Reporting System (CRS), the World Bank, and CEPII. The study incorporates regional dummy variables in the Ordinary Least Squares (OLS) regression models as a benchmark to account for regional fixed effects. These dummies help control for unobserved heterogeneity across different regions, ensuring that variations specific to particular areas are properly considered. By including these regional dummies, the analysis offers a more accurate estimation of the impact of AfT, as it controls for regional differences that may influence export performance. According to the study, AfT disbursements have a significant impact on exports at the .50 and .75 quantiles of the export distribution, with aid aimed at increasing infrastructure and production capacity having the greatest impact.

3.2.5. Sectoral Variations in AfT Effectiveness

AfT's impact also vary across export sectors. Ferro et al. (2014) estimated the impact of AfT on downstream manufactured exports in 132 aid-recipient countries between 2002 and 2008. They focus on the transportation, communications, energy, banking, financial services, and business services sectors, using GTAP input-output tables to calculate the total input requirements for each. Their study revealed that aid to services, including transport, energy, and banking, has a positive and significant impact on exports, with effectiveness varying by income group. The data used in this study were sourced from the OECD Creditor Reporting System (CRS), the United Nations Conference on Trade and Development's (UNCTAD) Commodity Trade Statistics Database (COMTRADE), the United Nations Industrial Development Organization's (UNIDO) Industrial Statistics Database (INDSTAT 4), and input-output tables derived from the Global Trade Analysis Project version 7 (GTAP7) and Argentina's National Institute of Statistics and Censuses (INDEC).

Ghimire et al. (2013) analysed the differential impact of AfT on sectoral exports in developing countries, focusing on agriculture, manufacturing, and services. Using a Seemingly Unrelated Regression (SUR) framework and panel data for 121 developing countries over 1995–2010 (for commitments) and 2002–2010 (for disbursements), they found that sector-specific AfT positively and significantly affects exports in the corresponding sectors. Their results highlight that aid targeted at economic infrastructure and productive capacity is particularly important for boosting sectoral exports.

3.2.6. AfT Studies in the Nigerian Context

Although Nigeria is a major recipient of AfT, empirical evidence on its sector-level effectiveness remains limited. Most existing research focuses either on general aid flows or agricultural assistance rather than AfT specifically. For instance, Kareem and Kareem (2015) examine agricultural aid but do not distinguish between AfT categories while Alabi (2014) assesses agricultural productivity and foreign aid across Sub-Saharan Africa without an AfT-specific focus. Consequently, the extent to which AfT influences Nigeria's agricultural and manufacturing exports remains unclear.

In addition, existing studies do not consider how regional integration frameworks such as ECOWAS may condition AfT effectiveness, despite Nigeria's strategic role in the regional trade environment. This lack of sector-specific and institutionally contextualised evidence highlights a significant gap in the literature and underscores the need for a focused analysis of AfT's export-enhancing potential in Nigeria.

3.2.7. Research Gaps and Contributions

Despite burgeoning global research on AfT, several gaps remain in the existing literature. First, most studies analyse AfT effects at the aggregate level, overlooking the possibility that AfT influences agricultural and manufacturing exports differently. Second, prior research seldom distinguishes between AfT components (economic infrastructure, productive capacity and trade policy and regulations) when assessing export outcomes for Nigeria. Third, existing empirical work

does not evaluate whether regional integration, like ECOWAS membership, amplifies AfT's export-enhancing effects, despite the salience of regional networks in trade.

To address these gaps, this chapter provides a Nigeria-specific analysis of AfT's impact on export performance across two major sectors: agriculture and manufacturing. It also separately identifies the effects of key AfT components and examines whether ECOWAS membership moderates these relationships. By doing so, the chapter contributes new evidence on the channels through which AfT operates in Nigeria's export environment and offers a more nuanced understanding of sectoral and institutional heterogeneity.

3.3. The Gravity Model

The Gravity Model of international trade is a strong and widely accepted framework for examining the factors that influence bilateral trade flows between different countries. Developed by Tinbergen (1962) and Pöyhönen (1963), the model posits that the volume of trade between two countries is proportional to their economic sizes (often measured by GDP) and inversely proportional to the geographic distance between them. The Gravity Model has been greatly improved and modified over time to include a variety of trade-related factors, making it a flexible tool for empirical trade analysis (Anderson and Wincoop, 2003; Bergstrand and Egger, 2013).

In its basic form, the Gravity Model can be expressed as:

$$\log X_{ij} = \beta_0 + \beta_1 \log GDP_i + \beta_2 \log GDP_j + \beta_3 \log \tau_{ij} + \varepsilon_{ij}$$

$$\log \tau_{ij} = \log (\text{distance}_{ij})$$

where X_{ij} represents exports from country i to country j, GDP is each country's gross domestic product, τ_{ij} represents trade costs between the two countries, typically proxied by geographical distance, and ε_{ij} is a random error term (Shepherd, 2013). The economic intuition behind the model is straightforward: larger economies trade more because they have more production capacity and market demand, whereas trade costs, which are frequently proxied by geographic distance, act as barriers to trade volume.

The gravity model has several advantages for analysing AfT's impact on export performance. First, it allows for the inclusion of AfT variables alongside standard trade determinants, making it possible to isolate the AfT effects being studied. Also, AfT effectiveness can be analysed on multiple levels, such as total exports, sectoral exports, or bilateral trade flows due to its flexibility. Moreover, the model makes it possible to identify heterogeneous effects across contexts by interacting AfT variables with regional dummy variables (Pettersson and Johansson, 2013; Martínez-Zarzoso *et al.,* 2017).

To adapt the Gravity Model for this study, the basic model can be augmented as follows:

$$X_{jt} = \beta_0 + \beta_1 \log AfT_t + \beta_2 \log GDP_t + \beta_3 \log GDP_{jt} + \beta_4 \log Distance_{ij} + Controls + \varepsilon_{jt} \quad (1)$$

In this expression, X_{jt} represents Nigeria's exports to country j in year t; AfT_t denotes the AfT received by Nigeria in year t; GDP_t and GDP_{jt} represent the sizes of the Nigerian economy and the trading partner's economy in year t, respectively; and $Distance_{ij}$ refers to the geographical distance between Nigeria and country j. The other controls include common language, contiguity, trade agreement, real effective exchange rate, and agricultural production value.

Furthermore, the standard gravity variables are expected to influence trade flows in theoretically consistent ways. Economic size (GDP), should increase trade volumes via both supply and demand channels (Anderson, 1979). Typically, a higher GDP per capita is indicative of a more sophisticated production capability and increased purchasing power (Frankel and Romer, 1999), both of which enhance trade potential.

Additionally, distance serves as a proxy for a variety of trade costs, with the expectation that increased distance will result in a decrease in trade volume due to increased transportation costs, information asymmetries, and cultural differences (Head and Mayer, 2014). Institutional and cultural proximity variables, such as common language and contiguity, typically improve trade by reducing transaction and information costs. Similarly, regional integration through agreements like ECOWAS is expected to boost trade by reducing formal barriers and creating harmonised standards (Baier and Bergstrand, 2007). The real effective exchange rate also influences trade flows by affecting export price competitiveness (Cheng and Wall, 2005). Building on this understanding of traditional trade

determinants, AfT serves as a complementary tool for addressing structural barriers through targeted interventions that directly impact trade performance.

In the AfT context, economic theory proposes several channels through which each AfT component may influence trade:

1. **Economic infrastructure aid** ought to reduce trade costs by enhancing transportation, communication, and energy infrastructure (Calì and te Velde, 2011b; Vijil and Wagner, 2012b).
2. **Productive capacity aid** should improve supply-side capabilities through technological upgrades and efficiency improvements (Helble *et al.,* 2012; Hühne *et al.,* 2014).
3. **Trade policy aid** should typically reduce institutional barriers and enhance trade facilitation (Busse *et al.,* 2012).

These theoretical relationships form the premise for analysing the impact of AfT on Nigeria's agricultural export performance.

3.4. Methodology

This study employs and builds upon the methodological frameworks of Martínez-Zarzoso et al. (2017), Hühne et al. (2014), and Calì and te Velde (2011). While their studies analysed AfT effectiveness in multiple countries, this study takes a country-specific approach to examine Nigeria's agricultural export performance. It builds on their methodological frameworks by using the gravity model and fixed effects estimations to assess how AfT and its different components affect various export sectors in both global and regional (ECOWAS) contexts.

3.4.1. Data and Time Frame

The study uses annual data from 2005 to 2018, providing 13 years of analysis. This timeframe was selected based on the availability of the Bilateral Trade and Customs Data (BACI), extracted from the United Nations Commodity Trade Statistics Database (UN COMTRADE). The timeframe was chosen to effectively track export trends in alignment with the trade cost trends discussed in Chapter 2.

The BACI dataset contains the value of exports (in US$ million) from Nigeria to each of its trade partners, disaggregated into 15 different product categories. For the analysis, these categories are aggregated into three broad sectors: agriculture (comprising Animal & Animal Products, Vegetable Products, and Foodstuffs), minerals (consisting of Mineral Products), and manufacturing (encompassing Chemicals & Allied Industries, Plastics & Rubber, Raw Hides, Skins, Leather & Furs, Wood & Wood Products, Textiles, Footwear & Headgear, Stone & Glass, Metals, Machinery & Electrical, Transportation, and Miscellaneous products).

This aggregation makes it possible to analyse the differential impact of AfT on these three primary sectors, thereby capturing the key distinctions in Nigeria's export sectors. The data also represents a diverse range of trading partners from various regions and development levels.

3.4.2. Model Specification and Variables

This analysis employs a gravity model framework augmented with AfT variables and various fixed effects specifications.

i. Total AfT and Exports

The first set of regressions estimates the effect of total AfT on different categories of Nigeria's exports. The basic form of each regression is given by:

$$X_{ijt} = \beta_0 + \beta_1 AfT_t + \beta_2 AfT_t * D_{1i} + \beta_3 AfT_t * D_{2i} + Controls + Fixed\ effects + \varepsilon_{ijt} \quad (2)$$

where:

- X_{ijt} = the value of Nigeria's exports of product category i to trading partner j in year t. Hence, the regressions capture how AfT affects exports of specific product categories to different destinations over time. The indices follow (i = 1, …15; j = 1, …, 198; t = 1…14). For example, if i =vegetable products, j =France, and $t = 2010$, then X_{ijt} is the value of Nigeria's exports of vegetable products to France in 2010.
- AfT_t = total Aid for Trade received by Nigeria in year t.
- D_{1i} = 1 if the product category is agricultural; 0 otherwise

- D_{2i} = 1 if the product category is minerals; 0 otherwise.

Interpretation:

- Manufactured exports (base category; $D_{1i} = 0, D_{2i} = 0$), AfT effect = β_1
- Agricultural exports ($D_{1i} = 1, D_{2i} = 0$), AfT effect = $\beta_1 + \beta_2$
- Mineral exports ($D_{1i} = 0, D_{2i} = 1$), AfT effect = $\beta_1 + \beta_3$

For example, for mineral exports the AfT effect is $\beta_1 + \beta_3$, which combines the baseline effect with the mineral-specific deviation.

- Controls include standard gravity model explanatory variables (GDP, distance, contiguity, common language) plus additional Nigeria-specific variables including agricultural production value, real effective exchange rate, and WTO and ECOWAS membership status. These control variables are fully defined in Table 8.

Manufacturing is chosen as the base category because it is Nigeria's most diverse non-oil export sector and faces more trade barriers. Therefore, it a meaningful benchmark for comparison.

The hypothesis is that:

H_1: AfT is expected to have a stronger positive influence on agricultural exports relative to manufacturing and minerals, implying that $\beta_1 > 0$, $\beta_2 > 0$, and $\beta_2 > \beta_3$.

The rationale for this hypothesis is that AfT specifically targets non-oil sectors, with an emphasis on agricultural development and value chain enhancement.

Six different versions of equation (1) are estimated, each with progressive combinations of fixed effects to address various potential sources of unobserved heterogeneity. These are as follows:

$X_{ijt} = \beta_0 + ... + \alpha_i + \varepsilon_{ijt}$ (2.1)

$X_{ijt} = \beta_0 + ... + \alpha_i + \gamma_j + \varepsilon_{ijt}$ (2.2)

$X_{ijt} = \beta_0 + ... + \theta_k + \varepsilon_{ijt}$ (2.3)

$X_{ijt} = \beta_0 + ... + \alpha_i + \delta_t + \varepsilon_{ijt}$ (2.4)

$$X_{ijt} = \beta_0 + ... + \alpha_i + \gamma_j + \delta_t + \varepsilon_{ijt} \quad (2.5)$$

$$X_{ijt} = \beta_0 + ... + \theta_k + \delta_t + \varepsilon_{ijt} \quad (2.6)$$

Regression (2.1) includes product fixed effects, α_i, to control for time-invariant characteristics specific to each product category; regression (2.2) also includes partner country fixed effects, γ_j, controlling for time-invariant characteristics specific to each trading partner; regression (2.3) includes product-partner fixed effects, θ_k, controlling for time-invariant characteristics specific to each product-partner combination (k=1...2772). Regressions (2.4) - (2.6) then repeat regressions (2.1) - (2.3), also including year fixed effects, δ_t, controlling for common shocks or trends that affect all trading relationships each year (such as global economic conditions, policy changes, or technological advancements).

Regressions (2.1), (2.2), (2.4) and (2.5) are estimated by pooled OLS, using F-tests to test for the joint significance of the fixed product, partner and year effects. Regressions (2.3) and (2.6) are estimated using panel data methods, with both fixed and random effects models estimated, and the Hausman test is used to identify the most appropriate model. For equation (2.6), an F-test is again used to test for the joint significance of the year effects.

ii. Disaggregated AfT and exports.

The second set of regressions aims to estimate the effect of total AfT on different categories of Nigeria's exports. The basic form of these regressions is given by:

$$X_{ijt} = \beta_0 + \Sigma\beta_{1m}AfT_{mt} + \Sigma\beta_{2m}AfT_{mt}*D_{1i} + \Sigma\beta_{3m}AfT_{mt}*D_{2i} + \text{Controls} + \text{Fixed effects} + \varepsilon_{ijt} \quad (3)$$

where AfT_{mt} represents the amount of AfT of type m received by Nigeria in year t (m=1...3). The three disaggregated types of AfT considered are productive capacity, economic infrastructure, and trade policy and regulations. The effect of AfT of type m on manufactures exports is given by the coefficient β_{1m}, while the effects on agricultural and mineral exports are given by $\beta_{1m} + \beta_{2m}$ and $\beta_{1m} + \beta_{3m}$ respectively. The hypothesis is that:

H_2: Different components of AfT (EI, PC, TPR) have varying effects across agricultural, manufacturing, and mineral sectors.

This hypothesis reflects the different mechanisms through which each AfT component operates. Economic infrastructure primarily benefits manufacturing through improved logistics and connectivity. Productive capacity targets agricultural modernisation, while trade policy improvements benefit all sectors more uniformly. As with equation (2), six different versions of equation (3) are estimated, each with the different combinations of fixed effects shown in equations (2.1) - (2.6) above.

iii. Total AfT with ECOWAS interaction

The third set of regressions aims to test whether the effect of AfT on Nigeria's exports to countries in the ECOWAS region differs from its effect on exports to countries outside of the region. The basic form of these regressions is given by:

$$X_{(ijt)} = \beta_0 + \beta_1 AfT_t + \beta_2 AfT_t * D_{1i} + \beta_3 AfT_t * D_{2i} + \beta_4 AfT_t * D_{3j} + \text{Controls} + \text{Fixed effects} + \varepsilon_{ijt} \quad (4)$$

where D_{3j} is a time-invariant dummy variable equal to 1 for partner countries that are members of ECOWAS, and 0 otherwise. (Note that no countries joined or left ECOWAS during the period of analysis, so the variable D_3 is time-invariant).

In equation (4), the effect of AfT on manufactured exports to ECOWAS countries is given by the sum of coefficients β_1 and β_4. The effect on agricultural exports to ECOWAS countries is given by $\beta_1 + \beta_2 + \beta_4$, while the effect on mining exports to ECOWAS is given by $\beta_1 + \beta_3 + \beta_4$. These effects can then be compared with the effects on non-ECOWAS countries, given by β_1 for manufacturing, $\beta_1+\beta_2$ for agricultural exports, and $\beta_1+\beta_3$ for mineral exports respectively. The hypothesis is that:

H_3: The effect of total AfT is greater on exports to ECOWAS countries than non-ECOWAS countries, implying that $B_4 > 0$.

This hypothesis reflects the expectation that regional integration and reduced trade barriers within ECOWAS enhance AfT effectiveness for agricultural products where regional trade networks are strong. As with equations (2) and (3), six different versions of equation (4) are estimated, each with a different combination of fixed effects.

iv. Disaggregated AfT with ECOWAS interaction.

The final set of regressions aims to test whether the effect of different categories of AfT differ for Nigeria's exports to countries in ECOWAS compared to countries outside of the region. The basic form of these regressions is given by:

$$X_{ijt} = \beta_0 + \Sigma\beta_{1m}AfT_{mt} + \Sigma\beta_{2m}AfT_{mt}*D_{1i} + \Sigma\beta_{3m}AfT_{mt}*D_{2i} + \Sigma\beta_{4m}AfT_{mt}*D_{3j} + \text{Controls} + \text{Fixed effects} + \varepsilon_{ijt} \quad (5)$$

Where m represents the three AfT components (economic infrastructure, trade policy and regulations, and productive capacity), and D_{3j} is a time-invariant dummy variable equal to 1 for partner countries that are members of ECOWAS and 0 otherwise.

In equation (4), for each AfT component m, the effect on manufactured exports to ECOWAS countries is given by the sum of coefficients β_1 and β_4. The effects on agricultural exports to ECOWAS countries are given by $\beta_1+\beta_2+\beta_4$, while the effects on mineral exports to ECOWAS are given by $\beta_1+\beta_3+\beta_4$. These effects can then be compared with the effects on non-ECOWAS countries, given by β_1 for manufacturing, $\beta_1+\beta_2$ for agriculture, and $\beta_1+\beta_3$ for mineral exports respectively. The hypothesis is that:

H_4: The effect of each AfT component on exports differs between ECOWAS and non-ECOWAS countries, with the impact varying across agricultural, mineral, and manufacturing sectors.

The expectation is that different types of aid will have varying effectiveness within the regional trade context, with some components being likely more important for regional trade integration than others.

As with previous equations, six different versions of equation (5) are estimated, each with a different combination of fixed effects.

3.4.3. Estimation Strategy

The estimation strategy starts with model selection tests. Hausman tests are first performed on specifications 3 and 6 to determine whether fixed or random effects estimation is more appropriate. The tests strongly reject the null hypothesis of random effects across all models (χ^2

ranging from 77.16 to 109.45, all $p < 0.001$), indicating that fixed effects estimation is appropriate. For specifications 1, 2, and 5, F-tests validate the inclusion of both product fixed effects ($F(14, 152) = 24.46$, $p < 0.001$; $F(14, 10782\text{-}10783)$ ranging from 50.14 to 50.50, $p < 0.001$), year fixed effects ($F(12, 1737)$ ranging from 23.23 to 23.36, $p < 0.001$; $F(12, 10775) = 29.10$, $p < 0.001$), and partner fixed effects. These effects are jointly significant in explaining export variations. Throughout the estimation process, robust standard errors are used to account for any heteroskedasticity in the data.

The R-squared values across models range from 0.05 to 0.33, with lower values (about 0.05-0.06) in the product-partner fixed effects models (columns 3 and 6) and higher values (0.29–0.33) in simpler specifications. This pattern is expected in panel data analysis with many fixed effects because the controls account for a significant portion of the variation that would otherwise be explained by the model variables (Wooldridge, 2010; Clark and Linzer, 2015). Despite the relatively low R-squared values, the consistency of statistically significant coefficients across specifications buttresses the discovered relationships.

This observed explanatory power is consistent with trade theory, which states that while AfT has a significant impact on export outcomes, exports are influenced by a range of factors other than aid, including institutional quality, local market conditions, and sectoral characteristics (Head and Mayer, 2014).

3.4.4. Robustness Checks

Each model is estimated using increasingly stringent specifications that start with product fixed effects and progress to product and partner fixed effects, product-partner pair fixed effects, and finally year fixed effects. This approach makes it possible to evaluate how robust the results are to different controls for unobserved heterogeneity. The consistency of the main findings across these specifications on their sign and significance increases confidence in the results. This method helps check whether the results are affected by unobserved factors at the product, country, or relationship levels and supports confidence in the conclusions despite these potential influences.

To guide interpretation of the regression results, Table 7 summarises the variables and expected relationships, while Table 8 outlines their definitions and data sources.

Table 7. Summary of Explanatory Variables and Expected Relationship with Agricultural Exports.

Variable	*Expected Relationship*	*Rationale*
AfT Variables		
AfT Total (lAfT_TOT)	Positive	Enhanced trade capacity and infrastructure
AfT Economic Infrastructure (lAfT_EI)	Positive	Improved trade-related infrastructure
AfT Productive Capacity (lAfT_PC)	Positive	Enhanced production and supply capabilities
AfT Trade Policy (lAfT_TPR)	Positive	Better trade policy environment
Regional Effects		
ECOWAS membership (ecowas_d)	Positive	Regional integration benefits
Interaction Terms		
*AfT * ECOWAS interactions*	Positive	Enhanced regional aid effectiveness
Control Variables		
GDP	Positive	Market size effect
Distance	Negative	Transport costs
Contiguity	Positive	Lower trade barriers
lreer	Negative	Currency appreciation reduces export competitiveness
Common language	Positive	Lower transaction costs

Table 8. Data definitions and sources

Variable Label	*Description*	*Source*
lexports	Natural logarithm of bilateral exports from Nigeria to the partner country. Measured in current US$ millions, calculated from export values reported in the UN COMTRADE database using the BACI reconciliation methodology	UN COMTRADE
lAfT_EI	Natural logarithm of Aid for Trade disbursements for economic infrastructure. Includes aid for transport, storage, communications, energy generation and supply in current US$ millions	OECD CRS
lAfT_TPR	Natural logarithm of Aid for Trade disbursements for trade policy and regulations. Includes support for trade policy, facilitation, negotiations, and training in current US$ millions	OECD CRS
lAfT_PC	Natural logarithm of Aid for Trade disbursements for productive capacity building. Includes sectoral support for trade development, agriculture, industry, mining, and financial services in current US$ millions	OECD CRS
lgd_d	Natural logarithm of partner country's GDP in constant 2015 US$	World Bank WDI
lgdp_o	Natural logarithm of Nigeria's GDP in constant 2015 US$	World Bank WDI
lagprod_value_o	Natural logarithm of Nigeria's agricultural production value. Measured in constant 2014-2016 international dollars, including all agricultural products.	FAO
eco_aft	An interaction term between total AfT and ECOWAS membership. Captures differential effect of total AfT on ECOWAS members	Author's construction
agr_aft	Interaction between total AfT and agricultural sector dummy. Captures differential effect of total AfT on agricultural exports	Author's construction
min_aft	Interaction between total AfT and mineral sector dummy. Captures differential effect of total AfT on mineral exports	Author's construction
eco_ei, eco_tpr, eco_pc	Interactions between each AfT component (economic infrastructure, trade policy and regulation, and productive capacity) and ECOWAS membership. Captures component-specific regional effects.	Author's construction
agr_ei, agr_tpr, agr_pc	Interactions between each AfT component and agricultural sector dummy. Captures component-specific agricultural effects.	Author's construction
min_ei, min_tpr, min_pc	Interactions between each AfT component and mineral sector dummy. Captures component-specific mineral effects.	Author's construction

Note: lAfT_TOT, ldist, lreer, ecowas_d, contg, comlang_ethno, and wto_d have been previously defined in Table 2.

3.4.5. Methodological Limitations and Future Research Directions

Although fixed effects specifications adequately address unobserved heterogeneity, they may not fully address potential endogeneity between AfT and exports. Endogeneity can arise from reverse causality, in which increased exports result in more AfT, or from omitted variables that influence both AfT levels and export performance. Future research may use instrumental variable approaches to more effectively ascertain causality (e.g., geopolitical factors affecting AfT levels). Alternatively, panel methods with lagged variables may help to control for endogeneity.

Moreover, the generalisability of the Nigeria-specific findings is another limitation. Nigeria's reliance on oil exports and its leadership position in ECOWAS may have an impact on the AfT-exports relationship in ways that aren't relevant to other countries. These findings may be less relevant to smaller, non-oil-exporting countries or those functioning in different regional contexts. Future research may employ multi-country analyses that incorporate interaction terms between AfT and country-specific characteristics (e.g., resource endowments, institutional quality, etc.) to evaluate the impact of AfT on diverse economic and political contexts. Comparative case studies may also reveal the circumstances under which AfT is most effective.

Despite these limitations, this study significantly improves the understanding of AfT's impact on export performance and provides a methodological framework for future empirical research on AfT effectiveness.

3.5. Results

This section presents and interprets the findings from the fixed effects regressions. The results progress from basic specifications with linear time trends (Columns 1-3) to more detailed specifications with year-fixed effects (Columns 4-6).

3.5.1. Overall Impact of Total AfT on Nigeria's Exports

Table 9 presents the baseline results for the impact of total AfT on Nigeria's exports, using manufacturing as the base category to allow for comparison of differential AfT effects across sectors. The model includes both standard gravity variables and Nigeria-specific controls.

The findings show that Total AfT (lAfT_TOT) has negative but statistically insignificant effect (-0.14 to -0.05) on Nigeria's manufactured exports across specifications. The lack of statistical significance indicates that AfT may have a weak adverse or neutral effect on manufactured exports, rather than the anticipated positive effect. In contrast, the agriculture-specific AfT interaction (agr_aft) shows statistically significant positive effects across all specifications (0.22 to 0.46) at the 1% to 10% levels. This result indicates that AfT has a substantially more positive impact on agricultural exports compared to manufactured exports.

F-tests were conducted to determine if the overall effect of total AfT on agricultural exports is statistically significant (H_0: lAfT_TOT + agr_aft = 0). These tests examine whether the combined effect of the baseline AfT coefficient and the agricultural interaction is zero. The results vary across specifications:

- Column 1: F (1, 10,783) = 0.31, p = 0.5774 (not significant)
- Column 2: F (1, 152) = 2.78, p = 0.0973 (not significant at 5% level)
- Column 3: F (1, 1,737) = 11.85, p = 0.0006 (significant at 1% level)

Though the combined effect is statistically insignificant in basic specifications, it is significant in the most restrictive specification. This indicates that AfT's positive effect on agricultural exports becomes more evident when accounting for unobserved product-partner heterogeneity.

Table 9. Impact of Total AfT on Exports: Fixed Effects Estimates

VARIABLES	(1) lexports	(2) lexports	(3) lexports	(4) lexports	(5) lexports	(6) lexports
lAfT_TOT	-0.14	-0.07	-0.05			
	(0.11)	(0.11)	(0.08)			
agr_aft	0.22*	0.28**	0.46***	0.23*	0.29**	0.46***
	(0.12)	(0.11)	(0.12)	(0.12)	(0.11)	(0.12)
min_aft	0.12	0.24	0.23	0.10	0.23	0.21
	(0.29)	(0.27)	(0.20)	(0.29)	(0.27)	(0.20)
lgdp_d	0.52***	0.30	0.56**	0.53***	0.10	0.36
	(0.02)	(0.26)	(0.22)	(0.02)	(0.25)	(0.22)
lgdp_o	5.09***	2.85	3.32***			
	(1.58)	(1.95)	(1.20)			
ldist_av	-0.62***			-0.63***		
	(0.05)			(0.05)		
contig	0.86***			0.86***		
	(0.11)			(0.11)		
comlang_ethno	0.27***			0.28***		
	(0.05)			(0.05)		
wto_d	0.24**	-0.23	-0.04	0.25**	-0.24	-0.06
	(0.10)	(0.33)	(0.34)	(0.10)	(0.35)	(0.34)
ecowas_d	1.02***			1.02***		
	(0.08)			(0.08)		
year	-0.13	-0.03	-0.06			
	(0.08)	(0.09)	(0.06)			
lreer	-1.20	0.06	-0.11			
	(0.76)	(0.90)	(0.59)			
lagprod_value_o	-4.20***	-3.73***	-3.76***			
	(0.67)	(0.57)	(0.43)			
Observations	10,811	10,817	10,817	10,811	10,817	10,817
R-squared	0.32	0.29	0.05	0.33	0.29	0.06
Fixed Effects	Product	Partner Country	Partner-Product Pair	Year & Product	Year & Partner Country	Year & Partner-Product Pair

*** p<0.01, ** p<0.05, * p<0.1

The control variables show expected relationships with export performance. Distance (ldist_av) has a significant negative effect (-0.62 to -0.63), indicating that geographical distance increases trade costs and reduces trade flows. Contiguity (contig) has a significant positive effect

(0.86), indicating that sharing a border with Nigeria greatly facilitates trade. Common language (comlang_ethno) has a positive effect on exports (0.27 to 0.28), suggesting reduced communication and cultural barriers to trade. ECOWAS membership (ecowas_d) has a significant positive effect (1.02), highlighting the advantages of regional integration for trade facilitation. WTO membership (wto_d) has a positive effect (0.24 to 0.25) on basic specifications, implying that multilateral trade commitments improve export performance. Partner country GDP (lgdp_d) has a consistent positive effect on exports (0.30 to 0.56), implying that larger, wealthier markets import more from Nigeria. Nigeria's own GDP (lgdp_o) also has a significant positive effect (2.85 to 5.09), implying that increased domestic production capacity improves Nigeria's ability to supply external markets. Finally, the real effective exchange rate (lreer) has mixed effects. This could reflect both the impact of exchange rates on export competitiveness (with appreciation making exports more expensive) and the possibility of exchange rate changes being driven by strong export performance and foreign currency inflows. Importantly, all of the control variables' effects remain consistent in direction and significance across all models in the tables below.

3.5.2. Disaggregated AfT Components

Table 10 presents the impact of disaggregated AfT components on Nigeria's exports.

The disaggregated AfT components show distinct patterns across all AfT categories. Economic infrastructure aid (lAfT_EI) has negative effects (-1.35 to -0.98) on manufactured exports, all significant at the 1% level. The negative effects may reflect short-term trade-offs, such as temporary resource reallocation or implementation disruptions, rather than long-term inefficiency of infrastructure aid. It is also possible that the type or location of infrastructure investments does not align closely with the needs of the manufacturing sector.

Productive capacity aid (lAfT_PC) has positive effects (0.16 to 0.20) on manufactured exports, significant at the 1% to 10% levels, indicating that capacity building directly enhances export competitiveness. Trade Policy and Regulations aid (lAfT_TPR) has positive and significant effects (0.11 to 0.18) across specifications at the 1% to 5% levels, demonstrating that policy reforms effectively improve export performance.

