

**HIGHER SCHOOL OF MANAGEMENT AND DIGITAL  
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**The impact of management control system  
on firm's performance  
CASE : Naftal company**

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## *Dedications*

First thing first thanks Allah for everything,

I would like to dedicate this thesis to my ever-supportive family, friends and my esteemed thesis supervisor, who have endured my countless moments of academic-induced madness with unwavering love and patience, I want to thank my cat for staying late with me. To my family, thank you for tolerating my late-night typing symphonies and providing a steady supply of snacks to fuel my brain cells. Your belief in me has been a constant source of inspiration. And to my friends, thank you for understanding my occasional disappearance from social gatherings and for always cheering me on from the sidelines. Your words of encouragement and hilarious distractions have kept me sane throughout this journey. This thesis is as much a testament to your unwavering support as it is to my own efforts. Let's celebrate together, preferably with copious amounts of cake and laughter ...

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## Abstract

This research aims to explore the influence of management control on the performance of Naftal GPL Batna. Several hypotheses were examined to understand the relation between management control and performance. We performed a descriptive analysis, where we gathered the data through a questionnaire then we conducted an analytical study using correlation, regression, and data reduction techniques. We found that there is a strong significant correlation between management control and performance, explained by a positive parameter estimate in a linear regression model. It is important for the company managers to also consider other factors such as marketing, governance, and employee's motivation, as they could help to improve the company performance.

## Résumé

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Cette recherche vise à explorer l'influence du contrôle de gestion sur la performance de Naftal GPL Batna. Plusieurs hypothèses ont été examinées pour comprendre la relation entre le contrôle de gestion et la performance. Nous avons réalisé une analyse descriptive, où nous avons collecté les données à l'aide d'un questionnaire, puis nous avons mené une étude analytique en utilisant les techniques de corrélation, de régression et de réduction des données. Nous avons constaté qu'il existe une forte corrélation significative entre le contrôle de gestion et la performance, expliquée par une estimation positive du paramètre dans un modèle de régression linéaire. Donc il est important que les responsables de l'entreprise tiennent également compte d'autres facteurs tels que le marketing, la gouvernance et la motivation des employés, car ils peuvent contribuer à améliorer la performance de l'entreprise.

## خلاصة

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يهدف هذا البحث الى استكشاف تأثير التحكم الإداري على أداء مؤسسة نפטال فرع باتنة (Naftal GPL Batna). تم فحص العديد من الفروض لفهم العلاقة بين مراقبة التسيير والأداء. قمنا بدراسة وصفية حيث قمنا بجمع البيانات من خلال استبيان ثم أجرينا دراسة تحليلية باستخدام تقنيات الارتباط والانحدار وتقليص البيانات. أظهرت النتائج المتحصل عليها الى وجود ترابط قوي ومعنوي بين مراقبة التسيير والأداء ، بالتوازي مع معامل تقدير موجب في نموذج الانحدار الخطي بين مراقبة التسيير والأداء. لذا يتوجب على مسيري الشركة الأخذ بعين الاعتبار كل العوامل الأخرى التي من شأنها أن تساهم في تحسين أداء الشركة مثل التسويق والحوكمة وتحفيز الموظفين.

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## List of Symbols and abbreviations

Symbols & Abbreviations	Meaning	Apparitions
BCG	Boston Consulting Group	P.17
BSC	Balanced scorecard	P.13,28,41
CEO	Chief Executive Officer	P.49
CFO	Chief financial officer	P .49
CRM	Customer relationship management	P. 114
CPTT	In french (comité de prévention et de protection du travail), stands for : "Committee for Occupational Health and Safety	P.9
DZD	The currency code for the Algerian Dinar.	P .89
ERP	Entreprise Ressource Planning	P.29
GPL	in french (Gaz de Pétrole Liquéfié) which is : liquefied petroleum gas	P.3
KSF	key success factors	P.36,47,75
KP budget	the budget allocated for Key Performance Indicators	P. 79
MCS	Management control system	P.63
OECCA	In french (L'ordre des experts comptables et comptables agree), Stands for Order of Chartered Accountants and Certified Accountants	P.9
SHEQ	Safety, health, environmental, and quality	P.65
SMEs	Small and Medium-sized Enterprises	P.21
SPA	In French (Société par actions) stands for : stock corporation	P .72
SPSS	Statistical Package for the Social Sciences	P. 101



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### **General introduction**

Currently, the global economy is undergoing rapid and sometimes unpredictable changes. The increasing internationalization of business deeply impacts organizations and corporate strategies. In this fiercely competitive and global landscape, only adaptable, competitive, and innovative companies that meet the new market requirements are able to survive and maintain a sustainable competitive advantage that is difficult to replicate.

In such a dynamic and uncertain environment, having a management control system becomes crucial for industrial companies to maintain the established trajectory towards their objectives and effectively navigate competition. It is essential for ensuring the expansion and longevity of these organizations.

To achieve this, leaders must set clear objectives and provide the necessary means to reach them while continuously facing ongoing challenges that the company encounters. As a result, decision-making by leaders is no longer solely based on instinct but relies on a comprehensive strategy and anticipatory elements developed through a dynamic system known as management control.

Management control is a function aimed at motivating managers and encouraging activities that contribute to achieving the organization's objectives. It allows for comparisons with past or projected data and triggers appropriate corrective measures.

In the field of management, performance is defined as the attainment of organizational objectives, regardless of their nature and variety, while considering the minimization of resources used to achieve these objectives.

In this context, management directs the focus of management control towards new demands, such as analyzing corporate performance and managing the value/cost relationship.

The survival of such companies necessarily depends on improving their performance, and management control can be seen as a means of enhancing economic performance. It is an effective tool when set objectives are achieved and an efficient tool when quantities obtained are maximized given a specific number of resources. To master increasingly complex situations, the establishment of a management control function becomes essential, with key instruments including accounting

(both general and analytical components), budgetary management, and the use of dashboards, among others.

Our research is conducted within the national company Naftal GPL Batna, aiming to assess the impact of management control on its performance. Thus, our study will revolve around the topics of management control and performance.

Based on previous introduction we articulated our research problematic as follow:

**“What is the impact of management control on the performance of the company?”**

We divided our problematic into the following 3 sub-questions:

1. What is management control system and what are its tools?
2. What is the firm performance and how could we evaluate it?
3. What is the role of management control within NAFTAL (Kechida-Batna)? What is its impact on the performance?

To address the research problem and sub-questions, we formulated the following hypotheses:

### **Main Hypothesis:**

- The impact of management control on company performance is reflected in performance measurement.

### **Secondary Hypotheses:**

- Management control drives company performance through various tools, including analytical accounting, budget management, and dashboards.
- Company performance can be defined by its ability to achieve objectives with minimal costs.
- The role of management control at Naftal GPL Batna is to enhance company performance and assist decision-making by executives.

This research aims to determine:

- The significance of management control in the day-to-day management of the company.
- A clear understanding of the concept of performance and the analysis of the impact of management control on performance improvement. The evaluation and analysis of costs will greatly

contribute to management control, as without them, it is impossible for any company to discuss the notion of performance.

For the methodology of our work, we have adopted a descriptive and analytical approach:

- **Descriptive:** because we have presented the key concepts of our topic, which are management control and performance.
- **Analytical:** because our topic primarily aims to analyze the management control system of Naftal GPL Batna.
- **Quantitative Study:** We conducted a quantitative study to assess the relationship between management control and company performance at Naftal GPL Batna. This involved collecting and analyzing numerical data to provide objective measurements and statistical evidence.

Regarding the collection of information necessary for the writing of our thesis, we conducted research at various libraries (Online, and normal libraries). Additionally, we had the opportunity to engage in discussions with the management controller of Naftal GPL Batna.

To address the research problem, our study focused on a literature review and consultation of specialized documents for the theoretical part.

As for the practical part, we conducted a content analysis of the management control system at Naftal GPL Batna. We utilized the following techniques:

- **Interview technique:** We conducted interviews at the hosting organization to gather the necessary information for the practical section of our study.
- **Observation technique:** We relied on this technique throughout our presence at Naftal GPL Batna.
- **Online distribution platform:** to reach a wider audience and collect responses in a convenient and efficient manner

To address these concerns effectively, we structured our research work into three chapters:

- The first chapter focus on general aspects of management control.

- The second chapter, is devoted to discuss different theoretical aspects of the notions of performance and explore the related concepts to derive the fundamental axes that will allow us to achieve the most appropriate evaluation.
- The third chapter is dedicated, firstly, to the presentation of Naftal GPL Batna. Then, we will shed light on the existing management control tools within this company, as well as the measurement of its performance. Additionally, we will conduct a quantitative study to assess the relation between management control and company performance, projecting our research findings onto it.

## **Chapter I : Theoretical Framework of Management control**

Management control is now a well-institutionalized function in most companies, allowing for rigorous management and faster reaction times on the part of company leaders. These leaders must have control over their management in the same way that a driver must have control over their vehicle. This first chapter will address the theoretical framework of management control, and is divided into two sections: the first section will cover general information about management control, its definition, its missions, and its objectives. In the second section, we will discuss management control tools.

## **Section 01: Overview of Management Control**

Any practical work must be accompanied by a cumulative understanding of the desired objective. Therefore, to better understand it, it is important to define management control, present its various functions and levels, as well as its different objectives.

### **1. Concept of Management Control**

In this section, we will discuss the emergence, evolution, definition, and related concepts of management control.

#### **1.1. Emergence and Evolution of Management Control :**

The concept of management control has undergone a long evolution over time. This evolution is due to the changing general conditions of management and significant modifications in cultural and social norms and the environment.

The turbulence of the political, economic, and social environment has considerably increased the different levels of uncertainty in management. Reducing uncertainty is one of the key benefits of management control, as it emphasizes information and communication issues and seeks to achieve necessary objectives for the company in more effective way.

Several authors have attempted to write about management control, but none of them have specified a start date for management control. It is the result of a long evolution of ideas among researchers in this discipline. They assert that this discipline dates back to antiquity and that the concept of management control is as old as that of accounting. Research in this area shows that accounting and management control already existed among the Sumerians in Mesopotamia around 3000 BC <sup>(1)</sup>.

To assist with land and herd management and to control economic achievements, accounting was developed, giving rise to the first written representation of numbers. Thus, management, accounting, and control appear to be inseparable and essential when economic activity must be mastered. Although the beginnings of cost accounting can be observed in Italian textile manufactures in the 15<sup>th</sup> century and French printer in the 16<sup>th</sup> century, it is clear that the need for

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<sup>1</sup> ALAZARD C et SEPARI S: « contrôle de gestion manuel et application », édition DUNOD, paris 2010,p3.

measuring and controlling economic activities increases and truly spreads on a large scale at the end of the 19<sup>th</sup> century, with the formation of large industrial production units that group machines and must organize work.

From a historical perspective, it seems necessary to separate the evolution of cost calculation and analysis from that of activity control. With the development of products and services in a growing economy, managers have sought help in decision-making and ways to control actions within the structure through management control. Thus, since the beginning of the 20<sup>th</sup> century, management control has been designed within the framework of Taylorism <sup>(1)</sup>, based on four principles:

- Stability over time;
- Perfect information of organizations;
- Search for minimizing total costs;
- Production costs dominate the total cost.

The control of activities and the corresponding control analysis field date back to the end of the 19<sup>th</sup> century, a period marked by a phase of industrialization<sup>(2)</sup>. Thus, it is the result of the evolution of technical progress and the development of economic activity. This evolution was influenced, notably by Taylor's (1905) analysis of scientific management <sup>(2)</sup>, Gantt's (1915) work on structure loads, Fayol's (1916) work, and the innovations in General Motors' management (1923).

After the industrial revolution, and particularly after World War II, a new type of control developed in all organizations, in parallel with the old one, based on opposite principles. It would be carried out by personnel belonging to the organization and would aim to monitor economic performance. This is the management control in its current sense.

Since the end of the 19<sup>th</sup> century, the evolution of the concept of management control has followed that of the conception of the enterprise.

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<sup>1</sup> Taylorism is named after its developer, Frederick Winslow Taylor, who is also known as the father of scientific management.

<sup>2</sup> Frederick Winslow (Taylor), *The Principles of Scientific Management*, Harper & Brothers, 1905.



## 1.2. Definition of Management Control

Management control is now a common practice in many organizations, and before shedding light on it, it is necessary to define its components: Control / Management.

Control refers to mastering a situation and exerting control over it to lead it towards a desired direction.

Management is the optimal use of scarce resources made available to a manager to achieve pre-established objectives. Based on the foregoing, "the function of management control can be defined as a set of tasks that assess the results of management centers based on objectives established in advance."<sup>(1)</sup>

There are numerous definitions of management control, each developing a particular aspect of this constantly evolving discipline.

Management control is currently considered an essential function for performance management, and some authors have proposed definitions of management control. The first to have theorized the discipline is Robert N<sup>(2)</sup>. Anthony (1965), a professor at Harvard, who defines management control as "*the process by which leaders ensure that resources are obtained and used with efficiency and effectiveness to achieve the organization's objectives.*"

The role of management control is then to quickly alert if the objectives are not being achieved in order to trigger corrective actions. Alazard and Sabine define management control as a science of choice and action, which consists of driving an organization using numerous techniques and approaches to aid in decisions<sup>(3)</sup> According to A. Khemakhem, "management control is the process implemented within an economic entity to ensure the efficient and permanent mobilization of energy and resources in order to achieve the objective pursued by this entity"<sup>(4)</sup>.

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<sup>1</sup> Chenhall, R. H. (2003). Management control systems design within its organizational context: findings from contingency-based research and directions for the future. Accounting, organizations and society,

<sup>2</sup> ANTHONY (R.N): « planning and control system », HARVARD UNIVERSITY, 1965.

<sup>3</sup> ALAZARD C et SABINE S: « contrôle de gestion », édition DUNOD, Paris 2001, p25.

<sup>4</sup> KHEMAKHEM(A), « Introduction au contrôle de gestion », Edition Dunod, Paris-Montréal, 1971, p10.

One of the most recent and comprehensive definitions is proposed by H. Bouquin, who sees control as: "processes and systems designed to ensure to the managers that the actions falling under their authority have been, are being, and will be implemented in accordance with the entrusted objectives, while freeing these managers from directly piloting these actions. Control is primarily intended to be operated automatically." <sup>(1)</sup>

Based on the above definitions, we can conclude that management control is a supporting function aimed at ensuring the verification and/or monitoring, through a set of techniques and tools, that what was planned has been achieved under the predetermined conditions to ensure the overall performance of the company.

### **1.3. Related concepts**

In this section, we will discuss the notions related to the discipline of management control, including internal control, internal audit, and external audit.

#### **1.3.1. Internal control**

Internal control concerns the establishment of rules, procedures, and their compliance. The Order of Certified Accountants and Chartered Accountants (OECCA) provides the following definition: "it is the set of safeguards contributing to the control of the company. Its purpose is, on the one hand, to ensure the protection, safeguarding of assets and the quality of information, and on the other hand, the application of management's instructions and to promote performance improvement.

It is manifested through the organization, methods, and procedures of each of the company's activities to maintain its sustainability."<sup>(2)</sup>

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<sup>1</sup> Isermann, R. (2011). Perspectives of automatic control. *Control Engineering Practice*, 19(12), 1399-1407.

<sup>2</sup> 2ALAZARD C et SABINE S : op.cit., p25

**Table I - 1: Comparaison between internal control and management control.**

	Internal control	Management control
Nature	A set of securities	A set of procedures and methods to monitor, analyze and correct the management of the company.
Goals	To master the operation of the company: <ul style="list-style-type: none"> <li>• Heritage protection</li> <li>• Information quality</li> <li>• Performance improvement</li> <li>• Application of management instructions</li> </ul>	<ul style="list-style-type: none"> <li>• Design the information circuit to facilitate its circulation</li> <li>• Check if the objectives set have been achieved.</li> <li>• Summarize all the results allowing an overall view of the situation</li> </ul>
Manifestation	Organization and Implementation of the procedure	<ul style="list-style-type: none"> <li>• Budget: preparation</li> <li>• Budget statements by cost or profit center.</li> <li>• Production/monitoring of the analysis of results</li> </ul>

**Source :** Consulting (J), « outils et techniques de contrôle de gestion », december 1986, p. 12

### 1.3.2. Internal Audit

According to the Institute of International Auditors, "Internal audit is an independent and objective assurance and consulting activity that is designed to add value and improve an organization's operations. It helps the organization achieve its objectives by bringing a systematic, disciplined approach to evaluating and improving the effectiveness of risk management, control, and governance processes."

"Internal audit is a tool that adds value to an organization's activities, making it a management tool." <sup>(1)</sup>

### 1.3.3. External Audit

External audit is an independent function of the company whose mission is to certify the accuracy of accounts, results, and financial statements; and more specifically, if we accept the definition of auditors: to certify the regularity, accuracy, and faithful image of accounts and

<sup>1</sup> BERTIN E, « Audit interne : enjeux et pratiques à l'international », organisation edition 2007, P16

financial statements <sup>(1)</sup>. This function is carried out by independent firms, auditors, or large national and international firms, and does not always coincide with all the activities of the firms.

The audit committee is chosen by the general assembly of shareholders, who mandate it to present a detailed report on the reliability of the accounting balance sheets presented to it.

The auditor is required to compile a file for the audited accounts in order to express an objective opinion.

The work of an auditor involves four classic phases:

- ✓ General study of the company
- ✓ Evaluation of the company's internal control
- ✓ Examination of the company's accounts
- ✓ Writing a detailed report.

## **2.Levels, positioning, and approach of management control:**

The levels, positioning, and approach of management control determine the effectiveness and efficiency of an organization's decision-making and operations.

### **2.1 Levels of management control**

Management control systems are designed to ensure the effectiveness, efficiency, and economy of the entire management process. In this regard, control is expressed at three levels <sup>(2)</sup>:

- ✓ Strategic control: Ensuring the relevance of long-term strategic choices
- ✓ Management control: Ensuring the relevance and monitoring of operational plans
- ✓ Operational control: Ensuring the effectiveness and efficiency of operations.

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<sup>1</sup> Simon, J., Hatherly, D., Porter, B. (2014). Principles of External Auditing. Royaume-Uni: Wiley.

<sup>2</sup> KEISER(A), « contrôle de gestion », Edition ESKA, 1999, P16

### 2.1.1.Strategic control

This allows management to understand the nature of the assumptions that determine the activities and structures of the company over the long term, which are deemed most suitable for achieving its objectives.

### 2.1.2.Management control

This allows management to ensure that the plans of the units are consistent with those of the company and that, in the short term, they are consistent with the strategic plan. It is also the system that encourages each manager to manage the ksf in the direction required by the strategy and allows them to compare the progress of their actions to the objectives of the short-term plan and identify the cause of any divergences in order to deduce the nature of the measures to be implemented.

### 2.1.3.Execution control (or operational control)

This allows each delegate to ensure that the scheduled tasks are carried out in accordance with the rules and that the delegators have the safeguards that dispense them from verifying the details of these tasks.

**Table I - 2: Levels of management control**

Control level management system	Managers Concerned	horizon	Type of System	Tools	Repositories
Strategic	Executive Management	Several years	Planning decision support system of communication and motivation	plan	- Efficiency -Overall profitability -Satisfactory level
Management	-Department management: -Factory -Zone	One and many years	Planning decision support system of responsibility center	Budget programs	-Efficacy -Efficiency -Optimum
Operational	-Heads of service -Team	Less than a year and day by day	Team mobilization system	-Standards -Dashboards -Gaps	-Compliance with rules -Standards

Source : DAYAN (A), « *Manuel de gestion* », volume1, 2e édition, Ellipses, 2004, p820

## 2.2. Positioning of management control:

There are no rules and norms for positioning management controllers in the organizational chart of an organization, since numerous contingency factors related to size, nature of power, and activity condition their place. It is possible to identify a number of criteria that influence the power relationship established between the controller and management: authority, image, influence, sanction, information, and time. These power sliders (according to Bouin and Simon) are integrated based on three components of power: intrinsic power, willingness to use this power, and ability to exercise it. Thus, it appears that different attachments are possible <sup>(1)</sup>:

**To the CEO:** This is a strong signal to link management control and strategy and give it a certain power and legitimacy. This position is justified by the extent of its strategic and operational scope. It also denotes a more important role than that of the CFO.

**To the CFO:** This position illustrates a certain dependence of the management controller on the CFO, which can harm communication with other services and restrict its scope to a more strictly financial domain, favoring accounting information or undermining more operational information (quality, time, etc.).

**At the same level as other departments:** This position gives equal place to all departments below the CEO, which can facilitate exchanges between departments and give the controller equal power to that of other departments.

In these small structures, the controller can also be the CFO and administrative director.

In decentralized structures (subsidiaries, profit centers), the management controller may also be attached to the head of the base entity, in terms of hierarchy, and to the central management controller, in terms of function. Regardless of his position, the management controller must be able to be on the field, listen, and communicate with all services and all hierarchical levels, and be the internal consultant for the entire organization.

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<sup>1</sup> ALAZARD C et SEPARI S, op.cit., p31.

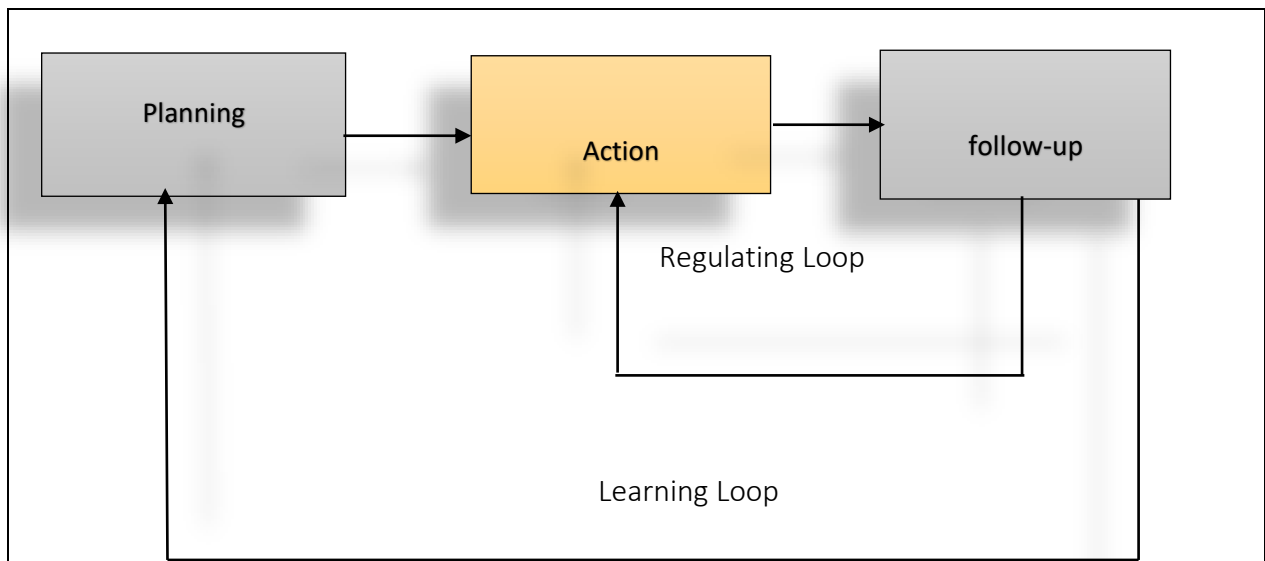
### 2.3. Management control approach

To build a management control system, clarifying objectives is essential for performance management. If serious reflection has already been carried out in the past, it is necessary to fight against its obsolescence by regularly reintegrating the relevance of objectives for the future in order to remain in phase with environmental solutions; this reflection on the mission and long-term objectives is called strategic planning.

Once the nature of the objectives is clarified, it is necessary to define the expected level; it is the controller who will constitute the gauge against which the results will be appreciated. However, before this, and in accordance with the principles of anticipation of the company's CEO to determine objectives, he will determine the degree of pressure imposed on the company.

Identifying the major issues of the company will also help to make certain operational choices in the construction of management tools; for example, the establishment of management accounting <sup>(1)</sup>.

**Figure I - 1 : Management control process**



Source : GIRAUD (F), SAULPIC (O), NAULLEAU (G), DELMOND (M-H) et BESCOS (P-L),  
« Contrôle de gestion et pilotage de la performance », Montchrestien edition, PARIS 2002, p 23.

<sup>1</sup>GIRAUD F, SAULPIC O, NAULLEAU G, DELMOND (M-H) et BESCOS (P-L), « Contrôle de gestion et pilotage de la performance », Montchrestien édition, PARIS 2002, p 23,24.

### **2.3.1. Planning phase**

#### **A- Definition of the sequencing of objectives over time**

Management control will stagger achievements over time by breaking down long-term objectives into more tangible intermediate objectives to illuminate the path; strategic planning will be relayed by an operational plan, which breaks down medium-term objectives (between 3 and 5 years), then by a budget, which continues this breakdown in the short term (generally 1 year).

#### **B- Selection of action plans consistent with the objective**

This step will be achieved through the coherence of resources used with the targeted objectives (a trade-off between possible action plans).

#### **C- Adjustment of resources**

Planning involves anticipating the resource needs induced by objectives and action plans, avoiding insufficient resources as well as misaligned resources, which could prove costly for the company. Planning is a difficult exercise, particularly when planning in an uncertain and changing environment, and determining objectives relies on assumptions that could be invalidated later on, such as general economic growth potentially being lower than expected. Additionally, the choice of a strategy and corresponding action plans requires a good understanding of the key factors for their success, and errors are possible given the instability of the environment. The evolution of objectives and action plans is essential; this is what is called a "learning loop."

### **2.3.2. Measurement and analysis phase of results**

After anticipating the corresponding objectives and action plans, performance may differ from what was envisioned, especially if action plans are not correctly implemented or if unforeseen events arise. Thus, tracking the results obtained and regularly comparing them with objectives is necessary to react in case of deviation. There are several methods to measure the gap between forecasts and achievements, or "variances," and to decompose them into sub-variances to identify the causes of any deviation and guide corrective actions. To be both faster and more operational, this process is supported by performance-enhanced modeling, such as the dashboard. The dynamic



of management control thus includes two complementary movements, where the construction of tracking tools differs according to the logic preferred by each movement.

#### **A- An implementation process**

It corresponds to loop <sup>(1)</sup> of regulation to successfully carry out predefined action plans; the tools used in this case must above all facilitate the making of corrective decisions, so that the information they provide must be targeted towards objectives, fast, and operational.

#### **B- A diagnostic process**

By regularly questioning the relevance of plans, both in terms of targeted objectives and action plans to achieve them, it also corresponds to the learning loop. The tools in this process must be open to the environment, offer the richest and most in-depth analyses possible. There can be a tool that serves both functions, but it must take different configurations.

### **3. Objectives, missions, and limits of management control**

Management control aims to ensure organizational goals are met, missions are fulfilled, while respecting the limits of authority and resources

#### **3.1. Objectives and missions of management control**

The main objective of management control is to "drive the performance of the company" through an improvement process dependent itself on several secondary objectives:

- **Definition of the strategy:** after a SWOT analysis conducted by the management controller, the manager will be able to establish an adequate strategy to achieve the company's goals;
- **Strategic planning:** the management controller identifies short-term objectives to bring them closer to the operational level;
- **Budgeting:** the management controller calculates the expected resources to carry out the company's operational activities in the short term.

