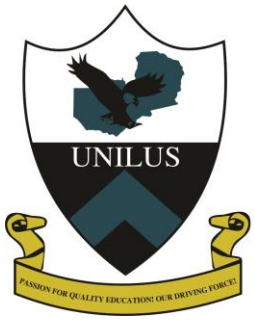

UNIVERSITY OF LUSAKA

School of Postgraduate Studies

The Impact of Foreign Direct Investment inflows on Manufacturing Value Addition in Zambia

by

SYDNEY NG'ANDU

A dissertation submitted to the School of Postgraduate Studies in Partial Fulfilment of the award of the Master of Science in Economics and Finance (MSCECF23120886)

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DECLARATION

I, **Sydney Ng'andu**, hereby declare that the work contained in this paper is my original work and that I have not copied or previously submitted it to any other university for a degree and that all referencing from other works has been acknowledged.

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Signature:  Date: 14/01/2025

DEDICATION

This research paper is dedicated to the memory of my late father, Mr. Kingstone Bason Ng'andu. Your unwavering love, wisdom, and strength continue to inspire me every day. Though you are no longer with me, your guidance and encouragement have shaped who I am and motivated me to pursue this journey. I am forever grateful for the values you instilled in me and the belief you had in my potential. This achievement is a tribute to you, and I carry your memory with me in every step I take.

ACKNOWLEDGEMENT

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This research is a testament to the collective effort, and I am sincerely grateful to everyone who played a role in it.

LIST OF ACRONYMS

ADF	Augmented Dickey Fuller
ECM	Error Correction Model
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GMM	Generalized Methods of Moments
GRZ	Government of the Republic of Zambia
INFLR	Inflation Rate
MCHT	Merchandise Trade
MFEZs	Multi-Facility Economic Zones
MVA	Manufacturing Value Addition
R&D	Research and Development
SEZs	Special Economic Zones
UNCTAD	United Nations Conference on Trade and Development
VECM	Vector Error Correction Model
ZAMSTAT	Zambia Statistical Office
ZDA	Zambia Development Agency

ABSTRACT

This study investigates the impact of Foreign Direct Investment (FDI) on Manufacturing Value Addition in Zambia from 1990 to 2023 using annual data. The general objective was to assess how FDI net inflows, GDP per capita, merchandise trade and Inflation Rate affect manufacturing value addition in Zambia. Given the stationarity of all variables at first difference and the presence of cointegration relationships, a Vector Error Correction Model (VECM) was estimated. The long-run results revealed that FDI net inflows had a significant positive impact on manufacturing value addition while inflation rate and GDP per capita had a negative long run relationship with manufacturing value addition in Zambia.

With regards to the short-run relationships among the variables in the model, an Error Correction Model (ECM) was employed to analyze the annual time series data. The results showed that the first and second lags of manufacturing value addition had a positive effect on current manufacturing value addition in the short run. Contrary, the coefficients of the first and second lags of GDP per capita and inflation rate had a negative effect on manufacturing value addition in Zambia in the short run. Notably, results through the error correction term revealed that the system would readjust to equilibrium at a speed of 86.45 percent in the long run.

*Additionally, a short-run causal relationship was noted where inflation rates and GDP per capita significantly influenced manufacturing value addition, pointing to a bidirectional relationship between these variables. Furthermore, while FDI net inflows was observed to granger cause GDP per capita and merchandize trade in the long run, results revealed that there was no direction of causality between manufacturing value addition and FDI net inflows. As such, the study has thus recommended on the need for f*uture studies to explore whether the impact of FDI net inflows varies across different sub-sectors of manufacturing to mention but a few.

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CHAPTER ONE: INTRODUCTION

Foreign Direct Investment (FDI) can have a very prominent role to play in shaping value addition in the manufacturing sector of economies. FDI, in many cases, is linked with the transfer of advanced technology, managerial expertise, and best practices from foreign investors to domestic firms. This technology transfer enables the adoption of more efficient and sophisticated methods of production and innovative processes, which lead to improvement in productivity and value addition in the manufacturing sector (Blomström et al. 1999).

Additionally, FDI inflows often result in the integration of domestic manufacturing firms into global value chains as foreign investors provide access to international markets, distribution networks, and technology-sharing agreements thereby allowing domestic firms to specialize in higher value added activities within the production process (UNCTAD, 2019). This integration therefore enhances the competitiveness and value addition of domestic manufacturing sectors.

The World Bank defines Foreign Direct Investment (FDI) as a category of international investment where an investor resident in one country establishes a lasting interest and significant influence in a foreign enterprise located in another country (Blonigen, 2019). According to Dunning (1993), explains that FDI inflows can be made in a number of ways, including buying shares in overseas businesses, opening branches or subsidiaries overseas, or forming joint ventures with local partners.

Markusen (1999) emphasizes that FDI inflows have the potential to positively impact domestic suppliers, subcontractors, and service providers in the receiving nation through knowledge and technological spillovers, which assist the growth of industrial clusters and ecosystems that support value-added activities in the manufacturing sector. This makes FDI significant, which is why conducting this study in Zambia was important.

1.1 Background of the study

- **Historical Development of Zambia's manufacturing sector**

Zambia's economic challenges are deeply rooted in its historical reliance on copper mining, which has exposed the country to fluctuations in global commodity prices and hindered economic diversification. Since gaining independence in 1964, Zambia's manufacturing sector initially experienced growth, driven by import substitution policies aimed at reducing reliance on foreign goods. One notable success was the growth of Zambia's textile industry. Companies like Mulungushi Textiles and Kafue Textiles thrived during the late 1970s, producing fabrics and clothing to meet domestic demand. These policies reduced the need for imported textiles, supported job creation, and encouraged industrialization. Additionally, protective tariffs and restrictions on imported goods provided local manufacturers with a captive market, fostering the growth of various light industries. However, the long-term sustainability of these industries was undermined by inefficiencies in state-owned enterprises, lack of technological advancement, and eventual economic liberalization in the 1990s, which exposed local industries to international competition.

However, the sector's expansion slowed in the 1980s due to economic mismanagement, external debt, and structural adjustment programs imposed by international financial institutions, which prioritized liberalization and privatization. Specifically, economic mismanagement, characterized by over-expansionary fiscal and monetary policies, led to macroeconomic imbalances. Concurrently, a significant drop in copper prices, Zambia's primary export, severely reduced national revenues, compelling the Government to accrue substantial external debt. In response, international financial institutions, including the International Monetary Fund (IMF) and the World Bank, imposed Structural Adjustment Programs (SAPs) that prioritized economic liberalization and privatization.

These programs mandated the removal of protective tariffs and subsidies that had previously shielded local industries, including textiles, from international competition. The sudden exposure to global markets, combined with inadequate infrastructure and a shortage of skilled labor, rendered Zambian textile manufacturers uncompetitive. Consequently, many factories either scaled down operations or shut down entirely, leading to significant job losses and a marked contraction in the manufacturing sector. This period underscores the vulnerabilities of over-reliance on a single commodity and the challenges of abrupt policy shifts without adequate support mechanisms.

Today, the sector faces persistent challenges such as inadequate infrastructure, high production costs, limited access to finance, and inconsistent policy implementation. Particularly, inadequate infrastructure and infrastructural deficits, such as unreliable electricity supply and poor transport networks, have disrupted production processes and increased operational costs, making local products less competitive in regional and global markets (ZDA, 2024). Frequent power outages, compounded by Zambia's dependence on hydroelectric power, have led to production slowdowns and higher energy costs for manufacturers. Moreover, high production costs are driven by expensive imported raw materials, outdated machinery, and inefficient supply chains. Additionally, access to finance remains a significant barrier, particularly for small and medium-sized enterprises (SMEs), due to high interest rates and stringent lending conditions, limiting investment in modernization and expansion. Moreover, policy inconsistencies and regulatory unpredictability have further undermined investor confidence, creating uncertainty for long-term planning and industrial growth.

Given Zambia's manufacturing landscape, a study on the impact of foreign direct investment (FDI) on Zambia's manufacturing value addition is critical for understanding how external capital can drive industrial growth, economic diversification, and sustainable development in the country's current economic landscape. Zambia's economy has long been reliant on copper exports, leaving it vulnerable to global commodity price fluctuations and limiting broader economic development.

On the other hand, FDI inflows have played a crucial role in enhancing manufacturing value addition and globalization through various mechanisms. Through FDI, local manufacturing companies have been incorporated into global value chains, giving them access to global distribution networks, markets, and export prospects (Haskel, 2007). In the developing world, FDI has stimulated trade facilitation through investments in physical infrastructure, such as ports, roads, and telecommunications, which are essential for accessing global markets (UNCTAD, 2019). Additionally, FDI inflows have led to investments in physical infrastructure, such as manufacturing facilities, transportation networks, and utilities, which have enhanced the productivity and competitiveness of the manufacturing sector (Gorg, 2003).

In Zambia, Government had/has implemented a series of measures to create an environment conducive to attracting Foreign Direct Investment (FDI) inflows, ranging from policy reforms, infrastructural developments, and institutional frameworks. In particular, one of the policy changes and incentives that drew in both domestic and foreign investment was the liberalization of the economy in the 1990s.

Consequently, Government established the Zambia Development Agency (ZDA) in 2007 through the ZDA Act No 6 of 2006 as the primary legislation aimed at promoting economic growth and development in Zambia by attracting and facilitating investment, enhancing exports, and supporting the development of small and medium sized enterprises (SMEs). Besides, ZDA mandates investors to invest at least US$ 10 million in designated sectors or US$ 500,000 in established Multi-Facility Economic Zones (MFEZs) in order to receive waivers on customs duty on imported equipment, excise duty and value added tax (Sinzala, 2023). The establishment of the Special Economic Zones (SEZs) and MFEZs aims to provide world-class infrastructure, including reliable power supply, advanced telecommunications, and well-maintained roads. These zones offer an attractive environment for investors by clustering businesses together, which reduces operational costs and enhances productivity (Maliwa & Nyambe, 2015).

Besides, several theoretical frameworks support the investigation of Foreign Direct Investment (FDI) inflows and their effects on manufacturing value addition. These conceptual frameworks aid in the explanation of how foreign direct investment (FDI) advances economic growth, especially in the industrial sector. The Eclectic Paradigm, the Technology Diffusion Theory, the Spillover Theory, and the Endogenous Growth Theory are important theories. Technology diffusion theory states that foreign direct investment (FDI) inflows assist local enterprises in implementing advanced technology, management techniques, and production processes from multinational corporations (MNCs), increasing manufacturing value and output (Blomström, 1999).

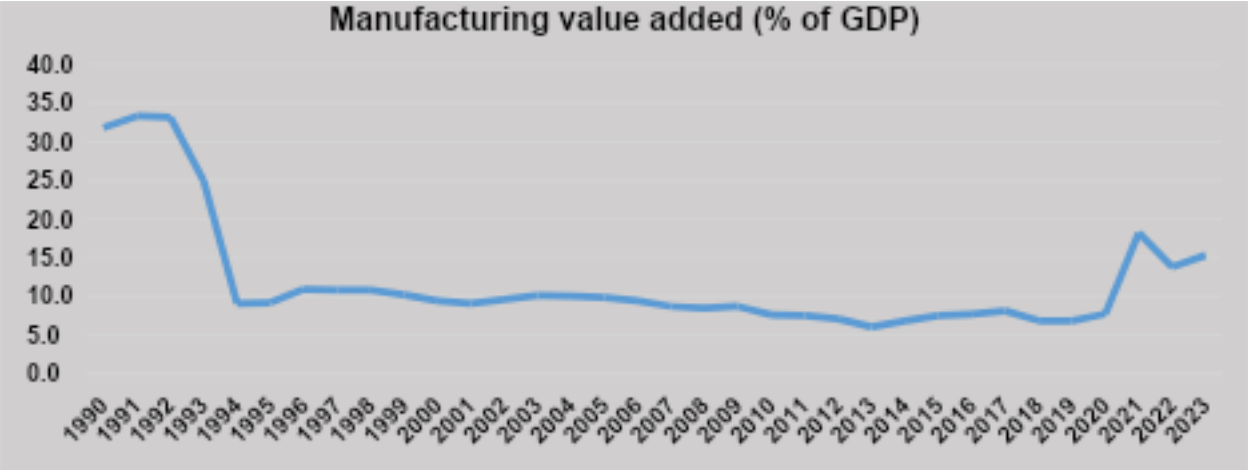
In spite Government's effort to create an environment conducive to attracting Foreign Direct Investment (FDI) inflows as well as ultimately boost industrial value addition, manufacturing value addition as a percentage of GDP only averaged 11.9 percent during the period 1990 to 2023. According to the World Bank data (2024), the data on manufacturing value added as a percentage of GDP in Zambia from 1990 to 2023 reveals several notable trends, averages, and fluctuations. Over the span of these 34 years, the manufacturing sector has experienced significant highs and lows, reflecting broader economic changes and potentially shifts in policy, technology, and global economic conditions.