Table 10. Impact of Disaggregated AfT Components on Exports: Fixed Effects Estimates

VARIABLES	(1) lexports	(2) lexports	(3) lexports	(4) lexports	(5) lexports	(6) lexports
lAfT_EI	-1.35***	-0.98***	-1.03***			
	(0.23)	(0.19)	(0.14)			
lAfT_PC	0.20**	0.16*	0.17***			
	(0.08)	(0.08)	(0.06)			
lAfT_TPR	0.18***	0.11**	0.14***			
	(0.07)	(0.06)	(0.04)			
agr_ei	0.07	0.11	0.23	0.09	0.12	0.24*
	(0.19)	(0.14)	(0.14)	(0.19)	(0.14)	(0.14)
agr_tpr	0.12	0.13	0.07	0.12	0.12	0.06
	(0.11)	(0.08)	(0.07)	(0.11)	(0.08)	(0.07)
agr_pc	0.03	0.05	0.18**	0.03	0.05	0.18**
	(0.10)	(0.08)	(0.08)	(0.10)	(0.08)	(0.08)
min_ei	0.27	0.22	0.18	0.24	0.20	0.15
	(0.44)	(0.38)	(0.32)	(0.44)	(0.38)	(0.32)
min_tpr	0.06	0.10	0.12	0.07	0.11	0.13
	(0.25)	(0.19)	(0.16)	(0.25)	(0.19)	(0.16)
min_pc	-0.12	-0.01	-0.01	-0.12	-0.01	-0.01
	(0.23)	(0.19)	(0.15)	(0.23)	(0.19)	(0.15)
Observations	10,811	10,817	10,817	10,811	10,817	10,817
R-squared	0.33	0.29	0.05	0.33	0.30	0.06
Fixed Effects	Product	Partner Country	Partner-Product Pair	Year & Product	Year & Partner Country	Year & Partner-Product Pair

*** p<0.01, ** p<0.05, * p<0.1. Note: Results for control variables can be found in Appendix A1

For agricultural exports, the interaction terms reveal additional effects beyond those for manufacturing. Economic infrastructure aid (agr_ei) shows an additional positive effect on agricultural exports (0.09 to 0.24), significant at the 10% level in Column 6. Agricultural productive capacity aid (agr_pc) also has additional positive effects (0.03 to 0.18), significant at the 5% level in the final specification. These positive interaction terms indicate that both infrastructure and productive capacity aid have more favourable effects on agricultural exports compared to their effects on manufacturing exports. However, agricultural trade policy aid (agr_tpr) shows positive but statistically insignificant additional effects (0.06 to 0.12) across specifications. All the interactions between the AfT components and the mineral sector dummy variable are also insignificant, implying that AfT has no significant differential impact on mineral exports compared to manufacturing.

3.5.3. Regional Variations: ECOWAS Effects with Total AfT

Table 11 presents the differential impact of total AfT on Nigeria's exports to ECOWAS countries compared to non-ECOWAS countries.

As shown on the table, Total AfT (lAfT_TOT) has negative but mostly insignificant effects (-0.20 to -0.06) for manufactured exports to non-ECOWAS countries, with significance only at the 10% level in the basic specification. This minimal impact suggests AfT has a weak adverse or neutral effect on manufactured exports outside the ECOWAS region.

Table 11. Total AfT and ECOWAS Effects on Exports: Fixed Effects Estimates

VARIABLES	(1) lexports	(2) lexports	(3) lexports	(4) lexports	(5) lexports	(6) lexports
lAfT_TOT	-0.20*	-0.11	-0.06			
	(0.12)	(0.12)	(0.08)			
eco_aft	0.32***	0.21	0.03	0.30***	0.21	0.03
	(0.11)	(0.18)	(0.11)	(0.11)	(0.18)	(0.11)
agr_aft	0.23*	0.29**	0.46***	0.24**	0.29**	0.46***
	(0.12)	(0.11)	(0.12)	(0.12)	(0.11)	(0.12)
min_aft	0.13	0.25	0.23	0.11	0.23	0.21
	(0.29)	(0.27)	(0.20)	(0.29)	(0.27)	(0.20)
Observations	10,811	10,817	10,817	10,811	10,817	10,817
R-squared	0.32	0.29	0.05	0.33	0.30	0.06
Fixed Effects	Product	Partner Country	Partner-Product Pair	Year & Product	Year & Partner Country	Year & Partner-Product Pair

*** p<0.01, ** p<0.05, * p<0.1. Note: Results for control variables can be found in Appendix A2

The interaction between ECOWAS membership and AfT (eco_aft) shows positive effects (0.21 to 0.32) that are significant at the 1% level in basic specifications but become insignificant in more restrictive models. These positive effects indicate that AfT has an additional positive effect on exports to ECOWAS countries compared to non-ECOWAS countries. However, the loss of significance in restrictive specifications suggests this regional advantage is not robust to all model controls. Therefore, the initial effect might be influenced by other factors not captured in simpler models.

The sector-specific interactions with AfT remain consistent with earlier findings. Agricultural AfT (agr_aft) shows statistically significant positive additional effects (0.23 to 0.46) across all specifications at the 5% and 1% levels, confirming that AfT has more positive impact on agricultural exports than manufactured exports. This differential effect appears consistent regardless of whether exports go to ECOWAS or non-ECOWAS countries. Mineral AfT (min_aft) shows positive but statistically insignificant coefficients (0.10 to 0.25) in all models, indicating no significant differential effect of AfT on mineral exports compared to manufacturing.

3.5.4. Combined Effects of Disaggregated AfT: ECOWAS and Sectoral Analysis

Table 12 presents the combined effects of disaggregated AfT components on Nigeria's exports, incorporating both regional and sectoral dimensions.

In contrast to the negative effects of infrastructure aid on manufactured exports illustrated in Table 10, the ECOWAS-economic infrastructure interaction (eco_ei) shows significant positive effects (0.19 to 0.52), significant at the 10% to 1% levels in most specifications. This positive interaction indicates that infrastructure aid has an additional positive effect on exports to ECOWAS countries, offsetting the negative effects in the baseline model. This suggests that infrastructure investments facilitated by AfT are more effective when targeted at regional trade.

Interestingly, trade policy aid shows a negative interaction with ECOWAS (eco_tpr: -0.17 to -0.23), significant at the 5% and 1% levels. Combined with the positive baseline effect from Table 10, this negative interaction means that trade policy aid has a smaller positive effect on ECOWAS exports than on non-ECOWAS exports. Possible explanations include misalignment between trade policy reforms and regional integration priorities, or existing regulatory harmonization within ECOWAS reducing the marginal benefit of additional policy aid. Productive capacity Aid's interaction with ECOWAS (eco_pc) shows positive but statistically insignificant coefficients (0.06 to 0.12), suggesting no significant differential effect between ECOWAS and non-ECOWAS destinations.

Table 12. Combined Effects of Disaggregated AfT: ECOWAS and Sectoral Analysis

VARIABLES	(1) lexports	(2) lexports	(3) lexports	(4) lexports	(5) lexports	(6) lexports
lAfT_EI	-1.43***	-1.04***	-1.06***			
	(0.23)	(0.20)	(0.15)			
lAfT_PC	0.17**	0.13	0.16***			
	(0.08)	(0.08)	(0.06)			
lAfT_TPR	0.22***	0.14**	0.18***			
	(0.07)	(0.06)	(0.05)			
eco_ei	0.50***	0.32**	0.19	0.52***	0.34**	0.21*
	(0.18)	(0.14)	(0.12)	(0.18)	(0.14)	(0.12)
eco_tpr	-0.22**	-0.17**	-0.19***	-0.23**	-0.19**	-0.20***
	(0.11)	(0.08)	(0.06)	(0.11)	(0.08)	(0.06)
eco_pc	0.12	0.12	0.06	0.11	0.12	0.06
	(0.10)	(0.11)	(0.07)	(0.10)	(0.11)	(0.07)
agr_ei	0.08	0.12	0.24*	0.10	0.13	0.25*
	(0.19)	(0.14)	(0.14)	(0.19)	(0.14)	(0.14)
agr_tpr	0.12	0.12	0.06	0.11	0.12	0.05
	(0.11)	(0.08)	(0.07)	(0.11)	(0.08)	(0.07)
agr_pc	0.04	0.05	0.18**	0.04	0.05	0.18**
	(0.10)	(0.08)	(0.08)	(0.10)	(0.08)	(0.08)
min_ei	0.28	0.22	0.18	0.26	0.21	0.16
	(0.44)	(0.38)	(0.32)	(0.44)	(0.38)	(0.32)
min_tpr	0.06	0.10	0.12	0.07	0.11	0.12
	(0.25)	(0.19)	(0.16)	(0.25)	(0.19)	(0.16)
min_pc	-0.12	-0.01	-0.01	-0.12	-0.01	-0.01
	(0.23)	(0.19)	(0.15)	(0.23)	(0.19)	(0.15)
Observations	10,811	10,817	10,817	10,811	10,817	10,817
R-squared	0.33	0.29	0.06	0.33	0.30	0.06
Fixed Effects	Product	Partner Country	Partner-Product Pair	Year & Product	Year & Partner Country	Year & Partner-Product Pair

*** p<0.01, ** p<0.05, * p<0.1. Note: Results for control variables can be found in Appendix A3

For sector-specific effects, the agricultural interactions remain consistent with Table 10's findings. Economic infrastructure aid shows additional positive effects for agricultural exports (agr_ei: 0.08 to 0.25), significant at the 10% level in the most restrictive specification. Similarly, productive capacity aid shows additional positive effects for agriculture (agr_pc: 0.04 to 0.18), significant at the 5% level in Column 6. These positive interactions confirm that both infrastructure and productive capacity aid have more favourable effects on agricultural exports compared to

manufactured exports. The mineral sector shows no significant interactions with any AfT component, indicating that AfT's effects on mineral exports do not differ significantly from its effects on manufacturing.

3.6. Discussion

This analysis identifies five unexpected patterns that deviate from theoretical expectations and previous research findings, with important implications for policy and research.

3.6.1. Sectoral Heterogeneity in AfT Effectiveness

The most striking is the clear sectoral heterogeneity in AfT effectiveness. AfT's insignificant effects on manufactured exports and significant positive effects on agricultural exports contradict Ferro et al.'s (2014) multi-country analysis, which found consistently positive effects across all sectors. However, it is consistent with the findings of Ghimire et al. (2016) that agricultural exports are most responsive to aid in countries with established agricultural trade networks. This finding implies that sector-specific institutional frameworks have a significant impact on AfT effectiveness. The agricultural sector's success is likely due to its simpler value chains and strong regional trade networks, whereas the manufacturing sector's limited responsiveness may stem from structural rigidities and import competition. According to McMillan and Rodrik (2011), "the larger the gap between the productivity of the sector that is shedding labour and the sector that is receiving it, the larger the contribution of structural change." Nigeria's mixed sectoral responses to AfT reveal that aid flows into established patterns of comparative advantage rather than catalysing broad structural transformation in any sector.

3.6.2. Differential Impact of AfT Components

All three AfT components show different patterns, indicating the multifaceted nature of the AfT-export relationship. The negative effects of economic infrastructure aid, while unexpected, are most likely due to short-term disruptions that occur during major infrastructure projects. These may include implementation delays, limited capacity to absorb large-scale investments, or temporary diversion of resources away from production while projects are in progress (Calderón and Servén,

2010; Busse *et al.,* 2012). Such transitional issues are not always captured in models that assume infrastructure investments produce immediate benefits. In contrast, productive capacity and trade policy and regulations aid work through more direct and responsive channels. These types of aid tend to strengthen institutions, improve the regulatory environment, and develop business skills, all of which can help firms to be export-ready (Helble et al., 2012; Hühne *et al.,* 2014).

Agricultural sector effects present another perspective. They show that when aid is tailored to a sector's specific needs, such as combining infrastructure with farm productivity support, the outcomes can be more positive (Brenton and von Uexkull, 2009). Overall, these patterns demonstrate that the impact of AfT is determined not only by the volume of aid provided but also by how and where it is delivered, as well as the local context in which it is received.

3.6.3. Regional Integration Effects on AfT Effectiveness

The significantly positive additional effect of economic infrastructure aid on exports to ECOWAS countries indicates that such investments are more effective when aligned with regional trade integration. This regional amplification effect supports the findings of Vijil (2014) that regional integration improves aid effectiveness. However, the unexpected negative additional effect of trade policy aid on ECOWAS exports implies that, while such aid may support exports to non-ECOWAS countries, it is less effective, or even counterproductive for promoting regional trade. This variation may reflect implementation challenges in trade policy reforms within the ECOWAS framework (Gbigbidje *et al.,* 2023). The findings suggest that aid-driven infrastructure investments have higher trade benefits when targeted at regional trade facilitation, whereas policy reforms may face institutional constraints within regional frameworks. This supports Viner's (2014) classic distinction between "trade creation" and "trade diversion" in customs unions, where the benefits of regional integration depend on specific institutional and market contexts.

3.6.4. Trade Costs and Export Performance

Interestingly, while the trade cost analysis in Chapter 2 found no significant effect of AfT on agricultural trade costs, the export analysis in this chapter reveals positive and significant effects of AfT on agricultural export performance. This apparent contradiction implies that AfT may affect

export performance via channels other than direct trade cost reduction. These channels may include quality improvements, market access facilitation, or other soft infrastructure enhancements that do not result in measurable cost savings, since AfT can boost export growth by providing capacity-building, certification assistance, and business development services for small and medium-sized enterprises (Hallaert, 2010; Calì and te Velde, 2011).

The difference between trade costs and export performance effects may also reflect underlying factors that are not easily visible in macro-level data, such as administrative improvements, improved export readiness, or enhanced market information systems (Basnett *et al.*, 2012; Shepherd, 2016). Therefore, more rigorous AfT evaluation approaches are needed; ones that consider both hard infrastructure's impact on direct costs and soft infrastructure's role in improving export performance.

3.6.5. Domestic Market Conditions and Binding Constraints

These findings challenge the traditional assumptions about aid effectiveness in large developing economies. The negative relationship between agricultural productivity and export performance suggests that as domestic production increases, producers may prioritise local markets over external ones. In large developing economies, increasing domestic demand often redirects productive capacity toward serving local demands rather than export markets, thereby reducing AfT effectiveness (Ibrahim *et al.*, 2022). This supports the notion that internal market pressures can impose binding constraints on the effectiveness of external support programmes in countries with large domestic markets such as Nigeria (Ssozi et al., 2019). Similar constraints have been identified in the growth diagnostics framework, which contends that economic activity is typically hampered by a few key constraints rather than all constraints acting equally (Hausmann *et al,* 2008).

In Nigeria, domestic market pressures such as exchange rate volatility may be one such constraint, limiting how AfT leads to increased exports. The inconsistent relationship between the real effective exchange rate (lreer) and export performance suggests that improvements in price competitiveness alone may be insufficient to boost exports if domestic conditions continue to divert production toward local markets. These patterns indicate the need for more tailored approaches to

implementing AfT interventions, including explicit accounting for domestic absorption effects, sector-specific constraints, and regional factors.

3.6.6. Implications for Policy and Research

This analysis shows that AfT works differently across sectors and regions, so interventions must be tailored accordingly. Rather than using the same approach everywhere, donors should align their support with each country's existing strengths and regional trade networks (Martínez-Zarzoso *et al.,* 2017). According to Gereffi et al. (2005), economic activity is not only international in scope, but also globally organised. This implies that AfT effectiveness is determined by how well a country positions itself within existing regional value chains, rather than simply increasing trade volume. The findings also bring to the fore the limitations of broad-based AfT evaluations, arguing for a more context-specific, disaggregated approach to understanding AfT effectiveness. This is consistent with Rodrik's (2007) critique of *'one-size-fits-all'* development policies, which contend that institutional arrangements must be tailored to address context-specific market failures and constraints.

3.7. Conclusion

By and large, this chapter shows that AfT effectiveness is far more context-dependent than broad theories or aggregate studies often imply. Rather than delivering uniform outcomes, AfT produces varying effects that are shaped by sector-specific factors, AfT components, and region. More specifically, the findings underscore that AfT does not operate in a vacuum. Its effectiveness depends on how well it aligns with the realities on the ground, including domestic market conditions, sectoral constraints, and regional trade relationships. Agricultural exports benefit the most when interventions are tailored to existing strengths and embedded in functional regional frameworks, whereas outcomes in the manufacturing sector remain limited, partly due to deeper structural challenges. Moreover, the divergence between AfT's impact on trade costs and its influence on export performance points to the importance of looking beyond measurable cost reductions. Soft infrastructure improvements, such as enhanced quality standards, better market information, and institutional capacity, may not always be reflected in trade cost metrics, yet they play a critical role in enabling export activity.

Additionally, economic infrastructure aid becomes more effective within the ECOWAS framework, while trade policy aid appears less effective for regional trade. This could mean that the trade-enhancing benefits of regional integration are not automatic but depend on the fit between aid interventions and the regional institutional context.

The complementarity of the findings in Chapters 2 and 3 demonstrates that AfT is most effective when it balances hard infrastructure development with soft infrastructure improvements using strategically targeted, sectorally differentiated, and regionally integrated approaches that leverage comparative advantages while addressing sector-specific constraints. As I proceed to the process evaluation in the final chapters, the macro-level patterns identified in the trade cost analysis in Chapter 2 and the export performance analysis in this chapter form the foundation for examining how AfT project design and implementation shape these differential outcomes.

Chapter 4

4. Hard Infrastructure Delivery in Nigeria: A Process Evaluation of the LAKAJI Corridor Component of the NEXTT Project

Abstract

This chapter extends the trade costs and export performance analysis in Chapters 2 and 3. It conducts a process evaluation of the LAKAJI Corridor Improvement component of the Nigerian Expanded Trade and Transportation project (NEXTT), implemented between 2012 and 2017. Despite AfT's aim to reduce trade costs, the findings from Chapters 2 and 3 reveal that AfT increased trade costs and had a differentiated impact on export performance, with no significant effects on manufacturing exports but positive effects on agricultural exports. This process evaluation aims to explain these mixed results by analysing the contextual factors, implementation strategies, and sustainability factors that influenced the LAKAJI Corridor Improvement Component of the NEXTT Project.

4.1. Introduction

Trade corridors are connectors for economic development. They connect production centres to markets and facilitate regional integration (Kunaka and Carruthers, 2014). Trade corridor interventions have become more prominent in development policy, with evidence suggesting their ability to reduce trade costs and enhance regional economic integration (Fau, 2019; Thame, 2021). To harness these gains in Nigeria, the NEXTT project identified and prioritised a key trade route for development; the Lagos-Kano-Jibiya (LAKAJI) Corridor. The LAKAJI Corridor is a 1,225-kilometer road that connects Lagos, Kano, and Jibiya (Figure 8). It serves as the main transport route for imports to northern Nigeria and exports through Lagos ports, linking the country's largest agricultural market in the north (Kano) with its largest consumer market in the south (Lagos). This strategic corridor is instrumental for domestic agriculture and processed food products, as well as for regional West African trade (Coste, 2014). As the main link between Lagos' marine gateways and northern

Nigeria's agricultural heartland, its strategic location has a direct impact on the country's trade competitiveness and agricultural export performance (Daramola, 2022).

Source: DevTech Systems Inc. (2018).

Figure 8. NEXTT Geographic Focus

The LAKAJI Corridor component of the NEXTT project comprises several integrated activities aimed at removing both physical and institutional trade barriers. These activities include: (1) improving road infrastructure along strategic segments of the corridor especially high-traffic routes connecting agricultural production areas to markets; (2) establishing modern warehousing and storage facilities to reduce post-harvest losses and improving inventory management for agricultural exporters; (3) improving border management systems between Nigeria and neighbouring countries, as well as at internal checkpoints between Nigerian states along the corridor, through technological upgrades and procedural reforms; and (4) providing technical assistance and training to stakeholders,

including training for customs officers to address bureaucratic and regulatory bottlenecks at Lagos port and along the corridor.

Furthermore, the component promoted public-private dialogue to improve coordination in corridor management between government agencies and the private sector. This multifaceted approach reflects the project's recognition that trade facilitation requires simultaneous improvements in physical infrastructure, institutional capacity, and stakeholder coordination. The LAKAJI Corridor component was built on previous USAID initiatives: the MARKETS (Maximising Agriculture Revenue in Key Enterprise and Target Sites) project and the NEEP (Nigeria Expanded Exports Program). This historical continuity established relationships that strengthened the NEXTT project's implementation (DevTech Systems Inc., 2018).

The LAKAJI Corridor connects the country's two most populous cities, passing through Kaduna, Ilorin, and Ibadan (Omotayo, 2018). According to Palladium International (2017), the transportation infrastructure between Lagos and Kano significantly influences the cost and time of trade on the LAKAJI Corridor. Delays account for 60% of the time needed to import and export goods via the LAKAJI Corridor, while inefficiencies or informal payments account for 50% and 40% of the cost. 15 of the 19.5 days it took to import goods were due to port delays (mostly border clearance procedures) and the short transport segment from the port to Lagos warehouses, where goods were transferred to trucks for all points north. Transport from Lagos to Kano ($1,548) and port freight forwarding fees ($885) were the most expensive. Export costs were lower, but transport from Kano to Lagos ($837) and freight forwarding ($587) were the highest.

By 2015, there were substantial improvements in the time and cost of trading along the corridor, including 25% reductions in importing and travel time between Lagos and Jibiya, 75% reductions in transport costs between Kano and Lagos, 35% reduction in export costs and 21% reduction in import costs via Lagos. By the project's conclusion in 2017, transport costs from Lagos to Kano had reduced by 74% and from Kano to Lagos by 77%. It also decreased the cost of imports from the Corridor by 35% and the cost of exports by 21% (Palladium International, 2017).

According to DevTech Systems Inc. (2018), the NEXTT project led to a major improvement of transport infrastructure along the LAKAJI Corridor. They reported that the project facilitated numerous infrastructure improvements, such as road and storage facility upgrades which have helped to reduce transport costs and delays, increasing the efficiency and dependability of the route. The successful completion of this component of the NEXTT project has fostered a more conducive environment for trade.

4.2. An Assessment of Previous NEXTT Evaluations: Methodological Limitations and Research Gaps

The Project Completion Report by Palladium International (2017) and The Final Evaluation Report by DevTech Systems Inc. (2018) are useful documentation of the project's implementation and outcomes. These evaluations used multi-stage and mixed methods approaches that combine quantitative metrics with qualitative data from stakeholder perspectives. However, a thorough examination of these reports reveals huge methodological gaps that limit the robustness of their findings.

One of the biggest challenges in these evaluations was the small sample size. As noted by DevTech Systems Inc. (2018, p.10), "Half of the target respondents were either unavailable or could not be reached during the data collection period." This raises concerns about the representativeness of the findings, given that data collection was initially planned for just 12 days across four states, with a four-day extension for unavailable government officials. Additionally, the evaluation team was "unable to validate investment and export figures reported by the Activity because respondents were unwilling to share financial information" (DevTech Systems Inc., 2018, p.10). Despite these data limitations, both reports present specific quantitative achievements as definitive facts: a 25% reduction in import time, a 36% reduction in import costs, $21.5 million in facilitated investments, and NEXTT beneficiaries' exports reportedly constituting 13.4% of Nigeria's total non-oil exports.

Moreover, the attribution of results is another major limitation in the evaluations' conclusions. The 2015 oil price collapse caused a significant Naira devaluation, making Nigerian exports more competitive globally, regardless of project interventions. Although the Final Evaluation

Report briefly mentions this issue, by stating that it is "difficult to determine whether the increase in export figures was due to the Naira's weakness or the intervention," (DevTech Systems Inc., 2018, p.30), the final assessments downplayed this factor. The reports frequently confused correlation with causation as they presented quantitative improvements as conclusive evidence of project success in the absence of adequate verification or statistical controls.

The sustainability of institutional capacity-building efforts is another concern. While the evaluations document numerous training sessions and policy initiatives, they provide little insight into whether these activities resulted in sustainable improvements or not. Formal outputs such as policy development and training were prioritised, but how they translate into operational changes is unclear. Furthermore, because these evaluations were conducted during or immediately after implementation, they could not assess long-term sustainability. Although Palladium International (2017) claimed sustainability was achieved through partnerships with Nigerian organisations, there is little evidence that these entities had the resources, incentives, or capacity to continue operations independently.

The selective emphasis on success stories further skews the evaluations' conclusions. For instance, while reporting that "57 Project Development Facility (PDF) applicants were approved for funding, totalling $21.5 million." The same document acknowledged that "only 5 of the 22 PDF recipients interviewed for this evaluation (23%) reported any gains from accessing this facility" (DevTech Systems Inc., 2018, p.11). This marked discrepancy between reported approvals and realised benefits did not receive sufficient analytical attention in the evaluations. Furthermore, shifting success criteria raises concerns about the validity of longitudinal comparisons.

As infrastructure-related targets became more difficult to achieve, the evaluations increasingly framed policy changes and capacity development as key accomplishments. Palladium International's Final Report exemplifies this by explicitly acknowledging the transition: "NEXTT initially focused on advocacy to support improvements of infrastructure and services along the LAKAJI Corridor... However, as the Government of Nigeria (GoN) went into austerity following the oil price collapse in 2015, NEXTT transitioned to partnering with the private sector" (Palladium International, 2017, p.5). The report also reframes project outcomes, stating that: "outcomes fall into

two categories: transactional and transformational. Transactional outcomes contributed significantly to NEXTT's success in meeting its quantitative targets... These transactional outcomes are complemented by long-term transformative change that results from strengthening market systems, establishing institutions, and leaving behind a better enabling environment" (Palladium International, 2017, p.8). This shift in measurement gave the impression of success that was based on changing evaluation metrics rather than actual progress towards initial project objectives.

Beyond these limitations, additional methodological issues further limit the robustness of the evaluations' findings. First is the evaluations' lack of counterfactual analysis. Without control groups or appropriate baseline comparisons, it is impossible to determine what outcomes would have materialised in the absence of the NEXTT project. This limitation renders even the most prominently reported achievements impossible to attribute exclusively to project activities. Second, there are some inconsistencies in the reports' claims that require careful interpretation. For example, the Final Evaluation Report by DevTech Systems Inc. (2018, p.11) states that "stakeholders primarily attributed the reduction in clearance times at the ports to a GoN executive order", but this is also presented elsewhere as a project achievement. Similarly, while the growth of the cashew sector is highlighted, with the report noting that "Nigeria's cashew revenue rose from less than $100 million to $250 million in 2016" (DevTech Systems Inc., 2018, p.17), there is little discussion of the challenges faced in other targeted sectors. Notably, the evaluation methodology did not fully account for how power structures may have influenced data collection. With USAID serving as both a funder and an evaluation commissioner, beneficiaries may have been hesitant to provide critical feedback on a programme they hoped would continue. In the absence of anonymous feedback mechanisms or independent verification, the beneficiary testimonials prominently featured in the reports may reflect inherent bias.

Further, despite reported improvements along the LAKAJI Corridor and theoretical expectations that infrastructure investment leads to lower trade costs (Portugal-Perez and Wilson, 2012), the macroeconomic analysis in the quantitative chapters revealed that AfT raised overall trade costs while showing no significant impact on manufacturing exports, but positive effects on agricultural exports. This pattern of increased trade costs alongside differentiated export outcomes

calls for further evaluation of implementation processes and sectoral variations. Therefore, further evaluation should focus not only on the immediate outputs and direct outcomes of the project, but also on the institutional, governance, and sustainability factors that could explain this disconnect.

Ultimately, these methodological limitations and evidentiary gaps call for a more rigorous evaluation approach that not only examines what the project accomplished but also how it was implemented and why certain outcomes materialised or failed to materialise. A process evaluation that incorporates a longer time horizon, triangulates multiple data sources (e.g., interviews, documents, quantitative data, etc.), pays closer attention to contextual factors, and focuses on implementation processes rather than merely outputs can generate insights that previous evaluations might have missed. This study provides a clearer picture of the NEXTT project's actual impact, the factors that influenced its effectiveness, and lessons for improving future AfT projects in Nigeria and similar contexts, as it offers an independent perspective free from ties to project implementation or funding.

4.3. Research Questions

To address the aforementioned gaps, this chapter uses a process evaluation framework to explore how contextual factors, implementation strategies, and sustainability factors influenced the LAKAJI Corridor component's outcomes. The evaluation employs semi-structured interviews with major stakeholders, extensive document analysis, and trade performance data to answer three main questions:

1. How has Nigeria's economic context influenced trade and transportation services along the LAKAJI Corridor?
2. What strategies and approaches were employed to implement trade and transport interventions?
3. What factors have influenced the long-term sustainability of implemented improvements?

This study employs a Theory of Change (ToC) framework to conduct a systematic analysis of the causal pathways between the project's inputs and outcomes, while also assessing the factors that impacted its implementation and sustainability. The method is in accordance with modern

evaluation methods that stress the importance of understanding not only the events that unfolded but also the reasons and mechanisms that led to the development of the results (Gertler *et al.*, 2016; Skivington *et al.*, 2021).

The rest of the chapter is structured as follows. Section 2 summarises the literature; Section 3 describes the methodological approach, including the ToC framework that guides the evaluation; Section 4 presents the findings, triangulates them with relevant quantitative evidence, and analyses the implications of these results for the project's TOC; Section 5 concludes the chapter and sets the stage for the evaluation of the other 2 components of the project.

4.4. Literature Review

Development corridors are policy initiatives that go beyond transportation networks and leverage infrastructure to promote economic transformation. This section explores the literature on trade corridors, infrastructure development, and PPPs. The idea of trade corridor development and its practical application are explained by these three interrelated streams of literature.

4.4.1. Trade Corridors: Beyond Infrastructure to Integration

Development corridors have transcended simple transportation routes to become full economic development strategies. Their role in fostering regional integration and economic transformation through focused economic activities and intentional policy actions has received increased attention in recent literature (Enns, 2018; Thame, 2021). According to Fau (2019), corridors add value by connecting industrial centres to markets, reducing transportation costs, and facilitating regional trade networks. Effective corridors integrate physical infrastructure with institutional reforms to achieve long-term economic outcomes (Shepherd, 2016).

The success of corridor programs depends heavily on their ability to integrate "hard" and "soft" infrastructure components (Tandrayen-Ragoobur *et al.,* 2023). While institutional frameworks and regulatory environments ultimately determine a corridor initiative's success, physical infrastructure lays the groundwork for connectivity. According to Kirshner and Baptista (2023), African corridor initiatives show that successful implementations usually incorporate policy reforms,

stakeholder engagement, institutional capacity building, and infrastructure upgrades. However, corridor development has many challenges in emerging economies where these requirements are mostly unmet. In the absence of institutional and regulatory frameworks, corridor initiatives frequently worsen already existing disparities or fall short of the desired outcomes (Smalley, 2017; Enns, 2018). This argument reinforces the need for broad strategies that address both physical and institutional barriers.

4.4.2. Infrastructure Development and Institutional Barriers

The role of infrastructure in economic development cannot be overstated. It encompasses physical assets, governance systems and regulatory frameworks. Infrastructure project outcomes are significantly impacted by institutional quality in developing countries, where governance issues usually outweigh physical constraints (Mazur, 2021). For instance, well-funded infrastructure development projects are frequently hampered by corruption and weak governance structures in Nigeria (Omoruyi, 2017).

Indeed, the connection between infrastructure investment and trade performance is always challenging when operating within weak institutions. Even though the data supports the impact of infrastructure quality on trade costs and market access, institutional barriers perpetually negate and reverse the expected benefits from infrastructure investments (Hoekman and Nicita, 2011). There is a growing awareness that successful infrastructure programs must address both physical and institutional barriers simultaneously.

As a case in point, Nigeria's export competitiveness is impeded by a variety of infrastructural barriers. Poor road conditions, insufficient storage facilities, and inefficient logistics systems drive up trade costs significantly. These physical constraints frequently mask deeper institutional issues, such as regulatory inefficiencies, corruption, and poor coordination mechanisms, which exacerbate infrastructure limitations (Salawu and Ghadiri, 2022).

