KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

EXCHANGE RATE VOLATILITY AND PERFORMANCE OF LISTED MANUFACTURING COMPANIES IN GHANA

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DECLARATION

I hereby declare that this submission is my own work towards the award of the MSc Accounting and Finance and that, to the best of my knowledge, it contains no material previously by another person or any material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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DEDICATION

I dedicate this work to my family for their endless love, support and encouragement throughout my pursuit of higher studies.

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ABSTRACT

The aim of the study was to examine the effect of exchange rate volatility on the performance of manufacturing firms. The study used data from 12 manufacturing firms from 2010 to 2021. The data was quantitative in nature and was gathered from the

annual report of the firms as well as market data from GSE. The study finds there has been a steady depreciation of the Ghanaian cedi against the USD for the 12-year period examined by the study and the highest volatility happened between 2013 and 2014. Using panel regression, the study discovered that profitability was adversely affected by exchange rate volatility However exchange rate volatility's effect on market value was negligible. It is recommended that manufacturing firms use financial instruments such as currency options, futures contracts, or forward contracts to hedge against exchange rate risks. This can help protect the firm's profits and cash flows from sudden fluctuations in exchange rates.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Following the end of the Bretton Woods system of fixed exchange rates in 1971, foreign currency risk management has taken more significance. In 1973, the post-war Bretton Woods fixed-exchange-rate structure collapsed (Fioretos, and Heldt, 2019). Such changes influence both the cash flow from operations and the valuation of a company. Moreover, evidence demonstrates that swings in exchange rates influence the pricing of imported inputs and completed commodities, indirectly impacting rival businesses (Anyoka, 2020). Thus, they should have a significant influence on the company's worth, whether it operates locally or worldwide. As the globe becomes more linked, an increasing number of organisations seek international expansion in order to capture market share and enjoy the advantages of economies of scale. To limit the consequences of volatility in foreign currency rates on their cash flows from overseas businesses, several chief executives are emphasising the need for risk management measures (Oxelheim, Alviniussen, and Jankensgard, 2020).

In Ghana, like in several other developing nations, the value of the cedi relative to the U.S. dollar and other major currencies has varied significantly throughout the years. The term "exchange rate fluctuation" refers to times of rapid rises or declines in the relative worth of one country's currency to another (Tamunowariye, and Anaele, 2022). In some developing nations, such as Ghana, currency appreciation relative to the U.S.

dollar, Euro, and British pound is limited. Due to the cyclical nature of many economic elements in Ghana, like as agriculture, consumption, and money supply, the Cedi-U.S.

Dollar exchange rate seems to follow an annual pattern (Boz, Casas, Georgiadis, Gopinath, Le Mezo, Mehl, and Nguyen, 2020). Foreign currency payables and receivables expose enterprises engaged in international commerce to a risk of loss known as "transaction risk." Possessing both payables and receivables in different currencies exposes businesses engaged in international trade to transaction risk. Globally operating multinational corporations may be susceptible to translation risks if their assets and liabilities are denominated in currencies other than the base currency (Ike, and Ogbodo, 2023).

Throughout the last two decades, investing in Ghana has been dangerous owing to the country's shifting currency rate and inflation. Predicting future interest rates for these two variables is challenging in both the short and long term due to the continual swings that generate uncertainty in the global investment industry. Foreign enterprises contemplating establishing a presence in Kenya face the risk of shifting currency rates (Offiong, Udoka, and Bassey, 2019). Ghana's economy has three primary components: manufacturing, agriculture, and services. The importance of manufacturing in the industrial sector cannot be overstated (Dastidar, and Elliott, 2020). Manufacturers are organisations that "transform resources, substances, or components into new things" and "assemble component portions of manufactured objects" for applications other than construction (Buchanan, and Gardner, 2019). While not as robust as it might be, Ghana's manufacturing sector continues to play an important part in the economy,

contributing an average of 7 per cent to GDP between 2006 and 2016 (Diao, and Hazell, 2019). As of 2017 (Ghana Statistical Service) (Ghana Statistical Service). Ghana's key industrial sectors include aluminium smelting, agro-food processing, oil refining, and cement production. Other industries include beverage manufacturing, textiles, clothes, glass, paints, plastics, chemicals, pharmaceuticals, and the processing of metals and wood (Corbu, Gheorghe-Barbu, Dumbravă, Vrâncianu, and Șesan, 2023).

According to Ross, Beath, and Mocker, (2019), for the majority of firms, success is sustained expansion over time. The great majority of Ghana's industrial firms import their raw materials (i.e., raw materials, machinery, spare components, and specialised labour). This indicates that firms are very sensitive to changes in the interest rate, inflation rate, and currency exchange rate. Given that so many of their inputs must be imported, these businesses are especially susceptible to variations in currency value. Due to the possibility of a rise in the price of raw materials as a result of shifting exchange rates, the production value may be lowered. Instability in interest rates has a detrimental effect on the profitability of manufacturing companies that import since they must borrow money to pay for imports.

1.2 Statement of the Problem

The manufacturing sector in Ghana has long been a significant contributor to the economy, accounting for 10.18% of the Gross Domestic Product (GDP) as of 2022 (World Bank Data 2022). This sector plays a vital role in creating employment opportunities, fulfilling corporate social responsibilities, generating foreign exchange

earnings, promoting investment, and increasing overall productivity, thereby improving the socio-economic welfare of individuals in the country. However, despite its contributions, the manufacturing sector in Ghana faces a significant challenge: exchange rate fluctuation.

The manufacturing sector heavily relies on imported capital goods and raw materials for production. As a result, any fluctuations in the exchange rate have adverse effects on its growth and overall performance. In an economy where the manufacturing sector is dependent on imports, exchange rate fluctuations have led to numerous setbacks, making it difficult to maintain both local and global competitiveness. Consequently, these fluctuations have caused the collapse of many manufacturing firms, created an atmosphere of macroeconomic uncertainty, and reduced firms' profits, employment levels, investment, and overall productivity.

The COVID-19 pandemic has further exacerbated the challenges faced by manufacturing firms in Ghana. The pandemic triggered a sudden economic downturn, which was compounded by internal miscalculations and external shocks such as increases in global prices of fuel, fertilizer, and food, currency depreciation, and a substantial debt burden (Taylor, 2022). The co-movement between the exchange rate and equity index in Ghana has also been affected by the pandemic (Amewu et al., 2022). According to a survey conducted by the Ghana Statistical Service et al. (2020), the pandemic shock has had widespread effects on Ghanaian firms, with 92.7% of manufacturing firms being affected. Consequently, many firms have been forced to

implement cost-cutting measures, including reducing staff hours, cutting wages, and, in some cases, resorting to layoffs. The depreciation of the cedi during the pandemic further intensified the challenges faced by manufacturing firms, particularly regarding imports and local inflation. The high cost of importing and clearing goods from Ghanaian ports has made it increasingly difficult for Ghanaian importers to sustain their businesses.

Several empirical studies have examined the effects of exchange rate fluctuations on various economic factors such as economic growth, capital inflows, trade balance, employment, and growth (Kwesi Ofori et al. 2018; Alagidede and Ibrahim, 2016; Nyarko et al., 2011; Mensah et al., 2013; Insah 2013; Frimpong and Adam, 2010), limited research exists on the specific impact of exchange rate fluctuations on the performance of manufacturing firms in Ghana. Only a few studies, conducted by Buabeng et al. (2019), Boateng (2019), and Abdul-Mumuni (2016), have specifically investigated this relationship. Buabeng et al. (2019) examined the effect of exchange rate fluctuations on the performance of manufacturing firms in Ghana from 1990 to 2018, considering factors such as inflation, trade openness, and investment. AbdulMumuni (2016) used the manufacturing sector's percentage contribution to GDP as an indicator of performance, while Boateng (2019) focused on financial performance, utilizing return on assets and equity as performance measures.

Given the significant challenges faced by the manufacturing sector in Ghana, exacerbated by exchange rate fluctuations and the impact of the COVID-19 pandemic,

there is an urgent need for further research to thoroughly investigate the specific impact of exchange rate volatility on the performance of listed manufacturing companies in Ghana. By conducting a comprehensive analysis that considers a range of performance measures, incorporates additional factors, and extends the analysis to the postpandemic period, this research aims to bridge the existing knowledge gap and provide valuable insights on the effect of the exchange rate fluctuations on listed manufacturing firms in Ghana.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this research is to investigate the effect of exchange rate volatility on firms' performance focusing on selected listed manufacturing companies in Ghana.

1.3.2 Specific Objectives

1. To evaluate the trend of exchange rate volatility in Ghana
2. To examine the effect of exchange rate volatility on the profitability of listed manufacturing firms in Ghana.
3. To establish the effect of exchange rate volatility on the market value of listed manufacturing firms in Ghana.