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<sup>1</sup> GIRAUD F, SAULPIC O, NAULLEAU G, DELMOND (M-H) et BESCOS (P-L), op.cit., p27-28.

- **Evaluation of Costs:** it measures all costs to understand the company's trend towards forecast and the market, which helps in decision making (such as changes in selling prices, etc.);
- **Budgetary Control:** it involves controlling the execution of the budget through a comparison between the budget forecasts and actual results to identify all variances and analyze them;
- **Contribution of Corrective Measures:** management control consists of correcting things in accordance with strategic objectives through corrective actions and even preparing preventive actions.

In parallel, management control has missions closely linked to these objectives, which are summarized according to the different phases of management control:

- **Finalization:** aligning the organization's goals and defining execution control methods (e.g., which inventory management model should be used?);

-Organizing the selection of annual objectives, planning, and budgeting for the company, its units, and managers to ensure they are consistent with the strategy,

-Minimizing conflicts between individual objectives or different parts of the company and the overall objectives of the company;

-Verifying that managers are encouraged to follow the strategy, particularly through a consistent evaluation of their performance and an adequate motivation system;

- **Piloting:** ensuring the necessary hierarchical and horizontal coherence, animating the piloting process to encourage managers to make desired decisions by organizing the information system;
- **Post-Evaluation:** verifying the performance of the execution control, even though it relies mainly on automation;
- **Reaction:** analyzing results and proposing corrective measures. In conclusion, according to H. Bouquin, we can identify the essential criteria for the successful implementation of management control missions:

- Support from management so that management control is not perceived as a mere surveillance system but as a vigilance system;
- Articulation between short-term choices and medium-term visions should be the dominant concern when developing tools, rules, and procedures; otherwise, management control will be a mere short-term pilot system;
- The fairness and efficiency of management criteria and performance measures are necessary conditions for the acceptance of the system by the managers concerned;
- A periodic audit of the control system is desirable because the sometimes rapid evolution of hypotheses about the environment and strategies can challenge the decision-making structure and certainly the systems.

### **3.2.Limits of management control**

There are three fundamental limits to management control <sup>(1)</sup>:

- Not everything can be measured at a reasonable cost, yet the system must still be piloted. Management control is not a panacea. Once an indicator is chosen, it quickly becomes an end in itself, susceptible to all sorts of manipulations. This limits the trust that can be placed in the management control system, even if all sorts of parades can be put in place (Renewing the indicators used, keeping them confidential, etc.). And it induces stress, particularly when the indicators are poorly chosen and lead to impossible demands.
- Managers should not rely solely on management control indicators, but also regularly observe what is happening on site in the company's units and with customers, as indicators do not detect everything.

On the other hand, it is often difficult to leave management control in its place. Management control, at the crossroads of many functions, can quite easily drift under the influence of its own tendencies, context, and the pressures of other actors. It can thus be limited to formal and nitpicking control, become an internal inspection body, or provide advice and assistance in decision-making,

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<sup>1</sup> Otley, D. (1999). Performance management: a framework for management control systems research. *Management accounting research*, 10(4), 363-382.

economic analysis, or even take on operational responsibilities, or occupy more specific functions related to another form of profession, nevertheless quite close: internal audit.

## Section 02: Management Control Tools

It is important for the efficiency of an organization and the quality of its management to find the best complementarity and coherence between the tools used for steering, which are:

- **Predictive tools:** they study the future in terms of environmental opportunities and expertise.
- **Realization tracking tools:** they make it possible to compare results with objectives, interpret gaps and take corrective measures.
- **Support tools:** they observe performances and tend to provide explanations.

### 1. Predictive tools

Their objective is to guide the choice of the company's strategic axes, its general objectives and the determination of economic assumptions. This allows the management controller to:

- Build a field of action for each entity of the company.
- Anticipate crisis situations and consider solutions (recovery measures)
- Justify budget overruns

The predictive instruments are:

#### 1.1.Planning

Planning is an organizational anticipatory approach linked to the idea of management. This concept is composed of three notions, whether in the long, medium or short term, as follows:

##### A. Strategic planning

Strategic planning takes up the key points of the strategy, namely:

- the company's markets/products/technologies;
- its objectives: quantified goals, for example, a market share percentage...;
- the means to achieve them: internal growth, external growth, geographical areas to be favored...

It retraces the various desired stages of the company's future. Its horizon has been considerably reduced with the impact of globalization: from 5 to 10 years in the 1980s, it is now very often reduced to a horizon of 3-5 years.

Having been developed following a precise study of the company's current strengths and weaknesses and its environment, the strategic plan integrates the notions of "Desirable" and "Possible" into a coherent and realistic whole. In this respect, it is completely different from foresight, which imagines the future, and whose horizon is much further away.

Expressing the main lines of an action plan that extends over several years, its form is varied and the objectives are not very detailed.

According to Peter Drucker, strategic planning is the content process of entrepreneurial decision-making that involves risk-taking and a greater knowledge of their future evolution. It then makes it possible to measure the results of these decisions against forecasts through organized and systematic feedback <sup>(1)</sup>.

### **B. Operational planning**

Operational planning is developed in agreement or on the proposal of responsibility centers.

It represents, over a horizon of two to three years, the practical modalities of implementing the strategy. This programming is articulated, for each function, into:

- Planning of actions;
- Definition of responsibilities;
- Allocation of financial, human and/or technical resources.

It leads to considering the near future of the company from the combined perspectives of its viability, profitability, and financing. This is why it is sometimes subdivided into several partial plans: investment plan, financing plan, forecasted "summary documents," and human resources plan <sup>(2)</sup>.

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<sup>1</sup> DRUCKER (P), «what strategic planning is », management tasks ,responsibilities, practices, Heinemann 1973,p125

<sup>2</sup> ALAZARD C, SABINE S, opcit p232-233

It constitutes a necessary step between the strategic plan and the budgets that organize current activity. The links between these different documents vary according to the nature of the company's planning; it can be:

- integrated, and in this case, the development of plans is joint, as well as their updating;
- not linked, and this may be the case for SMEs that determine certain strategic axes and use budgets as the only element of future programming

### **C. The annual action plan**

The annual action plan is the starting point for any active policy on organization and well-being in the workplace. It must contain the measures and means to achieve the set objectives and the developed work themes that must be carried out and meet the needs of workers.

The annual action plan is a prevention tool adapted to the company. Its development results from negotiation between the employer and the worker representatives of the work prevention and protection committee (CPTT). This plan has the particularity of entering into force during the calendar year following its drafting <sup>(1)</sup>.

The employer must absolutely allocate the necessary resources to implement the specific measures mentioned in this plan and must integrate, not dissociate, workers' well-being issues from other company issues. Meanwhile, workers will demand specific implementation deadlines for programming the human and financial resources necessary for sustainable improvement of working conditions.

### **1.2. Budget management**

Budget management is one of the management control tools; it is a predictive management modality that results from the definition of objectives, reflecting what the company wishes to do or estimates it can do<sup>(2)</sup>. Managers who have understood that success depends on budget management guarantee themselves the best chances of success and efficiency. This practice is used on a larger scale (within a company or a state) because it allows for better functioning and management.

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<sup>1</sup> Idem p.238

<sup>2</sup> Shim, J. K., & Siegel, J. G. (2011). *Budgeting Basics and Beyond*. John Wiley & Sons. p.57

### **A. Forecasting and budget development**

Once the economic studies phases are completed and objectives are set, the company starts by establishing activity forecasts for the coming year. In the face of these, it predicts all the means it needs to be able to achieve them.

The mobilization of all the company's managers at the same time makes the budget a collective work. But to give themselves the best chance of obtaining everyone's adherence, it is essential that the objectives meet a number of qualities. They must be ambitious but realistic, clear, precise, and quantified, accepted by those concerned, and eliminated in time and space.

The budget development, therefore, follows a logical plan that every company associates with. This plan takes place in several stages of the "budget process." First, the company's leaders must have as accurate knowledge as possible of the existing situation. It is therefore essential to have the most up-to-date forecasts possible for the end of the current year.

Before starting to think about the future, it is essential to have as precise an estimate as possible of the latest achievements. Once the most current data is known, the company then defines its strategy around three axes:

- Development of sales, market share, new customers, profitability, etc.
- Reduction of cash requirements, customer returns, inventory, etc.
- Maintenance of a high level of quality, profitability, leadership, etc.

So, regarding the budget, the emphasis is placed more specifically on one factor or another, either depending on the economic and competitive environment or based on past results.

## **2. Tools for monitoring implementation**

Tools for monitoring implementation help track progress, identify gaps, and ensure effective execution of plans and strategies

### **2.1. General accounting**

General accounting is a representation of the situation of the company and its situation at a given moment. It reports the results of a period (Income Statement) and the situation of the assets



at the end of the period (Balance Sheet). It has the particularity of being confusing for operational managers, exhaustive and complex since it is kept by economic and tax legislation, which makes it heavy and late, but regular and sincere <sup>(1)</sup>.

## **2.2. Analytical accounting**

Analytical accounting is a "data classification mode" (PC) which allows charges and revenues that general accounting has recorded by nature to be reclassified by destination or function, in order to analyze them for a given period. It is considered an essential means for optimizing resource allocations in large and medium-sized enterprises, and even small ones <sup>(2)</sup>.

### **A. Objectives of analytical accounting**

The essential objectives of analytical accounting are:

On the one hand:

- Knowing the costs of different functions of the company,
- Determining the evaluation bases of certain elements of the asset in the balance sheet (stocks and fixed asset productions),
- Explaining the results by sector of activity by calculating the complete costs of products to compare them with their selling price,

On the other hand:

- Allowing the establishment of forecasts of charges and revenues,
- Providing the necessary information for management and all elements to illuminate decision-making.

### **B. The operating mode**

The operation of analytical accounting includes two essential phases:

- The allocation of charges and revenues recorded in general accounting to analytical accounts,

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<sup>1</sup> GERVAIS.M, Contrôle de gestion, Ed. Economica, 6th edition, Paris, 1997, P.27

<sup>2</sup> ALAZARD C, SEPARI S « contrôle de gestion manuel et application, 3rd édition, Dunod, Paris1996, p64

- The internal movement of charges includes allocations, imputations, internal services, and incorporations.

This movement constitutes a precise path of internal flows with the aim of arriving, through stocks and costs by function and operation, at costs by products and activity results.

Analytical accounting must then provide all the elements that facilitate decision-making. It is the means of having, thanks to specified and permanent procedures, periodic and comparable analysis elements over time<sup>1</sup> (1). The analytical accounting system depends on several parameters:

- The characteristics of the products,
- The structure of the company,
- The information needs that the system must meet.

### **2.3. Budget control**

According to Henri Bouquin [2001], "the budget is (or should be) the accounting and financial expression of the action plans chosen so that the objectives and means available in the short term (generally the year) converge towards the achievement of operational plans". Budget control integrates budgets and compares "the real state of the system with its planned state" (2).

Budget control allows for the comparison of actual results with forecasts, the detection of significant gaps, their analysis, and corrective measures, grouping the main aspects of management control.

Budget control is not just a synonym for budget control but also a verification tool. It allows for verifying the performance of different centers of responsibility.

The objective of budget control is to improve the economic performance of the company.

Indeed, budget control allows managers to act faster and better on controllable variables.

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<sup>1</sup> BESCOS (P-L), « contrôle de gestion et management » 1995, p232-233.

<sup>2</sup> BERNLAND N, « le contrôle budgétaire », 2002

Budget control makes it possible to manage in advance and anticipate the observed gaps and to understand how the results are generated. The budget is then considered an instrument of coordination and communication.

Finally, the implementation of management control, and more specifically budgetary control, requires the structuring of the organization, the delimitation of responsibilities, and above all:

- To identify and distinguish between the control system and the controlled systems;
- To make the control process live as a tool that is acceptable and understandable to everyone.

### 2.4.Reporting

"Reporting" is a set of documents whose purpose is to inform the hierarchy of large decentralized units or groups of the results of responsibility centers and the means implemented (1).

The reporting is a set of performance indicators built after the fact, periodically, in order to inform the hierarchy of the unit's performance.

In the context of decentralized management, reporting allows checking that responsibility centers comply with their contractual commitments.

#### 2.4.1.Types of Reporting

There are several types of reporting (2):

- A. Statutory reporting:** primarily intended for third parties of the company (bankers, real or potential shareholders, financial analysts, State, etc.), it also offers the leader a first level of information on the group's performance (activity and margin indicators, the frequency of production of information is not only annual, but quarterly or even monthly, due to pressure from financial markets).

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<sup>1</sup> DORITH B et GAUJET C, contrôle prévisionnel et mesure de la performance, Dunaux edition, paris, 2007, p.294.

<sup>2</sup> GIRAUD F, SAULPIC O, NAULLEAU (G), DELMOND (M-H) et BESCOS (P-L), « Contrôle de gestion et pilotage de la performance » ED GAULINO editor EJA, PARIS 2002, p 124.

**B. Management reporting:** its function is to provide management (general management and major functional and operational direction) with the management information it needs to drive activities. It is generally provided by the management control function and is based on the operational structure of the group, which is not necessarily aligned with the legal structure.

### **2.4.3. Purpose of Reporting**

Reporting allows:

- To associate contractual indicators;
- To quickly alert on significant deviations;
- To constantly frame the likely year-end results.
- Organize upward management dialogue;
- Create team cohesion around common goals.

## **2.5. The dashboard**

### **2.5.1. Definition of the dashboard:**

According to Claude ALAZARD and Sabine SEPARI, a dashboard is a set of indicators organized into a system followed by the same team or the same manager to help decide, coordinate, and control the actions of a service.

The dashboard is a communication and decision-making instrument that enables the management controller to draw the manager's attention to the key points of his or her management in order to improve it <sup>(1)</sup>.

The dashboard is a set of essential indicators and information that provide an overview, identify disruptions, and make decisions to guide management towards achieving the objectives derived from the strategy. It should also provide a common language for the various members of the company.

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<sup>1</sup> ALAZARD C, SEPARI S; « contrôle de gestion », Dunod edition , 5th Edition, p 591

In short, we can conclude that a dashboard is a tool that is best suited for quick, permanent monitoring of a set of financial, quantitative, and qualitative variables.

### **2.5.2. Objectives of the dashboard**

A management dashboard has the following objectives <sup>(1)</sup>:

- It is a working document that allows the results of corrective actions to be assessed.
- It identifies the weaknesses of the company and provides a basis for decision-making.
- It allows managers to take action where needed and at the right time.
- It enables managers to evaluate the performance of their subordinates.
- It ensures necessary inter-center solidarity. A mission can be the subject of shared responsibility between different departments. Thus, the necessary decisions must be made jointly.
- It promotes communication among different leaders.
- It is a steering tool that synthesizes information provided to each manager.

### **2.5.3. The role of the dashboard in the company**

The main role of the dashboard remains to alert managers to their management. It must implement corrective actions that are rapid and effective <sup>(2)</sup>. This speed and frequency of publication explain why Anglo-Saxons often refer to the information collected in dashboards as "flash" information <sup>(3)</sup>. The dashboard is, in its very conception, an instrument of control and comparison. But the information system makes it a tool for dialogue and communication as well as an aid to decision-making.

#### **A. Tool for measuring performance against objectives**

It highlights physical results (quantities manufactured, sold, etc.) or financial results (turnover, margins, net profit, etc.) in relation to pre-established objectives that serve as a reference. The difference constitutes a gap expressed in absolute and relative value (%).

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<sup>1</sup> SELMER C, concevoir le tableau de bord, Edition Dunod, Paris, 1998, p.5.

<sup>2</sup> Dover, C. (2004). How dashboards can change your culture. Strategic Finance, 86(4), 42.

<sup>3</sup> ALAZARD C, SEPARI S ; opcit , p 552

### **B. Diagnostic tool**

It draws attention to "abnormal" phenomena, that is, those that are beyond a defined tolerance threshold in absolute or relative value for each correctable indicator by simulating their impact on results. The dashboard is generally an excellent revealer of weaknesses in the organization (duplication of effort, insufficient definition of responsibilities, etc.).

### **C. Tool for dialogue and responsiveness**

From its publication, the dashboard must serve as a dialogue between different hierarchical levels during the management committee or a specialized meeting.

Each manager then comments on their results, explains the causes of variances and the measures they have taken at their level. If necessary, they ask for directives or additional resources. The general management must ensure the consistency of corrective actions and not compromise the search for an overall optimum through partial optimizations.

### **D. Tool for motivating managers**

The dashboard constitutes a mirror that reflects the performance of managers and their ability to meet the challenges posed to them. It creates a sense of progress and progress towards stimulating goals, thus promoting the motivation of individuals and the cohesion of teams.

## **2.6. The information system**

The information system provides the necessary information for the implementation of the control process, performs the requested processing and thus contributes essentially to the "information-decision-control" relationship.

The information system is a stake in the efficiency of organizations and a whole socio-economy has been built around it, with aspects such as: the modality of relative or absolute outsourcing of the information system; the capitalization and sharing of information with

knowledge management <sup>(1)</sup>, communication and distance cooperation with reference to network organization, process modeling, or software performance that goes from specificity to generality.

The classic representation of the information system distinguishes three subsystems:

- The operating system consists of all resources related to the activity;
- The steering system includes all agents responsible for the conduct of operations and mobilization of necessary resources;
- The information system seen as a communication tool between the operating system and the steering system.

The information system relies on the "formal-informal" tension because it is organized around formal information (recoverable through a materialized support) while ignoring the informal dimension of information and the representations of agents.

The formal information system is therefore the essential object of developments related to the relations between the information system and organization. It is designed in the same way in all organizations and also contributes to the fact that organizations tend to resemble each other. This often leads to the implementation of unified management information systems and, through ERP (Enterprise Resource Planning) software, to standardized information systems between organizations.

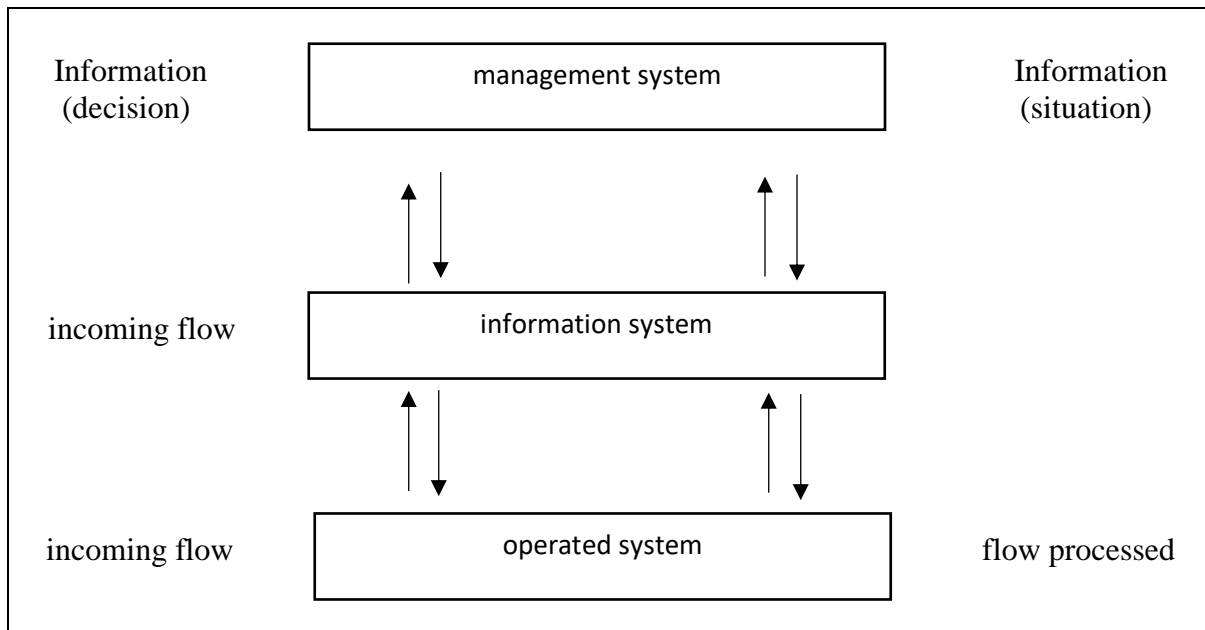
Therefore, the information system constitutes a real socio-technical system. As such, and in a very general way, the information system is seen as the combination of the following three components: information flows, technical processes and organizational agents.

ERP (Enterprise Resource Planning) today appears as a privileged reference not only in terms of information system but also as the essential instrument of a resource management control system by offering a modular architecture of the information system and a unique referential to all components of the organization.

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<sup>1</sup> FRERY F , GERRY J,SCHOLES K WHITTINGTON R , “stratégique”, 7th Edition, Pearson Education, 2006, p, 167

**Figure I - 2 : Information System Management**



Source : Chiapello (E), « Le contrôle de gestion : Organisation, outils et pratiques », 3th Edition, Dunod, p 209

### **3. Supporting Tools**

These are the tools and analysis methods invented by management control researchers and used in several modern companies with the objective of assisting managers during the implementation of corrective actions.

**3.1. Reengineering:** is "a fundamental rethinking and radical redesign of operational processes to achieve spectacular gains in critical performance areas, such as costs, quality, service, and speed"<sup>(1)</sup>.

**3.2. Benchmarking:** Over the past decade, techniques for comparing and improving performance through ratio analysis have been developed and partially renewed under the name of benchmarking. Benchmarking <sup>(2)</sup> is a continuous and systematic process of evaluating products, services, and methods against those of the most serious competitors and companies recognized as leaders or market leaders.

<sup>1</sup> M. HAMMER et J. CHAMPY : « Le réingenering » Ed. DUNOD, paris 1998, P.41

<sup>2</sup> Claude ALAZARD et Sabine SÉPARI : DCG 11 Contrôle de gestion manuel et applications, Ed DUNOD, 2nd edition, paris 2010, P.688.



### **Conclusion:**

Management control is constantly evolving to meet the information needs of managers whose requirements change according to the economic and social context. Management control is the process by which leaders ensure that resources are obtained and used efficiently and effectively to achieve organizational objectives. Management control relies on tools to accomplish its mission within the organization, and these tools must adapt to the organizational context. Management control enables the company, through its various tools, to assess the relevance, efficiency, and effectiveness of decisions made to achieve set objectives. In summary, it allows for verification and control of the progress of achievements, comparison between achievements and forecasts, and then determination of the cause and corrective measures if the company has not achieved its objectives.

Management control allows for the evaluation of efficiency, synergies, and flexibility but is not intended to evaluate profitability (this generally remains in the domain of financial analysis except in financial institutions where roles are often confused). There is no universal management control that can be implemented by everyone. Each organization must design its management control according to its requirements.

This chapter has allowed us to understand the different concepts related to management control. Following a literature review, we can say that management control is a key function in the company.

## **Chapter II: Management control serving performance**

In the first chapter, we discussed management control which represents the first aspect of our theme. In order to move forward and design elements of response to our research problem, we deemed it useful to devote the second chapter to the performance of the company, which is at the heart of our theme. We will present the second chapter by covering the key concepts of performance , measurement and evaluation of performance and the performance of the company and management control.

## Section 01: Key Concepts of Performance

The term "performance" is commonly used in the assessment of companies, particularly in management control: overall performance, financial performance, performance indicators, etc. The performance of a company is based on the "value-cost" pair, both of which are inseparable because the goal is not to minimize costs or maximize produced value, but to optimize the relationship between the two.

### 1. Definitions, Related Concepts, and Approaches to Performance

Performance can be defined as the execution of tasks and achievement of goals, often influenced by motivation and skills

#### 1.1. Definition of Performance

Etymologically, performance comes from the Old French word "performer," which meant "to accomplish, execute" in the 13th century. In the 15th century, it appeared in English with "to perform," from which the word "performance" derives with a broader meaning. It refers to both the completion of a process or task and the results obtained, as well as the success that can be claimed <sup>(1)</sup>.

Annick Bourguignon notes that the word "performance" belongs to the family of "suitcase words" and therefore has a wide range of interpretations. Bourguignon's<sup>(2)</sup> approach is to show how the idea of performance remains vague to meet political, social, and ideological functions. In practice, however, it is a multidimensional concept that overlaps with several meanings. He defines it as follows: "Performance is the achievement of organizational objectives, regardless of the nature and variety of those objectives. This achievement can be understood in the strict sense (result, outcome) or in the broad sense of the process that leads to the result (action)." He adds that in the field of management, the meaning of performance refers to multiple signifiers that revolve around the following three primary meanings:

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<sup>1</sup> [http://www.creg.ac-versailles.fr/IMG/pdf/Management\\_de\\_la\\_performance\\_des\\_concepts\\_aux\\_ouils.pdf](http://www.creg.ac-versailles.fr/IMG/pdf/Management_de_la_performance_des_concepts_aux_ouils.pdf) consulté le 15/03/2023

<sup>2</sup> BOURGUIGNON A : « Performance et ressources humaines, ouvrage collectif, édition economica, paris, 1996, p20

- A. Performance is success :** performance does not exist in itself; it depends on the representations of success, which vary according to the companies and the actors involved.
- B. Performance is the result of action :** in contrast to the previous meaning, this one does not contain a value judgment. The measurement of performance is understood as the ex post evaluation of the results obtained.
- C. Performance is action:** in this sense, performance is a process and not a result that appears at a moment in time. It is the implementation of a competence that is only a potentiality.

By combining these three meanings, performance can be considered as the action that leads to success, following a management process that defines and communicates the expected results, which will be measured afterward.

According to Philippe LORINO, "Performance in a company is everything, and only what contributes to improving the value-cost pair. Conversely, what contributes to reducing costs or increasing value, separately, is not necessarily performance"<sup>(1)</sup>. This definition highlights the inseparable elements of cost and value according to LORINO.

An enterprise is said to be performing if and only if it manages to have a positive influence on both of these variables at the same time.

As for KHEMAKHEM <sup>(2)</sup>, he also took into account the concepts of efficiency and effectiveness, defining the performance of a responsibility center (workshop, service, unit, company, branch, etc.) as the efficiency and productivity with which that center achieved the objectives it had accepted. The mention of these words is enough to clarify the meaning given to performance in management control.

So, for him, business performance is the relevant way of achieving a set objective. In other words, a company is said to be performing well if and only if it is effective and efficient; it is effective if it achieves all its goals, and it is efficient if it uses the appropriate means at the lowest cost.

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<sup>1</sup> LORINO (P), Méthodes et pratiques de la performance, Edition d'organisation, Paris, 1990, p.18

<sup>2</sup> KHEMAKHEM (A), « la dynamique du contrôle de gestion », Edition Dunod, 1992, p.311.

## 1.2. Notions related to performance

The usual confusion regarding the terms efficiency, effectiveness, and relevance creates some difficulty in representing the concept of performance. It is essential to distinguish between efficiency, effectiveness, and relevance. Although they are three aspects of a company's performance, these three concepts are not synonymous.

### A. Effectiveness

The concept of effectiveness is the core of any performance evaluation process for an organization, regardless of its type of activity. Therefore, it is important to know whether the company is achieving its objectives (quantitative or qualitative) in a satisfactory manner, taking into account the diversity of indicators.

