Behaviour of Firm's Cost in the Beverage Industry: A Case Study of Coca Cola Company

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ABSTRACT

This research investigates cost behavior within the beverage sector, specifically focusing on the Coca-Cola Company from 2005 to 2020. It analyzes the connections among key cost factors, such as operating expenses, cost of goods sold, inventory levels, and employee count, using financial data sourced from Coca-Cola's annual reports. The results demonstrate a positive correlation between operating costs and employee numbers, indicating that the size of the workforce has a significant impact on the cost structure. In contrast, the study uncovers a negative relationship between the cost of goods sold and both inventory levels and sales volume, suggesting that enhancements in efficiency and economies of scale play a role in reducing costs. This research underscores the necessity of understanding cost behavior for effective business planning, informed financial decisions, and long-term viability in competitive markets.

INTRODUCTION

Background information

The role of cost in the overall production planning of firms cannot be over-emphasized. This is because, the planned revenues and profit of every firm is largely influenced by the cost incurred both at the production stage as well as in the process of getting the goods and services delivered to the end users. When a firm constantly incurs higher cost without corresponding rise in production/sales volume or revenues flows, the profitability of that firm will be eroded.

Also, it is generally acknowledged that, the ultimate aim of business is to make profit. This implies that, for profit to be maximized, the firm must be able to employ relevant managerial skills and competencies that will facilitate its cost minimization process (Kimmel, & Kren, 2002). This is as a result of the fact that, increasing revenue with decreasing marginal cost will lead to increasing profitability. Thus, the need for business managers to constantly monitor and review their cost of operations in the course of carrying out daily business activities.

Basically, costs represent an array of expenditures or financial outflows of a firm that is usually incurred in the course of daily business operations (Shephard, 2015). These costs are often necessary for a business to survive in the face of rise global competition. Microeconomics outlines four key factors that drive every production process of an organisation. These factors include Land, Labour, Capital and Entrepreneurial skills. It is noteworthy that none of this factor is indispensable. For instance, land is not demanded for its direct consumption, and an unutilized portion of land cannot automatically translate into productive outputs until it is acted upon by other factors of production such as labour, capital and entrepreneur. It therefore implies that, the rent paid on land or unoccupied office space cannot on its own generate the needed output level until other factors are employed to complement it in the production process.

Similarly, an entrepreneur with the best business ideas yet lacks access to the needed capital for the business to materialize will exist in illusion. No matter how skillful labour is, if it is not employed, its contribution to production will remain a theoretical discussion. In the same fashion, when capital is tied down, it will remain unutilized and this will impede its contribution to the production process until it is released and collaborate with

other productive inputs. Thus, there is a mutual interaction among all the productive inputs whose joint impact is often felt in the entire production process.

Just like the Biblical injunction; "Howbeit this kind goeth not out but by prayer and fasting (Matthew 17:21, KJV)", there is no factor employment without corresponding cost, irrespective of the magnitude. The implication is that, each productive input commands an associated cost. For instance, the cost of employing labour in the production of goods and services is represented by the volume of wages and benefits that are paid in the course of the business operations. Similarly, land and building are fixed assets with their associate cost measured in terms of rent, rate, depreciation or any other measurement term. When capital is employed, the associated cost of engaging it is measured in the form of interest expense.

Arising from the foregoing, every business manager has a key interest in measuring the costs associated with each of the factors employed for production to take place. Every business overseer is concerned about the behaviours of these costs overtime in the determination of profit level. This is sequel to the fact that when profit objective is defeated, the survival of that enterprise comes under a serios threat. This negates the "going concern" tenet. Thus, when costs are continually high, leading to falling profit level or manifestation of recuring losses, the business is on the verge of collapse.

Generally, there are several types of costs that can be observed and easily quantified in the course of carrying out daily business activities (Toomey, 2000). These include direct labor cost, direct material cost, overhead costs on manufacturing measured in terms of indirect labor cost, indirect material cost as well as several other variable costs (Sands, 2002; Rishab, 2021).

It is believed that when business raises the cost of production, the corresponding output level will rise. In that esteem, there is an expected positive correlation between cost of input and quantity of output generated in the production process. This is the notion of returns to scale. Specifically, business manager used costs flows to determine the nature of such returns, whether increasing, constant or decreasing returns to scale.

Other types of costs such as interests on loan, dividend payout, annual depreciation charges require proper estimations and allocations. In this regard, the relationship between costs of input and units of output generated may not be directly visible or measurable (Shephard, 2015). For instance, business audit has been recognised as a tool for boosting quality business reporting.

