# Optimizing Electricity & Gas Distribution: The Impact of Dashboard-Driven Management Control

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**Abstract**

The dashboard is a command-and-control tool that allows organizations to improve management control mechanisms and measure performance. This is because it provides real-time information that allows decision makers to adjust their decisions in a timely manner (Farida & Setiawan, 2022). The following research paper aims to show the role of adopting this tool in the Electricity and Gas Distribution Corporation of Batna city as a model for highlighting the features of the dashboard in this type of institutions. This study concluded that the dashboard is one of the most important tools approved by the Electricity and Gas Distribution Corporation for Batna city to improve the management control process. It provided a complete picture of the effectiveness of the management methods used in the institution, and also allowed showing the percentages of deviations that were interpreted and corrected.

**Keywords:** dashboard, management control, performance, Public Economic Institutions

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## Introduction:

The increasing competition that companies face in today's market requires greater response to be competitive and effective (McGee, Prusak, & Pyburn, 1993). Accordingly, its information system must be able to provide indicators related to the behavior and development of the system in a very short time, allowing the decision maker to interact (Farida & Setiawan, 2022). However, tools such as analytical accounting or budget management do not allow feedback of information within the time frames compatible with the needs of the decision makers (Weygandt, Kimmel, & Aly, 2020).

The motives, goals and funding sources of public organizations differ from those of private organizations (Boyne, 2002), which makes the tools used in control and management different. Thus, in order to ensure regular monitoring of organizations' activities and accounts as well as analysis of their relationships with various stakeholders, many organizations use different tools

including dashboards. The dashboard was used as part of a Taylor approach consisting of notes with specific deadlines. Today, the dashboard is increasingly used to aid decision-making (Abduldaem & Gravell, 2019) and improve performance in real time.

The dashboard has different forms that fit with the shape, size and nature of the organization (Eckerson, 2010), and it gives digital indicators that allow the organization to know the results of its activity in real time. It thus enables it to take appropriate corrective measures to achieve its objectives, as preparing the dashboard requires analysis of the environment, strategy, risks, and others (Bharosa, Janssen, Meijer, & Brave, 2010). It also requires defining objectives and associated indicators (Epstein & Rejc, 2006).

The dashboard allows for better management of the organization's business, facilitating decision-making and improving performance, and it is considered important for both public and private organizations (Epstein & Rejc, 2006). It is a tool that allows monitoring the results of the activity on an ongoing basis and in real time, which makes it able to take appropriate corrective actions. If necessary, the indicators can be modified according to the objectives (Kerzner, 2022).

On the other hand, the Sonelgaz corporation is a public institution of an economic nature that provides public and strategic services, whether for private or public organizations, and even for citizens. It is an economic public facility that serves several stakeholders, including workers, customers, and a general national policy, all under the constraints of public pricing as well as the institution's budget and state support, in parallel with working to satisfy public service users. For this reason, the dashboard is an effective tool for managing this strategic public institution, and for supporting the strategic decisions taken to improve its financial position and achieve its strategic objectives. Accordingly, the current study seeks to answer the following problematic:

**What is the extent of the dashboard's contribution to achieving management control and improving performance in the Algerian economic public institution?**

Using the dashboard in Batna's Sonelgaz corporation helped this public economic institution to improve the decision-making process by providing correct and timely information. This contributed to the improvement of its performance, and allowed to save the time and resources necessary to achieve its management and financial goals, and herein lies the importance of research.

**Study objectives:**

**This study aims to:**

Explaining the role of the dashboard in achieving management control within the Algerian economic institution;

Clarifying the extent of the dashboard's contribution to improving performance in the Algerian economic public institution;

Providing a dashboard setup form for the Batna's Sonelgaz corporation, usable by all stakeholders

## Theoretical framework of the study

### First: The concept of the dashboard and its importance

The dashboard is widely defined as "a visual display of data used to monitor conditions and/or facilitate understanding"(Wexler, Shaffer, & Cotgreave, 2017). Therefore, the dashboard is an essential tool for proactive management that allows for real decision-building support for all actors in the organization. It is not just a display of indicators and results. However, the dashboard is above all a decision-making tool as it provides indicators of very useful information that allows decision-makers to take any action deemed useful to improve the situation. Furthermore, it is a powerful information tool that quickly informs managers of the evolution of their management, and a communication tool that enhances exchanges within the company with the goal of continually improving performance (Hémici & Bounab, 2016).

