

THE ROLE OF THROUGHPUT ACCOUNTING IN ACHIEVING COMPETITIVE PRIORITIES: AN APPLIED STUDY IN THE IRAQI CEMENT SECTOR

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Abstract:

The purpose of this study is to determine the degree to which the Throughput Accounting technique can be used. It has been applied to the Mas Iraq Cement Company as one of the cement companies in the study population that faces increasing competitive challenges, as well as to provide information about bottlenecks and constraints, how to manage them, how to increase Throughput to achieve an operating profit, how it prioritizes quality production over cost reduction, and how it supports competitive primacy. By identifying the production process bottleneck and reducing costs without compromising quality, this study is aimed to demonstrate the value of Throughput Accounting as a contemporary cost and administrative strategy that can adapt to shifting consumer demands, competitive market conditions, and economic advancements. The study concluded that using the Throughput Accounting technique within industrial companies has an effective and efficient role in raising the level of operational efficiency and achieving competitive Priorities.

Keyword: Throughout Accounting, Cost Rationalization, Competitive Priorities.

Introduction:

The modern industrial environment is witnessing rapid transformations and increasing competition, which requires industrial companies to adopt advanced accounting tools that enhance their operational efficiency and strengthen their competitiveness. Throughout accounting is one main and important tool, in contributing to improving operational effectiveness by identifying bottlenecks and reducing time and cost losses. This increases productivity and enhances the company's adaptability to market changes. This technology also provides accurate accounting information that supports strategic decisions and represents a fundamental step toward building accounting systems capable of achieving a balance between cost control, improving product quality, achieving operational savings, and enhancing customer satisfaction.

General Concept:

Throughout accounting is a simplified management accounting approach that provides managers with a decision-making support aimed at increasing a company's profitability (Lutlisky, 2018) is a result of Goldratt's theory of Constraints, offers a simple and viable alternative to the distortions created by cost accounting approaches (Jassem, 2021) the theory Constraints that bases "Throughput Value / Time on Constraint" in managing the constraint effectively has more successful results when compared to a traditional approach (Kirli, 2016) is a simplified management accounting method that provides managers with support in making decisions aimed at increasing the profitability of the company (Jurczyk, 2021) therefore the use of the throughput accounting method refocuses the enterprises and their management on the satisfaction of consumers (Elsukova, 2015) at the same time throughput accounting aims to identify bottleneck resources and remove them (Emehelu, 2022) and

Throughput Accounting requires the provision of more appropriate tools to stimulate these organizations (Kadhim, 2020) with the throughput accounting helps us select the proper product mix based on market demand.

On the other hand, TOC, which concentrates on the world of throughput, maintains its focus, on the firm's critical resources (Islam, 2015) requirements and growth of business, ergo Throughout Accounting focuses on three basic objectives (increasing throughput, reducing inventory, and reducing operating expenses) (Lutilsky, 2018). Its work is complementary to the management system as it works to provide all the information that managers need to manage and control the restrictions of the companies (Mijbil, et.al, 2020), Throughput is a total revenue minus purchased material cost (Phruksaphanrat, et.al, 2011), the decisions taken in light of throughput accounting are more accurate and have enabled the senior managements to access better strategic decisions (Sabri, 2022: 400) to enhance the competitive advantage of competitive companies. Cost management and reduction of costs of products and services have been considered by the companies to use cost information and develop and examine strategies to gain Competitive Priorities (Sabir and Hamad, 2023).

General Background:

Throughput Accounting focuses on managing constraints and bottlenecks to increase Throughput and is concerned with quality rather than reducing cost (Mohammed, 2020), and depends on time and the reason for this is caused by the increasing of time which means decreasing Throughput and hence profitability. Focusing on reducing time is an important factor in achieving the goal (Karim, 2020). This technic helps management to rationalize decisions related to increasing production and reducing its costs without compromising quality and increasing sales as a means of achieving competitive primacy and maximizing the profits of the company (Al-Sayed, 2022) and (Zabin, 2017). The link between production, costs, and ability to produce outputs arises by increasing the volume of sales while reducing the level of inventory, then reducing operating costs and supporting management improvement for the purpose of evaluating performance and trying to link the amount of outputs and resources consumed during a certain period and achieving the operational and strategic goals of the company (Al-Faqih, 2018).

