



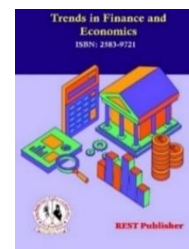
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# The Impact of Financial Performance Metrics on Revenue Management: A VIKOR Method Analysis

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**Abstract:** Let me create a concise and informative abstract that captures the key aspects of this research paper. This study investigates earnings management practices through the application of the VIKOR (VIseKriterijumska Optimizacija I Kompromisno Resented) multi-criteria decision-making method. The research analyzes five key financial performance indicators: Management's Financial Performance, operating income, earnings before interest and taxes (EBIT), net income, and Adjusted Earnings, evaluating them across multiple criteria including profitability ratios, return on assets, cash flow analysis, and earnings quality. Using a comprehensive dataset and the VIKOR methodology, the study reveals that Operating income became the primary consideration in earnings management decisions, taking precedence after EBIT. and Management's Financial Performance. Notably, the research demonstrates that optimal mathematical performance doesn't necessarily correlate with practical superiority in complex financial decision-making scenarios, as evidenced by Net Income's positioning. The findings contribute to the literature by providing a structured approach to evaluating earnings management strategies in situations involving conflicting criteria, offering valuable insights for financial managers and decision-makers in developing more effective earnings management frameworks. This study emphasizes the importance of adopting a balanced, multi-criteria approach to earnings management rather than relying on individual metrics in isolation.

**Keywords:** Based on the provided document, here are 10 key topics and their relevant keywords: 1. Earnings Management 2. Financial Performance Metrics 3. Corporate Governance 4. VIKOR Method Application 5. financial Analysis Components 6. Institutional Factors 7. Decision Making Framework 8. Financial Statement Quality 9. Company Characteristics 10. Performance Evaluation Methods

## 1. INTRODUCTION

Do companies manipulate earnings to achieve specific financial reporting goals? literature providing only limited evidence concerning the use of? particular accruals or revenue components for this purpose? Moreover, studies that investigate the specific accruals into Ent often focus on highly specialized contexts, such as bank loan loss reserves, or utilize valuation models Differentiating between intentional and unintentional income. components. [1] The findings of this study indicate that financial factors are taken into account. model collectively influence earnings management. This suggests that a company's financial characteristics play a role in motivating managers to engage in earnings manipulation. Together, these factors offer A comprehensive view of the company's financial position, shaping the extent and methods of earnings management practices. Specifically, company size, current assets ratio, company growth, and ROA each have a distinct impact Regarding revenue management, the results clearly demonstrate A positive relationship between company size, company growth, and ROA, individually, and earnings management practices. [2] Earnings management has emerged as

a significant concern in modern capital markets. Hardly a day passes without reports of major companies misleading investors through intentional misrepresentation of financial statements. For users of financial statement information, it is crucial to understand the nature of earnings management and the reasons behind its occurrence. This article delves into the various dimensions of earnings management to provide A comprehensive grasp of issue. [3] Our findings are relevant to financial statement preparers evaluating ERP adoption, switching ERP providers, or upgrading to a newer ERP version. Regulators monitoring public markets may find it noteworthy that ERP adoption can lead to increased earnings management while also enabling more timely earnings releases for market participants. Additionally, this study offers auditors empirical evidence supporting their concerns that ERP systems may heighten the risk of financial statement manipulation. [4] This course uses real-world accounting and auditing case studies to examine critical business issues tied to management integrity