However, the relationship between output quality and the associated cost incurred in hiring an auditor may not be directly observable or measurable. In such occasions where qualitative factors are vital for measuring output, there is no direct association between costs incurred and output accomplished in the business process. It is against this backdrop that this study aims to evaluate the behaviour of firm's cost in the beverage industry with specific emphasis on Coca Cola Company.

Research Questions

The study will dress the following research questions;

What is the behaviour of firm's cost in the beverage industry?

Research Objectives

To examine the behaviour of firm's cost in the beverage industry.

Scope of the Paper

The study aims to examine the behaviour of firm's cost in the beverage industry with specific emphasis on Coca Cola Company for a sixteen (16) year period. Specifically, the data scope is from 2005 to 2020. The data set will be obtained from the financial reports of Coca Cola Company in the assessment period.

LITERATURE REVIEW

Concept of Cost

Essentially, Cost can be described as the expenses made either in the process of production, or in the course of acquiring goods and services for direct utilization. It can also be described as a financial value of all economic resources which provide utility in the course of consumption. In business management, cost represents the actual expenses on factors of production such as land, material and labour (Toomey, 2000).

Various types of costs can exert different magnitude of impact on the outputs of a firm output. The concept of Costs is widely applied in different areas of business management. Thus, key areas in both public and private sector where cost is often discussed include, cash budgeting, capital budgeting, cost accounting, financial accounting, valuation among others (Heier & Jones, 2002).

Thus, we have accounting cost (outlay/nominal cost) and economics cost (real/opportunity cost or forgone alternative). Also, costs can be categorized on the basis of their relationship with the output produced as well as their usage context. Generally, there are two main types of costs incurred by businesses in the course of carrying out daily operations and they include fixed and variable cost (Horngren, Bhimani, Datar & Foster, 2002).

Fixed Costs

As the name implies, fixed costs are the types of costs that are not subject to change in the cource of production planning (Keeley, 2013). These costs do not vary with output in aproduction period. examples of fixed cost include expenses on land, building, office spece, equipment, furniture and fitting. They are often treated as overhead cost in the porduction process of a firm. Some manufacturing overheads include expenses on property taxes and insurance. These cost do not change even with increased or decreased level of outputs.

Variable Costs

unlike the fixed cost, variable costs are the tpyes of costs that change or vary with change in outputs. are sometimes called overhead costs. Examples of these types of costs include cost of labour, materials cost, transportationand distribution cost, marketing and promotion cost, packaging cost, among others. These types of cost change proportionally to changes in the level of output (Keeley, 2013). For instance, a firm wishing to increase its output level will expand its labour size by employing more labour and also producre more materials to achieve such increased output level.

Thus, more labor and material will be required to generate higher volume of output, suggesting that, the cost of labor and material will change in direct proportion to the output volume required in the process of production. Though, the use of both concepts of fixed and variable costs border on the prevailing businesss circumstances (Cooper & Slagmulder, 1998). For example, in the automobile industry, the cost of materals and spare parts used in the mannufacturing and refurbishing a vehincle can be treated as variable costs. However, the cost incurred by a transpotation company in acquiring the same vehicle is treated as fixed cost irrespective of what what spent or the kind of materials used in manufacturing such vahincle.

The cost of manufacturing an Airbus involved both fixed and variable cost. However, the financial values that determines the rate at which the ownership is transpfered to an Airline such as jet2.com is the fixed value of the Airbus. Consequently, the cost of acqurinf a fixed asset is treated as a fixed and not a variable cost for the purchasing firms. Thus, there is the need for each business manager to correctly identified what cost to be treated as fixed or variable cost.

Mixed Costs

Aisde the specific categorisation of costs into fixed and variable costs, there are other caterories of costs which are often treated as mixed. These types of costs exhibit attributes of both fixed and variable costs (Keeley, 2013). A typical example of such cost is the cost of supervision and inspection which are well-thought-out mixed costs. Cost can also be treated as direct or indirect cost in the business process.

Direct Costs

These types of costs are analogous to variable costs. They can be directly ascribed to the varrying expenses incured in the production of output. inventories valaution is done using direct costing approach. This is also regarded as variable costing method. When using direct costing approach, only those costs that vary directly with the volume of production are charged to products as they are manufactured. It therefore follows that inventory cost represents all the cost incurred in the course of employing direct material, direct labor, and all manufacturing costs that vary with output level.

Indirect Costs

Unlike the direct cost, Indirect costs can be associated with fixed costs incurred in the business process. This is because, indirect costs do not vary with the volume of output. Several items captured under this type of cost are often regarded as manufacturing overheads and they include factory supplies used, indirect labor, supervisors' salaries, taxes, utilities, depreciation on fixed assets suchas building and equipment, factory rent expenses, tools expense, patent expense, among others. the figure below illustrate the vatious cost concept.

