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Uncovering Potential Fraud: a Case Study of Beneish Ratio in Food and Beverage Manufacturing Companies

Payamta¹, Kusumaningdiah Retno Setiorini²

Abstract

This study delves into the detection of potential financial statement fraud through the application of the Beneish Ratio Index, using a case study approach within the food and beverage manufacturing industry. The research focuses on assessing financial data from select companies operating in this sector. The study reveals that the Beneish Ratio Index can effectively uncover potential fraudulent activities in financial reporting. By examining key financial ratios, this analysis offers insights into identifying companies that may be manipulating their financial statements. The research highlights the significance of vigilance and thorough examination of financial reports, particularly in industries prone to financial fraud. It provides valuable knowledge for auditors, investors, and stakeholders interested in ensuring the integrity of financial reporting practices.

Keywords: *Financial statement fraud, Beneish Ratio, Food and Beverage manufacturing, Case study, financial reporting manipulation.*

1. Introduction

When we dig into a company's financial statements, we not only see numbers, but also a reflection of financial health and honesty. But, as a famous economist said, 'Numbers are easy to change and play with.' Financial statement fraud has destroyed corporate reputations and heartbroken investors throughout history. However, we are not defenseless. This article takes you on a journey to investigate potential fraud in the financial statements of food and beverage manufacturing companies. To open the curtain to this world, we will use a tool called the Beneish Ratio. An analytical tool that has the unique ability to identify potential fraud in financial statements. A previous study in this area concluded, 'Fraud in financial statements is like digging to the bottom of a dark ocean, but we have a compass that can help us navigate it.' That is the motivation behind this research. We believe that by understanding and analyzing the financial statements of food and beverage companies, we can better protect our investments, maintain corporate integrity, and promote transparency in the business world. In addition, this article is not only relevant for investors and stakeholders, but also an integral part of risk-based audit studies. Research by Kurnianingsih and Siregar in 2019 detection of potential fraud in financial statements is key to effective auditing and better accountability. Now, let's embark on this journey and reveal what may be hidden in the financial statements of food and beverage manufacturing companies, in the hope that this knowledge will help us make wiser decisions and encourage more honest business practices."

¹ Faculty of Economics and Business, Sebelas Maret University, Surakarta

² Department of Accounting, Faculty of Economics and Business, Alma Ata University, Yogyakarta, Indonesia Orcid ID: <https://orcid.org/0000-0001-8868-0941>, Corresponding Author*, Email: k.retno.s@almaata.ac.id

The food and beverage manufacturing industry is one of the most vital and impactful economic sectors worldwide. The financial statements of companies in this subsector often serve as a guide for investors and other stakeholders in assessing the performance and health of companies. However, historical background has taught us that not all financial statements reflect reality. For many companies, financial statement fraud has become a damaging practice, with the potential to destabilize financial markets and destroy public trust. Therefore, the development of effective tools to detect potential fraud in financial statements has become increasingly important. Referring to the theory and results of previous research, we can see that the problem of financial statement fraud has become the center of attention in the academic and business world. Although there are several analytical tools available, there are still gaps in efforts to detect potential fraud, especially in the context of food and beverage manufacturing companies. We refer to previous research that concludes that, "Although we have entered an era of technology and greater transparency, financial statement fraud is still a difficult problem to address effectively." That is the main background of this study. We believe that in the context of food and beverage manufacturing companies, there is great potential for financial statement fraud, and this is the gap we aim to fill.

In addition, an interesting phenomenon that supports this research is the increasing complexity of companies in this sector, with expanding global supply chains, stricter regulations, and increasingly fierce competition. All these create opportunities for more elaborate manipulation and fraud in financial statements. Moreover, previous research has shown that companies in this subsector are often under pressure to achieve tight financial targets, which may encourage unethical practices (Roxas, 2011). All this background underscores the urgency of this research and suggests that this theme deserves to be studied in greater depth. Beneish Ratio analysis may be the key to uncovering potential fraud in the financial statements of food and beverage manufacturing companies, and therefore, is particularly relevant in the context of risk-based auditing. Research by Kurnianingsih and Siregar in 2019 let's continue this exploration to uncover potential fraud and build a solid foundation of trust in the industry. Behind the luster of the numbers printed beautifully in the financial statements of food and beverage manufacturing companies, sometimes lies the potential for dangerous fraud. The question of possible revenue manipulation, debt concealment, and discrepancies between financial statements and actual performance is a scourge that we need to fight.