The dashboard is, in addition to a host of other tools - general accounting, analytical accounting, discretionary budgets, planning, etc. - a tool for leadership and management control. The main objectives of the dashboard are to assist in decision making and to improve the performance of the organization. Nevertheless, its ultimate goal is to be useful and usable over time (James, 2012). Questioning the assumptions of the traditional management control model has led to the modernization of budgeting techniques and the emergence of performance measurement systems (Bouquin, 2013). Practitioners recognize the important role of performance measurement systems that are found in the dashboard and its characteristics that enable it to contribute effectively to management control and improve performance (Yigitbasioglu & Velcu, 2012).

The goal of performance measurement is to evaluate actual achievements and performance goals, as well as to identify differences or deviations. The dashboard displays the evaluation elements to judge a particular situation in light of the performance objectives, which allows for performance evaluation and decision-making, whether to continue or to radically change the methods (Buttigieg, Pace, Rathert, & management, 2017), as well as reducing uncertainty related to decision-making processes. In order for the information system to be effective, it must comply with some precise rules, both in terms of its operation and in terms of its content. Presentation of information, even if it covers different forms, must respect some restrictions such as brevity and appropriateness. The dashboard must encourage dialogue and motivate the managers, and it must transcend the role of strict supervision (Brand, 2007), and hence the design must include the following:

- Alignment with the organizational structure,

- Total and aggregated content,

- Preparing and sending speed.

**1- Dashboard definition**

The dashboard is a set of indicators that allows the manager to monitor the development of results, deviations from reference values (set goals, internal or external standards, statistical references) (Rahman, Adamu, & Harun, 2017), and others. This provided that the information is as timely as possible, with the aim of enabling administrative decision-making.

**There are different conventions for the term dashboard:**

-Definition of Gray and Pesqueux: It is "A management tool centered on the follow-up of goals, it is used to evaluate the actual performance of the company in relation to the goals pre-determined by the management system" (Pesqueux & Gray, 1991).

- Malo's definition: It is a tool for the company's top management that allows providing a comprehensive and composite view of the current operations' state and their environment (Malo, 1995).

- **Bouquin's Definition:** A dashboard is defined as a working tool consisting of "a few (from up to ten) indicators [incorporated] to enable managers to identify the status and development of the systems they are controlling, and to identify the trends which will influence these systems on a horizon consistent with the nature of their functions" (Morana & Gonzalez-Feliu, 2015).

- **Kaplan and Norton's definition:** In 1991, Robert Kaplan and David Norton developed the Balanced scorecard (tableau de bord prospectif BSC) model as one of the best performance management tools for public institutions. They have made it clear that this tool can be successfully implemented in the public sector, provided that it is adapted to the specificities of each institution (Kaplan & Norton, 2001, p. 100). This model presents a strategic performance management system derived from the company's vision and strategy, which is a multidimensional representation of performance from four financial and non-financial angles: (Selmer, 2019)

The "Finance" perspective: What should we offer shareholders?The "customer" perspective: how should customers perceive you?

The "process" perspective: What should processes provide to customers?

The "Organizational Learning" perspective: How should people and the organization lead change?

**-Afnor's definition:** Through the indicators that are linked to the dashboard, it is one of the management and decision-making tools that allows the decision maker to quickly get a clear view of the basic information that measures the status of the job, sector or process followed. It allows the manager to measure, compare, and analyze deviations (and directions) and to react quickly to improve their performance and increase customer satisfaction while achieving their goals (Matthieu, Hervé, & Jacques, 2006). Through the foregoing, it can be said that the dashboard is a set of indicators that allow managers to follow the development of results and deviations from reference or norm values (objectives and defined standards) in real time. The dashboard makes operational management serve the overall strategy of the organization (Rahman et al., 2017).