4.4.3. Public-Private Partnerships in Trade Development

Public-Private Partnerships (PPPs) have become requisite instruments for mitigating infrastructure gaps in developing countries. PPPs may employ private sector expertise and still ensure public oversight of essential services (Schomaker, 2020); nonetheless, their success is majorly determined by regulatory frameworks, institutional capacity, and stakeholder alignment (Wang *et al.*, 2023). Within the LAKAJI Corridor component, partnerships between government agencies and NEXTT played a crucial role in implementation, even if not formally labelled as PPPs. The Nigerian Investment Promotion Commission (NIPC) collaborated with NEXTT project implementers to assign a directive to support advocacy efforts along the corridor and catalyse stakeholder buy-in. Similarly, the Federal Emergency Road Maintenance Agency (FERMA) partnership contributed to the formation of the LAKAJI Corridor Management Group (CMG), which brought together private and public sector stakeholders to address infrastructure and logistics issues (DevTech Systems Inc., 2018).

These partnerships present both opportunities and challenges in Nigeria's context. Although such collaborative arrangements can address funding constraints, their effectiveness relies heavily on governance quality and regulatory frameworks (Momoh, 2019). This is because thriving PPPs require strong institutional frameworks, clear procurement processes, and efficient risk allocation strategies (Edobor Arimoro, 2022). However, within the Nigerian context, the success of public-private collaborative efforts can be undermined by corruption and weak governance frameworks, which underscores the necessity of more robust institutional safeguards (Cuadrado-Ballesteros and Peña-Miguel, 2022).

4.4.4. Implementation and Sustainability Challenges in Trade Facilitation

Typically, trade facilitation initiatives face implementation challenges that theoretical frameworks rarely anticipate. Booth and Unsworth (2014) argue that informal institutions and local power structures influence project outcomes. Similarly, Andrews et al. (2017) argue that successful

trade facilitation requires flexible implementation strategies that address new challenges while remaining strategic.

Sustainability is also a major concern in trade facilitation projects. Institutional capacity, local ownership, and stakeholder commitment are key factors in long-term success (Mvulirwenande *et al.,* 2017). Knowledge transfer and capacity building during implementation also have a significant impact on project viability after the funding period ends (Finkle *et al.*, 2024).

These findings stress the disconnect between theoretical expectations and the practical realities of trade facilitation. While traditional frameworks frequently depict a linear sequence of inputs and outputs, implementation realities tend to take more adaptive and unpredictable paths, shaped by institutional constraints and stakeholder interactions. The LAKAJI Corridor Improvement component of the NEXTT project provides a useful case study for investigating how such challenges manifest in practice.

4.5. Methodology

This section describes the methodological approach used for the process evaluation of the LAKAJI Corridor component of the NEXTT project. The methodology aims to determine how contextual factors, implementation strategies, and sustainability considerations affected the project's outcomes.

4.5.1. Process Evaluation Framework

Impact evaluations are necessary to properly assess the effectiveness of large projects. It is recommended that methodologies that complement each other be used to illustrate, qualify, and strengthen findings to understand the measured change and its causal link to the intervention. Understanding what enhanced or hindered change after a development intervention may be best accomplished using mixed methods (Craig and Hannum, 2007). As a result, the outcome of an impact evaluation should be based on process evaluation and monitoring data that provide a clear picture of how the project was implemented.

A process evaluation is an evaluation methodology that can supplement impact evaluations in useful ways. It examines how a project is set up and run, checks to see if it adheres to its original plan, and keeps track of its design and how it is implemented (Gertler *et al.*, 2016). Process evaluations are useful for determining why an intervention succeeded and how it could be improved, or why it failed unexpectedly or had unintended effects. They help answer questions about implementation fidelity and quality (i.e., what was implemented and how), mechanisms of change (i.e., how the intervention led to change), and context (i.e., how context affects implementation and outcomes) (Skivington *et al.*, 2021). A process evaluation examines implementation strategies rather than just outcomes (Moore *et al.*, 2015; Skivington *et al.*, 2021); an approach that is very valuable in this research context, given the contradiction between the substantial infrastructure investment and increased trade costs.

In development contexts, process evaluations offer numerous advantages. For instance, the success of a project is largely influenced by early evaluations, effective stakeholder communication, and contextual understanding (Limbani *et al.*, 2019). In the same vein, Grant et al. (2013) and Scott et al. (2019) argue that process evaluations are instrumental in differentiating between inherently flawed interventions and those that are impeded by implementation challenges.

To structure this process evaluation, three dimensions of the LAKAJI Corridor Improvement component are examined:

a. **Context**: How Nigeria's economic context influenced trade and transportation services along the LAKAJI Corridor.
b. **Implementation**: The strategies and approaches employed to achieve project objectives encompass both successful practices and implementation challenges.
c. **Sustainability**: Factors affecting the durability of improvements beyond the project period.

This approach integrates the process evaluation with the Theory of Change (ToC) framework outlined in the introduction to create a structured causal pathway and map the project's intervention logic systematically. An effective ToC must balance analytical rigour with the flexibility to accommodate changing implementation environments (Belcher *et al.,* 2020). This integration

makes it possible to map assumptions, identify barriers, and assess the alignment between project activities and intended results while remaining adaptable to emerging challenges.

4.5.1.1. Key Components and Assumptions:

1. **Inputs:** The main inputs for the project were USAID funding and technical assistance. Approximately $7,883,871 (about 47%) of the total budget of $16,620,054 was allocated to the LAKAJI Corridor component (Palladium International, 2017). The technical assistance provided consisted of expertise in transport assessment, customs training, FERMA capacity building, agribusiness development support, public-private dialogue facilitation, and investment planning services. The Project Development Facility, a $1.8 million USAID seed fund managed by NEXTT from 2015, operated as a PPP mechanism to provide additional support for business planning and feasibility studies along the corridor and in key value chains such as shea, cocoa, and cashew. This facility exemplified the project's approach to leveraging public funds to stimulate private-sector investment and engagement along the LAKAJI Corridor.

2. **Activities: Improving the LAKAJI Corridor:**

- **Upgrading road infrastructure and transport services:** The project identified high-priority road segments and collaborated with local authorities (including FERMA through public-private arrangements) to address maintenance issues. This was achieved by repairing dilapidated parts of the LAKAJI Corridor, connecting production areas to markets, and exploring multimodal transport options to reduce reliance on roads.

- **Establishing modern warehouses and logistics facilities:** Through partnerships between government agencies and private sector stakeholders, the project aimed to establish a network of warehouses to reduce post-harvest losses and consolidate shipments. This included constructing modern storage facilities, implementing temperature-controlled warehousing for perishable agricultural products, and creating logistics hubs for efficient sorting and distribution.

- **Enhancing border management and customs procedures:** The project fostered collaboration between customs, police, and other law enforcement agencies to reduce the number of checkpoints and improve their efficiency. This was achieved by streamlining inspection procedures, training officials, and advocating for fewer informal checkpoints through multi-stakeholder engagement.

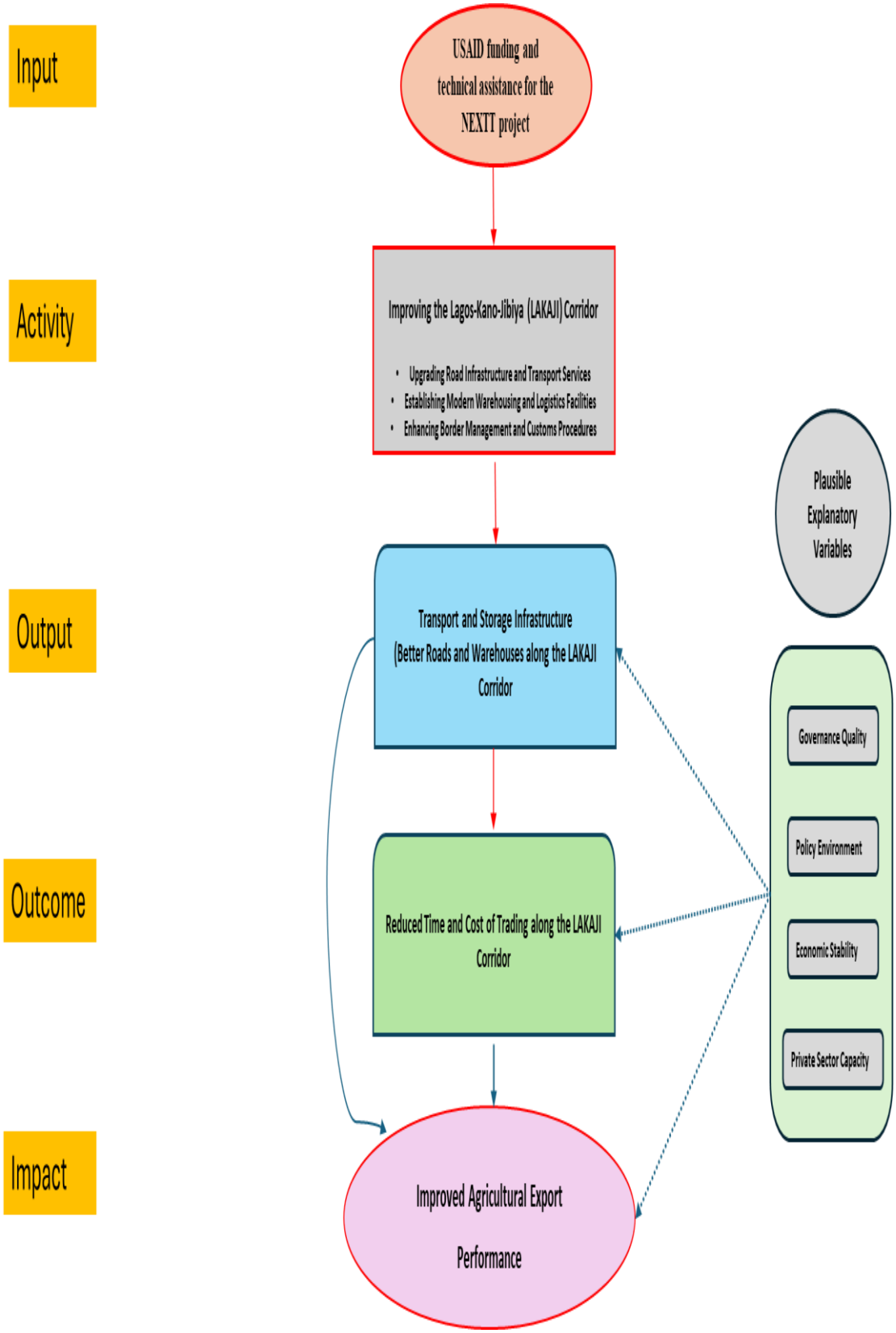
3. **Outputs:** The expected immediate tangible results

- **Transport and storage infrastructure:** These included improving warehousing and transportation infrastructure that reduce supply chain bottlenecks. Better warehouses allow for proper storage of agricultural products, reducing spoilage and facilitating strategic inventory management. Improved transport networks, on the other hand, should reduce transit times and vehicle maintenance costs should result in lower operational costs for exporters.

4. **Outcomes:** Intermediate and longer-term effects.

- **Reduced time and cost of trading on the LAKAJI Corridor:** Due to improved infrastructure and streamlined procedures, transportation times should significantly reduce through fewer checkpoints, better roads, and efficient warehousing. Simultaneously, less spoilage, lower vehicle maintenance costs, and fewer informal payments are supposed to reduce overall costs.

5. **Impact:** Improved agricultural export performance as detailed in the introduction.



Source: Author's Elaboration.

Figure 9. LAKAJI Corridor component Channel of Impact

Figure 9 shows how the LAKAJI Corridor improvement component was expected to influence trade costs and export performance. The project inputs (USAID funding and technical assistance) were expected to support infrastructure development along the LAKAJI Corridor through targeted activities. These activities included upgrading road infrastructure, establishing modern warehouses, and improving border management. They were expected to result in improved transportation and storage infrastructure. According to the framework, these outputs were expected to result in reduced trading time and costs along the corridor. Finally, these efficiency gains were expected to improve agricultural export performance by increasing competitiveness, improving product quality, and ensuring more consistent delivery times.

Understanding how the project operated in Nigeria is the cornerstone of this evaluation methodology. As described in Section 1.7, this study considers key contextual factors and underlying assumptions that influenced the project's implementation environment. These pre-identified elements provide an analytical foundation for evaluating the LAKAJI Corridor component, not only on whether but also on how those objectives were met. In this regard, the theory of change provides a structured foundation for investigating each link in the causal chain, assisting in assessing implementation fidelity and contextual relevance throughout the project's outcome trajectory.

4.5.2. Data Collection Methods

To ensure complete coverage of the NEXTT project, I employed three complementary data collection methods. First, semi-structured interviews served as the primary data collection tool. I then supplemented the interviews with in-depth document analysis and secondary data from credible sources.

4.5.2.1. Primary data

I conducted semi-structured interviews using carefully designed interview guides for each stakeholder category. These guides addressed the project's context, implementation process, and sustainability. The interviews were conducted in person and over the phone to accommodate

participants' preferences and logistical constraints. They were all recorded with participant consent and then transcribed for analysis.

- *Sampling Strategy and Sample Size*

To carry out the semi-structured interviews, this study used a purposive sampling technique. I originally targeted 30 key informants for this study. However, the final sample consisted of 15 participants. Unlike in previous evaluations, these participants represented all key stakeholder groups, ensuring balanced perspectives across government, project staff, and beneficiaries. In 13 interviews, these participants contributed unique perspectives on various aspects of the project. 12 individual interviews were conducted, as well as a three-person group discussion. The sample included five government officials, five USAID/NEXTT project staff, and five project beneficiaries, ensuring a balanced representation of stakeholder groups. Each participant had an average of 15 years of experience in the trade and development sector. They were chosen for their direct involvement in the project's design and implementation, as well as their ability to speak on a variety of project topics. Interview guides used are included in Appendix B.

Additionally, the sample size for this study was determined through continuous interviews until no new themes emerged. Although the final sample was smaller than anticipated, it adequately represented a diverse range of perspectives from all project components. Unlike the previous evaluation which struggled with representativeness, this study successfully engaged participants from various government bodies, including the FMITI, BOI, Nigerian Investment Promotion Commission (NEPC), USAID/NEXTT staff, and private sector beneficiaries such as Lagos Chamber of Commerce and Investment (LCCI), the Corridor Management Group (CMG), and processors/businesses in the Cashew Value Chain and freight forwarders.

This process evaluation, like earlier evaluations, faced constraints related to a small sample size. As previously noted by DevTech Systems Inc. (2018), data collection efforts were hindered by limited access to key respondents and reluctance to disclose sensitive information. While similar challenges were encountered in this evaluation, the sampling strategy adopted here prioritised the triangulation of interview data with secondary sources and documentary evidence, enhancing the

credibility of the findings. More importantly, this evaluation is enriched by the diverse perspectives of the participants, who not only addressed compelling scenarios of the Nigerian trade landscape but also detailed personal experiences with the project implementation. Their perspectives form the basis for the analysis that will be presented in the subsequent sections of this chapter and the following one.

4.5.2.2. Secondary data

While interviews provided contemporary insights, historical documentation was equally pivotal to my analysis. The previous evaluation reports and project documents were the primary data sources for this process evaluation, extending beyond mere background information. The documents analysed include: *The Lagos-Kano-Jibiya (LAKAJI) Corridor Performance Report* (CARANA Corporation, 2013), *The Mid-Term Performance Evaluation* (The Mitchell Group, Inc., 2015), *The Project Completion Report* (Palladium International, 2017), and *The Final Evaluation Report* (DevTech Systems Inc., 2018). These documents were systematically reviewed not just as background materials but as important data sources to:

- Establish baseline conditions and original project targets.
- Identify reported implementation challenges and adaptations over time.
- Examine discrepancies between planned and actual outcomes, and
- Extract evidence of institutional and contextual factors influencing project implementation.

The aspects listed above were not sufficiently addressed in previous evaluations. As such, the document analysis guided the interview questions and helped triangulate stakeholder perspectives with official project narratives. This approach made it easy to thoroughly evaluate both documented and undocumented factors influencing the LAKAJI Corridor component.

Aside from these qualitative sources, I used quantitative data from credible databases: the World Bank's Logistics Performance Index, which tracks Nigeria's logistics performance from 2010 to 2023; Doing Business data (2013–2019), which evaluates the country's cross-border trade performance; and the OECD Trade Facilitation Indicators (2017, 2019, 2022), which measure various aspects of trade facilitation after the project's completion (though these OECD indicators are only

available post-implementation, limiting their usefulness for direct causal inference and requiring greater reliance on pre-post comparisons from project documents and stakeholder recollections). Likewise, the World Development Indicators (2012–2019) detail Nigeria's export trends during and after the project's implementation. Triangulating secondary data with interviews allowed for a more objective assessment of broader trade and economic trends during and after the implementation phase. While these national-level indicators provide useful context, they cannot be used to make direct causal claims about the NEXTT project's specific impact.

Finally, it is worth noting that this study was carried out against the backdrop of serious socioeconomic and political challenges in Nigeria. These challenges include a change of government, the implementation of high-level reforms such as the elimination of fuel subsidies and currency depreciation, and deteriorating security conditions in the study area, as evidenced by frequent kidnappings. All these factors influenced stakeholders' availability and accessibility and required flexibility in interview scheduling and modes of communication. Despite these contextual challenges, the use of both in-person and remote interviews, as well as extensive document analysis and secondary data, allowed for thorough coverage of the project's implementation and results.

4.5.3. Data Analysis

I examined the qualitative data gathered through thematic analysis of interviews and document reviews. Interview transcripts were coded using NVivo qualitative analysis software to identify the patterns and themes that emerged in the project's context, implementation, and sustainability. Unlike previous evaluations, which focused on successful outcomes, my coding framework intentionally included both positive and negative experiences, implementation challenges, and unintended consequences. This balanced analytical approach addresses the selection bias that was present in previous assessments, resulting in a more accurate understanding of the project's actual outcomes. Furthermore, the temporal distance from project completion allowed my analysis to detect longer-term patterns and sustainability issues that would have been impossible to identify in evaluations conducted during or immediately after the project was implemented implementation.

4.5.4. Validity and Reliability

To ensure the reliability and methodological rigour of the evaluation, I employed various validation methods that directly address the limitations identified in previous evaluations. First, I triangulated data to support emerging patterns by carefully comparing information from several sources (interviews, project documentation, and secondary research materials), moving beyond the correlation-focused approach of earlier evaluations to better distinguish project effects from external influences. This approach specifically addresses the attribution challenges evident in previous reports that inadequately separated project outcomes from concurrent external factors like the 2015 oil price collapse and Naira devaluation. Throughout the interviews, I carefully cross-checked my data by presenting perspectives from previous interviews, seeking validation or alternative viewpoints, and occasionally introducing opposing viewpoints to ensure that the emerging themes remained consistent. To reduce power pressures that may have influenced previous evaluations, I informed participants about my independent research status and implemented anonymous feedback mechanisms, allowing stakeholders to speak openly about the project's shortcomings without fear of losing future funding. This method helped to validate interpretations across multiple interviews while also ensuring that no theme was overlooked. Throughout the process, I kept a reflective journal to document my methodological decisions and analytical techniques. This helped me track my decision-making process, identify potential biases, and maintain transparency in my interpretation of the data. My independent analytical perspective, which was unrelated to project implementation or funding agencies, increased the reliability of the findings by removing institutional pressures that may have influenced positive reporting in previous evaluations.

4.5.5. Positionality and Ethical Considerations

In this study, I consider myself a citizen with interests in aid, trade, and development within my country's political economy. My Nigerian citizenship, approximately 20 years of education, and five years of agricultural work experience provide me with a solid understanding of the Nigerian trading environment. With established industry networks, I had easy access to key informants and all relevant stakeholders for this study. Despite the strong arguments against foreign aid, I believe it can be effective when properly aligned with national development goals. My view on aid effectiveness is consistent with that of scholars such as Brown (2020) who argue that effective partnerships between donors and recipients are dependent on national leadership and ownership of development plans and that coordination between bilateral and multilateral donors must be strengthened to maximise the impact of aid.

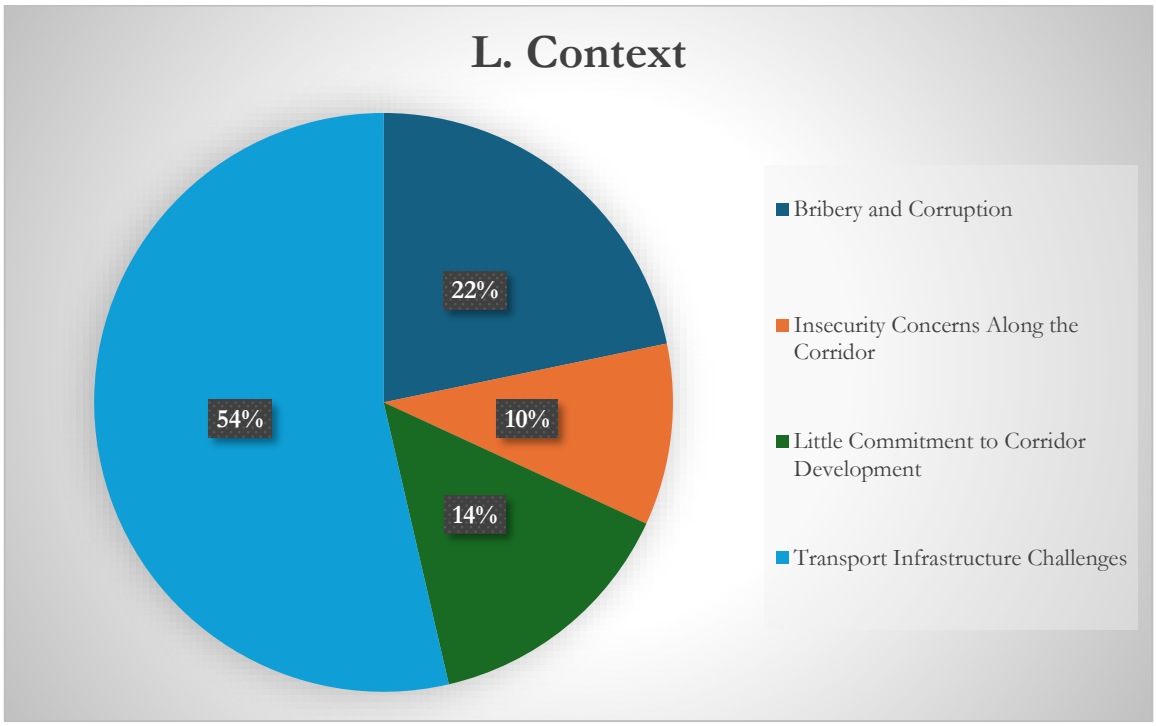
While my familiarity with the context allowed for deep cultural understanding and participant access, it required careful reflection to maintain analytical objectivity. Multiple validation strategies, such as data triangulation and member checking, helped to mitigate potential biases resulting from my professional and personal experiences with Nigeria's socio-political context. Aside from that, I maintained strict ethical standards throughout the course of the research[4]. All participants provided informed consent and were assured of confidentiality. Given the sensitive nature of evaluating a donor-funded project, greater emphasis was placed on protecting participants' identities and data. The University of East Anglia's Research Ethics Committee approved the study in September 2023, and all data collection and analysis procedures followed established protocols to protect participant privacy and research integrity.

[4] I submitted my application for ethical approval on July 4, 2023, and received feedback for revision on July 20, 2023. Amendments were revised and resubmitted on August 7, 2023, and the application was approved on September 13, 2023.

4.6. Results And Discussion

This section presents findings from the process evaluation of the LAKAJI Corridor component. The findings are organised around context, implementation, and sustainability based on the ToC framework detailed in section 3.3.

4.6.1. Context: How has Nigeria's economic context influenced trade and transportation services along the LAKAJI Corridor?



Note: A total of 68 responses were recorded for this question

Figure 10. Contextual factors influencing trade and transportation along the LAKAJI Corridor

Bribery and corruption (22%) were also cited as pressing issues affecting the development of the LAKAJI Corridor. Those who raised the issue of bribery and corruption also pointed out the problems of multiple taxes and informal charges on goods along the corridor. Other factors mentioned include insecurity concerns (10%) and a lack of commitment to the corridor development initiative (14). According to one of the respondents,

> *The roads are bad from Lagos to Jibiya throughout the corridor. We move most of our goods by road because we don't have effective rail services. So, give those roads about a year; they will go bad again due to overuse.*

In the same vein, respondents reported a lack of funding for developing these infrastructures, which has stalled the LAKAJI Corridor development. As one cashew processor lamented:

> *Funding is an issue. It is a huge capital-intensive project. Without funding, there is nothing you can do to invest in infrastructure to create an enabling environment for investors. That was one of the expectations of the LAKAJI Corridor intervention. But the transport killed a business before it started because logistics is not business and trade-friendly.*

This funding gap likely compromised the project's ability to deliver key outputs like upgraded road networks and storage facilities. Yet, infrastructure constraints and funding gaps are not the only obstacles to efficient trade along the Corridor. Bribery and corruption also obscured the corridor's prospects. Respondents reported that bribery and corruption have permeated the Nigerian system and would be difficult to eradicate because it has become institutionalised. According to one of the respondents, *'Every regulatory body in Nigeria is merely a toll gate.'* Another respondent pointed out that trade flow issues are born from logistics and human factors, which are more significant than infrastructure deficits. According to him,

> *The human issue is much bigger, coming from uniformed people: customs officers, police, and those coming from non-state actors...In addition, you still have the charges from some of those local and state government officials. Imagine all of them on the roads and at the ports collecting one form of money or the other to generate revenue for the government. So, those issues are still there.*

Moreover, multiple taxation stemming from regulatory obstacles and governance issues add to the cost of doing business along the corridor. One respondent recounted his experience:

> *We carried out a study from Lagos to the Seme border and then to the Republic of Benin. We had over 40 checkpoints. By then, from the Republic of Benin up to the time we got to the Ghana border, there were less than 8 checkpoints unlike you have in Nigeria. So, back to our corridor. You can imagine that from Lagos up to Jibiya, or let's say up to Kano alone, you may have up to 100 checkpoints of different kinds...It is good that these checkpoints are there, but if you have so many of them, and of course we know the system, at the end of the day, the checkpoints will take more time, and will also increase the cost of the movement. Because at every checkpoint you will spend some time.*

This multiple checkpoint problem goes beyond official agencies to include local communities. One respondent noted, *'Indigenes of certain communities stop drivers and ask them for documents and tips. And those communities are entrances to free flow.'* These informal checkpoints worsen the trade barriers and increase trading time and costs for transporters. As observed during field research along the Kaduna-Kano

route, various actors including customs officials, military personnel, and local community members operate checkpoints. Figure 11 shows roadblocks mounted by residents of a community along the Kano Expressway.

Source: Photographed by the author, November 1, 2024.

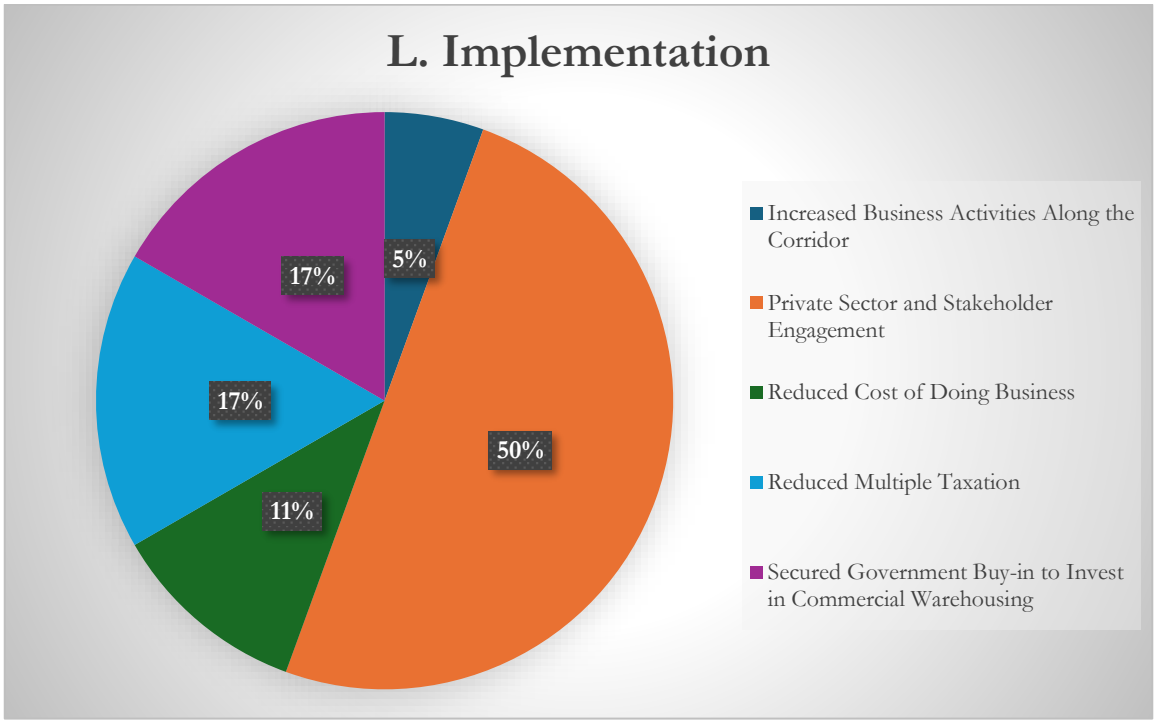
Figure 11. Informal Checkpoints Operated by Local Residents Along Kano Expressway

According to the trade literature, Nigeria's trade system is marked by tremendous challenges, including inadequate transportation and storage infrastructure, widespread bribery and corruption, multiple taxation, and financial constraints, all of which increase the cost of doing business. The challenges in Nigeria's trade corridors as insecurity, inadequate and poor infrastructure, high production costs, charges and barriers, cumbersome formal trade conditions, insufficient finance, and defective government policies (Gambo, 2020). According to the International Trade Administration (2023), Nigeria's logistics sector is rife with challenges such as, including a massive infrastructure deficit, poor road networks, unstable electricity, corruption, and multiple taxation. Specifically on the LAKAJI Corridor, regulatory charges, delays, extended transport times, transport

costs, and security concerns on the LAKAJI Corridor are major barriers to trade development in Nigeria (Omotayo, 2018).

Moreover, suitable storage facilities are vital for trade facilitation and ensuring the smooth flow of goods along the LAKAJI Corridor. Necessary infrastructure enhancements in Nigeria include high-speed highways, terminal infrastructures, cool storage warehouses, and runway extensions (Salawu and Ghadiri, 2022). However, the NEXTT project, with an $18 million budget, had limited influence over Nigeria's transportation infrastructure, which, according to World Bank estimates, requires $3 trillion to address its deficit (International Trade Administration, 2023).

4.6.2. Implementation: What strategies and approaches were employed to implement the trade and transport interventions along the LAKAJI Corridor?



Note: This question received 18 responses.

Figure 12. Strategies and approaches for implementing trade and transportation interventions along the LAKAJI Corridor.

Private sector and stakeholder engagement appeared to be the most effective implementation strategy, as all participants cited it, and it was the most frequently mentioned strategy (50%). This unanimous emphasis reflects a recognition of the pivotal role that collaboration and partnership play in achieving the desired results. As one respondent noted,

> *The involvement of private businesses was crucial in ensuring that the interventions aligned with the realities on the ground and addressed the actual needs of the users of the corridor.*

Additionally, stakeholder engagement fosters inclusivity, builds consensus, and promotes ownership of project outcomes, thereby enhancing its sustainability. Another respondent stressed the importance of *'bringing together all the relevant stakeholders, from government agencies to local communities,'* These perspectives draw attention to the pivotal role of collaboration and partnership in project success. They reflect the growing recognition of multi-stakeholder engagement as a major success factor in sustainable infrastructure projects.