Effectiveness can be defined as:

*"The ratio between the results achieved by a system and the objectives pursued. Thus, the closer the results are to the objectives pursued, the more effective the system will be. Therefore, the degree of effectiveness will be used to characterize the performance of a system."* <sup>(1)</sup>

The interest of this concept is to go beyond the measurement of performance solely by profit, which is reserved for commercial organizations with short-term profitability goals and is entirely inadequate for assessing long-term performance for these same organizations and for all those that do not pursue exclusively economic perspectives. Briefly, we can summarize effectiveness in the following formula:

$$\text{Effectiveness} = \text{Achieved results} / \text{Targeted objectives}$$

### B. Efficiency

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<sup>1</sup> DE BOISLANDELLE (H. M), « Dictionnaire de gestion: vocabulaire, concepts et outils »1998,économica, p.140.

In the context of evaluating the performance of a system, regardless of its nature, "efficiency expresses the ratio between the objectives pursued and the means used to achieve them" <sup>(1)</sup>.

Efficiency refers to a company's ability to achieve its objectives with the minimum possible means. Therefore, it reflects the productivity of an entity as it relates the results obtained to the resources consumed. Efficiency is the ratio between the goods or services produced, on the one hand, and the resources used to produce them, on the other. In other words, efficiency refers to a company's ability to achieve its objectives with the minimum means engaged. The concept of efficiency can be summarized in the following formula:

$$\text{Efficiency} = \text{Results achieved} / \text{Means used}$$

From a financial standpoint and according to STERN and AL-ANSARY, efficiency encompasses two concepts:

- **Productivity:** optimization of physical resources utilized.
- **Profitability:** optimization of financial resources utilized.

Both of these concepts are meaningful, representing a liberal perspective on performance. They ensure the sustainability of the activity and the optimization of resources available, in other words, efficiency and effectiveness are emphasized. This means, on one hand, striving to achieve objectives, and on the other hand, optimizing the potential of the company. Alongside this, the control system has become, with the evolution of regulations, a tool for achieving this performance.

**Figure: II - 1 :Components of Performance**



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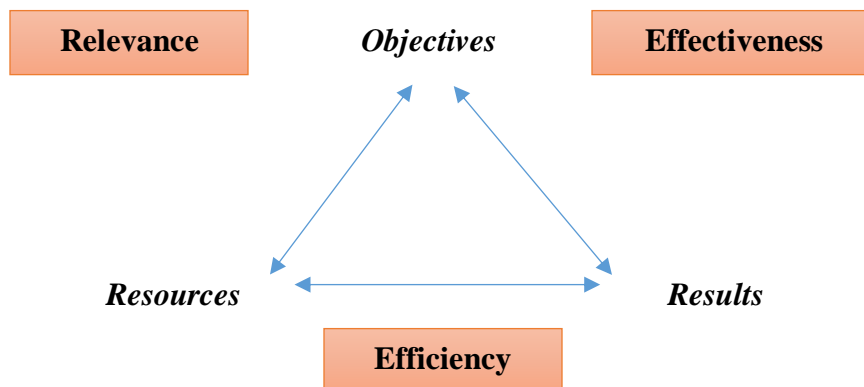
<sup>1</sup> IBID BOISLANDELLE (H. M), op.cit, p141.

**Source :** BOUIN, XAVIER, SIMON, François -XAVIER, « les nouveaux visages du contrôle de gestion », Edition, Dunod, paris, 2000, p74

### C. Relevance

Relevance is a very subjective and difficult notion to measure. However, it can be admitted that relevance is the conformity of the means and actions implemented in order to achieve a given objective. In other words, being relevant means achieving the set objective effectively and efficiently.

**Figure: II - 2: Criteria for performance**



**Source :** DUCROU (J, B), « hachette technique, hachette Livre –Management des entreprises BTS 1<sup>ère</sup>année 2008

### 1.3. Approaches to performance

Approaches to performance encompass the Financial Translation Approach and the Global Non-Financial Approach for effective evaluation and analysis.

#### 1.3.1. Financial Translation Approach

The financial approach to performance consists of asking the question "how can the organization position itself in relation to its shareholders?" by responding with an objective of maximizing profit generated and return on investment.

The measurement system associated with this approach is classical accounting, a modeling that consists of producing a numerical representation of an economic entity <sup>(1)</sup>, and the preferred indicator is the net accounting result.

It is a standardized model made up of conventions shared worldwide, which allows for an objective comparison between all organizations. Officially placing the shareholder, the owner of the firm, as the privileged recipient of the organization's activity, this model also allows for the strategic objective of maximizing profit to be broken down into more operational objectives that are understandable and manageable at a managerial level. Associated with these objectives, the indicators transposed into an operational dimension constitute the "control system"<sup>(2)</sup>; this system must reflect the strategy chosen by the company to achieve its return on investment objective.

The evolution of organizational requirements shows that the financial approach is flawed, not only insufficient for understanding all the challenges faced by the organization, but also designed solely from the perspective of addressing the shareholder first and foremost. Finally, by referring to the perception that the financial approach to performance is more an evaluation of the consequences of past decisions rather than the actual implementation of a control system oriented towards the future <sup>(3)</sup>.

### **1.3.2. Global Non-Financial Approach**

The non-financial approach, actually a mixed approach <sup>(4)</sup>, must compensate for the shortcomings of the exclusively financial approach. In particular, by using systems that integrate indicators other than intermediaries in calculating return on investment, it must allow for the deployment of the organization's strategy in the medium term.

The performance measurement system emblematic of this approach is Kaplan and Norton's balanced scorecard, which models performance according to four axes, including financial

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<sup>1</sup>Rumelt, R. P. (1991). How much does industry matter?. Strategic management journal, 12(3), 167-185.

<sup>2</sup> Eccles (R) , « the performance measurement manifesto » - Harvard business review, 1991 – academia édition, p131-137

<sup>3</sup> V, Pierre, » tableau de bord de gestion et indicateurs de performance »,2ème Edition, presse université, Québec, 1999, P113

<sup>4</sup> V, Pierre, op, cit, P114.



performance, but which also adds customer satisfaction, internal process control, and employee mobilization.

With this approach, managers are best equipped to understand the relationships that exist between various strategic objectives and to allocate the necessary resources optimally according to priorities.

Unlike the retrospective view of the financial approach, the global approach appears much more dynamic, and thanks to indicators observable in real time, or almost, managers are able to evaluate the impacts of decisions taken and to implement corrective actions without waiting for the periodic closure.

## **2. Levels, typology, and forms of performance**

Performance can be analyzed through various levels, typologies, and forms, revealing the intricate nuances of human achievement.

### **2.1. Levels of performance:**

Performance is a complex, multifaceted, and multidimensional concept due to the diversity of the company's objectives and its partners. However, external performance and internal performance can be distinguished.

#### **2.1.1. External performance:**

External performance is the company's ability to meet the objectives of its partners, which can be:

- **Shareholders:** the ability to generate profits and distribute dividends (financial performance).
- **Economic actors** (suppliers, banks, the state, employees): the ability to create revenue and value added (economic performance).
- **Society:** the ability to create jobs, innovate, and respect the environment, etc.

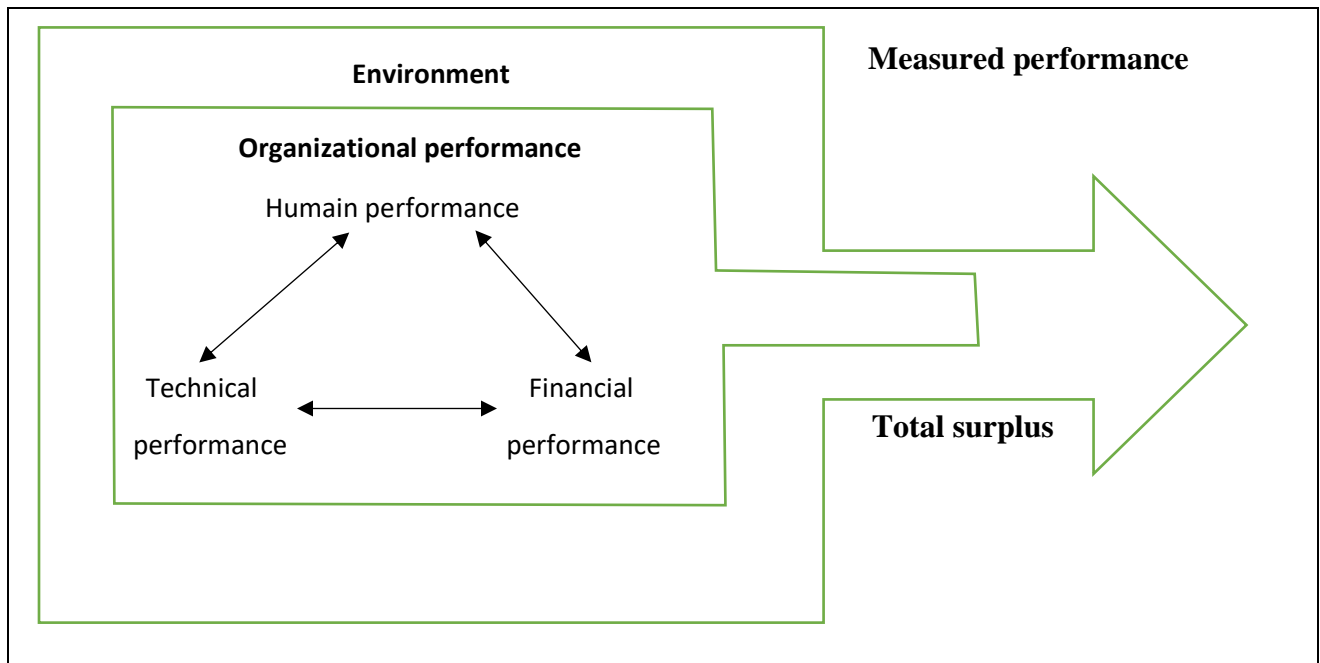
#### **2.1.2. Internal performance:**

Also known as unit performance, it occurs thanks to the company's resources and is essentially the result of the following combination: <sup>(1)</sup>

- **Human performance:** is the performance of individuals who can be considered as a strategic supplier capable of bringing value and achieving competitive advantage through skills management.
- **Technical performance:** is the company's ability to use its technical facilities effectively.
- **Financial performance:** resides in the effective mobilization and rational use of available financial resources.

Internal performance is the company's ability to achieve the objectives set by its leaders. It concerns all personnel in the company and all activities of the company (procurement, production, marketing, administration, etc.).

**Figure: II - 3: Internal Performance and External Performance.**



**Source :** MARTORY (B) « contrôle de gestion, performance sociale », édition Vuibert, 2<sup>ème</sup> édition, Paris, 1999, P. 237.

<sup>1</sup> MARTORY B, « contrôle de gestion, performance sociale », Ed Vuibert, 2eme édition, Paris, 1999, P. 23

## 2.2. Typology of Performance

In recent years, performance has been approached in a more global logic than just being the only assessment of profitability for the company. Thus, three types of performance can be distinguished:

### 2.2.1. Organizational Performance

Organizational performance is a notion that can correspond to a more or less large perimeter and be approached from different angles, as there is indeed a certain diversity in the proposed definitions.

Since its origins, management control has mainly focused on the calculation of costs induced by production processes. Thus, for a long time, organizational performance was assimilated to cost minimization, and many still consider it to be the main objective of management control. If this conception was coherent in the context of the large companies of the early 20th century that initiated the first management control system, it is now insufficient to apprehend the performance of the organization <sup>(1)</sup>

According to the theories of Taylor and Fayol, organizational performance concerns the way in which the company is structured to achieve its objectives and how it manages to achieve them.

Organizational performance is defined by Kalika (1988) <sup>(2)</sup> as:

*"measures directly related to the organizational structure and not to its possible social or economic consequences. These indicators are interesting in that they allow organizational difficulties to be discerned through their early manifestations, before the effects induced by them are felt from an economic point of view."*

He advances four factors of organizational effectiveness: <sup>(3)</sup>

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<sup>1</sup> GIRAUD(F), SAULPIC(S), NAULLEAU (G), DELMOND (M ,H) et BESCOS(P ,L), « Contrôle de gestion et pilotage de la performance », Edition GAULINO, PARIS 2004, p 65

<sup>2</sup> KALIKA, (M), « STRUCTURE REALITE ,DETERMINANT PERFORMANCE » Edition ECONOMICA 1998,p20

<sup>3</sup> [www.creg.ac-versailles.fr/la-performance-globale-et-ses-determinants#outil\\_sommaire](http://www.creg.ac-versailles.fr/la-performance-globale-et-ses-determinants#outil_sommaire), le 27/03 /2023

- **Respect for the formal structure:** non-compliance with the structure announced by management may reflect dysfunction within the organization.

- **Relations between services:** the search for conflict minimization reflects a need for coordination necessary for efficiency.

- **Quality of information flow:** the organization must develop information systems that allow reliable and comprehensive information to be obtained, essential for the proper functioning of the organization.

- **Flexibility of the structure:** its ability to change is a determining factor in adapting to environmental constraints, participation in decisions, employee turnover, and multilateral communication. In this conception, the company's performance results from the value of its organization. The latter is decisive and imposes its requirements on the social system. It structures employment and all positions, which in turn determine professional requirements. In this theory, performance has spontaneously tended to identify with productivity, which itself has been reduced to its apparent productivity version (quantity produced / number of hours worked).

### 2.2.2. Strategic and Competitive Performance

The economic environment in which every company operates is becoming increasingly complex. Competition is intensifying, becoming international, regardless of the sector of activity. New technologies are multiplying and developing; financial markets are very sensitive. Consumers are becoming increasingly demanding. And many other things interfere with the life of the company. All of this accentuates the need for companies to compare themselves with each other. This is called competition.

Strategic performance and competitive performance thus become a fundamental and indispensable notion on which companies must focus to become masters of their market<sup>(1)</sup>. Companies will therefore play on long-term performance, guaranteeing their sustainability and perpetuity. For Michael Porter, the search for performance no longer depends solely on the firm's

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<sup>1</sup> David, F. R., & David, F. R. (2016). Strategic Management: Concepts and Cases. Pearson.P13

action but also on its ability to accommodate, or even appropriate, the rules of the competitive game in a sector.

The nature of the competitive system determines how performance can be obtained, given the modes of competition that are the rule. It is by detecting sufficiently finely the changing characteristics of the competitive systems of each business activity or by anticipating new bases of differentiation (value creation) that companies can appropriate potential sources of performance. Performance can be both the exploitation of existing potential (which allows for maintaining a favorable position) and the development of new forms of competitive advantages by anticipating/constructing the rules of the game that will prevail in the future. Competitive performance largely depends on the strategic analysis of the competitive rules of the game.

Focusing on the quality of the strategy, and therefore the strategist, based on understanding the environment, this approach has spontaneously tended to identify overall performance with competitiveness.

### **2.2.3. Human Performance**

Economic theories assume that each production factor must be used efficiently and optimally in the production process in order to achieve the company's goals<sup>(1)</sup>.

The theory of human capital thus assumes that investment in training negatively or positively influences company performance. Today, human capital is a prime factor of production, and this factor should be considered a source of wealth and a source of company performance. This performance has become a major challenge for companies in an environment marked by instability and uncertainty<sup>(2)</sup>. Skills management is an essential tool for meeting this challenge, as it contributes to raising the level of highly skilled competencies.

It is increasingly recognized that a financially sustainable company is not sustainable if it is not humanly and socially performing. Issues related to skills, initiative, autonomy, employee

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<sup>1</sup> [www.creg.ac-versailles.fr/la-performance-globale-et-ses-determinants#outil\\_sommaire](http://www.creg.ac-versailles.fr/la-performance-globale-et-ses-determinants#outil_sommaire), le 27/03 /2023

<sup>2</sup> Becker, G. S. (1993). Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education. Royaume-Uni: University of Chicago Press.P108

adherence, achievement of objectives, and even to the project and therefore to the company culture, are determining factors.

### **2.3. Forms of Performance:**

Company performance must be overall, as it is essential to take into account all parts of the company according to their expectations, namely: customers, shareholders, employees, suppliers, and also a social environment. For this reason, we will present the different forms <sup>(1)</sup> of performance:

#### **2.3.1. Customer performance:**

With the globalization of markets, customer satisfaction ensures some sustainability of the industrial or commercial sector of the company. This satisfaction requires a significant mobilization of all company resources over a fairly long period of time. The company will have to build loyalty by anticipating their expectations and needs for personalized, quality products and services sold at a fair price. This is referred to as economic performance.

#### **2.3.2. Personal Performance:**

Personnel is an invaluable asset to the company, and in order to innovate and better serve the customer, it is necessary for the company to motivate its employees so that each employee feels involved and responsible for the future of the company.

The company should also develop the potential of its employees, establish a climate of trust and recognition. These actions serve to valorize the place of the human being in the company, which is referred to as social performance.

#### **2.3.3. Partner Performance:**

Companies entrust high-value activities to partners, and these activities represent a significant strategic impact in the value chain of the companies. To maximize the final value, make existing resources profitable, and improve profit, the relationship between companies and partners is not

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<sup>1</sup> FERNANDEZ.(A), « Les nouveaux tableaux de bord des managers », Edition d'Organisation, Paris, 2005, P39

limited to a simple contractual agreement but to a strategic relationship. This relationship is a constant exchange of information between partners and competitors.

#### **2.3.4. Shareholders' performance**

Performance in this case is linked to the satisfaction of these investors because they have shares, so they expect their share of profits. It is qualified as financial performance, and therefore according to the financial markets, the performance of the company is measured by creating wealth for the shareholder.

#### **2.3.5. Public performance**

For the company to be performant <sup>(1)</sup>, it must have a strategic vision that is shared by everyone, employees and managers alike. In other words, it is no longer possible for a company to succeed by prioritizing one economic aspect without taking into account the social aspect. Furthermore, globalization of information and pressures from the surrounding society have made the activities of companies increasingly complex, as several variables such as the environment and labor rights have become integral parts of corporate strategies to operate in their social environment.

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<sup>1</sup> FERNANDEZ.(A), Op.cit, P40

## **Section02: Measurement and evaluation of company performance**

After addressing the basic concepts of performance, we want to present its field of measurement and evaluation.

### **1. The idea of performance measurement**

The idea of performance measurement is also a vague concept. It is important to know on what basis the measurement will be made. Indeed, knowing what is considered to be performant or not requires the definition of precise criteria on which the measurements will be based.

First of all, performance measurement is a relative notion. When evaluating performance, it is important to know what it is being compared to and, above all, on what basis a comparison can be made.

Measurement can, however, be absolute <sup>(1)</sup> or relative. In the case of a relative evaluation, the results obtained will be judged relative to past or external performances of the company. When the evaluation is absolute, it is judged without reference to precise data.

Furthermore, measurement can be quantitative or qualitative, based on numerical data or more subjective characteristics. It is the evaluation method that will determine this characteristic.

#### **1.1. Definition of performance measurement**

"The measurement of a company's performance can be defined as the degree of achievement of a goal obtained by comparing the result achieved with the targeted goal"<sup>(2)</sup>.

#### **1.2. Criteria for performance measurement**

Performance is measured by the degree of achievement of the set objectives. Two main criteria are necessary to measure the performance of a company: quantitative criteria and qualitative criteria.

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<sup>1</sup> LYNCH (R-L) et CROSS (K-F), Measure Up, Yardsticks for Continuous Improvement, Cambridge, Blackwell Business, 1994,p8

<sup>2</sup> LYNCH (R-L) et CROSS (K-F), op.cit, p9.



### 1.3.1. Quantitative criteria

Quantitative measurement of performance often remains the main element guiding the evaluation of the company. Performance evaluation methods are, in fact, built around short-term financial and especially accounting criteria, such as turnover and annual profit <sup>(1)</sup>.

### 1.3.2. Qualitative criteria

Qualitative criteria are non-financial criteria that are increasingly used to measure performance. There are three types of these criteria: commercial and marketing, social, and strategic.

- **Commercial and marketing criteria include:**

- Market share;
- Quality of products and services;
- Quality perceived by customers;
- Customer satisfaction.

- **Social criteria:**

The human dimension represents a guarantee for the future performance of a company. This means that the qualifications and skills of the staff, as well as their motivation, allow the company to improve and increase its performance.

- **Strategic criteria:**

Strategic criteria such as product portfolio positioning (the BCG matrix, Boston Consulting Group) and the study of the strengths and weaknesses of the company based on the key success factors (KSF) of the industry. These criteria are also necessary to measure performance.

### 1.3. Performance indicators

An indicator is information<sup>2</sup> or a set of information contributing to the assessment of a situation by the decision-maker. It allows the measurement of progress towards the achievement of an

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<sup>1</sup> MICHEL BARABEL, « Thèse de doctorat en Gestion ». Sous la direction de Pierre Romelaer. paris, 1999, page 56.

<sup>2</sup> LORINO (P), « indicateurs de performance », sous la direction de BONNEFOUS(C) et COURTOIS(A),) productique- Hermès, paris, 2001, p.25.

organizational or operational objective and alerts the entity's leaders to changes in activity. It is therefore essential to choose the indicators that can correct the current situation and plan for the future. A good indicator should:

- Set targets that reflect the determined objectives.
  - Understand and analyze these achievements.
  - Direct management decisions in order to improve performance. There are three categories of indicators.
- **Activity and production indicators:** measure the direct result of the service's production process, which is called an intermediate result compared to the final result.

**-Activity indicators:** Follow the monthly turnover and its evolution compared to the same month of the previous year.

**-Production indicators:** Monitored monthly, it measures the evolution of the payroll compared to turnover.

- **Means indicators:** These indicators aim to describe the volume or cost of the resources used in the service production process. They are primarily operational in nature in order to make comparisons, and their translation into monetary units is often necessary.
- **Efficiency indicator:** The efficiency indicator is very important within any organization insofar as efficiency is the ratio between the achievements and the objectives that have been set. It measures the rate of achievement of objectives.

## 2. Principles and processes of performance measurement:

Performance measurement goes beyond simple observation; its objective is to make decisions that improve performance conditions. Therefore, management control, a performance management system, must implement performance measurement and control indicators.

Performance measurement cannot be summed up in a single criterion. The criteria chosen depend on the following questions:

- What are we measuring?
- What are the performance axes?

- For whom are we evaluating performance?
- At what term? Are we measuring immediate performance or medium-term potential for the organization?

### **2.1.Principles of performance measurement**

The interdependence and contradictory aspect of the principles of performance measurement construction make it difficult to isolate their importance. For the performance measurement of the company, the construction principles considered fundamental are presented below <sup>(1)</sup>:

- **Relevance principle**

A performance measure is considered relevant if it guides managers' behavior in the direction of the company's objective and, therefore, the general interest. In this perspective, the performance measurement of different company services must be of the same nature as the overall performance measurement of the company.

- **Controllability Principle:**

The controllability principle <sup>(2)</sup> states that the performance measurement of a company's services should be based on elements that are directly related to the efforts of these services and that can be controlled by them. This means that the contribution of their managers should be limited to only those elements that are under their control. Uncontrollable elements should be neutralized, meaning they should be removed from the performance measurement system.

- **Stability Principle:**

Although the performance measurement system should be adaptable to changes in circumstances and strategy, it should be relatively stable over time to allow for comparisons between periods. In any case, its complexity makes it difficult to modify frequently.

- **Reliability Principle:**

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<sup>1</sup> GIRAUD (F), SAULPIC(S), NAULLEA(G), M H DELMOND(M ,H) et BESCOS(P,L) , « Contrôle de gestion et pilotage de la performance », Edition Montchrestien, PARIS 2002, p 72

<sup>2</sup> Idem, p 73

The measurement should be reliable in relation to the performance of the company, meaning it should be verifiable and objective.

- **Verifiability:**

Verifiability means that the measurement should give the same result if it is performed by two different people. It requires the participation of those involved in the measurement in determining the performance indicators, as well as the accuracy of the data collection and processing mode required to evaluate performance.

- **Objectivity:**

Objectivity means that the person who measures has no personal interest in the evaluation. This means that the evaluation rules should be clear to everyone, and there should be very little room for interpretation and personal judgment <sup>(1)</sup>.

## **2.2. Performance Measurement Process:**

The evaluation of the performance of an activity of a service (including the evaluation of resources and results) requires the existence of three distinct devices.

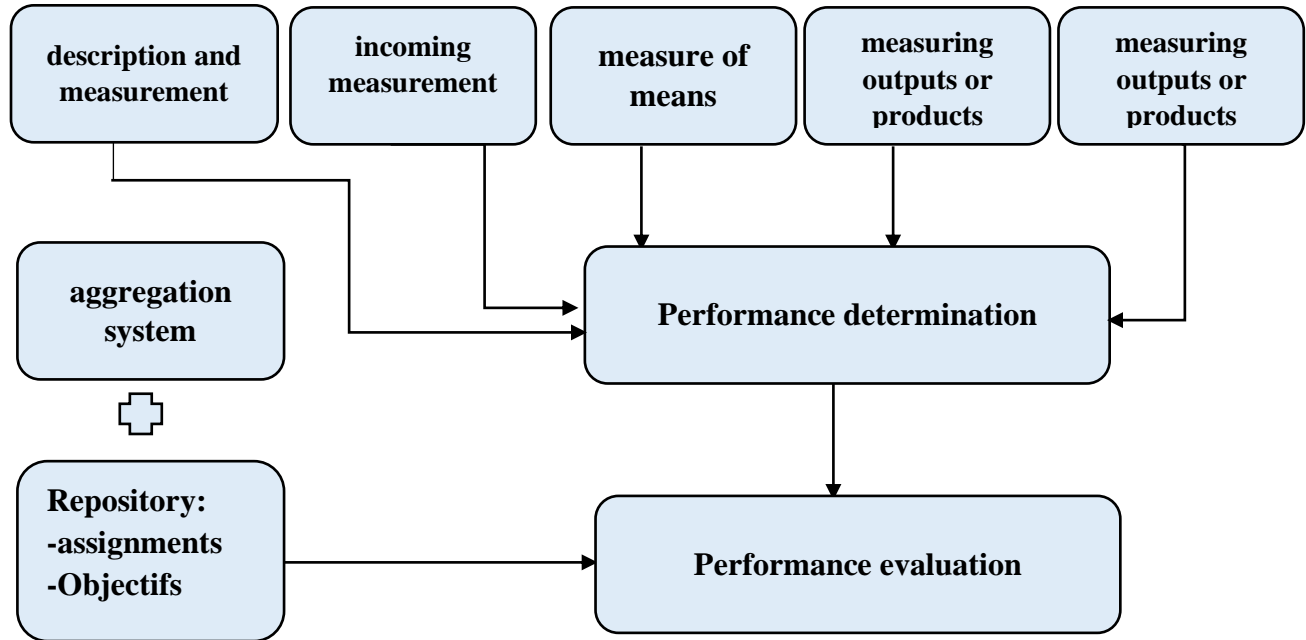
- A system for describing the activity, equipped with a set of measurement indicators, which leads to a new performance evaluation model.
- An aggregation system, allowing for synthesis (ratios, averages, etc.) from the elementary measurements of the description system.
- A referential, meaning a set of reference values, allowing for judgment on the results obtained. This referential may consist of missions, value systems, objectives, external or internal standards.

