Management Accounting System, Perceived Environmental Uncertainty and Corporate Performance in the Nigeria Breweries Sector

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ABSTRACT
The study examined the effect of Perceived Environmental Uncertainty on the Implementation of Management Accounting Systems on performance of Breweries Companies in Nigeria. Survey design method was adopted to gather data from respondents using structured questionnaire designed using likert-scale. Data were analysed using correlational and inferential statistics. Results shows $R^2$ of 0.759 and F-value of 172.88 which provide ample confirmation on the effect of adoption of Management Accounting Systems (MAS) based on Perceived Environmental Uncertainty (PEU) on organizational performance in the Breweries sector of the Nigeria economy following the high correlational positive relationship between the variable studied. It is concluded that adoption of Management Accounting systems based on perceived Environmental Uncertainties has enhanced the performance of the sector when tailored to the level of Environmental Uncertainties facing the Sector: It is recommended that contingent approach should be adopted in designing MAS so as to ensure provision of reliable and relevant information for product cost and pricing.

Keywords: Management Accounting Systems; Perceived Environmental Uncertainties, product cost and product price.

INTRODUCTION
Management Accounting Systems focus on the tracking of costs associated with production of goods and rendering of services in a company. Some of the most common systems include traditional cost accounting, lean accounting, throughput accounting, life-cycle costing, and transfer pricing. Each of these Management Accounting Systems (MAS) provides organizations with a different method of tracking costs in order to produce goods and services at the lowest cost possible. Failing to follow any system can result in overpriced goods and lower gross margins, thereby, reducing the level of company operating profit performance. Management Accounting System is a set of human and capital resources within an organization that is responsible for the production and dissemination of information deemed relevant and reliable for internal decision making.

Belkaoui (2002) and Horngren(2012) sees Management Accounting System as a formal mechanism for gathering, organizing and communicating information about the organization activities. Rasid, Isa and Ismail (2014) interpreted it as the systematic use of management accounting to achieve organizational goal.

The generation of relevant and reliable information is characterized by high level of environmental uncertainty expressed as Perceived Environmental Uncertainty (PEU) due to the dynamic nature of modern business environment. Perceived Environmental Uncertainty (PEU) is described as the inability to predict correctly certain situations in the environment – internal and external. These may present itself in terms of task uncertainty, diversity of
decisions, difficulties in predicting events, complexity of planning and control activities and the extent of lead time (Morris, 1986; Chenhall, 2003; and Lawrence and Lorch, 2011). PEU has been seen as an important factor that could affect the extent to which managers would require management accounting system information. The higher the level of PEU, the greater the amount of information that the manager has to process to be able to achieve a particular level of performance.

Management Accounting Systems possessed four basic features of broadness in scope (that is, futuristic information, external information and qualitative information, availability on time, aggregation and integration) and at the same time incorporates the characteristics of a traditional type management accounting information (Gordon, 1984; and Mia, 2002, Chenhall, 2003). Thus, a sophisticated and dynamic MAS would be future oriented, external, qualitative, timely, aggregated and integrated as this is necessary to cope with PEU which is a feature of contemporary business environment. The unpredicted events requires aggregated and integrated MAS information that equip the managers with an overall aggregated view of the business and the interrelationships between the component activities of the business (integrated) such as marketing, wages, sales, finance, controls, research and development and so on.

More specifically, the application and design of MAS in various organizations is attributed to contingency factors. Otley (1980) identified three of these contingency factors that cause variations in MAS, to include technology, organizational structure and environment; but Chenhall (2003) identified six contingency factors, namely: the external environment, technology (generic and contemporary), organizational structure, company size, strategy and culture.

The diversity and uncertainty of the business climate therefore calls for a sound understanding of the dynamics of MAS information and its interrelationship with PEU if business must succeed and be sustained.

**Statement of the Problem.**
The emergence of the systems concept in management literature brought about theoretical and empirical efforts been directed towards understanding the nature of organization environment interdependence, sequel to environmental uncertainty with variants of results as to how the performance of business is been affected. More so, most of the studies are conducted in developed economies of the western world. This study therefore seeks to examine the relationship between MAS information and PEU in the Nigeria context with focus on the Breweries sector performance.