Alongside stakeholder engagement, the project aimed to improve trade by increasing business activities along the corridor through commercial warehousing. As one implementer explained:

> *The roads were rough, so we couldn't do much about that. All we could do was improve the activities that happened on the roads. Then we tried to increase the business transactions along the corridor by first advocating for commercial warehousing on the LAKAJI Corridor.*

However, these efforts were less central than stakeholder engagement strategies. The rationale was that securing private sector engagement and government buy-in to invest in commercial warehousing could eventually eliminate the issue of multiple taxation and reduce the cost of doing business. This, in turn, was expected to boost business activity along the corridor. Nevertheless, these challenges are deeply entrenched and difficult to change. A government official's account of attempts to coordinate with paramilitary and law enforcement agencies to reduce checkpoints reveals that the coordination attempt was met with various responses. According to him, '*different agencies responded differently, with some more cooperative than others.'*

Perhaps the biggest hurdle implementers faced during this component's implementation was securing the government's buy-in for commercial warehousing investments. The project's framework for government support relied primarily on collaborative workshops, technical assistance, and

advocacy. Despite the collaborative workshops with state ministries and engagement with financial institutions like the BOI, government commitment remained limited. As one of the implementers revealed:

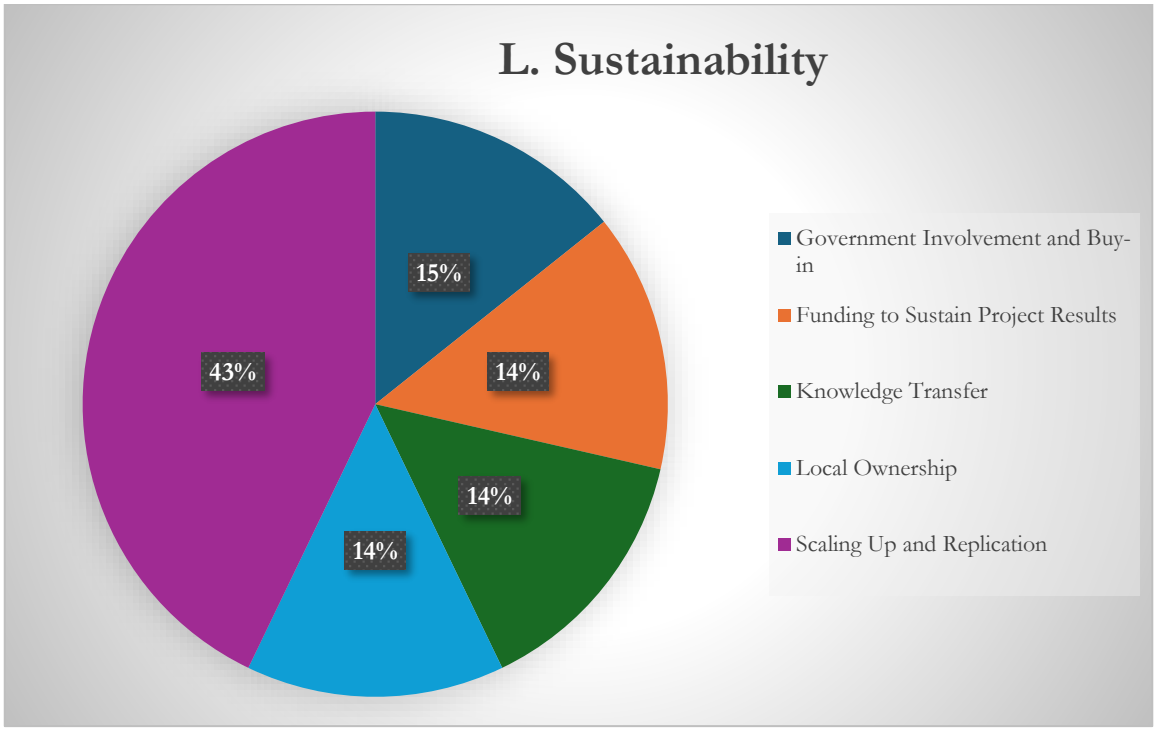
> *We attempted to collaborate with the procurement agency and explored various strategies, but we were essentially outsiders. It's important to remember that it's not the government's responsibility to buy into a USAID project; rather, it's USAID's job to align with the government's objectives. I'm not sure the government ever fully embraced the initiative by committing dedicated resources or incorporating it into their existing infrastructure development plans.*

Without explicit financial commitments, the warehousing initiatives struggled to move beyond the planning stage to actual implementation. the warehouse plan did not translate into concrete government action. This shows that future AfT projects must engage governments more effectively by framing projects in ways that are mutually beneficial and aligned with national interests. According to Smalley (2017), the primary drivers of corridor developments are not usually domestic governments but rather, coalitions of private sector actors who have been able to align their commercial ambitions with mainstream ideas on infrastructure and agriculture among donors and the international development community. Some actors are involved in multiple corridor development projects across regions. However, how public and private interests interact with each other and with local stakeholders is specific to each project, and particular narratives have been used to legitimise the corridors in each context. Simply put, project promoters typically adapt their messaging, using narratives that speak to local priorities and stakeholder concerns to gain support and legitimacy.

Furthermore, collaboration with government authorities is crucial for enacting policy reforms, mobilising financial resources, and ensuring the long-term sustainability of infrastructure investments. In practice, achieving these goals often requires partnerships with the private sector to implement successfully. Strategic efforts, such as reducing multiple taxation and securing government buy-in for commercial warehousing were initiatives aimed at creating a more conducive business environment. The project sought to stimulate economic growth, attract investment, and promote trade by advocating for such tax reforms and infrastructure development. This approach demonstrates the interconnectedness of policy, infrastructure, and partnership themes in reducing

trade costs along the corridor. Donor funding appears to be readily available to support such reforms, with private actors in some cases willing to provide border management software and systems at no cost through well-structured PPPs (Geda and Seid, 2015).

4.6.3. Sustainability: What factors have influenced the long-term sustainability of trade and transportation improvements implemented along the LAKAJI Corridor



Note: There were 14 responses to this question.

Figure 13. Factors influencing the long-term sustainability of trade and transportation improvements implemented along the LAKAJI Corridor.

According to the respondents, scaling up and replication, government buy-in, funding, knowledge transfer, and local ownership impacted the project's sustainability. 43% of the respondents recognised scaling up and replication as the primary factors that contributed to the project's success. On the other hand, securing government buy-in, funding, knowledge transfer, and local ownership each received an equal share of the remaining 57%.

According to respondents, the project's influence has rippled far beyond its immediate objectives, catalysing transformative initiatives like the Lagos-Kano Standard Gauge Railway project. As one respondent affirmed, *'they are now working on standard gauge rail today. It was part of the LAKAJI Corridor component that inspired it.'* This testament to the project's broader impact underscores its potential to reshape national infrastructure priorities and drive economic integration.

However, the role of government buy-in and support in achieving sustainability goals cannot be understated. Respondents often stressed the importance of integrating project activities into existing governance structures and garnering support from major decision-makers. One respondent, who went on to hold a senior role in his home state government shared a compelling example of how the knowledge gained from the project informed his current work. He pointed out the importance of storage facilities in improving trade, and the need for increased investment in warehouses along the LAKAJI Corridor, especially since his state falls along the corridor. In his words,

> *I am borrowing a lot from what I did on the NEXTT. I am borrowing a lot into this administration, and that's why I just got approval from the governor for our state to own a storage facility in the UK because there is an influx of our food into the UK. So now we are setting up our standard agency, and then we are about to own a huge warehouse in the UK. So, the State Commodity and Export Promotion Agency would export it so that we could earn the convertible currency. Then, individuals who want to export can also export and use our warehouses for commercial purposes and pay for it. We are starting with the UK, and then I'm told to create a memo for other countries where we have many Nigerian products.*

Not surprisingly, the quoted individual was widely regarded in the sample as the most dedicated project stakeholder in the Nigerian government. His track record demonstrates the value of individual champions in sustaining project outcomes beyond donor timelines. This illustrates that while institutional structures are important, committed individuals can play an even greater role in translating knowledge into actionable policies and investments. His example also underscores how targeted capacity building and deep engagement can empower local actors to internalise project objectives and apply them effectively in new roles.

Yet, the challenge of securing consistent funding persists, raising questions about the project's alignment with the Federal Government's infrastructure agenda. According to one of the respondents, the corridor initiative is off the government's agenda, and state governors have little

power to intervene because infrastructure development is a federal government project rather than a state government project:

> *Certainly, the state governments had limits to what they could do. It would be nice if we could get them all stirred up about the LAKAJI Corridor and get the governors to all talk to the president about how you need to invest in roads in our country. And that would be great, but ultimately, if there's no money in the coffers, they're barely keeping the lights on in the government. They're shutting down everything like that because they don't have the funds to run it; how will they expand the road between, or the rail, and go to standard gauge rail? It wasn't very realistic to expect us to transform this gigantic national corridor.*

Compounding these issues is the difficulty in ensuring effective knowledge transfer and local ownership. National leadership and ownership improve the commitment of local stakeholders to maintain project outcomes even after the project has ended. local stakeholders need to have a sense of belonging and connection to the project to engage and participate fully. Perhaps the most striking lesson from the NEXTT project's experience concerns perceptions and local ownership. As one participant noted, some aspects of the project may have been successful, but the underlying concept was American and could have been difficult to operationalise in Nigeria.

> *I mean, this was a US concept attributed to our project. And as such, it wasn't going to go anywhere. It could never go anywhere. Why would Nigerians follow an American initiative for the most populated corridor in the country? It wouldn't make any sense.*

Another private sector respondent echoed this sentiment, noting that:

> *Nigeria has very knowledgeable people, and we know the problems. If the right people; the major stakeholders, sincerely want to work, it can be achieved. Because we are here, we know the problem. We can easily tell you that this is the problem. So even when you bring people from outside to come and work with us, they can't do any magic more than what we shall do.*

These assessments buttress the prevailing notion of grounding development interventions in local realities and engaging key stakeholders from the outset. Without local engagement and contextual knowledge, development initiatives risk becoming unsustainable donor-driven interventions post-completion. initiatives viewed as collaborative instead of imposed, and aligned with national priorities, are far more likely to succeed.

It is worth reiterating that, by the time of this evaluation, many project participants had moved on to other organisations, relocated to other countries, retired, or even passed away. Their unavailability made it challenging to recruit more key informants for this evaluation. Also, the limited

knowledge transfer made it challenging to gather more insights from government parastatals. As the earlier quoted official remarked, *'In my parastatal, I was the only one who knew anything about the project.'* Therefore, the departure of key personnel brings to the fore the fragility of institutional memory and the urgency of strong knowledge management systems. Although his example of establishing state-led warehousing initiatives shows the potential impact of knowledge retention at the individual level, such outcomes are the exception rather than the norm. Without deliberate systems to embed learning within institutions, much of the project's technical expertise risks being lost when personnel exit.

According to Hynes and Lammersen (2017), effective scaling is essential for the long-term success of AfT. However, achieving sustainable outcomes also requires securing local ownership and government buy-in, which was a significant challenge in the NEXTT project context. Additionally, the difficulty in securing buy-in may arise from the challenge of aligning project goals with national priorities (Booth, 2012).

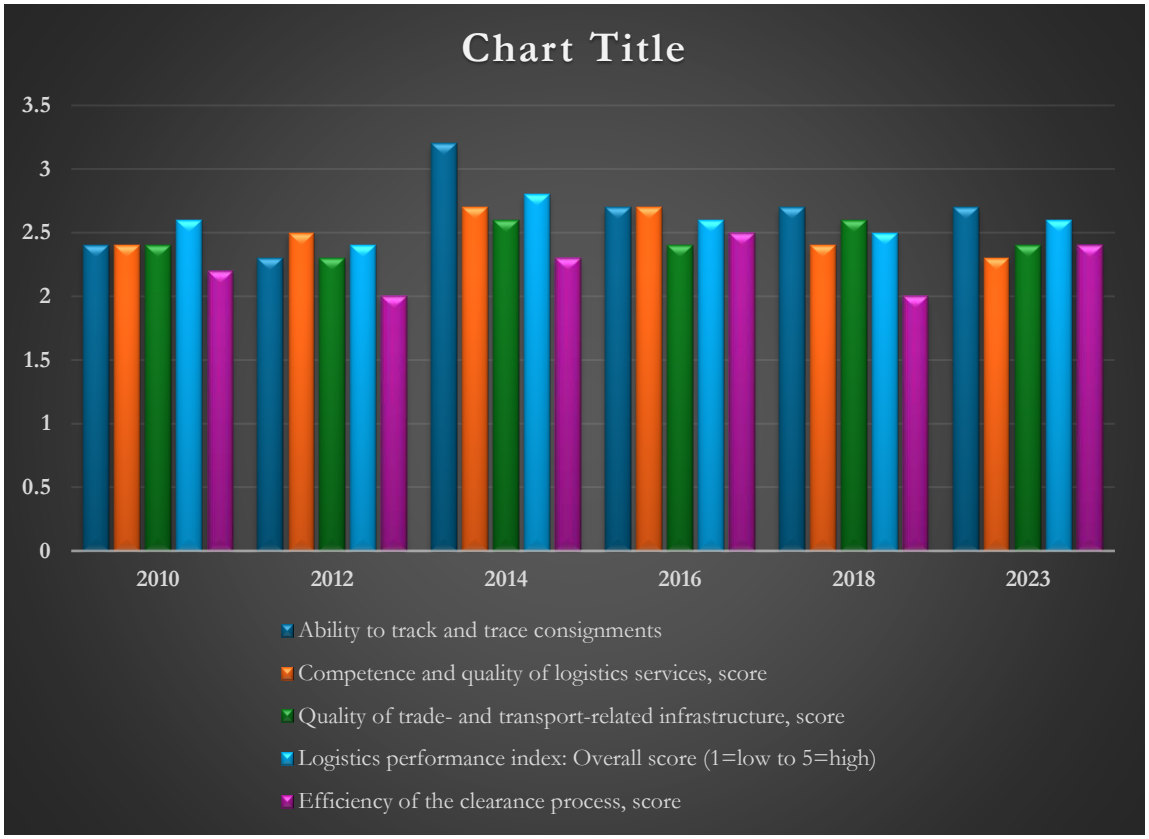
Further, the impact of the Lagos-Kano Standard Gauge Railway project on national infrastructure planning demonstrates AfT projects' ability to stimulate extensive policy transformations (Razzaque and te Velde, 2013; Hühne, Meyer and Nunnenkamp, 2014b). This demonstrates how successful projects can lead to significant policy changes in the face of other challenges. Nevertheless, securing consistent funding and local ownership is necessary for long-term sustainability. This difficulty in maintaining funding for infrastructure changes demonstrates the importance of having access to resources (Delmon, 2011; Leigland, 2018). Additionally, limited knowledge transfer and local ownership of the corridor development agenda draw attention to the importance of capacity building and local engagement as vital to ensuring the long-term viability of development interventions (Mvulirwenande *et al.,* 2017; Finkle *et al.*, 2024).

Therefore, the LAKAJI Corridor component's sustainability challenges reflect broader issues that AfT projects face, such as inadequate integration with national development strategies, insufficient institutional capacity, and competing priorities for limited resources (Basnett, 2013; Hynes and Holden, 2016). Addressing these issues requires a more holistic, context-specific, and

adaptive approach to design and implementation (Hoekman and Wilson, 2010; Cadot, Fernandes, Gourdon, Mattoo and de Melo, 2014).

More importantly, the themes that emerged during the evaluation of the LAKAJI Corridor component are not unique to this project but reflect the pervasive nature of the trade facilitation issues in Nigeria. The World Bank's Logistics Performance Index Surveys give some context to these findings. LPI trends for Nigeria between 2010 and 2023 (pre-project and post-project implementation periods) correspond with stakeholders' accounts. Figure 14 shows Nigeria's logistics performance across five key metrics with periods of improvement followed by regression in the past decade.

The LPI data can help to explain the broader trade facilitation trends in Nigeria during the NEXTT project. While the project's specific experiences cannot be directly linked to these national trends, the patterns in the LPI scores resonate with the major themes discussed during the interviews. For example, the infrastructure quality score has remained stagnant between 2.3 and 2.6 over time, supporting stakeholder perspectives on transportation and storage infrastructure deficits. Also, the ability to track and trace consignments' scores increased from 2.3 in 2012 to 3.2 in 2014 before falling back to 2.7 in subsequent years. This is consistent with stakeholders' reports of intermittent progress in modernisation efforts, followed by implementation challenges.



Source: World Bank Logistics Performance Index Surveys (2024)

Figure 14. Nigeria's Logistics Performance Data between 2010 and 2023

While the NEXTT project cannot be credited for these national trends, the alignment between the LPI scores and stakeholder accounts shows the common challenges of sustaining technological advancements amidst limited infrastructure and funding. In addition to these, the competence and quality of logistics services score decreased from 2.7 in 2016 to 2.3 in 2023 corroborating stakeholders' concerns about declining service quality. The decline is consistent with qualitative accounts of multiple taxation, informal charges, and coordination issues that affect service delivery along the corridor. Despite fluctuations, the clearance process efficiency score increased from 2.2 in 2010 to 2.4 in 2023, indicating progress in trade facilitation. However, its variability mirrors the bureaucratic inefficiencies and overlapping mandates uncovered in the process evaluation.

Furthermore, the overall logistics performance score remained constant at 2.6 throughout the project, confirming stakeholders' observations about systemic barriers to long-term

improvement. While the NEXTT project's experiences showcase a microcosm of these challenges, the LPI data suggests that the issues of infrastructure limitations, institutional barriers, and operational inefficiencies are pervasive across Nigeria's trade facilitation landscape. Stakeholder perspectives are supported by these quantitative patterns, which leads to the following conclusions: 1) Improvements in tracking and monitoring systems are difficult to sustain, as evidenced by the post-2014 decline in tracking scores; 2) service quality has deteriorated even with reform efforts, as evidenced by the declining logistics competence scores; and 3) infrastructure quality remains a persistent challenge, as evidenced by the fluctuating infrastructure quality scores. While the NEXTT project's experiences cannot be credited with shaping these national trends, they provide a granular illustration of the types of challenges that AfT projects need to address to improve Nigeria's overall trade facilitation performance.

4.6.4. Implications For the Project Theory of Change

In addition to demonstrating how the ToC's causal mechanisms operate within Nigeria's institutional environment, the process evaluation of the LAKAJI Corridor component strongly supports the project's ToC. The findings are consistent with the ToC's core logic that infrastructure improvements are required to reduce trade costs and can enhance export performance, though effects vary by sector as demonstrated in the broader analysis. They also bring to light the substantial influence of institutional, governance, and policy-related factors that the framework specifically identifies as alternative causes of these results. Moreover, the evaluation results confirm the ToC's core causal relationships, showing that targeted infrastructure investments contribute to reduced trade costs along the LAKAJI Corridor. Documented reductions in transportation time and costs by 2017 support this assertion, as stakeholders report notable improvements in logistics efficiency and the literature reveals up to 77% reductions in transport costs along the corridor. The results validate the ToC's claim that tangible trade benefits can arise from better infrastructure.

Significantly, the findings support key assumptions made in the ToC. The project's approach to customs training and collaborative engagements with local authorities demonstrates the ToC's assumption that institutional support and stakeholder engagement are necessary for successful

implementation. Furthermore, increased agricultural exports to ECOWAS countries during the project period support the ToC's emphasis on the private sector's ability to leverage improved infrastructure. Additionally, the evaluation explains how contextual factors affect the causal pathways outlined in the ToC. While the ToC acknowledges the potential impact of factors such as governance quality and economic stability, the findings indicate that these factors play a more active and significant role than previously conceptualised. Governance issues like institutional fragmentation and overlapping mandates, influence the degree to which infrastructure improvements result in long-term cost savings. Despite customs reform efforts, the continued presence of informal checkpoints resulted in high costs and delays, indicating that fragmented governance structures have a direct impact on trade performance.

Furthermore, the findings reinforce the significance of economic and security conditions, as stated in the ToC. The unpredictability of regulatory practices, as well as the presence of informal fees at various checkpoints, influenced how infrastructure improvements affected trade costs. These findings support the ToC's identification of the policy environment as an indispensable contextual factor, demonstrating how it specifically influences the relationship between infrastructure investments and trade performance. Finally, the evaluation reveals the reciprocal connections between project inputs, outputs, and outcomes. While the ToC claims that infrastructure upgrades directly contribute to lower trade costs, the findings show that these cost savings depend on the successful implementation of complementary policy reforms. Similarly, the evaluation demonstrates how infrastructure development can raise new governance issues, such as when improved transport routes attract increased regulatory scrutiny and result in new informal checkpoints. These observations contribute to the understanding of how the ToC's causal pathways work in practice, revealing their adaptive rather than linear nature.

4.7. Conclusion

The LAKAJI Corridor component illustrates how institutional and regulatory factors influence Nigeria's trade costs and export performance. Although the primary goal was to reduce trade costs and improve transport infrastructure through institutional arrangements and physical infrastructure upgrades, the findings support the ToC's prediction that governance quality and policy environment can influence project outcomes, with effects varying significantly across export sectors. The study shows how bureaucratic inefficiencies, corruption, and fragmented regulations undermine the potential benefits of infrastructure investments, though these constraints affect different export sectors differently, as evidenced by the varied responses of agricultural versus manufacturing exports to AfT. This reinforces the central premise of the ToC, which states that successful implementation requires strong institutional support.

In Chapter 5, I evaluate the project's trade policy and export Support components to conclude the process evaluation.

Chapter 5

5. Soft Infrastructure Development in Nigeria: Evidence from the NEXTT Project's Trade Facilitation and Export Support Components

Abstract

This chapter evaluates the Trade Facilitation and Expanded Export Support components of the NEXTT project. It builds on earlier findings that AfT increased trade costs while having varied effects on export performance, with more positive effects in the agricultural sector. Evidence from Chapter 4 showed that implementation challenges limited infrastructure improvements along the LAKAJI corridor. Drawing on project documents and stakeholder perspectives, this chapter assesses how institutional coordination, regulatory reforms, and capacity-building efforts shaped the NEXTT project's outcomes. It also examines the extent to which these interventions supported Nigeria's export development goals.

5.1. Introduction

Institutional capacity and regulatory frameworks often have a greater impact on trade than physical infrastructure. AfT effectiveness can be greatly influenced by institutional quality (Hoekman and Nicita, 2011; Shepherd, 2016). However, institutional reforms and export promotion programs face unique challenges that existing frameworks do not adequately address. According to Gnangnon (2021) and Zhang (2024), well-designed interventions can improve trade performance; their effectiveness is dependent on the interactions between informal practices, formal institutions, and market conditions. The NEXTT project's trade facilitation and export Support components are tailored attempts to address these institutional factors. Like the LAKAJI Corridor components, both components were implemented between 2012 to 2017. The goal was to strengthen Nigeria's trade policy framework, enhance regulatory processes, and build export capacity through targeted interventions (DevTech Systems Inc., 2018). Their implementation experiences reflect how institutional reforms and capacity building initiatives promote competitive trade in developing countries.

According to Palladium International (2017), the NEXTT project successfully transformed Nigeria's trade structure through its targeted interventions. Its impact went far beyond infrastructure development to include trade policy reforms, capacity building, market linkages, export growth, and long-term sustainability. One of the most notable achievements of the project was the implementation of key trade policy reforms to streamline Nigeria's trade procedures. These included supporting Nigeria's adoption and ratification of the WTO Trade Facilitation Agreement (TFA), modernising the Customs and Excise Management Act, introducing risk management protocols at the Nigerian Customs Service, and establishing a National Food Safety Policy with improved institutional frameworks. These reforms sought to remove barriers that disrupt trade flow, enhance regulatory efficiency, and reduce bureaucratic obstacles. By implementing more efficient customs procedures and trade facilitation measures, the project significantly increased Nigeria's overall trade competitiveness. These policy changes not only addressed immediate logistical issues but also established a solid foundation for long-term improvements in trade processes (The Mitchell Group, Inc., 2015).

Another important aspect of the NEXTT project was capacity building. The project enhanced the skills and knowledge of various stakeholders, including government officials, private sector actors, and local communities, through a series of workshops and training sessions. It also improved the trade environment by giving these stakeholders the tools and knowledge they needed to improve trade performance. The Mid-Term Performance Evaluation Report by The Mitchell Group, Inc. (2015) praised the project's success in stakeholder engagement and capacity building, claiming that it led to effective implementation and sustainability of the project's initiatives.

Similarly, Palladium International (2017) claimed that market linkages drove export growth and improved Nigerian agriculture's economic viability. However, this claim warrants further examination. The report primarily establishes a correlation between project activities and subsequent market connections without fully accounting for other significant factors. Importantly, the 2015 oil price collapse resulted in a significant devaluation of the Naira, which may make Nigerian exports more competitive globally, regardless of project interventions. DevTech Systems Inc. (2018)

recognises this challenge by highlighting the difficulty of distinguishing the project's specific contribution from broader macroeconomic trends. Despite this, the project claimed to have directly contributed $80 million in exports, with NEXTT client exports accounting for 13.4% of Nigeria's total non-oil exports in 2016. Another noteworthy accomplishment was facilitating an agreement between the Vietnamese Cashew Association and the Nigerian Cashew Association, which reportedly resulted in exports of 130,000 metric tonnes of cashew in 2016, increasing Nigeria's cashew revenue from less than $100 million to $250 million. While the reported results are impressive, it is imperative to thoroughly examine the implementation processes, contextual factors, and sustainability considerations that may have influenced these results through a process evaluation.

Perhaps most importantly, the NEXTT project aimed to promote long-term sustainability and investment on investment on the LAKAJI Corridor. Although it sought to ensure that benefits would endure beyond the implementation period, caution is needed in assessing its long-term impact. DevTech Systems Inc. (2018) evaluated only early sustainability mechanisms and indicators, without confirming longer-term effects. Nonetheless, the project's emphasis on stakeholder engagement and policy support was central to its sustainability strategy. The closure of nearly $20 million in investments by the end of the project highlights the economic benefits achieved during implementation. However, verifying whether these gains have been sustained would require further studies. Therefore, a closer examination of the reported accomplishments is necessary.

Building on the time and cost considerations discussed in Chapter 3, the impressive efficiency gains claimed in the project reports bring to the fore a need for a closer look at the supporting evidence. This process evaluation seeks to evaluate the NEXTT project's Components 2 and 3: Trade Policy and Trade Facilitation, and Expanded Export Support, by analysing available data, reviewing implementation approaches, and considering the perspectives of various stakeholders. This is a more rigorous examination that addresses the attribution challenges and limited timeframes of previous evaluations. The evaluation looks at how these components were implemented, what factors influenced their effectiveness, and what lessons can be drawn for future trade facilitation projects in Nigeria. Insofar as a process evaluation cannot prove causality between project activities

and broader economic outcomes, it can reveal useful information about implementation mechanisms and contextual factors. To achieve this goal, I look at different research questions for each component:

Component Two: Trade Policy and Facilitation

1. Context: How did Nigeria's unique economic, political, and social contexts affect the effectiveness of the project's trade policy and trade Facilitation component
2. Implementation: What specific approaches were used to provide trade facilitation support to the relevant ministries?
3. Sustainability: What factors helped to promote and sustain continued trade facilitation after the project's completion?

Component Three: Expanded Export Support

1. Context: What were the specific contextual factors that impacted the implementation of the Expanded Export Support component of the NEXTT project?
2. Implementation: What key activities and milestones were accomplished to ensure expanded export support?
3. Sustainability: To what extent have the results and outcomes of the expanded export Support component been maintained following the project's completion? (DevTech Systems Inc., 2018).

Based on the process evaluation framework detailed in Chapter 3, this analysis examines how contextual factors, implementation strategies, and sustainability factors influenced these soft infrastructure interventions. The evaluation also uses qualitative methods such as semi-structured interviews with key stakeholders and document analysis, then triangulates them with quantitative trade data.

The remainder of the chapter continues as follows: Section 2 looks at the literature on trade facilitation and export promotion in developing countries. Section 3 presents the results of the process evaluation of the trade policy and trade Facilitation component. Section 4 presents findings

from the expanded export Support components, and Section 5 concludes the chapter by summing up key findings and connecting them to those of the previous chapters.

5.2. Literature Review

Three related literatures on trade policy reform and export promotion in developing countries are reviewed in this section. The first focuses on trade facilitation and institutional reform in developing countries. The second examines Nigeria's trade facilitation experience, and the third analyses the impact of export promotion programs on SME performance in emerging markets.

5.2.1. Trade Facilitation and Institutional Reform in Developing Economies

Trade facilitation influences export competitiveness through administrative and procedural reforms. According to Fontagné et al. (2020) and Hendy and Zaki (2021), strong institutions distinguished by transparency, efficiency, and accountability facilitate smooth implementation, while weak institutional environments frequently undermine potential benefits.

The WTO TFA provides quantifiable evidence of trade facilitation impacts. Full implementation is expected to reduce global trade costs by 14.3% on average, with developing countries recording larger reductions. The agreement is predicted to increase global trade by up to $1 trillion per year, with approximately $344 billion benefiting developing countries (Hassan, 2020; Weijiang, 2022). This represents a 3.5% increase over the 2015 baseline and increases global real output by 0.15% (Kumar and Shepherd, 2019; Hassan, 2020). Implementation could reduce import trade costs for LDCs by between 2.5% and 4.5% (Melo and Wagner, 2016).

Some developing countries experience increases in export shares and gradual shifts in export composition towards manufactured goods and intermediate products, which may strengthen their participation in global value chains (Kumar and Shepherd, 2019; Ali and Milner, 2022). However, these outcomes depend heavily on domestic supply-side capacity and institutional conditions (Flentø and Ponte, 2017). Many African countries require substantial technical assistance and capacity

building to effectively implement the TFA, underlining AfT's role in supporting trade facilitation reforms (Melo and Wagner, 2016; Hassan, 2020)

Furthermore, administrative reforms must be combined with investments in physical infrastructure and institutional capacity to achieve maximum impact (Janssens *et al.*, 2020). Phytosanitary measures result in high compliance costs for developing country exporters (Murina and Nicita, 2017), though these measures can eventually improve trade by increasing consumer confidence and reducing information gaps (Ferreira and Ferreira, 2021).

These findings are directly relevant to Nigeria because the institutional reforms and border procedures examined in this chapter form the foundation of the NEXTT programme and related trade facilitation initiatives. Understanding these broader patterns helps to situate Nigeria's experience within the wider literature and clarifies the mechanisms through which reforms can influence export outcomes.

5.2.2. Export Promotion Programs and SME Performance in Developing Countries

Export Promotion Programs facilitate SME participation in international trade through multiple mechanisms. EPP participation increases export values by 17-23% within 3-5 years, though immediate effects are limited (Munch and Schaur, 2018). According to Traiyarach and Banjongprasert (2022), comprehensive EPPs that combine financial support, market linkages, and capacity building outperform single-instrument interventions by 40%.

Research identifies three key dimensions of EPP effectiveness. They include financial constraints and support systems, market linkage and network development, and institutional capacity building/development. First, financial constraints significantly impede SME export capacity. Credit constraints reduce export probability by 30%, with high interest rates, strict collateral requirements, and limited trade finance access preventing firms from pursuing opportunities (Bodlaj *et al.,* 2020). However, financial constraints can sometimes spur innovation in organisational processes, potentially improving export readiness (Traiyarach and Banjongprasert, 2022).

