

A Study On Raw Material Price Fluctuations And Its Impact On Profitability With Special Reference To Auckland Life Sciences Private Limited

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Abstract- *This study analyzes the impact of raw material price fluctuations on the profitability of tablet manufacturing units, with specific reference to Auckland Life Sciences Pvt. Ltd., Puducherry. In the pharmaceutical industry, raw materials such as Active Pharmaceutical Ingredients (APIs), excipients, and packaging materials account for a major portion of production costs, making profitability highly sensitive to their price changes. The research, based on secondary data over five years (2020–2024), employs trend analysis, ratio analysis, and regression techniques to examine the relationship between raw material costs and financial performance indicators like gross profit, net profit, operating profit, and return on investment. The findings reveal that all key raw materials exhibited consistent price increases, significantly affecting production costs and profit margins. While Gross Profit and Operating Profit Ratios improved due to effective cost control, Net Profit Ratio and ROI fluctuated, indicating the influence of rising input costs. Regression results confirmed a strong positive correlation between raw material consumption and net sales, proving that sales performance is closely linked to material usage. The study concludes that efficient material management, supplier diversification, cost control, and long-term procurement strategies are vital for maintaining stable profitability and achieving sustainable growth in a competitive pharmaceutical environment.*

Keywords- Raw Material Price, Fluctuation, Profitability Analysis, Pharmaceutical Manufacturing, Cost Control, Regression Analysis, Financial Performance, Material Management.

I. INTRODUCTION

In today's dynamic and competitive business environment, raw material prices play a crucial role in determining the cost structure and profitability of manufacturing and production based industries. Raw materials often account for a significant portion of total production costs, and fluctuations in their prices can have a direct and substantial impact on a company's financial performance.

The pharmaceutical industry is one of the most dynamic and vital sectors of the global economy, directly contributing to public health and economic growth. Within this industry, tablet manufacturing plays a critical role due to the high demand for oral solid dosage forms. However, one of the most significant challenges faced by manufacturers is the fluctuation in raw material prices. Raw materials, which include Active Pharmaceutical Ingredients (APIs), excipients, and packaging materials, constitute a substantial portion of the total production cost in tablet manufacturing.

Price fluctuations of these raw materials occur due to several factors, such as changes in global supply and demand, currency exchange rates, inflation, government regulations, transportation costs, and geopolitical conditions. These variations can significantly affect cost structures, profit margins, and overall financial performance of the company. For tablet manufacturers, even a small increase in raw material prices can lead to a considerable reduction in profitability, especially in a highly competitive market where product pricing is strictly regulated.

The study of raw material price fluctuations and their impact on profitability is therefore essential to understand the financial stability and decision-making processes of pharmaceutical companies. By analyzing these fluctuations, manufacturers can adopt strategies such as cost control, inventory management, long-term supplier contracts, and hedging mechanisms to mitigate risks and maintain sustainable profits.

Understanding these fluctuations is critical for financial planning, cost control, and pricing strategies. Companies must adopt robust cost-management practices and develop forecasting mechanisms to mitigate risks associated with volatile input costs. Analyzing the relationship between raw material price movements and profitability not only helps in identifying cost drivers but also assists in devising strategies to improve operational efficiency and sustain competitive advantage.

This study focuses on examining the extent of raw material price fluctuations and their direct impact on the profitability of tablet manufacturing units. It aims to provide insights into how price volatility influences production cost, gross margins, and net profit, thereby enabling pharmaceutical companies to make informed financial decisions.

NEED OF THE STUDY

- The study is essential to understand the impact of raw material price variations on the overall cost of production and profit margins in tablet manufacturing
- It helps to identify market trends and predict possible future price fluctuations, supporting effective financial forecasting and planning.
- The study aims to evaluate how price fluctuations affect different cost components, including raw materials, utilities, and operating expenses in pharmaceutical production.