1.4 Research questions

1. What is the trend of exchange rate volatility in Ghana?

2. What is the effect of exchange rate volatility on the profitability of listed manufacturing firms in Ghana?
3. What is the effect of exchange rate volatility on the market value of listed manufacturing firms in Ghana?

1.5 Significance of the Study

The study findings are likely to enhance policy formulation to oversee the management of foreign exchange rate volatility in projects sponsored by foreign currency via governmental institutions, non-governmental institutions as well and private organizations. They can also adopt the various strategies identified in the study findings in order to manage these risks. Finally, the study findings would provide direction for further research in topics relating to foreign exchange risk fluctuations and management in non-profit organizations and non-governmental organizations, an area that has not been comprehensively researched in the recent past.

1.6 Scope and Limitations of the Study

The study focuses on assessing exchange rate volatility on firms' financial performance in some selected listed manufacturing companies in Ghana. The period covers 12 years from 2010 to 2021. The study may suffer from omitted variable bias since manufacturing firms can be affected by a variety of external factors such as government policies, competition, and changes in technology, which may not be fully controlled for in the study.

1.7 Organization of the Study

The study is divided into five chapters. Chapter one introduces the topic of foreign and local banks profitability and states the problem highlighting the general and specific objectives of the study, research questions, significance of the study and scope of the study. Chapter two reviews relevant literature and presents a conceptual framework on the topic. Chapter three describes the research methodology and covers issues such as research design, study population, sample and sampling procedures. Chapter four addresses the results and discussions of the study and chapter five presents a summary of the study, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This is the second chapter of the study and it is concerned with the literature review discussion. The chapter is made up of four principal sections. The first section is the conceptual review which focuses on the definition of key concepts related to the study topic. The second section presents the theoretical review which focuses on the discussion of the theory or theories which support the study. The third section provides

the empirical review discussion. The fourth section presents the conceptual framework for the study.

2.2 Conceptual Review

2.2.1 Exchange Rate

A currency exchange rate is the price of one currency expressed in terms of another. A currency exchange rate is defined by Osabuohien, Obiekwe, Urhie, and Osabohien, (2018) as the rate at which one currency is exchanged for another. In a similar vein, Panasyuk et al. (2020) define an exchange rate as the value of one currency relative to another. According to the above definitions, a currency exchange rate is the number of units that one currency exchanges for another. According to Ayobami (2019), currencies are normally national currencies (though they may be sub-national in the case of Hong Kong or supra-national in the case of the Euro), and hence exchange rates allow for cross-border or international trade.

There are typically a variety of exchange rate regimes. According to Xu, Weber, and Staples, (2019), governments are allowed to choose the kind of system that will control their currency. According to several academics, the three fundamental exchange rate regimes are free-floating, pegged (fixed), and hybrid (Fapetu et al., 2017; Zhou, 2022). According to Camporese, (2019), in free-floating regimes, exchange rates are allowed to vary in response to supply and demand market dynamics. As a result, the exchange rates for such currencies are expected to move nearly continually, given that they are primarily quoted on financial markets by global institutions. A movable or adjustable

peg system is a fixed exchange rate system with a mechanism for currency revaluation, according to Zhou (2022). As implied by its name, the hybrid exchange rate system comprises both free-floating and pegged or controlled regimes (Saka, and Moyanga, 2023).

According to Ta, Liu, and Tadesse, (2020), the currency exchange rate at which the majority of the portfolio's assets are held determines the portfolio's actual return. Earnings and capital gains are worth less as the exchange rate declines. Due to the fact that exchange rates are governed by several complex factors that often baffle even seasoned economists, investors must understand how currency pricing and exchange rates impact their return on investment in the economy. Currency rates are regulated by the forces of supply and demand. Due to its impact on the global balance of payments, the exchange rate is the most valuable asset in the world for certain nations.

2.2.2 Classifications of Exchange Rate

Carrière-Swallow, Magud, and Yépez, (2021), and Ilzetzki et al. (2021) posit that there are different classifications of exchange rate. According to these authors, the most common classifications of exchange rates are based on bank foreign exchange trading, length of delivery of foreign exchange transactions, or the method of setting the exchange rate.

2.2.2.1 Exchange Rate Classification by Banks Foreign Exchange Trading

Activities

Fratzscher, Gloede, Menkhoff, Sarno, and Stöhr, (2019) note that this class of exchange rate is obtained from the perspective of the banks' foreign exchange trading activities. According to the authors, this range of exchange rates is mostly made up of buying rate, selling rate, and mid-rate.

Buying rate: Customers sell foreign currency to foreign exchange banks at a rate known as the buying rate or purchase price. To determine how much it would cost in your country's currency to purchase a specific quantity of foreign currency, you must know the purchasing rate, which is the exchange rate at which the foreign money is converted into a smaller amount of local currency.

Selling rate: When a bank sells foreign currency to a client, it does so at a certain exchange rate, which is commonly referred to as the selling rate or foreign exchange selling price. If the central bank sells a certain quantity of foreign currency, it must recover a predetermined proportion of domestic currency.

Middle rate: The number between the asking price and the bid price. Common in economic media, literature, and academic research.

2.2.2.2 Exchange Rate Classification by Length of Delivery of Foreign Exchange Transactions

Ilzetzki et al. (2021) observe that this class of exchange rate is dependent on the time of entering into an agreement on a foreign exchange transaction and the time for execution. The two principal exchange rates under this class are the spot exchange rate and the forward exchange rate.

Spot exchange rate: Spot exchange rate refers to the foreign exchange rate utilised for immediate transactions. So, you may anticipate receiving the conversion rate within two business days after executing a foreign currency transaction. Often, the phrase "spot exchange rate" refers to the rate at which currencies are purchased and sold on the foreign exchange market.

Forward exchange rate: The forward exchange rate will be offered at some point in the future, but only when the buyer and seller sign a contract to resolve their differences. When the delivery date arrives, the transaction will be completed at the agreed-upon price and amount. Forward foreign exchange trading is an appointmentbased transaction since the foreign currency buyer requires a different time for foreign exchange funds and the introduction of foreign exchange risk. The basis for the forward exchange rate is the "premium," "discount," and "parity" of the spot exchange rate.

2.2.3 Exchange Rate Volatility

The term "exchange rate volatility" refers to the degree to which the value of one currency swings compared to another (Iliyasu, and Sanusi, 2022). The degree to which a foreign exchange rate is unstable, irregular, or unexpected is referred to as its volatility. The risk associated with shifting exchange rates is characterised as exchange rate volatility (Samargandi, and Sohag, 2022). According to Bush, and Noria, (2021), unplanned exchange rate fluctuations have a detrimental effect on the volume of international trade and investment because the excessive volatility of current currency values increases uncertainty about future exchange rates.

According to Adeniyi and Kumeka (2020), exchange rate volatility lowers exports because it generates uncertainties about the success of foreign transactions. Persistent volatility might affect foreign capital flows because it could deter direct and portfolio investment. Excessive currency volatility may frighten away prudent investors. Increased risk premiums levied by traders to account for unanticipated swings in exchange rates may lead to price rises for items sold overseas. Export and import pricing uncertainty has a direct impact on production and investment, making precise information on exchange rate volatility essential. Short-term currency rate volatility is influenced by political events, changes in monetary policy, and expectations. Longterm exchange rate volatility is influenced by the comparative product prices of various nations (Sugiharti, Esquivias, and Setyorani, 2020).

It is vital to distinguish exchange rate volatility from misalignment. How much and how often the exchange rate varies is the measure of volatility (Malik, and Umar, 2019). When the present exchange rate and the anticipated future exchange rate are more closely linked, volatility tends to decrease. When both an unauthorized market and an official market exist, however, exchange rates become mismatched. Misaligned exchange rates occur when a currency's exchange rate is persistently below where it should be to be competitive over the long term (Nasir, and Jackson, 2019). It is a circumstance in which the market exchange rate deviates from its ideal theoretical level.

2.2.4 Firm Performance

Business performance is an economic indication of how well a firm allocates its people and material resources to accomplish its goals (Kim, and Lee, 2020). While analyzing a company's performance, it is also vital to evaluate the efficiency with which its resources are used in both its production and consumption processes. Performance reflects the effectiveness with which a corporation utilizes its resources to generate products and services (Smriti, and Das, 2018). Both financial and non-financial indicators may be used to measure the performance of a firm. Financial performance assesses how well a firm is doing financially, but non-financial performance reveals how well a company is doing in other areas, such as customer happiness and staff retention. This research cannot emphasise enough that earnings are its major objective.

Hence, performance and profitability are utilised synonymously throughout this research. Profitability relies on how well a firm utilises its available resources. Most

businesses want to boost their bottom line (Shuen, 2018). Profitability refers to the capability of a firm to earn revenue from its activities (Aklilu, 2019). Entrepreneurs often anticipate a payoff from their investments. Every business owner will always prioritize the bottom line. One indicator of a company's success is its net income (Sukesti, Ghozali, Fuad, Kharis Almasyhari, and Nurcahyono, 2021).