Cost Behavior Analysis

According to Corporate Finance Institute (2021), “Cost behavior analysis refers to management’s attempt to understand how operating costs change in relation to a change in an organization’s level of activity”. Thus, cost behaviour analysis entails a conscious investigation of how the various costs of operations such as direct materials cost, direct labour cost, as well as overhead costs impact on the general business activities in the course of developing a product.

Cost behavior analysis can also be conducted to assess the relationship between the unit of input and the cost of employing such inputs during business operations. Essentially, this type of analysis is carried out using mathematical cost functions (Corporate Finance Institute, 2021).

COST BEHAVIOR

COST BEHAVIOR is the change in the behavior of a cost(s) due to a change in the business activity.

Before analyzing behavior of costs, manager needs to understand crucial business activities that may impact costs.

IMPORTANCE OF ANALYSIS

- Knowledge of cost behavior would enable the manager to understand the impact of decline or rise with the change in the business activity.
- Understanding of cost behavior is necessary for cost-volume-profit analysis (CVP analysis).
- It also enables planning and controlling costs.

TYPES OF COST BEHAVIORS

VARIABLE COSTS : Such costs vary directly (or in direct proportion) with the change in the business activity.

FIXED COSTS : These costs do not change with any business activity change.

SEMI VARIABLE : Such costs are a mixture of fixed and variable costs.

COST FUNCTION

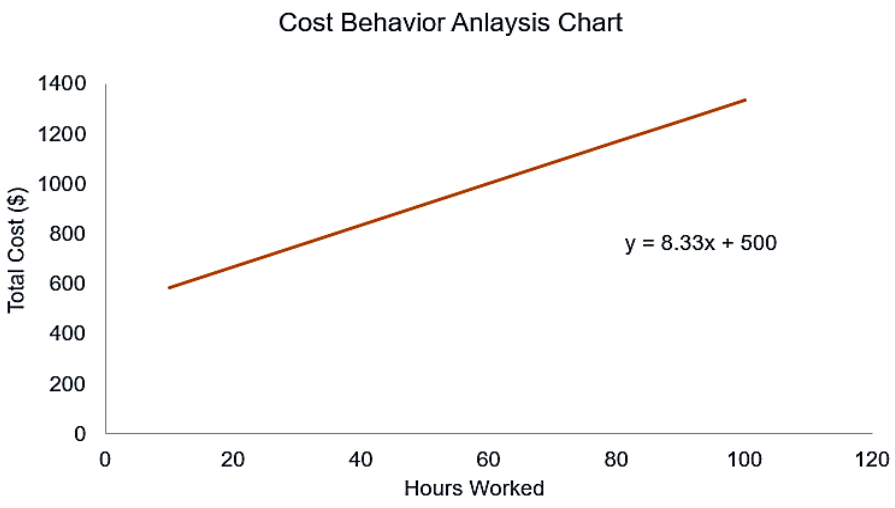
- **Cost Function** is a mathematical function to study cost behavior which can be plotted on a graph.
- **y = MX + b** where b is the fixed cost, x is the number of units, and m is the variable cost or the slope.

The Cost Function

Cost functions are used to demonstrate the extent to which material, labour, or overhead costs vary with the level of activity that is associated with that cost. Specifically, the total variable costs incurred in the course of producing a given level of output will tend to vary with the changes in the activities, whereas fixed costs will remain constant or fixed during the same process (Weiss, 2010). Cost functions are expressed in different mathematical equations (Benston, 1966). Specifically, cost functions are presents in the form of $y_t = \beta_0 + \beta_1 x_t$

Where; β_0 is the intercept in the cost function, β_1 is the parameters in the model that shows the impact of business activity on the associated cost, "*t*" is the time period. This function can be represented on a graph. The general assumptions underlying the cost functions include; Changes in the cost element or productive input can affect the changes in the associated total costs of production. Similarly, cost behaviour can be abridged into a linear cost model presented in a mathematical model within a particular range of activities at a given period of time. A good example of a cost function is demonstrated in the graph below.

Figure 1



Importance of studying Cost Behaviour

i. Cost behavior is very key to understanding how the cost of operations responds to the changes in daily business activities effective cost behaviour analysis enables business managers to determine the areas of the business that is contributing to increasing cost in the course of operation.

ii. Every business manager requires a clear understanding of the behavior of the costs in the course of preparing the period budget for the business (Sanjay, 2021). This will enable the manager to project which activity is likely to influence a rise or decline in any cost with the variation in the projected business activities.

iii. A good understanding of cost behaviour will assist the manager to plan for both variable and fixed inputs especially in the determination of materials volume and cost, staff capacity and the associated labour cost in terms of wages, salaries and compensations.

iv. A good understanding of cost behaviour is important to enable managers to conduct cost-volume-profit analysis which helps to understand the influence of variations in costs and volume of production/sales on the profit level of a firm.