Specific Background:

(Al-Hamdani and Al-Subaihi, 2016) Throughput Accounting provides information to achieve competitive primacy for the company by increasing sales, increasing profitability, and reducing the cost of products, which helps shareholders to carry out the process of analyzing the financial performance of the company fairly and within a specific period of time. Both (Al-Hamdani and Al-Subaihi, 2016), (Muhanna, 2022), (Emehelu, et.al, 2022). Companies seek to develop and improve their competitive position and maintain their share in the competitive market through the use of Throughput Accounting. This technique helps improve the profitability of the companies by removing restrictions, because companies must manage the restrictions and remove them one by one in order to gain more profitability which predicts and improves profit performance through analytical and strategic decisions to establish three important points: Throughput, inventory, and operating expenses then, it can quickly respond to customer requests and focus on profits. Therefore, production must be limited to the extent of customer demand, and determining the best ways to raise customer demand to a higher level must be its main focus. thus, the competitive situation is improved and developed, according to (Abu Rahma, 2017)

Throughput Accounting is a technique to rationalize administrative decisions, and every positive and correct decision helps the administration to achieve competitive priorities for the company.

The use of Throughput Accounting as a technique to rationalize decisions:

1. Related to quality costs, including costs (internal failure, external failure, prevention, detection).

2. Profitability planning and product assortment determination (based on the process of measuring cost, determining a selling price for each product, and determining the most profitable product).

3. Purchase or manufacture: There are three possibilities, as follows:

* Manufacturing a required part at a stage with excess capacity: it does not operate at full capacity in this case. The cost of raw materials is only the manufacturing cost.

* Manufacturing a required part in the stage preceding the stage in which there is direct bottleneck; : operating at a power level higher than the amount necessary to cover the suffocation stage.

* Manufacturing a required part in a stage that represents a constraint: The stage that represents a bottleneck is working at full capacity and does not have any excess energy.

Problem status:

Does applying the Throughput Accounting (TA) technique help in overcoming the defects and problems of traditional cost systems in the study sample company?

Research object:

Identify the information provided by the technique of Throughput Accounting (TA) and its importance and its role in supporting the dimensions of competitive priorities.

Research contribution:

Explain the importance of the Throughput Accounting (TA) technique in helping the company achieve its strategic goals, by identifying and addressing production obstacles and restrictions and providing appropriate and highly reliable information to senior management.

Outline:

Literature review:

(Uwah, 2023) (Karim, 2020) believes that the concept of Throughput accounting as an operational technique is related to the theory of constraints in the field of manufacturing, and (Elias and. Al-Ghaban, 2022) alternates this technique with (accounting for the return of internal activities) as one of the applied techniques For the theory of constraints, see (Emehelu, et.al, 2022), This technology is primarily concerned with sales as the only source of profit, in addition to providing accurate and critical information about the most profitable product mix, and (Ali and Ahmed, 2021) (Al-Sayed, 2022) (Mahdi and Salem, 2022) (Mohammed, 2020) believe The throughput accounting technique works to manage bottlenecks in the production process, which helps in delivering the product at the right time, which in return contributes to supporting the competitive properties for industrial companies. Also in (Zidan and Rania, 2024) point of view Competitive priorities are the ability of an organization to differentiate itself from other competitors, (Masyhuri, 2023) There is no specific recipe that companies should follow in choosing the right competitive priorities because every company has a different competitive strategy and no company has applied only one strategic competitive priority to its operating plan, the role of executives is essential as they can carefully consider when the company should set the priority competitive objectives and optimize the innovation strategy for each manufacturer's circumstances, so Throughput accounting (TA) is one of the fastest growing practices in accounting that requires a lot of investigation from an empirical perspective (Parkhi, 2016) so the key competitive priorities is where the company chooses to compete (Bate, 2023).

Hypotheses development: The possibility of applying the two Throughput Accounting (TA) techniques leads to achieving a competitive priorities in Bazian Cement Company Limited.

Research Method: The researchers adopted the applied approach by relying on the data of the research sample company.