The highest percentage recorded was in 1991, with manufacturing value added comprising 33.3 percent of GDP. This peak suggests a strong manufacturing base at the start of the decade, possibly driven by robust industrial activities and favorable economic conditions. In addition, the mid-1990s to early 2000s mark a period of relative stability but at lower levels compared to the early 1990s. The percentage hovers around 9-11 percent during these years, indicating a normalization at a lower base. For instance, manufacturing value added as a percentage of GDP in 1994 and 1995 stood at 9.1percent and 9.2 percent, respectively, slightly increasing to 10.9 percent in 1996, and stabilizing around 10 percent for several years. From 2000 to 2010, the data from the world bank further reveals a gradual decline in manufacturing value added. The early 2000s maintain levels close to 10 percent, but by 2010, it had decreased to 7.6 percent. This trend might be attributed to increasing globalization, outsourcing, and a shift towards service-oriented economies.

On the other hand, the manufacturing value added as a percentage of GDP was recorded lowest percentage in 2013, where manufacturing value added drops to 6.0 percent. This low point underscores the challenges faced by the manufacturing sector during this period, which could be due to a combination of global economic factors, technological changes reducing the labor-intensive nature of manufacturing, or structural shifts within the economy. Interestingly, the year 2021 marked a significant spike, with the percentage rising to 18.2 percent. This resurgence might be attributed to post-pandemic economic recovery, shifts in supply chains, or renewed focus on domestic manufacturing. Although there was a slight decline in the following years, with 13.8 percent in 2022 and 15.3 percent in 2023, the percentages remain higher than the preceding decade, indicating a potential revival or re-emphasis on manufacturing.

On average, considering the entire span from 1990 to 2023, the manufacturing value added as a percentage of GDP would be skewed by the high values in the early 1990s and the resurgence in the 2020s. However, the mid-period averages suggest a more modest contribution, likely around 9-10 percent, reflecting the longer-term decline and stabilization before the recent increases. The figure below gives a summary of the results

Figure 1: Trends in Zambia's Manufacturing Value addition (percent of GDP) from 1990-2023

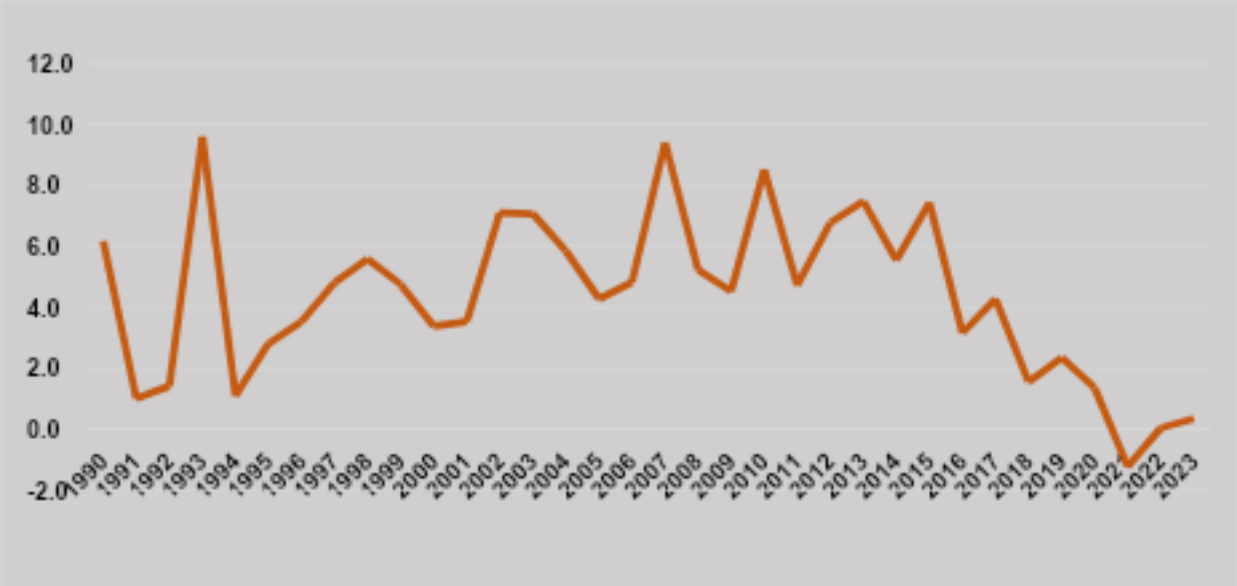


Source: Word Bank Microdata, 2024

On the other hand, Zambia’s FDI net inflows during the period 1990-2023 was recorded highest in 1993 at 9.6 percent of GDP. This peak indicates a significant influx of foreign investment during that year, which could be attributed to favorable economic policies, market liberalization, or global investment trends favoring the country at that time. Another notable high was in 2007, with 9.4 percent, reflecting another period of strong foreign investment, possibly due to pre-global financial crisis optimism and economic growth.

The lowest percentage was in 2021, where net inflows were recorded at -1.2 percent, indicating a net outflow of foreign direct investment. This negative value suggests a period of economic instability or policy changes that led to foreign investors withdrawing their investments. This outflow could have been influenced by global economic uncertainties or domestic issues affecting investor confidence. Additionally, in 2022, the FDI net inflows were at 0.0 percent while the year 2023 had a slight recovery to 0.3 percent, indicating a struggling recovery or continued economic challenges. Overall, the average FDI net inflows as a percentage of GDP over these 34 years would likely be around 4-5 percent, considering the peaks and troughs. The data reflects periods of high foreign investment interest, economic fluctuations, and significant challenges in recent years, providing a comprehensive view of the country's ability to attract and retain foreign direct investment over time. The figure below gives a summary.

Figure 2: Trends in Zambia's Foreign Direct Investment (percent of GDP) from 1990-2023



Source: Word Bank Microdata, 2024

1.1 Statement of the Problem

Despite substantial inflows of Foreign Direct Investment (FDI) into Zambia over the past decades, the impact of these investments on manufacturing value addition remains ambiguous as the country continues to record low levels of manufacturing value addition. According to the World Bank (2024), manufacturing value addition as a percentage of GDP averaged 7.83 percent for the period 2014-2022 compared to 9.29 percent for the period 2001-2013. This, however, raises concern about whether the benefits of FDI, such as technology diffusion and managerial expertise, are sufficiently reaching and uplifting the manufacturing industry.

Although the influx of FDI in Zambia has predominantly targeted the mining sector, there has been less pronounced effects observed in manufacturing sector. Furthermore, anecdotal evidence suggests that local firms may face challenges in absorbing and implementing the advanced technologies and practices introduced by MNCs.

Moreover, despite FDI inflows inducing the Zambian government to promote and support establishment of measures and policies as a facilitation factor to investment, including the manufacturing sector, empirical evidence indicating a causal relationship or significance relationship between FDI inflows and manufacturing value addition remain scarce. Therefore, given GRZ's intervention to continue attracting FDI inflows in the manufacturing sector, it is important to investigate the relationship of FDI inflows on manufacturing value addition in Zambia.

Additionally, while earlier research done in Zambia (for example Msoni, 2016; Mwale, 2014; Mawila & Nyambe, 2015) has shown that FDI impacts positively on economic growth, there is lack of clear empirical data to explain the relationship between FDI inflows and industrial value addition in Zambia. The lack of clear empirical data on the relationship between foreign direct investment (FDI) inflows and industrial value addition in Zambia highlights a critical research gap with significant implications for policymaking and economic development.

While previous studies have established a positive link between FDI and overall economic growth, they often overlook the specific mechanisms through which FDI influences value addition in the manufacturing sector. Understanding this relationship is crucial, as manufacturing value addition plays a key role in economic diversification, job creation, and the development of more resilient industries. Without concrete evidence, policymakers face challenges in designing targeted strategies to maximize the benefits of FDI for industrial development. Furthermore, a clearer understanding could reveal whether FDI is genuinely contributing to technological transfer, skill development, and the integration of local firms into global value chains, or if it merely reinforces extractive activities with limited spillover effects. Addressing this gap will provide a more nuanced understanding of FDI's role in enhancing Zambia's industrial capacity, enabling the formulation of more effective policies that promote sustainable economic growth and structural transformation. To fill this gap, this research opted to use a quantitative research method to investigate the relationship between FDI and manufacturing value addition in Zambia.

1.2. Research Objectives

1.2.1 Main Objective

The main objective of this study was to investigate the impact FDI net inflows on manufacturing value addition in Zambia.

1.2.1.1 Specific Objectives

1. To determine whether there is a statistically significant relationship between FDI net inflows, GDP per capita, merchandise trade (% of GDP) and Inflation Rate on manufacturing value addition in Zambia.
2. To determine whether there is a long-term relationship of FDI net inflows, GDP per capita, merchandise trade (% of GDP), Inflation Rate on manufacturing value addition in Zambia.
3. To determine the direction of causality between FDI inflows and manufacturing value addition in Zambia.
4. To provide policy implications on the findings and identify key channels through which FDI contributes to manufacturing growth in Zambia.

1.3. Hypothesis

1. **Null Hypothesis (H0):** There is no statistically significant relationship between FDI net inflows, GDP per capita, merchandise trade (% of GDP), Inflation Rate on manufacturing value addition in Zambia.

   Alternative Hypothesis (H1): There is a statistically significant relationship between FDI net inflows, GDP per capita, merchandise trade (% of GDP), Inflation Rate on manufacturing value addition in Zambia.
2. **Null Hypothesis (H0):** There is no cointegration relationship of FDI net inflows, GDP per capita, merchandise trade (% of GDP), Inflation Rate on manufacturing value addition in Zambia.

   Alternative Hypothesis (H1): There is a cointegration relationship of FDI net inflows, GDP per capita, merchandise trade (% of GDP), Inflation Rate on manufacturing value addition in Zambia.
3. **Null Hypothesis (H0):** There is no causal relation between FDI inflows and manufacturing value addition in Zambia.

   Alternative Hypothesis (H1): There is causal relation between FDI inflows and manufacturing value addition in Zambia.
4. **Null Hypothesis (H0):** There is no policy implications on the findings and identified key channels through which FDI contributes to manufacturing growth in Zambia.

   Alternative Hypothesis (H1): There is policy implications on the findings and identified key channels through which FDI contributes to manufacturing growth in Zambia.

1.4. Significance of the study

This study focuses on the impact of FDI on value addition to Zambian manufacturing sector for several reasons. First, FDI is widely regarded as a growth enhancing capital in developing nations, hence provide potential conduit into the main economic drivers that have shaped Zambian growth especially in the production sphere. Consequently, an examination of FDI and the extent of value addition in the manufacture sector could help the Zambian government in its endeavor to increase the sector's contribution towards the national gross domestic product and the reduction on exportation of raw materials. Lastly, this investigation seeks to present findings on the relationship between FDI inflows and manufacturing value addition, in a bid to add to the existing literature, and benefit future work.

1.5. Scope of the study

This research concentrates on analyzing the impact of FDI on manufacturing value addition in Zambia using secondary time series data from 1990-2023. It is particularly focused on the manufacturing sector and does not broaden its study to other subsectors in Zambia's economy.

1.6. Operational Definition

Net FDI inflows are the net stock of a country's FDI which includes the amount of established investment, new investments or reinvestment of profits by overseas investors less the capital export (World Bank, 2023).

The inflation rate is ordinarily defined as the growth of the average price of the goods and services that are consumed within a given economy within a given period relative to the nominal GDP (IMF, 2023).

Merchandise trade involves the cross-border transportation of tangible goods such as consumer goods, manufactures goods, and materials (WTO, 2023).

GDP per capita is the total value of all goods and services produced in a particular region often though a domestic per each person in that region (World bank, 2023).