and professional responsibilities. It covers key topics such as off-balance sheet financing, related party transactions, revenue recognition, materiality, loan and lease loss reserves, restructuring charges, and auditor independence. By addressing common challenges faced by financial professionals, the course aims to enhance understanding of ethical dilemmas and promote a deeper awareness of professional standards. [5] Revenue represents a company's earnings and is a crucial element of the income statement and overall financial statement summary. It serves as a key indicator of a company's value-generating activities and demonstrates how resources are allocated to the capital market. Revenue holds significant importance for investors and analysts, who examine it closely to determine the attractiveness of a specific stock. [6] The study sets an ambitious objective, and its specification and empirical testing represent a crucial step forward. As a result, DHKS makes a valuable contribution to the literature on revenue management, fostering essential advancements in this field. These advancements hinge on research that tackles several fundamental questions related to DHKS or accrual-based revenue management—questions that previous studies have not sufficiently addressed. The following discussion explores these questions in detail. [7] This paper serves a dual purpose. First, it argues for a perspective on earnings management that contrasts with the notion of cunning managers deceiving unsuspecting owners. Instead, it suggests that earnings management can align with shareholder interests. Specifically, the study examines a system that limits shareholders' ability to enforce binding commitments. Earnings management can be beneficial as it minimizes owner interference. Even if such practices do not serve shareholders' immediate interests (when financial statements are disclosed), they can be advantageous in the long term by motivating managers to join the company and invest effort toward its success. [8] Our findings reveal A negative correlation exists The relationship between having at least three women on a board and effective revenue management. This finding aligns with the critical mass theory, which advocates for regulations and policies to enhance women's representation on corporate boards. can enhance the board's effectiveness in detecting and mitigating earnings management. Consequently, such policy measures can diminish the influence of CEOs and senior management within organizations, challenging the perpetuation of the "old boys' club" mentality. These results support the notion that women on boards serve as more effective monitors, making them a valuable component of strong corporate governance. [9] Threshold effects can have significant implications, even if only a small number of participants respond to them directly. For example, consider a scenario where only a firm's bankers are primarily concerned with the firm meeting a specific performance threshold. If all stakeholders are aware of the bankers' priorities, analysts and shareholders will also pay attention to whether the firm meets the bankers' expectations. This is because executives are unlikely to jeopardize their relationship with the bankers. Therefore, achieving the threshold not only satisfies the bankers but also influences other participants' rational assessments through inferred signals. [10] This issue is highly controversial, as estimates of discretionary accruals reflect management's discretion, which introduces several challenges when assessing research design choices. Accounting researchers must understand the factors that influence accruals in a context where incentive problems do not exist. Whether accruals respond linearly to changes Concerning revenue management, the, as suggested by the Jones model, this question remains unanswered. However, the existing literature offers some insights into the matter. [11] As is common in We recognize that, like many corporate governance studies, our analysis may. influenced by internal factors, as the internal governance of firms is often a subject of debate. The factors influencing The effectiveness of internal governance can influence the extent of actual revenue management. To examine this, we employ multiple approaches. [12] I observe what remains after accounting for the discretionary spending models (a component of spending not tied to current earnings) are substantial and closely linked to future earnings growth. These models for measuring REM includes errors that account for long-term investments. Additionally, the residuals exhibit cumulative patterns similar to those seen in reported discretionary spending, increasing from the oldest to the youngest cohorts. Since the The regression residuals are expected to average zero, with older cohorts exhibiting more significant negative residuals and younger cohorts showing larger positive residuals. [13] As the capital managed by institutional investors grows, their influence on managerial decision-making has also expanded. This trend has sparked interest in understanding its impact on managerial behavior and the varying incentives for institutional investors based on the size of their stakes. Managers of publicly traded companies are responsible for providing Financial statements that Delivering a truthful and precise portrayal of the company's financial standing is essential, as capital market participants depend on the reliability of these reports to make well-informed investment choices. [14] Individualism refers to a societal orientation where individuals are expected to prioritize personal goals and take care of themselves and their families. In contrast, collectivism is the degree to which individuals are integrated into strong, cohesive groups. In collectivist societies, people are often born into Close-knit groups, such as extended families, that provide protection in return for steadfast loyalty. [15] Determining Management is required to make various assumptions in order to determine fair value. forecasts, including the likelihood of future revenues, earnings, and outcomes of contingencies. These estimates can open avenues for earnings manipulation. This study focuses on analyzing The financial effects of goodwill impairments within a sample of companies are analyzed. Additionally, the study explores whether the negative impact of goodwill impairments on financial statements encourages the use of "big bath" accounting practices and whether the management of big bath earnings is significant. small firms in the context of goodwill impairments. [16] Our final