Situational analysis

Synopsis of Coca Cola company

The Coca-Cola Company is an American transnational beverage company with its headquartered situated in Atlanta, Georgia, United States. The Company's key activities include manufacturing, retailing, as well as the marketing of non-alcoholic beverage concentrates and syrups (The Coca-Cola Company, 2021).

On 29 January 1892, the company was established by Asa Griggs Candler and John Stith Pemberton. The current Chief executive officer is James Quincey who assumed the position on 1 May 2017.

There are over 500 brands of products (The Coca-Cola Company, 2013) which are fully or partially owned by The Coca-Cola Company, in more than 200 countries (The Coca-Cola Company, 2007). The Coca-Cola Company has been operating a franchised distribution arrangement as far back as 1889 (Prestige Franchising Limited, 2017). The Corporation engages in the production of large volume of syrup concentrate, packaged in bottles and distributed across over 200 countries in the world.

The firm owns its anchor bottler in North America, Coca-Cola Refreshments (Merced, 2010). The Coca-Cola Company's stock is listed on the NYSE and is part of DJIA and the S&P 500 and S&P 100 indexes. The Coca-Cola Company has a revenue of US$37.27 billion (2019 figure), operating income of US$10.09 billion, net income of US$8.92 billion, total assets of US$86.38 billion, total equity of US$18.98 billion and a total of 86,200 employees (2019 est.) (The Coca-Cola Company, 2021).

Behaviour of firm's cost in the Coca Cola company

This segment presents the general Behaviour of firm's cost in the Coca Cola company from 2005 to 2020 using the data obtained from the company's annual financial reports.

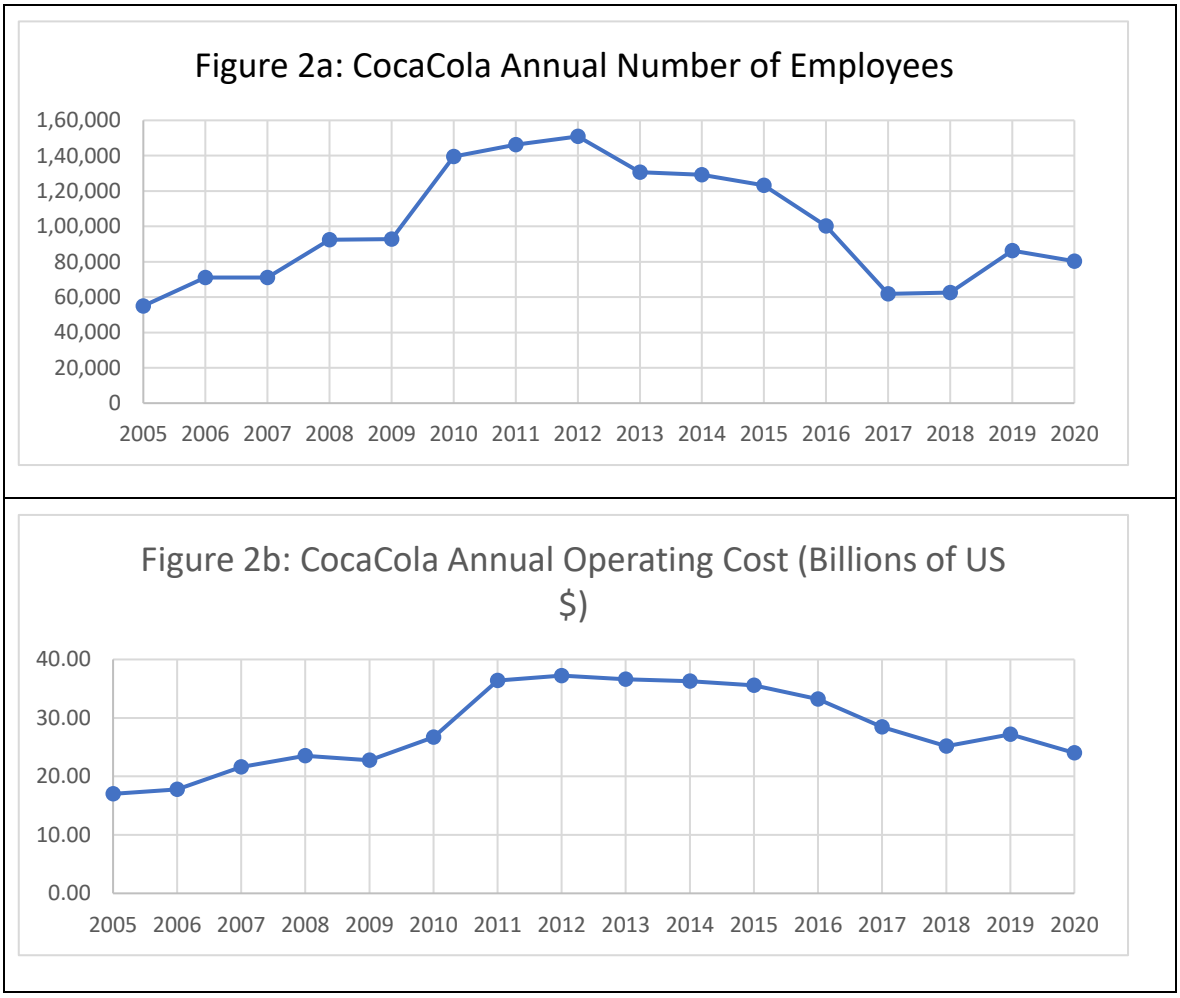
Number of Employees and the Associated Annual Operating Cost