**Objective of the Study**
The main objective of the study is to investigate the effect of perceived environment uncertainty (PEU) on implementation of management accounting systems and companies performance in the Breweries sector of the Nigeria economy.

**Research Hypothesis**
The research hypothesis for this study stated in null form is: There is no significant effect of perceived environmental uncertainty on the implementation of MAS and organization performance in the Breweries sector in Nigeria.
CONCEPTUAL, THEORETICAL AND EMPIRICAL ISSUES.

Management accounting systems provides information deemed relevant for internal decision making (Belkaoui, 2002). Rasid (2014) describe it as the systematic use of management accounting to achieve organizational goals.

The MAS consists of several subsystems which interact and integrate to ensure coherency of the entire organization as complete system aim at achieving its set goal and objectives. The design of MAS must thus take cognizance of the nature of operation, environmental variables, the sector the organization operates (competition), the type of informational needs for management decisions and control as well on the expected level of performance. Conversely, therefore, the more sophisticated the design, the more detailed the information provided and the more frequently the system generates the information. The designs of MAS components in terms of the levels of these characteristics have been associated with company performance (Inegbenebor, 1995; Ajibolade, 2013).

Management accounting system has many advantages to an organization since through an effective MAS, it is possible to enhance the overall performance of the company. Some of the accrued benefits include:

i. **Increase efficiency of the company:** Companies opt for management accounting as it increase the efficiency of company in resource utilization. It contributes in striving for better performance by evaluating and comparing, thereby making it easy to achieve results, motivating employees for better performance and companywide efficiency.

ii. **Increases the bar of profitability:** Management accounting includes budgetary control and capital budgeting. The use of this method makes it easier for the company to cut short the extra expenditure for performing vital operations. This indirectly increases the bars of profits for the company, as the company is able to reduce its pricing on the products.

iii. **Simplifies the decision making:** Managerial decisions and other activities of management require a simplified report of the financial statement of a company. For this action, management accountants create a detailed technical report with simpler interpretations with key facts of the financial statements.

iv. **Enables the fluctuation of business monetary fund:** one of the essential factors in business is the monetary fund. Management accounting systems enables a control over the fluctuation of this monetary fund by studying the flow of the funds in details. More so, it helps in maintaining the availability of funds during emergency as well as eliminating the any source within the company that misuses the fund.

v. **Cost Transparency:** In the corporate world, most the costs comes from the Information Technology (IT). The work of management accounting in the firm is to work with the IT department closely. This action ensures a within budget actions and provides cost transparency to the company.

Daft (2010) identifies certain factors affecting management accounting system design. Management accounting uses financial information to implement effective change. Accounting numbers provide objective feedback about profitability and efficiency, and help to identify opportunities and problem areas. To be useful, management accounting systems must accurately reflect company activities, tracking useful information in sufficient detail without taking more time than they worth. The factors explicitly enumerated are: Quality of information to be provided, timeliness of information, availability of resources and effective feedback.
**Perceived Environmental Uncertainty**

Perceived environmental uncertainty occurs when an organization decision-maker perceive unpredictability in their environment (Agbejule, 2007). This takes place when there is difference between available information and required information. By implication decision-makers perceive uncertainty of the environment when they do not feel confident that they understand the major events or trends happening in the external environment, or when they feel unable to accurately assign probabilities to the likelihood that particular events and changes will occur (Milliken, 1987).

Perceived Environmental Uncertainty (PEU) varies from industry to industry and at different stages of industry lifecycle, just as the level of recognition of the importance of the external environment also varies from company to company accordingly, as does the reaction of companies to their environment (Abels, 2002).

In earlier studies, perceived environmental uncertainty was described from two broad dimensions: variability and complexity (Robbins and Coutler, 2005). Variability describes changes taking place in the environment; if environmental changes are minimal and predictable, it is called a stable environment; if components in an organizations environment are vibrant, unpredictable and changing frequently, it is considered a dynamic environment.