test involves examining future earnings and stock returns. Earnings management is often associated with a temporary boost in earnings. If firms inflate earnings to avoid reporting losses, we anticipate a decline in earnings the following year. Moreover, if discretionary accruals are the primary tool for earnings management, these declines are expected to be more pronounced in firms with positive discretionary accruals. Additionally, if the market does not anticipate this decline in future earnings, stock price drops are likely to be more concentrated among firms with positive discretionary accruals. [17] Estimating fair value involves management making a range of assumptions and forecasts, such as the probability of future revenues, earnings, and the impact of contingencies. These estimations can create opportunities for potential manipulation of revenue. This study seeks to evaluate The financial effects of goodwill impairments across a sample of companies are examined. Moreover, it investigates adverse effects of goodwill impairments on on financial statements lead to the use of "large bath" accounting and whether the management of such earnings differs between large and small companies in the context of goodwill impairments. [18] Thus, this paper seeks to offer additional evidence on the relationship Among revenue management and group characteristics, specifically focusing on group-affiliated firms and non-electronic firms. Group-affiliated firms tend to encounter more significant agency issues due to the opacity of their Transactions, excluding electronic entities typically have a lower level of foreign ownership, resulting in higher agency costs. [19] Every company seeks to generate revenue to ensure business continuity. Profit is defined as the difference between revenue and expenses over a specific period, which is closely linked to management's efficiency. Revenue serves as a measure of how effectively management runs the company. As a result, company management is often inclined to report profits in the financial statements. Another strategy employed by management is revenue management, which involves manipulating financial statements through opportunistic actions to maximize profits. [20]

**VIKOR Method:** The VIKOR method is intended to solve problems involving multiple criteria decision-making (MCDM). problems that involve conflicting and comparable criteria with varying units. It assumes that a compromise is acceptable to resolve conflicts, that the decision maker seeks a solution near the ideal, and that all criteria are assessed against the alternatives. The method is primarily focused on ranking and, when conflicting criteria emerge, identifies a set of alternatives offering a compromise solution (one or more). Additionally, the VIKOR method is enhanced through stability and trade-off analyses, which assist in determining weighted stability intervals. [21] This paper introduces an improved A revised version of the VIKOR method, incorporating an The innovative A normalization technique based on the target values of the criteria, leads to a robust algorithm that emphasizes the A balanced solution for material selection. Moreover, the new model overcomes the key limitations of the original VIKOR method with a simple approach, thereby minimizing the risk of choosing unsuitable materials based on predefined criteria. [22] Decision-making involves choosing the optimal alternative by evaluating various factors while taking into account the decision maker's preferences and viewpoints. expectations. Each decision is made within a specific context, which includes the information, available alternatives, values, and preferences at the time of the choice. One of the most challenging aspects of decision making is defining multiple criteria for evaluating the alternatives. As a result, multicriteria decision making (MCDM) involves making choices in situations where there are several, often conflicting, criteria (benefits and drawbacks). [23] The Taguchi method has proven to be highly effective in enhancing quality across various industries. However, the majority of its applications have concentrated on improving specific responses or outputs. There may be opportunities to expand its use by applying the method to more holistic system improvements, such as optimizing process efficiency, minimizing variability in production timelines, or even improving customer satisfaction metrics. By broadening the scope of the method, industries could potentially uncover new ways to address complex, multi-dimensional challenges beyond just quality responses When optimizing multiple responses, engineers often depend on their experience to identify the best factor-level combination, a method that lacks an objective and systematic approach. Recently, several methods have been developed to address multiple-response problems, but these methods do not consider the variations in quality loss across different responses. [24] Traditional single-criteria decision-making is inadequate for tackling these challenges. A multi-criteria approach is necessary to formulate policies aimed at replacing fossil fuels with renewable energy (RE). Given Due to the complexity of energy planning and projects, multi-criteria analysis is essential in the decision-making process. The VIKOR method, also known as the compromise ranking method, is an effective tool for multi-criteria decision-making. [25] This paper introduces a modified VIKOR method to address lean tool selection problems in computer-aided manufacturing, where each alternative is assessed based on specific criteria. To illustrate its application, numerical examples, including two solved problems and a case study, are provided to validate both the proposed model and the new method. [26] The VIKOR method employs a ranking index that measures the "closeness" to the optimal solution. In contrast, the fundamental principle of the TOPSIS method is that the chosen alternative should have the "shortest distance" from the positive ideal solution (PIS) and the "farthest" from the negative ideal solution (NIS). The VIKOR method is a compromise ranking approach used in multi-criteria decision-making (MCDM) problems, aiming to identify a suitable solution. that maximizes benefits for the majority while minimizing harm to the opposing party. There is a substantial body of literature dedicated to the