Second, market linkages and network development prove essential. Firms with extensive networks are 45% more likely to sustain export activities (Costa *et al.,* 2017). Networks provide market intelligence, reduce information asymmetries, facilitate capability development through peer learning (Priyono *et al.,* 2020; Magni *et al.*, 2021), and improve access to resources needed for export development.

Third, institutional capacity significantly influences effectiveness. EPPs within strong institutional frameworks achieve 50% higher success rates through policy coordination, streamlined procedures, enhanced public-private dialogue, and improved service delivery (Dornelas and Carneiro, 2018).

In Nigeria, bureaucratic bottlenecks reduce EPP effectiveness by 25-40% (Abe, 2024; Falaye, 2024). However, programs that address both capability development and market access help firms overcome obstacles. Successful programs combine financial incentives with market research, training, and network development support. These programs recognise that financial assistance alone is insufficient for sustainable export promotion.

5.2.3. Research Gaps

Despite extensive research on trade facilitation and export promotion, many questions remain unanswered about their effectiveness in countries such as Nigeria. Specifically, there is little empirical evidence on the relationship between trade facilitation reforms and existing institutional structures and informal practices. The impact of export promotion programs in the face of institutional constraints has also received limited attention. Moreover, few studies have investigated how different implementation approaches affect the long-term viability of trade development interventions.

This chapter addresses these gaps through a process evaluation framework that examines both implementation processes and contextual factors that influenced the NEXTT project's trade facilitation and export promotion components, as well as how these translate into tangible results.

Similar to the LAKAJI Corridor component, Figure 15 presents the Theory of Change (ToC) for these "soft infrastructure" elements of the project.

5.2.4. ToC Key Components and Assumptions

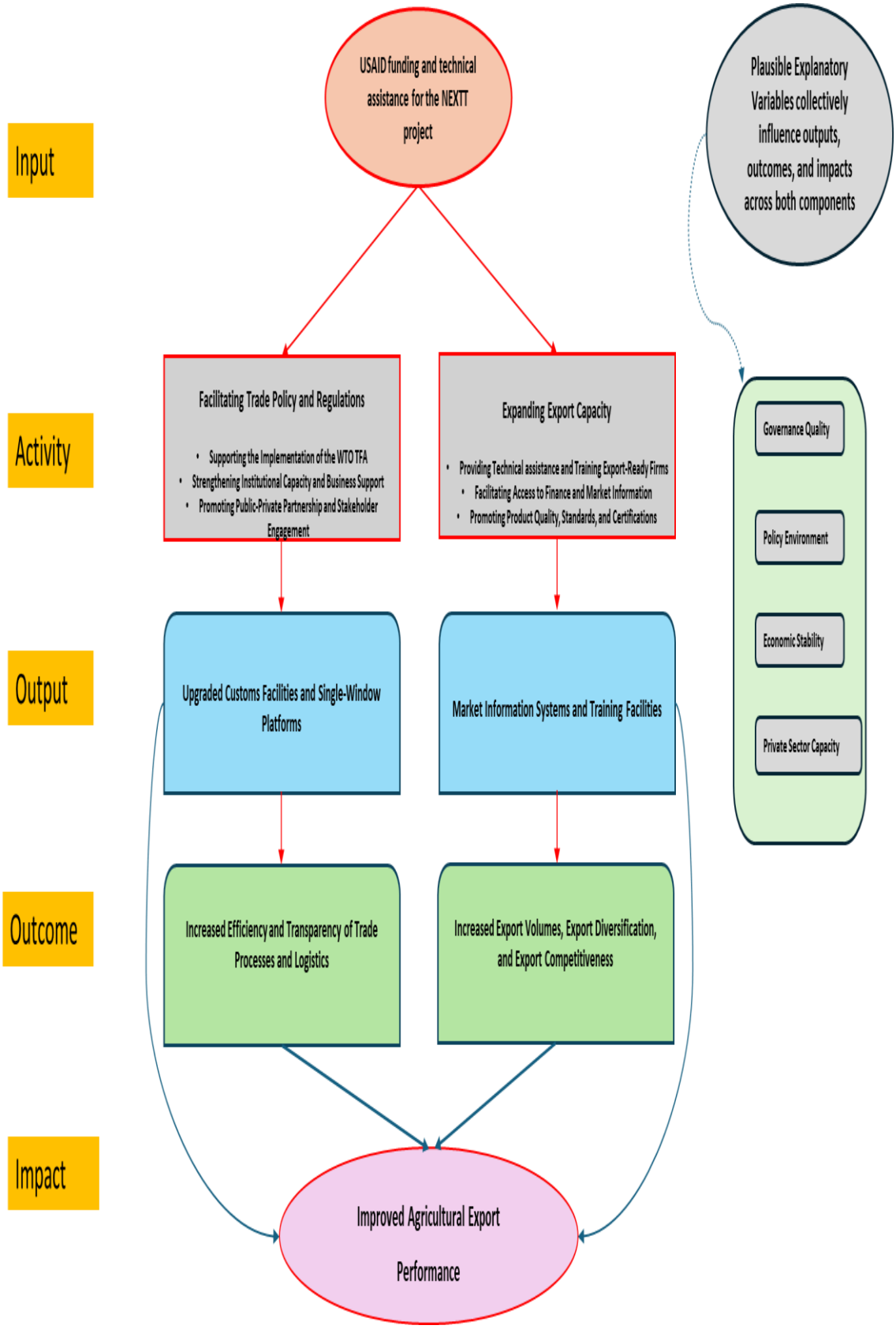
1. **Inputs:** Of the total $16,620,054 in funding for the NEXTT project, approximately $5,990,188 (36%) was allocated to the trade policy and trade Facilitation component, while $2,745,995 (16.5%) was allocated to the expanded export Support component (Palladium International, 2017).
2. **Activities:** The activities in each of the components are as follows:

a) **Facilitating Trade Policy and Regulations:**

- **Supporting the implementation of the WTO Trade Facilitation Agreement (TFA):** The project worked with the Federal Ministry of Industry, Trade, and Investment (FMITI) and other agencies to coordinate national trade policies with WTO commitments, provide technical assistance for international trade rule compliance, and interpret global trade standards for domestic implementation to enable Nigeria to fully benefit from the TFA.

- **Strengthening institutional capacity and business support:** The project trained customs officials, standards organisations, and export promotion agencies to improve regulatory effectiveness and service delivery. It also established business support mechanisms to help exporters navigate confusing trade regulations and break into international markets.

- **Promoting PPPs and stakeholder engagement:** The project promoted PPPs and stakeholder engagement by establishing working groups and consultative forums where business associations, exporters, transporters, and government officials collaborated to identify and address trade policy issues.



Source: Author's Elaboration.

Figure 15. Process Evaluation ToC

b) **Expanding Export Capacity:**

- **Providing technical assistance and training export-ready firms:** The project collaborated directly with farmer associations and processors to improve post-harvest practices. This was achieved by prioritising important agricultural value chains (cashew, cocoa, sesame), identifying bottlenecks in processing and quality control, and implementing interventions to improve productivity and quality.

- **Facilitating access to finance and market information:** This was achieved by connecting producers with international buyers and providing regular updates on market trends and prices. The project also provided a lot of training to exporters on how to access trade finance and collaborated with the Bank of Industry (BOI).

- **Promoting product quality standards and certifications:** Exporters were trained on international standards, market requirements, and procedures to increase export capacity. This was achieved through workshops on certification, packaging, and documentation to assist businesses in meeting international market requirements.

3. **Outputs:** The project's activities are expected to yield immediate tangible results, including:

- **Upgraded customs facilities and single window platforms:** The project laid the groundwork for faster document processing and clearance by working with the NCS and FMITI to standardise regulations and improve electronic systems. The single-window platform should eliminate redundant submissions and allow agencies to share information, thereby reducing processing time and costs.

- **Market information systems and training facilities:** Information systems should provide real-time data on market requirements and prices, allowing producers to make more informed decisions. Training facilities are supposed to create long-term platforms for capacity building even after the project has ended.

4. **Outcomes:** These are the intermediate and longer-term effects of the project. They include:

- **Increased efficiency and transparency of trade processes and logistics:** Upgraded customs facilities, single-window platforms, and trained officials should lead to increased efficiency and transparency in trade processes and logistics. Electronic systems should improve transparency by making procedures available to the public and reducing opportunities for corruption, whereas standardised procedures would ensure that regulations are applied consistently.

- **Increased export volumes, export diversification, and export competitiveness:** This is expected to happen through lower trade costs, better market information, and higher production quality. Lower trade costs should increase the international price competitiveness of Nigerian products, while better market information would allow producers to target high-value chains and diversify their export destinations.

5. **Impact:** Improved agricultural export performance

As described in the introduction, the TOC recognises the role of contextual factors such as governance quality, policy environment, economic stability, and private sector capacity that may influence outcomes independent of project interventions. The framework also maintains the same underlying assumptions of institutional support, stakeholder commitment, economic conditions, and adoption of new practices. These assumptions are the internal conditions necessary for the project's interventions to yield the intended outcomes. They also serve as key areas of inquiry in the evaluation, making it possible to determine where implementation was successful or unsuccessful, as well as how contextual factors impacted these results, by inspecting the integrity of each link in this causal chain.

5.4. Data Sources and Methodological Approach

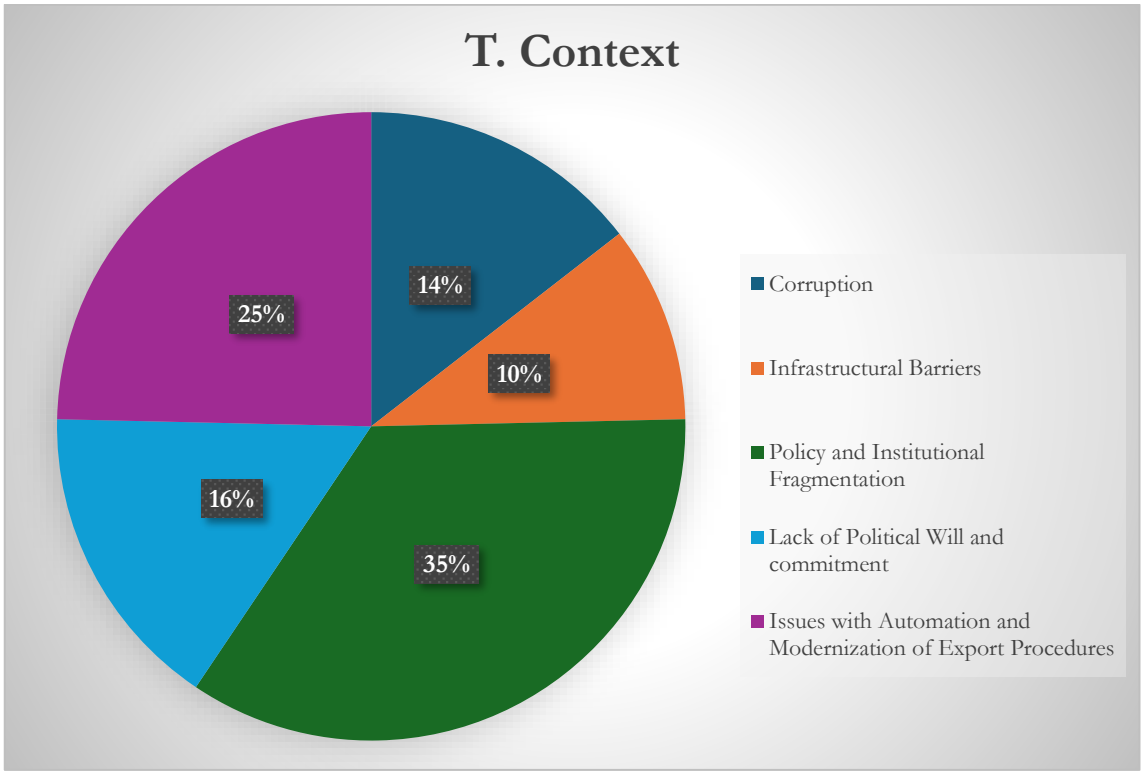
This chapter's findings are based on the methodology detailed in Chapter 3. For Component Two, the analysis is based on 70 responses to contextual factors, 17 responses to implementation approaches, and 31 responses to sustainability. In Component Three, 104 responses addressed contextual influences, 83 discussed implementation activities, and 25 concentrated on sustainability

factors. Quantitative data from the OECD Trade Facilitation Indicators, the World Bank's Trading Across Borders database, and export performance statistics supplement these stakeholder perspectives. This triangulation approach addresses a key shortcoming of previous evaluations, which often conflated correlation with causation. While these national-level indicators provide useful context for understanding the project's operating environment, they should be used with caution because changes cannot be directly attributed to project interventions due to their limited scope and the presence of numerous external factors.

5.5. Component Two: Trade Policy and Trade Facilitation.

The findings from the process evaluation of the Trade policy and trade Facilitation component are examined in this section. As stated in the evaluation methodology, the findings are organised around context, implementation, and sustainability.

5.5.1. Context: How did Nigeria's unique economic, political, and social contexts affect the effectiveness of the project's trade policy and trade Facilitation component?



Note: A total of 70 responses were gathered for this question

Figure 16. Economic, political, and social factors that influenced the effectiveness of the trade policy and trade Facilitation component.

Policy and institutional fragmentation and automation and modernisation of export procedures were the most significant factors that impacted the trade policy and Facilitation component, accounting for 60% of the responses. The remaining 40% can be attributed to infrastructural barriers, a lack of political will, and corruption issues.

According to the respondents, policy and institutional fragmentation obscured trade facilitation efforts in numerous ways. As one respondent described it, *'the issue is that we have so many institutions in Nigeria that speak to trade policies, but there's no synergy between them.'* This lack of coordination and coherence creates inefficiencies, duplications, and disparities that obstruct trade processes. Another respondent brought up the importance of border-agency collaboration. According to him, border-agency collaboration entails not only satisfying WTO requirements but also ensuring sustained results through genuine cooperation among border agencies. While addressing the same issue, a representative of the FMITI pointed out that:

> *There used to be a time when we were deliberating on the agency that should oversee these trade activities. We all concluded that the customs were better positioned for that based on their electronic processing and technology efficiency. We are also looking at efficiency in doing their job. So, customs are way up there, but the other agencies that need to be on board have yet to agree to it.*

These reform efforts have yielded some positive results within specific agencies. A notable example is the report from customs leadership, as explained by a respondent:

> *The Comptroller General of Customs... immediately he assumed office, one of the things he did internally was to make sure that all those checkpoints were reduced to an acceptable number. Any 100 kilometres, maybe just three or something.*

However, this initiative also brought the difficulties in achieving inter-agency coordination to the fore. Even though the customs could reform its checkpoints, it had no authority over other agencies' operations. The respondent continued:

> *He realises that because it's for customs, he cannot control what happens with Nigerian police, immigration, and other agencies... he initiated a process that he, as the head of customs, needs to meet with the heads of all those other agencies.*

This experience highlights both the potential for reform and the challenges of achieving major changes in a fragmented institutional environment where multiple stakeholders, including state governors and local government authorities, maintain their checkpoints for revenue generation. Figure 17 shows customs officers stationed along the Kaduna Expressway.

Source: Photographed by the author, November 1, 2024.

Figure 17. Customs Officers Stationed by the Roadside Along Kaduna Expressway

These obstacles at different checkpoints complicate trade operations, leading to delays and higher costs for traders. Simplifying these procedures and eliminating unnecessary checkpoints will enhance the ease and efficiency of doing business and create a more suitable trade environment. According to a representative of the FMITI, Nigeria is now working on automation to create a single window for the export documentation system. According to him,

> *The single window is like an automated system whereby an importer or an exporter just makes a single declaration or deposit of documents. Such an importer would have all the necessary documents, and they would scan them and send them to that central point. So that such a person doesn't need to meet Government agencies like the Customs and Standards Organisation of Nigeria, the Nigerian Police Force, and whoever has an interest in the products again. So, the issue of time and cost are the two basic things this seeks to address. That's why countries like Singapore will take only 4 minutes to do all their export clearance procedure. Because they already have those documents, there's no need for any physical activity or document where someone will waste time or human factors like corruption will come into play.*

However, the implementation of this process has been delayed by security concerns, infrastructural barriers, and corruption. Automation would result in exporters having limited interaction with agency personnel, eliminating the opportunity for engaging in informal payments.

More specifically, the pushbacks have been from corrupt officials who benefit from the fragmentation.

Infrastructural barriers also threaten the automation agenda. Respondents described Nigeria's trade system as plagued by unreliable electricity, outdated technology, and insufficient internet connectivity. As one participant observed:

> *When you are online, everything will go as it should in real time. If you are an agency and must do your work, you need an uninterrupted power supply, the internet, and good technology. But here, the agency can tell you the system is down because there is no power supply, or some will tell you there is no diesel to power the generator or inverter.*

In the absence of reliable electricity, even the best automation systems can't function effectively. Another participant in the discussion pointed out the importance of funding in achieving automation. According to him,

> *On the infrastructure component, most of these donor agencies will tell you that what they can offer you is service. The funding aspect is crucial. It's not every time that we need electricity. We have inverters everywhere now; many agencies use them to keep the system on, even without electricity or diesel. At least, that will help them keep the system running so that it can take all the gadgets they have installed and monitor what is happening around the corridor, like 100 kilometres away. But those things are also expensive.*

Furthermore, the prevailing security conditions in the country have necessitated rigorous inspections of trucks transporting goods along the corridor. Although there is a desire to automate export processes for total efficiency, there are concerns about corrupt practices that pose national security threats. An official from the FMITI shared an anecdote about the Authorised Economic Operators (AEO) program, which aims to fast-track processes for compliant traders:

> *The Authorised Economic Operators (AEO) are higher-level compliant traders and big companies that do a lot of imports because they export frequently. And over a year, we have seen that these are compliant; they do all their things, no hanky-panky or shady things. Sometimes, when their goods are coming, there's no need to delay; we fast-track them. That's what we call fast track, so that people who may be in their warehouses can go and do their checks. Or just occasionally or spontaneously, if they think of checking a container randomly. Once they checked, they found out that everything was intact. That's the level that Customs is getting to now. However, Customs is concerned that they have placed frequent exporters on the AEO and have breached the trust because someone probably believed that Customs is now relaxed and hasn't conducted any checks on those exporters in about 2-3 years. Someone introduced illegal materials into the packaged goods because no one was checking. As a result, those concerns break the trust in such exporters. The problem is that we have a non-compliant environment. Whenever they conduct post-clearance audits, they discover that many cleared trucks carry illegal substances.*

Therefore, despite the argument that security agencies should not be involved in trade, it is undeniable that illegal substances and arms still find their way into the country through various means. According to another respondent:

> *They may be going overboard, but they know what they are doing. How did the harmful substances taken on the streets get into the country? They came in somehow. So, they choose those points based on the information they have. Because if they don't set up those points to check, those illegal substances will just be entering the country freely, and that's dangerous for our society. So, it can be reduced, yes, but they have solid reasons for their actions. That's why I talked about balancing things out and creating control measures. Furthermore, when you see soldiers or security personnel, most are not concerned about delaying you. Their main concern is those goods you say you are transporting. What is precisely in the truck? You know, some people hide ammunition among agricultural produce? And the military knows the possible ways these things are moved into the country. But then again, we keep blaming the security agencies for not doing enough on the front of national security.*

Figure 18 illustrates another military checkpoint along the Kaduna-Kano Expressway. Both Figures 17 and 18 were taken during the same fieldwork trip.

Given the security situation in the country, persuading some security agencies to relocate their checkpoints from the corridor has been a herculean task. While some progress has been made in reducing the number of checkpoints, they continue to cause delays and increase the cost of transporting goods along the corridor. Addressing these limitations undoubtedly requires both political will and human capital, as highlighted by a respondent,

> *In Nigeria, we need a government that will see trade as a priority. Look at our trade and investment budgets; they are unbelievably low. But we don't see it as something fundamental. We need to see that trade is one of the ways by which our economy can be developed.*

According to the literature, institutional fragmentation, insufficient political backing, automation barriers, infrastructural deficits, and corruption are common in developing countries (Takpara, 2021). The lack of cohesive institutional frameworks is a major impediment to effective trade facilitation in supporting evidence-based analyses and enabling smooth cross-border transactions (Adhikari, 2019). This issue is evident in Nigeria's fragmented institutional setting, where agencies frequently operate independently, duplicating procedures and impeding trade flow.

Source: Photographed by the author, November 1, 2024.

Figure 18. A Military checkpoint along the Kaduna-Kano Expressway

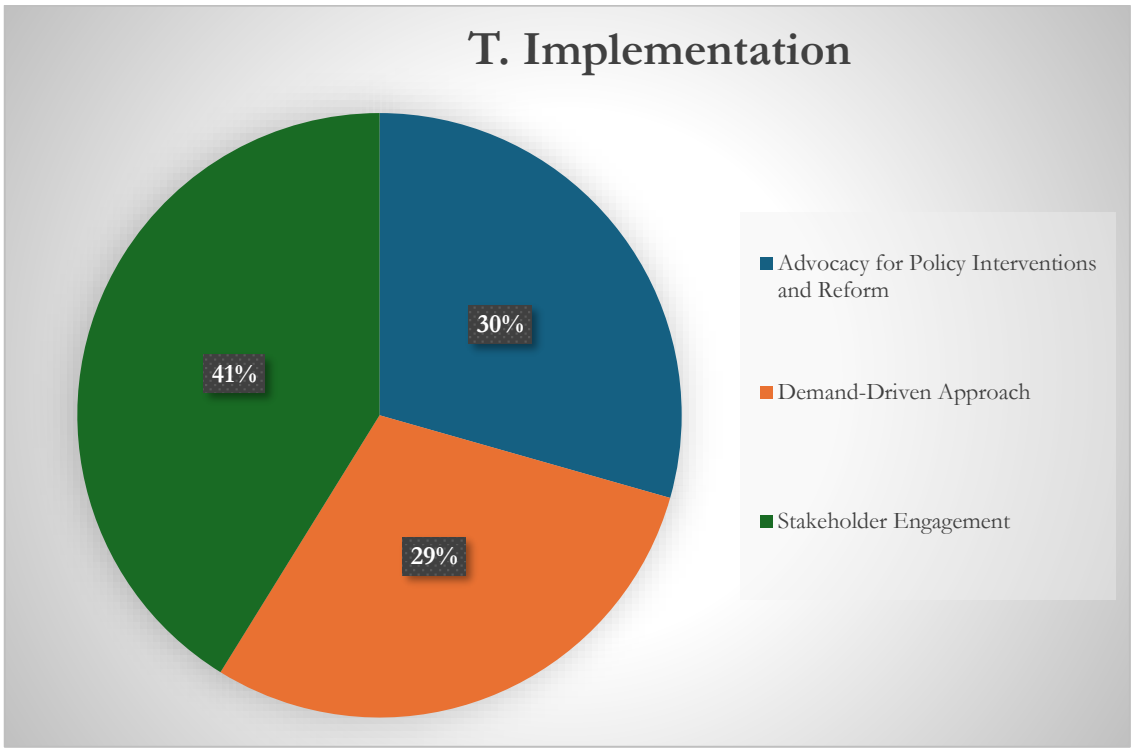
Political will and alignment with national priorities have also been recognised as instrumental factors in driving trade reform. According to Booth (2012) and Booth and Unsworth (2014), technical assistance alone is insufficient without political backing; a sentiment shared by respondents who cited insufficient budget allocations and low prioritisation of trade initiatives in Nigeria. This strengthens the argument that political commitment is required to decisively advance development efforts.

Single Window Systems help to streamline documentation submissions (Martínez-Zarzoso and Chelala, 2020), which aligns with Nigeria's efforts to automate and modernise trade processes. However, its implementation is challenging given the security concerns and technological constraints in Nigeria. While automation can potentially reduce the time and costs of trading, the findings suggest that entrenched practices and inadequate infrastructure limit its effectiveness. Furthermore, hard infrastructure is important for effective trade facilitation (Portugal-Perez and Wilson, 2012) and its deficiencies have negative consequences for developing economies (Yadav, 2014). For example,

erratic power supply and limited internet access stall Nigeria's trade facilitation efforts. Respondents stated that these deficiencies impede real-time operations and limit the benefits of digital platforms.

Moreover, corruption continues to complicate trade facilitation efforts, despite automation efforts. According to Awunyo-Vitor and Sackey (2018) and Chen, Liu and Lee (2022), corruption raises costs and reduces efficiency. Respondents mentioned security checkpoints, which, while intended to prevent illegal trade, frequently compound trade costs due to informal payments, multiple taxes, and lengthy delays.

5.5.2. Implementation: What specific approaches were used to provide trade facilitation support to the relevant ministries?



Note: 17 responses were provided for this question.

Figure 19. Approaches used to provide trade facilitation support to the relevant ministries.

There were limited responses to this question. This was so because only a few people could speak on policy-related issues. A comprehensive set of 17 responses was obtained from the group

discussion with FMITI officials and the lead implementer of this component. Three distinct but interrelated themes that reinforce one another developed: stakeholder engagement (41%), adoption of a demand-driven approach (29%), and promotion of policy interventions and reforms (30%).

Within the NEXTT project framework, stakeholder engagement was recognised as a vital element. The NEXTT project sought to promote inclusivity and sustainability in trade policies and interventions by partnering with government ministries and private sector entities throughout the project cycle. According to one of the NEXTT project staff,

> *The stakeholders for the three components were almost overlapping and were almost similar in many cases. So, for instance, we were talking about policy improvement for the business environment, incentives for export, and the like. These were issues of concern in the trade ministry, the Food and Drug Administration Agency, the Nigeria Export Promotion Commission, etc. So now, all three groups must work with all these stakeholders at different times. There was synergy and cross-understanding of the connections between the entire project, I mean, the three components. So, the stakeholders were very similar, and we leveraged that fact also to gain some momentum.*

Alongside stakeholder engagement, the project's focus on policy interventions and reforms was a key pillar of its strategy. Advocacy efforts were aimed at persuading and lobbying policymakers and stakeholders to implement policies that promote trade, remove barriers, and boost the competitiveness of Nigerian businesses. As one NEXTT project staff member noted:

> *In terms of policy, I think one of the biggest achievements of that project was getting Nigeria to sign up for the WTO trade facilitation agreement. After that, we supported and helped redesign Nigerian trade policy and committed to the review.*

These policy achievements, however, did not come easily. Respondents recounted the challenges of lobbying for long-term policy change:

> *So, one of the big jobs we had to do was to lobby the Senate and National Assembly to pass a new law that allowed private participation in the development of that corridor. But that didn't work throughout the project. I think it was just in the last weeks when the former president was leaving that he signed a new bill that allows private participation in the rail building process.*

Furthermore, the project's aim to adopt a demand-driven approach, while commendable, revealed the challenges in aligning external interventions with local priorities and contexts. This is evident from the contrasting accounts of an implementing staff member and an official from the FMITI. According to the implementer,

> *They were needs-based and consistent with the national priorities in that interventions were mainly designed based on requests from MDAs and needs assessment from our site. And, of course, priorities again were spelt out in national development plans and existing policy documents, which*

> *informed the design of the projects even at the beginning stage. So, I think there was complete alignment with the priority and needs of stakeholders and the nation.*

On the contrary, the FMITI official insisted that donors must work with the needs identified in the WTO documents. He said, *"Since Nigeria has submitted all the required documents, any donor coming into Nigeria should consider all these things and channel their funding towards those areas of need."*

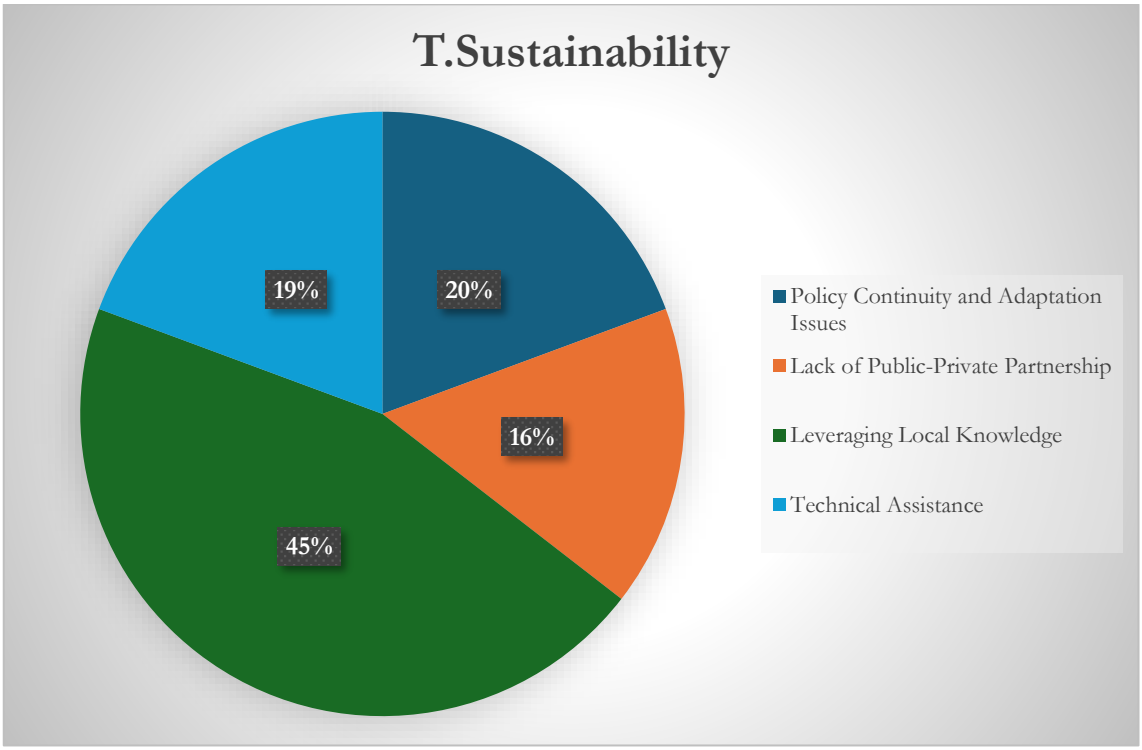
Effective institutional support is paramount, as it enables governments to establish the necessary institutional framework to implement priorities (Adhikari, 2019). Current approaches to AfT implementation need to consistently align with the trade needs of the recipient country or region. More often, AfT relies on the Ministry of Trade's project list, rather than directly addressing trade constraints, market failures, and the lack of coordination within the country (Basnett, 2013). This highlights the need for AfT interventions to be tailored more closely to the specific needs and challenges of beneficiaries.

Further, aid effectiveness varies depending on the selected policy objectives. Donors may perceive aid as successful, while recipients may view it as ineffective if the outcomes desired by the recipients differ from the donors' objectives. The OECD prioritises the importance of "ownership" and "alignment" in recipient countries, which are vital for determining suitable measures of aid effectiveness (Kim, 2019). Ensuring that interventions align with local circumstances and directly address the identified needs of recipient countries increases their relevance, effectiveness, and sustainability. This approach ensures optimal AfT impact and value for money.