Research Limitations: Spatial limitations: Masa Iraq Cement Company - Temporal limitations: Years 2022-2023

Research Model: The research model in light of the research objectives and hypotheses, and building this model based on using Throughput Accounting technique as an independent variable to enhance competitive priorities as a dependent variable

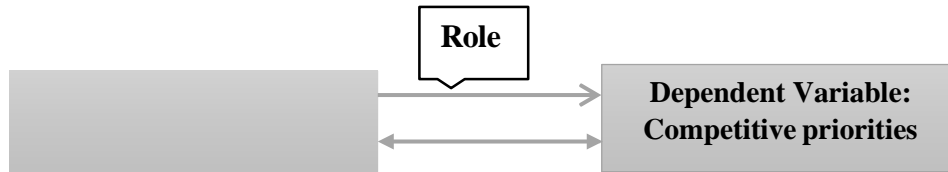


Figure (1)
Study Model

Research diagram prepared by the researchers based on the research methodology A throughout Accounting Measures (Al-Halbousi & Ali, 2021):

1. **Throughput:** The rate of inventory conversion to sales, and can calculate the throughput by subtracting the sale price from the changing cost of raw materials used by production.
2. **Inventory:** is the money in the company that is used to convert inventory into completion, Traditional accounting carries inventory with all operational expenses, but throughput accounting evaluates production stock under operation and full production at variable cost only
3. **Operating expenses:** all the money spent to generate a throughput.

Throughput Accounting offers an alternative to traditional cost accounting by focusing on maximizing throughput, while modern cost accounting emphasizes long-term efficiency within the economic and social context (Pantelescu, et.al,2019).

This helps industrial companies maintain their leading position. Furthermore, some key points highlighting the differences between Throughput accounting and the traditional system can be summarized as follows:

Table (1)

Comparing the Traditional system with Throughput accounting

	The traditional system	Throughput accounting	Notes on the vision
1	Inspecting raw materials before manufacturing is not considered important.	The type and quality of the scarce primary resources available to the economic unit are carefully identified and assessed before the manufacturing process begins.	Increasing preventative costs in throughput accounting is necessary to avoid both internal and external failures.
2	The monitoring and evaluation of internal manufacturing processes are not taken into account, which leads to an increase in internal failures.	Focus is placed on evaluating the internal process flow during manufacturing and preventing internal defects.	Cost optimization and the focus on total quality management in throughput accounting.
3	Sales growth rates are low and slow due to inadequate analysis of operational decisions and their impact on	Sales growth is very noticeable due to their focus on studying the impact of operational decisions on profitability.	Avoid losses in throughput accounting.

	profitability.		
4	The storehouse becomes overcrowded with raw materials and finished products, which increases storage costs and creates a bottleneck.	Taking into account the reduction of storage costs and the accumulation of production at the bottleneck point.	Focus on the theory of constraints in throughput accounting.

Researchers believe that traditional costing focuses on determining product costs by allocating cost elements to control overall costs. Similarly, production accounting focuses on enhancing profitability by streamlining the production process, addressing production bottlenecks, increasing production capacity and sales, and reflecting this on Competitive priorities.

Competitive priorities:

Competitive priority refers to an economic unit's ability to build a defensible competitive position by generating superior value for its customers (Al-Sabaawe, et.al, 2024), and determines the success or failure of industrial companies. It seeks to build and study planned strategies to ensure the sustainability of its competitive position (Al-Zamili and Yaqoub, 2023)also is the strength of industrial companies to face their competitors through possessing efficient and effective resources (Musa, 2025)therewith Competitive priorities linked to operational strategy and its reflection on many operational aspects of the company (Al-Sabaawe, et al., 2024).It represents a set of strategic objectives that allow economic units to build and maintain core competencies to enhance Competitive priority, while requiring continuous review and adaptation to evolving customer expectations (Durugbo, et.al, 2021).

The most important characteristics of competitive advantage are: (it is not absolute but relative compared to competing companies, for the long term and difficult for products to be imitated by competing companies, achieving value for the company and customers) (Maysaa, 2025).