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<sup>1</sup> GIRAUD (F), SAULPIC(S), NAULLEA(G), M H DELMOND(M ,H) et BESCOS(P,L) op cit p73.

The following figure summarizes the synoptic way in which all factors and elements enter into the performance evaluation process.

**Figure: II - 4: the three systems of a performance evaluation model in services**



**Source:** LONING (H), MALLET(V), MERIC (V), PESXUEX (Y), CHIAPELLO (E),SOLE(A), « le contrôle de gestion organisation, outils et pratiques » 3<sup>ème</sup> édition, Dunod, paris 2008, page 189

### **3. Role and objectives of performance measurement**

Performance measurement plays a crucial role in assessing organizational performance and achieving strategic objectives effectively and efficiently.

#### **3.1.Role of performance measurement**

Performance measurement systems play a very important role in the success or failure of a strategy, and in the quality of defined companies.

It is a means to rhythm and structure <sup>(1)</sup> the control process.

➤ **Rhythm the dynamic of control:**

Measurement is important in several respects. First, it is important with respect to the control process, because if it gives it rhythm, measurement will allow:

- To "set" the results obtained at regular intervals, and thus to apprehend the level of performance provisionally achieved. To manage performance, it is necessary to set deadlines, opportunities to "take stock". For example, a sales manager whose goal is to significantly increase sales in a year must manage the progressive achievement of this goal by evaluating their achievements each month.

- To "quantify" the level of performance obtained precisely: our sales manager cannot rely on an intuitive idea of their monthly sales volume, they must confirm it with more objective information, such as invoiced turnover.

- To "trigger" managerial actions: the measurement and analysis of results will allow managers not only to know their results, but also to evaluate them, that is, to compare them to the objectives previously set, and thus to identify any need for corrective actions. The measures produced play a role as warning signals, the organization of a regular flow of measurement thus constitutes, in a way, the "paperwork" of the pilot dynamics.

➤ **Structure the control process:**

However, the main stake <sup>(2)</sup> is in the core of the control system itself, that is, the choice of the type of measurement selected. From this point of view, measurement fulfills structuring functions of the system. Firstly, it allows the type of performance towards which a manager must direct their decisions to be objectified.

**3.2. Objectives of performance measurement:**

➤ **Influence behaviors:**

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<sup>1</sup> GIRAUD(F), SAULPIC(S), BORNIER (C), « le contrôle de gestion et le pilotage de la performance », Edition Gaulino, 2008, p28

<sup>2</sup> GIRAUD(F), SAULPIC(S), BORNIER (C), op.cit p29.

Performance measurement <sup>(1)</sup> cannot be an end in itself; it aims at a multitude of objectives and goals. It seeks to direct the behavior of managers in two ways: by providing clear information on the nature of the desired performance, and by putting in place incentive and control devices based on this measurement.

➤ **An information objective:**

Performance measurement allows the manager to periodically have the situation of the company, the degree of achievement of objectives, as well as all information related to its operation. It allows and facilitates the verification of the coherence between individual performance achieved by different services and the expected overall performance.

➤ **An incentive objective:**

Performance evaluation plays an important role in inciting organization managers by putting them under pressure towards defined performance. This tension can be transformed into a dynamic that creates performance and learning.

The incentive system leads, in the first place, to the establishment of a negotiation between managers and the hierarchical level regarding the evaluation term to allow everyone's participation in the success of the company.

The incentive system is reinforced by the establishment of a reward/punishment system to motivate personnel according to the performance achieved by each operations manager. This can translate into:

- Remuneration: presence or absence of bonuses, fixed salary evolution, etc.;
- Status: promotion, transfer, dismissal, etc.;
- Recognition: notoriety, motivation prize (best manager prize, trip, etc.).

The incentive system, which is part of performance measurement, is supposed to be an important driver of action and motivation.

#### **4. Conditions for measuring performance well**

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<sup>1</sup> GIRAUD (F), SAULPIC(S), NAULLEA (G), DELMOND (M-H) et BESCOS (P-L), op.cit, p65.

Four conditions seem fundamental for measuring performance well: <sup>(1)</sup>

- **Attach the indicator to a responsibility**

Performance must be clearly localized. It must always be linked to a responsibility.

The person in charge is the one who can act on the parameters, the means of performance.

Conversely, one can only be responsible for the elements on which one can act and which one controls.

- **Define an objective to give meaning to performance**

Without an objective, there is no performance. For each indicator, a target value must be defined. This value can be imposed by the hierarchy or negotiated with it.

If one wonders what the qualities of a "good" objective should be, the following ideas can be put forward:

- The objective must make sense, be reasonable compared to the past: if it is set too high, it is discouraging;
- If set too low, it generates inefficiency losses. The objective evolves as the previous objectives are achieved. The objective must be justifiable;
- The objective must be consistent with the means available to the person in charge;
- The objective must be relevant to the strategy deployed by the company;
- Finally, some objectives are not really objectives. The objective must be precise.

- **Be able to measure performance**

The indicator must be capable of precise measurement at a reasonable cost. It is often tempting to imagine sophisticated indicators to monitor certain parameters, such as qualitative ones. If obtaining this information proves difficult or if the cost is too high, the measurement is not possible.

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<sup>1</sup> Atkinson, R. (1999). Project management: cost, time and quality, two best guesses and a phenomenon, its time to accept other success criteria. *International journal of project management*, 17(6), 337-342.



- **Separate functions**

The principle of separation of functions is a principle of internal control.

It states that it is necessary to separate decision-making functions from functions involving the holding of monetary values (or goods) and accounting functions to avoid errors and fraud.

**5. Difficulty of measuring performance:**

Difficulty in measuring performance: Among the major management disciplines, management control has played a key role in measuring organizational performance, and contrary to what one might think spontaneously, this problem is neither simple nor trivial because performance has moved from a single-criteria model to a multi-criteria model.

The difficulty lies primarily in the implicit requirements expected of any measurement, namely: <sup>(1)</sup>

- accuracy and sensitivity, that is, the ability of the measurement to reflect the desired phenomenon and its variations;
- reliability, which ensures that the same performances produce the same measurement values;
- objectivity, which guarantees that the measurement is not affected by the person carrying out the measurement;
- simplicity and readability, which make the measurement easily understandable by its user.

These qualities are neither obvious nor natural. Thus, "total accuracy", that is, the accuracy of a measurement, does not exist, it is always "more or less accurate" compared to the phenomenon it apprehends, if only because it always relies on a certain number of conventions, whose relevance is by definition not demonstrable.

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<sup>1</sup> GIRAUD(F), SAULPIC(S), BORNIER (C), op , cit P33

Likewise, reliability <sup>(1)</sup> and objectivity do not go without saying, they must be built. Thus, for example, accounting measures, which are generally considered to be the most reliable and objective measures, are only so because the organization has put in place very rigorous procedures for internal and external control of this legal data. Operational data generally also undergo validation controls to ensure quality current information. On the other hand, many management information, as soon as they are created for specific needs of managerial analysis, must be accompanied at the same time by the creation of satisfactory procedures for collecting, processing and validating information.

Beyond their intrinsic difficulty, these qualities are not always easy to combine. Thus, it is tempting, to measure a phenomenon with greater precision, to multiply measurements, but this exercise has its limits if one wishes to maintain the principle of simplicity. However, the main difficulty undoubtedly lies in the choice of relevant measurements, i.e. measurements that are consistent with the performance of the company. A good measurement system is a system that correctly translates the company's strategic objectives, often multidimensional.

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<sup>1</sup> Idem, p34.

## Section 03: Company Performance and Management Control

### 1. The role of management control in improving performance:

The changing economic environment and the search for optimization of the "value/cost" ratio push companies to ask the management control department to define its objectives and be a help in performance management. In this perspective, the objectives of management control can be summarized in three points: performance management, continuous improvement of the company, and risk management <sup>(1)</sup>.

#### 1.1. Performance management:

The deployment of management control within a given entity aims above all at performance management. This can be considered the ultimate goal of management control. It is necessary for any management controller to understand and identify the concept of performance management in order to make the management control approach more relevant.

According to LORINO <sup>(2)</sup>, managing the performance of the company means directing different activities towards value creation. This value changes from one functional logic to another: marketing creates value for customers, human resources create it through individuals for other individuals, and financial and accounting management creates value for shareholders.

Performance management is primarily about knowing the degree of contribution of each activity to value creation, and then directing efforts towards the most productive activities and improving the rest.

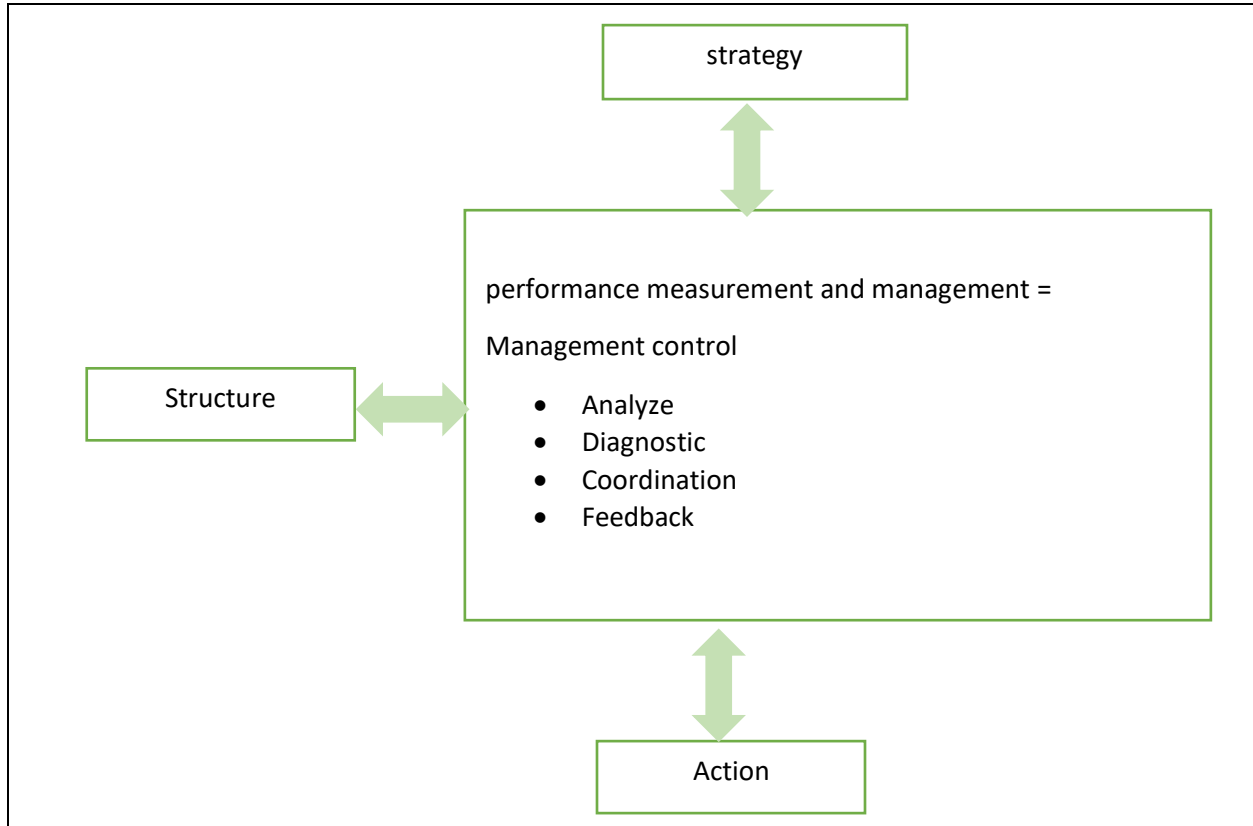
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<sup>1</sup> ALAZARD (C) et SEPARI (S) : « contrôle de gestion manuel et applications », édition DUNOD, paris 2010, p20

<sup>2</sup> LORINO (P) : « Comptes et récits de la performance : essai sur le pilotage de l'entreprise », éditions d'organisation, Paris, 1999, p137

The following diagram shows the positioning of management control in the management process:

**Figure: II - 5: Management control in the organization's management process**



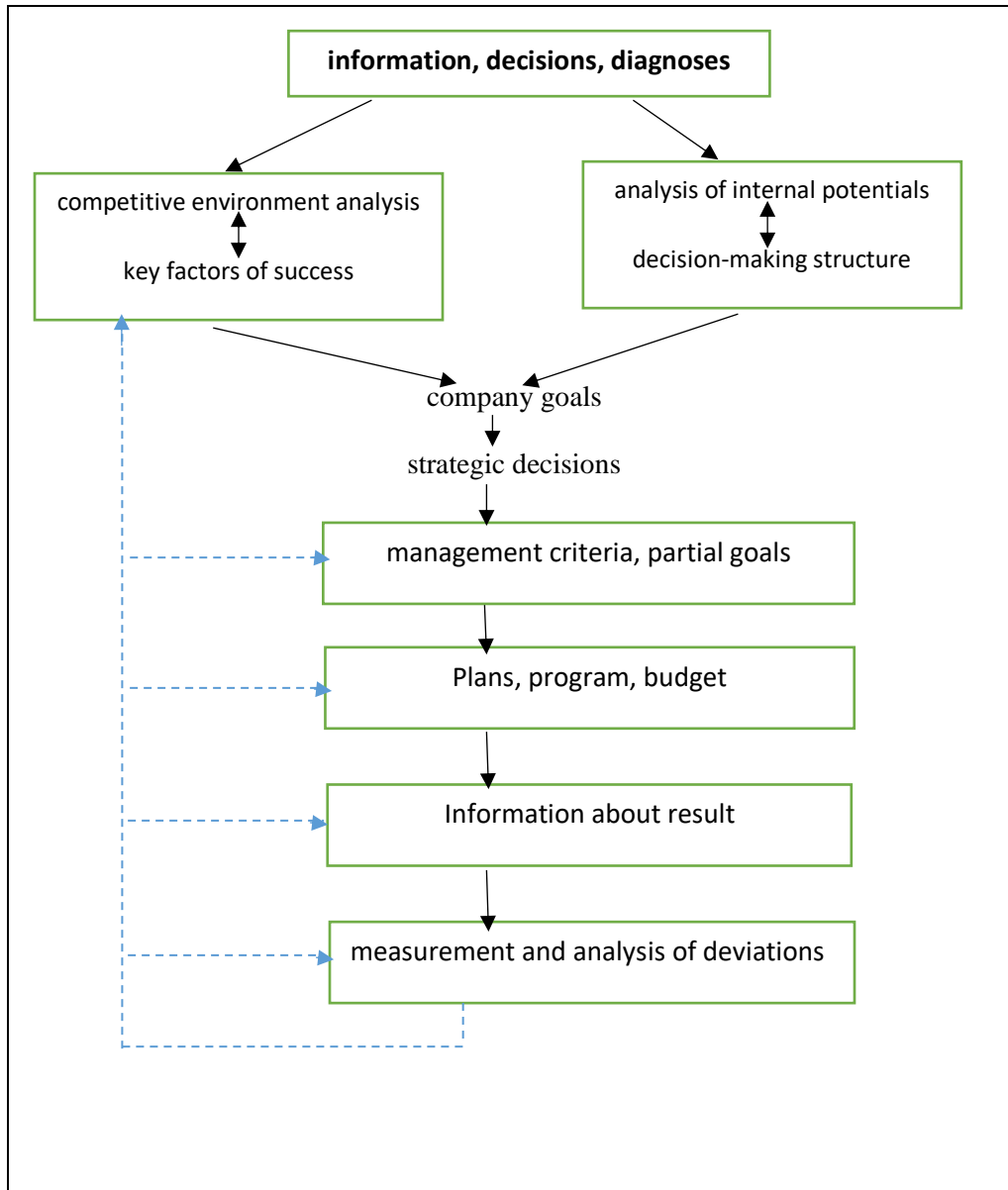
Source : ALAZARD (C) et SEPARI (S) :op.cit.,p22.

Management control must interact with the objectives and strategies of the organization. The techniques for preparing, coordinating and controlling production activity must be articulated based on the objectives and strategies defined globally for the company and must serve to measure their efficiency <sup>(1)</sup> and effectiveness. To do this, management control intervenes before, during and after action. The integration of management control into the organization's management process can be presented by the following diagram:

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<sup>1</sup> ALAZARD (C) et SEPARI (S) :op.cit, paris 2010, p23

Figure: II - 6: Management control in the organization's management process



Source :ALAZARD (C) et SEPARI (S), op.cit., paris 2010, p24

## 1.2. Continuous improvement of the organization

To make the best use of resources and skills, the company must manage its common variable strategic organization. Structuring by processes seems to be a relevant approach for performance; it involves breaking down the organization into operational and support processes and then modifying and improving those that are not profitable. Management control can help formalize

these processes and, above all, measure the costs of these processes to determine margins and possible levers for increasing value added.

### **1.3. Consideration of Risks:**

In managing performance, corporate governance, and risks become inseparable, and it is necessary to understand the impact of a company's activities on its stakeholders by integrating related risks.

## **2. Utility, principles, and tools for managing performance**

### **2.1. The utility of the management system:**

- The implementation of a management system serves three objectives.
- Verify that the objectives underlying the chosen strategy are being followed;
- Advise operational teams on their actions based on the analysis of results and indicators;
- Capitalize on information and fuel reflection on future objectives and strategy;
- An adapted management system allows management to be alerted in a timely and appropriate manner, to identify and manage dysfunctions quickly, to focus fully on objectives, and to direct actions.

### **2.2. Principles of performance management system:**

A management system must meet certain conditions: <sup>(1)</sup>

- Simple, easy to handle and modify, and therefore consist of a limited number of management indicators and objectives.
- Contain selective information based on choices guided by the company's strategy.
- Interpretable for action, consisting of indicators understandable by those concerned.
- Structured, for example, different indicators may provide conflicting messages.
- Oriented towards strategy, as it must be adaptable to fluctuations in strategy.

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<sup>1</sup> LORINO (P), op.cit, p129

### **2.3. Performance management tools**

A management system provides key data on the operation of the activity (past, present, future), a common repository with a set of shareable indicators, and progress towards the selected objectives

#### **2.3.1. Strategic dashboard:**

An evaluation tool for the strategy, identifying areas of improvement and excellence where the company seeks to create value. Operational dashboards are oriented towards the short term and are an excellent tool for monitoring activities. All these dashboards constitute an effective chain of financial or non-financial information that enables the successful implementation of possible strategies.

#### **2.3.2. Management reporting:**

The management reporting presents monthly financial statements with comments on financial performance and explanations of variances from budget and objectives. It provides a clear synthesis of activities and their progress towards objectives, is mainly aimed at management, and consists mainly of financial indicators.

**Conclusion:**

An enterprise is considered to be performing well when it is both effective and efficient. It is effective when it achieves its pursued objectives and efficient when it maximizes the quantity produced with minimum cost.

Measuring the performance of an enterprise is a current issue for any management team in a company. In fact, any enterprise that is concerned with its evolution and development must continuously ask questions about the evaluation of its performance. The main goal of performance measurement is to clarify the responsibilities of everyone within the enterprise and between the enterprise and its partners, and to ensure the motivation and mobilization of everyone to achieve the objectives of the enterprise. On the other hand, it enables the personnel to be integrated with the enterprise's objectives and to ensure their adherence to the enterprise's project.

To measure performance, it is necessary to first determine the evaluation criteria, which are the reference quantities or qualities used to quantify or qualify the performance. To achieve this, the management control department needs to build a tool that responds better to the needs of quick control, which is the dashboard.



## **CHAPTER 03: The impact of management control on performance within NAFTAL GPL BATNA.**

### **Introduction:**

Previously, we have discussed the methodological and theoretical framework of the study, which will allow us later to study the relationship between management control and the performance. All concepts the characteristics of each variable were identified and presented separately. different mechanisms and tools for the MCS were presented which we thought it has a direct impact on improving the overall performance of the company.

To verify the study hypotheses and answer the research problematic, theoretical concepts were applied in reality through an empirical study. We chose the Naftal- (Unit of Batna).Note that Naftal which represents one of the most important national public economic companies, where our attempt is to understand the role of applying management control in improving the company performance. During Chapter 3, we will discuss the following points:

- Presentation of the company NAFTAL GPL BATNA site.
- Description of the functioning of the management control within NAFTAL GPL BATNA and presentation of its tools.
- Assessment of the impact of management control on performance within NAFTAL GPL BATNA.
- Both descriptive and quantitative study will be conducted to examine the effect of the management control system and the performance of the company.

## **Section01: Presentation of NAFTAL company.**

The first section provides an overview of the host organization NAFTAL, its history, creation, social purpose, organization of its missions, objectives, and its structural and organizational evolution, mission, and strategic objectives.

### **1. History of NAFTAL**

#### **1.1 History of SONATRACH Group:**

SONATRACH, National Company of Transport, Refining, Transportation, and Marketing of Hydrocarbons is a company engaged in the refining and distribution of petroleum products in the national territory. Before the nationalization of hydrocarbons, the distribution and marketing of petroleum products in Algeria depended entirely on large multinational companies such as ESSO, SHELL, BRITISH PETROLEUM.

#### **1.2 Creation of the NAFTAL company:**

Created by decree No. 80-101 of April 6, 1980, the ERDP-NAFTAL company was formed by the transfer of structures, means and assets, activities, and personnel held, managed, and administered by SONATRACH in the context of its activities. ERDP-NAFTAL began operations on January 1, 1982. It was restructured and modified by decree No. 87-189 of August 25, 1982, into two companies:



- **NAFTEC:** Responsible for oil refining.
- **NAFTAL:** Responsible, within the framework of economic and social development, for the distribution and marketing of petroleum products.
  - NAFT: Oil
  - AL: AL Djazair (Algeria)

In other words, Oil Algeria.

#### **1.3 Social purpose:**

National Company for the Commercialization and Distribution of petroleum products, including CLPB products (fuels, lubricants, tires, and bitumen) and LPG (liquefied petroleum gas); and this as of August 27, 1987.

#### **1.4 Organization of the company:**

It should be noted that NAFTAL's mission is to transport its diversified range of products and services as defined above from refining locations (Arzew, Skikda, etc.) or ports for certain products from Algerian refineries using coastal shipping or from foreign refining and manufacturing facilities (tires) to the many scattered users throughout the national territory (see previous paragraph). To carry out its activities, NAFTAL has, like any distributor, a fairly dense distribution network, organized in such a way as to meet all customer requirements and managed by a General Directorate located in Algiers and decentralized administrative units called Districts, each of which intervenes in two to three Wilayas in order to cover the entire national territory.

The distribution network consists of infrastructure and storage and distribution centers for lubricants, bitumen, marine products (for districts located in coastal areas), aviation products (for each civil airport located on the national territory), warehouses and depots for fuel storage, service stations, and sales outlets (stores).

The company is structured on several levels:

- General Assembly composed of a single shareholder SONATRACH, which owns 100% of NAFTAL's shares.
- Board of Directors comprising a President (CEO of the company), members from the parent company SONATRACH, and a union representative.
- Chief Executive Officer and his staff composed of Senior Advisers and Advisers.
- Branches (Marketing, Fuels, LPG, International Activities)
- Executive Departments (Finance and Accounting, Human Resources, Strategy, Planning, SPE Economy)
- Central Departments (Audit, Procedures and Management Control, Hygiene, Safety, Environment, Quality HSEQ)
- Departments (General Administration, Social and Cultural Affairs)

The Branches are considered operational structures and are themselves organized into several levels:

1. Central level: Activity and Product Directions, Departments and Services.

2. Decentralized level: Districts (Administrative Units), Centers and Administrative Antennas at the level of each Wilaya (Province).

This is a highly hierarchical organization designed according to the principles dictated by Taylorism.

There are 21 districts attached to the Commercialization Branch and 19 districts belonging to the GPL Branch.

To package GPL in 13 kg and 3 kg bottles and propane in 35 kg bottles, NAFTAL has Enfutage Centers (packaging carousels). The organization of NAFTAL is established to fulfill three essential functions:

- Supply
- Product storage
- Sales of products and services.

NAFTAL is equipped with considerable resources for this:

- A workforce of more than 29,900 people, of which around 3,000 are temporary. Note that almost 8% of the workforce is at the managerial level. The ratio of senior executives to the total workforce is currently 1.03%.
- An important fleet consisting of more than 3,500 trucks. The transportation of petroleum products is one of NAFTAL's essential tasks. It often requires a certain know-how to be carried out effectively. Note that in 2004, NAFTAL sold 10 million tons of fuel and transported 24 million tons. This clearly shows that the logistics function is essential to the company's activities. Fuel procurement is partially done by rail. There is a joint venture for the transport of petroleum products
- Energy Products Transport Company (STPE) - whose capital belongs 50% to NAFTAL and 50% to SNTF (National Railway Transport Company)
- Storage sheds for lubricants and special products
- Bitumen storage tanks
- Warehouses and fuel storage depots.

Note that NAFTAL owns more than 660 gas stations, of which 335 are managed by third parties through leasing (free management). It performs wholesale tasks for petroleum products, in other words, it supplies petroleum products to more than 1,250 private gas stations and 335 free management stations. It plays the role of a retailer by directly marketing to customers (direct management) from its own gas stations, which numbered 329 as of January 2006.

### **1.5. Structural and Organizational Evolution:**

We will trace the historical development of NAFTAL's structural and organizational evolution.

➤ **In 1983:**

The GPL/Fuel project was transferred from SONATRACH to NAFTAL.

➤ **In 1984:**

48 NAFTAL units for the distribution of multiple products were created; a grouping and organization of transit activities into four port units (UNPs), namely: Algiers, Oran, Annaba, and Skikda.

➤ **In 1987:**

Separation of SONATRACH's two main activities, namely the refining and distribution of petroleum products (NAFTEC, NAFTAL):

NAFTAL: Responsible for the commercialization and distribution of petroleum products.

NAFTEC: Responsible for petroleum refining.

➤ **In 1989:**

Decentralization of the company's social and cultural activities.

➤ **In 1990:**

Decentralization and computerization of the activity: "stocks/sales/clients"

➤ **In 1992:**

NAFTAL units were consolidated according to product flow studies; 9 attached units; 19 NAFTAL distribution units.

➤ **In 1996:**

The foreign trade department was dissolved.

➤ **In 1997:**

The heritage protection department was created as well as the internal security structure at the unit level; in response, port units were dissolved.

➤ **In 1998:**

In order to meet security requirements, an "industrial security" cell was created, as well as an "audit and system" department for the independence of the company and a printing unit.

The CLPB, GPL and AVM departments were dissolved and reborn in the form of divisions.

➤ **In 1999:**

Central archives were created and organized at NAFTAL Chéraga so that NAFTAL, ESSO, SHELL and other documents could be listed and classified.

In addition, 03 regional audit departments were created under the system audit department; the NAFTAL GPL/Algiers unit project was dissolved.

➤ **In 2000:**

Creation of the computer processing center (CTI) which meets the requirements for updating NAFTAL information, as well as competitive obligations in anticipation of potential competition.

Implementation of the general organization chart for the GPL and CLP/AVM divisions, as well as the creation of the Bitumen division.

➤ **In 2001:**

Reorganization and product-based organization for the CLP/GPL division; detailed organization of the Bitumen division as well as the creation of a commercial antenna; training department and reorganization of the west training center.