A review of the literature on uncertainty reveals a variety of definitions of the concept. It is seen as lack of information for and knowledge of in decision making (Duncan, 1972; Lawrence and Lorsch, 2011). Uncertainty is equally viewed as a product of unpredictability (Cyert and March, 2013), environmental turbulence (Emery and Trist, 2005), and the complexity of influential variables. The complexity, interrelatedness and inter connectedness of influential variables in the environment call for segmenting the environment for the purpose of analysis (Fahey and Narayanan, 2006). The dimensions of uncertainty therefore include: macro-environmental uncertainty competitive uncertainty, market (and demand) uncertainty; and Technology uncertainty, (Anderson and Tushman, 2010). These dimensions are relevant for purposeful planning and controlling of organization’s activities.

**Company Performance**

Company performance is the net result of the combined efforts of all individuals and groups in an organization (Khandwalla, 2007). Companies referred to in this study are Brewery companies. The definition of company performance is problematic because it varies depending on the view point upon which it is assessed. For instance, from the society’s point of view, performance may be assessed in terms of efficiency of production of products or services needed by the society. From the proprietary point of view, profitability and growth in earnings may be the criteria; while employees may assess performance from what the organization offered them in terms of monetary and non-monetary incentives. Customers may look at performance from product quality, prompt delivery and affordable/competitive prices. Since management must take into account the various expectations of these diverse groups in setting it goals, management’s criteria for assessing company performance may be assumed to adequately reflect the concerns of other groups such as the society, employees, suppliers and customers (Khandwalla, 2007). Daft (2007) suggested two measures of economy aspects of company performance from management’s view point – return on assets and growth in sales. He however noted that, obtaining accurate data in terms of these measures may prove difficult especially in multi-industry companies and privately-held companies as owners, who are sole gatekeepers to such information on individual companies are very sensitive about releasing any performance related data.
Relationship between management accounting system, perceived environmental uncertainty and performance.

Designing an appropriate strategy requires organizations putting in place a structure (that is, an information processing system, example; management accounting system) capable of accommodating the variability and uncertainty of their environment. Organizational effectiveness is a function of the correctness of 'Fit' between the information system of an organization and its environment (Burns and Stalker, 2001; Hage and Aiken, 2010; and Lawrence and Lorsch, 2011). Conflicting results have been found in this area as to the implication and relationships between the variable under study. Generally, it is believed that low environmental uncertainty encourages the development of mechanistic structures that emphasize formal controls, centralized decision making and specialization of activities (Burns and Stalker, 2001). In an uncertain environment an organic structure, with its low degree of formality, decentralized decision-making and less specialization is best suited. Lawrence and Dyer, 2003; Fredrickson and Mitchell, (2004); Brownnel, (2005); and Miller, (2006), however, found that hostile and turbulent conditions are best served by a reliance on formal MAS. Regardless of performance effect, Lindsay and Rue (1980) and Schrader (1989) found for large and small firms that there is a positive relationship between environmental uncertainty and planning formality.

Theoretical Review

This study hub on contingency theory which according to Emmanuel, Otley and Merchant (1990) is use to study complex relationship between strategic priorities, organizational design and MAS and their impact on organizational performance. This has continued to attract the attention of researchers like Gerdin and Greeve, (2004); Jermias and Garic, (2008); Gordon and Narayanan (1984). The theory, as applied to Management Accounting (MA) has been described as “a major development of the behavioural management accounting research” which seeks to define specific aspects of an accounting system’s design that are appropriate for different sets of circumstances. The theory is based on the premise that “there is no universally appropriate accounting system applying equally to all organizations in all circumstances (Emmanuel, et al, 1990); implying that as the specific circumstances of an organization alters, so should the MAS adapt if it is to remain effective.

The theory is specifically ideal for this study because Brewery companies in Nigeria are face with the major challenge of globalization as almost all their inputs are imported thereby subjecting them to vagaries of international foreign exchange market that is volatile and uncertain. This is also due to the fact that several dimensions including turbulence, hostility, diversity, complexity and restrictiveness, complexity and dynamism, controllability and uncontrollability affects the Breweries operating environment.