Manufacturing value addition on the other hand is the Gross Value Added by the manufacturing sector without including intermediate goods and services. This measure helpful for indicating the contribution of manufacturing to economic growth and industries' evolution (World Bank, 2019).

CHAPTER TWO: LITERATURE REVIEW

For this study, it is necessary to go back into the literature to make sure what FDI net inflows, GDP per capita, inflation rate and merchandise trade's effect on manufacturing value addition is fully understood. This chapter presents a structured discussion of relevant literature, organized into three main sections: The theoretical framework, the empirical framework, and the conceptual framework. This paper contains a review of literature on this subject area, and because this topic covers a wide range of areas of specialization, approaches and findings vary. In this chapter, the prior literature of academic research in the field is reviewed in an effort to determine which theories have been used as tools for understanding the phenomenon and the key findings that need to be investigated in the subsequent chapters.

Additionally, among all the theories outlined below, this study considered the endogenous growth theory as the pillar for this work. This is because foreign direct investment is likely to have an influence on the manufacturing value addition in Zambia through technology, skills and increased competition, access to export markets and merchandise trade. Moreover, the shift that the Zambia's manufacturing industry has made in relation to the heavy reliance on improvements driven by innovation will be consistent with the endogenous growth model's role of technology and stimulation of growth.

2.1 Theoretical Framework

- **Endogenous Growth Theory**

Endogenous growth theory, as articulated by Romer (1986), posits that FDI can drive long-term economic growth by fostering innovation and technological progress within the host country. This theory emphasizes the role of knowledge spillovers and human capital development in enhancing manufacturing value addition. When multinational enterprises invest in a host country's manufacturing sector, they often bring new technologies and managerial expertise. This, in turn, can lead to increased productivity and innovation in local firms. Paul (1986) and Robert Lucas (1988) contended that economic factors such as human capital, innovation, and knowledge spillovers are what drives growth. Contrary to exogenous theories, which view technological advancement as an external force, endogenous growth theory highlights the need of deliberate investment in research and development, education, and information exchange for economic growth.

According to endogenous growth model as explained by Romer (1986), knowledge capital accumulation results in growing returns to scale. This means that the more innovation and knowledge a company or economy gains, the greater its chances of long-term growth. Because experienced and educated individuals are better equipped to develop and implement new technologies, human capital is crucial to this process. Moreover, Lucas (1988) asserts that information sharing across businesses can spur additional innovation and raise economic output as a whole.

Also, Romer (1986) posits that economic growth in the host country is fostered through foreign direct investment as it catalyzes innovation throughout the economy. The concept explains that knowledge spillovers and human capital investments are useful in increasing industrial value addition. Foreign multinational corporations are a source of modern technology and managerial skill for the host country’s industrial sector. Thus, the local industries become more efficient and innovative. Also, the theory emphasizes on policies that promote skill acquisition and research and development so as to maximize the impact of FDI on value addition in the manufacturing industry.

One of the primary ways in which FDI contributes to endogenous growth is through technology transfer. Multinational corporations (MNCs), which are typically the source of FDI, often bring advanced technologies and managerial know-how to host countries. This technology transfer can improve the productivity of local firms, particularly in the manufacturing sector. Studies have shown that FDI inflows lead to the adoption of better production processes, machinery, and systems that can increase the efficiency of domestic industries (Borensztein et al., 1998). In Zambia, for example, foreign investments in the mining sector have led to the introduction of state-of-the-art mining technologies, which have indirectly benefited related industries such as manufacturing by improving supply chains and creating demand for locally produced goods.

Furthermore, FDI can create knowledge spillovers, allowing the innovations and technological advancements of foreign companies to spread to local firms. These spillovers occur due to different interactions, including competition, cooperation, and workforce mobility between local and foreign companies (Markusen, 1995). Within the manufacturing sector, local companies can implement these innovations, improving their production methods and boosting their value-added results. Research conducted by Javorcik (2004) revealed that foreign direct investment inflows significantly boosted productivity in local companies within developing nations, attributed to spillover effects from international firms, especially in the manufacturing sector.

Endogenous growth theory offers a valuable perspective on how FDI can aid in achieving long-term economic growth and enhancing manufacturing value addition. By means of technology transfer, developing human capital, and enhancing competition, FDI can aid in the growth of the manufacturing industry and boost productivity. Nonetheless, the connection between FDI and the enhancement of manufacturing value is not consistently clear-cut. The ability of FDI to stimulate endogenous growth relies on elements like the absorptive capacity of domestic companies, the degree of competition, and how much local enterprises can gain from knowledge spillovers. In nations such as Zambia, FDI has provided certain advantages, especially regarding technology and skill enhancement, yet obstacles persist in making sure these advantages lead to sustainable growth within the manufacturing industry.

- **Spillover Effects and Externalities Theory**

This theory as postulated by Caves (1974) explores the spillover effects and externalities associated with FDI in the manufacturing sector. The study argues that FDI can generate positive externalities by enhancing the competitive environment and leading to productivity gains in local firms. These spillovers occur through various channels, such as the demonstration effect, where local firms imitate the advanced technologies and practices of multinational corporations, and the labor mobility effect, where employees trained by foreign firms transfer their skills to domestic firms. The presence of FDI can also stimulate local firms to improve their efficiency and innovate to remain competitive, thereby increasing manufacturing value addition.

According to (1974), the spillover effects are the great or adverse impact of economic activities on external parties who have not participated directly in the business transaction. He further articulates that in the case of FDI, spillover effects are often positive and occur when foreign investors transfer knowledge, technology, skills, and managerial practices to local firms improving their productivity. These effects are externalities as they occur in the economy but do not reflect in the transaction costs or prices the foreign investor and local firms paid during the investment.

On the other hand, the theory of externalities, first widely explored by Pigou (1920), describes situations where the costs or benefits of an economic activity are not fully captured by the participants. Externalities can be either positive or negative. He further postulates that positive externalities, such as those generated by FDI, improve the welfare non-investing domestic firms or the broader economy by creating benefits without requiring direct compensation. For instance, a foreign firm may introduce advanced manufacturing techniques or train local workers, enhancing the productivity of domestic businesses and contributing to overall economic development.

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as the demonstration effect, where local firms imitate the advanced technologies and practices of multinational corporations, and the labor mobility effect, where employees trained by foreign firms transfer their skills to domestic firms. The presence of FDI can also stimulate local firms to improve their efficiency and innovate to remain competitive, thereby increasing manufacturing value addition.

A study by Kugler (2000) demonstrated that FDI inflows contributed significantly to the human development of a country. When foreign companies establish operations in the manufacturing sector, they often need to train domestic workers in the use of new technologies and production techniques. These employed, once trained, can transfer their new skills to other companies, resulting in broader knowledge diffusion across the economy. Moreover, skilled employees who move between international and domestic firms further facilitate the transfer of knowledge and techniques, generating additional spillover effects.

On a contrary, while competition from foreign firms can stimulate productivity growth, it can also lead to market dominance by large multinational corporations, which can crowd out smaller, local firms. This could limit the benefits of FDI for the broader economy and hinder the development of a robust local manufacturing sector (Saggi, 2002).

- **Dependency Theory**

Dependency theory which is significant in the realms of development emerges from systematic economic relations with developed nations. Foreign Direct Investment can perpetuate dependency and retain attainment in developing countries from the perspective of dependency theory where maintaining manufacturing value addition becomes the focal point (Frank, 1966). This systematic relationship with the wealthy nation, along with internal factors leads to economic undermining of countries and is the basis of the problem.

The late 50s and early 60s saw the dawn of dependency theory which presented itself against the backdrop of modernisation theory, according to which developing nations need to follow the same path that developed nations took for growth. But a peer review by leading scholars like André Gunder Frank, Immanuel Wallerstein, and Raul Prebisch helped shed light on how developing nations are economically mistreated through the

line of dependency due to being dominated by wealthier nations (Frank, 1966). These nations form the “core” of the world while Other nations serve as the “periphery” where raw materials and labor are provided at cost effective rates (Kikerkova,1972). Thus, the dependency theory intuitively suggest that the economic growth of the developed countries often occurs at the expense of developing countries, which remain trapped in cycles of poverty and underdevelopment.

This theory delineates the world into two parts, the “core” countries and the “peripheral” nations. Taking a closer look at the global economic system, it can be seen that that it also follows suit by appearing to be divided into these two parts. According to Wallerstein (1974) postulates that while the core nations like America and other nations are industrialized, and highly developed along economic and technological lines, peripheral ones were still underdeveloped as they depended solely on exporting raw materials. Furthermore, these nations were also cut off from state of the art technological advancements and industrialization (Wallerstein, 1974). He also diverges his opinion towards dependency theorists, stating that they claim an unequal economic relationship persists between the periphery and core due to constant resource, wealth, and technological shift from the periphery to the core.

When looking from the viewpoint of FDI can help improve the value addition for the manufacturing sector, especially in the short term. An example of this would be, when global corporations such as Multinational companies which open branches in emerging economies, bring along with them highly advanced levels of technology, capital and expertise which tins trade resources. Domestic sectors are thus able to enjoy a substantial increase in their efficiency and productivity. Due to these foreign investments, domestic companies can enhance their operational capacity, product standards, and gain access to novel growth opportunities.

It is important to remember that dependency theory highlights the downside of FDI being more severe but positive effects being exaggerated. For example, Zambian policymakers have experienced mistakes in the past where fdi in mortgaging regions would boost the manufacturing economy without detriment. This, however, is a more realistic scenario. The financing firms often invest a lot into mining or turning goods into exports with little turn over into local economy, which why ZDA (2020) predicts global

dominance for resource-based investments, economic activity will remain firm even without extracting. So, in Zambia's manufacturing economy, there have been resources with pouring of foreign capital into the mines but no related resources into manufacturing economy.

- **Neoclassical Growth Theory**

Neoclassical growth theory, as proposed by Solow (1956), suggests that FDI contributes to economic growth through capital accumulation and technological advancement. In the context of manufacturing value addition, FDI is seen as a source of external capital that enhances the productive capacity of the host country. By introducing new machinery, equipment, and advanced production techniques, FDI helps increase the efficiency and output of the manufacturing sector. The theory also highlights that the impact of FDI on manufacturing value addition is more pronounced when the host country has a high marginal product of capital and a well-developed infrastructure to absorb and utilize the foreign investment effectively.

According to the economic growth ideas of Solow (1956), it suggests that technology transfers and capital can deepen due to FDI. It is regarded that FDI increases the number of foreign resources available to a country in terms of manufacturing value addition. Greater efficiency and output in the manufacturing sector is achieved through FDI, which introduces new machinery, equipment, and techniques of production. In addition, the theory also points out the condition when this effect is stronger in a country: It has a high marginal product of capital and the country has developed the infrastructure to harness, absorb and make effective use of that foreign investment.

Several studies have highlighted how FDI can enhance capital accumulation in developing countries. For example, a study by (Alfaro, 2004) discovered that FDI had a favorable influence on capital formation in the host nation, particularly in capital intensive industries like manufacturing. This increasing capital stock helps businesses to expand production, enhance efficiency, and create higher-value-added goods.

Moreover, foreign firms often bring advanced technology and managerial expertise, which can raise the efficiency of capital utilization in domestic firms. The influx of such

capital leads to improvements in the overall productivity of the manufacturing sector, which ultimately contributes to higher manufacturing value addition. As Solow (1956) argues, the growth of output in a country depends on the ability to efficiently combine labor and capital, and FDI is an important source of the necessary capital.

- **Institutional Theory**

As explained by North (1990), this theory discusses the role of institutions in shaping the impact of FDI on economic outcomes, including manufacturing value addition. Institutional theory posits that the quality of institutions such as legal frameworks, governance structures, and regulatory policies significantly influences how FDI affects the host economy. Strong institutions can create an enabling environment that maximizes the positive impacts of FDI by ensuring transparency, protecting property rights, and enforcing contracts. In the manufacturing sector, effective institutions can facilitate technology transfer, enhance managerial practices, and promote fair competition, thereby boosting manufacturing value addition. Conversely, weak institutions may lead to inefficiencies and limit the benefits of FDI.

A study by campos (2003) observed that a relevant determinant of FDI inflows is the degree of institutional quality that includes property rights and law enforcement. Since countries with better institutions have more investments, it is because investors are more assured that their investments are safe with little interference which allows business to be effective. On the other hand countries with weak institutions like corruption, regulatory inconsistency may prevent FDI or make it too expensive for the local foreign enterprises to operate.