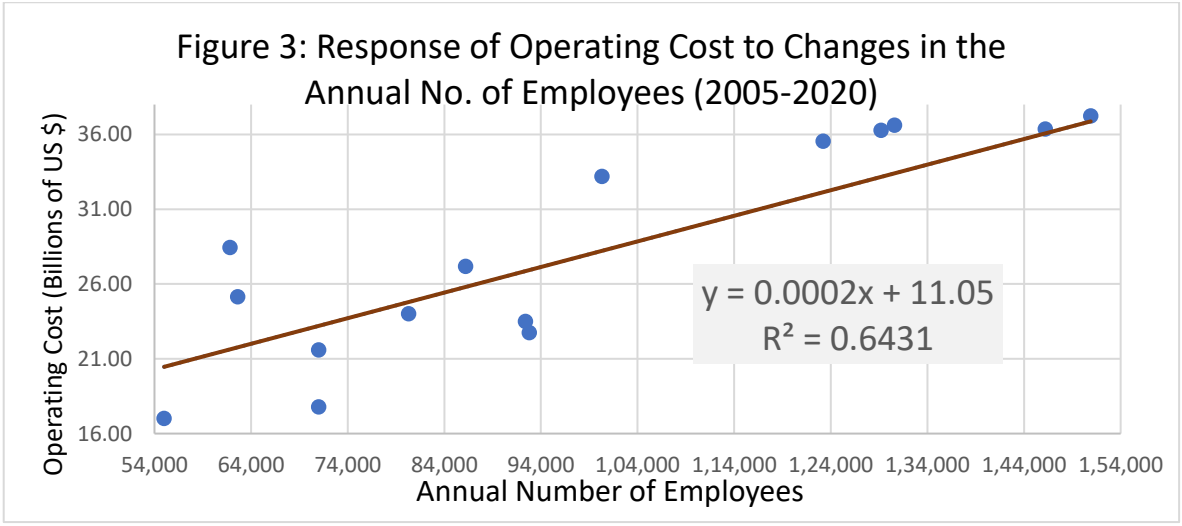
Essentially, figure 2a and figure 2b report the trends of the annual number of employees and the associated annual operating cost for the Coca Cola company from 2005 to 2020, from the figure, the total number of employees was 55,000, while the associated annual operating cost was US $17.02 billion in the year 2005. As of 2010, the total number of employees had increased to 139,600, while the associated annual operating cost had increased to US $26.71billion in the same year.

As of 2015, the total number of had decreased to 123,200, while the associated annual operating cost had

increased further to US $35.57 billion in the same year. As of 2018, the total number of employees had decreased significantly to 62,600, while the associated annual operating cost also declined to US $25.15 billion in the same year. As of 2020, the total number of employees had increased significantly to 80,300, while the associated annual operating cost declined to US $24.02 billion in the same year.

Similarly, figure 3 reports the response of the company's operating cost to changes in the annual number of employees from 2005 to 2020. From the figure, the fitted curve and the associated estimates of cost function revealed a positive response of the company's operating cost to changes in the annual number of employees from 2005 to 2020. This implies that, when the total annual number of employees increased by 1 unit, the operating cost will rise by 0.0002 unit. The coefficient of determination further revealed that, total annual number of employees contribute about 64.31% of the variations in the annual operating cost of the Coca Cola company.