Additionally, the findings of the NEXTT project echo the importance of a demand-driven approach. While some respondents believed that the project was in line with Nigeria's national priorities, others argued that its design did not adequately address local needs, given the LAKAJI Corridor's reputation as a foreign-led initiative. Therefore, local ownership and alignment with national goals are cardinal for the success of AfT programs (Kim, 2019). However, according to the Final Evaluation Report (2017), the NEXTT project was designed using a demand-driven approach, as evidenced by its focus on stakeholder engagement, qualitative feedback, and market relevance. These partnerships increase efficiency and improve AfT outcomes (Adhikari, 2019). The project's

success in bringing together diverse stakeholders is consistent with previous research on the importance of multistakeholder engagement in trade facilitation (OECD and WTO, 2019a). The project also demonstrated the importance of AfT in facilitating policy changes, such as allowing private investment in infrastructure development. These reforms led to increased efficiency and transparency in trade processes. The initiative encouraged collaboration among government ministries, the private sector, and civil society, resulting in less duplication and greater synergy in trade policy implementation. These outcomes align with the view that regulatory improvements are imperative for boosting trade performance (OECD and WTO, 2019a).

5.5.3. Sustainability: What factors helped to promote and sustain continued trade facilitation after the project's completion?



Note: This question generated 31 responses.

Figure 20. Factors that have helped to promote and sustain continued trade facilitation after the project's completion.

At the core of the project's experience is an invaluable lesson: the key to sustainability lies in the hands of those who know the terrain best. Leveraging local knowledge was the most mentioned sustainability factor, accounting for 45% of responses. This underscores the importance of local ownership and expertise in the success of trade facilitation efforts. As one respondent observed:

> *The worst thing is that the project was seen as a foreign initiative. It wasn't seen as a local initiative. If you're ever developing or writing a project for a donor, you don't come up with this great idea and tell the Nigerians you ought to do this. You go into the government agencies, and you listen to what it is they want to achieve. And if it aligns with your objectives, you do what they want. That's how things change.*

This respondent's comment points to a perception challenge: the project was viewed as externally driven rather than emerging from within Nigeria's own government structures. It emphasises the importance of consulting the relevant government agencies at the design stage, understanding their stated priorities, and ensuring alignment with donor objectives before proposing activities. In this view, greater ownership is achieved through early dialogue with the specific government bodies responsible for the sector. Another respondent echoed this sentiment by drawing attention to the importance of understanding the specifics of desired change:

> *First, they should try to understand exactly what they want to change. They must understand exactly what they want to change, not high-level, beautiful-sounding stuff. What would the change be? Nigeria has very knowledgeable people, and we know the problems.*

These accounts suggest that the path to sustainable trade facilitation lies not in grand, externally imposed designs but in the granular, context-specific solutions that are born out of deep engagement with local stakeholders. The approach recognises that the people who face these challenges daily have the deepest understanding of what is needed, and their knowledge should serve as the premise upon which the project is designed.

Alongside local knowledge, the NEXTT project's experience shows that PPPs are the cornerstone of sustainable trade reforms. The literature is well-established with examples of how PPPs can leverage private sector resources and expertise to drive innovation and efficiency in trade facilitation. Yet, the promised PPPs were difficult to sustain due to existing institutional and legal frameworks that obstructed private sector participation. As one respondent lamented:

> *Everything was supposed to be driven by the private sector, but as I said, the law was limiting private sector participation, and we didn't resolve that before the project ended. Then again, the high cost of investment required for the development of that sector was beyond just what many of the investors or the local business group that was put together could have done on their own. Perhaps they could have completed some projects if there had been another partner to support after USAID.*

Technical assistance is another pillar of trade facilitation. According to the respondents, the project's approach failed on several occasions to focus on long-term capacity building and institutional strengthening. Simply providing technical assistance may not be enough to meet government officials' expectations. Technical support should include financial assistance and capacity-building, as this could incentivise them. According to a government official,

> *If I, as a government official, embark on an assignment for five or six days as part of an initiative, and I am still unable to meet certain needs afterwards, how do you think that next time they come up with initiatives, I will be enthusiastic about supporting them?*

more than technical assistance may be needed to meet the level of satisfaction that government officials anticipate.

Policy continuity is perhaps another challenge to the sustainability of the NEXTT project's achievements. As one respondent put it,

> *Nigeria essentially just takes assistance, and very unfortunately, when the project ends, we hardly see the output or success of projects being sustained. The government hasn't done anything with all the successes of the project.*

This observation highlights the susceptibility of even the most promising reforms amid shifting political priorities. It also goes to show that sustainable trade facilitation projects require not just technical solutions, but also deep political commitment and institutional integration that can withstand the uncertainties of electoral cycles and larger administrative changes.

The most successful AfT initiatives have been defined by country ownership at the highest political level and active local participation (Hynes and Lammersen, 2017). However, meeting government officials' expectations requires more than just providing technical assistance. integrated development approaches that combine public and private investment with technical assistance can lead to higher success rates.

Trade facilitation literature identifies several factors for the success of such initiatives, including leveraging local knowledge, encouraging PPPs to provide adequate technical assistance, and ensuring policy continuity and adaptation (Jiahao *et al.*, 2022). The NEXTT project findings are consistent with these themes and provide useful guidelines for their practical application. First, local ownership and context-specific solutions are imperative for sustaining trade facilitation projects. According to Rodrik (2000) and Nastase et al. (2021), successful trade policies must be adaptable to local conditions. The respondents stated that the success recorded on the NEXTT was primarily due to engaging local stakeholders and aligning interventions with Nigeria's national priorities. They maintained that trade facilitation projects are more likely to succeed when they are tailored to local needs and expertise rather than imposed from outside.

Second, PPPs help to sustain trade reforms because they combine private-sector resources with public-sector initiatives (Leite Campos *et al.*, 2018). However, the NEXTT project struggled to establish effective PPPs due to regulatory barriers and high investment costs. Furthermore, respondents reported that, despite the project's initial goal of driving private sector reforms, weak institutional frameworks hampered effective collaboration and reform implementation. Some of these barriers include a lack of regulatory guarantees, poor financial projections, insufficient feasibility assessments, and inadequate communication (Ojebode, 2016). Similarly, Nigeria's regulatory environment impedes the viability of PPPs, with existing laws and regulations restricting private sector participation (Arimoro, 2019). Also, institutional frameworks for PPPs in Nigeria are insufficient and lack the regulatory and executive powers found in countries operating within the bounds of best practice (Essia and Yusuf, 2013). Ultimately, successful PPPs in Nigeria are dependent on overcoming these institutional and legal challenges (Adamu *et al.,* 2015).

Third, technical assistance is paramount for advancing reforms (Huang *et al.*, 2024). However, the findings indicate that the NEXTT project's support was insufficient to ensure sustainability. Respondents drew attention to the importance of a more integrated approach to capacity building that includes not only technical skills but also financial support and institutional development. This view highlights the need for future AfT projects to adopt more holistic strategies

that ensure local actors are prepared to continue reforms well after the project's completion. Additionally, the NEXTT project encountered numerous challenges in maintaining policy continuity and adapting to political changes. Although the project was successful in some areas, many of its achievements were not sustained after completion due to shifts in political priorities, stressing the need for stable and continuous policy frameworks to support long-term transformation goals (Patterson *et al.*, 2017).

To further contextualise the stakeholder perspectives, data from the OECD Trade Facilitation Indicators (TFIs) and the World Bank Trading Across Borders database are examined. The data covers three separate periods: the pre-project baseline (2012 - 2013), the project implementation (2014 - 2017), and the post-project period (2017 - 2022). Although direct attribution to the project cannot be established, these indicators help to contextualise the operating environment described by interview respondents.

Table 13 shows Nigeria's OECD Trade Facilitation Indicators, which range from 0 to 2. 0 indicates poor performance and 2 indicates international best practice. Nigeria's trade facilitation performance improved modestly, from 0.824 in 2017 to 0.930 in 2022. The country also scored low on border agency cooperation (0.455-0.545 for internal and external collaboration). This buttresses the institutional fragmentation concerns highlighted by respondents. Fees and charges (1.357 to 1.462) and appeal procedures (1.333 to 1.444) are improving, but the overall performance is still lower than best practices.

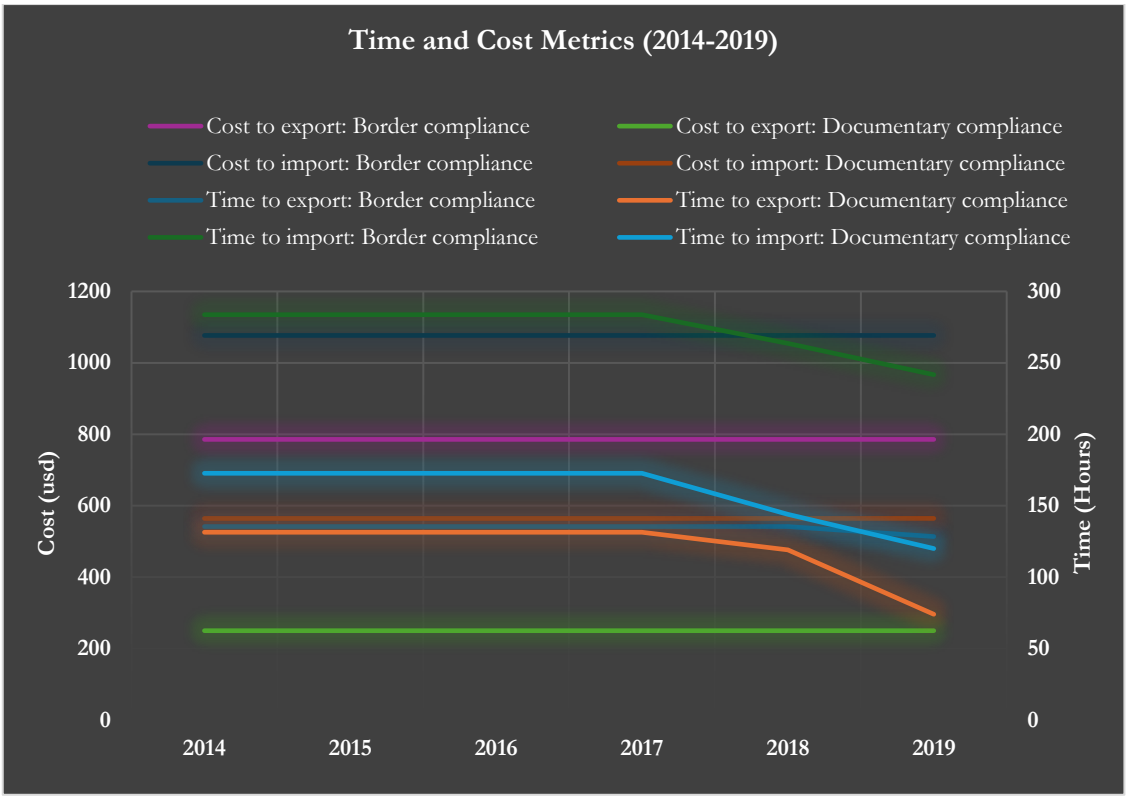
Table 13. OECD TFA Indicators for Nigeria for the years 2017, 2019, and 2022

Category	Category Name	2017	Best Practice (2017)	2019	2022	Best practice (2019 & 2022)
	Average trade facilitation performance	**0.824**		**0.893**	**0.93**	
A	Information availability	1.05	1.571	1.05	1.05	1.667
B	Involvement of the trade community	1.000	1.625	1.143	1.143	1.75
C	Advance rulings	0.571	1.636	0.571	0.571	1.909
D	Appeal procedures	1.333	1.615	1.444	1.444	1.615
E	Fees and charges	1.357	1.714	1.462	1.462	1.857
F	Documents	0.625	1.667	0.875	0.875	1.778
G	Automation	0.615	1.615	0.7	0.7	1.692
H	Procedures	0.938	1.514	1	1	1.6
I	Internal Border Agency Cooperation	0.455	1.182	0.455	0.545	1.273
J	External border agency cooperation	0.455	1.182	0.455	0.545	1.273
K	Governance and impartiality	0.667	1.889	0.667	0.889	1.889

Note: Scores range from 0 (poor performance) to 2 (international best practice)

Source: OECD (2022).

Figure 21 also presents World Bank Trading Across Borders data for Nigeria from 2014 to 2019. The Trading Across Borders data show patterns that complement the OECD indicators. During the project implementation period (2014-2017), Nigeria had lengthy processing times, with 135.4 hours for border compliance and 131.4 hours for document processing when exporting. While processing times improved slightly for documentary compliance (from 131.4 to 74.0 hours for exports in 2019), costs remained consistently high across all categories.



Source: World Bank Doing Business Database (2025)

Figure 21. Doing Business - Trading Across Borders Indicators for Nigeria (2014 to 2019).

These national-level data patterns support the respondents' perspectives in three ways. First, both datasets confirm the institutional coordination issues raised by respondents. The OECD data show low agency cooperation scores, whereas the World Bank data show persistently high costs, highlighting the fragmentation issues raised in the interviews. Second, the data validates respondents' perspectives on automation and modernisation progress: while processing time improvements were modest (mostly in documentary compliance), high costs persisted, supporting respondents' accounts of implementation challenges. Third, the discrepancy between reduced processing times and persistently high costs observed in both datasets reinforces respondents' concerns that reforms are failing to deliver meaningful efficiency gains. This pattern shows that procedural improvements did not result in cost savings, consistent with interview findings about the limitations of reform efforts.

5.5.4. Implications for the Theory of Change

Evidence from the trade policy and trade Facilitation component confirms the ToC's central idea that institutional reforms improve trade efficiency, though these relationships unfold through more nonlinear pathways than initially anticipated. Similarly, trade facilitation reforms, including customs modernisation and regulatory simplification, produced efficiency gains in specific areas, aligning with the ToC's core logic. Yet, these improvements varied across agencies due to institutional fragmentation and bureaucratic resistance. This pattern supports the ToC's identification of governance quality as a key contextual factor, showing its widespread influence throughout the causal chain.

Furthermore, political will proved to be a decisive mediating factor, confirming the ToC's underlying assumption about stakeholder engagement. The results demonstrate that sustained political commitment determines how policy reforms translate into operational changes. This was evident in the project's work with the WTO TFA. Despite initial momentum in securing Nigeria's signature, implementation fluctuated with leadership changes. This pattern reinforces the ToC's focus on stakeholder commitment while illustrating how political considerations operate in practice.

In addition to these, the evaluation strengthens the case for a positive relationship between physical infrastructure improvements and policy reforms, supporting the ToC's holistic approach to trade development. The findings reveal these components as mutually reinforcing elements as customs modernisation yielded greater cost savings in areas with upgraded physical infrastructure, while infrastructure improvements delivered stronger benefits when paired with streamlined procedures. The findings also point out the importance of institutional strength and knowledge systems for maintaining progress, agencies that incorporated training materials into their standard operating procedures and established knowledge-sharing mechanisms achieved more consistent reform implementation.

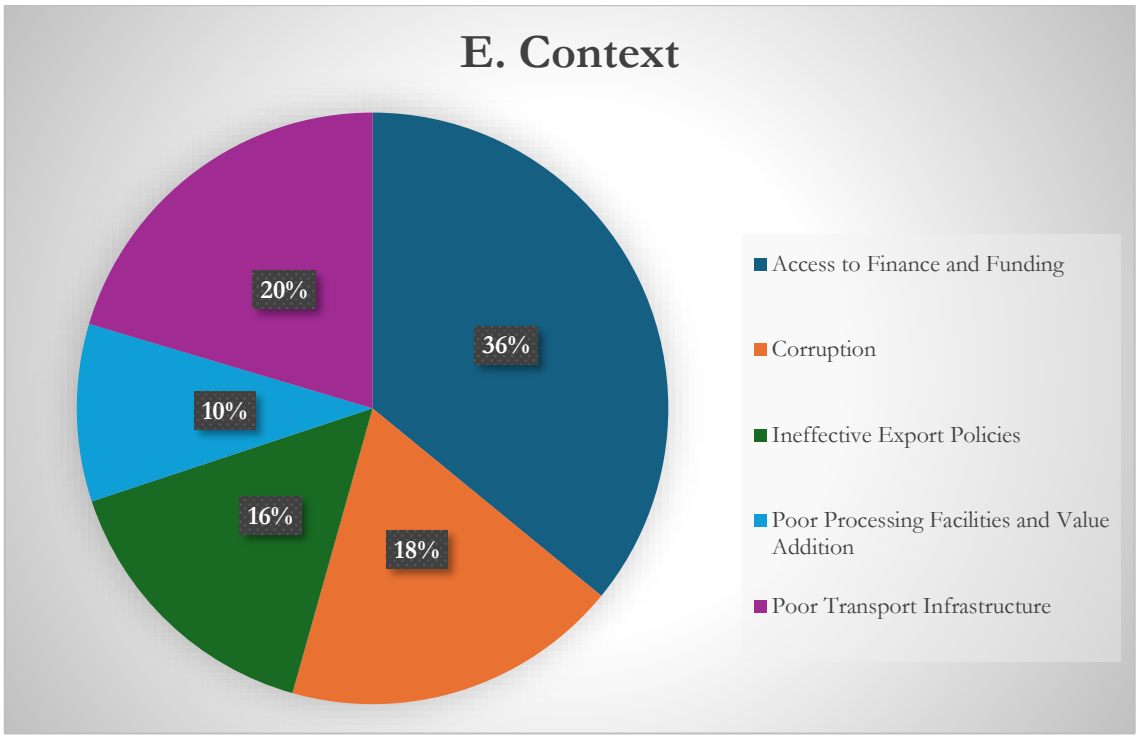
Additionally, the evaluation demonstrates how Nigeria's unique economic context influences reform effectiveness and validates the ToC's consideration of contextual factors. Trade facilitation initiatives also showed varying success patterns due to local market conditions. This varied success

record validates the ToC's consideration of economic conditions as mediating factors in determining reform outcomes.

5.6. Component Three: Expanded Export Support

This section discusses the results of the process evaluation of the Expanded Export Support component. Similar to the trade Policy component, this analysis is based on the methodology and TOC outlined in Chapter 3.

5.6.1. Context - What were the specific contextual factors that impacted the implementation of the Expanded Export Support component of the NEXTT project?



Note: A total of 104 responses were collected for this question.

Figure 22. Contextual factors that impacted the implementation of the Expanded Export Support component of the NEXTT project.

Throughout the process evaluation, the expanded export Support component had the highest number of responses (211), far exceeding the LAKAJI Corridor component (101 responses)

and the trade Policy component (118 responses). This also works well, as improved export performance is the ultimate goal of the NEXTT project. Respondents identified limited funding, poor transport infrastructure, corruption, export delays, weak regulations, and gaps in processing and value addition as key factors that hindered the implementation of the export Support component. Of these challenges, the most pressing one was access to trade finance, as 36% of respondents highlighted it as the main impediment to exports.

According to a cashew processor, lack of oversight in the loan disbursement process and prolonged application processing times are the major issues processors encounter in Nigeria. Loans often did not reach the people who genuinely needed them or arrived too late to meet the intended purpose. According to him,

> *Most times, you discover that by the time they even bring in that project, they are giving funds to people who don't even have a factory, and they still end up buying our raw nut for exporting. But, in a situation where you know where their factory is, they need to put in extra effort, go the extra mile, and know where the factory is. Where is the factory? What is their capacity? What do they need? So not that somebody somewhere, a table farmer, someone that doesn't have a farm, that only has an office in Abuja and is calling himself a farmer, who doesn't have a farm but just an office in Abuja, would be the one collecting the grant and everything. So those are the issues we are facing in Nigeria.*

Another processor echoed this sentiment, noting that most financial institutions do not understand agro-processor operations:

> *There's a disconnect between those who are into agro-processing and banking in Nigeria. In other countries, it might be that they are doing well. But in Nigeria, all these big-name banks are not interested in funding those who are into agro-processing. They are not because they don't have agricultural desk officers to tell them the reality.*

Furthermore, the loans arrive when they cannot meet the processor's needs, and the loan repayment cycles are often unrealistic:

> *"My experience has been a very tough one. When we started the processing, the bank gave me 15 million to stock cashews. But when did the money come? The money came when the cashew finished in the market. And then they started charging me interest. I needed cash in December; they gave me the money in June. So how do I stock it? And then, in June of the following year, they told me to pay back. I ended up paying interest without really turning it over. It's tough in Nigeria because nobody is going to give you money. If you're doing 6,000 tons, you need 3 billion to buy raw cashew nuts. I know cashew factories that have shut down. State-of-the-art factories shut down because there is no finance. The cash cycle is short. I can't buy cashews from February, March, and April, start processing in May and June, and be expected to pay back 6 billion in April. It doesn't work that way. It takes an average of 18 months to process 6,000 tons, which means I need a working capital that's more than 12 months. I need 24 or 36.*

Conversely, an important point raised during this study is the concept of the 5Cs of creditworthiness. They include character, capacity, capital, conditions, and collateral (Oseni, 2023). According to the BOI representative, most businesses are not credit-worthy. In his words:

> *I know it can be very challenging to secure access to finance. The other question would be, is the applicant loan-ready or finance-ready? Being finance-ready means that the applicant has put measures in place that will sufficiently prove to the bank or the financier that he can access, utilise, and repay his exposure. Those three things must go hand in hand. So, that is also a major challenge. Now, most people who participate in or are willing to participate in projects like this come barehanded. They have nothing. In terms of capacity, does he have the required knowledge and know-how to make this business work? Or are his production processes efficient enough to compete competitively in the marketplace? We cannot lend to them because some can have good products, but they are not market-sensitised. That means that it has not been taken to the market, it's not market-ready, or it has not been accepted. The second part is that most projects you can get are at the ideation stage. They've not been market tested; it is a good business idea somebody has, and the person is seeking funding to enable him to implement that. And the person is coming for debt or quasi-debt funding where you have a grant and debt. When you take the person through his cash flow and cash flow activity, you realise that the person will need a gestation period to bring the product up to the commercialisation stage.*

Furthermore, there is the peril of corruption, the bane of the Nigerian economy. A respondent described widespread dishonesty in how loans are disbursed in Nigeria, with politically connected "portfolio farmers" crowding out legitimate businesses. He described how exporters are forced to pay bribes and unofficial fees to conduct their business, creating additional costs and unpredictability in an already challenging process.

These financial constraints are exacerbated by numerous infrastructure problems throughout the sector. Exporters face issues with local and international logistics. Respondents pointed out that getting containers to move goods from the North to Lagos, where they will connect to the port, can be daunting, mainly due to bad road conditions and multiple checkpoints where they must pay numerous informal charges. A processor explains their typical logistics hassle:

> *A truck gets hooked around Lapai in Niger State for two weeks. For two long weeks, it's there standing. How do I connect the vessel? And there is no alternative. There is no alternative by rail; there is no alternative by inland water. That's why you see that exports have been down. The transport killed a business before it started because nobody was ready to go and get their truck stuck for two weeks. And don't forget, soybean meal, for example, cannot withstand heat or rain. So, this means you produce quality soybean meal, which gets bad in transit, and you lose millions. Who takes the risk? Is it worth taking seven days to take a soybean meal to Lagos? It's not. The truck might get stuck because it might rain on the way.*

Figures 23 and 24 show trailers parked along the roadside, some out of service and others with drivers sleeping inside.

Source: Photographed by the author, November 1, 2023.

Figure 23. Broken-down trailers along the roadside.

Another processor explained that:

> *Most times, we finish loading in the evening. So, it takes the trailer till at least the second day to get to Lagos. Let's say 12 or 10 hours for the trailer to get to Apapa. And you know they usually sleep on the road; they don't want to enter Lagos in the afternoon. They can get there earlier, but the road is bad. Number two, they can't enter Lagos in the afternoon because of all these Government agencies and the rest that will arrest them and ask them to pay.*

Deficient processing and value-addition systems also rob exporters of their full return on investment. As one government official narrated:

> *We grow stuff here, we don't process. We grow and then we sell. Now, if you're abroad and you see shea butter, I'm sure they're telling you it's produced in Ghana. Why? Because we don't have shea processing plants that will produce the standard for exports within the country for a very long time. You go there, and they will tell you the yam is from Ghana. They bought the yam from Niger State or Benue State. You will see shea nuts, they'll tell you the nuts are from the Ivory Coast, and cashews are from Vietnam. So many things from Nigeria, you know, and the fault is partly ours because we don't look at standards.*

Source: Photographed by the author, December 8, 2023.

Figure 24. Congestion at Apapa Port – Loaded Trucks Queued for Offloading

Perhaps, the most severe issue is inconsistent and inefficient export policies. On the international front, various respondents reported the disservice caused by the lack of indigenous vessels and how it affects exports on cost and product quality. A government official illustrated the implications of this policy gap:

> *Due to the lack of ownership of home vessels. We usually depend on international vessels. Imagine moving a product from here to South Africa, but the ship you want to use must first return to the Netherlands. It is just like an aircraft. If you travel, the aircraft must return to its home country before reaching your destination. But imagine how straightforward it would be if you were exporting with our local vessels. But we don't have the ships that are locally made for us.*

Another processor offers a firsthand account of the difficulties he faced using foreign vessels to export Nigerian:

> *So, if you buy raw cashews from Guinea-Bissau, I must move it to Valencia. And then get containers that are coming to Lagos. How many thousands of kilometres? I must transport it from Guinea-Bissau to Gambia, Senegal, Mali, and Nigeria. Then, I was told it was better to take it to Valencia by container and bring it back to Lagos. So frustrating. Trading by land or sea has been very tough, very tough across West Africa. You know, we are doing okay in processing. But transportation is an issue. When we are done processing, we can't move the products. I saw raw*

> *cashews in Guinea-Bissau, and I want to buy them and process them in Nigeria because I have a market in place. But the thing is, I can't get the cashew out of Guinea-Bissau to Nigeria. The cost is nerve-wracking.*

Although Nigeria has abundant agricultural resources, its lack of processing facilities and value addition prevents it from participating competitively in global value chains. A processor asserts that "*Nigeria primarily exports raw materials in global markets instead of manufacturing finished goods that command higher prices*," thereby missing out on meaningful economic opportunities from local processing.

These challenges are well established in trade literature. According to Hosny (2020), firms focused on exports typically need more external financing compared to those focused on domestic markets, yet they encounter significant challenges in obtaining it. This corresponds with the experiences shared by respondents, who mentioned poorly timed loans and unrealistic repayment cycles. Hosny further argues that firms with easier access to credit are more diverse. Export-oriented firms are less likely than smaller firms to report access to finance as a business constraint. Moreover, businesses entering foreign markets require significant initial funding to cover internationalisation costs (Akoto and Adjasi, 2021), which supports the experiences of processors who require longer working capital cycles of 24-36 months, as opposed to the typical 12 months provided by banks. future AfT projects in Nigeria should tailor their interventions to include financial incentives, credit access, capacity building, financial literacy, and management skills in one package.

Similarly, the infrastructure challenges noted by respondents are corroborated by Hendy and Zaki (2021), who quantify the notable reduction in export value caused by transit delays. They contend that administrative barriers can account for 2-15% of the value of traded goods, confirming the experiences of respondents who reported encountering multiple checkpoints and informal payments. Furthermore, the density and redundancy of administrative procedures can cost 2-15% of traded goods' value, and underline the need for simplification, modernisation, and harmonisation of export and import processes. In addition, the efficiency of transport and logistics services is crucial for enabling firms to export goods and services effectively (Gani, 2017). Administrative barriers, like delays in inland transit, substantially decrease the export value for time-sensitive goods (Hendy and Zaki, 2021).

Corruption in loan disbursement and regulatory agencies highlights wider institutional challenges noted in the literature. The existence of portfolio farmers overshadowing legitimate businesses corresponds with studies on institutional deficiencies in the agricultural sectors of developing economies. According to Muhammad and Melemi (2023), institutional corruption can erode formal lending frameworks, especially creditworthiness criteria. The 5Cs of creditworthiness include character, capacity, capital, conditions, and collateral (Oseni, 2023). *Character* refers to the applicant's credit history, and *capacity* indicates the borrower's income-to-debt ratio. *Capital* involves checking the capital used for investment, that is, when a client owns a business or borrows through an organisation, it is necessary to assess how much of the client's money is in the business. *Collateral* refers to an asset used to secure a loan.

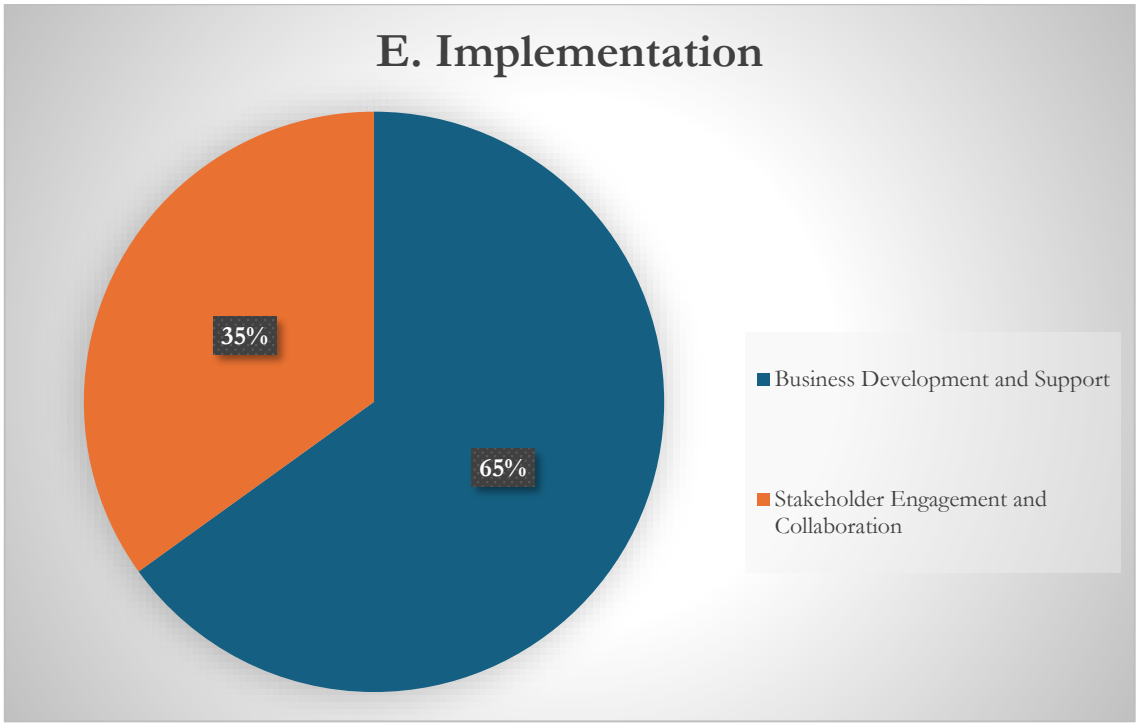
Conditions refer to the expected return during or at the end of the investment period (Muhammad and Melemi, 2023), corroborating the BOI representative's account.

Furthermore, inadequate storage facilities and prolonged wait times affect product quality (Salawu and Ghadiri, 2022). The processing and value addition shortfalls, along with the transportation challenges identified by respondents, underscore the wider supply chain vulnerabilities explored in recent literature. These routing difficulties also have phytosanitary implications, as product quality declines due to poor storage and extended wait times.

However, it is noteworthy that the COVID-19 pandemic further disrupted global supply chains and logistics. The global economic crisis triggered by the COVID-19 pandemic profoundly affected the sustainable growth of supply chains. Seaports, which played a fundamental role in connecting marine supply chains, were also affected by the changes, leading to the closure of several of them (Salawu and Ghadiri, 2022). In a general view, all the issues mentioned above are interrelated in that ineffective export policies and corruption can affect infrastructural development and access to finance. Similarly, access to finance has implications for processing and value addition. The overarching effect is a delay in export processes and increased time and cost of trading. This can be addressed by improving connectivity and the fluidity of trade and investment along supply chains, thereby promoting transfers of capital, knowledge, and skills, and socio-economic upgrading will

stimulate trade. Therefore, developing countries, notably the least developed ones, need technical and financial support to compete in international markets and realise their trade potential. Many developing country firms cannot enter global markets due to outdated infrastructure, limited access to trade finance, high compliance costs, and lengthy border procedures (Hynes and Lammersen, 2017).