theory and application of VIKOR. [27] The VIKOR method is a useful tool for multi-criteria analysis and is widely applied to ranking trade-offs in business management. However, research applying the VIKOR method to environmental analysis is limited. This study utilizes the VIKOR method to develop a priority ranking of land use control strategies for sub-basins in the Cheng-Wen Reservoir watershed, considering five criteria, including geographical and meteorological factors, in the analysis. [28] To enhance the regional economy and improve the mobility index, a transportation mode that guarantees continuous, regular, and reliable services is crucial. Public transport plays a significant role in supporting daily activities in society. However, it is often restricted to major roads and has a limited number of routes. Recently, there has been an innovative shift in the transportation service sector. For example, online transportation services offer alternative solutions to vehicle congestion, providing quick and easy access to areas that traditional public transport cannot reach. [29] Like the TOPSIS method, the VIKOR method aims to identify the optimal alternative from a set of options by choosing the one nearest to the ideal feasible solution. The VIKOR method employs a vector approach to compute compromise rankings, taking into account the best and worst performance of each alternative. Figure 1 illustrates a typical starting point. [30] The VIKOR method employs an aggregation function to determine the distance from the optimal solution, whereas the TOPSIS method uses a ranking index that takes into account the distance from both the best and worst solutions. The alternative ranked highest by VIKOR is the closest to the best solution. However, the alternative ranked highest by TOPSIS is the best according to the ranking index, which does not always correspond to the one closest to the ideal solution. [31] In the quest for economic growth, numerous countries and cities are increasingly tapping into natural resources, resulting in environmental issues and risks like air and water pollution. Consequently, businesses, corporations, and society at large are now taking on greater social responsibilities due to the depletion of resources, climate change, and environmental hazards. [32] This method assists stakeholders in making more informed decisions by utilizing the diverse information and expertise of decision-makers. It has the benefit of distributing responsibility for the outcomes. However, several challenges emerge when shifting from a single-decision-making process to one driven by multiple decisions. [33] In a rotor spinning system, twist is generated by a nozzle. As the yarn spins around the inner wall of the nozzle, false twists are formed between the rotor groove and the draw tube. At high rotor speeds, soft nozzles can lead to excessive twisting and distortion of the yarn. To address this, grooves are either cut or pressed into the nozzle, temporarily lifting the yarn away from the nozzle surface, which reduces rolling friction and enhances sliding friction. [34] Over the past two decades, the use of fuzzy logic in various manufacturing sectors has grown rapidly. In its basic form, fuzzy logic treats variables based on their membership size, rather than their absolute values. It focuses on the level of tolerance for ambiguity, rather than precision and accuracy. Any imperfect information, whether from imprecise measurements or expert elicitation that cannot be precisely coded, can be incorporated into a fuzzy model. Essentially, fuzzy logic aims to apply imprecise reasoning methods, similar to the way the human brain operates, as opposed to relying on rigid, precise reasoning. [35] As previously noted, to overcome the identified limitations, some studies treat the risk prioritization of failure modes as a multi-criteria decision-making (MCDM) problem. Consequently, various mathematical methods have been employed to offer effective and precise solutions. MCDM, which utilizes decision matrices, provides valuable techniques for comparing and ranking alternatives. [36] Recently, universities have sought to gain innovative perspectives by adopting modern methods in the context of a globalized world to enhance their Academic and research services: To attain a prestigious standing among the top-performing universities, it is essential to effectively assess the quality of current services as part of the effort to enhance performance. Identifying strengths and weaknesses, along with developing and implementing effective strategic planning, should also be integral components of this progress. [37] In traditional multi-criteria decision-making (MCDM) models, it is assumed that all criteria are considered at once, with evaluation values being precise, reliable, and accurate. However, this may not always reflect real-world scenarios. For a decision-making model to be most effective, it must closely align with real-world conditions. Yet, this can be difficult or even impossible due to the complexity, uncertainty, and incomplete information or knowledge that often arise in real-world decision-making situations. [38] Previous studies of the Lava water resource system in Serbia have identified potential dam sites for reservoirs to supply water. However, a comprehensive analysis is necessary to address the conflicting technical, social, and environmental factors. While topographic studies confirm the required reservoir capacity, the hydrological solution may conflict with environmental, social, and cultural concerns. [39] India is one of the largest automotive markets globally and one of the fastest-growing countries. As a result, automobile manufacturers are increasingly focusing on India due to its promising growth potential in this sector, making competition intense. Therefore, product development should begin with conceptual design that emphasizes low cost, high performance, and quality. It is evident that reducing the mass of vehicles is a key technological goal for improving vehicle performance, reducing carbon dioxide (CO<sub>2</sub>) emissions, and enhancing fuel economy. [40]