Furthermore, institutional theory suggests that institutions influence the types of FDI that flow into a country. For instance, countries with strong institutions may attract high-quality FDI, which brings advanced technologies, managerial expertise, and access to global markets. In contrast, countries with weaker institutions may only attract lower-quality FDI, which could result in limited spillover effects or technological transfer.

2.2 Empirical Review

As it is highlighted earlier, there is relatively scarce research done on the overall effect of FDI inflows most literature on this topic identifies a relationship between FDI and economic growth of which the case of Zambia is no exception. A variety of economic experts and policy makers from various global economies have indeed investigated, as well as engaged in, the more complex and ever-changing interdependency between FDI on the growth of manufacturing sector in both the developed and the developing nations. Attached please find a synthesis of existing literature discussing these topics.

Global Empirical Studies

Several empirical and theoretical analyses have been conducted on the impact of FDI in the manufacturing industries and the general economy of respective countries offering a wide range of conclusions on the effects of FDI on the growth of economy.

Nguyen (2020) employed panel data analysis of industry data on FDI flows and impact on manufacturing value addition to Vietnam covering the year 2000 to 2018. The study also revealed that FDI boosted manufacturing value addition in Vietnam through technology transfer, management development as well as influence on international market opportunities. The study also proposed that in order to attract more foreigners to invest in the nation which added value to manufacturing, there should be a favorable investment climate and good infrastructure.

Waldkirch (2010) build up from the work done by Keller and Yeaple (2009) to analyze the impact of foreign investment entry on the Gross Value Added manufacturing sector in Germany from the period 1998 to mid-2000s. Employing the econometric models it is convincingly argued that FDI had a positive impact on the German manufacturing sector and especially in high technology sectors such as electronics and pharmaceutical sub-sectors by increasing productivity through the diffusion of new technologies and management practices.

Exploiting firm level data spanning the period 1987–2002, Keller and Yeaple (2009) extensively analyzed the effect of FDI on the US manufacturing industry. It emerged that FDI enhance productivity growth particularly in high-tech industries to include electronics and pharmaceutical sectors, and suggested measures to rein in for innovation and adoption of technology to support future development in manufacturing.

Fukao et al. (2005) were particularly interested in understanding the role of FDI in Japanese manufacturing industry. Their research showed that FDI increased Japanese manufacturing, and most notably the electronics and automobile industries. The authors are right claiming that in order to increase FDI inflows, Japan's government should improve the legal environment and increase spending on R&D.

Examining the roles of FDI in participating Central and east European countries, Cieslik (2017) reveal that FDI stimulates manufacturing productivity. The findings designated that countries absorbing FDI mostly in capital- and technology-intensive products like Automobiles and Electronics sectors are benefiting more in terms of Technology transfers and increased productivity.

Javorcik (2004) worked on a vast study about the impacts of FDI on productivity and value insertion in manufacturing industries in Eastern Europe. This study used a fixed effects regression model and instrumental variable estimation to quantify the effect of FDI, especially the tech scavenging effect. The study pointed out that foreign affiliate acted as knowledge transferring channel to the local firms, which greatly enhanced value-added production particularly in electronics sector.

Likewise, using co-integration technique, Ctum (2006) analyzed the long run equilibrium between Manufacturing Value Addition, FDI, GDP per capita, Trade openness and Inflation for Central & Eastern Europe. The established results pointed to the fact that FDI played a crucial role in growth of manufacturing sector in the future. Also, concern to trade openness and higher GDP per capital helped to enhancement of the value addition in the sector. But the same study also noted that inflation was a factor that hindered improvement of manufacturing value addition.

Chakraborty & Nunnenkamp (2008) modeled the role of FDI in manufacturing value addition in India by employing fixed effects models. The study built a strong correlation between FDI and industry specific growth in sectors such as chemical, machinery and Electronics industries. The publication opined that FDI was a good substitute for domestic capital in India, made manufacturing more competitive and productive.

Zhang (2006) focused his research on appropriate measure of FDI and its effects on Chinese manufacturing industry during the period of 1991-2002. This study confirmed that labour-endogenous FDI supported innovation and skills development for manufacturing industries to increase the value addition.

In his study on FDI impact on growth in Thailand, Philippines, Pakistan & Sri Lanka during 1990-2014, Ali Mingque (2014) confirms that there is long run positive co-integration between FDI and manufacturing value addition. In this respect, the evaulations indicated that FDI was likely to generate a positive impact on these countries' GDP capital formation, government consumption and trade openness.They pointed out that FDI increased manufacturing value addition in Macedonia; however, the impact was not the same for all countries. After analyzing the data, the authors specified factors that impact the employment relationship, including GDP, labor productivity and trade openness. It highlighted the aspect of economic environment and quality institutions as key foci for attracting FDI on the manufacturing agenda.

Najaf (2018) examined the effects of FDI on the growth of the Sri Lankan economy, Pakistan, the Philippines and Thailand, using long-term analysis in showing that FDI has a positive effect of on growth, GDP, government expenditure and employment.

Bengoa (2003), in his study on "FDI, Economic Freedom, and Growth: , "The Latin American Experience," was devoted to analyzing important connections in the economic processes of the region. The research established a high level of correlation between FDI and manufacturing value addition. But it threw lights on the negative correlation between inflation and industrial growth. In addition, the study also highlighted that economic development characterised by Gross Domestic Product per capita, jointly with trade openness, play a crucial role in enhancing industrialisation progress in the region.

Likewise, Binh (2017) analyze the effect of FDI and trade openness on manufacturing value added in South East Asia. Because of the long-run co-integration analysis, the study established a long-term positive relationship between FDI, trade openness, and manufacturing value addition; inflation also resulted as a negative factor. However, manufacturing value addition was nevertheless informed by economic development as proxied by the GDP per capita, which was positive and statistically significant.

Hence it can be concluded from these studies that there is significant importance of FDI in manufacturing value addition technological change and overall growth. The findings also revealed that FDI has its largest multiplier effect on manufacturing productivity in the technological advance industries, and institutions and business environment quality matter for attracting productive and technology.

Empirical studies in Africa

Another area of extensive study constructively exploring the nexus of FDI and industrial value is the exploration of the impact of FDI on the manufacturing value addition across the countries.

Similarly, in the case of Egypt, El-Sahli and Abdallah (2020) examined a panel data analysis for a period from 1990 to 2018 and focused the positive role of FDI for manufacturing sectors especially for textile and chemical sectors. It highlighted the use of technology transfer as the only way through which productivity at the local industries could be enhanced. With regard to FDI, the authors also underlined the need to strengthen the improvement of the investment climate through education and vocational training. Besides, they suggested continuing with economic liberalization and undertaking measures to rebuild investors' confidence in the business and investment climate in Egypt.

Mwangi & Ngugi 2019 conducted a study on FDI and its effects on Kenyan manufacturing industries within the period of 1995 to 2017 using a Vector Error Correction Model (VECM). The research indicated that the sector has benefitted from FDI by which flow technology, better management practices and export marketing opportunities. The study recommended that the government of Kenya should undertake measures necessary to increase the FDI inflow which included; Roll out investment protection, reduce merger

aspects, and utilities like transport, energy, and communication which hinder the commencement of investment in Kenya.

Ngowi (2019) looked at the impact of FDI on the manufacturing sector in South Africa over the period of 1995-2015 and adopted VAR model. This study also observed the relationship between FDI and manufacturing value addition and established the fact that manufacturing value addition in the automotive and electronics industries was greatly influenced by FDI. The authors underscored the importance of improving the investment climate in South Africa, thus, the country should improve legal propensity, enhance the transparency of regulations and secure political stability. They also stressed adoption to modern infrastructure both physical and organizational as keys to manufacturing development.

Adegboye and Alimi (2018) conducted an empirical analysis to examine the impact of FDI on Nigerian manufacturing sector employing panel data econometric method for the period 1990 – 2015. As expected, the results of the study established a direct link between FDI inflows and sector's productivity due to the processes like technology transfers, skills development, and competition. The authors emphasized on government policies that create a predictable macroeconomic environment including tax incentives, bureaucratic efficiency and infrastructure development to support FDI led growth.

In studying the relationship between FDI and financial sector in developing nations, Lee and Chang (2009) found out that FDI has a deeper effect to countries with developed institutional frameworks and structures for financial sectors. In line with expectation, the study which employed the Generalized Method of Moments (GMM) uncovered that while countries with better governance structure coupled with higher human capital could realise the benefits of FDI in its entirety for enhancing productivity in the manufacturing sector. On the other hand, the study recommended that where formal institutions are somewhat weaker, the impact of FDI in such nations is lessened.

Seyoum (2009) studied the liberalism impact of FDI on manufacturing and trade within the Eastern Africa countries in the period of 1980 to 2005. This study pointed out that from 5percent to 7percent of increment in value added in manufacturing was attributed to FDI and the major mode was technology transfer. Local firms benefited from the technological transfers through efficiency and productivity brought about by new technology and management practices of firms from the foreign countries. The study also revealed that infrastructure and human capital played a critical role in the benefits realization of FDI. The study advised that positive legal reforms should be enacted to safeguard investor rights, and to remove bureaucratic constraints to ultimately increase more FDI and enhance its impact.

Taken together, these research works show the centrality of FDI in the development of manufacturing industries by making positive contributions through technology acquisition, enhance in management skills and capacity within industries to export. They also emphasize that for enhancing the impact of FDI as an instrument of increasing manufacturing value addition a right business environment, good regulations and sound infrastructure is crucial.

2.3 Conceptual Framework

With the primary goal of demonstrating whether Zambia's FDI receipts from 1960 to 2022 had a substantial impact on promoting long-term value addition in the manufacturing sector, the study will make use of a conceptual framework based on the endogenous growth model. According to the model, Zambia's manufacturing value addition should be impacted by foreign direct investment (FDI) (technology transfer, skill development, increased competition, and increased access to export markets), merchandise trade (a proxy for trade openness), the official exchange rate, and GDP per capita growth. Therefore, manufacturing value added (% of GDP) is the dependent variable, and the independent variables are FDI net inflows, GDP per capita, merchandise trade (% of GDP), and Inflation Rate.

2.3.1 Key variables and their expected relationships

- **Dependent Variable**

1. **Manufacturing value addition (percent of GDP):** This metric examines the extent to which the manufacturing segment Impacts the on-going economic activity. A higher percentage in this regards suggest greater industrial code diversification that is symptomatic of a more developed economy.

- **Independent Variables**

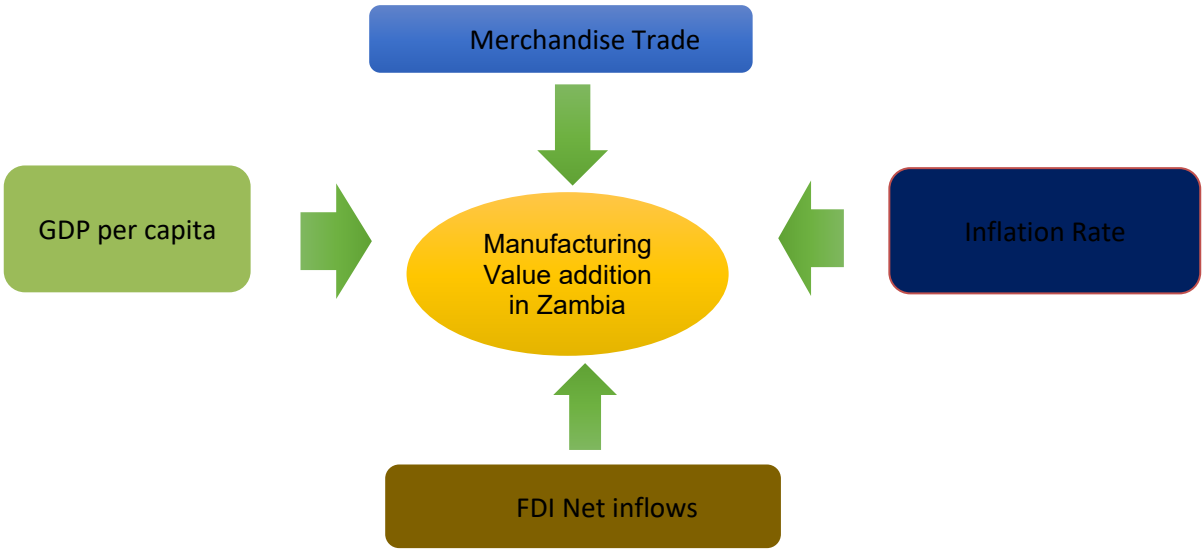
2. **FDI Net Inflows:**
   - **2.1 Technology Transfer:** FDI assists in the transfer of technology and use of new techniques in conducting production to the manufacturing sector in Zambia.
   - **2.2 Skill Development:** Further, foreign investors help in improving skills of the local workforce to fully apply technologies and innovations introduced in manufacturing corporations.
   - **2.3 Market Competition:** The existence of foreign firmsHELLO increases market rivalry in home markets, hence forcing domestic firms to improve on their performance.
   - **2.4 Expanded Market Access:** By the help of FDI, local firms obtain a chance to join other global markets with the help of networks of MNCs.