5.6.2. Implementation - What key activities and significant milestones were accomplished to ensure expanded export support?



Note: 83 responses were obtained for this question.

Figure 25. Key activities and milestones accomplished to ensure expanded export support.

The project's success relied on two main strategies that worked in tandem. Business development and support (65%) and stakeholder engagement (35%).

The business development support activity was a successful strategy according to respondents. Cashew processors described how training sessions, workshops, and networking

opportunities changed their operations substantially. These activities not only introduced them to new methods and ideas but also created valuable connections that helped them expand their businesses. A processor narrated:

> *They have helped us; they've linked us up; USAID has done a lot for us regarding the workshop we attended and even linked us with buyers in America. It is USAID that linked me with the buyer in America. I'm happy about that. I learned a lot during the annual conferences in which they underwrite the bill. Every year, you get to see new machinery and processing companies, you get to see new partners, and then you get to see a lot of improvement in how you produce better quality cashew nuts. They ask you questions like: Do you have a problem with cashew processing or peelability? Do you understand the drying system? Etc. That was very educational and informative, and improved my network with many buyers.*

This sentiment was echoed by another processor, who noted that:

> *You know when you are doing something before, and you see someone who says, Okay, this is how to do it perfectly, you quickly grab it, and you quickly understand what the person is doing. Because you have been doing it the other way around before, and somebody says you can do it like this, it gives you more money, helps you improve your product, and gives you more recognition in the international market. So those are the areas, and I think we learned more, and it added value to our business.*

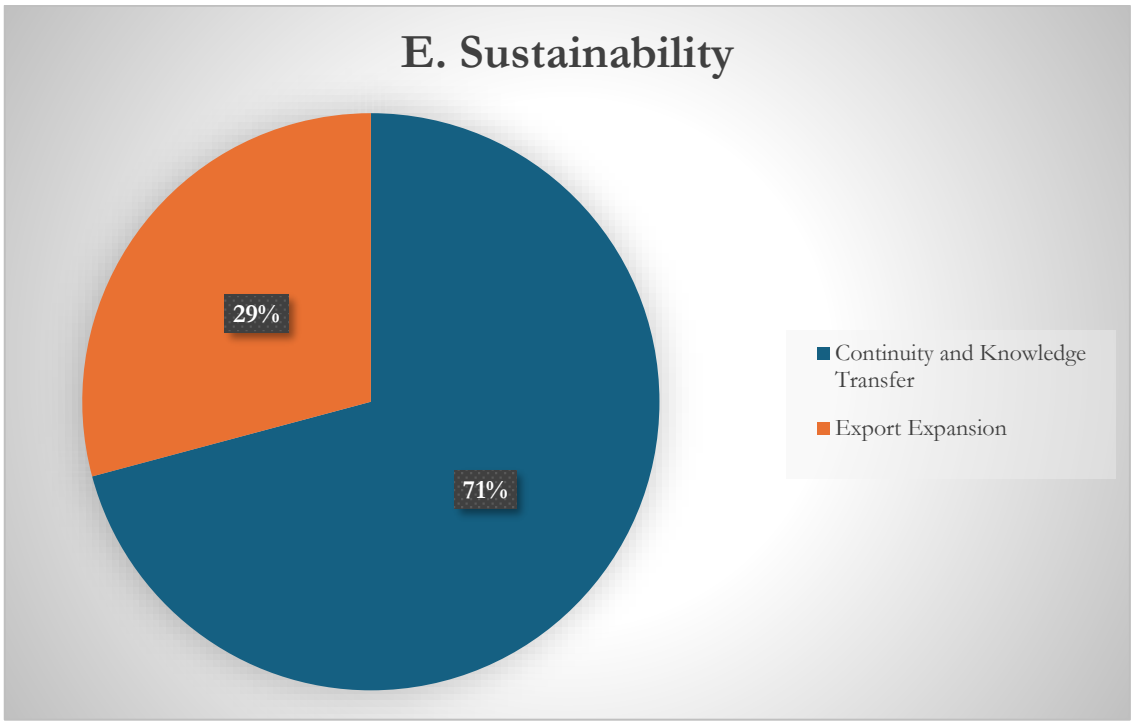
Nonetheless, the project's success was not solely a function of its business development and support activities. Equally crucial was its emphasis on stakeholder engagement and on building strong partnerships with local actors to ensure the relevance, effectiveness, and sustainability of its interventions. As one implementer noted, *'We had a terrific team of technical experts, and the private sector recognised them, took advantage of them, and acted on what we gave them. Because of that, things went very well.'*

This collaborative approach was based on extensive involvement with the local community. It was also pertinent to the project's success in navigating the peculiarities of Nigeria's trade environment. Working closely with stakeholders to understand their needs, challenges, and priorities allowed the project to tailor its interventions to the specific realities on the ground, ensuring that its support was not only relevant but also actionable. This approach, which involves local stakeholders in export promotion activities, increases the relevance and impact of such initiatives (Dornelas and Carneiro, 2018). Strong local partnerships increase buy-in and resource mobilisation, making export initiatives more viable (Ordonez-Ponce *et al.,* 2021). Therefore, engaging local stakeholders allows trade projects to adapt to the local business environment and ensure that solutions are both contextually appropriate and effective (Hiller *et al.,* 2016; Kananura *et al.*, 2017).

According to Mota et al. (2021), export services such as seminars, market analysis, and trade fair participation are valuable for businesses looking to develop export strategies, increase visibility, and enter new markets. They provide firms with relevant information that can help them navigate export procedures as well as overcome market entry and financing challenges. The NEXTT project's Business development support activities such as workshops, conferences, and networking opportunities were highly praised by the respondents. They reported that training and networking helped them gain the necessary skills, improve product quality, and increase their market presence. Similarly, small businesses greatly benefit from non-financial services like Business Development Services (BDS). These services assist businesses in increasing efficiency, product quality, and competitiveness, all of which are essential for successful export ventures. Training and support activities also help businesses meet international standards and improve their production processes, making them more appealing to foreign buyers. While financing is necessary, providing requisite non-financial services, such as Business Development Services, is integral for developing small businesses (Kazungu, 2023).

While firms have the primary responsibility for developing the skills, knowledge, and experience needed for successful exporting, external partnership programs can offer the external support needed to help firms obtain the information, knowledge, experience, and resources required to create an export strategy that leads to improved performance (Jaiswal, 2023). Despite the issues with the business environment in Nigeria, the NEXTT project seemed to have excelled in the export Support component of the project, with processors, implementers, and other government officials alluding to this fact. Most participants highly praised the business development and support objectives in market linkage, training and capacity building, and connection to funding.

5.6.3. Sustainability - To what extent have the results and outcomes of the expanded export Support component been maintained following the project's completion?



Note: This question had 25 recorded responses.

Figure 26. The extent to which results and outcomes of the expanded export Support component have been maintained following the project's completion.

Two factors were identified as crucial for sustainability: continuity and knowledge transfer (71%), and export development (29%). The former serves as a precursor to the latter; continuing the business development activities learned during the project and transferring the knowledge would improve firms' export performance.

The impact of knowledge transfer is best illustrated through the experiences of the exporters themselves. They spoke about how well the project's training and support impacted their operations. One exporter's account details the shift in practices catalysed by the project:

> *Before the training, we load whatever we want to ship in a trailer. We get the trailer, buy brand paper to locate the trailer, and then we load our cartons. The carton of cashews is boxed in 22.68 kg, and a 12-foot container takes 680 to 700 cartons. So, we just loaded the trailer full of 680 or 700 cartons to Lagos. When it gets to Apapa, we transfer it into the container. But after the training, we started bringing down the container to the factory. So, whatever we want to do, we load everything in the factory in the container, which is locked, and then transport it to Lagos directly. So, we no longer use the trailer. After receiving the training, we brought the empty container to our factory in Ilorin. Then we loaded it, and all the inspection was done here. Maybe just a few inspections will be done in Lagos because they know the container arrived from Ilorin. So that's the changes I saw after that training.*

Interestingly, the impact of knowledge transfer extended far beyond individual firms. As one implementer noted, once the project established buyer-seller linkages, these business relationships grew naturally on their own:

> *You now learn that the exporters we worked with at the time now consider it a duty to attend international trade shows where they can meet directly with buyers of their products. So, what we used to do at the time was gather them together and put them in groups and such. What you can see now is that various associations are doing this. So, the exporters go independently once they learn about the international trade shows and other events. We introduced these things to them at that time, and they have carried on as cogent or critical components of their business.*

Although export development was mentioned less frequently in the responses, it remained an integral element in ensuring the project's lasting impact. As one respondent noted, the project's impact on the trading system was undeniable:

> *In short, the NEXTT project has been one of the best projects USAID has funded in the country because it secured counterpart funding from commercial banks and different financial institutions. Today, you can look back and see some of those projects having export possibilities—not even possibilities; they are already exporting to the US because NEXTT created what we call market linkages.*

Perhaps the most striking example of this impact was the project's role in brokering a landmark trade agreement between the Vietnamese and Nigerian cashew industries. As one implementer recounted:

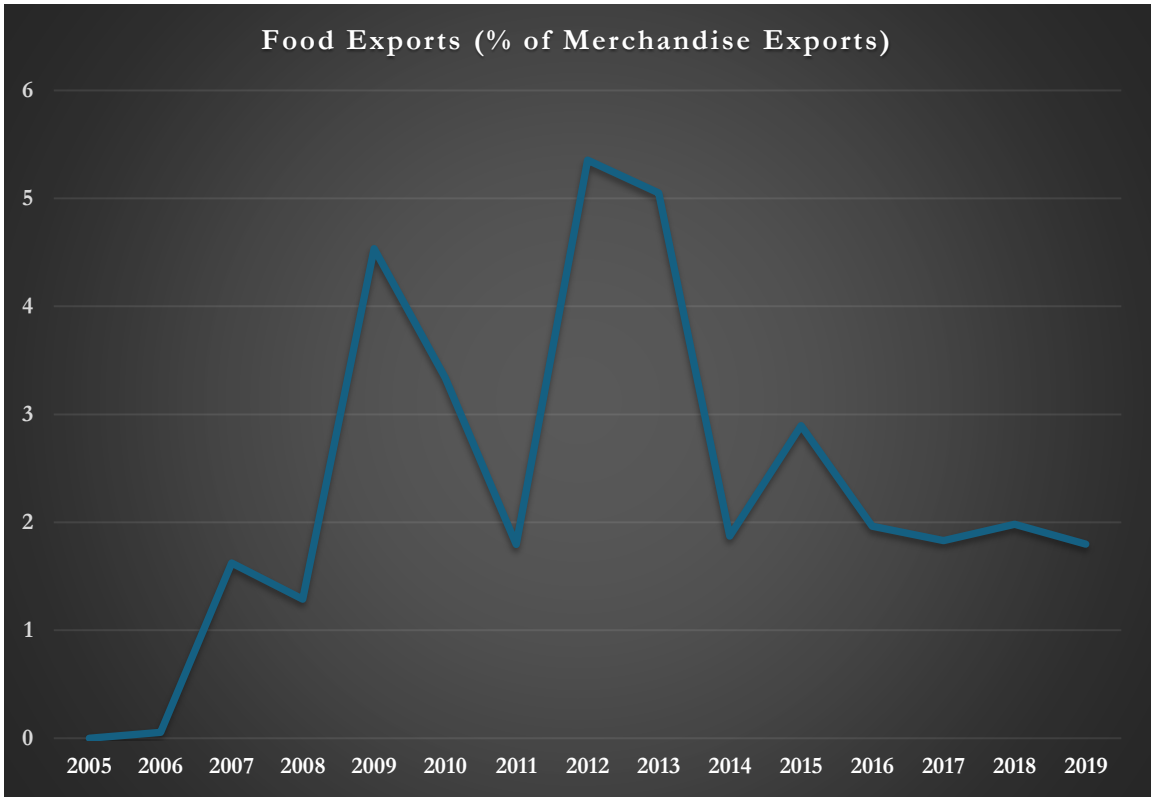
> *We realised that there was a need to introduce Nigerian cashew exporters directly to the international market. So, we decided to do a buyer-seller linkage. We realised that the Vietnamese, even though they were the largest producers of cashews at the time, were also the major importers of cashews. They were also the major exporters to America. So, we engaged the Vietnamese Cashew Association and planned with them a B2B that encompassed direct buyer-seller linkage. We also went through a session on quality improvements and export processes, and procedures. Exporters were taught quality parameters and how to do their quality testing. And we did this tour with NEPC, the Cashew Association, as well as five lead exporters of cashew from Nigeria. At the end of that event, the Vietnamese Cashew Association for the first time signed an MOU with the Nigerian Cashew Association for the supply of, I think, 103,000 - 106,000 metric tons of cashew from Nigeria. That was unprecedented. Because of everything that the exporters learned during the B2B sessions and the tour, they came back and implemented everything. They have now started to do the quality testing here from Nigeria. Before they even accept cashews from the local buying agents or local commodity traders, they would do testing and see the quality before even thinking of exports.*

Nonetheless, as stated in the Final Evaluation Report (2017), verifying any claims made by beneficiaries was challenging, and it is difficult to determine whether the increase in export figures was due to the Naira's weakness, which made Nigeria's exports more appealing, or the intervention. Although the lower value of the Naira may have influenced some export figures, the activity's B2B linkages and training created an environment where businesses could take advantage of the weaker Naira and export quality goods.

Long-term impact requires knowledge transfer and institutional capacity building (Haddoud *et al.,* 2017; Malca *et al.,* 2020), as revealed by the findings. Many exporters have reported implementing the quality control procedures and improved container loading methods they learnt during the NEXTT business development activity.

Also, export promotion programs are most effective when they help businesses develop and maintain global business networks (Costa et *al.,* 2017; Ahmed and Brennan, 2019). The NEXTT project demonstrated this through effective buyer-seller relationships, as evidenced by the Vietnamese-Nigerian cashew trade agreement, which allowed for exports of over 100,000 metric tonnes. However, it is impossible to attribute export growth solely to EPPs due to the presence of other economic factors (Traiyarach and Banjongprasert, 2022). For instance, currency depreciation made it more difficult to determine how the NEXTT project specifically impacted export performance.

To contextualise these findings further, Nigeria's food export performance during the project period is examined.



Source: World Development Indicators (2024)

Figure 27. Food Export Trends Data for Nigeria from 2005 to 2019.

Nigeria's food exports as a percentage of total merchandise exports fell from 5.5% in 2012 to 1.8% in 2015, recovering only partially to 2.0% in 2019. This was the export context in which the NEXTT project was implemented. Despite the overall decline, the project's targeted interventions in specific food value chains yielded measurable sector-specific gains. According to the NEXTT final evaluation reports, cashew exports increased from $100 million to $250 million between 2015 and 2016, demonstrating how targeted capacity building, market linkages, and business support initiatives could assist exporters in navigating the challenging export environment. This trend suggests that, while the NEXTT project operated within national constraints, its targeted interventions addressed some of the broader challenges that Nigerian food exporters faced.

5.6.4. Implications for the Theory of Change

The expanded export Support component not only strongly supports the ToC but also clarifies how its mechanisms operate in practice. The interviews confirm the ToC's main argument that specific interventions such as technical assistance, certification support, and market connections effectively enhance export capacity and market access. According to the respondents, these activities improved competitiveness in the cashew, cocoa, and sesame value chains. They also explain how broader economic and policy factors affect project outcomes, as evident in the ToC's recognition of policy environment and economic stability as contextual factors. While the project successfully improved market connections and export readiness, SMEs' growth potential remained constrained due to limited access to finance. This confirms the ToC's identification of economic conditions as a key moderator, and it demonstrates how these conditions influence export performance.

Notably, PPPs proved to be invaluable for sustaining export activities, supporting the ToC's emphasis on stakeholder engagement. The durability of market linkages and technical assistance often depends on partnerships with industry groups, government agencies, and international buyers. The Vietnam-Nigeria cashew agreement exemplifies how strategic partnerships create durable trade relationships. Additionally, institutional alignment, as stressed by respondents, validates the ToC's focus on governance quality. Success in improving export standards and certification processes depended heavily on cooperation between regulators and businesses. Strong alignment between institutions produced positive outcomes, while poor coordination or conflicting regulatory requirements caused bureaucratic delays. This supports the ToC's identification of governance structures as a major determinant of the project's success.

However, the interviews revealed how the influx of AfT may inadvertently encourage rent-seeking behaviour. Several respondents described cases in which people created fictitious businesses (portfolio farmers) to gain access to donor funds. Others described instances in which funding intended for farmers was diverted by politically connected actors. These patterns suggest that AfT, when linked to concessional loans or foreign currency, may unintentionally promote corruption (Svensson, 2000; Alesina and Weder di Mauro, 2002). While such governance failures may not be

visible in macro-level data, they can distort implementation and have an impact on project outcomes that fixed effects models do not account for (Burnside and Dollar, 2000).

The evaluation also explains the relationship between export readiness and market access, which supports the ToC's logic of linking capacity building to market access. Successful exporters used their initial market connections to identify exact quality requirements, which then guided their upscaling. Importantly, the findings show that benefits spread beyond direct participants, confirming the ToC's assumption of adoption and usage. As early adopters improved their practices and became successful, other businesses adopted similar practices that created efficiency improvements across the value chains. This horizontal knowledge sharing demonstrates how the project's knowledge transfer magnified its effects far beyond direct participants through the widespread adoption of improved practices.

5.7. Conclusion

Looking at the evaluation results across all three project components, there are interconnected relationships that validate the ToC's core causal pathways. The institutional constraints discussed in Chapter 3 also affected trade policy reforms and export promotion activities, though the extent of their impact varied considerably among components. This study confirms what the ToC predicted about how governance structures and institutional coordination shape outcomes, while also revealing significant differences in how these contextual factors influenced each project component.

The LAKAJI Corridor component demonstrates how institutional and regulatory factors shape Nigeria's trade costs, which supports the ToC's prediction that governance and policy environments influence project outcomes. For example, corruption, bureaucracy, and regulatory fragmentation hampered efforts to reduce trade costs through institutional reforms and infrastructure upgrades. In contrast to DevTech Systems Inc.'s evaluation, which found no infrastructure improvements and only mentioned "unregulated taxation," this evaluation reveals more serious issues, such as goods left stranded for weeks and entrenched corruption. The findings on stakeholder

engagement only partially support Palladium International's assessment, revealing varying effectiveness and limited government commitment while contradicting previous claims of successful engagement.

Though some sustainability strategies produced positive results, officials' accounts of poor institutional memory indicate that limited knowledge transfer hampered long-term success. The findings support the macro-level findings from Chapters 2 and 3. Despite infrastructure investments, trade costs remain high, possibly due to implementation inefficiencies or unobserved contextual factors (Calì and te Velde, 2011a; Busse, Hoekstra and Königer, 2012). However, AfT has the potential to increase agricultural exports through productivity and market access (Moïsé *et al.*, 2013). The evidence also shows that AfT's success is dependent on jointly addressing physical infrastructure and institutional reform, which supports the ToC's emphasis on the interplay of infrastructure, governance, and trade performance.

Numerous coordination challenges were reported on the trade Policy component. These challenges echo the ones reported in the LAKAJI Corridor component. Although DevTech Systems Inc. (2018, p. 11) asserted that the project was "very successful in meeting the objectives of Component Two: improving trade policy and trade facilitation," 60% of respondents identified policy and institutional fragmentation as key impediments. Previous evaluations only mentioned these issues briefly and ignored how they may have derailed the project. Palladium International (2017, p. 9) also reported "transformative outcomes," but did not fully capture how electricity shortages obstructed automation or security concerns jeopardised trade facilitation goals. While DevTech Systems Inc. (2018, p. 37) gave details on "strategic, needs-based, and timely technical assistance," and claimed the project was "consistent with the needs of stakeholders" (p. 15), this evaluation reveals tensions in the project's demand-driven approach. Some participants viewed it as an "American initiative" with limited local ownership. Their account contradicts DevTech Systems Inc.'s (2018, p. 12) claim that stakeholder engagement improved operations and challenges Palladium International's (2017, p. 5) portrayal of enduring public sector partnerships.

By contrast, the expanded export Support component showed greater resilience to institutional barriers, supporting the ToC's claim that stakeholder commitment and private sector engagement can improve outcomes even in challenging settings. Despite receiving the lowest allocation of total funding (16.5%), this component produced the strongest results, indicating that well-targeted, stakeholder-driven efforts can outperform more resource-intensive ones. The findings are consistent with DevTech's claim that the project was "very successful in facilitating export expansion" and Palladium International's (2017, p. 14) claim that "NEXTT's support to firms, associations and other trade bodies has contributed directly to US$80 million in exports."

However, this study goes a step further by describing the mechanisms that drove this success. While DevTech only mentioned working with NEPC on a buyer-seller meeting in Vietnam (2018, p. 11), one implementer described how they "recognised a crucial need to connect Nigerian cashew exporters directly with the international market," strategically building relationships that led to the Vietnam-Nigeria cashew agreement. The MoU demonstrates that targeted interventions can succeed when larger reforms fail. Though DevTech credited the Activity with exporting "130,000 MTs of cashew in 2016" (2018, p. 11), and Palladium International (2017, p. 30) mentioned new market links, this evaluation focuses on the strategies that enabled the reported success. Nevertheless, DevTech Systems Inc.'s (2018, p. 30) acknowledgement that the Naira devaluation may have inflated export figures provides necessary context for attribution.

As for sustainability, the findings both confirm and challenge the earlier claims. Continued business ties partially support DevTech Systems Inc.'s (2018, p. 13) view that "interventions will continue after the Activity ends," but the emphasis on knowledge transfer and continuity, accounting for 71% of sustainability responses, questions the assumption that institutional partnerships alone would guarantee sustainability. While Palladium International (2017, p. 2) cited partnerships with Nigerian organisations to drive reform, this evaluation found those efforts to be stalled by legal and funding constraints, casting doubt on their claim that NEXTT had "built sustainability into its design" (2017, p. 6).

This process evaluation complements and strengthens the macro-level findings presented in Chapters 2 and 3 by providing a project-level perspective on the relationships between infrastructure development, trade policy reforms, and export support. The varied outcomes across components offer contextual insight into Chapter 2's finding that AfT increased trade costs and Chapter 3's finding of positive effects on agricultural exports with no significant impact on manufacturing. The relative success of the export Support component aligns with Chapter 3's finding of positive agricultural export responses.

Chapter 6

6. Conclusion

This thesis analyses AfT effectiveness in Nigeria using a mixed methods approach that combines rigorous econometric analyses with a qualitative process evaluation. The methodology reveals the multidimensional relationships between AfT and export performance, demonstrating that AfT produces sector-specific results that vary considerably across economic contexts. The findings suggest that AfT outcomes are not uniform but rather influenced by sectoral heterogeneity, governance structures, and regional frameworks. They also stress the need to move beyond simplistic assumptions to more context-specific approaches when designing and evaluating AfT projects.

Specifically, it makes a significant contribution to the AfT literature by identifying important sectoral variations in AfT effectiveness in Nigeria. Chapter 2 established the "what" of the study by showing that, contrary to the prevailing notion that AfT reduces trade costs, AfT actually increased manufacturing trade costs and had no significant impact on agricultural trade costs. Chapter 3 addressed the "so what?" dimension by analysing the potential consequences of these findings. The results revealed that despite its negative effects on trade costs, AfT has a more positive impact on agricultural exports and no significant effect on manufactured exports, with some evidence of stronger effects within the ECOWAS region. This apparent contradiction between trade costs and export performance justified the need for the process evaluation conducted in Chapters 4 and 5 to understand the "why" and "how" of these results.

6.1. Sectoral Heterogeneity

The sectoral variations identified across the chapters reveal striking differences in how AfT impacts various economic sectors. Chapter 2's analysis showed that, contrary to the prevailing notion that AfT reduces trade costs, it increased manufacturing trade costs while having no significant impact on agricultural trade costs. Chapter 3, however, demonstrated that AfT had a positive and statistically significant impact on Nigeria's agricultural exports but showed no statistically significant effects on manufactured exports, with some evidence of enhanced effects within the ECOWAS

region. This pattern suggests that export performance can be improved through methods other than direct trade cost reduction. The disaggregated analysis revealed significant differences: Economic infrastructure aid had a negative baseline effect on manufactured exports, whereas productive capacity and trade policy aid had a positive impact. This component-specific variation underscores that AfT effectiveness depends not only on the sector but also on the type of intervention.

Both the quantitative and qualitative evidence underscore the indispensable role of supportive trade networks and sector-specific structural factors in shaping AfT effectiveness. The sectoral heterogeneity revealed in Nigeria's export patterns indicates that generic AfT interventions are likely to fail unless they are customised to the unique characteristics and needs of each sector. Fundamentally, this study illustrates that AfT's ultimate impact may be determined by a combination of project design, implementation quality, and sectoral responsiveness, with institutional and policy environments also influencing outcomes through mechanisms often not fully captured in quantitative analyses.

More importantly, the agricultural sector's positive response to AfT, despite persistent trade cost challenges, illustrates how sector-specific factors can enable export growth through alternative pathways such as productivity enhancements and improved market access. Without this complementary enabling environment, even well-designed interventions may fail to realise their full potential.

6.2. Temporal Dimensions: infrastructure time vs. quick wins

This study identifies significant temporal dimensions and complicated feedback loops in AfT effectiveness that defy conventional evaluation frameworks. The process evaluation found that infrastructure development efforts led to short-term disruptions, while targeted export promotion activities delivered more immediate benefits. This pattern is known as “infrastructure time”: the idea that collaborative infrastructure projects require extended periods to mature beyond initial adjustment costs before generating economic returns (Karasti *et al.,* 2010). The LAKAJI Corridor component exemplifies both this concept and its unintended consequences, as infrastructure improvements simultaneously reduced transit times while increasing regulatory scrutiny through

additional checkpoints (both formal and informal). These findings suggest that achieving broader economic gains from infrastructure investments necessitates long-term functionality and strategic planning, which could explain why AfT increased trade costs despite its goal of reducing them. These disruptions appear to be temporary side effects of infrastructure transformation, rather than evidence of a permanent deterioration in trade conditions (Mohanty and Bhanumurthy, 2019; Salim and Negara, 2019). The quantitative findings support these observations, with Chapter 2 demonstrating the delayed effects of infrastructure investments on trade costs and Chapter 3 capturing the more immediate response of agricultural exports to targeted AfT interventions.

Export promotion activities, such as skills training and business-to-business linkages, helped SMEs' entry into new markets and provided tangible benefits in less time. The Vietnam-Nigeria cashew agreement exemplifies this approach, as it quickly produced tangible export gains without necessarily depending on extensive system overhauls. Such immediate gains are necessary to build the required momentum and support for more substantive trade reforms (Hallaert, 2010). However, these early gains are insufficient to address the underlying systemic constraints in Nigeria. Limited access to finance and macroeconomic instability limit firms' ability to fully capitalise on AfT opportunities. Therefore, targeted AfT initiatives must be combined with relevant policies to address the underlying structural issues and achieve sustainable benefits.

6.3. Regional Integration and AfT Effectiveness

Another key finding from the study's quantitative and qualitative components is that regional integration frameworks have a significant impact on AfT effectiveness. The quantitative analysis revealed a stronger AfT impact on agricultural exports within ECOWAS, with the interaction analysis revealing that this regional advantage was more pronounced for economic infrastructure aid, which shifted from negative to positive effects within the ECOWAS framework. Trade policy aid, however, showed reduced effectiveness for regional trade, highlighting that regional integration affects different AfT components in distinct ways. The process evaluation, on the other hand, shows mechanisms that explain these regional disparities. Although extensive trade facilitation reforms were stalled by entrenched governance constraints, more targeted export promotion efforts succeeded by

building on existing networks and leveraging regional frameworks. Insofar as the fixed effects estimation controls for persistent structural features, differences in AfT impact across regions and sectors suggest that country-specific and sectoral implementation challenges may play a large role. These may include time-varying or context-specific inefficiencies that are not captured in macro-level data.

6.4. The Role of Public-Private Partnerships

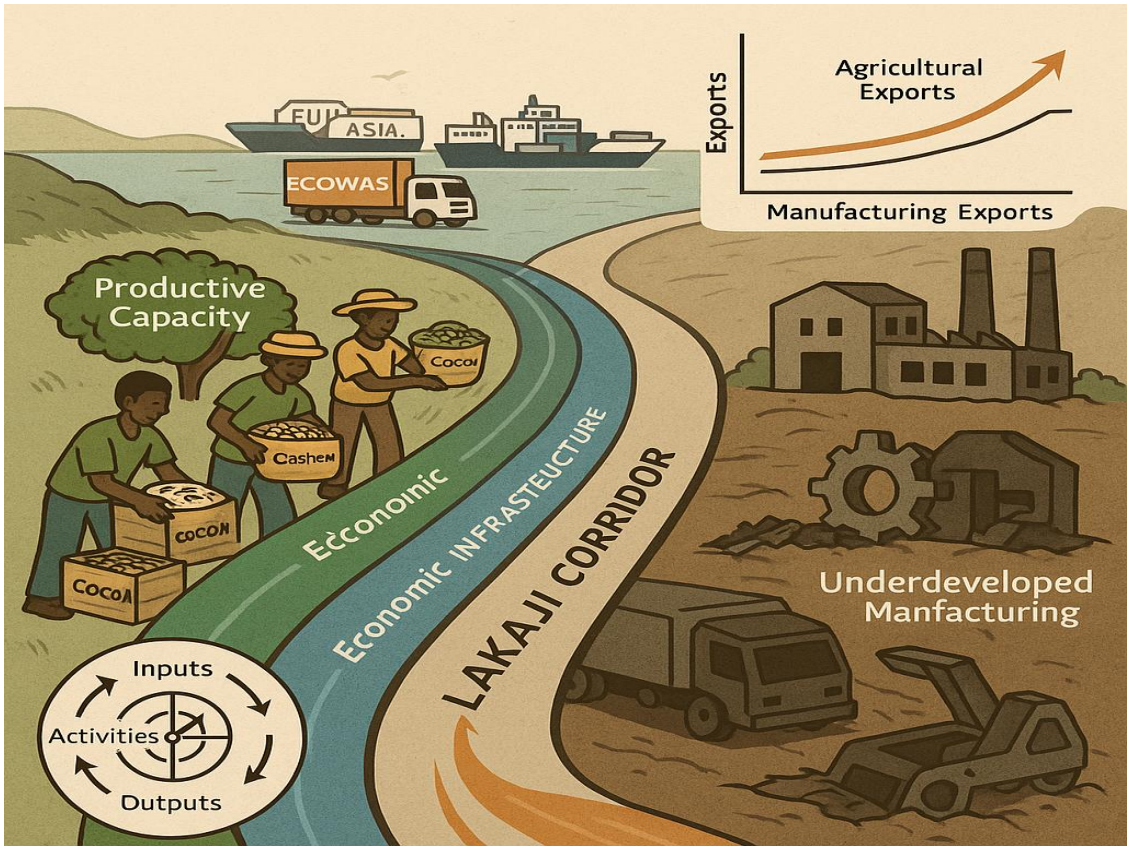
The process evaluation also reveals important findings about PPPs that were not captured in the quantitative analysis. Even though the LAKAJI Corridor component faced significant challenges in establishing effective PPPs due to regulatory barriers and capacity constraints, the Export Support Component successfully mobilised private sector networks to overcome institutional roadblocks. These contrasting experiences demonstrate that effective AfT implementation requires not only public infrastructure investment but also strategic mechanisms for engaging private sector actors in institutionally compatible ways. When effective, these partnerships serve as pivotal institutional bridges between government, industry, and donors, making implementation and adaptation seamless. Notably, the success of these partnerships often intersected with regional integration frameworks. For instance, ECOWAS membership provides standardised procedures and dispute resolution mechanisms that make PPPs more viable by reducing uncertainty for private sector partners (Olayiwola, 2012, 2022; Wang *et al.*, 2023). Future AfT programs should therefore prioritise both the construction of durable PPP frameworks and the strategic leveraging of regional integration mechanisms to enhance sustainability and cross-border trade efficiency.