## 2. MATERIALS AND METHOD

**Management's Financial Performance:** Financial performance represents the overall financial well-being of a business. It involves the effective utilization of various financial assets to support operational activities, which in turn generate revenue and drive profitability.

**Operating Income:** Operating income refers to the profit a company earns from its primary business operations, after subtracting operating expenses like wages, depreciation, and the cost of goods sold. It is calculated by:

**Earnings Before Interest and Taxes (EBIT):** EBIT margins generally fall into certain ranges: a margin below 3% is typically seen as unprofitable (not great), a margin between 3% and 9% is considered sustainable (acceptable), and a margin above 9% indicates strong potential for generating solid returns (excellent)

**Net Income:** Net income is the amount a business or individual earns after subtracting taxes, deductions, and other expenses. For businesses, it represents the remaining profit after all costs, such as taxes, wages, and the cost of goods sold, have been deducted.

**Adjusted Earnings:** Adjusted current income encompasses any income item that is part of the pre-adjustment minimum taxable income, even if it is not included in the revenue or profit for the taxable year.

**Profitability Ratios:** A profitability ratio is a financial indicator used to assess a company's performance. It is used to assess and evaluate its financial health. It measures profitability in relation to factors such as operating expenses, shareholders' equity, revenue, or balance sheet assets over a defined period.

**Return on Assets (ROA):** Assets typically considered in calculating ROA include cash, equipment, property, marketable securities, shareholder equity, and cash equivalents. ROA is represented as a percentage, with a higher percentage indicating greater efficiency in a company's management.

**Cash Flow Analysis:** A ratio greater than one signifies that the risk of default is low. Ideally, this ratio should be as high as possible, as it demonstrates sufficient cash flow to cover both debt and interest obligations. It is determined by dividing net operating cash flow by total debt.

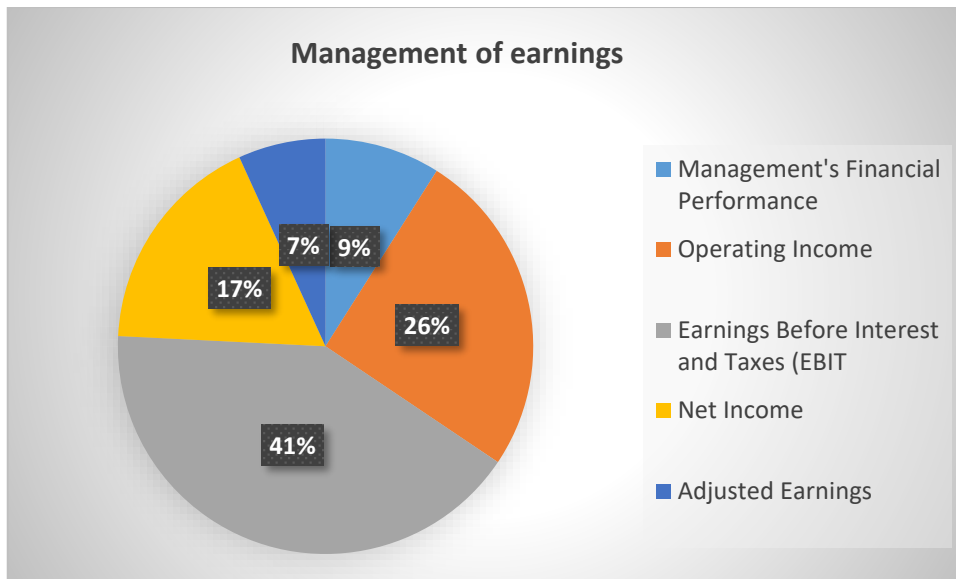
**Earnings Quality:** A strong quality of earnings (DoE) ratio reflects that a company's earnings are stable and primarily generated from its core operations. Generally, a ratio close to 1 indicates high-quality earnings, as it demonstrates that net income aligns closely with operating cash flow, excluding one-time items.