STATEMENT OF THE PROBLEM

The pharmaceutical industry, particularly tablet manufacturing, is highly dependent on raw materials such as Active Pharmaceutical Ingredients (APIs) and excipients, which account for a significant share of production costs. Companies like Auckland Life Sciences Pvt. Ltd. face constant challenges due to frequent fluctuations in raw material prices arising from global supply-demand imbalances, heavy reliance on imports, currency rate variations, inflation, and changes in government trade policies. These unpredictable cost changes directly impact the profitability of the company by increasing production expenses and reducing profit margins, especially in a market where medicine prices are tightly regulated and competition is intense. The inability to fully pass on increased costs to customers makes it essential to study the trends of raw material price fluctuations, identify external factors influencing these changes, and evaluate their impact on profitability. Such an analysis will help in framing cost control measures, procurement strategies, and financial planning approaches to ensure sustainable growth and competitiveness in the market.

SCOPE OF THE STUDY

- The study focuses on raw material price fluctuations and their impact on profitability specifically in the tablet manufacturing segment of Auckland Life Sciences Pvt. Ltd.

- The research period considers recent trends over 5 years, providing insights into both short-term and long-term price movements.
- It highlights the relationship between cost fluctuations and financial indicators like gross profit, net profit, and return on investment.

OBJECTIVES OF THE STUDY

- To examine the trend of raw material price fluctuations in Auckland Life Sciences Private Limited.
- To study the profitability position of the Auckland Life Sciences Private Limited.
- To analyze the price fluctuation and its impact on profitability.

LIMITATION OF THE STUDY

- The analysis is based on secondary data and company records, so accuracy depends on the data provided.
- The study covers a specific time frame (5 years) and may not reflect long-term trends.
- Profitability is influenced by multiple factors, but this study mainly focuses on raw material price fluctuations.

II. REVIEW OF LITERATURE

Muthukumar. E and Nisha. K.G (2014) This article focuses on the effect in profitability of yarn producers when the prices of cotton are fluctuating with special reference to Precot Meridian Ltd. Even though there is an increase in the sales volume and reduction in the cost, Yarn producers facing the risk of maintaining the profitability margin. The only raw material of yarn production is Cotton. And the cotton is a seasonal product. So the purchase of raw material is on seasonal basis. Cotton price in Domestic Market and International Market are different and it is always fluctuating. After Globalization as the yarn producers have both domestic and export sales, they have to face heavy competition in domestic market with importers and in the foreign market with other yarn export countries. Keywords: Cotton, Yarn, Price fluctuations, Precot meridian

Ibegbulem Andreas Brutus and Okorie Chiyem (2015) Many business organizations in Nigeria fail to appreciate the role of materials management in enhancing their profitability. In most cases, the function seems to be a formality in the system, while in other cases the functions are actually applied strictly. Some organizations are of the belief that material management is just a routine function of the

purchasing department thereby reducing it to the background. Arising from this backdrop, this study aims at finding out how an organization can tackle the problems identified and how effective material management can increase the profitability of an organization. The study revealed that material management used by the organization 11 contributes to the profitability of the company, adequate storage facilities prevents interruption on production process among other things. As a result of the above, it was recommended that there should be good record system of materials for the operations of the organization as it affects production and the training of staff to acquire new skills and knowledge needed for the work for the benefit of the organization.

Molla K. (2017) The study aimed to assess the current practices and challenges associated with material resource management in selected governmental secondary schools across Addis Ababa City Administration. Specifically, it focused on key functions of materials management—planning, purchasing, distribution, storage, inventory control, maintenance, and disposal—as well as the implementation of relevant policies and guidelines. A descriptive survey research design with a mixed-methods approach was employed, involving school personnel, sub-city education officers, and members of Parent-Teacher-Student Associations from three sub-cities and six schools. Data were collected via questionnaires, interviews, observations, and document review. The findings revealed widespread problems: many schools lacked effective guidelines; materials were often stored improperly; inventory control was irregular; personnel responsible for purchasing and managing resources lacked proper qualifications; stakeholder involvement was minimal; and storage facilities were inadequate. Based on these results, the study recommended developing clear guidelines for material purchasing and usage, enhancing stakeholder participation in needs assessment, improving storage infrastructure, and assigning dedicated staff for resource management to improve effectiveness in schools.

III. RESEARCH METHODOLOGY

Research methodology section of project report, outline the systematic approach employed to gather and analyse data. This pivotal section serves as a roadmap for study, detailing the methods and techniques used to answer research question or test hypothesis. It involves a careful explanation of research design, data collection methods, and data analysis procedures, providing clarity on ensure the reliability and validity of findings.