➤ **In 2002:**

A reorganization of the administrative and financial direction/GPL division as well as an organization of tax activities at all directions and divisions.

- The appointment of a new CEO.
- Capital increase in two phases:

September: 12650 x 10 DA

December: 15650 x 10 DA

➤ **In 2003:**

- Signing of 03 contracts for the purchase of rolling stock with SNVI.
- Implementation of a quality management system, with a view to certification of AVM activities.
- Creation of the marketing committee and the development of its sales force.
- Relaunch of the NAFTAL News review.
- Creation of an analytical accounting software allowing better management of monetary flows and a more precise understanding of the effective cost of products from Input to Output.
- New macrostructure organization chart, namely, five branches: commercial, fuels, GPL, international activities, and LPB.

➤ **In 2004:**

- Creation of the network division;
- Creation of lubricant and pneumatic branches;
- Creation of the marketing department;
- Creation of the marketing branch.

➤ **In 2005:**

- Dissolution of the central marketing department.
- Update of NAFTAL's macro structure (SPA).
- Modification of the organization of the general administration.
- Reorganization of the marketing branch.

➤ **In 2006:**

- Project to dissolve LPB and integrate it with the marketing branch.
- Adjustment of the organization of the marketing branch.

## **2. Objective and Mission of NAFTAL:**

### **2.1. Missions of NAFTAL:**

NAFTAL is a national company responsible, as part of the national plan for economic and social development, for the marketing and distribution of petroleum products, including those intended for aviation, LPG, fuels, solvents, aromatics, bitumen and tires; it has essential missions for the smooth running of its activity.

The most important missions that form the basis of its activity are:

- Organizing and developing the marketing and distribution of petroleum and derivative products;
- Storing, transporting and/or having transported any petroleum product sold in the national territory;
- Ensuring the application and respect of measures related to industrial safety, safeguarding and protection of the environment, in relation to the concerned organizations;
- Conducting any market study on the use and consumption of petroleum products;
- Defining and developing a policy on auditing, designing and implementing integrated information systems;
- Developing and implementing actions aimed at the optimal and rational use of infrastructure and resources;
- Ensuring the application and respect of measures related to the internal security of the company in accordance with regulations;
- Developing a brand image and quality.

### **2.2. Objectives of NAFTAL's strategy:**

In order to face competition, the updating of NAFTAL's activity as well as the updating of all its management systems must be done as quickly as possible; because the opening of the market to competition and Algeria's accession to the WTO constitutes the gateway to a competition that



will surely upset the current market situation where NAFTAL holds a monopolistic position; this puts NAFTAL under the obligation to update itself and establish an offensive strategy allowing it to be competitive vis-à-vis its potential competition.

- Human Resources and Common Resources Department;
- Distribution and Sales Department;
- Technical and Maintenance Department;
- Finance and Accounting Department;
- Information Technology Department.

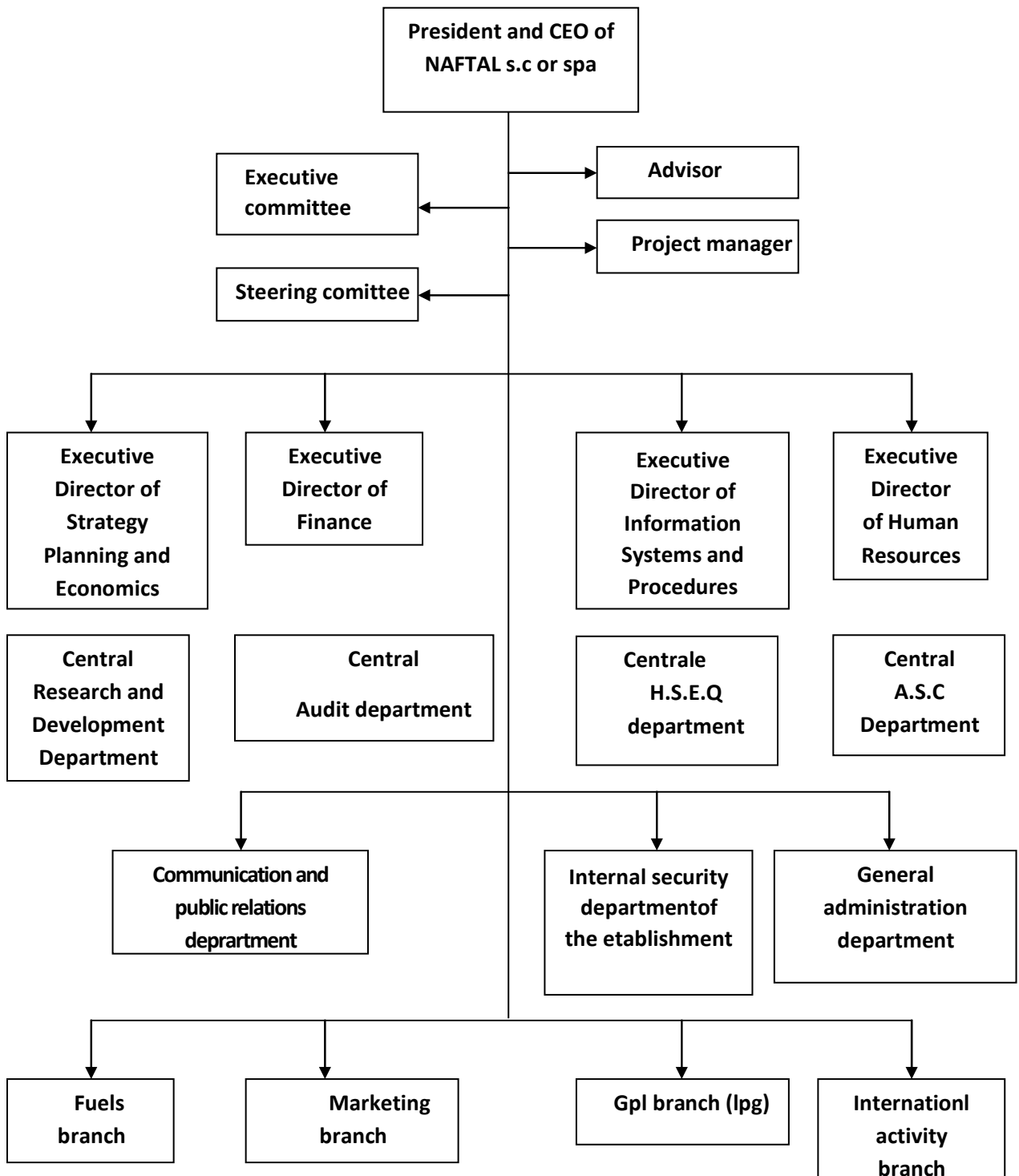
NAFTAL generally aims for a dual objective:

- Pursuing its mission of distributing petroleum products;
- Improving its quality of service.

The main actions carried out by NAFTAL are:

- The modernization and rehabilitation of its storage infrastructures;
- Bringing its installations into compliance with industrial protection and safety standards;
- The modernization and expansion of its network of service stations;
- Renewal of its road transport means and handling equipment;
- Increasing its capacity for transport by pipeline;
- The promotion of its clean products: LPG and unleaded gasoline.

Figure : III - 1: The general chart of NAFTAL



Source: General Direction of NAFTAL, 2010.

### **3. Presentation of NAFTAL GPL Branch "Batna":**

#### **3.1. Creation of the GPL Branch:**

The GPL (Liquefied Petroleum Gas) Branch was created, like the other branches, to take charge of a part of NAFTAL's missions, and its main mission is the supply and marketing of GPL products.

This Branch was created in July 1998 and has an important role in the political, economic, and social aspects of the country, as it is responsible for supplying the Algerian market with gas and derivatives. It has a two-level structure:

**Functional Part:** responsible for ensuring the technical or administrative organization of the operational structures and providing the necessary logistics for its operation.

**Operational Part:** organized into an Operational Directorate called Maintenance & Realization and 19 GPL Districts covering the operational centers, including 42 Filling Centers, 47 Relay Depots, and 03 Bulk Centers. The Districts operate according to the decentralization and empowerment approach.

#### **3.2. Organization of the GPL Branch:**

##### **3.2.1. Technical Personnel and Common Means Department:**

It includes three (03) services:

- Common Means Management Service
- Human Resources Service
- Personnel Management Service

This department is responsible for the following tasks:

- Personnel administration and management;
- Payroll management;
- Social security benefits management;
- Implementation and monitoring of the training program;
- Implementation and monitoring of the human resources development program.

### **3.2.2. Finance and Accounting Department:**

It consists of four (04) services:

- Accounting Service;
- Treasury Service;
- Budget and Cost Service;
- Management Control Service.

This department is responsible for the following missions:

- Financial management;
- Budget management and control;
- Accounting management.

### **3.2.3. Information Technology Department:**

It includes two (02) services:

- Systems and Networks Service;
- Management Information Systems Service.

This department is responsible for the management of information systems, the maintenance and programming of computer networks within the organization.

### **3.2.4. Distribution Department:**

It includes two (2) services:

- Sales Service.
- Operation Service.

This department is responsible for the administrative tasks and missions related to distribution (order, delivery, etc.).

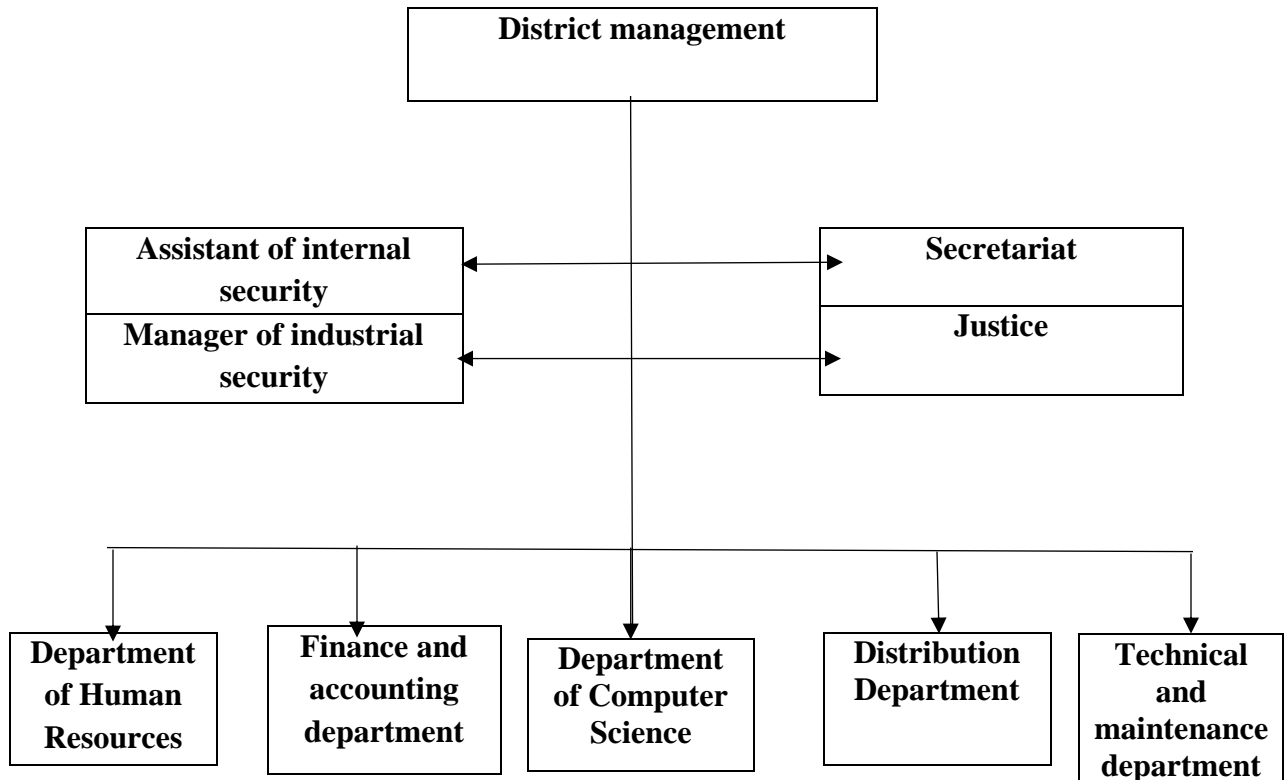
### **3.2.5. Maintenance Department:**

It includes three (3) services:

- Fixed Maintenance and Installation Service.
- Planning and Methods Service.
- Rolling Stock Maintenance Service.

This department manages the fixed maintenance and installation teams, rolling stock teams, and is responsible for planning and methods.

**Figure : III - 2: Organizational chart of the GPL Branch BATNA**



**Source:** General Direction of NAFTAL, 2010.

### **3.3.Missions of the GPL district:**

The GPL branch is responsible for ensuring the supply of the national market, with activities related to transportation, storage, bottling, and distribution. The main missions consist of:

- Developing partnerships and cooperation in the field of GPL
- Distributing GPL to users under the best conditions of cost, quality, deadlines, and safety
- Modernizing infrastructure to improve productivity, safety, and management
- Developing and promoting GPL in packaged, bulk, and fuel gas forms

### **3.4.Objectives of the GPL district:**

- The objectives of the GPL branch are to:
- Manage, organize, promote, and develop bottling and distribution activities of GPL
- Organize and develop the commercial and distribution network
- Ensure compliance with safety standards and guidelines throughout the GPL chain (transport, bottling and storage installation, bottles, tanks, accessories, etc.)
- Market bulk and packaged GPL, their packaging, and accessories

### **3.5.Scope of the study: Finance and accounting department:**

The finance and accounting department has the mission to:

- Coordinate and monitor all treasury accounting activities, budget, and assets
- Consolidate, analyze financial statements and ensure the honesty of district accounts
- Ensure the consistency of accounting entries with physical and financial flows

#### **3.5.1. Treasury service:**

It consists of two sections, the revenue section, and the expense section, and its mission is to:

- Monitor and control treasury flows, revenue and expenditure
- Process investigation payment files, suppliers, and other expenses
- Establish reconciliation statements (revenues and expenses)
- Control and perform accounting of treasury accounts and ledgers
- Establish activity reports

#### **3.5.2. General accounting service:**

It consists of two sections, the SVCD section and the accounting section, and its mission is to:

- Carry out accounting entries in accordance with (balance sheets, balance, and books)
- Control closing accounts and prepare inventories and balance sheets
- Develop accounting analysis and summaries
- Perform closing and reopening operations of accounts

### **3.5.3. Budget and cost service:**

Its various missions are:

- Develop the district's investment and operating budgets
- Consolidate all the necessary expenses to determine the cost
- Control and process the district's financial situations
- Make adjustments to budgets and credits
- Ensure regular monitoring of analytical accounting

### **3.5.4. Management control service:**

Supervise the unit's accounting records, as its main function is to detect fraud, falsification, and errors in accounting documents and support them with evidence from budgets

- Develop budgets
- Establish management procedures and rules
- Monitor results
- Choose key indicators for dashboards
- Produce and disseminate management tools.

## **Section 02: Description of the management control within NAFTAL GPL**

### **BATNA**

The management control of NAFTAL GPL BATNA is a structure that contributes to the realization of forecasts and coordination regarding decision-making in various functions of the organization, and it influences staff behavior. Its objective is to improve performance within the organization.

It is responsible for all activities related to the supply chain of the site (demand, procurement, production, maintenance, transport, and storage).

It carries out various missions and roles assigned by the general management. Its main tasks include developing budget forecasts, budget control, analyzing variances, and calculating costs.

Throughout this section, we will first present its positioning and missions. We will then discuss the management control approach. Finally, we will focus on how it carries out its missions by explaining its fundamental activities.

#### **1.Management control service positioning:**

The positioning of the management control within NAFTAL GPL BATNA is the same as that of other departments (human resources, logistics, production, etc.). The management control service is below the general management (Figure : III - 2), which allows it to have the same power as other departments. This position facilitates the controller in exchanging information with other departments and offering support that facilitates decision-making and information on performance that can improve future results.

This position allows the management controller to better manage various data and be more relevant.

#### **2.Management control missions:**

The management controller of NAFTAL GPL BATNA should do much more than just manage numbers. While performing its tasks explained above, it should offer support for decision-making and information on performance that can improve basic results. It is expected to manage many data and be logical, more relevant, more strategic, and more useful.

For this, it performs the following key missions:



- Development and cost control of local SC activities: (demand planning, material procurement, material warehousing, manufacturing activities, engineering, SHEQ);
- Development of the KP budget and its revisions, in connection with the operational team;
- Development of monthly closings;
- Control of the plant level;
- Analysis of variances and implementation of necessary corrective actions;
- Analytical budget and business plan development;
- Produce management information necessary for monitoring branch activities, particularly to verify the achievement of set objectives (or identify variances and implement appropriate corrective actions);
- Inventory level and workforce control;
- Verification of the coherence of analytical and accounting results;
- Monitoring progress towards objectives and measures taken;
- Cost optimization management efforts (defining targets, benchmarks, profitability analyses, etc.);
- Financial reporting: income statement, overhead, etc.;
- Providing control data to the regional headquarters;
- Periodic performance reports and root cause analyses;
- Providing complete, accurate, significant, and comparable information to branch management (and explaining it) within established deadlines;
- Performance monitoring and evaluation;
- Driving for efficiency through: Effectiveness of:
  - Staff/Productivity;
  - Workflow processes;
  - Appropriate tracking of material costs.

**3.Management control tools within Naftal GPL BATNA:**

**3.1. Information System:**

Naftal GPL in Algeria does not rely on an ERP system but instead utilizes its own custom applications to support its operations. These tailored applications enable Naftal GPL to efficiently carry out their tasks and deliver quality services to customers. The company has developed its own suite of applications, including those for finance, procurement, inventory management, sales, and human resources. These in-house applications provide real-time visibility, streamline processes, and support decision-making. Naftal GPL also employs specialized apps for customer relationship management, supply chain management, fleet management, energy management, and data analytics. By leveraging their own applications, Naftal GPL effectively manages its operations, ensuring productivity, efficiency, and customer satisfaction.

**Figure : III - 3: The applications that are used by Naftal**

Department	Applications
Information technology	-SDCOM -Parc Info -FTP
Finance	-NAFTCompta -NAFTImmo -SDCOM -NAFT tresor
Technical	-NAFTPDR -SDCOM -GPS
Distribution	-SDCOM -GPS

**Source:** Created based on company data.

**3.2. Planning:**

Planning at Naftal is not considered as detailed forecasting but rather as a process aimed at achieving ambitious objectives. For the sustainability of the site, leaders are always cautious when

making strategic decisions. The role of strategic planning is to set long-term objectives and to schedule their achievement by defining intermediate objectives that are closer and more tangible and can be achieved within a one-year horizon. The site's management controller replaces targets and budgets with effective steering mechanisms, continuous planning reviews, rolling expense forecasts, and a proactive approach that focuses on future costs rather than historical costs. This allows managers to respond to unpredictable events more quickly and adapt to changes.

### **3.3. Budgetary Management**

The budget is an essential tool within the company. It reflects the plan necessary for achieving objectives and is a key instrument for measuring the company's performance. It is highly useful for the company as it serves as a starting point for forecasting, steering, and control tasks.

The management controller of Naftal GPL BATNA is responsible for budget project development, monitoring its execution, and analyzing budget statistics.

#### **3.3.1. Forecasting and Budget Development:**

Following the profitability principle, the budgeting process begins when the general management sets the objectives to be achieved for the upcoming fiscal year in collaboration with the management controller.

Once the objectives are set, the sales department examines the feasibility of achieving these objectives based on in-depth market studies estimated by the headquarters, "Naftal Algérie," to estimate next year's sales.

Once the objectives are validated by the general management, the budget must be developed, and this takes place in the month of November of the previous year.

The budgeting process is as follows:

- ✓ Definition of cost centers: main and secondary cost centers (costs related to auxiliary cost centers will be reallocated to the main centers).
- ✓ Preliminary definition of materials involved in the production process.
- ✓ Determination of resources and needs in each center by the respective managers.

### **3.3.2. Implementation Phase:**

This is the process of executing the annual program (achieving objectives). It takes place within the site based on the calculations made during the budgeting phase, by entering actual information related to this phase into the system on a monthly basis.

### **3.3.3. Budget Monitoring and Control:**

To measure the performance of its various budgetary responsibility centers, the management controller of Naftal GPL BATNA uses budget monitoring and control. Monitoring is carried out according to a control model that allows for understanding all the results recorded in the system, including the method used to achieve the desired objectives. Budget monitoring is a necessary verification process before committing any expenses to prevent exceeding budgeted amounts. It involves comparing the forecasts in the budget with the actual results achieved to identify the causes of variances and take any necessary corrective measures.

To effectively monitor and control the site's achievements, the management controller must:

- Compare actual results with forecasts.
- Analyze variances, taking into consideration the specific factors characterizing the period, by preparing summary documents.
- Determine the causes of variances.
- Make decisions on corrective actions by addressing the factors leading to favorable results.

By utilizing the annual budget, the management controller can conduct an annual control by comparing actual results with forecasts and attempting to analyze the variances.

To bring the numbers closer to reality, the management controller is responsible for entering actual expenses into the system at the end of each month.

## **3.4. General Accounting and Cost Accounting:**

For the effectiveness and efficiency of the management control system, the site has:

### **3.4.1. General Accounting**

It is the primary source of information, and the company has a unified general accounting system, such as:

- Accounting constraints must be audited to consolidate accounting data.
- Accounts are closed each month, which requires:
  - ✓ A copy of the balance sheet.
  - ✓ Analysis of accounts according to the general ledger.

Accounting constraints are recorded for the following operations:

- Purchasing operations from domestic or foreign suppliers.
- Sales operations.
- Inventory.
- Cash transactions.

### **3.4.2. Analytical Accounting:**

Having knowledge of the total cost of purchased, manufactured, or sold products is essential for the management controller and site managers. To achieve this, they utilize analytical accounting based on the homogeneous section method. The allocation of expenses is carried out through cost centers using allocation keys. In this method, secondary cost centers are allocated to primary cost centers, where each center has a unit of measurement for cost calculation.

The calculation of "full processing cost" in the site is done as follows:

- ✓ Site definition: country, cost calculation period, exchange rate value (as site purchases are in foreign currency).
- ✓ Cost center definition:

**Bottle Filling Center:** Responsible for filling bottles with liquefied gas, including specific equipment like filling pumps, weighing scales, and safety devices for accurate and safe filling.

**Storage Center:** Receives, stores, and manages tanks within the production unit. It includes bulk storage facilities for the tanks, along with monitoring and control systems for stock levels.

**Packaging Center:** Prepares and bottles into smaller containers, such as bottles or cylinders. Involves quality control processes, labeling, sealing, and preparing bottles for distribution.

**Maintenance Center:** Handles maintenance and repair of production equipment, including pumps, compressors, valves, and filling installations. Ensures proper functioning of equipment and performs preventive and corrective maintenance tasks.

**Quality Control Center:** Dedicated to verifying GPL compliance with quality and safety standards. Conducts tests, analyses, and inspections to ensure the produced products meets required specifications.

### **3.5.Reporting :**

is a control, monitoring, and decision support tool. It is prepared by the site's management controller at the end of each month to inform the hierarchy, including the board of directors, site management, and even the general management of "Naftal Algeria" about the evaluation status of production units and the overall site performance. The reports transmitted within the company include:

#### **a) Management Report:**

It aims to provide an account of the degree of goal achievement on a monthly basis. A comparison between achievements and forecasts is conducted to identify and analyze deviations, while also attempting to provide justifications for the causes. The reporting transmitted to the management control department consists of two aspects:

##### **❖ Quantitative aspect:**

Analyzing the rates of budget achievement using trend tables, comparison charts, and interpretations of these trends.

##### **❖ Qualitative aspect:**

- ✓ **Production:** Determining production volume, achievement rates, trends, etc., compared to the previous year. The management controller provides information on different production categories through a comparison table and determines production growth rates for periods exceeding 2 years.
- ✓ **Consumption Report:** Providing information on monthly site consumption by comparing set objectives and attempting to identify causes in cases of consumption

exceeding expectations. These measurements are compared with previous years to assess their evolution.

- ✓ **Efficiency:** The management controller is required to report on the efficiency of production machinery.
- ✓ **Human Resources:** Providing information on the site's workforce, their distribution across each site center. The site has two categories of employees (permanent and temporary). The report compares their evolution with previous periods, identifies absenteeism rates and causes, and addresses recruitment, necessary training, and turnover.

#### **b) Activity Report:**

At the end of each year, the management controller should prepare a comprehensive report summarizing the company's activities, including its situation during the past fiscal year, anticipated evolution, and significant events. It should also include performance indicators and information related to the company's environment.

### **3.6. Dashboard**

The dashboard within the Naftal GPL Batna company is an essential tool for management, gathering and synthesizing necessary information in the form of KPIs (Key Performance Indicators). These KPIs are utilized by the general management to assess the system's progress, detect disruptions, and make corrective decisions. The dashboard encompasses both financial and environmental/social aspects.

The Balanced Scorecard, a management concept focusing on strategy and vision rather than control, is used to translate the organization's vision into concrete actions. Developing the company's strategy is a prerequisite for effective performance management. Key indicators are established for each perspective: financial (productivity index), customer (customer satisfaction index), process (internal satisfaction), and learning (training plans).

To create the dashboard at Naftal GPL Batna, the management controller prepares monthly reports containing relevant information about the company's situation.

### 3.6.1. Dashboard Development:

At the end of each month, the management controller receives data from each department head, which corresponds to the specific objectives of the company.

The controller then incorporates this data into tables, focusing on key points and transforming them into clear and easily readable information.

It is through these tables, which illuminate the degree of achievement of Naftal GPL Batna's objectives, that the leaders gather information and assess the company's status.

### 3.6.2. Characteristics of Naftal GPL Batna's Dashboard:

Like any company, Naftal GPL Batna has its own dashboards that reflect its activities. In pursuit of overall performance, Naftal GPL Batna takes into account various dimensions (economic, social, and environmental).

- ✓ **Economic Dimension:** Naftal GPL Batna primarily uses economic indicators to measure performance, such as production indicators.
- ✓ **Social Dimension:** Key social indicators at the site include workforce evolution and employee training.
- ✓ **Environmental Dimension:** Naftal GPL Batna integrates different environmental indicators into its operations, ensuring compliance with sustainable development standards that contribute to overall performance.

The site primarily utilizes partial KPIs (indicators related to production activities) for performance measurement. This is due to the sales process being managed at the headquarters, which restricts the use of certain performance indicators related to sales.

### 3.7. Benchmarking:

While Naftal GPL may not have direct competitors, it can still leverage benchmarking to enhance its performance and remain at the forefront of the industry. Instead of focusing on direct competitors, Naftal GPL can adopt a broader approach by benchmarking against industry best practices and standards in the gas and energy sector.



By analyzing similar companies in different regions or even across different sectors facing similar challenges in energy management, logistics, safety, and other relevant areas, Naftal GPL can learn from their experiences and implement improvements in its own operations.

Internal benchmarking can also be employed by comparing different units within Naftal GPL to identify areas for improvement and promote operational excellence.

By utilizing benchmarking, Naftal GPL can enhance its performance and optimize its operations, ensuring it remains competitive and continuously improves in the absence of direct competitors.