3. **GDP per capita growth:** An increase in the flows reflects overall economic development, growth in per capita income, which stimulates demand for manufactured products.
4. **Merchandise Trade (percent of GDP):** This variable is used a measure of the openness of the trading regime. This openness can open doors to new markets, acquisition of raw materials and coming into contact with foreign competition which in one way or the other has an effect on manufacturing value addition.

5. **Higher inflation** often means instability in an economy and this central issue may result to increased cost of production or lack of investors' confidence.

Overall, manufacturing value added (% of GDP) is the dependent variable, and the independent variables are FDI net inflows, GDP per capita, merchandise trade (% of GDP), and inflation rate. The conceptual framework is stated as follows:

Figure 3: Conceptual Framework for the Study



Source: Author's compilation based on the endogenous growth model

2.3.2 Analysis of Expected Relationships

- **Net FDI inflows and Manufacture Value Addition**

In order to exert a positive influence on the value added by manufacturing in Zambia, FDI inflows are expected to follow the lead of the endogenous growth model. The injections of capital and technology and managerial expertise could bring about enhancements in productivity and industrial growth. Earlier studies have confirmed that various ways in which FDI is believed to increase manufacturing output exist. For instance, Ngowi (2019) and Adegboye and Alimi (2018) found that FDI promotes the growth of manufacturing through technology ownership and skill advancement.

- **Manufacturing Value Addition and GDP per Capita Growth**

An increase in GDP per capita is thought to accompany one of higher manufacturing value added, because as incomes rise, demand for manufactured goods surges, thereby providing increased markets for local manufacturers. Certainly, work conducted by Adams and Opoku (2015) suggested that GDP per capita growth increases manufacturing output, though it is not as significant as FDI.

- **Merchandise Trade and Manufacturing Value Addition**

Higher trade openness, as measured by merchandise trade percentages against GDP, is likely to enhance manufacturing value added through enlarging market access and accessibility to competitive-inputs, in support of previous findings, such as those by Seyoum (2009), where the study suggested the significant role of openness in improving FDI effects on manufacturing

- **Inflation Rate on Manufacturing Value Addition**

High inflation rates can hamper investments into the manufacturing sector since they stir economic uncertainty and thereby heighten the production costs. Hence, Adams and Opoku (2015) posit that inflation will negatively impact manufacturing output, suggesting a requirement for stable macroeconomic conditions.

To conclude, applying these variables to the conceptual framework built on the endogenous growth model is designed to yield a holistic analysis of the determinants of manufacturing value addition in Zambia. This posited positive influence of FDI, GDP per capita growth, and merchandise trade on manufacturing value addition points to the need to pursue an enabling investment climate along with trade openness. Conversely, inflation and inefficiencies within the financial sector need to be addressed in order to support long-standing growth in manufacturing. This holistic approach may provide valuable insight for policymakers inclined to increase the industrial sector's contribution to Zambia's overall development.

CHAPTER THREE: METHODOLOGY

This chapter provides a description of the approach used in this study in defining and assessing the effects of FDI on the manufacturing value addition in Zambia having considered the earlier chapter that provided a literature review. They entail information about the plan of the study, the way data was collected, and how the data was analyzed. The explicit goal of this chapter is to provide the reader with a clear understanding of the conducted research process and its results' efficiency and reliability, which will make it easier for the readers of the study to apply the results in their future research activities. Some of the areas discussed are research methodology, development of the mathematical model, and diagnostic check.

3.1 Research Approach

The research approach for this study was quantitative method. This approach helped to measure FDI effects, identify trends, and contribute to evidence-based policy-making, ensuring objectivity, reliability, and generalizability for policymakers, investors, and stakeholders.

3.2 Research design

The study employed quantitative methods design. Particularly, the study goal of ascertaining whether there is a long-term equilibrium link between FDI net inflows, GDP per capita, merchandise trade and Inflation Rate on manufacturing value addition in Zambia was examined with the aid of the correlational design. Furthermore, the goal of the causal comparative research design was to investigate the cause-and-effect relationship between foreign direct investment inflows and industrial value addition in Zambia.

3.3 Study Population

The study population for this research included stakeholders from the Ministry of Commerce, Trade, and Industry, the Zambia Statistical Agency (ZAMSTATS), Zambia

Development Agency (ZDA), and the Zambia Association of Manufacturers (ZAM), who offered thorough insights to the phenomenom study.

3.4 Sample Size

This study employed secondary yearly time series data extending from the year 1990 to the year 2023 giving a total of 33 observations.

3.5 Sampling Techniques

Instead of using a sample technique, the sampling strategy for this study involved explicitly selecting relevant data points across a defined time, from 1990 to 2023, to guarantee that the data is comprehensive and indicative of the patterns and impacts under examination.

3.6 Data Collection/Instruments

This study relied on secondary annual time-series data collected from the Bank of Zambia and the World Bank Microdata Library. These online repositories offer reliable and rich datasets for analysis used in this study.

3.7 Model Specification

The study adopted a multiple regression model for purposes of investigating statistical significant relationship between FDI net inflows, GDP per capita, merchandise trade (percent of GDP) and Inflation Rate on manufacturing value addition in Zambia. The study's multiple linear regression is as follows:

$$\gamma_t = \beta_0 + \beta_1 \times_{1t} + \beta_2 \times_2 + \beta_3 \times_3 + \beta_4 \times_4 + \varepsilon_t|$$

Where $\gamma_t = Zambia's\ Manufaxcturing\ Value\ addition\ in\ period\ t.$

$\times_1 = FDI\ net\ inflows\ in\ period\ t.$

$\times_2 = GDP\ per\ capita\ in\ period\ t.$

$\times_3 = Merchandise\ Trade\ in\ period\ t.$

$\times_4 = Inflation\ Rate\ in\ period\ t.$

$\beta_0 = \gamma - intercept\ of\ the\ line$

$\beta_i = (i = 1,2,3) are\ estimates\ of\ the\ coefficient$

$\varepsilon_t = An\ error\ term$

3.8 Data Analysis

In this research study, quantitative data analysis was employed to examine the relationships among the predetermined variables regarding regression and correlation. The data analysis strategy employed statistical and economic methods. This was made possible through the utilization of Statistics and Data Analysis (STATA) version 15, an econometric toolset. The statistical and econometric tests enumerated below were utilized in STATA to produce results relevant to the study's aims:

1. **Descriptive Statistics test**

The objective of this examination was to condense and present a coherent summary of the key aspects of the data, particularly concerning FDI net inflows, GDP per capita, merchandise trade, inflation rate, and manufacturing value added. In addition, a descriptive statistics test was performed to assess the distribution of the data from the previously mentioned variables. This required assessing whether the time series data were biased or had outliers, potentially affecting the results of regression models or other analyses, or if they were normally distributed, which could impact the choice of statistical tests.

2. **Unit Root test**

The research utilized unit root tests for the analyzed time series data to avoid erroneous statistical conclusions if the data is non-stationary. Specifically, the time series data underwent stationarity testing through the Augmented Dickey-Fuller (ADF) test. By performing a unit root test, the examination was essential in confirming that the variables utilized in regression models are stationary, thus yielding more dependable results (Gujarati 2009).

3. **Johansen Cointegration test**

The second test done was the cointegration test by use of Johansen cointegration test which determines long-run relationships in the variables. A major conclusion that authors derived from this test was that the variables involved are in a long-run equilibrium. This test was important in determining the time horizon after which the impact of FDI on Zambia's manufacturing value addition would occur as supported by the unit root test.

4. **Vector Error Correction Model (VECM) test**

Upon confirming the stationarity and cointegration properties of the time series data, the Vector Error Correction Model (VECM) test was performed in accordance with the cointegration findings. Specifically, the reason for using the VECM test was that the time series data were cointegrated and non-stationary at the levels, indicating a long-run equilibrium relationship. The purpose of the VECM test was to examine how short-term variations in FDI inflows are adjusted to match long-term manufacturing growth patterns in Zambia.

5. **Model Stability test**

A stability test on the estimated VECM model was conducted to assess the consistency of the model's parameters over time. In this instance, the purpose of conducting stability tests was to verify that the results regarding the effect of FDI inflows on Zambia's manufacturing value addition are dependable and strong throughout the sample period. This phase is essential for drawing accurate conclusions and offering reliable policy suggestions.

6. **Auto Correlation test**

Autocorrelation denotes the correlation of error terms over various time intervals. The primary aim of performing an autocorrelation test in this research was to verify the reliability and validity of the multiple regression model implemented in the analysis. Moreover, it was important to check for the lack of autocorrelation in the residuals to confirm the model's validity. Autocorrelation present in the residuals may suggest that the model is incorrectly specified or that significant variables were left out. Utilizing the Lagrange Multiplier test, the analysis helped to identify if the residuals of the regression model exhibit trends that need addressing or if they are independently distributed.

7. **Granger causality test**

The aim of this test was to determine the predictive capability of one time series in relation to another. This method is commonly employed to demonstrate causation in time-series data. Consequently, the aim of the test was to produce pertinent data regarding the causal relationship between FDI net inflows and manufacturing value addition in Zambia. Understanding the causal direction allows policymakers to formulate

more effective strategies. For example, prioritizing measures to attract FDI could enhance the manufacturing sector if FDI inflows Granger-cause manufacturing value addition.

3.9 Ethical Considerations

This study adhered to all ethical behaviors of truthful reporting in order to enhance existing knowledge. The data was not distorted, fabricated nor falsified in any manner. All sources that was used in this study was properly recognized.

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION

In this chapter, the analysis and interpretation of the data will be presented. The results of the empirical analysis are presented and the chapter concludes with the interpretation.

4.1 Pre-Estimation Results

4.1.1 Descriptive Statistics

Table 1: Descriptive Statistical Results

VARIABLES:	MVA	FDI	GDPG	INFLR	MCHT
Mean	11.90631	4.367094	1.149994	35.13141	59.76403
Median	9.292757	4.628971	1.530860	18.14611	60.09471
Maximum	33.34589	9.604383	6.507553	183.3120	76.98121
Minimum	6.023735	-1.228417	-10.81755	6.429397	40.29477
Std. Dev.	7.528384	2.721277	3.498436	45.48862	10.33874
Skewness	2.059119	-0.018793	-1.378239	2.124524	0.009510
Kurtosis	5.951143	2.355536	5.410248	6.438877	1.894737
Jarque-Bera	36.36461	0.590392	18.99392	42.33041	1.731122
Probability	0.000000	0.744386	0.000075	0.000000	0.420816
Sum	404.8146	148.4812	39.09981	1194.468	2031.977
Sum Sq. Dev.	1870.327	244.3765	403.8889	68284.08	3527.358
Observations	33	33	33	33	33

Source: Author's compilation using STATA results

Summary descriptive statistics of the variables of interest, with all 33 observations, are presented in Table 11 above. This data covers annual years spanning from 1990 to 2023. The following is the descriptive statistics analysis per variable.

i. Manufacturing Value Addition (MVA)

The average MVA is 11.90631, indicating that over the sample period, the typical value of manufacturing value added is approximately 11.91. Also, the median MVA is 9.292757, suggesting that half of the observations are below this value, which is lower than the mean, indicating a skewed distribution. The results further revealed a skewness of 2.059119, which implies that the distribution is positively skewed and there are few extremely high values pulling the mean above the median. Furthermore, while the Jargue- Bera Test statistics of 36.36461 with a p-value of 0.000000 rejects the null hypothesis of normality and confirms that MVA is not normally distributed, the kurtosis

value of 5.951143 on the other hand, suggests a leptokurtic distribution with a high peak and heavier tails compared to a normal distribution.

ii. Foreign Direct Investment (FDI) net inflows

The mean FDI net inflows is 4.367094 with standard deviation of 2.721277, reflecting moderate variability around the mean. The skewness of -0.018793 is very close to zero, indicating a nearly symmetric distribution of FDI values. FDI net inflows shows a Jarque-Bera test statistic of 0.590392 with a p-value of 0.744386 which does not reject the null hypothesis of normality, thereby indicating that FDI values are approximately normally distributed.

iii. Growth Domestic Product (GDP) per Capita

GDP per capita averaged 1.149994, which suggests a modest economic standard of living over the sample period. GDP per capita values appears to show significant periods of contraction with a maximum value range of 6.507553 and a minimum value of -10.81755. The skewness of -1.378239 and Jarque-Bera test statistics of 18.99392 indicates a negatively skewed distribution with a longer left tail and confirms the variable is not normally distributed respectively.

iv. Inflation Rate

Inflate rate shows a mean of 35.13141 and standard deviation of 45.48862. Also, inflation values range from 6.429397 to 183.3120, indicating periods of hyperinflation and relatively low inflation in the economy. The skewness of 2.124524 indicates the distribution is positively skewed and there are a few extremely high values pulling the mean above the median of 18.14611.

v. Merchandize Trade

The mean merchandise trade value is 59.76403, indicating substantial average trade over the period. Additionally, merchandize trade shows moderate variability values ranging from 49.29477 to 76.98121. The skewness of 0.009510 shows a nearly symmetric distribution of merchandize trade values while the kurtosis value of 1.894737 suggests a platykurtic distribution with a flatter peak and thinner tails.