Empirical Review

Several studies have been carried out by different researchers regarding the relationship between management accounting systems, perceived environmental uncertainty and company performance. In a study on the contextual factors that impact on MAS designs in Nigerian manufacturing companies, Ajibolade (2013) noted that strong explanatory power of PEU affect the MAS designs of manufacturing companies. The study did not however examine the effect of the relationships of the variables studied.

Otley (1980) in his study found that hostile and turbulent conditions are best served by a reliance of formal MAS, regardless of the performance effect. Lindsay and Rue (1980) and Schrader (1989), found that there is a positive relationship between environmental uncertainty and planning formality in both large and small firms.
Ronny (2012) concluded from his study that most managers (47.06%) have a high perception about environmental uncertainty and rest (52.94%) is moderate PEU. Most companies (88.24%) acts as defenders and rest (11.74%) as prospectors. 79.41% companies implement MAS at the high intensity while the remaining (20.59%) at the moderate to low intensity. After testing his hypothesis, he arrived at the conclusion that PEU has a significant influence on the implementation of MAS and organizational performance. These results parallel with previous studies such as Seaman and William (2011), Mat (2010), Nimtrakoom and Tayles (2010), Gosselin (2011), Hoque (2011), Abdel-maksoud (2012) and Sandalgaard (2012).

Mia (2002) and Kreitner (2009) highlight that the use of traditional management accounting information in the form of budget reports and variance analysis can be traced back to the origin of accounting systems. It is argued that in the competitive environment, continual use of traditional accounting information could be harmful, since it focuses on historical and financial facts.

Huber (1980) and Moores and Booth (1994) and Davidson and Graffin (2000) argued that the competitive environment creates uncertainty and impact managers’ decision-making ability related to increasing sales revenue, reducing costs, improving customer satisfaction and raising employees’ morale as well as developing new products, services, processes and markets. MAS provides information to address all the above issues for an organization to stay ahead in complex and competitive environment.

Ajibolade (2013) using technology as a factor along side effect of perceived environmental uncertainty on management accounting systems and corporate performance, reported evidence of a strong moderation influence of the variables studied. The implication is that companies facing high environmental uncertainty and complex technological production processes will likely reap great benefits from using more sophisticated MAS. These will help produce more information for appropriately measuring performance, more detailed product cost information for proper pricing of products and help highlight areas for cost control purpose for increase profitability. The study found no conclusive empirical evidence regarding the relationship between MAS design and level of decentralization. Decentralization although found to be positively correlated with sophistication in MAS design, was not found to moderate the relationship between MAS design and performance.

The relationship between the usage of MAS information and organizational performance can be seen under management accounting and control systems and organizational performance particularly as it has to do with assisting managers in their decision-making and outcomes measured in terms of goals achievement (Otley, 1980; Govindarajan, 1988; Fisher, 1995; Chenhall, 2003; Langfieldsmith, 2003; Ferris and Haskins, 2008). Choe (2004) investigated the relationship between management accounting information and production performance and found positive relationship. Further, Baines and Langfieldsmith (2003) pointed out that an increasingly competitive environment has resulted in an increased emphasis on differentiation strategies giving rise to changes in organizational design, advanced manufacturing technology and advanced management accounting practices. These changes have led to greater reliance on non-financial accounting information, which has a positive effect on performance. Chong and Chong (1997) found MAS played a role in the relationship between strategic choices and performance. Gul (2014) investigated the relationship between MAS and organizational performance and found that positive relationship exist between the variables studies under high level of PEU (Seaman and Williams, 2011; Ajibolade, 2013).
The gap in the literature thus suggest the need for an understanding of the relationship between MAS, PEU and corporate performance since these form the hub of formulating and implementing strategies by organizations.