This approach allows Naftal GPL to leverage the benefits of benchmarking, even in a unique market position, ultimately contributing to the advancement of the gas and energy industry as a whole.

### Section 03: Evaluation of the impact of management control on performance within Naftal GPL BATNA:

In this section, we will evaluate the performance of Naftal GPL Batna and the contribution of management control on performance, aiming to address our research problem. The overall evaluation was conducted through: site documents and responses from the executives.

The comprehensive performance evaluation within Naftal GPL Batna takes into account quantitative and qualitative criteria measured over different years, depending on the nature of the information (from 2019 to 2021).

What sets this performance evaluation apart is the assessment of three main dimensions of performance measurement on the site: economic, social, and environmental dimensions.

#### 1. Economic Performance

The economic performance of the company is influenced by several factors:

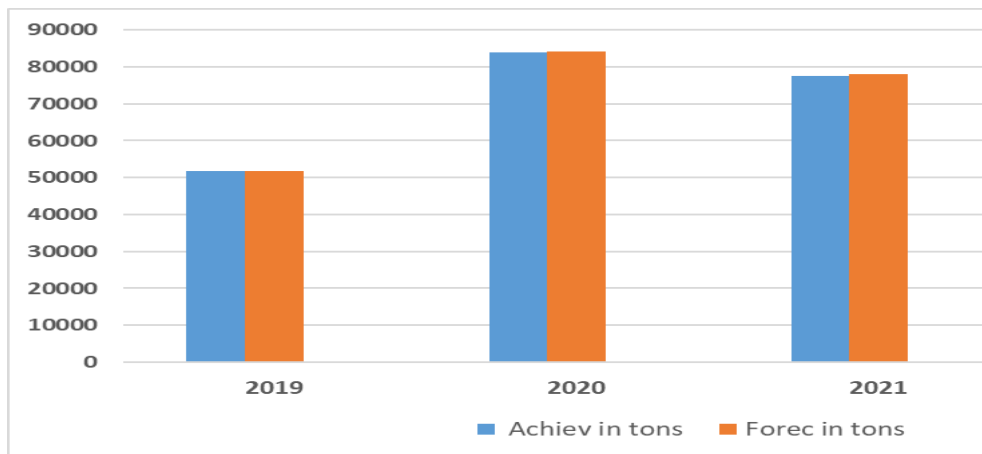
##### 1.1. Production growth:

##### 1.2. Table : III - 1 : : Naftal’s Production evolution

years	2019	2020	2021
Achievements in tons	51666,73	84004,23	77566,59
Forecasts in tons	51821,73	84180,64	77892,37
Deviation	(155)	(176,41)	(325,78)
Achievement rate	99,7%	99,8%	99,6%

Source: Created based on company data.

Figure : III - 4:Presentation of actual and forecasted production.



Source: Created based on company data.

**Comment:**

The figure above represents the production achievements of the site over the past three years. Over the course of three years, the achievement rates have remained consistently high, with values of 99.7%, 99.8%, and 99.6% recorded. This indicates a strong level of performance and consistency in meeting objectives during that period. The consistently high achievement rates suggest effective management and execution of tasks, demonstrating a commitment to excellence and continuous improvement

**1.3. Cost evolution rate:****Table : III - 2: Total production costs**

<b>Years</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
<b>Total cost DZD</b>	280477132,47	457721075,03	423593718,60
<b>Achievements in tons</b>	51666,73	84004,23	77566,59
<b>Cost of a ton</b>	5428,58	5448,78	5461,03
<b>Rate of evolution</b>	0	0,37%	0,22%

**Source:** Created based on company data.

**Comment:**

We observe that production costs in the company are increasing. The company has been unable to control costs over the past two years. This variation, which can be considered as a loss, is attributed to several factors. However, the main factor is that the company purchases all raw materials from abroad, leading to fluctuations in the exchange rate.

**1.4. Market share.**

The presence of a company with a monopoly on selling a specific product, such as Naftal GPL in Algeria, indicates the exclusive control it holds over the market without any direct competitors. This grants the company substantial market power, enabling it to independently set prices and dictate sales terms. Consequently, Naftal has emerged as the dominant force in the Algerian GPL market, effectively barring other entities from offering comparable products or services. As a result, the company enjoys unparalleled influence in the market, bolstered by its exclusive control and absence of direct competition.

### 1.5. SWOT analysis

**Table : III - 5: SWOT analysis**

<p><b>Strengths:</b></p> <ul style="list-style-type: none"> <li>-The site has a good distribution network, holds concrete information regarding markets, ensures product availability, has a good quality primary product that is reliable and compliant with regulatory requirements.</li> <li>- The district has a skilled workforce with technical expertise in handling and distributing LPG.</li> </ul>	<p><b>Weaknesses:</b></p> <ul style="list-style-type: none"> <li>-The primitive production equipment can create long-term problems.</li> <li>-The office managers have not maintained and transformed it since the factory was created, and therefore cannot find comfort during their walk to work.</li> <li>-Some of the workers who apply the basis of the new system do not achieve its objectives, which can harm the efficiency of renewal and innovation.</li> <li>-The district may have limitations in terms of storage and distribution infrastructure, which could impact its operational efficiency.</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>-The opportunity to replace gas with LPG in the coming years exists due to factors such as environmental considerations, potential energy transitions, evolving market dynamics, and consumer preferences.</li> <li>-The Algerian market is promising: <ul style="list-style-type: none"> <li>• In terms of consumption;</li> <li>• Development prospects;</li> <li>• Evolution of needs.</li> </ul> </li> <li>-The Algerian market serves as a gateway to the markets of sub-Saharan African countries.</li> </ul>	<p><b>Threats:</b></p> <ul style="list-style-type: none"> <li>-Advancements in technology and alternative energy sources that may reduce the demand for GPL and the other products.</li> <li>- Potential competition from private companies or international players if the market opens up.</li> <li>- Fluctuations in global oil and gas prices impacting Naftal's profitability.</li> </ul>

**Comments:**

This diagnosis consists of analyzing the organization's environment in order to identify threats and opportunities that can guide its strategy, while also exploring the possibility of transforming threats into opportunities. This analysis helps define the "Key Success Factors" that need to be mastered in order to dominate the sector. Through the external strategic diagnosis, the organization will attempt to assess elements that may hinder the achievement of its mission and identify those that can be favorable. It can also question its potential ability to transform threats into opportunities. Therefore, we can conclude that this diagnosis allows Naftal GPL Batna to become more efficient and effective in decision-making regarding its strategy.

## 2.Social Performance

This type of performance could be evaluated using different indicators such that:

### 2.1. Supervision Rate

This rate corresponds to the ratio of managers in the organization to the total workforce.  
Supervision Rate = (number of managers / total workforce)

**Table : III - 3: Presentation of the supervision rate**

	2021		2022		Evolution %
	Total staff	%	Total staff	%	
Executive/Managerial position	2	0,12%	2	0,12%	0,00%
Manager	200	12,50%	203	12,70%	1,50%
Supervisory position	680	42.50%	685	43.08%	0.74%
Worker	667	41,68%	660	40,00%	-1,06%
Intern	51	3.18 %	40	02,05%	-27,50%
Total	1600	100%	1590	100%	-0.62%

**Source:** Created based on company data.

**Comment:** The workforce of the company has decreased by 10 employees compared to 2021. This can be attributed to:

- ✓ Retirement of employees
- ✓ Conversion of temporary positions to permanent positions
- ✓ Conversion of permanent positions to temporary positions
- ✓ End of contracts.

### 2.2. Productivity

#### 2.2.1. Workforce participating in production

**Table : III - 4: Workforce participating in the production process**

Année	2020	2021	2022
Naftal	500	380	267
Temporary	224	274	365
Total	724	654	632

**Source:** Created based on company data.

**Comment:**

The number of temporary employees is significant on the site compared to those in permanent positions. This is due to the types of contracts used by the site to avoid additional social charges, especially when there are no tasks to be performed.

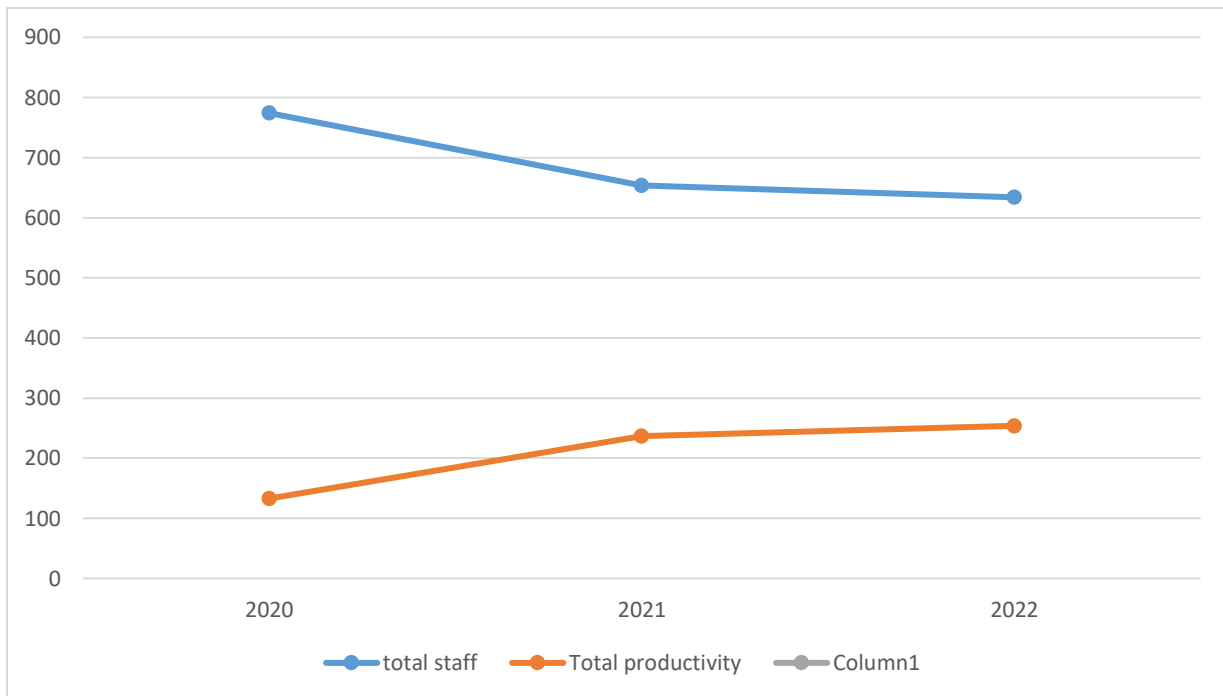
**2.2.2.Evaluation of employee productivity**

**Table : III - 5: Production per employee**

	2020	2021	2022
Naftal(permanent)	500	380	267
Permanent productivity	75	136	155
Temporary	224	274	365
Temporary productivity	58	101	99

**Source:** Created based on company data.

**Figure : III - 6: Presentation of employee productivity.**



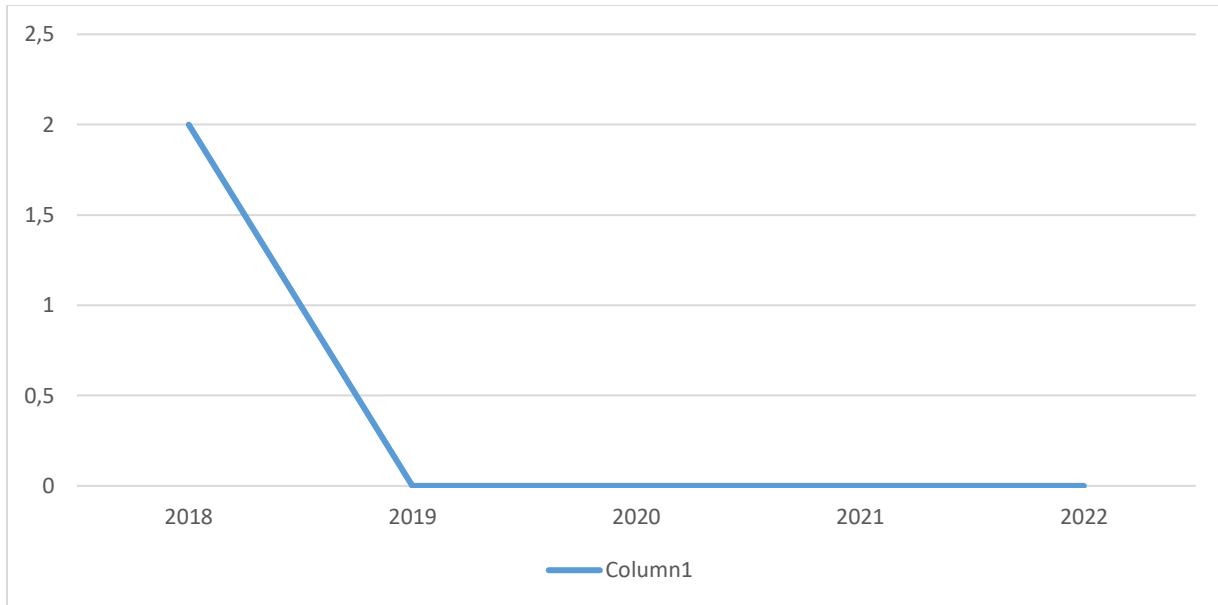
**Source:** Created based on company data.

**Comment:**

The figure above represents the total productivity of an employee (labor) in tons over the course of a year. We observe that there is variation in employee productivity. This variation depends on several factors and can be summarized by the work environment, motivation, and machine breakdowns.

**2.3.Assessing the number of accidents.**

**Figure N : The level of accidents at the site.**



**Source:** Created based on company data.

**Comment:**

The site has not experienced any workplace accidents since 2018, which reflects the strong prevention, safety, and protective measures implemented by the site. It also demonstrates the competence of the health and safety department that has ensured the well-being of the employees. This action has a significant impact on the social performance of the company.

**2.4. Evaluation of illness rate**

• **Illness rate** = (Sick days / Total workdays)

**Table : III - 6: Presentation of illness rate**

	2020	2021	2022
Total staff	724	654	632
Work days	360	360	360
Total work days	260640	235440	227520
Sick days	19131	12831	7030
Sickness rate	7,34%	5,45%	3,09%

**Source:** Created based on company data.

**Comment**

We observe that the sickness rate in the company is considerable, and it varies each month. This rate could be an obstacle for the company as it affects the efficiency of the employees.

### **3. Environmental Performance**

Based on the following tables, the site measures environmental performance.

#### **3.1 Energy consumption rate:**

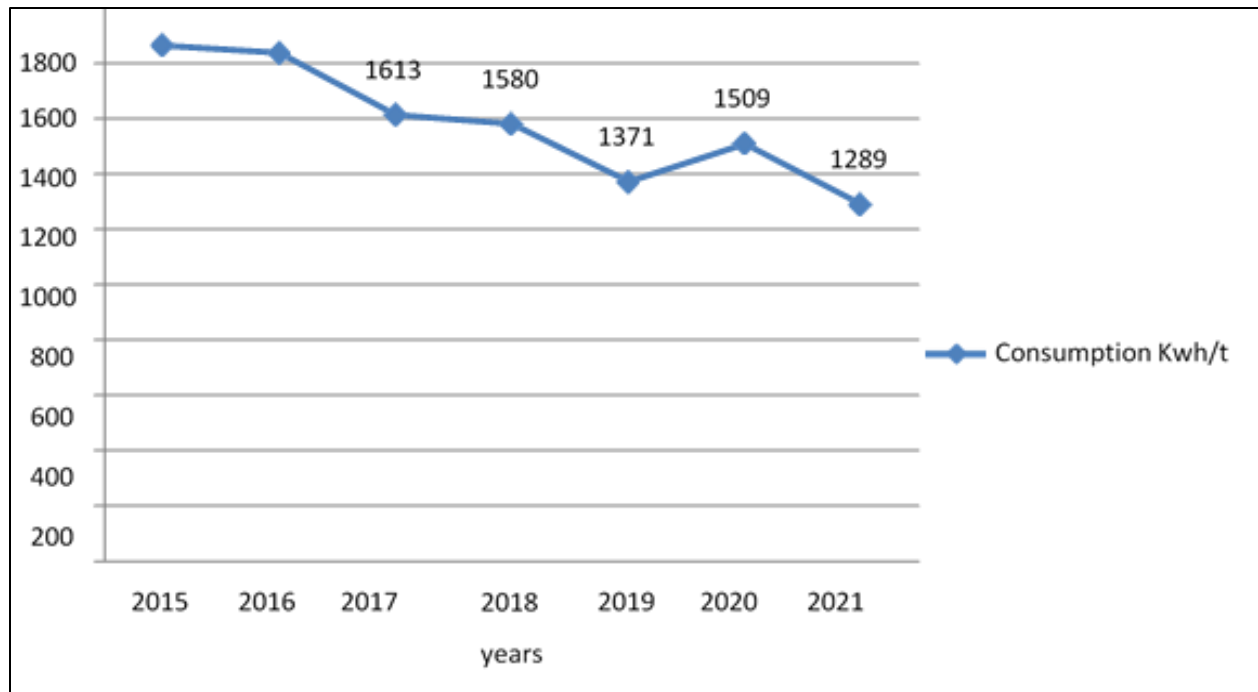
- **2021 Achievement:** (-30.29% vs 2015)
- **2021 Objective:** 1335.6 KWh/t (-28.38%)

**Table : III - 7: Evolution of energy consumption.**

Année	2015	2016	2017	2018	2019	2020	2021
ConsommationKWh/tonne	1865	1837	1613	1580	1371	1509	1289

**Source:** Created based on company data.

**Figure : III - 7: Evolution of energy consumption.**



**Source:** Created based on company data.

#### **Comment:**

The figure above represents the level and evolution of annual energy consumption per KWh/t (kilowatt-hour per ton). The horizontal axis represents the average energy consumed for the production of one ton, and the vertical axis represents the years.



We observe that energy consumption (electricity) is decreasing, reflecting an evolution starting from the year 2015. This evolution is advantageous for the site as it achieved its objective of 1335.6 KWh/t for the year 2021, which was previously set.

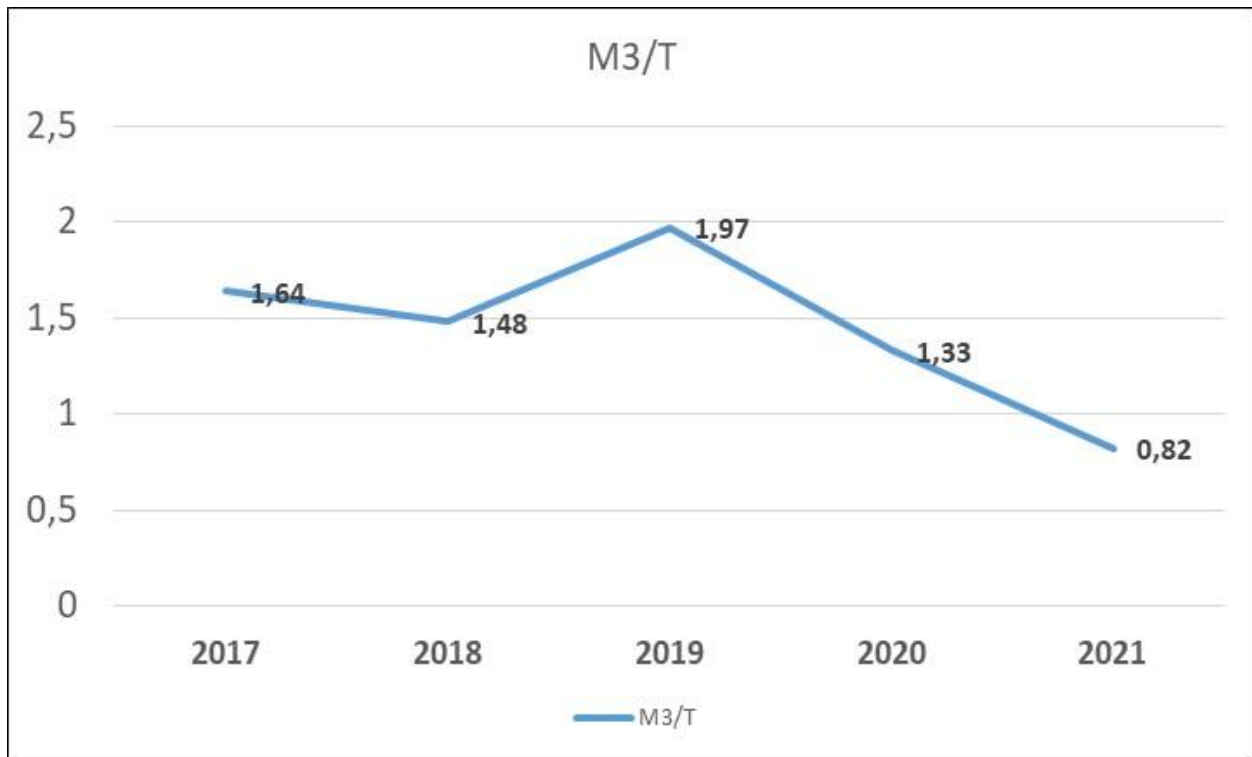
### 3.2. Evaluation of water consumption

**Table : III - 8: Water consumption**

Year	2017	2018	2019	2020	2021
M3/T	1.64	1.48	1.97	1.33	0.82

**Source:** Created based on company data.

**Figure : III - 8: Evolution of water consumption**



**Source:** Created based on company data.

**Comment :**

The figure represents the level and evolution of annual water consumption per m3/t (cubic meter per ton).

The vertical axis represents the consumption of one cubic meter for the production of one ton. Water consumption showed a decrease in 2021, which can be attributed to advancements in water consumption practices, leading to increased efficiency in the production process.

The company was able to achieve an average annual consumption of 0.82 m<sup>3</sup>/t, indicating a variation of (-50%) from 2017 to 2021. The site has aimed to reduce water consumption each year for ecological reasons.

In addition to regular water consumption, the company also utilizes a specific quantity of water for burning simulation purposes. This water is used in simulations related to burning processes, allowing the company to analyze and optimize their operations for improved efficiency and safety.

### **3.3. Recycling and Waste Production**

Recycling efforts in the LPG industry can involve the proper handling and disposal of LPG cylinders or tanks, as well as the recycling or reconditioning of expired or damaged cylinders. However, it should be noted that Naftal Algeria, as a company, does not engage in the direct recycling of their LPG wastes. Instead, they may have established partnerships or agreements with specialized recycling companies that handle the recycling process.

In such cases, Naftal Algeria may sell their LPG waste or cylinders to these recycling companies, which have the expertise and infrastructure to recycle or recondition the materials in an environmentally responsible manner. These recycling companies are likely equipped with the necessary processes for inspection, testing, and refurbishment of LPG cylinders, ensuring compliance with safety standards and environmental regulations.

After analyzing the previous results and studying the management control approach within the company, we can now observe the relationship between management control and performance at the company level. In order improve performance, the company utilizes the best performance management tools. It is noteworthy that:

1. The information system it possesses has helped the company gain a in budget management, budget control, and cost control.
2. The relevance of performance indicators.
3. The use of the balanced scorecard, which has a significant impact on performance management.
4. The strong influence of management control at the company level, as the reports it prepares on a monthly basis contribute to decision-making by the executives.
5. Indeed, management control does not directly drive performance, but it assists in the performance management process through these tools.

We could summarize the results of management control for performance management at Naftal GPL BATNA as follows :

<b>domains of performance</b>	<b>Performance indicators</b>	<b>Strategic objectives</b>
<b>customer axis</b>	Satisfaction Indicators: Increase in the number of customers.	-Developing the offering to cover all customer needs. -Customer retention. Improving customer satisfaction.
<b>Financial axis</b>	Financial Indicators: Revenue growth. Evolution of profit margin and sales. Productivity improvement.	-Streamlining operating costs. Integration into ethical funds. Access to capital markets
<b>Internal Process Axis</b>	Quality Indicators: S.H.E.Q Indicators - Safety, Hygiene/Clinical, Environment, Solid Waste Management, Quality implemented.	Operational excellence. Establishing reference documents. Safety/hygiene of facilities. Safety/quality of products. Compliance with hygiene regulations. Reducing pollution. Preserving resources. Decreasing direct costs (reducing waste). Decreasing accident and legal risks. Image/gaining market share.
<b>Learning Axis</b>	Competence Indicators: Progress bonus. Training hours.	Staff engagement/responsibility. Managing skills/knowledge. Optimizing operations.

## Section 4 : Field study Using Questionnaire

This section presents an introduction to a quantitative study that investigates the relationship between management control and performance in the context of Naftal. The study involved examining 60 employees within the organization, and data was collected through a questionnaire administered to the participants. In addition to the questionnaire, various tools, including observation, document analysis, and interviews, were utilized to collect and verify data.

### 1. Data collection and evaluation tool:

To evaluate the relationship between management control and performance in the context of Naftal, we conducted a quantitative study that examined 60 of Naftal's employees. We collected data using a questionnaire that was administered to employees. The questionnaire was distributed through two channels:

- an online distribution platform using Google Forms,
- manual distribution method to optimize efficiency.

In addition to the questionnaire different tools were used to collect and verify the data :

- 1- **Observation:** this method is frequently used by researchers to collect and verify the data from their sources. During our internship period and consecutive visits to the studied institution, observation was actually relied upon within the management departments, accounting and analysis departments.
- 2- **Document analysis:** Documents are primary sources that the researcher obtains from official entities within the institution or from specialized entity websites. By analyzing them, the researcher obtains more reliable information.
- 3- **Interview:** interviews were used while distributing the questionnaire. The interview contains a set of pre-prepared questions answers were used to enhance the accuracy of the information and obtain additional information that may help in the study.

### 2. Main axes of the questionnaire:

The questionnaire contains 3 general parts :

- A. **Personal Data:** This axis involves collecting initial information about the sample individuals, including age, job level, educational level, and professional experience.
- B. **Axis of Management Control:** This axis contains 10 items divided on three dimensions (organization, information system, and human resources). The aim of this axis is to assess the effectiveness of the management control system in the company and its improvement during the last 5 years.
- C. **Axis of Performance:** This axis includes 10 items that aim to identify the actual level of performance within the studied institution. It contains 3 subsections: Financial Performance, Social Performance, Relation with costumers and the environment .

The case focused on a diverse cohort of participants (especially who hold integral roles in the daily operations of the company), including administrative managers, employees, and technicians. Our aim was to extract meaningful insights from the data generated by the questionnaire and identify areas for potential improvement in management control mechanisms that may lead to enhanced overall company performance.

The evaluation of employee responses was conducted using the Likert scale, which is a five-point scale used to measure behaviors, preferences, and reactions of individuals who share certain personal and professional characteristics. This scale is one of the most widely used statistical measures in research studies

3. **A.1. The Questionnaire** : Questionnaire is in Index A

4. **Analysis of results** :

In this section, we analyze the dataset collected through a questionnaire. Our main focus is to explore the relationships between variables using correlation analysis in SPSS. Correlation analysis helps us understand the strength and direction of the linear association between variables. By determining significant correlations, we can identify interdependencies and potential connections among the variables. Additionally, we assess the statistical significance of these correlations to ensure their reliability. Furthermore, we perform Multiple Correspondence Analysis (MCA) on the questionnaire data to extract key factors and patterns, reducing the dataset's complexity. Through correlation analysis and the MCA, we aim to gain valuable insights into the

relationships and underlying structure of the variables, contributing to the study's objectives and decision-making processes.