Overall, the means and medians of the variables were closely aligned, ranging between 1 and 60. The highest observed value was 183.312 for the inflation rate, while the lowest was -10.8175 for GDP per Capita. Most variables had relatively low standard deviations, except for the inflation rate, which had a notably high standard deviation of 40.29. Skewness measurements indicated that most variables were positively skewed, whereas GDP per capita and FDI net inflows were negatively skewed. Additionally, the low kurtosis values and high Jarque-Bera probability values (greater than 5percent) suggest that the data is leptokurtic and normally distributed. The table below presents the summary of the results.

The descriptive statistics help in developing information that shows the degrees of variation and distribution of the variables so that understanding of economic change and fluctuation in the sample period can be obtained easily.

Table 2: Lag Selection Criteria

Lag	Log L	LR	FPE	AIC	HQ	SC
0	-520.806	NA	1.3e+08	32.8629	32.9388	33.0919
1	-439.586	162.44	3.9e+06	29.3491	29.8046*	30.7233*
2	-410.276	58.622*	3.4e+06*	29.0797*	29.9148	31.599

Source: Author's compilation using STATA results

The lag length chosen for this analysis was two (2), based on the guidance provided by the Akaike Information Criterion (AIC).

4.1.2 Unit Root Test Results

Using the Augmented Dickey Fuller procedure, the following are the hypothesis criteria;
(Null Hypothesis) H_0 = Variables are Non-stationary (Unit root).
(Alternative Hypothesis) H_1 = Variables are stationary (No unit root).

Before estimating the regression models, it should be pointed out that the existence of the unit roots in time series data compromises the results. Hence, performing inference tests called for checking the variables' stationarity. Of special interest in time series analysis is the concept of order of integration where by determine the number of differences that make a variable stationary. As a part of data preprocessing it is needed to decide if the data is stationary or non-stationary, for this purpose Augmented Dickey-Fuller (ADF) test has been used.

The ADF test makes sure that estimates used in regression analysis are from a stationary data set to avoid the production of wrong results. This test helps determine at what point a time series is stationary. In this case, the null hypothesis that specified the process under consideration is non-stationary is turned down if the p-value obtained is less than 0.05, so is for the stationary hypothesis specified. In this study, the ADF test has been used for both the independent and the dependent variables in their natural logs. Applying first difference on these variables changed their p-values under 0.05 for all implying the models were stationary. The summary of the findings is presented in the following table below.

Table 3: Augmented Dickey Fuller Test Results at Levels and 1st Difference

Augmented Dickey Fuller Test								
	LEVEL				1ST DIFFERENCE			
VARIABLE	Prob.	T. Stat	5percent Critical		Prob.	T. Stat	5percent Critical	ORDER
INFLR	0.0754	-3.247	-3.580	INFLR	0.000*	-6.451	-3.584	I(1)
MCHT	0.0938	-1.355	-1.708	MCHT	0.000*	-3.953	-1.711	I(1)
FDI	0.9932	-0.087	-3.580	FDI	0.000*	-5.371	-3.584	I(1)
GDPG	0.9231	-1.134	-3.580	GDPG	0.010*	-3.943	-3.584	I(1)
MVA	0.5662	-2.064	-3.568	MVA	0.000*	-5.250	-3.572	I(1)

Source: Author's compilation using STATA results

4.1.3 Johansen Cointegration Test Results

The Johansen Cointegration test was performed under two lags, opening five likelihood equations in overall, of which maximum of two were cointegration equations. This shows that there is a stable long run equilibrium relationship between the variables in the model under consideration. There was evidence of the cointegration equations test, based on the results from the trace and maximum eigenvalue statistics for the models – at levels of 'none' and 'at most one' where the test statistics values crawled over the respective critical thresholds. Therefore, the hypothesized assertion of no cointegration between the variables was turned down. The results show that the variables of FDI net inflows, GDP per capita, merchandise trade (percent of GDP), inflation rate, and manufacturing value addition are cointegrated in the long run in Zambia's case.The results are summarized in the table below.

Table 4: Johansen Cointegration Test Results

Max Rank	EigenValue	Trace Stat.	Critical Value (5percent)
0	-	85.3141	68.52
1	0.69257	47.5695	47.21
2	0.53632	22.9753*	29.68
3	0.35697	8.8454	15.41
4	0.21832	0.9634	3.76
5	0.02966		

Source: Author's compilation using STATA results

4.1.4 Vector Error Correction Model (VECM) Test Results

Given the stationarity of all variables at first difference and the presence of cointegration relationships, a Vector Error Correction Model (VECM) was estimated. The long-run results revealed that FDI net inflows had a significant positive impact on manufacturing value addition, with confidence interval values of (0.2838, 0.7567) and probability value of 0.0137. This implies that a unit increase in FDI leads to a 0.5202 percentage increase in manufacturing value addition over the long term. Similarly, GDP growth showed a significant negative effect on manufacturing value addition, with confidence intervals between (-0.5788, -0.1674) and probability value of 0.0301. This means that, all else being equal, a unit increase in GDP growth rate results in a 0.3731-unit decrease in manufacturing value addition in the long run. Lastly, inflation rate also had a negative relationship with manufacturing value addition, indicating that a unit increase in inflation rate leads to a 0.1440-unit decrease in manufacturing value addition, holding all else constant. These findings were significant based on confidence interval tests, with values ranging from (-0.1594 to -0.1286). Overall, the results revealed that all the independent variables consisting of merchandize trade, FDI net inflows, inflate rate and GDP per capita have a statistical significant relationship on Zambia's manufacturing value addition due to the respective probability values which were less than the significance confidence level of 0.05 percent.

Table 5: VECM Long Run Results

VARIABLE	COEFFICIENT	STD. ERR	Prob	CONFIDENCE INTERVAL (95percent)	
FDI	0.5202*	0.1206	0.0137*	0.2838	0.7567
GDPG	-0.3731*	0.1049	0.0301*	-0.5788	-0.1674
INFLR	-0.1440*	0.0078	0.0249*	-0.1594	-0.1286

*denotes significant coefficients

4.1.5 Error Correction Model (ECM) Test Results

An Error Correction Model (ECM) was estimated to analyze the short-run relationships among the variables in the model. The results showed that the first and second lags of manufacturing value addition had a positive effect on current manufacturing value addition in the short run. Specifically, a percentage increase in the first and second lags of manufacturing value addition led to a 0.7743 and 0.9954 percentage increase in current manufacturing value addition, respectively, with the significance confirmed by confidence intervals of (0.3061, 1.2425) and (0.4539, 1.5368), both being positive. Additionally, the coefficients of the first and second lags of GDP per capita were negative, indicating an adverse effect on manufacturing value addition in the short run. A percentage increase in GDP per capita resulted in a 0.7594 and 0.4956 percentage decrease in manufacturing value addition, supported by the significant confidence intervals of (-1.0993, -0.4194) and (-0.9325, -0.0588), holding all other factors constant. Furthermore, inflation rate also had a negative effect on manufacturing value addition, meaning that a percentage increase in inflation rate caused a 0.1184 percentage decrease in manufacturing value addition, with confidence intervals of (-0.1759, -0.0610).

Lastly, the estimated error correction term was -0.8645 (86.45percent), with confidence intervals of (-1.295, -0.4376), indicating that the system would readjust to equilibrium at a speed of 86.45percent in the long run. Overall, analysis on the short run relationship among the variables in the model showed that the independent variables were statistically significant in the explanation of the impact of FDI net inflows on Zambia's manufacturing value addition as supported by the respective probability values that were less than the significance level of 0.05 percent, thereby rejecting the null hypothesis of no significance relationship among the considered variables for this study. .

Table 6: ECM Short Run Results

VARIABLE	COEFFICIENT	Prob	STD. ERR	CONFIDENCE INTERVAL (95percent)	
MVA(-1)	0.7743 *	0.0100*	0.2388	0.3061	1.2425
MVA(-2)	0.9954 *	0.0009*	0.2762	0.4539	1.5368
GDPG(-1)	-0.7594 *	0.0318*	0.1734	-1.0993	-0.4194
GDPG(-2)	-0.4956 *	0.0014*	0.2228	-0.9325	-0.0588
INFLR(-1)	-0.1184 *	0.0330*	0.0293	-0.1759	-0.0610
ECT(-1)	-0.8645 *	0.0261*	0.2178	-1.2915	-0.4376

*denotes significant coefficients

4.2 Post Estimation Results

4.2.1 Autocorrelation Test Results

A Lagrange Multiplier test was conducted to check for autocorrelation in the model, yielding probability values of 0.4674 and 0.9593 for the first and second lags, respectively, both of which were greater than 0.05. As a result, the null hypothesis of no autocorrelation was not rejected, leading to the conclusion that the model was free from any form of autocorrelation.

Table 7: Autocorrelation Test Results

LAG	CHI 2	DF	PROB > CHI 2
1	24.9100	25	0.4674
2	14.1336	25	0.9593

Source: Author's compilation using STATA results

4.2.2 Heteroscedasticity Test Results

A white heteroscedasticity test was conducted to assess the unequal variance in the error term or residuals. Thus, the probability value obtained was 0.805 which was greater than 0.05 suggesting the absence heteroscedasticity in the model.

Table 8: Heteroscedasticity Test Results

CHI-SQ	DF	PROB.
307.76537	330	0.805

Source: Author's compilation using STATA results

4.2.3 Model Stability Test Results

The model stability test on the estimated VEC model imposed four (4) unit moduli, with all remaining eigenvalues being less than one (1). This provided strong evidence to conclude that the model was stable.

Table 9: Model Stability Test Results

EIGENVALUE	MODULUS
1	1
1	1
1	1
1	1
0.6042 + 0.5470i	0.8150
0.6042 - 0.5470i	0.8150
-0.4357 + 0.6810i	0.8085
-0.4357 - 0.6810i	0.8085
-0.7910 + 0.0426i	0.7921
-0.7910 - 0.0426i	0.7921
-0.2502 + 0.5898i	0.6407
-0.2502 - 0.5898i	0.6407
0.0699 + 0.6272i	0.6311
0.0699 - 0.6272i	0.6311
0.0698	0.0698

*Modulus Value less than one denotes model stability

*Source: Author's compilation using STATA results

4.2.4 Granger Causality Test Results

The Granger causality test shows that in the short run, inflation rates (INFLR) and GDP growth (GDPG) significantly influence manufacturing value added (MVA). Additionally, Manufacturing value added (MVA) granger causes inflation rates and merchandize trade (MCHT) in the short run highlighted by the significant p values less than 5percent. Similarly, in the short run, foreign direct investments granger cause GDP growth and merchandise trade whereas GDP growth in the short run granger causes Merchandize trade respectively. Notably, there exists long run granger causality between the dependent variables namely Manufacturing value added, Inflation rates and Merchandize trading with the related independent variables highlighted by the significant error correction terms (ECT-1).