**METHODOLOGY**

The study adopts a survey design approach involving use of a questionnaire to elicit responses from the sampled populations of Breweries companies in Nigeria. The companies websites were obtained and copies of the questionnaire mail to them for responses. Judgmental sampling technique was used to select eleven (11) Breweries companies

These are:
2. Consolidated Breweries Plc. Ijebu-ode, Ogun
3. Life Breweries company, Onitsha, Anambra State
4. Sona Breweries Plc. Lagos
5. Brewtech Brewery Limited, Ojota, Lagos
6. Guinness Nigeria Breweries – Ikeja, Lagos
7. International Breweries Limited – Ilesa, Osun State
8. Champion Breweries Plc, Uyo, Akwa Ibom State
9. International Beer and Beverages Industries Limited, Kaduna
10. Standard Breweries Nigeria Limited, Ibadan
11. D – Explicit – Ibadan

*Source: Nigerian Business Directory, 2018*

A total of 10 copies of the questionnaire were e-mail to each company totaling 110 copies with only 57 copies filled and mailed back representing 52% response rate and used for the analyses. The questionnaire was closed ended four points Likert Scale with strongly agreed, agreed, disagreed and strongly disagreed options weighting 4, 3, 2, and 1 points respectively. These scores were used to determine the criterion mean point of 2.5 (that is: 4+3+2+1/4). Thus the mean response of 2.5 and above was considered as agreed and below considered disagreed. The mined data is then analyzed using Pearson’s product moment correlation; a parametric test that seeks to determine the existence or absence of a linear or non-linear relationships between variables, and ANOVA and ‘t’ statistic to validate the hypothesis for the study.

**RESULTS AND DISCUSSION**

Two simple linear regression models are formulated for the study as follows:

\[
PBC = B_0 + B_1MAS + e \quad \text{equation 1}\]

\[
MAS = B_0 + B_1 + PEU + e \quad \text{equation 2}\]

Where;
- PBC = Performance of Breweries Companies in Nigeria
- MAS = Management Accounting System
- PEU = Perceived Environmental Uncertainty
- \(B_0\) = Constant term
- \(e\) = Stochastic error term.

**Data Presentation, Calculation of Mean Values and Analysis**

The data mined from the questionnaire responses on the variables of study are presented in the tables that follow.
From the Table 1 above, result shows that all the dimensions of Perceived Environmental Uncertainties (PEU) are agreed to by the responding companies except for legal regulations affecting the business sector. This may not be unconnected with the fact that Nigerian business laws and regulations are not flexible and easily amended to reflect current realities. Thus the dimension of independent variables used for the study are validated and suited for the study.

From the data presented in Table 2, results show that all the companies under study agreed to all the management accounting variables selected for study as all the item had a mean value of above 2.5 acceptance threshold.
Table 3: Data presentation on companies performance.

<table>
<thead>
<tr>
<th>S/No.</th>
<th>Items/Variables</th>
<th>Very good</th>
<th>Good</th>
<th>Bad</th>
<th>Very bad</th>
<th>Mean</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Return on investment (ROI)</td>
<td>22</td>
<td>27</td>
<td>8</td>
<td>0</td>
<td>2.88</td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>Success at operating revenues from new products</td>
<td>9</td>
<td>26</td>
<td>12</td>
<td>10</td>
<td>2.44</td>
<td>D</td>
</tr>
<tr>
<td>3</td>
<td>Reduction in cost of transacting with customers</td>
<td>11</td>
<td>23</td>
<td>14</td>
<td>9</td>
<td>2.45</td>
<td>D</td>
</tr>
<tr>
<td>4</td>
<td>Level of repeat business with valuable customers</td>
<td>27</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>3.02</td>
<td>A</td>
</tr>
<tr>
<td>5</td>
<td>Return on Equity (ROE)</td>
<td>20</td>
<td>28</td>
<td>8</td>
<td>1</td>
<td>2.84</td>
<td>A</td>
</tr>
<tr>
<td>6</td>
<td>Level of staff commitment</td>
<td>19</td>
<td>24</td>
<td>11</td>
<td>3</td>
<td>2.72</td>
<td>A</td>
</tr>
</tbody>
</table>

Source: field Survey /Author’s Computation, 2018

On the performance variables of the companies as presented in Table 3, the respondents agreed to four (4) and disagreed to two (2) of the items. The mean value for success at generating revenue from new products and reduction in cost of transacting with Customers did not meet the acceptance threshold of 2.5 mean value. The rationale behind these may not be unconnected with the fact that pricing a new product requires the consideration of many variables which also often account for high failure rate of such products. These variables include setting the right price for the product, making it convenient for a wide range of users, poor market segmentation, among others.