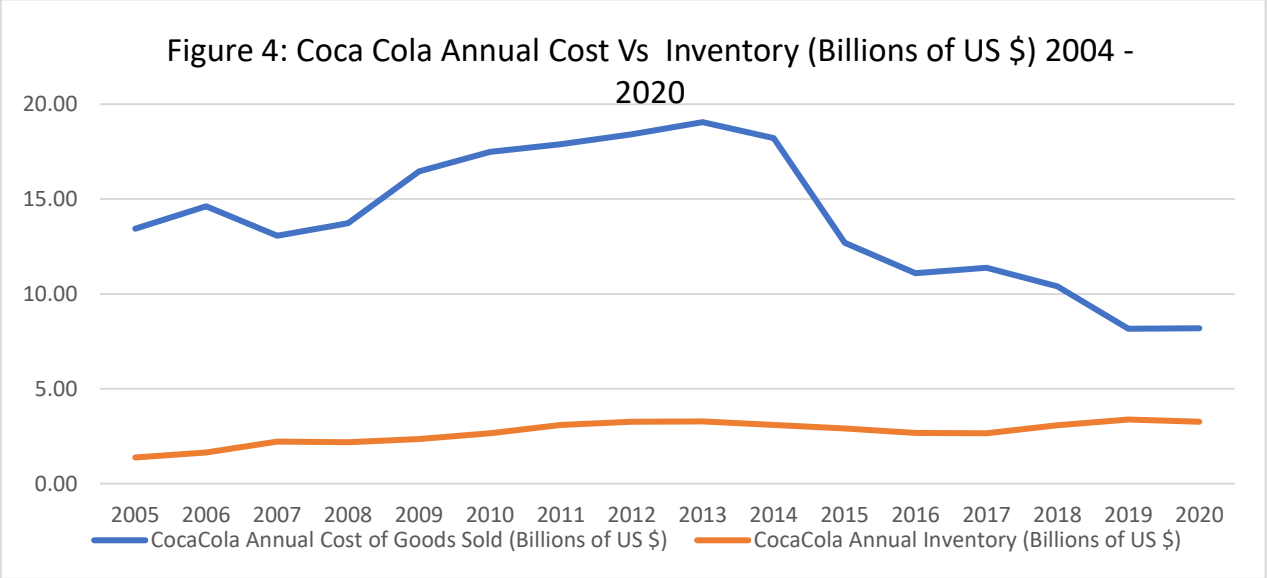


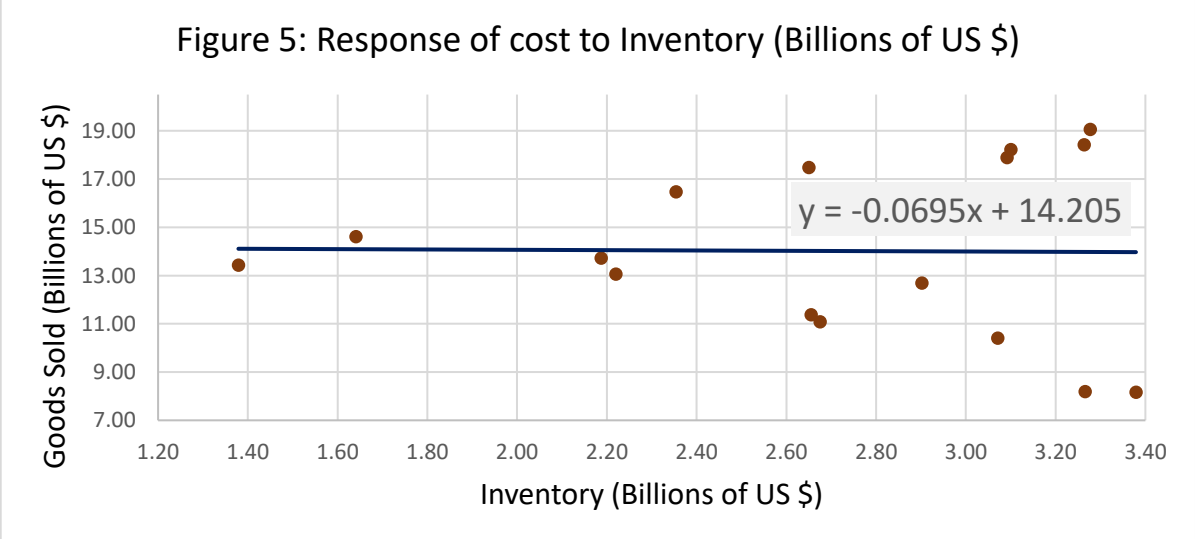
Response of cost of sales to annual Inventory value

Figure 4 reports the response of cost of sales to annual inventory value of the Coca Cola company from 2005 to 2020. From the figure, coca cola annual inventory stood at US$1.38 billion in 2005, while the associated annual cost of goods sold was US$13.43 billion in that same year. However, as of 2010, annual inventory rose to US$2.65 billion, while the associated annual cost of goods sold also increased to US$17.48 billion in that same year.