**2- Dashboard functions**

The dashboard is used as a monitoring and comparison tool, and it helps in decision-making, and is used for other purposes such as communication and dialogue. According to Voyer (Voyer, 2011)the dashboard has six functions (Demeestère, Lorino, & Mottis, 2017):

The function of continuous monitoring, deviation monitoring and alerting, allowing major deviations to be highlighted.

The function of a catalyst for investigation and a guide for analysis, informing the operator when to analyze and intervene

Reporting and accountability function, in light of the availability of sufficient information.

The function of communication and motivation by providing objective data based on facts, which allows facilitating communication and reducing the risk of misinterpretation of indicators.

The function of contributing to the formulation of goals and expectations that allows the process of feedback and continuous improvement to occur.

3-Dashboard advantages

The dashboard has become a tool for leadership and management rather than control, that is, a transition has been made from a reactive attitude to a proactive leadership (Malik, 2005). Although it has been used as a control tool for a long time, its current uses have changed and it is now considered an approach designed to achieve sustainable performance (Yigitbasioglu & Velcu, 2012).

Hence, the dashboard has many advantages. They are represented by the following:

Providing a clear financial vision,

Taking corrective actions in a timely manner, given the indicators displayed on a continuous basis, adjustments can be made as soon as deviations arise,

Easier and faster communication: the available information provides the decision maker with a better margin of maneuver that allows him to address the imbalances in consultation with the various bodies.

A key tool for strategic outreach: it allows the strategy to be activated. After decision makers accept their tactical assignments and set very specific performance goals, they design their experimental assistance tool. Then they design the dashboard in line with the approach taken to make the strategy tangible, as the performance objectives express the implementation of the strategy in the field.

**4-Dashboard limitations**

The dashboard is a tool that the organization uses to improve its performance, but it should not be used as an oppressive or punitive tool. Dialogue and sharing ideas are the basis of management. Using the dashboard as a punitive tool gives way to harmful practices and data manipulation (Pesqueux & Gray, 1991). This tool should not remain static, it should be dynamic, embodying an open system that adapts to environmental variables (Voyer, 2011).

It should be noted that the dashboard is only a support for the management and will not, in any way, replace the decisions taken by the managers. It cannot provide analyses, diagnoses, or even provide an explanation when faced with certain situations.

Second: Designing and building the dashboard

Designing the dashboard requires first consultation and communication with the various actors in the organization. Communication is an essential point of dashboard success, without which the project cannot succeed (Allio & Leadership, 2012) . The success of the communication process takes place in consultation with the various actors by presenting the dashboard project to be prepared and highlighting its benefits, and trying to integrate the suggestions of the various parties in preparing the project .

The most important steps of dashboard design can be summarized in the following basic elements, (Fernandez: 2018).

1-Identifying areas for improvement

The dashboard is used to guide the process of improvement by making the right decisions within a certain horizon. This improvement must be continuous and in harmony with its competitive environment (Fernandez, 2018).

**2- Accurate identification of intervention points**

It is about identifying the processes and activities concerned with improvement, as well as the individuals concerned with deploying the strategy. These points of intervention constitute the

priority of the dashboard in order to guide the planned improvement process and are linked to the ability to make appropriate decisions in order to save time (Fernandez, 2013).

**3- Selecting performance objectives**

Practically every manager is responsible for strategy development, i.e. adopting an achievable tactic that embodies the performance objectives to be achieved in order to embody the chosen strategy or improvement approach.

Performance is expressed in two interrelated dimensions: effectiveness and efficiency. Effectiveness means pursuing the right actions to achieve set goals, and efficiency means making sure that we use the allocated resources in the best way.

The selection of performance objectives is one of the most important stages of preparing the dashboard, as it dictates the direction to be followed in addition to the pace of improvement. It is necessary for the stakeholders to participate in the improvement project.

**4-Selection of performance indicators**

The selection of performance indicators should be in line with the strategy followed, the specific context and the needs of decision-makers, as well as the procedures to be adopted. The actors involved in the process of selecting indicators are responsible for making decisions based on the information provided by these indicators (Weygandt et al., 2020).