Hypothesis Testing and Discussion
The correlation coefficients, ANOVA (F) value, R-square and t-statistics are adopted in addressing the research objective and validating the null hypothesis stated for the study. The regression results are presented in the tables that follows:

Table 4: Model Summary.

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R. Square</th>
<th>Adjusted R. Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>.871a</td>
<td>.759</td>
<td>.754</td>
<td>.92899</td>
</tr>
</tbody>
</table>

a. Predictor: (Constant), Adoption of Management Accounting System base on PEU

Source: Author’s Computations, 2018

Table 5: ANOVAa

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Square</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>149.200</td>
<td>1</td>
<td>149.200</td>
<td>172.880</td>
<td>.000b</td>
</tr>
<tr>
<td>Residual</td>
<td>47.467</td>
<td>55</td>
<td>.863</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>196.667</td>
<td>56</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Company's Performance
b. Predictors: (Constant): Adoption of Management Accounting System Base on PEU

Source: Author’s Computation, 2018
The result in Table 4 shows the $R^2$ (Coefficient of determination) of .759 which means that about 76 percent of the total variation in the companies’ performance is influenced by the adoption of management Accounting system practices based on perceived environmental uncertainties (PEU).

The result in Table 5, ANOVA table shows the F-value of 172.88 and p –value .000 indicating that the model is good since p < .05. This means that the effect of MAS on performance was significant. The result also shows a correlation coefficient (R) value of .871 (87.1%) meaning a strong positive relation between the variables studied. The standard error of estimate indicates that, on average, observed performance of Breweries Companies scores deviate from the predicted regression line by a score of .92899. This is attributable to measurement error in independent variables as well as other factors that influence performance of the industry that may not have been considered or captured in our model.

When the predictor variable was analyzed, the relative contribution of Management Accounting System based on PEU show ($\beta = .871$) $t = 13.148$, p (0.05) meaning the variable is a strong predictor of performance of the industry being studied. Thus, the null hypothesis was rejected and the alternative upheld that “There is significant effect of PEU on the implementation of MAS and organizational performance in the Breweries sector in Nigeria. The findings of this study agrees with Choe (2004) whose study found a positive relationship between management accounting system and production performance. The findings also agrees with the position of Ajibolade (2013) that management accounting system help produce more information for appropriately measuring performance, more detailed product cost information for proper pricing of products, which would eventually boost profitability. More so, the findings supports the study of Schrader (1989) which found a positive relationship existing between perceived environmental uncertainty and management accounting system in enhancing good planning and strategies that build company’s sustainability.

**CONCLUSION AND RECOMMENDATIONS**

This research study presents the result on Management Accounting System (MAS), Perceived Environmental Uncertainty (PEU) and corporate Performance in the Breweries sector of the Nigeria economy. The study has provided findings in support of management accounting system in enhancing the performance of the manufacturing Companies in Nigeria, if tailored to the level of environmental uncertainty facing the companies and technological complexity of their production process. The findings confirmed the positive and linear relationship between management accounting system and the organizational performance as it provide information which includes financial and non-financial, internal and external information that permits top management to consider a number of alternative strategies to achieve the optimum results.
under perceived uncertainties. It shows that managers acknowledge the uncertainties experienced in their organization and are forced to adapt, develop strategies in order to remain relevant in their business environment and eventually become competitive and maintain growth in performance.

A major implication of these findings for the management of the companies and the designers of management accounting system is that:

i. Contingency approach should be adapted in designing MAS so as to ensure provision of reliable and relevant information for product costs and pricing.
ii. MAS must be sophisticated enough to be up to date in capturing developments in the business environment thus making it dynamic in structure and design.
iii. Regular training and retraining on contemporary MAS techniques should be available those responsible for design and formulation of strategies and polices for organization to enable a paradigm shift from traditional MAS to modern techniques and procedures.

SUGGESTION FOR FURTHER RESEARCH

This study focus on breweries sector of the Nigerian economy, a wider coverage is advocated for all manufacturing sectors and other service organizations that adapt MAS in their operations.

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