To calculate profit, sales income is reduced from operational expenses like as supplies, salaries, and other administrative costs (Amusawi, Almagtome, and Shaker, 2019). Every enterprise should generate profits, which can be quantified in two ways: accounting profits and economic profits (Ilham, Arliansyah, Juanda, Sinta, Multazam, and Syahputri, 2022). The company's profitability is a reflection of management's expertise in converting assets into cash (Agustia, Muhammad, and Permatasari, 2020). Thus, firms will experience a variety of advantages associated with larger revenues (Gomez, and Bernet, 2019). Any firm must generate a profit to survive and grow over time. Investors are drawn to the company due to its profitability (Cornell, and Damodaran, 2020). In an effort to increase profits, many businesses spend many hours in meetings striving to minimise expenses without losing sales growth (Chowdhury, Sarkar, Paul, and Moktadir, 2020).

Profitability, as defined by accountants, is the amount by which a company's revenues surpass its expenditures over a certain period of time; in a rising economy, this statistic represents the earnings of industrial businesses involved in a broad variety of activities (Widarti, and Pramajaya, 2018). So, one conceivable definition of the profitability of a manufacturing business is its net profit (Ebimobowei, Uche, and Young-Arney, 2021).

A manufacturer may be deemed profitable if its earnings exceed its capital expenditures. So, the performance of the corporation is judged by its fiscal year's financial outcomes (Agyei-Mensah, 2018).

The profitability of a company's operations is one of the most essential components of its financial statements (Pattiruhu, and Paais, 2020). As a leading indicator of a company's health and development, management, owners, and all other stakeholders depend largely on profitability. Revenue, capital employed, assets, and profits per share may all be used to measure the profitability of a firm within a certain time period. A company's profitability figures may be used to measure its growth and performance in part (Onuorah, 2023).

Return on assets (ROA) is the most often used profitability statistic from an accounting standpoint. The return on assets is the amount of profit earned for each shilling invested. This demonstrates the management's ability to maximize the return on capital investments (Gompers, 2022). Return on Assets (ROA) is a straightforward indicator that reflects how well a company's management converts its assets into profits. In the manufacturing business, a company's performance may be determined by its return on investment (ROI) ratio (Monday, and Ugbomhe, 2021).

2.2.5 Some Factors Affecting Firm Performance

2.2.5.1 Capital Structure

According to Ali, Tahira, Amir, Ullah, Tahir, Shah, Khan, and Tariq, (2022), a corporation's capital structure is characterised by the proportion of stock to debt. According to Lerner, and Nanda, (2020), firms have access to a variety of funding options, each with its own set of securities. This concept is useful for analysing firms since it identifies the various debt-to-equity ratios used by corporations. Edmans, (2023) devised the pie model to highlight the relationship between a company's value and its different financing methods. They also said that a company's capital structure is determined by its debt-to-equity ratio.

According to García-Sánchez, and García-Sánchez, (2020), an effective administration of such a strategic decision is required to guarantee that the ultimate interests of the company's shareholders and other stakeholders are satisfied. The capital structure choice must be carefully considered by managers since it influences not just profitability but also the returns and risks to shareholders, which in turn affects the firm's market share. This is because the total worth of a firm may be affected by its cost to borrow money. While constructing the capital structure and doing other assessments, managers must carefully analyse how their actions will impact the company's performance.

2.2.5.2 Firm Size

Primarily, a company's size determines how much it benefits from economies of scale. When a company grows, economies of scale enable it to cut its total production costs

and boost its overall efficiency. This indicates that bigger firms generate a greater return on investment. When high management loses sight of day-to-day operations, it may be detrimental to a company's performance (Darmawan, and Djaelani, 2021). Due to their size, large enterprises have more resources, more market influence, and maybe more flexibility to adjust to changing situations. The size of the organisation or firm is also a factor in how investments impact cash flow (Alam, Uddin, and Yazdifar, 2019). Three fundamental variables define the size of the majority of businesses: the number of workers, the amount of income, and the number of physical assets (Larson, Sloan, and Zha Giedt, 2018).

2.2.5.3 Growth

Expansion has an impact on future profitability (Piquer-Rodríguez, Butsic, Gärtner, Macchi, Baumann, Pizarro, Volante, Gasparri, and Kuemmerle, 2018). If growth rates are raised, investors may anticipate higher returns over the long term. When a nation's economy expands, firms are able to enhance their market positions and obtain a competitive edge. While the future development potential of a corporation may be seen as a valuable asset, it cannot be collateralized and is not taxable revenue. Pecking order theory posits that enterprises may begin by utilising internal funds rather than seeking external funding (Sierra, 2020). So, organisations with great development potential will utilise internally produced funds since they are more secure than debt and equity.

Increasing external financing is expensive due to knowledge asymmetries, which may impair future growth possibilities and profitability.

2.2.5.4 Liquidity

When a company has adequate liquidity, it may satisfy its financial commitments with more ease. This will allow the company to continue working without interruption due to a shortage of funds, and it will lower the expenses associated with borrowing, thus enhancing the organization's efficiency and production. Yet, the relationship between liquidity and leverage is seen differently by various individuals. According to the idea of trade-offs, there is a positive association between liquidity and leverage since companies with adequate liquidity favour external investment because they can repay the loan and reap tax advantages. Yet, according to the pecking order theory, more liquid organisations opt to finance new ventures with internal funds as opposed to external capital, indicating a negative link between the two. Yet, there is a scarcity of research examining how liquidity influences capital structure selection. As a measure of liquidity, Rouf, (2018) and Mugambi, Muturi, and Njeru, (2023) adopt the ratio of current assets to current liabilities.

2.3 Theoretical Review

2.3.1 Purchasing Power Theory

The theoretical framework of Purchasing Power Parity (PPP) serves as the foundation for the computation of exchange rates (Plošinjak and Festić, 2021). The statement suggests that changes in the exchange rate between two currencies during a certain period of time are dependent on changes in the price levels of the two countries involved. The core principle that underlies the concept of purchasing power parity (PPP) is that a specific unit of currency should have the capacity to purchase an

identical range of goods within a specific country, just as the equivalent amount of foreign currency can obtain in a foreign country, taking into account the current exchange rate. This assures the existence of an equilibrium in the buying power of the currency unit in both economies. One often used approach to evaluate possible deviations from purchasing power parity (PPP) is doing a comparative examination of prices for similar or identical goods within the respective baskets of two countries. The theory has been labelled as the "inflation theory of exchange rates" owing to its focal point on the impact of price level escalations as the principal determinant of exchange rate fluctuations (Barson, Junior, and Adam, 2022).

The notion of purchasing power parity (PPP) has been a topic of investigation in the discipline of economics for several decades. The concept of "purchasing power parity" was officially coined in the period that followed World War I, as documented by Gião (2022). This introduction was presented within the context of a global policy discourse over the most advantageous level of nominal exchange rates among the major industrialised countries. The present discourse emerged as a consequence of the notable instances of inflation seen during and after the war. The notion of Purchasing Power Parity (PPP) has now been firmly embedded inside the cognitive framework of several international economists, influencing their understanding of the global economic environment (Xu, 2021). Dornbusch and Krugman (1976) noted that international economists often have a basic belief in one variant or another of the purchasing power parity (PPP) theory of the exchange rate. The investigation pertaining to the modification of exchange rates has substantial significance within the domain of

exchange rate policy. This is due to the fact that nations that maintain fixed exchange rates must identify the likely equilibrium exchange rate, while nations with flexible exchange rates aim to discover the expected level and volatility of both real and nominal exchange rates. Within a broader framework, the investigation into the extent to which exchange rates adhere to a value established by purchasing power parity assumes a significant role in evaluating the level at which the global macroeconomic structure attains self-equilibrium.

Falahati (2019) posits that the notion of purchasing power parity being sustained via international commodities arbitrage is intricately linked to the Law of One Price. According to this theory, it is argued that the price of a globally traded commodity should be consistent across all geographical areas throughout the globe, as long as the price is denominated in a universally accepted currency. This phenomenon occurs due to the ability of people to participate in risk-free profit generation via the transportation of commodities from places characterised by lower prices to regions characterised by higher prices, often referred to as arbitrage. The maintenance of a purchasing power parity (PPP) exchange rate across nations is suggested by the Law of One Price, assuming that the market basket used to compute the aggregate price level in each country is composed of similar commodities with equivalent weights.

There are several arguments that may potentially be offered in opposition to this line of reasoning. The Law of One Price may be broken in situations where transaction charges are present, such as transit fees, taxes, tariffs, duties, and nontariff barriers. Engel and Rogers (1996) performed research that investigated the disparities in prices of

equivalent commodities across many locations in the United States and Canada. The results of their study provided significant empirical support for the theory being examined. The researchers specifically noted that there was a higher degree of uncertainty in the extent of pricing differentials as the distance between the cities rose. Furthermore, while doing a comparative analysis of prices between cities situated in distinct nations (often known as the "border effect"), it was shown that the volatility of the price disparity saw a substantial rise.