Similarly, coca cola annual inventory increased further to US$3.28 billion in 2013, while the associated annual cost of goods sold also rose to US$19.05 billion in that same year. There was however a decrease in the value of inventories to about US$3.07 billion in 2018 while the associated annual cost of goods sold also fell to US$10.41 billion in that same year. Nevertheless, when the company's inventory dropped from US$3.38 billion in 2019 to US$3.27 billion in 2020, the associated annual cost of goods sold increased from US $8.16 billion in 2019 to US$8.20 billion in 2020.

Similarly, figure 5 reports the response of the company's cost of goods sold to changes in the company's inventory from 2005 to 2020. From the figure, the line of best fit and the associated estimates of cost function revealed a negative response of the company's annual cost of goods sold to changes in the inventory. This implies that, when the total annual inventory increased by 1 unit, the annual cost of goods sold dropped by 0.070 unit. This could be as a result of improvement in the production process or as a result of significant enhancements in the skills and competencies of management and workers responsible for the production line. This is the basis of cost minimization.



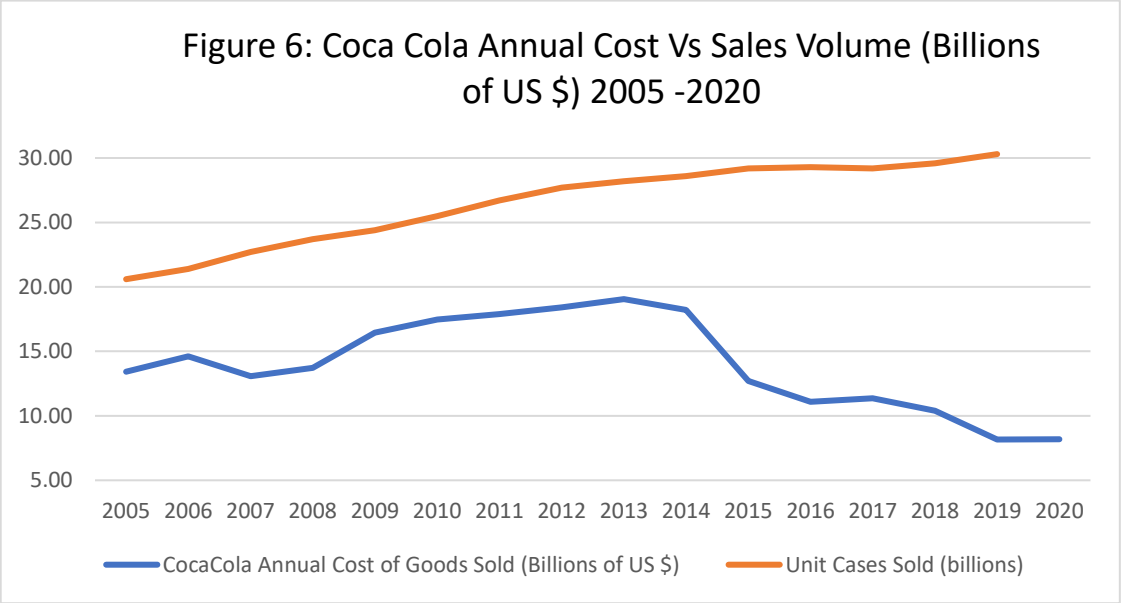


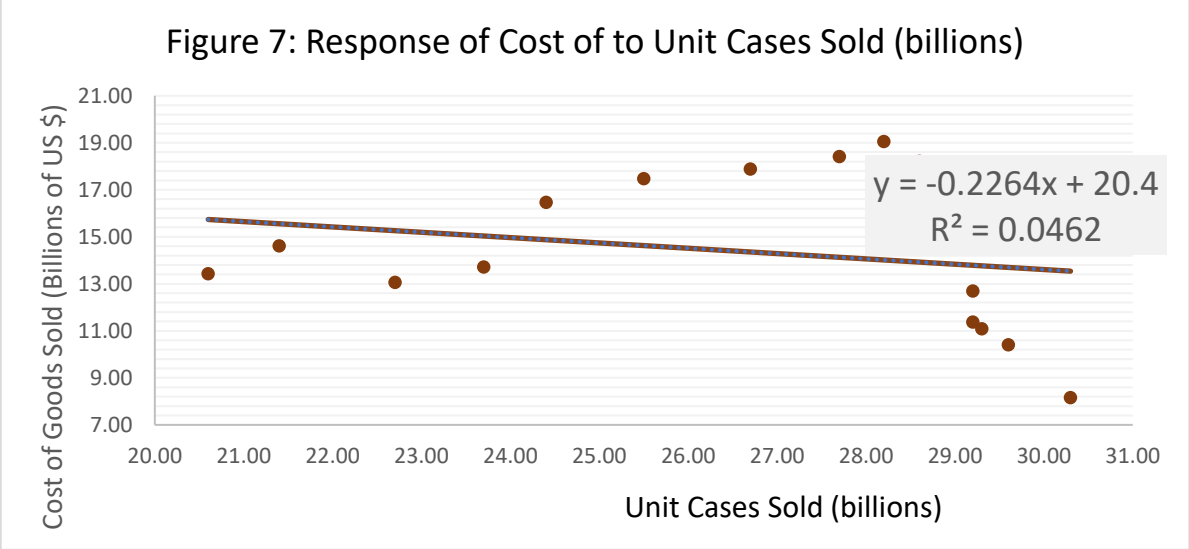
Response of cost of sales to Sales Volume