**MCA definition :**

It is a statistical technique used to analyze categorical variables and explore relationships between multiple variables simultaneously. MCA is particularly useful when dealing with large datasets containing qualitative or categorical variables, as it allows for the visualization and interpretation of complex data patterns. By representing data points in a lower-dimensional space, MCA helps identify associations, dependencies, and similarities between categories, enabling researchers to gain insights and make informed decisions based on the analyzed data.

**4.1. Correlations between axes and their corresponding questions**

In this part we compute the correlation coefficient between each of the two axis (Axis 1 Management control ,Axis 2 Performance) and its corresponding questions .

**Table : III - 9: Correlations between axis 1 and its questions**

		Q1	Q2	Q3	Q4	Q5	Axis1
The company knows a significant increase in adopting different control management's over last 5 years ?	Correlation Coefficient Spearman's rho	1.000	.601**	.602**	.555**	.434**	.794**
	Sig. (2-tailed)	.	.000	.000	.000	.001	.000
	N	60	60	60	60	60	60
The quality and precision of the forecast balance sheet has been enhanced in a significant over last 5 years ?	Correlation	.601**	1.000	.620**	.717**	.594**	.823**
	Sig. (2-tailed)	.000	.	.000	.000	.000	.000
	N	60	60	60	60	60	60
The quality of the human resource management enhanced over the last 5	Correlation	.602**	.620**	1.000	.505**	.772**	.885**
	Sig. (2-tailed)	.000	.000	.	.000	.000	.000
	N	60	60	60	60	60	60
The institution has enhanced its information system during the last few years in an increase way.	Correlation	.555**	.717**	.505**	1.000	.549**	.763**
	Sig. (2-tailed)	.000	.000	.000	.	.000	.000
	N	60	60	60	60	60	60
Employees level and of mastering Human resources managements	Correlation	.434**	.594**	.772**	.549**	1.000	.802**
	Sig. (2-tailed)	.001	.000	.000	.000	.	.000
	N	60	60	60	60	60	60

tools (softwares , ...etc) increase over last 5 years.							
Axis1	Correlation	.794**	.823**	.885**	.763**	.802**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.
	N	60	60	60	60	60	60

\*\* . Correlation is significant at the 0.01 level (2-tailed)

**Source:** Created by the student based on company data by using SPSS

**Table : III - 10: Correlations between axis 2 and its questions**

		Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Axis2
The company's profits have increased over the last 5 years	Correlation	1.000	.433**	.058	.445**	.089	.302*	.488**	.054	.488**	.519**
	Sig. (2-tailed)	.	.001	.663	.000	.507	.021	.000	.689	.000	.000
	N	58	58	58	58	58	58	58	58	58	58
The company's market share have increased over the last 5 years	Correlation	.433**	1.000	.496**	.345**	.176	.550**	.379**	.685**	.379**	.632**
	Sig. (2-tailed)	.001	.	.000	.007	.180	.000	.003	.000	.003	.000
	N	58	60	60	60	60	60	60	60	60	60
Does the contribution of the to the local community company increases over last 5 years ?	Correlation	.058	.496**	1.000	.348**	.194	.056	.391**	.317*	.391**	.436**
	Sig. (2-tailed)	.663	.000	.	.007	.137	.670	.002	.013	.002	.000
	N	58	60	60	60	60	60	60	60	60	60
Advertising campaigns have increased over last 5 years ?	Correlation	.445**	.345**	.348**	1.000	.300*	.379**	.499**	.053	.499**	.641**
	Sig. (2-tailed)	.000	.007	.007	.	.020	.003	.000	.690	.000	.000
	N	58	60	60	60	60	60	60	60	60	60
The quality of the human ressource management enhanced over the last 5	Correlation	.089	.176	.194	.300*	1.000	.505**	.772**	-.026	.772**	.744**
	Sig. (2-tailed)	.507	.180	.137	.020	.	.000	.000	.846	.000	.000
	N	58	60	60	60	60	60	60	60	60	60
The institution has enhanced its information system during the last few years in an increasive way.	Correlation	.302*	.550**	.056	.379**	.505**	1.000	.549**	.343**	.549**	.760**
	Sig. (2-tailed)	.021	.000	.670	.003	.000	.	.000	.007	.000	.000
	N	58	60	60	60	60	60	60	60	60	60
Employees level and of mastring Human ressources managements tools increase over last 5 years.	Correlation	.488**	.379**	.391**	.499**	.772**	.549**	1.000	-.037	1.000**	.901**
	Sig. (2-tailed)	.000	.003	.002	.000	.000	.000	.	.780	.	.000
	N	58	60	60	60	60	60	60	60	60	60
Improvement of waste processing and recycling mechanisms.	Correlation	.054	.685**	.317*	.053	-.026	.343**	-.037	1.000	-.037	.264*
	Sig. (2-tailed)	.689	.000	.013	.690	.846	.007	.780	.	.780	.041
	N	58	60	60	60	60	60	60	60	60	60
Employees level and of mastring Human ressources managements tools increase over last 5 years.	Correlation	.488**	.379**	.391**	.499**	.772**	.549**	1.000**	-.037	1.000	.901**
	Sig. (2-tailed)	.000	.003	.002	.000	.000	.000	.	.780	.	.000
	N	58	60	60	60	60	60	60	60	60	60
Axis2	Correlation	.519**	.632**	.436**	.641**	.744**	.760**	.901**	.264*	.901**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.041	.000	.
	N	58	60	60	60	60	60	60	60	60	60

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).



**Comment:**

From the previous tables, it is evident that the correlation coefficients between the score of the statement (Question) and its corresponding axis of the questionnaire belongs to are statistically significant at the 0.01 and or 0.05 levels ( $\text{sig} < 0.05$  and or 0.05) , indicating the questionnaire's validity. In addition all questions of the first axis are correlated to each other with significant correlation which means that these questions have the same direction and answers are generally correlated.

**4.2. consistency of the questionnaire**

Cronbach's alpha coefficient is computed for a questionnaire to assess the internal consistency reliability of the items or measures within the questionnaire. It is a statistical measure that indicates the extent to which the items in a questionnaire are measuring the same underlying construct or concept. By computing Cronbach's alpha, we can evaluate the reliability and consistency of the questionnaire's items. A high Cronbach's alpha value (typically above 0.7) suggests that the items are highly correlated and provide reliable measurements of the intended construct.

**Table : III - 11: Reliability Statistics Cronbach's alpha coefficients**

	<b>Cronbach's Alpha</b>	<b>N of Items</b>
Axis 01	0.879	5
Axis 02	0.841	9
Overall	0.913	14

**Source:** created by student based on the company data by using SPSS

**Comment:**

From the previous table, it is clear that the reliability coefficients of the questionnaire axes and its overall score ranged from 0.841 to 0.913 which are high reliability coefficients, indicating the stability of the questionnaire.

**4.3. Variable Importance**

To achieve the study's objectives and analyze the collected data, various appropriate statistical methods were utilized using the Statistical Package for the Social Sciences (SPSS) version 27. After coding the data to determine the length of the five-point scale cells, the range was calculated as  $5-1=4$ . Then, it was divided by the number of scale cells to obtain the correct cell length, which is  $4/5=0.80$ . This value was then added to the lowest value in the scale, which is one.

**Table : III - 12: The verification level of the variable in light of the relative weight.**

Verification Level:	Very weak	Weak	Moderate	Strong	Very strong
Relative Weight:	1 - 1.8	1.81 - 2.6	2.61 - 3.4	3.41 - 4.2	4.21 – 5

**Source:** created by student based on the company date by using SPSS

**Table : III - 13: Descriptive Statistics of axes**

	N	Mean	Std. Deviation	Variance	Level
Axis2	60	3.6722	.75002	.563	Strong
Axis1	60	3.5400	1.08880	1.185	Strong

**Source:** created by student based on the company date by using SPSS

**Comment :** It is clear that the first and second axes have strong level which means that generally most answers in two axes are in the strong level or a mixture of very strong and under strong level, we could verify that by detail by examining the level of each answer

**Table : III - 14: Descriptive Statistics**

	Mean	Std. Dev	Var	Level
The company knows a significant increase in adopting different control management's over last 5 years ?	3.53	1.371	1.880	Strong
The quality and precision of the forecast balance sheet has been enhanced in a significant over last 5 years ?	3.55	.982	.964	Strong
The institution has enhanced its information system during the last few years in an increasive way.	3.12	1.617	2.613	Strong
The quality of the human ressource management enhanced over the last 5	3.95	1.333	1.777	Strong
Employees level and of mastring Human ressources managements tools (softwares , ...etc) increase over last 5 years.	3.55	1.254	1.574	Strong
The company's profits have increased over the last 5 years	3.78	.879	.773	Strong
The company's market share have increased over the last 5 years	4.20	.879	.773	Very Strong
Does the contribution of the to the local community company increases over last 5 years ?	3.90	.951	.905	Strong
Advertising campaigns have increased over last 5 years ?	3.45	1.032	1.065	Strong
Awareness campaigns have increased over last 5 years ?	3.12	1.617	2.613	Strong
The relationship with customers has strengthened over the past few years.	3.95	1.333	1.777	Strong
Customer satisfaction has improved over the past few years	3.55	1.254	1.574	Strong
Improvement of waste processing and recycling mechanisms.	3.60	.867	.753	Strong
Working on optimal energy and raw material consumption.	3.55	1.254	1.574	Strong

**Source:** created by student based on the company date by using SPSS

**Comment:**

The descriptive data analysis focused on assessing the importance, variance, and deviation of the questionnaire items related to both the management control and firm performance axes. Overall, the results indicate that the majority of the questions in the questionnaire were deemed important by the respondents, as evidenced by the high mean scores assigned to these items. The high variance in the responses suggests that there were diverse opinions and perceptions among the participants regarding the various dimensions of management control and firm performance. Additionally, the standard deviation values differs from relatively small and large, indicating a variation in the degree of dispersion in the responses. This implies that the participants' perspectives on management control and firm performance varied considerably, potentially reflecting the diverse nature of view employees of the company included in the study. The observed importance, variance, and deviation of the questionnaire items highlight the need for further analysis to understand the underlying factors influencing these perceptions and their potential impact on firms' performance.

**4.4.Exploring the relationship between management control and the performance of Naftal GPL**

The primary objective of this research is to investigate the relationship between management control and performance at Naftal GPL. To accomplish this, two key analytical techniques are employed: correlation analysis and multiple correspondence analysis (MCA).

**Table : III - 15: Correlations between Axes**

			Manag-control	Performance
Spearman's rho	Management control	Correlation	1.000	.846**
		Sig. (2-tailed)	.	.000
		N	60	60
	Performance	Correlation	.846**	1.000
		Sig. (2-tailed)	.000	.
		N	60	60

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source:** created by the student based on the questionnaire data using SPSS

**Comment :**

From the correlation between axe 01( Management control) and 02 (Performance)it is clear that there is a strong significant effect between Management control and performance, we could preview this relation by using MCA analysis . From the correlation between axe 01 and 02 it is

clear that there is a strong significant effect between Management control and performance, we could preview this relation by using MCA analysis

#### 4.5. Multiple correspondence analysis (MCA)

In order to preview the relation between the two axis we perform an MCA analysis using R ( see R-source code in Table: A.3 in Index)

first we performe MCA between all the variables (questions) and the two axis , then we perform it to test the relation between Axis 2(Performance) and the component of the first axis (sub axis of Axis 1). Results are as follow:

##### 4.5.1. MCA between Axe 2 and axis 1 and all the questions

**Table : III - 16: Model Summary**

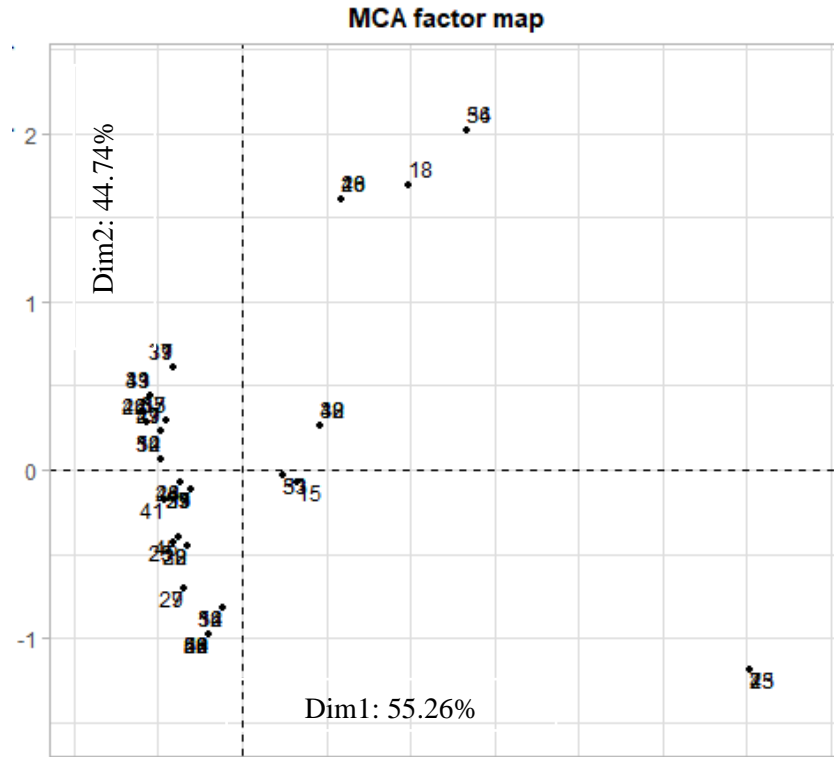
Dimension	Variance Accounted For	
	Total (Eigenvalue)	Inertia
1	11.669	0.553
2	9.446	0.447
Total	21.115	1.00
Mean	10.558	0.500

**Source:** created by the student based on the questionnaire data, using R 4.2.1(Rstudio ide)

#### **Comment:**

The previous table shows that the first dimension explains 58% of the information contained in the data while the second dimension explain 47%, this mean that these two factors explains all the information contained in the data.

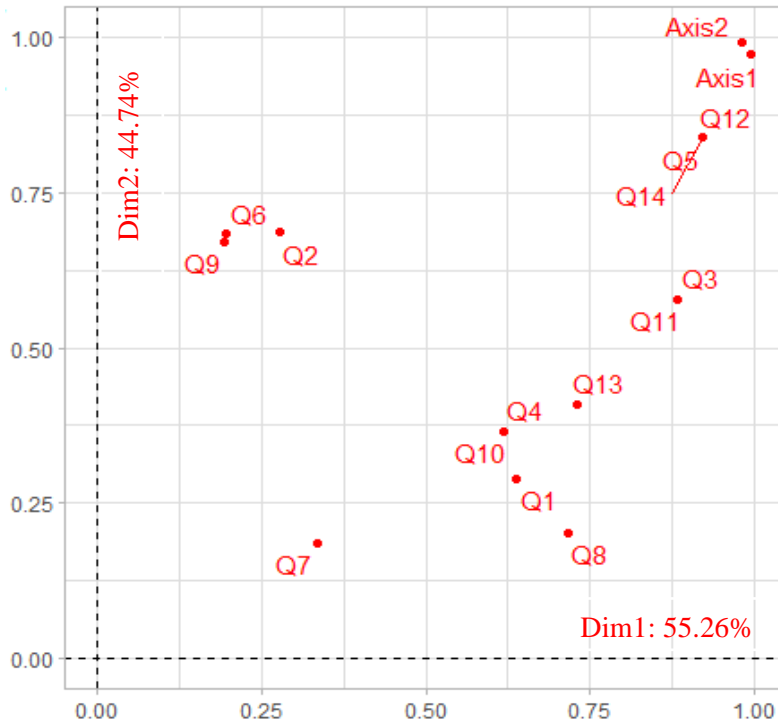
Figure : III - 9: Object points labeled by case numbers



Source: created by the student based on the questionnaire data, using R 4.2.1(Rstudio ide)

**Comment :**

This graph displays four distinct patterns or clusters of points representing different response patterns among the participants. These patterns offer insights into the relationships and associations between the variables studied. Analyzing the proximity and dispersion of points within and across clusters helps identify the strength of relationships and potential areas of alignment or divergence.

**Figure : III - 10: Variable representation**

**Source:** created by the student based on the questionnaire data, using R 4.2.1(Rstudio ide)

### 1. Analyze and interpret the results (tables and graph).

The V-test is used to test the null hypothesis: the variable has no effect on the AFCM model. If the V-test yields a significant result, it indicates that the variable should be included in the model because it contributes significantly to the overall variability (there is a significant association between the variable and the factor axis). This can help make decisions regarding the inclusion of the variable in the AFCM model.

According to the V test almost all variables are significant on F1 and F2 .(see **Table: A.1 in index A**), but our goal isn't analyzing Question but relation between Axes.

### Comment:

From the graph we could see that Axis 1 and 2 are next to each other which mean that they have a good relation.

4.5.2. MCA between Axe 2 and subs of axis 1

Table : III - 17: Table of inertia

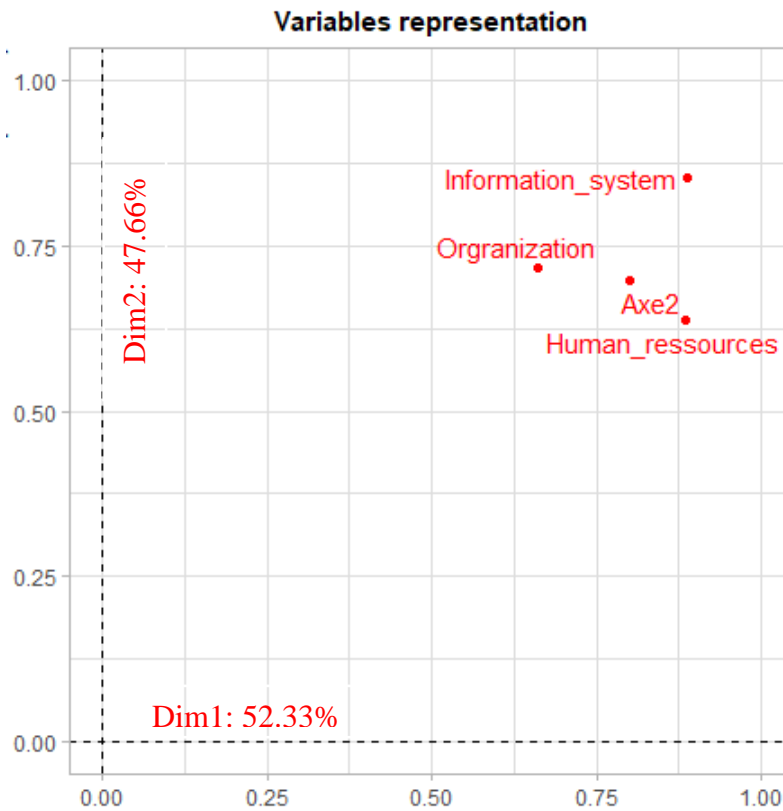
Dimension	Variance Accounted For	
	Total (Eigenvalue)	Inertia
1	3.442	.523
2	3.135	.476
Total	6.577	1.00
Mean	3.289	.500

Source: created by the student based on the questionnaire data, using SPSS v27

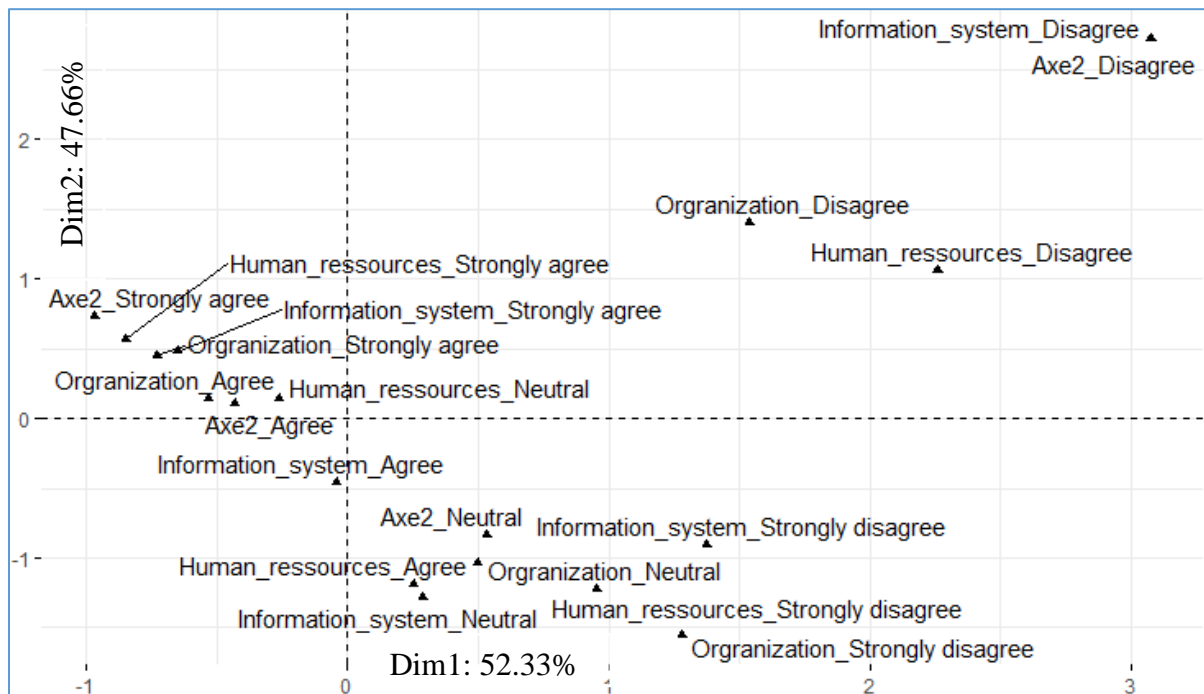
Comment:

Based on the table of Inertia, it is clear that the first dimension explains more than 86% of total inertia then we could use that dimension to analyze the graph.

Figure : III - 11: Discrimination measures between axes 1 and subs



Source: created by the student based on the questionnaire data, using R 4.2.1(Rstudio ide)

**Figure : III - 12: Variable categories-MCA**

Source: created by the student based on the questionnaire data, using R 4.2.1(Rstudio ide)

### 1. Analyze and interpret the results (tables and graph).

The V-test is used to test the null hypothesis: the variable has no effect on the AFCM model.

According to the V test almost all variables are significant on F1 and F2 (see **Table: A.2 in index A**), .

From **Figure : III - 13**: we could distinguish three general groups and we could see also that modalities of axis 2 adequate modalities of the first three dimensions (organization, human resources, information system).

In addition and according to **Figure : III - 14**: we could see that Axis 2 is next to other sub-axis (dimensions) which means that they have a good relation but each sub has its own intensity on the second axis.



**Table : III - 18: Correlations between Axes and subs**

		Axis2 (performance)	Organizati on	information_s ystem	Human_ress ources
Axis2 (performance)	Correlation Spearman's rho	1.000	.645**	.760**	.836**
	Sig. (2-tailed)	.	.000	.000	.000
	N	60	60	60	60
Organization	Correlation	.645**	1.000	.691**	.648**
	Sig. (2-tailed)	.000	.	.000	.000
	N	60	60	60	60
information_syst em	Correlation	.760**	.691**	1.000	.530**
	Sig. (2-tailed)	.000	.000	.	.000
	N	60	60	60	60
Human_ressour ces	Correlation	.836**	.648**	.530**	1.000
	Sig. (2-tailed)	.000	.000	.000	.
	N	60	60	60	60

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source:** created by the student based on the questionnaire data, using SPSS v27

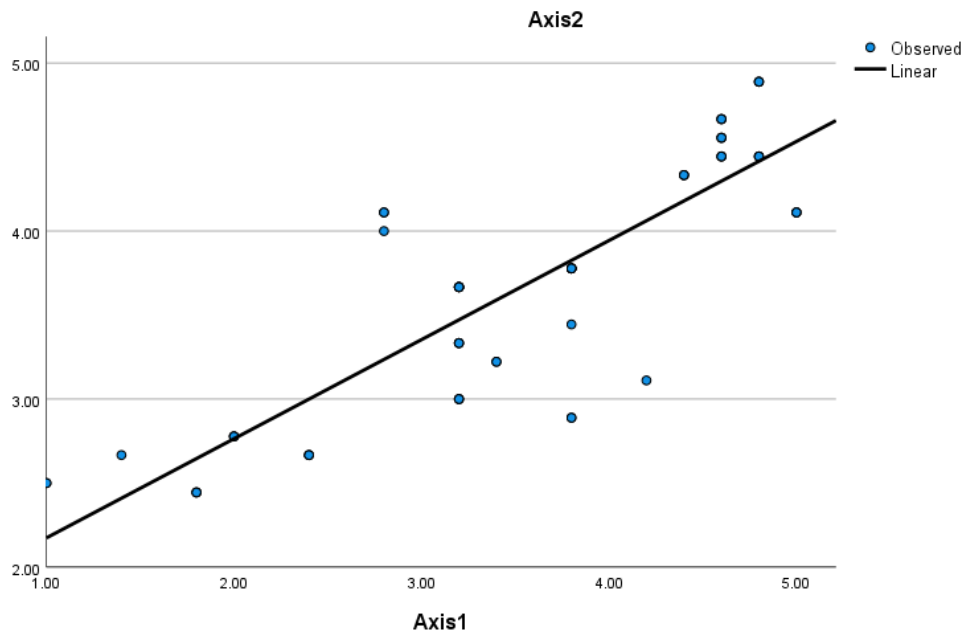
**Comment:**

From the previous figure and the table of correlation between axe 02 and the subs of axe 1 it is clear that there is a strong significant effect between Management control and performance, we could preview this relation by using MCA analysis

#### 4.6. Linear regression between management control and performance

In order to model Axis 1 and 2 we supposed Axis 1 as dependent variable and axe2 as independent, and by using automatic curve fitting function in SPSS it suggest a linear relation between the two Axes.

**Figure : III - 15: Linear regression between Management control and performance**



**Source:** created by the student based on the questionnaire data, using SPSS v27

**Comment:**

The figure depicts a linear regression between two axes, showcasing a somewhat scattered distribution of data points. Despite the slight dispersion, there is still a discernible linear relationship present. The regression line provides a reasonable approximation of the overall trend in the data, indicating a correlation between the variables.

**Table: III - 19: Linear regression results**

Model		Unstandardized Coefficients		t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error			Lower Bound	Upper Bound
1	(Constant)	1.584	.173	9.165	.000	1.238	1.930
	Axis1	.590	.047	12.635	.000	.496	.683

Dependent Variable: Axis2

**Source:** created by the student based on the questionnaire data, using SPSS v27

**Comment:**

**Unstandardized Coefficients:** These coefficients represent the estimated values for the intercept (constant) and predictor variable: (Axis1). (Management control) .The standard error associated with the coefficient estimates. It reflects the precision of the coefficient estimates. For the constant, the standard error is 0.173, and for Axis1, it is 0.047 which are very low values. The significance

(Sig.) provides the p-value associated with each coefficient. The p-value indicates the probability of obtaining a t-value as extreme as the observed value, assuming the null hypothesis that the coefficient is zero. In this case, both coefficients have p-values of .000, which means they are statistically significant. This mean that the liner model is valid model

The model shows that the relation between Management control and performance is linear with a parameter of 0.59 which means that if we improve the management control by 100% then the performance of the company will be improved by 0.59 . As a conclusion we could release that the performance of Naftal is proportional to the quality of its management control system.