## 3. RESULT AND DISCUSSION

**TABLE 1.** Determination of best and worst value of management of earnings using VIKOR method

	Profitability Ratios	Return on Assets (ROA):	Cash Flow Analysis	Earnings
Managements earnings	12.34	59.54	27.89	12.468
Operating Income	34.89	98.76	45.90	78.675
Earnings Before Interest and Taxes (EBIT)	56.76	23.89	12.54	89.345
Net Income	23.89	89.78	34.56	12.654
Adjusted Earnings	9.34	24.78	89.45	34.578

The table presents Identifying the best and worst values using VIKOR method across five financial performance categories: Return on Assets (ROA), Cash Flow Analysis, Earnings Quality, Management's Financial Performance, and Operating Income. Various metrics such as EBIT, Net Income, and Adjusted Earnings are evaluated. For example, the highest Operating Income is 98.76, while the lowest Adjusted Earnings are 9.34. These values aid in identifying optimal and suboptimal performances within profitability ratios and financial management indicators, facilitating decision-making in comparative evaluations and benchmarking for improvement.



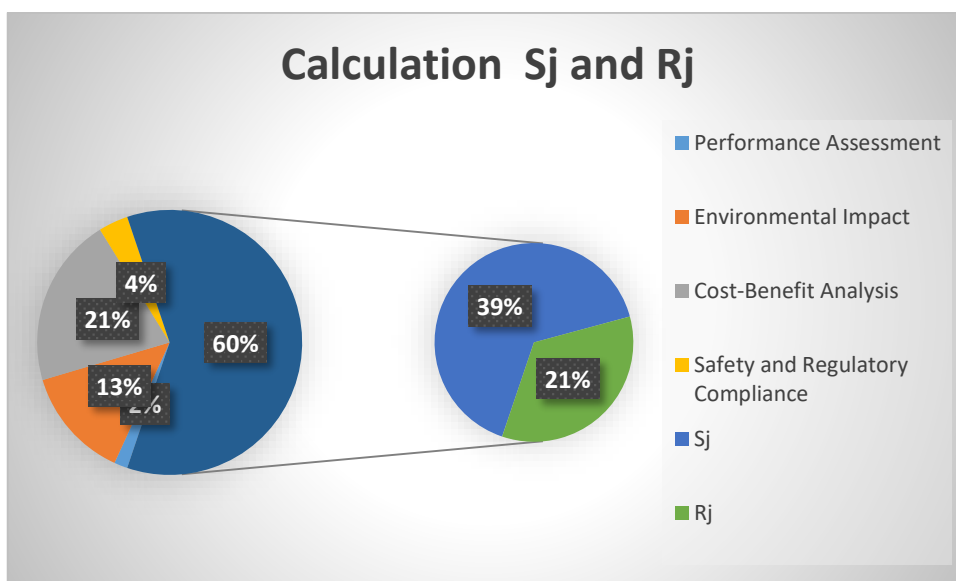
**FIGURE 1.** Identifying the best and worst values of management income using the VIKOR method.