Figure 6 reports the response of cost of sales to annual unit cases of products sold from 2005 to 2020. From the figure, coca cola annual sales volume at US$20.60 billion in 2005, while the associated annual cost of goods sold was US$13.43 billion in that same year. However, as of 2010, annual sales volume rose to US$25.50 billion, while the associated annual cost of goods sold also increased to US$17.48 billion in that same year.

Similarly, coca cola annual sales volume increased further to US$28.20 billion in 2013, while the associated annual cost of goods sold also rose to US$19.05 billion in that same year. Nevertheless, when there was an increase in the annual sales volume to about US$29.60 billion in 2018, the associated annual cost of goods sold also declined to US$10.41 billion in that same year. Similarly, when the company's annual sales volume rose further from US$29.60 billion in 2018 to US$30.30 billion in 2019, the associated annual cost of goods sold dropped from US $10.41 billion in 2018 to US$8.16 billion in 2019.

In the same way, figure 7 reports the response of the company's cost of goods sold to changes in the company's annual sales volume in the period of assessment. From the figure, the line of best fit and the associated estimates of cost function revealed a negative response of the company's annual cost of goods sold to changes in the annual sales volume. This implies that, when the total annual sales volume increased by 1 unit, the associated cost of goods sold dropped by 0.2264 unit. Nevertheless, the coefficient of determination revealed that, the company's annual sales volume only accounted for about 4.62% of the systematic variations in the annual cost of goods sold of the Coca Cola company in the period of assessment.





SUMMARY AND CONCLUSION

Summary

This study examined the behaviour of firm's cost in the beverage industry with specific emphasis on Coca Cola Company from 2005 to 2020. The study employed annual data set obtained from the company's annual financial reports for the period of assessment. The study was able to revealed the dynamics of costs, inventories, sales volumes as well as the changes in both employees' base of the company in the period of assessment. The findings of the findings are summarized as follows;

1. There was a positive response of the company's operating cost to changes in the annual number of employees from 2005 to 2020.

2. The study also established a negative response of the company's annual cost of goods sold to changes in the inventory.

3. Finally, there was a negative response of the company's annual cost of goods sold to changes in the annual sales volume.

   There study therefore concludes that the understanding of the general behaviour of a firm's cost is important for general business planning, especially in the area of labour, material and profit projections.

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Data used for analysis

Year	Coca Cola Annual Cost of Goods Sold (Billions of US$)	Coca Cola Annual Inventory (Billions of US $)	Coca Cola Annual Unit Cases Sold (billions)	Coca Cola Annual Number of Employees	Coca Cola Annual Operating Cost (Billions of US $)
2005	13.43	1.38	20.60	55,000	17.02
2006	14.62	1.64	21.40	71,000	17.78
2007	13.07	2.22	22.70	71,000	21.61
2008	13.72	2.19	23.70	92,400	23.50
2009	16.47	2.35	24.40	92,800	22.76
2010	17.48	2.65	25.50	139,600	26.71
2011	17.89	3.09	26.70	146,200	36.37
2012	18.42	3.26	27.70	150,900	37.24
2013	19.05	3.28	28.20	130,600	36.63
2014	18.22	3.10	28.60	129,200	36.29
2015	12.69	2.90	29.20	123,200	35.57
2016	11.09	2.68	29.30	100,300	33.21
2017	11.37	2.66	29.20	61,800	28.46
2018	10.41	3.07	29.60	62,600	25.15
2019	8.16	3.38	30.30	86,200	27.18
2020	8.20	3.27		80,300	24.02
Source: https://www.macrotrends.net/stocks/charts/KO/cocacola/financial-statements					