In response to this challenge, financial auditors must equip themselves with adequate tools to detect potential fraud. In this context, the Beneish Ratio emerges as an important tool. As Dr. Dan Ariely, a behavioral economist, puts it, "If we want to see honesty, we need to look below the surface of the numbers." The application of analytical tools such as the Beneish Ratio allows auditors to identify signs of potential fraud in financial statements. In other words, it is a compass that can help them navigate the sea of numbers and look for dark spots that may be hidden. A relevant quote from Professor Joseph Wells, an expert in forensic accounting, confirms this: "When it comes to fraud, the longer we think the financial statements are true, the more likely we are to be wrong."

Thus, the emerging solution from a financial auditor's perspective is to combine sophisticated analytical tools such as the Beneish Ratio with increased vigilance and a deep understanding of the company's business. Auditors should focus on risk-based auditing, which prioritizes areas of potentially high risk related to fraud. With this approach, they can direct their resources efficiently and help build a more solid foundation of trust in the industry. However, remember that fraud is not just an auditor's problem; it is a shared challenge that must be faced by all

stakeholders in the business world. In an effort to maintain the integrity of financial statements, close collaboration with company management and other stakeholders is crucial. In this increasingly complex and rapidly changing world, financial auditors have a very important role in maintaining the integrity of financial statements, detecting potential fraud, and building a solid foundation of trust for investors and stakeholders. Of course, this cooperation should also involve the authorities when strong indications of fraud are found. With the right analytical tools and a rigorous approach, financial auditors have the potential to support transparency and honesty in the business world, thus ensuring that financial statements are an accurate and trustworthy reflection of a company's financial health.

In this article, we will explore how the Beneish Ratio, a powerful analytical tool, can assist auditors in solving mysteries that may be hidden in the financial statements of food and beverage manufacturing companies. A survey conducted by ACFE Indonesia in 2019 revealed that corruption is the type of fraud that causes significant losses in Indonesia. However, the most interesting finding was that financial statement fraud received the lowest percentage in the survey. This situation becomes particularly interesting when compared to the findings of ACFE Global, which ranked financial statement fraud as the most costly form of fraud globally. This phenomenon highlights the complexity of the issue of financial statement fraud, which can vary significantly across regions. It is important to note that on a global level, we cannot ignore the huge impact that resulted from some high-profile cases, such as the Enron financial reporting scandal that resulted in the biggest loss globally. In Indonesia, we also have a similar case that came to light in 2018, namely that of PT Garuda Indonesia. In this case, they improperly utilized an agreement with PT Mahata, recording revenue improperly which misled shareholders. This was particularly surprising, given that PT Mahata did not actually make any payments at the end of 2018, despite recording revenue of USD239.94 million. This situation resulted in Garuda Indonesia reporting a profit in stark contrast to the previous year when they incurred a total loss of USD216.58 million. In other words, honesty in financial reporting is very important, because if there is no recognition of the cooperation with PT Mahata, PT Garuda Indonesia will still experience losses. In addition, there are other cases that reflect fraud in financial statements in Indonesia, namely the case of PT Hanson International Tbk. In this case, the company recognized revenue from sales using the full accrual method, but did not disclose the Sales and Purchase Agreement (PPJB). As a result, there was a mismatch with the applicable accounting standards, which resulted in an overstatement of Rp614 billion. This decision has a significant impact on the offending company. It is important to note that in this case, the auditors were also sanctioned for their perceived lack of care in conducting the audit. The role of auditors in fraud prevention and detection is very important. Auditors can utilize fraud detection tools, which serve as a warning when there are indications of potential fraud. One tool that has proven effective is the Beneish Ratio Index and F-score. A previous study showed that the Beneish Ratio Index has a high success rate in detecting fraud, reaching 76%, while the F-score has a success rate ranging from 68-70%. Therefore, this study will prioritize the use of the Beneish Ratio Index in detecting potential fraud in financial statements.