Figure 1 demonstrates how the best and worst values are determined. VIKOR method across financial performance metrics. Management's Financial Performance ranges from 12.34 to 59.54, while Operating Income ask at 98.76. EBIT and Net Income exhibit variations, with Adjusted Earnings having the lowest value at 9.34 and highest at 89.45.

**TABLE 2.** Calculation  $S_j$  and  $R_j$

	Performance Assessment	Environmental Impact	Cost-Benefit Analysis	Safety and Regulatory Compliance	$S_j$	$R_j$
Management's Financial Performance	0.015816	0.13096	0.200104	0.034887	0.381768	0.200104
Operating Income	0.134701	0	78.675	0.220144	79.02984	78.675
Earnings Before Interest and Taxes (EBIT)	0.25	0.25	0.25	0.25	1	0.25
Net Income	0.076708	0.029985	0.178423	0.035408	0.320524	0.178423
Adjusted Earnings	0	0.247028	0	0.096754	0.343782	0.247028

Table 2 displays the calculation of  $S_j$ , where  $R_j$  represents the sum of the normalized values from Table 1, along with the determination of the best and worst values.



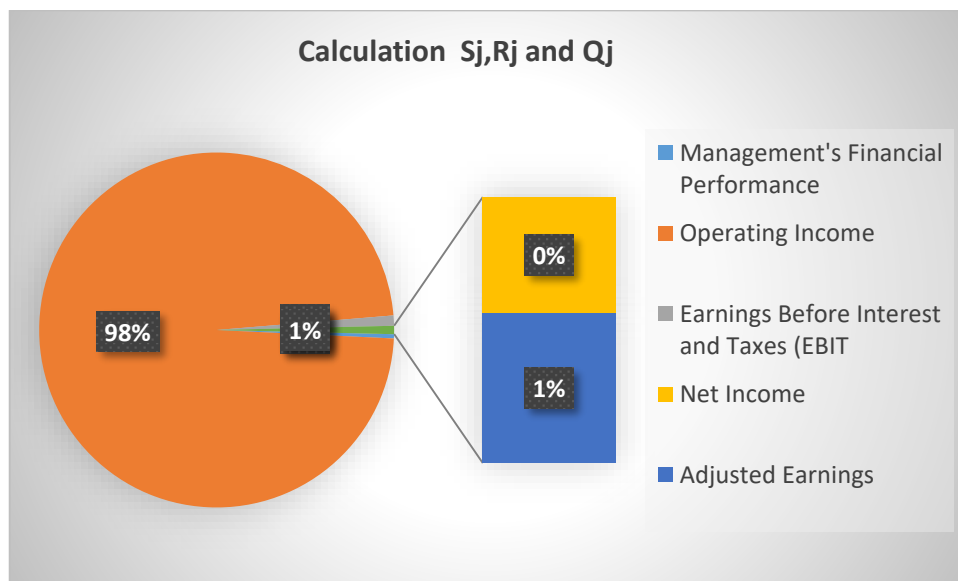
**FIGURE 2.** illustrates the calculation of  $S_j$  and  $R_j$ .

Figure 2 shows the calculation of  $S_j$  and  $R_j$ , which is the sum of the normalized values from Table 1, derived From the Determination of the best or worst values

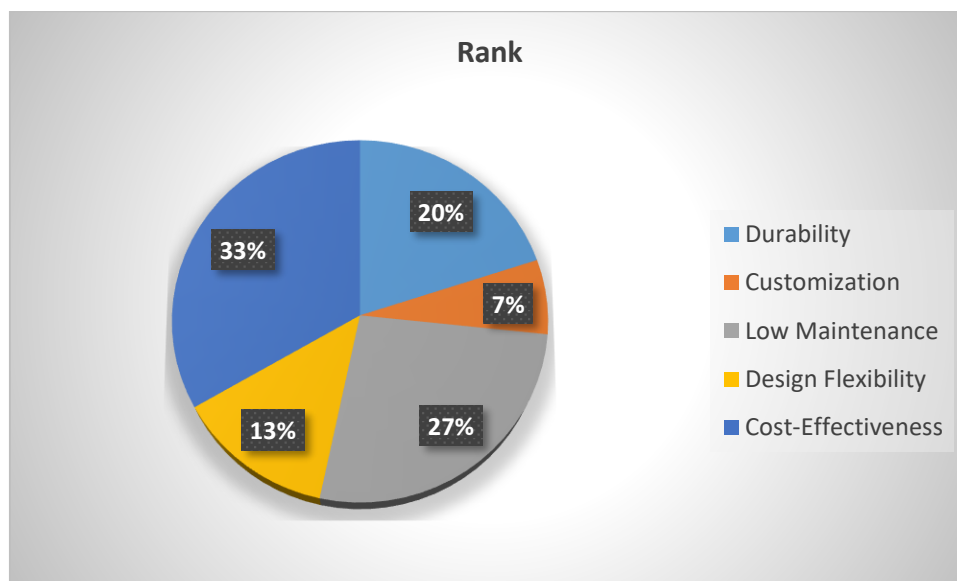
**TABLE 3.** presents the final results of the  $Q_j$  calculation.