Table 10: Granger Causality Test Results

Granger Causality Test						
Variables	Short run					Long run
	Independent					ECT-1
	MVA	FDI	INFLR	GDPC	MCHT	
Dependent						
MVA		0.88 (0.3471)	16.32 (0.0001)***	19.17 (0.000)**	0.08 (0.7834)	-0.8645 [0.000] *
FDI	0.16 (0.6873)		0.43 (0.5121)	0.05 (0.8316)	0.76 (0.3839)	0.2122 [0.341]
INFLR	4.12 (0.0425)**	1.39 (0.2380)		1.33 (0.2486)	0.08 (0.7759)	4.8988 [0.000]*
GDPC	0.05 (0.8191)	6.81 (0.009)**	2.20 (0.1377)		0.26 (0.6102)	0.4378 [0.073]
MCHT	5.52 (0.018)**	5.65 (0.0175)**	0.86 (0.3538)	6.72 (0.0096)**		-1.1023 [0.041]*

Source: Authors computations STATA output, ( )* represents significant P Values

CHAPTER FIVE: DISCUSSION OF THE FINDINGS

The aim of this chapter to discuss the study findings which was about investigate the impacts of FDI net inflows, GDP per capita, merchandise trade (percent of GDP) and inflation Rate on manufacturing value addition in Zambia from 1990 -2023. The findings are envisaged on a number of research objectives inherent of the study. The chapter also shows key diagnostic tests that were carried out in the study and recommendations.

5.1 Analysis Results

In examining the impact of FDI net inflows on Zambia's manufacturing value addition, it's essential to understand how FDI serves as a conduit for capital flow, technology transfer, and managerial expertise into host economies. This is crucial as the extent of its impact can vary significantly based on factors such as the host country's economic policies, workforce skill levels, and market conditions.

5.1.1 Discussion on the significant relationship and cointegration findings

As such this paper sought to shed light on this topic in the Zambian context. Thus it was observed that FDI net inflows significantly improved the manufacturing value added in the long run likely attributable to capital inflows, technology and expertise necessary in enhancing effectiveness and efficiency of the manufacturing sector. This aligns with the findings by Idoko (2018), which highlighted positive contributions of foreign direct investments in the manufacturing sector. However, Tajul (2012) argued otherwise noting that the positive effect is largely short term as the relationship becomes significantly negative in certain manufacturing sectors in the long run. Nonetheless, the varying findings highlight the relatively nonlinear relationship that FDI and the manufacturing sector have in various regions across the world.

Notably, inflation rates had a significantly negative long-term relationship with manufacturing value added, likely attributable to the increase in cost of production

deterring investments in the manufacturing sector. Erinma (2016) supports these findings, stating that rising inflation rates in Nigeria negatively affected the manufacturing sector's contribution to GDP and the average capacity utilization of the sector. Thus, the subsequent effect of reduced purchasing power impedes value addition in the manufacturing sector. However, Suhanyiova (2024) notes that the relationship between inflation rates and the manufacturing sector is only negative in the short run but later becomes positive in the long run mainly on grounds of adaptability and resilience. As such, increases in input costs could result in declines in the manufacturing value added (Marco, 2023), whereas enhancements in manufacturing value added could signal a rise in economic activity prompting inflation rate adjustments to stabilize the rate of growth.

Notably, GDP growth was noted to have a significantly adverse effect on manufacturing value added both in the short and long run. This could be attributed to benefits in economic growth not trickling down to the manufacturing industry where the growth in GDP is largely driven by non-manufacturing sectors. However, Euis (2020) observes that, in the short run, GDP positively influences the manufacturing sector up until the first lag in the long run and becomes negative (insignificant) in subsequent lags. Thus, the relationship is largely variable based on the time period and regions observed.

Conclusively, as can be noted, most dependent variables had a statistically significant long run relation except for the number of merchant trades which was insignificant in both the short and long run.

5.1.2 Discussion on the direction of causality findings

This study identifies any causal links among the variables through the use of the granger causality test. In that regard, manufacturing value added was noted to granger cause merchandize trading stemming from the subsequent improvement in the number of trades internally and externally arising from improvements in manufacturing value added. Biswajit (2020) notes that as manufacturing sectors become more sophisticated and efficient, they not only boost domestic output but also enhance the quality, quantity and volume of both internal and external trades posing as a unidirectional relationship.

Furthermore, a short-run causal relationship was noted where inflation rates (INFLR) and GDP growth (GDPG) significantly influenced manufacturing value added (MVA). Additionally, Manufacturing value added was observed to influence inflation rates in the short run, pointing to a bidirectional relationship between these variables, where changes in manufacturing output impact inflation, and inflation and GDP growth in turn affect manufacturing activity. Hau's (2006) study concurs noting that the dynamic relationships stemming from economic variables (Inflation rate, GDP growth rate) drive cost structures and output levels in the manufacturing sector. The subsequent effects of increased inflation rates spikes may destabilize manufacturing sectors through price volatility, while GDP growth can enhance it by driving demand for manufactured goods.

Similarly, in the short run, foreign direct investments were observed to granger cause GDP growth and merchandise trade whereas GDP growth in the short run granger causes Merchandize trade highlighting both unidirectional and bidirectional relationships respectively. Similar studies concur and highlight this dynamic relationship in that foreign direct investments drive economic growth by providing capital and expertise, which boosts productivity and employment (Al-khasawneh, Mohanad, 2013). Therefore, as the economy grows, foreign direct investments are likely to increase resulting in a stronger economy which enhances export competitiveness, increasing merchandise trade.

Finally, a long run causal relationship was noted between the dependent variables namely Manufacturing value added, Inflation rates and Merchandize trading with the related independent variables.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

International business investment has been widely known to positively influence growth more so to economy of the developing nations, whereby FDI has been considered one of the critical contributors towards the improvement of the economy. This research basically looked for the co-integration and cause and effect analysis using FDI net inflows and manufacturing value addition of Zambia available data from 1990 to 2023.

Cointegration test also showed that there is a long run co-integrating relationship and a positive long run association between the considered variables which are manufacturing value addition and FDI net inflows. While GDP per capita was found to have a considerably negative impact on manufacturing value addition both in the short and long term, the study's findings showed that inflation rate had a negative long-run relationship with manufacturing value addition.

In terms of statistical significance, the findings demonstrated that every explanatory variables significantly impacted Zambia's manufacturing value addition. Regarding the causation test's direction, the findings showed that manufacturing value addition granger causes merchandise trade. While it was observed that there is no causal relationship between Zambia's manufacturing value addition and FDI net inflows, a short-run causal relationship was noted where inflation rates and GDP per capita significantly influenced manufacturing value addition. Furthermore, manufacturing value addition was observed to influence inflation rates in the short run, pointing to a bidirectional relationship between these variables, where changes in manufacturing output impact inflation, and inflation and GDP per capita in turn affect manufacturing activity.

6.2 Recommendations

This study proposes several key actions concerning the topic.

1. Since there is a long-term relationship between FDI inflows and manufacturing value addition, Zambia should focus on creating an investment-friendly environment that encourages foreign investors, particularly in the manufacturing sector. This can be achieved through incentives such as tax breaks, ease of doing business reforms, and infrastructure development, especially in transport and energy sectors, to reduce operational costs for manufacturers This is supported by a related study by Kgosietsile and Lekgari (2021) which suggested that Botswana should enhance its business climate because FDI's ability to increase manufacturing value is dependent on a stable macroeconomic environment and efficient regulatory frameworks.
2. The work also identified that FDI has the ability to make a positive difference to the growth of the manufacturing sector. As an incentive for attracting FDI, Zambia may focus on those sectors in the country that has a comparative advantage in agriculture manufacturing, natural resources processing and value added exportation. They could range from advocating for agro-processing, textiles and electronics, supporting specific industrial clusters or strengthening existing SEZs by providing them extra physical and/or regulatory upgrades.
3. Access to financing is often a barrier for domestic manufacturers looking to scale, and foreign investors may also look for robust financial systems to ensure their investments are secure. By introducing financial products tailored to manufacturers, such as low-interest loans for investment in machinery and equipment, this can help facilitate investments into the manufacturing sector. This is corroborated by research by Nguyen (2020), which recommended on the necessity of infrastructure development and a favorable investment climate in order to draw in high-quality FDI that can increase industrial value addition.
4. FDI also delivers capital, but more crucially, technology and innovation – therefore, the positive long run co-movement between FDI and manufacturing value addition could be suggestive of the country's ability to swiftly assimilate

capabilities in advanced manufacturing technologies. Hence the government should come up with policies that support the transfer of technology like forming partnership between the foreign firms and the local firms.

5. The implication drawn from the results is that there is a negative association between manufacturing value addition and per capita GDP both the short run and long run. In response to this, the government should prune down its dependence on raw material sectors that hardly support manufacturing. An economy where industries that contribute little value to manufacturing dominate clearly shows that, a host country's manufacturing value addition does not have direct correlation with a diabolical GDP per capita. Diversification is important in order to avoid high risks associated with dependency on a particular sector.
6. On the same note, to lessen the adverse long-term inflation impact on manufacturing value addition the government needs to focus on infrastructure development particularly transport, power and communication to help lower manufacturing costs in the production process and boost up productivity in the manufacturing sector. Besides, the current and upcoming measures that envisage the elimination of obstacle to access for the manufacturing sector will enable it to manage inflation factors and shocks affecting GDP.
7. While this study has noted a short run causal relationship where inflation rate and GDP per capita significantly influence manufacturing value addition, future researches should examine the short-term effects of inflation on manufacturing, including how it affects labor costs, raw material prices, and production capacity. By understanding the short-term effects of inflation on the manufacturing sector, this will assist policymakers in developing focused strategies to reduce the adverse effects of inflation on manufacturing operations, such as modifying interest rates or managing inflation expectations.
8. Additionally, further research should explore the bidirectional relationship between GDP per capita and merchandise trade, focusing on how each affects the other over time. Particular focus should be placed on how trade policy, exchange rates, and worldwide market movements affect GDP growth and trade. As such, knowing how GDP per capita and merchandise trade are feedback loops will help appreciate how changes in one can either speed up or slow down the other. Consequently, this can help guide policy choices meant to simultaneously advance economic growth and trade. On the other hand, future research should

examine how FDI and merchandise trade interact within particular industries (e.g., high-tech, manufacturing, agriculture). This is because different sectors may respond differently to FDI and merchandise trade interactions. Therefore, understanding these variations will allow for more targeted policies aimed at promoting trade in specific industries, thereby fostering sustainable economic growth.

9. However, more research could be conducted to analyze the relationship between FDI and merchandise trade on a more detailed sectoral basis including high-tech, manufacturing, and agriculture sectors. There could be some varied effects depending on the type of interaction between FDI and merchandise trade all across the industries. With these insights of sector specific dynamics, one can think of policies that can be useful in providing the impetus for trade in these sectors, and thereby, sustainable development.
10. The study established short run relationship between inflation rate and manufacturing value addition, however, we cannot afford not to ask whether these short run relationships persist; or change over time. Some of the areas for further research that have emerged from this study include a longitudinal analysis of the nature of the relationships between FDI, GDP per capita, and merchandise trade. Studying such relationships over long-term would answer such questions as: Is the effect of FDI and GDP per capita on merchandise trade constant or does it change as the economy grows.
11. Lastly, since FDI net inflows may not have a direct causal relationship with manufacturing value addition in Zambia in accordance with this study's result, it is important to consider domestic factors that could contribute to manufacturing value addition. These factors could include infrastructure development, human capital, innovation, and access to finance. Future research should investigate whether domestic policies and internal investments have a more significant role in the manufacturing sector than foreign capital.