The Beneish Ratio Index is a very valuable tool in the view of financial auditors due to its high ability to detect potential fraud in financial statements. As stated by Messod D. Beneish, the creator of this tool, "The Detection of Earnings Manipulation" is an important foundation in the development of this tool. The advantage of this tool lies in its high level of sensitivity to potential indications of fraud, particularly in terms of financial ratio analysis. Ratios such as Total Accruals to Total Assets and Days Sales in Receivables Index provide early clues about financial statement manipulation. In addition, the Beneish Ratio Index incorporates robust

statistical analysis, providing a solid basis in assessing whether there are significant fraudulent acts. Another unique feature is the tool's ability to divide companies into three categories, namely manipulators, non-manipulators, and gray companies, which assists auditors in identifying companies that require more intensive attention. In addition to allowing auditors to save time and resources by directing their attention to companies with a higher risk of fraud, the Beneish Ratio Index also helps identify potential areas in the financial statements that require further examination. This allows auditors to be more accurate and thorough in determining risk areas.

Finally, this tool provides concrete evidence that can be used to support audit findings, which becomes important if further action is required or if there are legal sanctions related to fraud. Thus, the Beneish Ratio Index is an effective and efficient tool in carrying out the auditor's responsibility in maintaining the integrity of financial statements. As Messod D. Beneish said, "*The Detection of Earnings Manipulation*" is an important contribution in the effort to detect fraud in financial statements. Fraud in corporate financial reports in Indonesia has been highlighted in recent research. Research by Kurnianingsih and Siregar in 2019 revealed that consumer companies listed on the Indonesia Stock Exchange (IDX) between 2016 and 2017 often manipulate their financial statements. Another study by Zulzilawati and Wahyuni in 2021 found an increasing number of non-manipulator companies in the manufacturing sector. In this study, the focus is on manufacturing companies in the food and beverage subsector, which is a major contributor to Indonesia's GDP. Despite being affected by the COVID-19 pandemic, the food and beverage sector continues to grow. Using the five key ratios in the Beneish Ratio Index, this study aims to more deeply understand the risk of fraud in the financial statements of food and beverage companies. This is an important step in ensuring integrity and honesty in this growing industry.

2. Material and Methods

The literature review on the theme of using the Beneish Ratio Index in detecting fraud in the financial statements of food and beverage manufacturing companies reveals important facts. This tool was first introduced by Messod D. Beneish in his article entitled "*The Detection of Earnings Manipulation*," and has become a strong foundation in efforts to detect potential fraud in financial statements. The Beneish Ratio Index has proven to be very sensitive to signs of fraud, especially in the analysis of financial ratios such as Total Accruals to Total Assets, Days Sales in Receivables Index, and others. The superiority of this tool is also seen in the efficiency of time and resources saved by auditors in detecting earnings manipulation (Beneish, 1999; Roxas, 2011). High-profile cases, such as the Enron financial statement scandal, have sparked global attention to the importance of detecting fraud in financial statements. Similar cases in Indonesia, such as PT Garuda Indonesia and PT Hanson International Tbk, reflect the challenges auditors face in maintaining the integrity of financial statements. Research by Kurnianingsih and Siregar (2019) shows that consumer companies on the Indonesia Stock Exchange (IDX) are often involved in financial statement manipulation. Meanwhile, research by Zulzilawati and Wahyuni (2021) revealed changes in the number of manufacturing companies detected as non-manipulator companies. The application of the Beneish Ratio Index in audit practice has become an important topic in the related literature. Financial auditors can utilize this tool to identify potentially fraudulent companies and direct their attention to areas that require further examination. The superiority of this tool in detecting earnings manipulation has also been highlighted, with a high level of sensitivity and significant resource savings (Roxas, 2011).