Any dashboard includes indicators that allow making the organization's goals understandable where the degree of their achievement can be monitored. The indicators included in the dashboard must be directly related to the most important variables (key factors) of the strategy implemented by the company. Moreover, it should contain only a limited number of indicators at each level of responsibility and with respect to each manager's working possibilities (Brand, 2007).

The indicator, which is the main component of the dashboard, is defined as a quantitative display of an economic variable for a specified level of responsibility. An indicator is an item or group of information items that express a specific goal or objective. The indicator can also be defined as the information that makes it possible to know the state of the system at a time t and to be able to deduce any improvement or deterioration in the system very quickly (Eckerson, 2010).

Performance indicators can be categorized into financial indicators and non-financial indicators. Financial indicators are directly related to the financial results and profitability of the institution and are based on accounting and financial data, and are considered easy to interpret, quantitatively and comparable over time with similar institutions (Brand, 2007). The most frequently used financial indicators are turnover, gross margin, net result and cost price. However, non-financial indicators are considered more qualitative than quantitative indicators,

such as employee performance or the quality of service provided to customers, they are strategic goals that cannot easily be quantitatively expressed (Fernandez, 2018). Hence, each company, according to its size and sector of activity, will choose the dashboards that best suit it, and the most relevant indicators for building these boards.

## 5- Building a dashboard

The development and implementation of any system such as a dashboard in a company is a delicate and time-consuming task, and for its success the organizational structure must be clear, responsibilities clearly defined, information and good and effective communication available in the company (Eckerson, 2010). This is because the dashboard app and indicators can be misunderstood and seen as a way by management to monitor and control everyone. The success of a real dashboard system requires explanation and communication about the project, its purpose, interest, and use at different levels of the organization (Demeestère et al., 2017). Moreover, the tasks and objectives must be defined because the continuous improvement of the performance of each center is linked to the tasks and objectives that have been clearly defined before. Thus, the tasks and objectives of each center emanate from the strategy set by the public administration, from which deviations in relation to these objectives will then be calculated. (Hémici & Bounab, 2016, p.301) The main steps of building a dashboard are as follows:

A. selection of parameters: it is necessary to identify the main factor(s), whose control will make it possible to ensure the approximation of the actions carried out with the desired results;

B. Selection and testing of indicators: each manager, based on the objectives of his position, and the selected key factors, develops his own dashboard and defines the indicators necessary to monitor the performance of the position, and the indicators necessary to move to the next level ;

C. Data collection and processing: Management control must ensure that the company's information systems (financial, technical, business) have the data necessary to identify indicators, and have the capacity to allow processing and collecting this data to develop dashboards within the required time frame (Abbasi, 2016, p.305);

D. Conducting tests: this stage is necessary, it allows us to check, for example, the reliability of computer systems in data collection and processing, attention to the indicators held in dashboards, the frequency of calculation, etc.. It also allows the identification of the identified deviations significance and thus attention to the calculation of indicators, the commitment of different managers to the system and their cooperation in favor of Company dashboard system .(Hémici & Bounab, 2016)

In light of the above, it is possible to build a balanced dashboard that helps in decision-making and respects the required rules. The organization and arrangement of indicators should as much as possible respond to the message to be conveyed, i.e. the dashboard should be balanced.

**6- Audit and review**

Over time, the strategy changes and the company evolves, which requires adapting the dashboard to these changes to ensure that it is effective in terms of being fully aligned with the desired goals, with the procedures launched, and used correctly.

Third: dashboard components and tools

1- Components

The dashboard includes the following aspects:

-Regulatory component: Improving the performance of the organization allows to empower managers and make them more responsible. This prompts them to use more rigorous, performance-oriented management mechanisms, by producing meaningful information about the principles and goals set by the entire organization (Kumar & Belwal, 2017).