The idea of Purchasing Power Parity (PPP) and the Quantity idea of Money (QT) are both prominent concepts within the field of economics, occupying similar positions in terms of their significance in economic thinking and policy. Throughout its evolution under the influence of different writers and at various stages, the PPP theory has been interpreted as a concept of identity, a proposition that is inherently clear, an empirical pattern, or a representation that is excessively simplified and potentially deceptive. The theory under consideration remains a topic of debate, as does the QT (Quantum Theory), owing to the existence of both flawed strict interpretations and the absence of meaningful content in more permissive interpretations. There is a chance to use theoretical frameworks and empirical evidence in order to establish the specific circumstances and extent to which Purchasing Power Parity (PPP) provides a helpful although inaccurate representation of exchange rate movements.

Over the course of time, analogous to the manner in which changes in real income or financial progress lead to slow changes in velocity that break the direct relationship

between the money supply and prices, there are also progressive deviations from purchasing power parity (PPP). It is worth noting that variations in productivity development across different countries might result in slow changes in actual exchange values. The use of Purchasing Power Parity (PPP) enables the understanding of the manufacturing industry's performance, which demonstrates an upward trajectory as the currency rate appreciates and achieves its pinnacle when the exchange rate depreciates.

2.4 Empirical Review

Ayobami (2019) examines how variations in the value of the naira influenced the profitability of Nigeria's industrial enterprises from 1981 to 2016. Using data from the World Bank's Global Development Indicators report and the Central Bank of Nigeria's Statistical Bulletin, estimates were produced. The research discovered a weak but favourable association between fluctuations in the currency rate and the expansion of manufacturing companies in Nigeria.

Williams (2018) analysed the influence of currency changes on the development of several Nigerian-listed firms between 2012 and 2016 in a similar manner. This research uses ordinary least square regression as its estimate technique. The findings reveal that the exchange rate has a significant and favourable impact on company success. In addition, the data demonstrate that inflation has a substantial positive influence on corporate performance.

From 1980 to 2017, Umaru et al. (2018) analysed the effect of currency variations on growth in four ECOWAS nations with substantial English-speaking minorities (Ghana, the Gambia, Nigeria, and Sierra Leone). The research used a panel data estimate approach to analyse global development indicator data (which includes fixed and random effects as well as pooled OLS). In Ghana and Nigeria, the correlation between currency rate volatility and economic development was negative and statistically significant, but not in The Gambia or Sierra Leone.

Kenneth et al. (2016) examined the effect of various exchange rate regimes on Nigeria's economic development from 1970 to 2014. In this work, the Generalized Method of Moments (GMM) was used as an estimation approach to analyse data from the Central Bank of Nigeria and the World Bank's global development indices. The 1970-2014, 1970-1985, and 1985-2014 time periods are used in this research. According to the results, each of the analysed exchange rate regimes had an effect on the Nigerian economy. Fixed exchange rates have a substantial impact on the economic prosperity of Nigeria.

Latief and Lefen (2018) performed an analysis to determine how fluctuations in the value of a country's currency affect trade and FDI between developing countries along the "One Belt, One Road" route. To participate in this programme, we have selected seven developing countries: Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka. The United States provided the panel data for the years 1995 through 2016. Foreign direct investment (FDI) and international trade were also studied in

connection with exchange rate volatility using a fixed effect model. This research shows that countries involved in the One Belt One Road (OBOR) programme suffer greatly when exchange rate volatility affects international trade and FDI. These findings are consistent with economic theory, which predicts that fluctuating exchange rates may hurt international commerce and FDI.

Khalid (2017) performed research on the effect of interest and currency rates on Pakistan's stock market capitalization. The study analysed annual data from 1990 to 2017. This research looked at the long- and short-term effects of various macroeconomic conditions on total market capitalization. Various econometric techniques, such as the Johansen method, the Error Correction Model (ECM), and Variance Decomposition, were used in the investigation. The results show that there is a one-way causal link between the foreign exchange rate and the interest rate, as determined by the Granger-causality tool.

Zahonogo (2016) investigated the effect of trade liberalisation on economic growth in developing countries, with special attention paid to sub-Saharan Africa. In this analysis, we utilise data from 42 different countries in Sub-Saharan Africa (SSA) to test a dynamic growth model. From 1980 to 2012 is included in the analysis. The Pooled Mean Group estimate technique is employed in this work, as it is ideal for evaluating dynamic heterogeneous panels and reaching inferences based on long-run equilibrium connections. The results suggested that a linear link between trade openness and economic growth in Sub-Saharan Africa (SSA) does not exist.

In their paper, "Currency Rate Volatility and Banks Performance in Nigeria," Kemisola et al. (2016) performed objective research from 2005 to 2014 on the issue. The fluctuation in the exchange rate is determined by calculating the average yearly return of the US dollar vs the Nigerian naira during a 10-year period. The ARCH LM test demonstrates the susceptibility to exchange rate fluctuations. The findings reveal that currency exchange rate changes have a negative and considerable impact on the profitability of banks. In addition, the devaluation of the Nigerian naira significantly impacted bank liquidity.

From 1990 to 2018, Buabeng et al. (2019) examined the impact of currency rate fluctuations on the performance of Ghanaian manufacturing enterprises. The research employs an autoregressive distributed lags model and calculates cointegration using the limits test approach. The findings indicate a considerable negative correlation between the exchange rate and the performance of manufacturing companies. Moreover, it is shown that inflation, trade openness, and investment all have a substantial positive relationship with the manufacturing sector's performance in Ghana.

2.5 Conceptual Framework

The conceptual framework provides a pictorial description of the relationship between the variables of the study. The Independent variables are exchange rate volatility, the dependent variables are profitability and market value and the control variables are firm size, inflation, leverage and liquidity. The framework shows how the dependent variables moderate the independent variables and control variables.

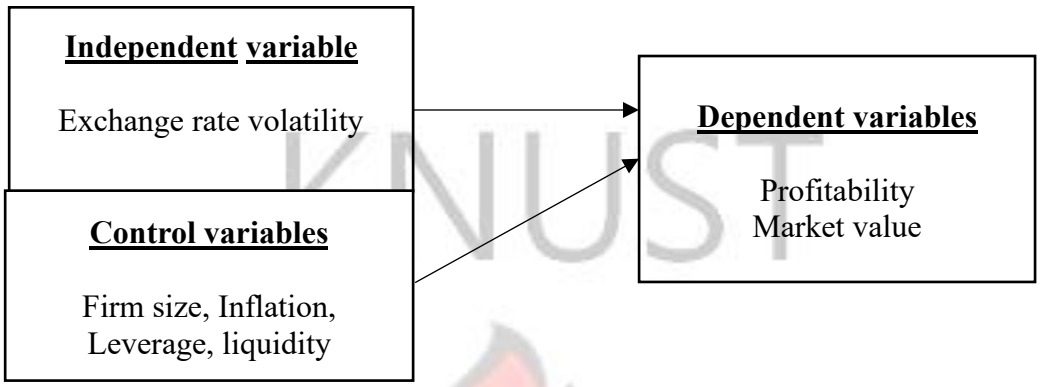

Figure 2. 1 Conceptual Framework

Source: Author (2023)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter is the third chapter of the study which is the methodology adopted to investigate the effect of exchange rate volatility on firm performance. This chapter explains how the research was carried out.

3.2 Research Philosophy

Research philosophy refers to the set of beliefs, assumptions, and values that underlie a research study. It is the foundation upon which the research is built and influences the

research design, data collection, analysis, and interpretation. There are three main types of research philosophy: Ontology, Epistemology and Axiology (Lê and Schmid, 2022).

3.2.1 Ontology

Ontology is concerned with the nature of reality and what can be known about it. It deals with the question of what exists, and what can be known about the existence of things. Ontology is classified into Objectivism, critical realism and constructivism. Objectivism assumes that there is an objective reality that can be observed and measured. It holds that there is a clear distinction between the subject (researcher) and the object (phenomenon under study) and that the object can be studied independently of the subject's perspective or interpretation (Mohajan, 2020). Constructivism assumes that reality is constructed through subjective interpretation and meaning-making. It holds that the subject and the object are inseparable and that the researcher's perspective and interpretation play a key role in shaping the research findings. Critical realism ontology assumes that there is an external reality that can be studied, but that this reality is mediated by social structures and power relations. It holds that the researcher should be aware of these mediations and aim to uncover the underlying social mechanisms that shape the phenomenon under study (Hameed, 2020).

The study fell under the objectivist ontology, which assumes that there is an objective reality that can be observed and measured. In this view, exchange rate volatility is an external factor that affects firm performance.