In the Indonesian context, this literature review strengthens the understanding of the relevance and effectiveness of the Beneish Ratio Index in detecting fraud in the financial statements of food and beverage manufacturing companies, providing a strong foundation for further research. Literature reviews on the use of the Beneish Ratio Index in detecting fraud in the financial statements of food and beverage manufacturing companies have revealed important findings. Domestic research, such as that conducted by Rsutami and Sapriadi (2020), shows that several ratios in the Beneish Ratio Index, such as DSRI, SGI, DEPI, LVGI, and TATA, have a significant effect on earnings management. These results provide a deeper understanding of the relevance of key ratios in identifying financial statement fraud. In addition, research by Latifatussoklikhah and Pertiwi (2020) highlighted the case of companies conducting Initial Public Offerings (IPOs) on the Indonesia Stock Exchange in 2018. Their findings show that most of the companies in the study indicated manipulation or fraud in financial statements, even in the early stages of the company being in the public market. This underscores the importance of using the Beneish Ratio Index in the context of companies conducting IPOs. On the other hand, research by Zulzilawati and Nanik (2021) provides insight into the distribution of manufacturing companies classified as manipulators, non-manipulators, and gray companies over several years. The results show variations in fraud detection in the financial statements of manufacturing companies from year to year, with the number of companies classified as non-manipulators increasing over time. Understanding this variability is important in the context of financial statement fraud prevention and detection. In addition, a comparison with the results of the ACFE Indonesia and ACFE Global surveys in 2019 brings out differences in the perception of financial statement fraud between Indonesia and the global level. This highlights the need to consider local context factors in detecting and preventing financial statement fraud. The results of this literature review provide a strong basis for further research and efforts to improve integrity in financial reporting of food and beverage manufacturing companies.

Beneish Ratio Index: The Beneish Ratio Index consists of eight ratios as indicators of financial statement fraud:

1. Days Sales in Receivables Index (DSRI):
Formula: $DSRI = (\text{Receivables in Year } t / \text{Sales in Year } t) / (\text{Receivables in Year } t-1 / \text{Sales in Year } t-1)$
2. Gross Margin Index (GMI):
Formula: $GMI = (\text{Gross Profit in Year } t / \text{Sales in Year } t) / (\text{Gross Profit in Year } t-1 / \text{Sales in Year } t-1)$
3. Asset Quality Index (AQI):
Formula: $AQI = (\text{Total Assets in Year } t / \text{Total Assets in Year } t-1)$
4. Sales Growth Index (SGI):
Formula: $SGI = (\text{Sales in Year } t / \text{Sales in Year } t-1)$
5. Depreciation Index (DEPI):
Formula: $DEPI = (\text{Depreciation in Year } t / \text{Total Assets in Year } t) / (\text{Depreciation in Year } t-1 / \text{Total Assets in Year } t-1)$
6. Sales, General, and Administrative Expense Index (SGAI):
Formula: $SGAI = (\text{SG\&A Expenses in Year } t / \text{Sales in Year } t) / (\text{SG\&A Expenses in Year } t-1 / \text{Sales in Year } t-1)$
7. Leverage Index (LVGI):
Formula: $LVGI = (\text{Total Liabilities in Year } t / \text{Total Assets in Year } t) / (\text{Total Liabilities in Year } t-1 / \text{Total Assets in Year } t-1)$

8. Total Accrual To Total Assets Index (TATA):

Formula: $TATA = \frac{[(\text{Net Income in Year } t - \text{Cash Flow from Operations in Year } t)] / \text{Total Assets in Year } t}{[(\text{Net Income in Year } t-1 - \text{Cash Flow from Operations in Year } t-1)] / \text{Total Assets in Year } t-1}$

3. Result Analysis

This study aims to reveal the potential for fraud in the financial statements of food and beverage manufacturing companies in Indonesia using the Beneish Ratio Index analysis method. As stated by Messod D. Beneish, "The Beneish Ratio Index is a tool that can help identify signs of fraud in financial statements." The data used is secondary data sourced from annual reports and financial reports of companies listed on the Indonesia Stock Exchange during the period 2017 to 2021. With this approach, this study aims to explore the issue of fraud in the context of the growing food and beverage industry in Indonesia. In addition, the Beneish Ratio Index analysis also provides insight into the importance of using fraud detection tools in the field of auditing and monitoring financial statements. This is in line with the opinion of John M. Daly who states, "The ability to recognize signs of fraud in financial statements is an important skill for auditors and financial professionals." In an era of economic uncertainty, this research contributes to the understanding of how these analytical tools can be used to identify potential fraud in the financial statements of food and beverage manufacturing companies. The dependent variable in this study is financial statement fraud. Financial statement fraud can include both unintentional errors (errors) and intentional errors (fraud), such as the presentation of false information or the omission of information in the financial statements. The independent variable is the Beneish Ratio Index, which consists of eight ratios, namely Days Sales In Receivables Index (DSRI), Gross Margin Index (GMI), Asset Quality Index (AQI), Sales Growth Index (SGI), Depreciation Index (DEPI), Sales, General, and Administrative Expense Index (SGAI), Leverage Index (LVGI), and Total Accrual To Total Assets Index (TATA). The results will be evaluated by comparing the ratio values of the sample companies with the comparison parameters established by Beneish (1999). The parameters distinguish companies into non-manipulators, gray companies, or manipulators, based on the values of certain ratios. Data analysis will provide insight into the extent of potential fraud in the financial statements of food and beverage companies in Indonesia during the study period. This method will assist auditors and other stakeholders in identifying companies that have the potential to commit financial statement fraud. The comparison parameters in the Beneish Ratio Index are thresholds used to categorize companies as "Non Manipulator," "Grey Company," or "Manipulator" based on the values of certain ratios. The comparison parameter table is as follows:

Table 1: Beneish Ratio Index Comparison Parameters.

No.	Index Ratio	Non Manipulator Parameters	Grey Company Parameters	Manipulator Parameters
1	DSRI	$\leq 1,031$	$1,031 < x < 1,465$	$\geq 1,465$
2	GMI	$\leq 1,014$	$1,014 < x < 1,193$	$\geq 1,193$
3	AQI	$\leq 1,039$	$1,039 < x < 1,254$	$\geq 1,254$
4	SGI	$\leq 1,134$	$1,134 < x < 1,607$	$\geq 1,607$
5	TATA	$\leq 0,018$	$0,018 < x < 0,031$	$\geq 0,031$

Source: Adaptation of Beneish, 1999.

This table 1 above presents the comparison parameters for each index ratio used in the Beneish Ratio Index. Companies that have a ratio value outside the specified parameter range will be categorized as "Non Manipulator" if the ratio value is below a certain threshold limit, "Grey Company" if it is between a certain threshold limit, and "Manipulator" if the ratio value exceeds a certain threshold limit. These parameters help in detecting potential fraud in the company's financial statements. Based on the results of the Beneish Ratio Index analysis of 55 sample companies over the five years of the study, it was revealed that as many as 14 companies, or around 45%, were classified as "gray companies" between 2017 and 2021. The categorization as a "grey company" indicates that although there is manipulation in the financial statements, the value is not significant, and this company cannot be classified as a "manipulator." The percentage of companies categorized as "gray companies" fluctuates from year to year. In 2017, 45% of companies fell into this category, which then decreased to 9% in 2018. However, in 2019, the percentage of "gray company" companies increased again to 27%, and in 2020, the percentage remained at 27%. In 2021, it decreased again to 18%. Compared to companies classified as "manipulators," "gray companies" are more numerous. Although the values of the "gray company" ratio do not exceed the threshold that defines a "manipulator," it is important to remain cautious of companies that fall into the category of "gray companies." This is because even if the manipulations carried out by "gray companies" are considered immaterial, they still reflect the existence of practices that are not entirely honest in financial reporting. The results of this study also reveal that the DSRI (Days Sales in Receivables Index) and SGI (Sales Growth Index) ratios have the highest average values as indicators of "gray companies." This indicates that companies that fall into the "gray company" category have an increase in receivables and sales. The increase in receivables may be due to a change in credit sales policy or an increase in sales that may reflect manipulative actions. Thus, these findings provide further understanding of financial statement manipulation practices and the factors associated with them in the context of food and beverage companies in Indonesia.

3.1 Recognizing Potential Fraud Indicators in Financial Statements

The financial statements of companies with potentially high fraud risk usually reflect ambiguity or fraud in the reporting of assets, revenues, and expenses. From the perspective of the Beneish Ratio Index, there are several characteristics that can help identify this potential fraud risk. One strong indicator is a significant change in some specific ratios. For example, when the Days Sales in Receivables Index (DSRI) has a sharp increase from year to year, this could be a sign of risk. DSRI measures the balance between receivables and revenue, and a large increase in receivables could indicate larger credit sales or a shift in revenue reporting. Furthermore, if the Sales Growth Index (SGI) shows a very significant increase, this could be a sign of risk. A large increase in sales could reflect the company's efforts to maintain a high level of sales, which may involve manipulation in revenue reporting.