The researchers believe that the Throughput Accounting technique forms a strategic structure that contributes to improving the performance of industrial companies and enhancing their competitive capability in producing similar products. This framework depends on identifying bottlenecks and scarce resources affecting the flow of production processes and available capacity, through diagnosing and controlling bottlenecks to address them effectively. It also relies on measuring throughput level based on quantitative and qualitative indicators that reflect actual performance and profitability. Consequently, industrial companies can re-plan and gradually improve their operations by removing constraints and increasing resource flow efficiency, leading to raising productivity levels and improving output quality simultaneously. This is reflected in achieving competitive advantage dimensions represented in cost rationalization, enhancing product quality, and improving responsiveness to market changes, which contributes to enabling industrial companies to maintain their leading position.

Practical Aspect:

Industrial companies have great importance in the state's infrastructure; especially cement companies that cover society's needs, as they participate in construction and development by providing one of the basic raw materials.

Brief Introduction to MAS Cement Company (Bazian –Al Sulaymaniyah):

MAS Iraq Cement Company was established in 2008 in the Kurdistan Region/Bazian district, located (35) km west of Sulaymaniyah city center, in a plain area surrounded by mountains from all sides, at an elevation of (860m) above sea level and very close to the sources of raw materials necessary for cement production. It was implemented by the Chinese company (SINOMA) with Iraqi

workers. MAS-Iraq Cement Company consists of three production lines for cement production with a planned or design capacity of (6,080,250 tons) annually. The study population consists of cement companies in Sulaymaniyah Governorate, showing the company names, production capacity, and their ratios. Among these companies, the study sample is determined as follows:

Table (2)
Companies: Study population (competing companies)

	Names:factories	Production capacities	%
1	Bazian cement company Limited (Lafarge)	2,000,000 tons annually	13.53%
2	Gassen Company	2,400,000 tons annually	16.24%
3	Delta Company	2,000,000 tons annually	13.53%
4	Tasluja Company	2,300,000 tons annually	15.56%
5	Mas factory	6,008,250 tons annually for free production lines which is study sample.	41.14%
	Total	14.780.250 tons annually	100%

Prepared by the researchers based on the company data

I notice from the table above that the study population consists of (5) industrial companies for cement manufacturing, and the study sample was MAS Iraq Cement Company with the highest production capacity at a rate of (41.14%) among competing companies that produce the same product.

Table (3)
Quantity and design, available and actual cost of cement for two years (2022-2023)

	Year 2022		Year 2023	
	Actual 2022	Planning 2022	Actual 2023	Planning 2023
Cement cost /dinar	307.894,225,336	373.122.889.935	359,969,096573	422,831,549,432
Quantity of cement tons	5,017,311,76	6,080,250.00	5,176,297.99	6,080,250,00
Cost per unit	61,366.37	61,366.37	69,541.80	69,541.80

Prepared by the researchers based on the company data

It is evident from Table No. (3) that the actual and design production capacity of Mas Iraq Cement Manufacturing Company shows that the actual production capacity increased by (3.17) and its cost rose by (16.92).

Table (4)
Annual sales quantity and revenue for year 2002-2023

Year	Sales quantity	Sales revenue
2022	4,989,714.27	451334551261
2023	5,205,627.03	476164360676

Prepared by the two researchers based on company data.

It is observed from the table above that the sales quantity increased by (4.33%) and the difference between the sales quantity from 2022 to 2023 was (215,912.76 tons). Sales revenue increased by (5.50) and the difference between sales revenue from 2022 to 2023 was (24,829,799,415 dinars), which indicates positive points at the company level.

**Table (5)
 Raw Materials (Direct Materials Cost) Annual for Two Years 2022-2023**

Year 2022		Year 2023		
Cost Dinar	Quantity in tons	Cost Dinar	Quantity in tons	
28,117,289,017	7,617,767.84	33,410,250,526.00	8.128.106.74	Raw materials

Prepared by the two researchers based on company data.

It is evident from Table No. (5) that the quantity of raw materials increased by (6.70) and the difference between the raw materials quantity from 2022 to 2023 was (510,339 tons). The cost of raw materials increased by (18.82) and the difference between the raw materials cost from 2022 to 2023 was (5,292,961,509 dinars). This indicates the application or use of cost rationalization instead of cost reduction.