RESEARCH DESIGN:

Research design is the overall plan or framework that guides a researcher in conducting a study systematically. It acts as a blueprint that outlines how the research problem will be approached, what data needs to be collected, how the data will be gathered, and the methods that will be used for analysis and interpretation. A well-structured research design ensures that the research process is organized, minimizes errors or biases, and helps in obtaining accurate and reliable results. It also provides clarity in defining the objectives, selecting the appropriate methods, and establishing the sequence of activities required to complete the study. In essence, research design serves as a roadmap that connects the research problem with the conclusion, ensuring that the findings are meaningful and relevant to the study objectives.

TYPES OF RESEARCH DESIGN:

- Descriptive Research Design
- Analytical Research Design
- Experimental Research Design
- Exploratory Research Design

DATA SOURCE & COLLECTION METHODS:

There are two types for collecting data

- Primary data
- Secondary data

TOOLS USED FOR ANALYSIS OF DATA:

The data were analysed during the following financial tools. They are

- Trend analysis
- Ratios analysis
- Regression analysis

TYPES OF RATIO ANALYSIS

- Gross Profit Ratio
- Net Profit Ratio
- Operating Profit Ratio
- Return on Investment (ROI)

IV. DATA ANALYSIS AND INTERPRETATION

4.1 TREND ANALYSIS:

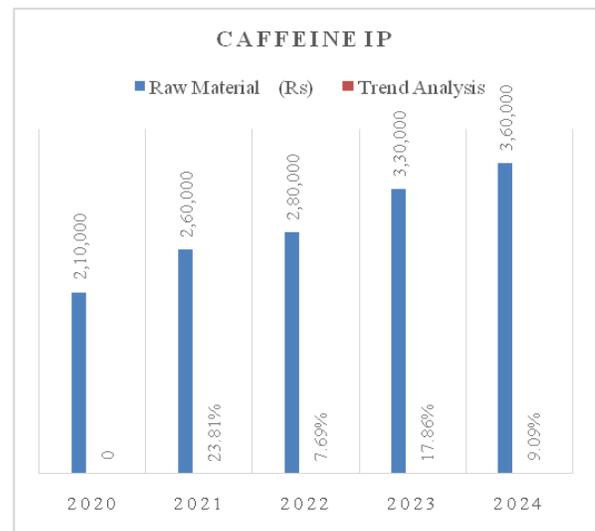
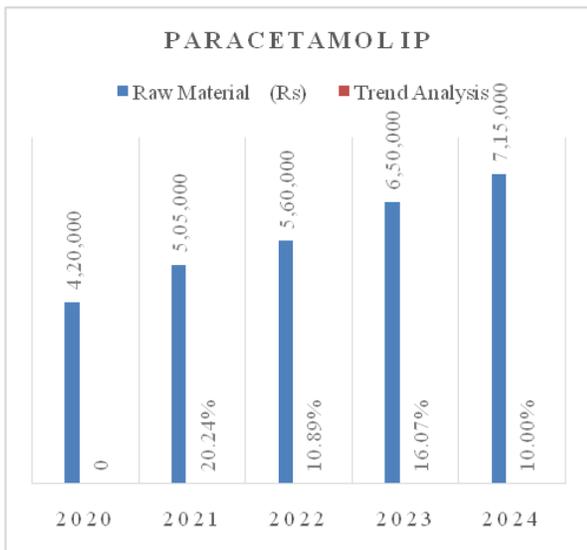
4.1.1 TABLE SHOWING THE TREND ANALYSIS OF PARACETAMOL IP

| Year | RawMaterial(Rs) | TrendAnalysis |
|------|-----------------|---------------|
| 2020 | 2,10,000 | - |
| 2021 | 2,60,000 | 23.81% |
| 2022 | 2,80,000 | 7.69% |
| 2023 | 3,30,000 | 17.86% |
| 2024 | 3,60,000 | 9.09% |

| Year | RawMaterial(Rs) | TrendAnalysis |
|------|-----------------|---------------|
| 2020 | 4,20,000 | - |
| 2021 | 5,05,000 | 20.24% |
| 2022 | 5,60,000 | 10.89% |
| 2023 | 6,50,000 | 16.07% |
| 2024 | 7,15,000 | 10.00% |