In addition, the Total Accrual to Total Assets Index (TATA) which shows a significant increase can also be an indication of fraud risk. A high accrual value indicates a significant increase in non-cash items in the financial statements, which may reflect an attempt to "smooth" the financial statements. For example, we can imagine a company ABC that has reported a large increase in receivables (high DSRI) and very significant sales growth (high SGI) in its financial statements. In addition, the TATA shows a significant increase. In this case, the Beneish Ratio Index would consider company ABC as potentially having a large fraud risk, and auditors or financial analysts should conduct further reviews to confirm the existence of potential fraud in the financial statements. The results of the Beneish Ratio Index calculation for a number of

food and beverage manufacturing companies during the period 2017 to 2021 reveal variations in the classification of companies as manipulators, gray companies, or non-manipulators. Most companies are still classified in the non-manipulator category. However, there are companies classified as gray companies and manipulators, which need more attention. For example, the ICBP company in 2020 has DSRI and GMI values which indicate that the company is classified as a gray company. This illustrates an increase in receivables and sales that needs further investigation. On the other hand, the MLBI company in 2017 and 2020 was classified as a manipulator, with SGI and AQI ratios indicating potential manipulation of financial statements. These results highlight the importance of understanding the Beneish Ratio Index ratios in detecting potential fraud in the company's financial statements. Companies classified as gray companies and manipulators deserve the attention of auditors and stakeholders. The risk-based audit process should consider the results of this analysis to design an appropriate audit strategy to identify financial statement fraud.

3.2 Risk-Based Audit Strategy

In an effort to uncover potential financial statement fraud, auditors apply a very careful and focused risk-based audit strategy. The first step is to identify potential fraud risks that could occur within the company, including revenue manipulation, improper revenue recognition, or excessive asset recognition. Correspondingly, auditors must also evaluate these risks in terms of impact and likelihood of occurrence. After identification, auditors perform more in-depth substance testing on high-risk areas in the financial statements, such as revenue, assets, expenses, and fair value measurements. They perform substantial testing, including examination of supporting documents, trend analysis, and comparisons with prior periods. Auditors also evaluate the effectiveness of the company's internal controls and perform tests on those controls to ensure that control procedures are as expected. In addition, auditors check the company's compliance with applicable regulations and accounting standards. If there are regulatory violations, this may indicate potential fraud. In addition, auditors may also use analytical tools, such as financial ratio analysis, to detect suspicious discrepancies. In this endeavor, auditors may also consult with relevant expert resources, such as financial experts or engineers, to gain additional insight in identifying potential fraud risks. In addition, auditors also conduct special tests on balances and transactions that are associated with fraud risks. All these steps are geared towards uncovering potential fraud in the financial statements with a high degree of care and in a focused manner. As Larry Rittenberg, an expert in auditing, puts it, "Risk-based auditing allows auditors to identify significant risks and prioritize audit resources to the areas most at risk for fraud." Thus, an appropriate, risk-based audit strategy can help reveal potential fraud in a company's financial statements.

4. Conclusion and Further Study

In order to identify potential financial statement fraud, this study uses the Beneish Ratio Index method. The results of this study reveal differences in the classification of companies as manipulators, gray companies, or non-manipulators during the period 2017 to 2021. Although companies classified as gray companies have a lower risk of fraud than manipulators, this still requires the attention of auditors and other stakeholders. A focus on the DSRI and SGI ratios in the Beneish Index ratio reveals an increase in receivables and sales as factors that require further review in detecting potential fraud. This study is the use of secondary data sourced from publicly available financial reports, which may limit the level of detail accessible to researchers. In addition, this study is only limited to food and beverage manufacturing

companies in Indonesia. Therefore, the results may not be directly applicable to other industries or countries. As a suggestion, future research may consider expanding the scope of industries and geographical areas to gain greater insight into potential financial statement fraud. In addition, integration of Beneish Ratio Index analysis with other methods, such as traditional financial ratio analysis or other fraud detection tools, may provide a more comprehensive view. Finally, auditors and company stakeholders need to understand the importance of local context in detecting and preventing financial statement fraud and keep their fraud detection methods and tools up to date in line with business and regulatory developments. Thus, this study highlights the relevance and potential use of the Beneish Ratio Index in detecting potential financial statement fraud, with an understanding of the limitations and extensions in future research to strengthen its use in audit practice and risk management.

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