	$S_j$	$R_j$	$Q_j$	Rank
Management's Financial Performance	0.6106759	0.381768	0.000651	3
Operating Income	157.925	79.02984	1	1
Earnings Before Interest and Taxes (EBIT)	1.5	1	0.007384	2
Net Income	0.534354	0.320524	0	5
Adjusted Earnings	0.687565	0.343782	0.000634	4

table 3 displays the final result of the  $Q_j$  calculation, derived from the sum of the  $Q_j$  values used for ranking, along with the calculation results from  $S_j$  and  $R_j$ .



**FIGURE 3.** illustrates the calculation of  $S_j$ ,  $R_j$ , and  $Q_j$ . It shows how  $Q_j$  is calculated by summing the results of  $S_j, R_j$  ranked on the values.



**FIGURE 4.** Ranking Displayed

Figure 4 Shows the Rank of Management of earnings for using the analysis of VIKOR Method. Customization is got the first rank whereas is the Cost-Effectiveness is having the Lowest rank.

#### 4. CONCLUSION

Based on the provided document, I'll create a comprehensive conclusion about the earnings management analysis using the VIKOR method. The analysis of earnings management using the VIKOR multi-criteria decision-making method reveals several significant insights into financial performance evaluation and decision-making processes. The study demonstrates that managing earnings involves complex trade-offs between various financial metrics, including profitability ratios, return on assets (ROA), cash flow analysis, and earnings quality. The findings indicate that Operating Income emerged as the most significant factor (Rank 1) in the VIKOR analysis, with the highest  $Q_i$  value of 1, suggesting its crucial role in earnings management decisions. This is followed by Earnings Before Interest and Taxes (EBIT) at Rank 2, demonstrating its importance as a key performance indicator. Management's Financial Performance secured the third position, indicating its moderate but significant influence on overall earnings management strategies. The analysis revealed interesting patterns in the compromise solutions, where Net Income, despite having the lowest  $Q_i$  value (0), ranked fifth, highlighting that optimal mathematical performance doesn't always translate to practical superiority in complex financial decision-making scenarios. This underscores the importance of considering multiple criteria rather than relying on single metrics when evaluating earnings management practices. The study's results also emphasize the value of the VIKOR method in providing a structured approach to evaluating earnings management strategies, particularly in situations involving conflicting criteria. The calculated  $S_o$  and  $Raj$  values Offering valuable insights into the trade-offs between various financial metrics helps decision-makers understand the consequences of their choices Based on both collective utilization and individual regret. ( $raj$ ). From a practical standpoint, these findings imply that organizations should adopt a balanced approach to earnings management, taking into account both short-term performance indicators and long-term sustainability factors. The study highlights that while certain metrics may show strong individual performance, their overall ranking may be affected by their relationship with other critical factors in the financial ecosystem. This comprehensive analysis provides valuable guidance for financial managers and decision-makers in developing more effective earnings management strategies. It emphasizes the importance of considering multiple performance indicators simultaneously rather than focusing on individual metrics in isolation. The results support the notion that successful earnings management requires a nuanced understanding of various financial indicators and their interrelationships, as demonstrated through the VIKOR method's systematic evaluation approach.

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