4.1.1 CHARTSHOWINGTHETRENDANALYSISOF PARACETAMOLIP

4.1.2 CHARTS HOWING THE TREND ANALYSIS OF CAFFEINEIP



INTERPRETATION

INTERPRETATION:

The raw material cost has shown a steady upward trend from 2020 to 2024. In 2021, it recorded the highest growth of 20.24%, indicating a sharp rise in production or price. The growth slowed to 10.89% in 2022 but rose again to 16.07% in 2023, reflecting higher demand. In 2024, the increase moderated to 10%, showing stability in consumption. Overall, the data indicates continuous expansion with fluctuating growth rates.

The raw material cost has consistently increased over the five years. In 2021, there was a sharp rise of 23.81%, showing higher demand and price growth. The increase slowed in 2022 to 7.69%, but picked up again in 2023 with a 17.86% rise, indicating strong production activity. In 2024, the growth rate moderated to 9.09%, reflecting stability in usage. Overall, the trend shows steady expansion with fluctuations in growth rates.

4.1.2 TABLES HOWING THE TREND ANALYSIS OF CAFFEINEIP

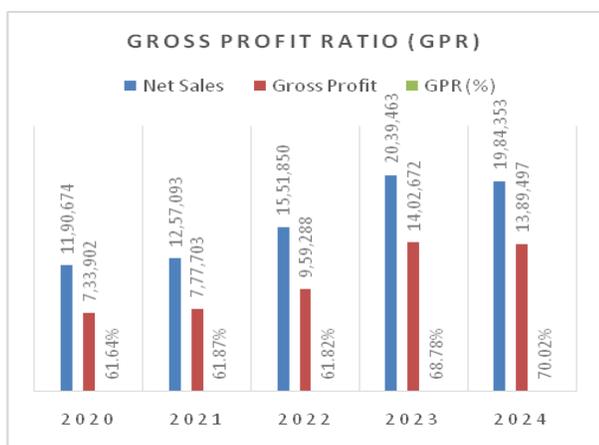
4.2 RATIO ANALYSIS

4.2.1 TABLES HOWING THE GROSS PROFIT RATIO

| Year | Net Sales | Gross Profit | GPR(%) |
|------|-----------|--------------|--------|
| 2020 | 11,90,674 | 7,33,902 | 61.64% |
| 2021 | 12,57,093 | 7,77,703 | 61.87% |
| 2022 | 15,51,850 | 9,59,288 | 61.82% |
| 2023 | 20,39,463 | 14,02,672 | 68.78% |
| 2024 | 19,84,353 | 13,89,497 | 70.02% |

(Source: Secondary Data)

4.2.1 CHARTS HOWING THE GROSS PROFIT RATIO



INTERPRETATION:

The company’s Net Sales and Gross Profit have shown a steady upward trend from 2020 to 2024, except for a slight dip in sales in 2024. The Gross Profit Ratio (GPR) remained stable around 61–62% during 2020–2022, reflecting consistent profitability. In 2023, the GPR improved sharply to 68.78%, indicating better cost efficiency or higher margins. By 2024, the GPR further increased to 70.02%, showing strong profitability despite a small decline in sales. Overall, the data indicates that the company has strengthened its cost control and improved efficiency, leading to a rising gross profit margin over time.

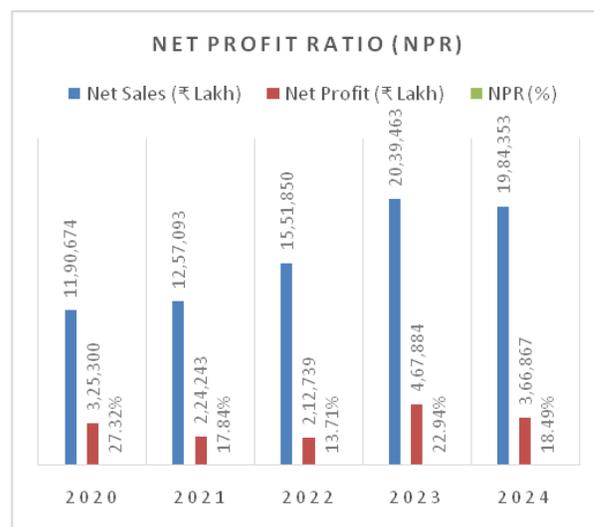
4.2.2 TABLE SHOWING THE NET PROFIT RATIO