**Table (6)
 Other Annual Costs in Dinars for Two Years 2022-2023**

Total	Material transport wages	Internal (IbrahimXalil)	customs	External customs	
511,514.024	198,225,000.00	137,316,600.00		175,972,424,000	Year 2022
5670438,678	234,612,000	276,760,332		56,066,346	Year 2023

Prepared by the two researchers based on company data.

It is evident from Table No. (6) that other costs increased by (10.93%) and the difference between the raw materials quantity from 2022 to 2023 was (55,924,654 dinars).Note: There appears to be an inconsistency in the original Arabic text, as it mentions "raw materials quantity" but the context suggests it should refer to "other costs" based on the table being discussed.

Throughput margin= sales revenue – fully flexible costs (Ismail and Hussein 2016: 6)

28,117,289,017 + 511,514,024 = 28,628,803,041 Total fully flexible costs for 2022.

451,334,551,261 – 28,628,803,041 = 422,705,748,220 Throughput margin for 2022.

33,410,250,526 + 567,438,678 = 33,977,689,204 Total fully flexible costs for 2023.

476,164,350,675.86 – 33,977,689,204 = 442,186,661,472 Throughput margin for 2023.

**Average inventory= beginning inventory + ending inventory÷2
 (Based on the company's personal interviews)**

Table No. (7)
Calculation of Average Inventory for 2022-2023

Inventory 1-1-2022	Inventory 31-12-2022	2	Average inventory
32,804,591,463	52,850,003,560	85,654,595,023	42,827,297,512
Inventory 1-1-2023	Inventory 31-12-2023	2	
52,850,003,560	48,968,074,716	101,818,078,276	50,909,039,138

Prepared by the two researchers based on company data. It is observed from the table above according to the average inventory that the materials in the warehouse increased by (18.87), However, the ending inventory decreases by a percentage (7.35).

**Inventory turnover ratio by value=cost of goods sold ÷ Average inventory
 (Based on the company's personal interviews)**

Table No. (8)
Calculation of Inventory Turnover Rate for Two Years 2022-2023

	Year 2022	Year 2023
Cost of goods sold	357.155,760,716.00	389,950,106,827,00
Average Inventory	42827297512	50909039138
Inventory turnover Ratio	8.34	7.66

Prepared by the two researchers based on company data. It is evident from Table No. (8) that the inventory turnover rate for the two years 2022-2023 decreased by (0.68).

Operating profit=Throughput margin –operating costs (Zabin and Manhal ,2017 8; Faqi 2018:108)

Table No. (9)
Calculation of Operating Costs for 2022-2023

	Year 2022	Year 2023
Throughput margin	422,705,748,220	442,186,661,472
Operating costs	310,694,261,727.70	347,485,150,138
Operating profit	112,011,486,492	94,701,511,334

Prepared by the two researchers based on company data. It is observed from the table above that the operating profit for the two years 2022-2023, decreased by (15.45).

Also, sales revenue increased by (5.50), which indicates the leadership level of the company and control over the market. Sales quantity increased by (4.33), and sales revenue increased by (5.50). This indicates an increase in production capacity and the company's success in customer satisfaction, cost rationalization, product quality improvement, and achieving Competitive priorities.

Conclusions: The research reached the following conclusions:

Implementing throughput accounting helps to balance cost reduction, improved product quality, adherence to delivery deadlines, and meeting customer requirements, thus enhancing the company's competitiveness. Also, implementing throughput accounting helps identify bottlenecks, improve productivity, and increase sales. It also provides accurate accounting information about the costs associated with resources and activities, which supports sound decision-making in both the short and long term, thus enhancing the company's competitiveness and helping it maintain its market position. The research reached the following conclusions through analyzing the practical aspect: The operating profit for the two years 2022-2023 decreased by (15.45), but sales revenue increased by (5.50), which indicates that the company maintained its competitive position. The production capacity ratio for the research sample company was 41.14, which was the highest among the five companies in the research population.

Recommendation:

It is recommended that industrial companies adopt a productivity-based accounting system to improve their overall productivity, use available resources efficiently, and monitor all stages of the production process, from raw materials to finished products. These companies can rely on both quantitative and qualitative indicators to assess their productivity levels and manage resources effectively. Moreover, training and development programs for employees should be fulfilled to enhance their skills and increase their knowledge and experience in the field of productivity-based accounting.

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