3.2.2 Epistemology

Epistemology is concerned with the nature of knowledge and how it is acquired. It deals with the question of how we know what we know. Epistemology is classified as positivism, interpretivism and critical theory. Positivism epistemology assumes that knowledge is derived from empirical observation and testing. It holds that the goal of research is to identify causal relationships between variables and that these relationships can be measured and verified through rigorous data collection and analysis (Lê and Schmid, 2022). Interpretivism epistemology assumes that knowledge is constructed through subjective interpretation and meaning-making. It holds that the goal of research is to understand the meaning and experience of the phenomenon under study and that this understanding can be achieved through qualitative data collection and analysis (Hameed, 2020). Critical theory epistemology assumes that knowledge is inherently political and that research should aim to critique and challenge existing power relations and social arrangements. It holds that the researcher should be reflexive and aware of their positionality and values and that research should aim to promote social justice and transformative change (Hameed, 2020).

This study fell under the positivist epistemology, which assumes that knowledge is derived from empirical observation and testing. In this view, the researcher would collect quantitative data on exchange rate volatility and firm performance, and use statistical methods to identify causal relationships.

3.2.3 Axiology

Axiology is concerned with the role of values in research. It deals with the question of what values should be present in the research process. Axiology is classified into Valueneutral, Value-laden and Participatory (Wan, 2022). Value-neutral axiology assumes that research should be free from personal values and biases. It holds that the researcher should strive to remain objective and unbiased in data collection and analysis. Valueladen axiology assumes that research is always value-laden and that the researcher's values and positionality play a role in shaping the research process and findings. It holds that the researcher should be transparent about their values and aim to promote ethical and socially responsible research (Wan, 2022). Participatory axiology assumes that research should involve active participation from the stakeholders affected by the research findings. It holds that the researcher should aim to empower and collaborate with these stakeholders and that research should have practical and immediate relevance to the communities involved (Mohajan, 2020). This study fell under the value-neutral axiology, which assumes that research should be free from personal values and biases. In this view, the researcher strived to remain objective and unbiased in data collection and analysis.

3.3 Research Strategy

Quantitative research is a research strategy that involves the collection and analysis of numerical data. This research strategy relies on statistical and mathematical methods to analyse the data and draw conclusions. The main goal of quantitative research is to test hypotheses and establish causal relationships between variables (Bauer, Churchill,

Mahendran, Walwyn, Lizotte and Villa-Rueda, 2021). Qualitative research, on the other hand, is a research strategy that involves the collection and analysis of nonnumerical data, such as text, images, and observations. This research strategy relies on interpretive methods to analyse the data and generate insights. The main goal of qualitative research is to explore and understand the meanings and experiences of the phenomenon under study (Bauer, Churchill, Mahendran, Walwyn, Lizotte and Villa-Rueda, 2021).

This study was quantitative because the study collected quantitative data on exchange rate volatility and firm performance, such as financial statements, market data, and macroeconomic indicators. The study used statistical methods, such as regression analysis, to test if exchange rate volatility has a significant effect on firm performance.

3.4 Research Design

Research design is the plan or blueprint that guides a research project, outlining the procedures and methods that will be used to collect and analyse data (Park et al., 2020). The types of research designs are case studies, experimental designs, longitudinal designs and correlational designs. The case study involves an in-depth investigation and analysis of a single individual, group, or organization. Case studies can be either descriptive or explanatory, and can be used in a variety of research fields, including psychology, sociology, and business (Zhang, Huang, Li, and Bao, 2021).

Experimental design involves the manipulation of one or more independent variables to observe the effects on a dependent variable. Participants are randomly assigned to

different groups to control for confounding variables. This design is useful for establishing causality, but may not be feasible or ethical in some contexts. A quasiexperimental design is similar to an experimental design but lacks random assignment to groups. This design is useful when random assignment is not possible or practical, but may be subject to confounding variables (Park et al., 2020).

Correlational design involves the observation of naturally occurring relationships between variables. This design is useful for identifying associations and making predictions but does not establish causality. Longitudinal design involves the observation of the same participants over time, allowing for the examination of changes and developmental trends. This design is useful for identifying patterns and testing theories of change but may be subject to attrition or practice effects. Case study design involves the in-depth examination of a single case or a small number of cases. This design is useful for exploring complex and context-specific phenomena, but may not be generalizable to other cases (Bauer, Churchill, Mahendran, Walwyn, Lizotte and Villa-Rueda, 2021).

This study fell under the longitudinal design. This design involves collecting data from the same sample of manufacturing firms over time to observe changes in their performance and fluctuations in exchange rate volatility. The study analysed the trend and magnitude of the effect of exchange rate volatility on firm performance using statistical methods, such as regression analysis and time-series analysis. This design

helped to identify long-term patterns and trends in the relationship between exchange rate volatility and firm performance.

3.5 Population and Sampling Selection

The population of a study relates to the elements of interest that form the focus of the study. With the current study, the focus is on manufacturing firms listed on the Ghana Stock Exchange (GSE). Therefore, all the manufacturing firms listed on the GSE form the population of the current study. There were 14 manufacturing companies listed on the stock exchange

3.6 Sample Size and Sampling Technique

From the population, sampling is made to obtain the sample section for the study. Sampling relates to the selection of elements from the target population. To select from the target population, an inclusion criteria is defined. The inclusion criteria are that a selected or participating firm must have its annual reports available. Following this inclusion criteria, Twelve (12) firms were purposively selected (based on data available for the respective years) from the population of 14 manufacturing firms that are listed on the Ghana Stock Exchange as of the end of the year 2021. The period covered 2010 to 2021 since data was mostly available for the said period.

3.7 Data and Source of Data

The study utilizes secondary data. The data are annual panel data covering a seven-year period from 2010 to 2021. This period is used because it is the last seven-year period

with data on all the relevant variables of firms available. Data are obtained from the annual reports of the individual firms and the Ghana Stock Exchange.

3.8 Data Analysis

The panel or longitudinal methodology of research is adopted for the study. The panel estimation method is employed because panel data blends the features of both crosssectional data and time series data, which provides it with more degrees of freedom and sample variability, thus, improving the efficiency of econometric estimates (Hsiao, 2007). Following the adoption of the panel estimation strategy, the panel regression analysis is employed. The analysis was done with the help of Stata Software.

3.9 Model Specification

The choice the model stated was based on testing the dataset the reveal the appropriate test to be used. The study used a random effect model. The utilisation of the random effect model is justified based on the Hausman test results, where the p-values for both equation 1 and equation 2 exceed the 5% significance level. This implies that the null hypothesis is accepted, affirming that the random effect model is appropriate for the specified model. The random effect model accommodates unobserved individualspecific effects, offering a suitable framework for the analysis. The model is specified below.

Sequel to the studies by Osundina (2016) and Keshtgar et al. (2020), the following econometric models are used.

$$PROF_{it} = \alpha + \beta_1 EXCHF_{it} + \beta_2 LIQ_{it} + \beta_3 INFL_{it} + \beta_4 LEV_{it} + \beta_5 SIZE_{it} + €_{it} \ldots\ldots$$

(1)

$$MV_{it} = \alpha + \beta_1 EXCHF_{it} + \beta_2 LIQ_{it} + \beta_3 INFL_{it} + \beta_4 LEV_{it} + \beta_5 SIZE_{it} + €_{it} \ldots\ldots \text{ (2)}$$

Where:

α_0 = the constant term α_1 -α_4 = the regressors/coefficients to be estimated

Subscripts i and t = individual firms (n=1,2,3 ……n) and time period (t =2010, 2013 ….2021)

μ = error term

The rest of the variables in the models are the group of dependent, independent, and control variables which are described and represented by their respective symbols in Table 3.1 below.

3.10 Variables Description and Measurement

The measurement and description of the variables employed in the study which include dependent, independent, and control variables are shown in Table 3.1 below.

Table 3. 1 Description and measurement of variables

Variable	Code	Measurement	Sources
Dependent Variables			
Profitability	ROA	Net profit divided by total assets	(Kairu, 2016; Ayobami, 2019)
Market value	Tobin's Q ratio	market value to the book value of assets	Osundina, 2016; Kelilume, 2016)
Independent variable	EXCH		
Exchange rate volatility		Standard deviation of the changes in the exchange rate between Ghana cedi and US dollar	(Kairu, 2016; Keshtgar et al., 2020)
Control Variables			
Firm size	SIZE	Natural log of Total Assets	(Keshtgar et al., 2020; Kairu, 2016)
Inflation	INFL	Annual rate of consumer price inflation	Kairu, 2016; Osundina, 2016; Kelilume, 2016)
Leverage	GDP	Total debt divided by total assets	Kelilume, 2016; Ayobami, 2019)
Liquidity	LIQ	Current assets divided by current liabilities	Ayobami, 2019)

Source: Author (2023)

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter describes the findings and discussion of the results of the study on exchange rate volatility and firm performance. The data collected in this study was evaluated, discussed and inferences made, in an effort to address the specific objectives of the study.