6.5. The Aid for Trade Paradox

This thesis examines an apparent paradox in Nigeria's trade environment: despite substantial AfT inflows, the effects on trade outcomes are uneven and vary across sectors, destinations, and project types. Rather than producing uniform reductions in trade costs or consistent improvements in export performance, AfT operates through multiple channels that generate mixed and sometimes counterintuitive results.

The findings show that productive capacity and trade policy aid reduce specific elements of trade costs and strengthen agricultural export performance, while economic infrastructure aid is affected by implementation delays that weaken or offset expected gains in the short term. Similarly, AfT has stronger effects within ECOWAS markets than in global markets, meaning that regional institutions influence AfT effectiveness.

This pattern reflects context-dependent, sector-specific, and institutionally mediated outcomes. The "paradox" therefore lies in the coexistence of positive and limited impacts within the same policy environment. Rather than asking "Does AfT work?", the evidence suggests the more useful question is "Under what conditions, through which channels, and for whom does AfT work most effectively?"



Source: Generated by the Author using Google's Gemini

Figure 28. The Aid for Trade Paradox Visualised

The Nigerian experience reveals that even substantial financial commitments ($6.8 billion in AfT funding) cannot guarantee success without careful attention to local institutional realities and sector-specific constraints. The study essentially shows that AfT can simultaneously fail and succeed through different pathways, challenging fundamental assumptions about how development interventions work in practice.

6.6. Methodological Contributions

From a methodological standpoint, this thesis contributes valuably to the AfT effectiveness debate through its innovative mixed methods approach to AfT evaluation. It identifies complex impact mechanisms that may be invisible in single-method designs by combining quantitative estimation of trade costs and export performance with a process evaluation. The quantitative results reveal empirical patterns that highlight the importance of sectoral differentiation and challenge assumptions about uniformity in AfT's impact. They also situate these findings within their broader institutional context: This integrated framework offers a promising foundation for future research on the mechanisms and impact of major trade reforms.

More broadly, this study breaks new ground by opening up the black box of AfT implementation, using a theory-based process evaluation to demonstrate how trade facilitation efforts unfold in practice. The process evaluation reveals the numerous ways in which administrative hurdles, institutional fragmentation, and coordination failures can undermine AfT effectiveness. Agencies with overlapping mandates added extra layers of red tape for firms, while poor coordination among bureaucratic entities slowed the efficient flow of trade. These governance challenges highlight the limitations of a narrow focus on resource levels and imply that institutional misalignments can derail AfT projects irrespective of funding size. The export Support component is a clear case in point, having achieved the most success despite receiving only 16.5% of the project's total funding, the lowest allocation among all components. This underscores the fact that well-targeted interventions aligned with institutional realities can yield disproportionate returns on investment.

Furthermore, previous evaluations of the NEXTT project primarily focused on immediate outputs and outcomes; this evaluation expands on them by investigating longer-term impact and

revealing the institutional factors that mediated the project's impact. Unlike previous evaluations that were conducted by project stakeholders and focused on success metrics, this independent evaluation examined both accomplishments and limitations with equal rigour. The findings establish several key factors to consider for future AfT evaluations. These factors include extending evaluation timeframes beyond immediate project completion to capture delayed effects, using mixed methods approaches that can reconcile quantitative outcomes with implementation processes, and systematically assessing variations in effectiveness across sectors and regions.

6.7. Policy Implications and Recommendations

The findings have important implications for policymakers, development partners, and practitioners seeking to enhance AfT effectiveness in Nigeria and similar contexts. Across the empirical chapters, the results suggest that AfT is associated with lower trade costs, improvements in agricultural export performance, and support for institutional reforms. However, the effectiveness of these interventions depends on how they are designed, sequenced, and aligned with domestic institutions. Institutional constraints do not prevent progress, but they shape the types of interventions that are more likely to succeed. The recommendations below present practical, context-appropriate actions informed by the key findings of each empirical chapter.

6.7.1. Sector-Differentiated AfT Programming (Based on Chapter 2)

Chapter 2 showed that AfT is associated with higher trade costs in manufacturing, while the relationship with agricultural trade costs is weaker and not statistically robust. These differences reflect sector-specific constraints, regulatory requirements, and supply chain characteristics..

Policy actions:

1. Strengthen productive capacity and standards systems in manufacturing, where AfT shows clearer associations. Policy support could target quality upgrading, process improvements, and firm-level capacity development in export-oriented manufacturing activities.

2. Design agriculture-specific interventions that address bottlenecks such as delays affecting perishables, compliance challenges, and market access barriers. This may involve support for

storage facilities, certification processes, and agricultural extension services for export readiness.

3. Avoid implementing uniform AfT strategies across sectors. As shown in this study, sectoral needs and responsiveness differ significantly and require tailored approaches.

6.7.2 Align AfT with Regional Integration Priorities (Based on Chapter 3)

Chapter 3 found that AfT is more strongly associated with Nigeria's agricultural exports to ECOWAS countries than to non-ECOWAS destinations. This makes the case for the importance of regional integration and the potential for regional institutions to reduce non-tariff barriers.

Policy actions:

1. Strengthen Nigeria's participation in ECOWAS trade facilitation efforts, ensuring that AfT programs complement regional initiatives (such as the AfCFTA) aimed at simplifying cross-border movement of agricultural goods.

2. Support the harmonisation of standards and certification within ECOWAS since AfT seems to align more effectively with export performance when regional regulatory environments are supportive.

3. Prioritise interventions that address constraints along regional trade corridors, especially those that affect agricultural exporters who depend on predictable and efficient routes.

6.7.3 Address Institutional Fragmentation and Improve Coordination (Based on Chapter 4)

Chapter 4 indicated that fragmented responsibilities and overlapping agency roles contributed to delays in implementation. Components of the NEXTT project that aligned with existing institutional structures and utilised capacities already present within government agencies achieved comparatively smoother progress.

Policy actions:

1. Strengthen coordination mechanisms among trade-related agencies by clarifying roles, improving communication, and reducing duplication in regulatory and operational procedures.

2. Design AfT interventions that align with agency mandates, ensuring that responsibilities match institutional capacity and priorities.

3. Support capacity building in key institutions, particularly those involved in standards, customs, and export promotion, in order to enhance their ability to deliver AfT-supported reforms.

6.7.4 Sequence AfT Interventions Appropriately (Based on Chapter 5)

Chapter 5 highlighted the importance of sequencing interventions. In the NEXTT project's case, activities that targeted immediate, practical challenges generated quicker results, while reforms requiring coordination across multiple institutions or involving large-scale infrastructure experienced delays.

Policy actions:

1. Start with high-impact, short-term interventions such as export readiness support, training, and market linkage activities, which can generate early results and build stakeholder confidence.

2. Introduce broader institutional reforms only after initial momentum has been established, allowing early achievements to support more complex initiatives.

3. Set realistic timelines for infrastructure or multi-agency reforms, recognising that such interventions face structural delays that may not be fully mitigated by design improvements.

6.7.5 Strengthen Local Ownership and Institutional Alignment (Based on Chapter 5)

The qualitative findings indicate that project sustainability could have been achieved if local agencies played a central role in decision-making during the planning phase. Projects that stakeholders perceive as externally imposed usually face resistance or lack continuity.

Policy actions:

1. Ground AfT project design in substantive consultations with implementing agencies, ensuring that objectives reflect local priorities rather than external assumptions.
2. Embed sustainability measures within implementation through mentorship, documentation, and training components that promote continuity after donor exit.
3. Encourage domestic leadership of AfT initiatives so that agencies maintain ownership of decision-making processes and long-term planning.

6.7.6 Strengthen Transparency and Programme Accountability

Across the empirical chapters, weak coordination and limited oversight were identified as recurring barriers to AfT effectiveness. Improved transparency and accountability can reduce delays, limit discretionary decision-making, and support more efficient use of AfT resources.

Policy actions:

1. Expand digital systems for tracking trade procedures and project implementation, which can reduce administrative uncertainty and enhance public oversight.
2. Promote independent monitoring of AfT-supported reforms, particularly for interventions involving multiple agencies or complex procedures.
3. Develop clear reporting frameworks that document progress, identify bottlenecks, and improve communication between donors and government agencies.

Taken together, these recommendations underscore that effective AfT programming requires sector sensitivity, regional engagement, institutional alignment, and sustained local ownership. Although, Nigeria has its institutional constraints, the findings suggest that progress is possible when

interventions build on existing capacities, reflect local priorities, and are sequenced strategically. Applying these evidence-based practices can strengthen AfT outcomes and support Nigeria's broader objectives for trade-led development.

6.8. Limitations and Future Research

Despite the methodological rigour of this analysis, it has some limitations. First, the fixed effects estimations in Chapters 2 and 3, though accounting for time-invariant characteristics, may fail to account for time-varying governance distortions or policy shocks that occur alongside AfT inflows. Although these fixed effects models control for institutional factors, qualitative evidence points to time-varying governance distortions that may operate through unobserved channels. This suggests the presence of omitted variable bias rather than a direct causal relationship. For instance, the interviews revealed that there are instances when fictitious businesses are created to obtain aid, implying that AfT may occasionally exacerbate corruption in weak institutional contexts. These time-varying factors are not directly observable in the model, but they may contribute to the nonlinear relationship between AfT and their intended outcomes.

Second, the inherent complexity of trade facilitation processes can make it difficult to determine precise causal relationships and attributions. Nevertheless, the use of process evaluation alongside econometric analysis provides one of the most comprehensive assessments of AfT to date in the Nigerian context. Third, the evaluation timeframe may also not adequately capture slower-moving institutional effects. Although the mixed methods design is a strong basis for understanding cause-and-effect relationships, it is still difficult to separate the project's impact from broader economic changes. The coincidence of the 2015–2016 Naira devaluation with project implementation represents a significant confounding factor that, despite the econometric controls, limits definitive causal attribution of export gains solely to AfT. This analysis, however, provides compelling insights into the primary drivers and mediators of AfT performance by systematically triangulating evidence from various sources and methodologies.

Future research could build on this study by employing longitudinal designs to track the institutional impact of AfT over longer periods. Comparative analyses across national contexts would

also be useful in understanding how different economic and political structures influence AfT effectiveness. Additional research into the specific mechanisms by which regional frameworks improve AfT outcomes may yield generalisable policy and practical insights.

6.9. Final Reflections

To conclude, this study presents new evidence that AfT effectiveness is determined not only by resource levels or intervention design, but also by the not-so-straightforward interactions between project inputs, institutional parameters, and economic structures. Realising AfT's promise requires moving beyond standard best-practice models to craft interventions that are carefully tailored to national and regional implementation realities. Donors and implementers can maximise their impact by prioritising institutional and sectoral differentiation, adopting adaptive multi-phase designs, and investing in cross-cutting coordination capabilities. Ultimately, achieving AfT's potential to drive inclusive trade and growth across the continent will hinge on policymakers' ability to translate these findings into proactive, context-specific AfT strategies that align with local institutional realities and sectoral needs.

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8. Appendix

Appendix A: Summary of control variables for agricultural export models

Below are the control variables results for Tables 10, 11, and 12 regressions.

Appendix A1: Control variables used in regression models reported in Table 10.

VARIABLES	(1) lexports	(2) lexports	(3) lexports	(4) lexports	(5) lexports	(6) lexports
lgdp_d	0.53***	0.20	0.45**	0.53***	0.10	0.36*
	0.02	0.26	0.22	0.02	0.25	0.22
ldist_av	-0.62***			-0.63***		
	0.05			0.05		
contig	0.86***			0.86***		
	0.11			0.11		
comlang_ethno	0.27***			0.28***		
	0.05			0.05		
wto_d	0.25**	-0.22	-0.03	0.25***	-0.25	-0.06
	0.10	0.35	0.34	0.10	0.35	0.34
ecowas_d	1.02***			1.02***		
	0.08			0.08		
year	0.61***	0.50***	0.51***			
	0.15	0.14	0.10			
lgdp_o	-8.86***	-7.15**	-7.37***			
	2.91	2.85	1.99			
lreer	8.74***	7.33***	7.52***			
	1.81	1.69	1.21			
lagprod_value_o	-10.86***	-8.60***	-8.93***			
	1.30	1.24	0.89			
Observations	10,811	10,817	10,817	10,811	10,817	10,817
R-squared	0.33	0.29	0.05	0.33	0.30	0.06
Fixed Effects	Product	Partner Country	Partner-Product Pair	Year & Product	Year & Partner Country	Year & Partner-Product Pair

*** p<0.01, ** p<0.05, * p<0.1

Appendix A2: Control variables used in regression models reported in Table 11.

VARIABLES	(1) lexports	(2) lexports	(3) lexports	(4) lexports	(5) lexports	(6) lexports
lgdp_d	0.52***	0.25	0.55**	0.53***	0.05	0.35
	0.02	0.25	0.22	0.02	0.24	0.22
ldist_av	-0.62***			-0.63***		
	0.05			0.05		
contig	0.87***			0.87***		
	0.11			0.11		
comlang_ethno	0.27***			0.28***		
	0.05			0.05		
wto_d	0.25**	-0.23	-0.04	0.25**	-0.24	-0.06
	0.10	0.35	0.34	0.10	0.36	0.34
ecowas_d	-0.89			-0.75		
	0.68			0.68		
year	-0.13	-0.03	-0.06			
	0.08	0.09	0.06			
lgdp_o	5.10***	2.86	3.32***			
	1.58	1.95	1.20			
lreer	-1.20	0.07	-0.11			
	0.76	0.90	0.59			
lagprod_value_o	-4.19***	-3.72***	-3.76***			
	0.67	0.57	0.43			
Observations	10,811	10,817	10,817	10,811	10,817	10,817
R-squared	0.32	0.29	0.05	0.33	0.30	0.06
Fixed Effects	Product	Partner Country	Partner-Product Pair	Year & Product	Year & Partner Country	Year & Partner-Product Pair

*** p<0.01, ** p<0.05, * p<0.1

Appendix A3: Control variables used in regression models reported in Table 12.

VARIABLES	(1) lexports	(2) lexports	(3) lexports	(4) lexports	(5) lexports	(6) lexports
lgdp_d	0.53***	0.14	0.44**	0.53***	0.04	0.35
	0.02	0.25	0.22	0.02	0.24	0.22
ldist_av	-0.62***			-0.63***		
	0.05			0.05		
contig	0.87***			0.87***		
	0.11			0.11		
comlang_ethno	0.27***			0.28***		
	0.05			0.05		
wto_d	0.25**	-0.23	-0.05	0.25***	-0.26	-0.08
	0.10	0.38	0.34	0.10	0.37	0.35
year	0.60***	0.50***	0.50***			
	0.15	0.14	0.10			
lgdp_o	-8.75***	-7.11**	-7.35***			
	2.91	2.86	1.99			
lreer	8.66***	7.32***	7.51***			
	1.81	1.69	1.21			
lagprod_value_o	-10.79***	-8.59***	-8.92***			
	1.30	1.24	0.89			
Observations	10,811	10,817	10,817	10,811	10,817	10,817
R-squared	0.33	0.29	0.06	0.33	0.30	0.06
Fixed Effects	Product	Partner Country	Partner-Product Pair	Year & Product	Year & Partner Country	Year & Partner-Product Pair

*** p<0.01, ** p<0.05, * p<0.1

Appendix B: Participants Interview Schedule

Below are the interview protocols for each major component and the key stakeholder groups. The guides were tailored to the evaluation themes: context, implementation, and sustainability.

Appendix B1: LAKAJI Corridor Improvement Interview

Interview Schedule

Opening statement: Hello, my name is Nafeesat Rabiu-Adebayo. I am going to discuss the NEXTT project with you. I will ask you to tell me about your job responsibilities and the tasks that you perform in the ministry. I will also ask you about Nigeria's trade and agricultural commodities exports. I am interested in hearing your thoughts and opinions about the NEXTT project on the basis of its alignment with Nigeria's political and socio-economic context, its implementation, and sustainability. There are no right or wrong answers. You can choose not to answer any question at any time. Do you have any questions about how your responses will be used? Do you have any other questions about what we are doing here?

Question Type	Questions asked and probes
Opening	Question: What is your role in your organisation? Probe: Have you always worked in your current role? How long have you worked here?
Introductory	Question: What would you like to know about me and my research? Probe: How do you feel about me being here? What do you think about participating in this research?
Transition	Question: What role did you play in the NEXTT project?
Key	Questions: 1. To what extent has Nigeria's context influenced trade and transportation services demand along the Lakaji Corridor?

Probes:

- Can you describe the various factors (economic, social, and political) that have influenced the demand for trade and transportation services along the Lakaji Corridor?
- How has demand for trade and transportation services along the Lakaji Corridor changed since NEXTT was implemented?
- To what extent do you believe external factors, such as regional trade agreements or global market trends, influence demand for trade and transportation services along the Lakaji Corridor?
- What, in your opinion, could NEXTT do differently in the future to better respond to the demand for trade and transportation services along the Lakaji Corridor?
- How successful has the project been in meeting the demand for trade and transportation services along the Lakaji Corridor, and what factors have contributed to this success or failure?
- How has the project's approach to addressing Nigeria's trade capacity challenges differed from other similar projects in the region, and what lessons can be drawn from this experience?

2. How well did the project adapt to changing circumstances and emerging needs during its implementation?

Probes:

- Did NEXTT show flexibility and adaptability in response to changing circumstances and emerging needs during its implementation, in your opinion?
- Were there any opportunities for NEXTT to be more proactive in responding to changing circumstances and emerging needs during its implementation? What were they, if so?
- How well did the project's budget and resources allow it to adapt to changing circumstances and emerging needs, and were there any limitations or constraints that hampered its ability to respond effectively?
- What lessons can be drawn from the project's experience in adapting to changing circumstances and emerging needs, and how can these lessons be applied to future projects tackling similar issues?

	3. To what extent have the improvements made to the Lakaji Corridor infrastructure been sustained after the NEXTT project's completion, and what steps have been taken to ensure the infrastructure's continued maintenance and upkeep following the COVID-19 pandemic? Probes: • Has the infrastructure of the Lakaji Corridor deteriorated or fallen into disrepair following the completion of the NEXTT project? If so, what contributed to the deterioration? • Can you provide examples of any ongoing maintenance or repair work done on the Lakaji Corridor infrastructure since the NEXTT project's completion, and how this work has been funded and organised to ensure sustainability? • How has the COVID-19 pandemic affected the Lakaji Corridor infrastructure's maintenance and upkeep, and what steps have been taken to ensure that the infrastructure remains functional and accessible during this time? • Can you describe any measures put in place to ensure that the improvements made to the Lakaji Corridor infrastructure are maintained and sustained after the NEXTT project is completed? • What challenges or limitations have been encountered in maintaining the Lakaji Corridor infrastructure improvements, and how have these challenges been addressed?
Summary	Question: Based on what you have told me, it sounds like... Is that correct?
Closing	Question: Do you wish to add anything?

Appendix B2: Trade Policy and Trade Facilitation Interview

Interview Schedule

Opening statement: Hello, my name is Nafeesat Rabiu-Adebayo. I am going to discuss the NEXTT project with you. I will ask you to tell me about your job responsibilities and the tasks that you perform in the ministry. I will also ask you about Nigeria's trade and agricultural commodities exports. I am interested in hearing your thoughts and opinions about the NEXTT project on the basis of its alignment with Nigeria's political and socio-economic context, its implementation, and sustainability. There are no right or wrong answers. You can choose not to answer any question at any time. Do you have any questions about how your responses will be used? Do you have any other questions about what we are doing here?

Question Type	Questions asked and probes
Opening	Question: What is your role in the ministry? Probe: Have you always worked in your current role? How long have you worked here?
Introductory	Question: What would you like to know about me and my research? Probe: How do you feel about me being here? What do you think about participating in this research?
Transition	Question: What role did you play in the NEXTT project?
Key	Question: 4. How did Nigeria's unique economic, political, and social contexts affect the effectiveness of the project's trade policy and trade Facilitation component? Probes: • Can you provide examples of successful trade policy or trade facilitation interventions implemented as part of the project, despite the difficulties posed by Nigeria's unique economic, political, and social contexts?

- To what extent did Nigeria's unique economic context (such as the economy's reliance on oil) affect the effectiveness of trade policy and trade facilitation?
- How much did Nigeria's unique political context (such as the role of corruption and political instability) influence the effectiveness of trade policy and trade facilitation?
- How closely did the project's approach to trade policy and trade facilitation align with Nigeria's broader economic development goals and priorities, and how did this alignment impact the project's effectiveness?

5. To what extent has the project's support to relevant ministries improved Nigeria's trade facilitation efficiency and effectiveness?

Probes:

- Can you describe the project's specific assistance to relevant ministries, and how this assistance has improved Nigeria's trade facilitation efficiency and effectiveness?
- How have the relevant ministries reacted to project support, and what steps have they taken to incorporate project recommendations and best practices into their policies and procedures?
- To what extent has this assistance improved the efficiency and effectiveness of Nigerian trade facilitation?
- To what extent has the project's support for relevant ministries been maintained after the NEXTT project's completion?
- How did the project's approach to capacity building and institutional strengthening help to improve the efficiency and effectiveness of trade facilitation in Nigeria, and what specific strategies or interventions were used to achieve these outcomes?

	6. What challenges have been encountered in implementing this support following the COVID-19 pandemic? And what measures have been taken to ensure continued trade facilitation? Probes: • Can you provide examples of any innovative approaches or best practices used to ensure continued trade facilitation following the COVID-19 pandemic, and how have these approaches been received by relevant ministries and stakeholders? • To what extent, and how effectively, have digital technologies and online platforms been used to facilitate trade following the COVID-19 pandemic? • What lessons can be drawn from the difficulties encountered in implementing trade facilitation assistance in the aftermath of the COVID-19 pandemic, and how can these lessons be applied to future development projects in Nigeria and elsewhere?
Summary	Question: Based on what you have told me, it sounds like... Is that correct?
Closing	Question: Do you wish to add anything?

Appendix B3: Expanded Export Support Interview

Interview Schedule

Opening statement: Hello, my name is Nafeesat Rabiu-Adebayo. I am going to discuss the NEXTT project with you. I will ask you to tell me about your job responsibilities and the tasks that you perform in your organisation. I will also ask you about Nigeria's trade and agricultural commodities exports. I am interested in hearing your thoughts and opinions about the NEXTT project on the basis of its alignment with Nigeria's political and socio-economic context, its implementation, and sustainability. There are no right or wrong answers. You can choose not to answer any question at any time. Do you have any questions about how your responses will be used? Do you have any other questions about what we are doing here?

Question Type	Questions asked and probes
Opening	Question: What is your role in the organisation? Probe: Have you always worked in your current role? How long have you worked here?
Introductory	Question: What would you like to know about me and my research? Probe: How do you feel about me being here? What do you think about participating in this research?
Transition	Question: What role did you play in the NEXTT project?
Key	Question: 7. Given Nigeria's demand for export services and export capacity, how well did the project leverage local resources and expertise? Probes: • What specific local resources and expertise did the project use to support expanded exports, and how did these resources get identified and mobilised? • How and to what extent were local stakeholders, including government agencies, private sector actors,

and civil society organisations, involved in designing and implementing export support services?

- How effective were the project's export support services in increasing the volume and value of Nigerian exports, and what evidence do you have to back up your assessment?
- How accessible and inclusive were export support services for all members of society, including women, youth, and marginalised groups, and what steps were taken to ensure inclusiveness?
- What lessons can be drawn from the implementation of export assistance services, and how can these lessons be applied to future export assistance initiatives in Nigeria and other countries?

8. How consistently was the project implemented across multiple sites?

Probes:

- Could you describe any differences or variations in how the project was implemented across different sites, as well as the factors that contributed to these differences or variations?
- How were the project's implementation guidelines and standards communicated to and enforced across sites, and what steps were taken to ensure consistency across all sites?
- Can you give examples of any difficulties or obstacles encountered in ensuring consistency in project implementation across multiple sites, and how these difficulties or obstacles were overcome?

9. What steps were taken to scale up the project's outcome to other parts of Nigeria? And how has the COVID-19 pandemic affected this process?

Probes:

	• Can you describe any specific measures or strategies used to expand the project's outcomes to other parts of Nigeria, as well as how these measures or strategies were identified and prioritised? • How effective were the measures or strategies used to expand the project's outcomes to other parts of Nigeria, and what impact or outcomes were observed as a result of these efforts? • How has the COVID-19 pandemic affected the project's efforts to expand its results to other parts of Nigeria, and what steps have been taken to address any challenges or obstacles posed by the pandemic? • Did the project's outcomes change or adapt when it was scaled up to other parts of Nigeria, and if so, how were these changes addressed? • How were the project's outcomes effectively communicated and disseminated to relevant stakeholders in other parts of Nigeria?
Summary	Question: Based on what you have told me, it sounds like... Is that correct?
Closing	Question: Do you wish to add anything?

Appendix B4: USAID Nigeria Interview

Interview Schedule

Opening statement: Hello, my name is Nafeesat Rabiu-Adebayo. I am going to discuss the NEXTT project with you. I will ask you to tell me about your job responsibilities and the tasks that you perform in your organisation. I will also ask you about Nigeria's trade and agricultural commodities exports. I am interested in hearing your thoughts and opinions about the NEXTT project based on its alignment with Nigeria's political and socio-economic context, its implementation, and sustainability. There are no right or wrong answers. You can choose not to answer any question at any time. Do you have any questions about how your responses will be used? Do you have any other questions about what we are doing here?

Question Type	Questions asked and probes
Opening	Question: What is your role in the organisation? Probe: Have you always worked in your current role? How long have you worked here?
Introductory	Question: What would you like to know about me and my research? Probe: How do you feel about me being here? What do you think about participating in this research?
Transition Key Questions	Question: What role did you play in the NEXTT project? **1. LAKAJI CORRIDOR IMPROVEMENT** Probes: **a. Context Alignment** • Were the interventions carried out in accordance with the Lakaji corridor's specific needs and challenges? **b. Implementation**

- What strategies and approaches were used to reduce transit time and costs along the Lakaji corridor?

c. Sustainability

- How have the improvements made along the Lakaji corridor been sustained after the project was completed?
- What steps were taken to ensure that the capacity developed by the Lakaji Corridor Management Group (CMG) and other stakeholders is long-term?

d. Impact on Trade and Transportation

- What changes or improvements have been noticed along the Lakaji corridor as a result of the interventions?
- Were there any specific outcomes or accomplishments associated with the development of trailer parks along the corridor?

2. TRADE POLICY AND TRADE FACILITATION

Probes:

a. Context Alignment

- Were trade policy measures and trade facilitation activities implemented in accordance with Nigeria's specific trade challenges and needs?

b. Implementation

- What strategies and approaches were used to carry out the project's trade policy measures and trade facilitation activities?

c. Sustainability

- How likely were the trade policy measures and trade facilitation activities to be continued after the project was completed?

d. Impact on Trade Facilitation

- What changes or improvements have resulted from the project's interventions in trade policy regulation and trade facilitation in Nigeria? i.e. How did the project help to reduce trade barriers and improve trade process efficiency in Nigeria?

3. EXPANDED EXPORT SUPPORT

Probes:

a. Context Alignment

- How well did the project's expanded export Support component align with its trade policy and trade facilitation goals?
- Were export assistance measures implemented in accordance with the specific needs and challenges of Nigeria's export sector?

b. Implementation

	• What specific interventions were implemented to improve export capacity and competitiveness? • How were the project's export support measures implemented? i.e. What strategies and approaches were used to support exporters to boost their export capacity? **c. Sustainability** • To what extent were the results of the project's expanded export Support component likely to be sustained after completion? • What steps were taken to ensure that the capacity built in beneficiaries' export abilities is long-term? **d. Impact on Export Performance** • What changes or improvements in export performance were observed as a result of the project's interventions? • Did the project help to increase the volume or value of Nigerian exports?
General Question	Probes: **a. Monitoring and Evaluation** • What mechanisms were in place to track and assess the efficacy of the project? • How were the evaluation's findings, conclusions, and recommendations communicated to the relevant stakeholders, including the Nigerian government and other collaborating partners? **b. Challenges and Lessons Learned**

	• What difficulties or obstacles did you face during the project's implementation phase? • What key strategic, programmatic, technical, and managerial features should be considered when designing and implementing future trade and investment activities in Nigeria, based on this project's experience? **c. Cross-Component Integration** • How were the three components of the project integrated to ensure synergy and maximum impact? • Was the project able to improve cross-component integration through partnerships or collaborations with other stakeholders? If so, how so?
Summary	Question: Based on what you have told me, it sounds like... Is that correct?
Closing	Question: Do you wish to add anything?

Appendix B5: Financial Services Interview with the Bank of Industry (BOI)

Interview Schedule

Hello, my name is Nafeesat Rabiu-Adebayo. I am going to discuss the NEXTT project with you. I will ask you to tell me about your job responsibilities and the tasks you perform in the organisation you represented during the project. I will also ask you about Nigeria's trade and agricultural commodities exports. I am interested in hearing your thoughts and opinions about the NEXTT project based on its alignment with Nigeria's political and socio-economic context, its implementation, and sustainability. There are no right or wrong answers. You can choose not to answer any question at any time. Do you have any questions about how your responses will be used? Do you have any other questions about what we are doing here?

Question Type	Questions asked and probes
Opening	Question: What is your role in the organisation? Probe: Have you always worked in your current role? How long have you worked here?
Introductory	Question: What would you like to know about me and my research? Probe: How do you feel about me being here? What do you think about participating in this research?
Transition Key	Question: What role did you play in the NEXTT project? Questions: **1. Project Context** **Probes:** • How did the Nigeria Expanded Trade and Transport Project facilitate access to finance for project beneficiaries? • What role did the Bank of Industry (BOI) play in providing financial support to businesses during and after the project? • Have there been any challenges or barriers project beneficiaries face in accessing finance for their businesses after the project was completed? If so, how have these been addressed?

	• In your opinion, did the NEXTT project achieve its expanded export support goal? • What do you consider the strengths and weaknesses of the project, and what are your recommendations for maximising the impact of such trade-related projects in Nigeria? **2. General Context** **Probes:** • Can you provide insights into the specific financial instruments or mechanisms that the BOI utilises to enhance access to finance for trade and transport activities? • How has the BOI collaborated with other financial institutions or partners to improve access to finance for agribusinesses in Nigeria? • Can you share any success stories or examples of how access to finance has positively impacted trade and transport activities in Nigeria? • What suggestions does the BOI have for further improving access to finance for agribusinesses in the future?
Summary	Question: Based on what you have told me, it sounds like... Is that correct?
Closing	Question: Do you wish to add anything?