| Year | Net Sales | Net Profit | NPR(%) |
|------|-----------|------------|--------|
| 2020 | 11,90,674 | 3,25,300 | 27.32% |

| | | | |
|------|-----------|----------|--------|
| 2021 | 12,57,093 | 2,24,243 | 17.84% |
| 2022 | 15,51,850 | 2,12,739 | 13.71% |
| 2023 | 20,39,463 | 4,67,884 | 22.94% |
| 2024 | 19,84,353 | 3,66,867 | 18.49% |

(Source: Secondary Data)

4.2.2 CHART SHOWING THE NET PROFIT RATIO



INTERPRETATION:

The Net Profit Ratio shows fluctuations over the five years. In 2020, it was strong at 27.32%, but dropped sharply to 17.84% in 2021 and further down to 13.71% in 2022, indicating rising costs or reduced efficiency. In 2023, profitability improved to 22.94%, showing recovery. However, in 2024, it declined again to 18.49%, reflecting moderate performance. Overall, the trend highlights instability in profit margins despite growing sales.

V. FINDINGS, SUGGESTIONS & CONCLUSION

FINDINGS:

- All major raw materials (Paracetamol IP, Caffeine IP, Diphenhydramine Hydrochloride, Maize Starch, Talc, and Oxetacaine IP) showed a steady upward trend from 2020 to 2024.
- The highest growth rates were recorded in 2021 across most materials, indicating strong demand and/or higher input costs. Later years (2023–2024) show moderated but consistent growth, reflecting stability in usage and better cost control.

- The Gross Profit Ratio (GPR) remained stable at 61–62% between 2020–2022, then rose sharply to 68.78% in 2023 and 70.02% in 2024. This shows improved cost efficiency, stronger margins, and effective operations despite a slight sales dip in 2024.
- The Net Profit Ratio (NPR) showed fluctuations, falling from 7.32% in 2020 to a low of 13.71% in 2022. It recovered to 22.94% in 2023 but declined again to 18.49% in 2024, indicating instability in net profitability due to rising costs or other expenses.
- The Operating Profit Ratio (OPR) improved overall, rising from 17.52% in 2020 to a peak of 29.69% in 2023. Though it dropped slightly to 25.98% in 2024, it still reflects strong operational performance compared to earlier years.

SUGGESTIONS:

- Plan raw material procurement carefully to avoid stock-outs or overstocking, ensuring smooth production without unnecessary inventory costs.
- Negotiate with multiple suppliers to secure better rates, timely deliveries, and stable supply, reducing dependency on a single source.
- Explore bulk purchasing or long-term contracts for raw material to minimize costs and take advantage of price stability over time.
- Monitor and reduce overhead expenses across departments, including energy, utilities, and administrative costs, to maintain consistent profitability.
- Optimize production processes by implementing lean manufacturing techniques to reduce wastage and improve efficiency.
- Implement strict budgetary controls to track expenses effectively and prevent overspending on non-essential operations. Focus on maintaining a high Gross Profit Ratio (GPR) by controlling direct production costs and improving resource utilization.
- Regularly review pricing strategies and market conditions to sustain Net Profit Ratio (NPR) and remain competitive.

CONCLUSION:

The overall analysis shows that the company has demonstrated steady growth in raw material consumption, sales, and profitability, although with some fluctuations across years. Ratios such as Gross Profit and Operating Profit have improved, reflecting stronger cost efficiency and better operational performance, while Net Profit Ratio and ROI displayed volatility due to rising costs and varying returns on capital. The regression analysis

confirmed a strong positive relationship between raw material usage and sales, highlighting the importance of efficient resource management. To sustain profitability and ensure long-term stability, the company should strengthen raw material planning, control operating and administrative expenses, and adopt lean manufacturing and automation for greater efficiency. By implementing sound financial management, diversifying suppliers, and using forecasting tools for better decision-making, the company can maintain stable margins, improve returns, and achieve sustainable growth in the future.

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