4.2 Descriptive Statistics

Table 4.1 indicates that the average profitability return (ROA) of manufacturing firms is 0.04 with a standard deviation of 0.14. This implies that the manufacturing firms, on average, earn a return of 4% on their assets. The standard deviation of 0.14 suggests that there is a significant amount of variability in the returns earned by manufacturing firms. The high standard deviation could indicate that some manufacturing firms are performing well above the average, while others are performing below the average. It could also suggest that there are external factors, such as changes in the economy or market conditions, that are impacting the performance of manufacturing firms to varying degrees.

Additionally, the study suggests that there is a relatively high level of risk associated with investing in manufacturing firms, as the variability in returns indicates that there is a higher likelihood of investors earning lower returns or even experiencing losses.

Therefore, investors who are considering investing in manufacturing firms may need to carefully evaluate the risks and potential rewards of such investments. The table further reveals that the average market value (Tobin's Q ratio) of manufacturing firms is 1.75 with a standard deviation of 1.74. This implies that the market value of manufacturing firms, on average, is 1.75 times higher than their replacement cost of assets. Tobin's Q ratio is a financial ratio that compares a company's market value to its replacement cost of assets, so a ratio greater than 1 implies that the market value of the firm is higher than its replacement cost.

The high standard deviation of 1.74 suggests that there is a significant amount of variability in Tobin's Q ratios of manufacturing firms, indicating that some firms may be performing much better than others in terms of market value. This variability may be caused by a variety of factors, such as differences in management quality, market conditions, or technological innovation. Additionally, the high standard deviation suggests that investors should carefully evaluate the risks associated with investing in manufacturing firms with varying Tobin's Q ratios.

The mean exchange rate volatility for USD/GHS is 0.16 with a standard deviation of 0.09. This implies that the exchange rate for USD/GHS has a relatively high degree of volatility, with an average fluctuation of 0.16 cedis around the mean exchange rate. Additionally, the standard deviation of 0.09 suggests that there is a significant amount of variation in the degree of volatility over time. This means that the exchange rate can vary significantly from the mean exchange rate and that the degree of variation can

change rapidly. In practical terms, this could mean that businesses or individuals who rely on USD/GHS exchange rates for their operations may need to take extra precautions to manage their currency risk, as the exchange rate can fluctuate significantly in either direction. The information suggests that the country experienced a relatively high level of inflation over the twelve-year period in question, with an average annual inflation rate of 11.89%. Additionally, the standard deviation of 3.44 indicates that there was some degree of variability in the annual inflation rates over the twelve-year period. This means that some years may have had higher inflation rates than others and that the inflation rate may have fluctuated from year to year.

Table 4. 1 Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
MV	125	1.75	1.74	0.31	12.83
PROF	125	0.04	0.14	-0.38	0.46
EXCH	125	0.16	0.09	0.02	0.38
INFL	125	11.89	3.44	7.14	17.45
LEV	125	0.52	0.26	0.02	1.23
SIZE	125	17.63	1.74	13.77	20.60
LIQ	125	2.31	4.86	0.08	52.72

Source: Author (2023), MV: market value, PROF: profitability, EXCH: exchange rate volatility, INFL: inflation, LEV: leverage, LIQ: liquidity.

The average annual leverage of manufacturing firms is 0.52, which means that on average, these firms finance 52% of their assets with debt. The standard deviation of

leverage is 0.26, which implies that there is significant variation among manufacturing firms in terms of their leverage ratios. Some firms may have much higher leverage ratios, while others may have much lower ones. The study's findings suggest that leverage is a common financing strategy among manufacturing firms, but it also carries some risks, such as higher interest expenses and potential bankruptcy in case of economic downturns. Therefore, firms should carefully manage their leverage levels to balance the benefits and risks of debt financing.

The average liquidity of manufacturing firms is 2.31, which means that these firms have current assets that are 2.31 times larger than their current liabilities. This suggests that on average, manufacturing firms have sufficient current assets to cover their shortterm obligations. The standard deviation of liquidity is 4.86, which implies that there is significant variation among manufacturing firms in terms of their liquidity ratios. Some firms may have much higher liquidity ratios, while others may have much lower ones.

The study's findings suggest that manufacturing firms, in general, have a healthy liquidity position, but it also highlights that some firms may face liquidity challenges, such as difficulty in paying their short-term obligations. Therefore, firms should carefully manage their liquidity levels to ensure they have sufficient working capital to meet their short-term obligations and avoid financial distress. The average natural logarithm of the total assets of manufacturing firms is 17.63. The standard deviation of the natural logarithm of total assets is 1.74, which implies that there is significant variation among manufacturing firms in terms of their total asset size. Some firms may

have much larger asset sizes, while others may have much smaller ones. The study's findings suggest that manufacturing firms, in general, have relatively large asset sizes, but there is significant variation among them. This highlights the diversity of the manufacturing industry, with some firms being much larger than others.

4.3 Correlation Matrix

Table 4.2 shows the relationship among the variables. The table shows that the highest correlation among the independent variables is between inflation and exchange rate volatility. Also, the VIF indicates that all the values are less than 10 which suggests the absence of multicollinearity.

Table 4. 2 Correlation

	MV	PROF	EXCH	INFL	LEV	SIZE	LIQ	VIF
MV	1.00							
PROF	0.31	1.00						
EXCH	-0.01	-0.17	1.00					1.33
INFL	0.08	0.00	0.48	1.00				1.35
LEV	-0.10	-0.52	0.09	-0.05	1.00			1.2
SIZE	0.26	0.17	0.03	-0.08	0.00	1.00		1.03
LIQ	0.01	0.11	0.06	0.15	-0.38	-0.13	1.00	1.22

Source: Author (2023), MV: market value, PROF: profitability, EXCH: exchange rate volatility, INFL: inflation, LEV: leverage, LIQ: liquidity.

4.4 Hausman Test

Table 4.3 presents the results of the Hausman test. The data indicates that the p-value for equation 1 is 0.21 which is above the 5% significance level. Also, the p-value for equation two is 0.35 which is above the 5% significance level. Based on the data equation 1 and 2 confirms the null hypothesis that the random effect model is appropriate.

Table 4. 3 Hausman Test

	Stat	P-value	Implication
Equation 1	7.18	0.21	Random effect
Equation 2	8.25	0.35	Random effect

Source: Author (2023)

4.5 Diagnostic Test

Table 4.4 shows that the p-value of the Wooldridge test for autocorrelation is 0.00 which suggests the presence of autocorrelation. The Breusch-Pagan / Cook-Weisberg test for heteroskedasticity shows a p-value of 0.00 indicating the presence of heteroskedasticity. This study controls for autocorrelation and heteroskedasticity using the Driscoll/Kray covariance matrix.

Table 4. 4 Diagnostic tests

	Stat	P-value	Implication
Autocorrelation	98.82	0.00***	Presence of autocorrelation

Heteroskedasticity	28.30	0.00***	Presence of Heteroskedasticity

*Source: Author (2023), ***: 1% significance level.*

4.6 Trend of Exchange Rate Volatility in Ghana

Table 4.5 shows the trend of exchange rate volatility from 2010 - 2021. The table shows that the average exchange rate between USD and GHS has steadily increased from 2010 to 2021. In 2010, the average exchange rate was 1.4353 USD/GHS, while in 2021 it was 5.929166667 USD/GHS (Figure 4.1). The standard deviation of the exchange rate has also increased from 2010 to 2021, indicating increased volatility in the exchange rate.