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Appendix 1: Descriptive Statistic Results

	MVA	FDI	GDPG	INFLR	MCHT
Mean	11.90631	4.367094	1.149994	35.13141	59.76403
Median	9.292757	4.628971	1.530860	18.14611	60.09471
Maximum	33.34589	9.604383	6.507553	183.3120	76.98121
Minimum	6.023735	-1.228417	-10.81755	6.429397	40.29477
Std. Dev.	7.528384	2.721277	3.498436	45.48862	10.33874
Skewness	2.059119	-0.018793	-1.378239	2.124524	0.009510
Kurtosis	5.951143	2.355536	5.410248	6.438877	1.894737
Jarque-Bera	36.36461	0.590392	18.99392	42.33041	1.731122
Probability	0.000000	0.744386	0.000075	0.000000	0.420816
Sum	404.8146	148.4812	39.09981	1194.468	2031.977
Sum Sq. Dev.	1870.327	244.3765	403.8889	68284.08	3527.358
Observations	33	33	33	33	33

Appendix 2: Lag Length Criteria Selection Results

```
.
. //Lag length criteria selection
. varsoc MVA FDI GDPG INFLR MCHT, maxlag (2)

   Selection-order criteria
   Sample:  1992 - 2023                              Numbe
> r of obs
>                 =        32
   ┌─────┬──────────────────────────────────────────────────
> ──────────────────────────┐
   │lag │     LL      LR      df    p      FPE        AI
> C
>         HQIC
>                   SBIC
>                                 │
   ├─────┼──────────────────────────────────────────────────
> ──────────┤
   │  0 │ -520.806                          1.3e+08   32.8
> 629
>        32.9388
>                  33.0919
>                                 │
   │  1 │ -439.586  162.44   25  0.000  3.9e+06   29.3
> 491
>        29.8046
>                *
>                  30.7233
>                         *
>                                 │
   │  2 │ -410.276  58.622*  25  0.000  3.4e+06*  29.0
> 797
>     *
>        29.9148
>                  31.599
>                                 │
   └─────┴──────────────────────────────────────────────────
> ──────────┘
    Endogenous:  MVA FDI GDPG INFLR MCHT
     Exogenous:   cons
```

Appendix 3: Cointegration Results

```
.
. //Johansens Cointegration test
. vecrank MVA FDI GDPG INFLR MCHT

                      Johansen tests for cointegrati
> on
Trend: constant
>    Number of obs =      32
Sample:  1992 - 2023
>             Lags =       2
------------------------------------------------------------------------------
> --------------------------

>     5%
maximum                                        trace
>  critical
  rank     parms       LL       eigenvalue  statistic
>    value
    0       30     -452.93259            .     85.3141
>    68.52
    1       39     -434.06032      0.69257     47.5695
>    47.21
    2       46     -421.76321      0.53632     22.9753*
>    29.68
    3       51     -414.69827      0.35697      8.8454
>    15.41
    4       54     -410.75724      0.21832      0.9634
>     3.76
    5       55     -410.27555      0.02966
------------------------------------------------------------------------------
> --------------------------

.
```

```
Cointegrating equations

Equation             Parms      chi2      P>chi2
-------------------------------------------------
_ce1                     4     691.366    0.0000
-------------------------------------------------

Identification:  beta is exactly identified

                  Johansen normalization restriction i
> mposed
------------------------------------------------------------------------------
> ------------------------------
        beta |      Coef.   Std. Err.       z     P>|z|
>       [95% Con
>               f. Interval]
-------------------------------------------------------------------------------
> ------------------------------
_ce1
         MVA |           1          .        .       .
>                .
>                     .
         FDI |    .5202718   .1206412      4.31   0.000
>       .2838195
>                    .7567242
        GDPG |   -.3731482   .1049488     -3.56   0.000
>       -.578844
>                   -.1674524
        INFLR |   -.1440342   .0078423    -18.37   0.000
>      -.1594048
>                   -.1286635
        MCHT |   -.0177793   .0201335     -0.88   0.377
>      -.0572402
>                    .0216816
       _cons |   -7.840034          .        .       .
>                .
>                     .
```

Appendix 4: Model Stability Results

```
.
. //Model stability test
. vecstable
```

Eigenvalue stability condition

Eigenvalue	Modulus
1	1
1	1
1	1
1	1
.6042309 + .5470653*i*	.815092
.6042309 - .5470653*i*	.815092
-.4357894 + .6810083*i*	.808508
-.4357894 - .6810083*i*	.808508
-.7910123 + .04269914*i*	.792164
-.7910123 - .04269914*i*	.792164
-.2502549 + .5898892*i*	.640778
-.2502549 - .5898892*i*	.640778
.06996103 + .6272737*i*	.631163
.06996103 - .6272737*i*	.631163
.06986528	.069865

The VECM specification imposes 4 unit moduli.

Appendix 5: Granger Causality Results

```
. //Granger Causality test Manufacturing Value Added
> @Dependent Variable
. test ([D_MVA] : LD.FDI)

 ( 1)  [D_MVA]LD.FDI = 0

           chi2(  1) =    0.88
         Prob > chi2 =    0.3471

. test ([D_MVA] : LD.INFLR)

 ( 1)  [D_MVA]LD.INFLR = 0

           chi2(  1) =   16.32
         Prob > chi2 =    0.0001

. test ([D_MVA] : LD.GDPG)

 ( 1)  [D_MVA]LD.GDPG = 0

           chi2(  1) =   19.17
         Prob > chi2 =    0.0000

. test ([D_MVA] : LD.MCHT)

 ( 1)  [D_MVA]LD.MCHT = 0

           chi2(  1) =    0.08
         Prob > chi2 =    0.7834

.
```

```
. //Granger Causality test FDI @Dependent Variable
. test ([D_FDI] : LD.MVA)

 ( 1)  [D_FDI]LD.MVA = 0

           chi2(  1) =    0.16
         Prob > chi2 =    0.6873

. test ([D_FDI] : LD.INFLR)

 ( 1)  [D_FDI]LD.INFLR = 0

           chi2(  1) =    0.43
         Prob > chi2 =    0.5121

. test ([D_FDI] : LD.GDPG)

 ( 1)  [D_FDI]LD.GDPG = 0

           chi2(  1) =    0.05
         Prob > chi2 =    0.8316

. test ([D_FDI] : LD.MCHT)

 ( 1)  [D_FDI]LD.MCHT = 0

           chi2(  1) =    0.76
         Prob > chi2 =    0.3839

.
```

Appendix 6: Autocorrelation Results

```
.
. //Auto correlation test (Serial Correlation)
. veclmar

  Lagrange-multiplier test
```

lag	chi2	df	Prob > chi2
1	24.9100	25	0.46742
2	14.1336	25	0.95935

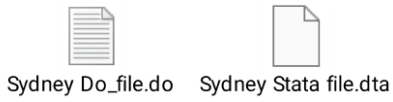
```
  H0: no autocorrelation at lag order

.
```

Appendix 7: Heteroscedasticity Test (White Cross Terms) Results

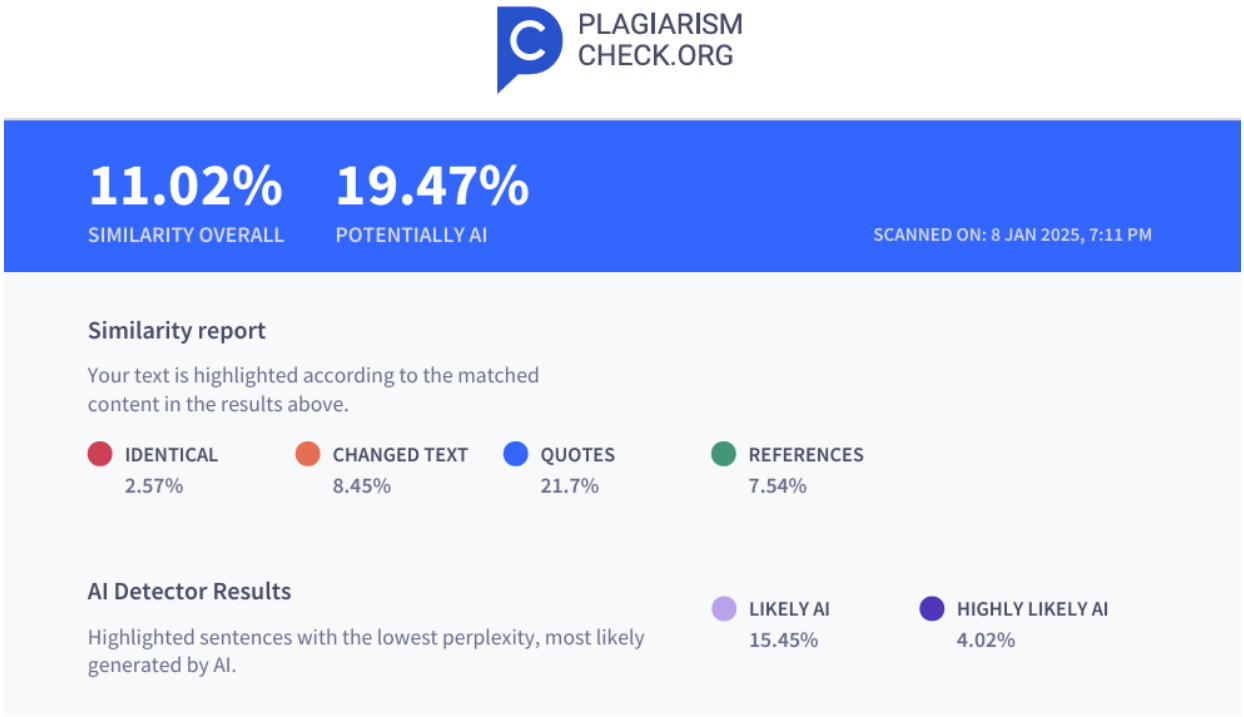
VEC Residual Heteroskedasticity Tests (Levels and Squares)					
Date: 10/28/24 Time: 21:45					
Sample: 1990 2023					
Included observations: 31					
Joint test:					
Chi-sq	df	Prob.			
307.76537	330	0.80500			
Individual components:					
Dependent	R-squared	F(22,8)	Prob.	Chi-sq(22)	Prob.
res1*res1	0.8087686854827012	1.537916028837878	0.272014207015243	25.07182924996374	0.293652088101389
res2*res2	0.6994111515189465	0.8461103234876068	0.646628513466298	21.68174569708734	0.479016314884035 8
res3*res3	0.4968034916030976	0.3590164321766411	0.972841255722596	15.40090823969603	0.844466340604733 8
res4*res4	0.7712402877679272	1.2259633088824585	0.403145590488575 6	23.90844892080575	0.352046635212308 5
res5*res5	0.6177431887012921	0.5876517570407232	0.845912099045133 6	19.15003884974005	0.636046001706099 8

res2*res1	0.70947973049 00664	0.88803658933 7852	0.6153 11603 36892 68	21.9938 716451 9206	0.4602 54549 15406 86
res3*res1	0.67031 188325 57726	0.73933 442957 08219	0.7293 30019 19872 78	20.7796 683809 2895	0.5343 88490 72727 23
res3*res2	0.62198 348463 11714	0.59832 256898 21374	0.8381 01652 22906 92	19.2814 880235 6631	0.6278 88015 61793 11
res4*res1	0.92889 005501 12054	4.75008 385782 724	0.0143 49952 78663 249	28.7955 917053 4737	0.1507 89841 74095 73
res4*res2	0.76752 691931 38736	1.20057 211402 1002	0.4163 99488 81876 06	23.7933 344987 3008	0.3581 55000 16379 46
res4*res3	0.52863 897844 66485	0.40782 403934 31071	0.9542 25523 40868 48	16.3878 083318 461	0.7961 83715 92607 51
res5*res1	0.56809 802509 99296	0.47830 552310 88835	0.9182 38957 26457 99	17.6110 387780 9782	0.7287 84623 71059 15
res5*res2	0.46972 516290 7532	0.32211 437956 35321	0.9832 88106 83269 99	14.5614 800501 3349	0.8803 60163 57628 94
res5*res3	0.84575 964819 3327	1.99395 916423 27	0.1579 83162 28727 76	26.2185 490939 9314	0.2424 17008 79834 6
res5*res4	0.84047 507646 42476	1.91585 925107 1557	0.1728 10623 18352 02	26.0547 273703 9168	0.2493 39724 17355 16

Appendix 8: Stata Output Files



Appendix 9: Summary of the Similarity Report



Report #24370633

1 2 3 4 11 School of Postgraduate Studies The Impact of Foreign Direct Investment inflows on Manufacturing Value Addition in Zambia by SYDNEY NG' ANDU A dissertation submitted to the School of Postgraduate Studies in Partial Fulfilment of the award of the Master of Science in Economics and Finance (MSCECF) 2024 DECLARATION I, Sydney Ng'andu, hereby declare