### **Conclusion:**

This section highlights the importance of management control in firms' performance based on the findings obtained from the questionnaire analysis. While management control has a significant impact, it is essential to acknowledge the influence of other factors, including marketing, governance, and employee motivation.

The results emphasize that firms should not solely rely on management control systems. Instead, they should consider a holistic approach that integrates effective marketing strategies to meet customer needs and gain a competitive advantage. Additionally, sound governance practices promote transparency and ethical conduct, contributing to long-term sustainability.

Furthermore, employee motivation plays a crucial role in driving performance. Creating a work environment that fosters engagement and growth is key to leveraging the potential of management control systems. Motivated employees are more likely to contribute effectively, leading to improved overall performance.

To enhance firms' performance, it is necessary to address not only management control but also complementary factors such as marketing, governance, and employee motivation. By adopting a comprehensive approach, organizations can develop strategies that encompass multiple dimensions of performance, adapt to market changes, meet customer expectations, and cultivate a high-performing workforce.

In summary, while management control is significant, this section emphasizes the need to consider additional factors for a comprehensive understanding of firms' performance. Integrating marketing, governance, and employee motivation within the organizational framework enables the development of effective strategies for sustainable success.

## **General conclusion :**

Today, the business activity has become much more complex and undergoes changes that result from globalization, increased competition, and rising customer demands, where only well-organized companies can ensure their continuity.

Management control therefore proves to be the main tool that enables the transmission between the strategic level and the operational level of the company. With its various tools, it takes its place within the company as a founding principle of innovation, responsiveness, and adaptation to market requirements.

Before proceeding with the synthesis of our findings, it is essential to highlight that our study faced certain limitations due to the stringent confidentiality requirements imposed by the company. These confidentiality constraints were specifically imposed because of the strategic significance of the data handled by the management controller, which necessitated careful handling and restricted access throughout the study.

Recognizing the importance given to this function and at the conclusion of our work, which aims to assess the impact of management control on company performance, we conducted an internship at Naftal GPL, a prominent company in the energy and hydrocarbon sector, located in the Batna province. In order to achieve this goal, the company practices management control and attaches importance to budget management, analytical accounting, and dashboards, considering them as central elements of management control. Therefore, the first hypothesis is confirmed.

We provided a description of the main management processes of this company. We focused specifically on the production process of this company. Then, we listed the various outcomes and indicators of these tools. This analysis confirmed the crucial role of the "management control" function in enhancing the performance of Naftal GPL, as evidenced by the following observations:

- "Naftal GPL Batna" has achieved the objective of minimizing production costs, indicating its effectiveness in cost control. This is attributed to the nature of the management control tools it utilizes.

- The experience gained in previous years has allowed it to increase production.

- Minor deviations between forecasts and actual results were observed, leading us to conclude that "Naftal GPL Batna" was able to meet its objectives. Management control consists of verifying that action plans have been followed and objectives have been achieved. Performance is defined

by achieving these objectives with minimal costs. This observation confirms our second hypothesis.

-The management control and performance management at Naftal GPL Batna rely on various management tools such as analytical accounting, management reports, and dashboards, which provide an up-to-date view of the company's situation. These tools serve as support for enhancing performance.

We have observed that this company has good indicators for measuring its performance, which are presented by the management control department. During our internship and based on the data we collected, the objectives pursued by this entity are often achieved with minimal costs. Our judgment based on this situation is that the activity of Naftal GPL Batna is effective and efficient, and management control plays a supporting role in ensuring its progress and performance improvement. These results have allowed us to confirm our final hypothesis.

Indeed, the current management control system at Naftal GPL Batna is effective and enables the achievement of results and the realization of objectives emphasized by the company.

In conclusion, we would like to emphasize that we do not claim to have completed all the necessary research in the development of our final dissertation. However, we hope that our work will serve as inspiration for future research endeavors. The work we have accomplished, regardless of its quality, is a result of the knowledge acquired during our academic journey and our thoughtful reflection on the posed problem, namely the theme. It reflects the depth of insights gained from our university curriculum and signifies our intellectual growth and analytical abilities. Our work serves as a testament to the transformative power of education and our commitment to understanding and addressing the challenges inherent in the chosen theme.

## **Recommendations and future work**

### **1. Recommendations**

To improve the performance of firms, it is essential to consider not only management control but also complementary factors, such as:

#### **A. Marketing:**

- Conduct a thorough market analysis to identify customer needs and preferences.
- Develop a comprehensive marketing plan that aligns with the organization's goals and objectives.

- Utilize digital marketing tools and platforms to reach a wider audience and improve customer engagement.
- Invest in customer relationship management (CRM) systems to better understand and track customer interactions and feedback.
- Continuously monitor and evaluate marketing performance to identify areas for improvement.

### **B. Governance:**

- Establish clear policies and procedures for decision-making, risk management, and compliance.
- Foster a culture of transparency, accountability, and ethical behavior.
- Develop a governance framework that aligns with the organization's strategic objectives and values.
- Regularly review and update governance practices to ensure they remain effective and relevant.
- Provide training and support to employees to ensure they understand and comply with governance requirements.

### **C. Employee motivation:**

- Develop a comprehensive employee engagement strategy that includes regular feedback, recognition, and career development opportunities.
- Foster a positive work culture that values employee well-being, diversity, and inclusion.
- Provide competitive compensation and benefits packages that align with industry standards.
- Offer flexible work arrangements that support work-life balance and productivity.
- Regularly assess employee satisfaction and engagement levels and take action to address areas of concern.

By adopting a comprehensive approach that considers all three dimensions of performance, organizations can develop strategies that are more effective, sustainable, and adaptable to changing market conditions and workforce needs. It's important to also regularly monitor and evaluate the effectiveness of these strategies and make adjustments as needed. Additionally, it's crucial to

involve all stakeholders in the process, including customers, employees, and other relevant parties, to ensure that their perspectives and feedback are taken into account.

### **2. Future work**

Based on the results of the descriptive analysis and quantitative study conducted in this thesis, several potential avenues for future research have been identified.

Firstly, a longitudinal study could be conducted to examine the impact of management control systems on firm performance over time.

Secondly, the impact of different types of management control systems, such as financial control, internal control, or market control, on firm performance could be explored.

Thirdly, the impact of management control systems on firm performance in different industries, such as manufacturing, service, or healthcare, could be investigated.

Fourthly, the impact of cultural factors, such as national culture or organizational culture, on the relationship between management control systems and firm performance could be examined.

Lastly, the impact of technology, such as data analytics or artificial intelligence, on the effectiveness of management control systems and firm performance could be explored.

Additionally, qualitative research could be conducted to gain deeper insights into the experiences and perceptions of managers and employees regarding the implementation and effectiveness of management control systems in their organizations.

These areas of future work have the potential to further develop our understanding of the impact of management control systems on firm performance and contribute to the existing body of knowledge in this field.

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## Index A :

Personnel information						
Age		[18-30[	[31-40[	[41-50[	[51-60[	[60 , +[
Educational level		PHD	Master	Licence	secondary	Other
Experiance (years)		+15	10-15	05-10	02-05	0-02
Position		director	chief technical	technical	assistant	Adminis- trative
Axis N° 01: Management control						
Organization						
N°	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
01	The company knows a significative increase in adopting different control management's over last 5 years ?					
02	The quality and precision of the forecast balance sheet has been enhanced in a significative over last 5 years ?					
The information system						
03	The institution has enhanced its information system during the last few years in an increasive way.					
Human rессources						
4	The quality of the human rессource management enhanced over the last 5 years.					
5	Employees level and of mastring Human rессources managements tools (softwares , ...etc) increase over last 5 years.					
Axis N° 02 Financial Performance						
Financial Performance						
6	The company's profits have increased over the last 5 years					
7	The company's market share have increased over the last 5 years					
Social Performance						
8	Does the contribution of the to the local community company increases over last 5 years ?					
9	Advertising campaigns have increased over last 5 years ?					
10	Awareness campaigns have increased over last 5 years ?					
Relation with costumers						
11	The relationship with customers has strengthened over the past few years.					
12	Customer satisfaction has improved over the past few years					
Enviremental performance						
13	Improvement of waste processing and recycling mechanisms.					
14	Working on optimal energy and raw material consumption.					

**Table: A.2 : Contribution cos2,coordinate,v.test**

	Coord		Cos <sup>2</sup>		Contr		V.Test	
	Dim 1	Dim 2	Dim 1	Dim 2	Dim 1	Dim 2	Dim 1	Dim 2
Q1_Agree	-0.53	-0.11	0.05	0.00	0.33	0.02	<b>-1.71</b>	<b>-0.36</b>
Q1_Disagree	0.84	1.60	0.04	0.14	0.27	1.26	<b>1.47</b>	<b>2.83</b>
Q1_Neutral	0.03	0.24	0.00	0.03	0.00	0.18	<b>0.14</b>	<b>1.27</b>
Q1_Strongly agree	-0.59	-0.26	0.19	0.04	0.97	0.23	<b>-3.34</b>	<b>-1.47</b>
Q1_Strongly disagree	1.77	-0.37	0.48	0.02	3.30	0.18	<b>5.34</b>	<b>-1.11</b>
Q2_Agree	-0.39	0.02	0.10	0.00	0.49	0.00	-2.47	0.13
Q2_Disagree	1.02	0.78	0.05	0.03	0.41	0.30	1.80	1.37
Q2_Neutral	0.41	-0.28	0.09	0.04	0.46	0.27	2.29	-1.58
Q2_Strongly agree	-0.79	-0.56	0.11	0.06	0.73	0.46	-2.55	-1.81
Q2_Strongly disagree	1.65	2.71	0.14	0.39	1.07	3.58	2.90	4.77
Q4_Agree	-0.37	-0.21	0.02	0.01	0.11	0.04	-0.95	-0.55
Q4_Disagree	-0.37	0.06	0.02	0.00	0.16	0.00	-1.20	0.18
Q4_Neutral	-0.19	0.20	0.01	0.01	0.05	0.07	-0.64	0.69
Q4_Strongly agree	-0.69	-0.39	0.24	0.07	1.25	0.48	<b>-3.74</b>	<b>-2.09</b>
Q4_Strongly disagree	1.42	0.43	0.67	0.06	3.94	0.45	<b>6.28</b>	<b>1.91</b>
Q3_Agree	-0.08	0.56	0.00	0.08	0.01	0.61	<b>-0.32</b>	<b>2.15</b>
Q3_Disagree	3.31	-2.68	0.58	0.38	4.32	3.51	<b>5.84</b>	<b>-4.72</b>
Q3_Neutral	-0.08	0.13	0.00	0.00	0.01	0.02	<b>-0.26</b>	<b>0.41</b>
Q3_Strongly agree	-0.54	-0.34	0.29	0.12	1.15	0.57	<b>-4.15</b>	<b>-2.63</b>
Q3_Strongly disagree	1.33	1.74	0.20	0.34	1.40	2.97	<b>3.41</b>	<b>4.46</b>
Q5_Agree	-0.15	-0.09	0.01	0.00	0.03	0.02	<b>-0.57</b>	-0.34
Q5_Disagree	3.31	-2.68	0.58	0.38	4.32	3.51	<b>5.84</b>	<b>-4.72</b>
Q5_Neutral	-0.09	0.24	0.00	0.03	0.02	0.20	<b>-0.53</b>	<b>1.36</b>
Q5_Strongly agree	-0.76	-0.50	0.25	0.11	1.35	0.72	<b>-3.80</b>	<b>-2.49</b>
Q5_Strongly disagree	1.24	2.16	0.17	0.52	1.21	4.54	<b>3.18</b>	<b>5.52</b>
Q6.NA	1.73	2.92	0.10	0.29	0.79	2.79	<b>2.47</b>	<b>4.17</b>
Q6_Agree	0.14	-0.52	0.01	0.13	0.05	0.87	<b>0.78</b>	<b>-2.80</b>
Q6_Disagree	0.84	1.60	0.04	0.14	0.27	1.26	<b>1.47</b>	<b>2.83</b>
Q6_Neutral	-0.24	0.15	0.03	0.01	0.15	0.07	<b>-1.34</b>	<b>0.83</b>
Q6_Strongly agree	-0.28	-0.25	0.02	0.02	0.14	0.14	<b>-1.17</b>	<b>-1.04</b>
Q7_Agree	-0.20	0.19	0.02	0.02	0.11	0.13	<b>-1.12</b>	<b>1.09</b>
Q7_Disagree	-0.35	0.38	0.01	0.01	0.05	0.07	<b>-0.61</b>	<b>0.67</b>
Q7_Neutral	1.45	-0.58	0.37	0.06	2.49	0.50	<b>4.69</b>	<b>-1.88</b>
Q7_Strongly agree	-0.29	0.00	0.07	0.00	0.30	0.00	<b>-2.02</b>	0.01
Q8_Agree	-0.26	0.10	0.02	0.00	0.13	0.02	<b>-1.16</b>	<b>0.43</b>
Q8_Disagree	3.31	-2.68	0.58	0.38	4.32	3.51	<b>5.84</b>	<b>-4.72</b>
Q8_Neutral	-0.21	0.15	0.02	0.01	0.12	0.07	<b>-1.16</b>	<b>0.82</b>
Q8_Strongly agree	-0.08	0.17	0.00	0.02	0.02	0.10	<b>-0.46</b>	<b>0.95</b>
Q9_Agree	0.04	-0.42	0.00	0.18	0.01	0.87	0.29	<b>-3.25</b>
Q9_Disagree	-0.28	0.32	0.01	0.02	0.09	0.15	<b>-0.89</b>	<b>1.05</b>
Q9_Neutral	0.13	0.43	0.00	0.05	0.03	0.36	<b>0.50</b>	<b>1.66</b>
Q9_Strongly agree	-0.86	-0.59	0.08	0.04	0.58	0.34	<b>-2.19</b>	<b>-1.51</b>

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Q9_Strongly disagree	1.65	2.71	0.14	0.39	1.07	3.58	<b>2.90</b>	<b>4.77</b>
Q10_Agree	-0.37	-0.21	0.02	0.01	0.11	0.04	<b>-0.95</b>	<b>-0.55</b>
Q10_Disagree	-0.37	0.06	0.02	0.00	0.16	0.00	<b>-1.20</b>	0.18
Q10_Neutral	-0.19	0.20	0.01	0.01	0.05	0.07	<b>-0.64</b>	<b>0.69</b>
Q10_Strongly agree	-0.69	-0.39	0.24	0.07	1.25	0.48	<b>-3.74</b>	-2.09
Q10_Strongly disagree	1.42	0.43	0.67	0.06	3.94	0.45	<b>6.28</b>	<b>1.91</b>
Q11_Agree	-0.08	0.56	0.00	0.08	0.01	0.61	<b>-0.32</b>	<b>2.15</b>
Q11_Disagree	3.31	-2.68	0.58	0.38	4.32	3.51	<b>5.84</b>	<b>-4.72</b>
Q11_Neutral	-0.08	0.13	0.00	0.00	0.01	0.02	<b>-0.26</b>	<b>0.41</b>
Q11_Strongly agree	-0.54	-0.34	0.29	0.12	1.15	0.57	<b>-4.15</b>	-2.63
Q11_Strongly disagree	1.33	1.74	0.20	0.34	1.40	2.97	<b>3.41</b>	<b>4.46</b>
Q12_Agree	-0.15	-0.09	0.01	0.00	0.03	0.02	<b>-0.57</b>	-0.34
Q12_Disagree	3.31	-2.68	0.58	0.38	4.32	3.51	<b>5.84</b>	-4.72
Q12_Neutral	-0.09	0.24	0.00	0.03	0.02	0.20	<b>-0.53</b>	<b>1.36</b>
Q12_Strongly agree	-0.76	-0.50	0.25	0.11	1.35	0.72	<b>-3.80</b>	<b>-2.49</b>
Q12_Strongly disagree	1.24	2.16	0.17	0.52	1.21	4.54	<b>3.18</b>	<b>5.52</b>
Q13_Agree	-0.21	0.01	0.02	0.00	0.09	0.00	<b>-0.95</b>	0.06
Q13_Disagree	3.31	-2.68	0.58	0.38	4.32	3.51	<b>5.84</b>	<b>-4.72</b>
Q13_Neutral	-0.24	0.04	0.06	0.00	0.23	0.01	<b>-1.86</b>	0.35
Q13_Strongly agree	0.05	0.54	0.00	0.07	0.00	0.57	<b>0.17</b>	<b>2.08</b>
Q14_Agree	-0.15	-0.09	0.01	0.00	0.03	0.02	<b>-0.57</b>	-0.34
Q14_Disagree	3.31	-2.68	0.58	0.38	4.32	3.51	<b>5.84</b>	<b>-4.72</b>
Q14_Neutral	-0.09	0.24	0.00	0.03	0.02	0.20	<b>-0.53</b>	<b>1.36</b>
Q14_Strongly agree	-0.76	-0.50	0.25	0.11	1.35	0.72	<b>-3.80</b>	<b>-2.49</b>
Q14_Strongly disagree	1.24	2.16	0.17	0.52	1.21	4.54	<b>3.18</b>	<b>5.52</b>
Axe1round_Agree	-0.44	0.02	0.05	0.00	0.33	0.00	<b>-1.78</b>	0.07
Axe1round_Disagree	1.72	-0.10	0.52	0.00	3.50	0.01	<b>5.56</b>	-0.32
Axe1round_Neutral	-0.06	0.12	0.00	0.01	0.01	0.04	-0.31	<b>0.58</b>
Axe1round_Strongly agree	-0.76	-0.53	0.25	0.12	1.35	0.81	<b>-3.80</b>	<b>-2.65</b>
Axe1round_Strongly disagree	1.65	2.71	0.14	0.39	1.07	3.58	<b>2.90</b>	<b>4.77</b>
Axe2round_Agree	-0.39	-0.20	0.13	0.03	0.55	0.17	<b>-2.73</b>	<b>-1.37</b>
Axe2round_Disagree	3.31	-2.68	0.58	0.38	4.32	3.51	<b>5.84</b>	<b>-4.72</b>
Axe2round_Neutral	0.39	0.89	0.08	0.42	0.41	2.70	<b>2.17</b>	<b>5.01</b>
Axe2round_Strongly agree	-0.83	-0.59	0.12	0.06	0.80	0.51	<b>-2.66</b>	<b>-1.89</b>
Orgranization_Agree	-0.56	-0.11	0.06	0.00	0.37	0.02	<b>-1.80</b>	<b>-0.36</b>
Orgranization_Disagree	1.74	-0.93	0.40	0.11	2.79	0.99	<b>4.86</b>	<b>-2.60</b>
Orgranization_Neutral	0.23	0.50	0.02	0.11	0.12	0.72	<b>1.15</b>	<b>2.49</b>
Orgranization_Stronglyagree	-0.61	-0.30	0.25	0.06	1.19	0.35	<b>-3.85</b>	<b>-1.89</b>
Orgranization_Stronglydisagree	1.73	2.92	0.10	0.29	0.79	2.79	<b>2.47</b>	<b>4.17</b>
Information_system_Agree	-0.08	0.56	0.00	0.08	0.01	0.61	<b>-0.32</b>	<b>2.15</b>
Information_system_Disagree	3.31	-2.68	0.58	0.38	4.32	3.51	<b>5.84</b>	<b>-4.72</b>

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Information_system_Neutral	-0.08	0.13	0.00	0.00	0.01	0.02	-0.26	<b>0.41</b>
Information_system_Strongly agree	-0.54	-0.34	0.29	0.12	1.15	0.57	<b>-4.15</b>	<b>-2.63</b>
Information_system_Strongly disagree	1.33	1.74	0.20	0.34	1.40	2.97	<b>3.41</b>	<b>4.46</b>
Human_ressources_Agree	-0.13	0.14	0.00	0.00	0.02	0.04	<b>-0.48</b>	<b>0.53</b>
Human_ressources_Disagree	2.17	-0.95	0.52	0.10	3.69	0.88	<b>5.55</b>	<b>-2.43</b>
Human_ressources_Neutral	-0.23	0.07	0.02	0.00	0.11	0.01	<b>-1.05</b>	0.31
Human_ressourcesq_Strongly agree	-0.73	-0.47	0.29	0.12	1.48	0.76	<b>-4.13</b>	<b>-2.66</b>
Human_ressourcesRND_Strongly disagree	1.24	2.16	0.17	0.52	1.21	4.54	<b>3.18</b>	<b>5.52</b>

Value of Vtest in Bold are significant level of 0.05

Source: created by the student based on the questionnaire data, using R 4.2.1(Rstudio ide)

Table: A.2 : Contribution cos2,coordinate,v.test

	Corrd		contr		cos <sup>2</sup>		Vtest	
	Dim 1	Dim 2	Dim 1	Dim 2	Dim 1	Dim 2	Dim 1	Dim 2
Axe2_Agree	-0.43	0.11	2.61	0.18	0.15	0.01	<b>-3.01</b>	<b>0.74</b>
Axe2_Disagree	3.08	2.72	14.65	12.68	0.50	0.39	<b>5.42</b>	<b>4.78</b>
Axe2_Neutral	0.53	-0.84	3.07	8.44	0.15	0.38	<b>3.00</b>	<b>-4.72</b>
Axe2_Strongly agree	-0.97	0.73	4.36	2.74	0.17	0.09	<b>-3.13</b>	<b>2.35</b>
Orgranization_Agree	-0.53	0.14	1.32	0.10	0.05	0.00	<b>-1.72</b>	<b>0.46</b>
Orgranization_Disagree	1.54	1.40	8.54	7.87	0.31	0.26	<b>4.30</b>	<b>3.91</b>
Orgranization_Neutral	0.50	-1.04	2.31	11.17	0.11	0.46	<b>2.51</b>	<b>-5.23</b>
Orgranization_Strongly agree	-0.73	0.45	6.59	2.76	0.36	0.13	<b>-4.58</b>	<b>2.81</b>
Orgranization_Strongly disagree	1.28	-1.55	1.69	2.76	0.06	0.08	<b>1.83</b>	<b>-2.21</b>
Information_system_Agree	-0.04	-0.46	0.01	1.48	0.00	0.05	-0.16	<b>-1.78</b>
Information_system_Disagree	3.08	2.72	14.65	12.68	0.50	0.39	<b>5.42</b>	<b>4.78</b>
Information_system_Neutral	0.29	-1.28	0.38	8.45	0.01	0.29	<b>0.92</b>	<b>-4.13</b>
Information_system_Strongly agree	-0.65	0.48	6.57	3.93	0.42	0.23	<b>-5.01</b>	<b>3.67</b>
Information_system_Strongly disgr	1.38	-0.90	5.85	2.80	0.21	0.09	<b>3.52</b>	<b>-2.31</b>
Human_ressources_Agree	0.25	-1.19	0.36	8.96	0.01	0.32	<b>0.92</b>	<b>-4.34</b>
Human_ressources_Disagree	2.26	1.06	15.80	3.88	0.57	0.13	<b>5.79</b>	<b>2.72</b>
Human_ressources_Neutral	-0.26	0.14	0.57	0.17	0.03	0.01	<b>-1.21</b>	<b>0.63</b>
Human_ressources_Strongly agree	-0.85	0.56	7.84	3.84	0.39	0.17	<b>-4.80</b>	<b>3.18</b>
Human_ressources_Strongly disagree	0.95	-1.22	2.82	5.11	0.10	0.17	<b>2.44</b>	<b>-3.12</b>

Value of Vtest in Bold are significant level of 0.05

Source: created by the student based on the questionnaire data, using R 4.2.1(Rstudio ide)

**Table: A.3 : R-source code**

```
# Load necessary packages
library(FactoMineR)
library(factoextra)
library(readxl)
library(ggplot2)

# Import data from Excel file as "data"
data <- read_excel("C:/Users/Akrem/Desktop/XIData/data2.xlsx")
# Convert data to categorical
data <- as.data.frame(lapply(data, factor))
# Visualize the data
data
# Perform MCA analysis
mca <- MCA(data, ncp = 3)
# Plot the inertia
fviz_screplot(mca_result, type="inertia", ncp = 3, addlabels = TRUE)
# Show MCA graph in black (for printing)
fviz_mca_var(mca, col.var = "black", repel = TRUE)
# Plot modalities with contribution and add gradient color scale
fviz_mca_var(mca, col.var = "contrib", gradient.cols = c("#00AFBB", "#E7B800", "#FC4E07"),
repel = TRUE)
# Plot the individuals in the dimensions space
fviz_mca_ind(mca, col.ind = "cos2", gradient.cols = c("#00AFBB", "#E7B800", "#FC4E07"))
# Plot the individuals in the dimensions space, colored by groups
fviz_mca_ind(mca, habillage = data, palette = "jco", addEllipses = TRUE)
# Show the MCA analysis summary
summary(mca)
# Show the MCA analysis summary for each parameter for copying reasons
mca$eig
mca$var
mca$var$coord
mca$var$cos2
mca$var$contrib
mca$var$v.test
mca$ind
mca$ind$coord
mca$ind$cos2
mca$ind$contrib
```

---

## **INDEX B:**

### *Interview Guide on the Impact of Management Control on Performance at Naftal GPL BATNA Site*

#### **Company: Naftal GPL Batna:**

**Title:** Interview Guide on the Impact of Management Control on Company Performance

Date and time of the interview: 23/03/2023 at 09:30

**I. Introduction phase:** I am a master's student in ESGEN Kolea. I am working on my final thesis to obtain a master's degree, focusing on the impact of management control on company performance.

#### **II. Active listening phase on the research topic:**

##### **SECTION 01: Description of the management control function**

- 1) Who performs management control?
- 2) What is the role of management control within Naftal GPL Batna?
- 3) What are the key tasks of management control?
- 4) What management control tools are used within Naftal GPL Batna?
- 5) Could you describe how each tool operates and explain the role of each tool?
- 6) Are you responsible for cost calculations? What method do you use?
- 7) Does the site have control over costs?
- 8) What steps do you take for the budgeting process?
- 9) Are you responsible for budget monitoring and control? During which period and on what areas do you focus?
- 10) Are the budget forecasts close to the actual figures?
- 11) What types of reporting do you develop? When and how do you prepare them?
- 12) How do you develop your dashboards?
- 13) What type of management system do you use? How does it function, and what are its advantages?

##### **SECTION 02: Evaluation of Naftal GPL Batna performance**

- 14) How do you present the company's situation to the executives?
  - 15) What are the performance areas of the company?
  - 16) What are the key indicators you use to measure performance?
  - 17) Based on what criteria do you choose these indicators?
  - 18) What is the company's market share?
  - 19) Regarding economic performance, what is the achievement rate of set objectives?
  - 20) How do you measure human performance?
  - 21) How do you measure environmental performance?
  - 22) Do you achieve the pre-established objectives?
  - 23) Are the management control tools sufficient to measure company performance?
-



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