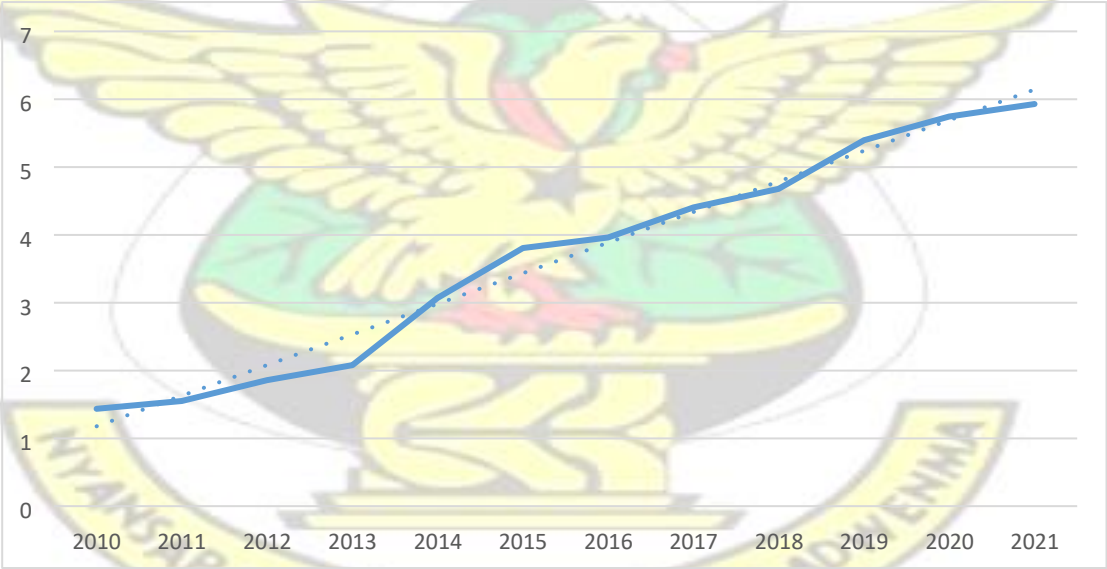

Figure 4. 1:Mean exchange rate (USD/GHS)

The largest increase in the average exchange rate occurred between 2013 and 2014, where it increased from 2.079208333 USD/GHS to 3.071608333 USD/GHS. This increase was likely influenced by various economic factors, such as changes in the

demand for Ghanaian exports or changes in global oil prices. Overall, the trend in the data suggests that the exchange rate between USD and GHS has become increasingly volatile and has steadily increased over the past decade, with the largest increase occurring between 2013 and 2014. The steady increase in the exchange rate between USD and GHS from 2010 to 2021, where it has increased by at least 4 cedis, suggests that the Ghanaian economy has experienced some level of depreciation over this period. The depreciation of the currency could lead to higher inflation and increased costs of imports, which can lead to a rise in the cost of living for citizens. In addition, it can make it more expensive for the government to service its foreign debt, which can put a strain on the country's fiscal resources.

Table 4. 5 Trend of Exchange rate volatility

Year	Mean exchange rate (USD/GHS)	Standard deviation of exchange rate	Percentage change
2010	1.4353	0.016714315	
2011	1.552141667	0.055219946	8.14%
2012	1.857841667	0.087554083	19.64%
2013	2.079208333	0.141157043	11.92%
2014	3.071608333	0.376681613	47.79%
2015	3.804833333	0.240254682	23.96%
2016	3.962725	0.152608716	4.14%
2017	4.405925	0.116634744	11.17%
2018	4.676391667	0.159156325	6.13%
2019	5.396425	0.181514027	15.43%

2020	5.744125	0.123946273	6.45%
2021	5.929166667	0.15685494	3.22%

Source: Author (2023)

The percentage changes show that the exchange rate between USD and GHS has generally been increasing over the years, with some years experiencing particularly large jumps. For example, the exchange rate increased by almost 48% in 2014 and by almost 24% in 2015. This suggests that the Ghanaian currency has been experiencing a relatively high level of depreciation over the years.

4.7 Effect of Exchange Rate Volatility on Profitability

Table 4.6 indicates that the r-square is 0.32 which indicates that the independent variables explain the variance in the dependent variable by 32%. The coefficient of exchange rate volatility is -0.2388 suggesting a negative relationship with profitability. Also, the p-value is 0.03 which indicates that the relationship is significant at the 5% level. This finding means that a 1% increase in exchange rate volatility leads to a 0.2388 decrease in profitability. The finding implies that firms' profitability is adversely affected by exchange rate fluctuations. The finding supports the study of Okon, Udeme and Habila (2020).

Table 4. 6 Exchange rate volatility and profitability

	Coef.	Std. Err.	t-stat	P-value
EXCH	-0.238788	0.0956404	-2.5	0.03**
INFL	0.0030734	0.0012602	2.44	0.03**

LEV	-0.2760184	0.0702042	-3.93	0.00***
SIZE	0.0117087	0.0067946	1.72	0.11
LIQ	-0.0012474	0.000714	-1.75	0.11
Constant	-0.0227659	0.1233682	-0.18	0.86
OBS	125			
R-square	0.32			

*Source: Author (2023), EXCH: exchange rate volatility, INFL: inflation, LEV: leverage, LIQ: liquidity,***: 1% significance level, **: 5% significance level.*

A possible explanation is that exchange rate volatility makes it difficult for firms to predict their future earnings, which may lead to uncertainty and risk aversion. As a result, firms may reduce their investments, which could negatively affect their ROA. Exchange rate volatility can increase uncertainty and risk aversion, leading to reduced investment and lower profitability. Moreover, manufacturing firms are typically more exposed to exchange rate risk because they rely on imported raw materials, intermediate goods, and capital equipment, which are often denominated in foreign currencies. This can make their input costs more volatile, leading to reduced profitability.

The finding supports the agency theory. The theory of agency suggests that managers may have incentives to pursue activities that are not in the best interest of shareholders, particularly during times of exchange rate volatility. For example, managers may be incentivized to engage in speculative activities that could result in short-term gains but negatively impact the firm's long-term profitability and ROA.

4.8 Exchange Rate Volatility and Market Value

Table 4.7 indicates that the r-square is 0.05 which indicates that the independent variables explain the variance in the dependent variable by 5%. The coefficient of exchange rate volatility is -0.2542 suggesting a negative relationship with market value. Also, the p-value is 0.84 which indicates that the relationship is not significant. The finding supports the study of Farah (2014).

Table 4. 7 Exchange rate volatility and market value

	Coef.	Std. Err.	t-stat	P-value
EXCH	-0.2542793	1.255036	-0.2	0.84
INFL	0.0494085	0.0371299	1.33	0.21
LEV	0.0648051	0.5801229	0.11	0.91
SIZE	-0.3470734	0.1418507	-2.45	0.03**
LIQ	-0.000428	0.0092368	-0.05	0.96
Cons	7.166934	2.192077	3.27	0.01***
OBS	125			
R-square	0.05			

*Source: Author (2023), MV: market value, PROF: profitability, EXCH: exchange rate volatility, INFL: inflation, LEV: leverage, LIQ: liquidity, ***: 1% significance level, **: 5% significance level.*

Tobin's Q ratio is a measure of a firm's market value relative to its book value, and it reflects investors' perceptions of the firm's future earnings potential and growth

prospects. A possible reason is that investors may perceive a manufacturing firm as having long-term growth potential due to factors such as technological innovation, economies of scale, or competitive advantages, which could offset any negative impact of exchange rate volatility. Also, most of the sampled manufacturing firms have operations in multiple countries and as such may be less susceptible to the impact of exchange rate volatility on their market value. This is because currency fluctuations in one country may be offset by movements in another country. By diversifying their operations, these firms can mitigate the impact of exchange rate volatility on their overall performance.

4.9 Discussions

4.9.1 The Trend of Exchange Rate Volatility in Ghana

The first objective of the study look at the trend of exchange rate volatility in Ghana over the period from 2010 to 2021. The results indicated a steady increase in the average exchange rate between USD and GHS during this timeframe. In 2010, the exchange rate stood at 1.4353 USD/GHS, rising to 5.929166667 USD/GHS in 2021. Concurrently, the standard deviation of the exchange rate also witnessed an upward trajectory, suggesting heightened volatility throughout the years.

This observed escalation in exchange rate volatility, particularly the significant surge between 2013 and 2014, raises pertinent questions about the factors influencing these fluctuations. Economic variables, such as alterations in the demand for Ghanaian exports and shifts in global oil prices, likely played a pivotal role during this period. Such fluctuations align with existing literature, as noted by Olanipekun (2015), who

identified the exchange rate volatility value to swing compared to other currencies. Moreover, Bahmani-Oskooee and Hajilee (2013) highlight the adverse impact of unplanned exchange rate fluctuations on international trade and investment. The results of this study, affirming a consistent increase in volatility, corroborate the notion that excessive volatility in currency values heightens uncertainty about future exchange rates. Adeniyi and Kumeka (2020) further emphasize that exchange rate volatility induces uncertainties, potentially leading to a decrease in exports due to apprehensions about the success of foreign transactions.

The percentage changes over the years underline a persistent increase in the exchange rate, with notable spikes in certain years, such as a nearly 48% increase in 2014 and almost 24% in 2015. This pattern suggests a high level of depreciation in the Ghanaian currency, a phenomenon that aligns with the literature's recognition of currency volatility impacting foreign capital flows (Adeniyi & Kumeka, 2020). The consistent depreciation of the currency, as indicated by the upward trend, may lead to higher inflation and increased costs of imports. This, in turn, can elevate the cost of living for citizens, a concern echoed in literature by Samuelson and Nordhaus (2001). Secondly, the increased volatility poses challenges for the government in servicing its foreign debt, potentially straining the country's fiscal resources.

Thus, the findings of this study underscore the importance of understanding exchange rate volatility trends for policymakers and businesses in Ghana. The observed patterns

align with theoretical expectations and underline the need for proactive measures to mitigate the potential adverse effects on the economy.

4.9.2 The Effect of Exchange Rate Volatility on the Profitability of Listed Manufacturing Firms in Ghana

The second objective examines the impact of exchange rate volatility on the profitability of listed manufacturing firms in Ghana. The results show that the exchange rate has a negative and significant impact on the profitability of listed manufacturing firms in Ghana. The negative relationship implies that as exchange rate volatility increases, the profitability of listed manufacturing firms in Ghana tends to decrease. This aligns with the broader understanding that currency fluctuations can introduce uncertainty and risk, adversely affecting business performance. The negative coefficient suggests that a 1% increase in exchange rate volatility leads to a 0.2388 decrease in profitability.

In alignment with existing literature, the negative relationship found in this study echoes the findings of Okon, Udeme, and Habila (2020). The literature review further corroborates this, with Ayobami (2019) discovering a negative and significant link between currency rate fluctuations and the expansion of manufacturing companies in Nigeria. Williams (2018) also found a significant and negative impact of exchange rate changes on the profitability of listed firms in Nigeria. The findings of this study resonate with the broader trend identified in the literature, reinforcing the notion that exchange rate volatility can be a hindrance to economic growth.

The agency theory, as applied to exchange rate volatility, posits that conflicts of interest between managers and owners may arise, impacting decision-making and, subsequently, firm performance. This aligns with the observed negative impact on profitability in the study. Managers, in response to exchange rate fluctuations, may prioritize short-term gains over long-term competitiveness, potentially jeopardizing the overall health of the firm. Additionally, the study echoes Akinlo and Lawal's (2015) findings that changing currency rates can have both short-term and long-term effects on industrial production. The negative relationship discovered in this research implies that not only does exchange rate volatility pose an immediate threat to profitability, but its persistency may have enduring consequences on the economic performance of listed manufacturing firms in Ghana.

Thus, the evidence presented in this study underscores the need for robust risk management strategies by listed manufacturing firms in Ghana to mitigate the adverse effects of exchange rate volatility on profitability. Understanding the dynamics of this relationship is essential for informed decision-making by both managers and policymakers, ensuring the long-term sustainability of the manufacturing sector in Ghana.

4.9.3 The Effect of Exchange Rate Volatility on the Market Value of Listed Manufacturing Firms in Ghana

The third objective examines the influence of exchange rate volatility on the market value of listed manufacturing firms in Ghana. The results show a negative relationship with market value. However, the relationship lacks statistical significance. The findings

align with the insights of Farah (2014), supporting the notion that exchange rate volatility might not significantly impact the market value of manufacturing firms.

Tobin's Q ratio, a measure comparing a firm's market value to its book value, is often employed to gauge investors' perceptions of a firm's future earnings potential and growth prospects. One possible explanation for the lack of statistical significance in the relationship between exchange rate volatility and Tobin's Q could be that investors perceive manufacturing firms as having long-term growth potential, mitigating the adverse impact of exchange rate volatility. Investors might consider factors such as technological innovation, economies of scale, or competitive advantages that could offset the negative effects of currency fluctuations on market value.

This study postulates that the sampled manufacturing firms may show resilience to the impact of exchange rate volatility on their market value. However, diversification allows these firms to balance the effects of currency fluctuations in one country with movements in another. Such strategic operational diversity can serve as a protective measure, enabling firms to mitigate the overall impact of exchange rate volatility on their performance.

Buabeng et al.'s (2019) examination of currency rate fluctuations on the performance of Ghanaian manufacturing enterprises aligns with the present study, indicating a considerable negative correlation between the exchange rate and manufacturing companies' performance. The positive relationships identified between inflation, trade

openness, and investment with the manufacturing sector's performance in Ghana resonate with the link of various economic factors.

Using the agency theory as a theoretical perspective when ownership and control are separated in a firm, conflicts of interest may arise between owners and managers. The agency problem becomes apparent when managers prioritize their own interests over those of the owners, potentially leading to suboptimal decision-making and impacting firm performance (Shah & Hussain, 2012). Exchange rate volatility, as a factor influencing the firm's exports and imports, can present challenges in decision-making. The impact of exchange rate volatility on a firm's competitiveness and profitability, as outlined by agency theory, is contingent on managers' decisions. When the home currency appreciates, exports become more expensive, and imports become cheaper, potentially harming the firm's performance. Conversely, a depreciating home currency can make exports cheaper and more competitive while increasing the cost of imports, potentially benefiting the firm. However, managers may not consistently act in the best interests of the firm's owners. Short-term profit focus or engaging in currency speculation might diverge from long-term competitiveness goals.

Thus, the study's non-significant findings regarding the relationship between exchange rate volatility and the market value of listed manufacturing firms in Ghana prompt reflections on the resilience of these firms and the specific nature of factors influencing market dynamics. The literature review offers comparative insights, emphasizing the need for context-specific analyses and highlighting the diverse economic conditions

within regions. The agency theory also provides a theoretical framework to understand the potential conflicts of interest in managerial decision-making, underscoring the importance of aligning managerial actions with the long-term interests of firm owners.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In keeping with the study's stated goal of investigating the effect of exchange rate volatility on manufacturing firms' performance, this chapter summarises the results and offers conclusions and suggestions.

5.2 Summary of Findings

The study finds there has been a steady depreciation of the Ghanaian cedi against the USD for the 12-year period examined by the study and the highest volatility happened between 2013 and 2014. It was also discovered that exchange rate volatility negatively

affects the return on assets of manufacturing firms. Exchange rate volatility had a coefficient of -0.2388 and a p-value of 0.03. However, the study further discovered that exchange rate volatility does not affect Tobin's Q ratio of manufacturing firms significantly. The p-value of exchange rate volatility was 0.84.

5.3 Conclusion

In conclusion, the study investigated the impact of exchange rate volatility on listed manufacturing firms in Ghana. The adverse effect of exchange rate fluctuations on the profitability and market value of these firms is evident. The non-significant relationship between exchange rate volatility and market value, as identified in the study, raises questions about the resilience and strategic diversification of manufacturing firms. The findings underscore the need for nuanced economic policies that consider the specific challenges posed by exchange rate volatility in the Ghanaian manufacturing sector. Moreover, the study aligns with the principles of agency theory, highlighting potential conflicts of interest between managers and owners in the face of currency fluctuations. As such, the implications of this research extend beyond the immediate financial impact, emphasizing the importance of aligning managerial decisions with the longterm interests of firm owners to navigate the challenges posed by exchange rate volatility in Ghana.

5.4 Recommendations

It is recommended that manufacturing firms use financial instruments such as currency options, futures contracts, or forward contracts to hedge against exchange rate risks.

This can help protect the firm's profits and cash flows from sudden fluctuations in exchange rates.

Manufacturing firms should increase exports to diversify revenue streams. By increasing the volume of exports, these firms can diversify its revenue streams and reduce its dependence on the domestic market. This can also help the firm take advantage of favourable exchange rates in other markets.

The government should take measures to stabilize the exchange rate by intervening in the foreign exchange market, maintaining a stable inflation rate, and promoting economic growth. The study provides the following recommendations to various stakeholders for the industry, research, academia and policy.

a) Industry or Practice:

For industry practitioners, particularly within the manufacturing sector in Ghana, it is imperative to implement robust risk management strategies to navigate the challenges posed by exchange rate volatility. Companies should consider adopting financial instruments such as forward contracts or currency hedging to mitigate the impact of currency fluctuations on their profitability and market value. Additionally, fostering strategic diversification by expanding operations to diverse markets can serve as a protective measure. Furthermore, fostering a culture of financial literacy among employees, especially those involved in decision-making roles, is crucial. This can enhance their understanding of the implications of exchange rate movements and contribute to informed decision-making.

b) Research or Academia:

For research and academia, there is a need for continued exploration into the nuances of exchange rate volatility and its effects on various industries. Scholars should undertake in-depth analyses of specific sectors to uncover sector-specific patterns and responses to currency fluctuations. Moreover, the development of predictive models that can anticipate potential currency movements and their impact on firm performance would be a valuable contribution to the field. Collaborative research efforts, both domestically and internationally, can enrich the understanding of exchange rate dynamics and inform more effective risk management strategies for businesses.

c) Policy:

From a policy perspective, it is crucial for regulatory bodies in Ghana to collaborate with industry stakeholders to formulate adaptive policies that consider the impact of exchange rate volatility on manufacturing firms. Providing incentives for companies to engage in risk management practices, such as tax benefits for adopting hedging strategies, could encourage proactive risk mitigation. Additionally, policymakers should prioritize initiatives that enhance economic stability, as a stable economic environment is inherently less susceptible to extreme currency fluctuations. Collaborative efforts with international bodies to develop standardized risk management practices can also contribute to a more resilient business environment.

5.5 Recommendation for Further Studies

The study recommends that further studies should be conducted on how exchange rate volatility influences the earnings management practices of firms.

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