-Administrative component: The main preoccupations of managers are: planning, organizing, directing and controlling. This prompts managers to use a management dashboard to have a comprehensive view of their unit. It also provides them with some important details that allow them to understand the facts better, enabling them to take decisions and corrective actions faster (Bobylev, 2023). This makes the dashboard a tool that helps in the decision-making process.

-Information component: Managers must have the needed information so that they can inform their subordinates (Reinking, Arnold, & Sutton, 2020). The information may enable them to monitor activities in real time, as well as to properly measure and evaluate results. It is better to present the information briefly, relying on the basics that allow interpretation of results and deviations. After all, the information should be organized, purposeful, and easy to use.

-Informatics component: Information technology allows organizations to quickly and clearly create, process, store and circulate data.

**2- Dashboard tools**

To present the dashboard to its users, there are several forms such as: deviations, ratios, graphs...etc; They are used to draw the manager's attention to key information to facilitate analysis and decision-making (Reinking et al., 2020).

-Deviations: “Deviation is the difference between the reference data and the observed data, the difference between the expected cost and the actual cost, and between the quantity allocated and the quantity consumed.” The goal of analyzing deviations is to find out their causes and inform the managers so that they can take the necessary corrective measures (Senci & Snieska, 2023).

-Ratios: “It is a relationship with significant amounts for the operation of the company“. They make it easier to understand the situation in relative terms, since it must be represented in an

evolutionary way in space so that increase means improvement and that the nature of the proportions varies according to the receptor and its hierarchical level.

Graphs: are the most preferred tools, they present information in a meaningful way and allow a better visualization of a development, trend or change in a situation. Among the most used graphs we find (Eckerson, 2010):

•Graphs: allow to follow the evolution of one or more values over time, and this type of representation allows the projection of the trend (Fernandez, 2008, p. 123)

•Pie charts: They are the best tools for displaying relative data (percentage) such as: market share, distribution of costs by type, distribution of employees and others.

•Charts: Particularly suitable for tracking the evolution of values over time and often used to compare several series of values.

•Tables: Generally used to highlight the gaps between goals and achievements. It also makes it possible to monitor the development and estimate the trend by putting the achievements of certain periods side by side and comparing them.

Fourth: The dashboard in the Directorate of Electricity and Gas Distribution in Batna city

The dashboard of the Directorate of Electricity and Gas Distribution reflects the comparison between the estimates and the achievements that the Directorate has achieved, and finding the percentage of achievement and deviation between them through a set of indicators. It shows the positive progress of the activities and the sites of defects.

**1- Designing the dashboard in the directorate**

The dashboard shows the operations and activities carried out by the institution, which are prepared in the form of tables based on a set of data and indicators. In order to prepare the ideal dashboard for the company, it is necessary to follow the stages of designing the dashboard, which are as follows:

- Conducting a study of the institution's environment and getting to know it: The first step in designing a dashboard is to study and get to know the environment of the organization. This is done by identifying the position of the institution and knowing its market share. Sonelgaz is considered the monopoly in Algeria with regard to the transmission and distribution of electricity and gas, that is, it has no competitors. However, on the production side, the market remains open to local and foreign investment. The Sonelgaz Corporation is also working, according to Decree 02-01, to open the market space for electricity and gas energy.

-Defining goals: The goal setting stage comes after studying and getting to know the organization's environment. Objectives must be consistent with the organization's policies and available resources, and be implemented within a specified period of time. Among the objectives

that the Corporation seeks to achieve: increasing the coverage rate of the gas network; reducing the rate of electricity loss; an annual increase in the debt conversion ratio; profit and continuity. This is in addition to meeting the needs of customers, ensuring that today's network is adapted to the new technologies of tomorrow so that it remains constantly in line with customer needs, securing the infrastructure to face the evolution of consumption (network capacity, source stations, securing lines for climate risks). On the other hand (production growth and large-scale accidents), supporting and implementation of development projects within the framework of the state program and in line with the company's tasks, working to provide the best conditions to facilitate communication with gas and electricity customers, contributing to building a social policy in line with the values and objectives of the institution.

-Selecting indicators: After defining the items to be measured, the managers choose the indicators that will help them. By reviewing the documents of the institution, we extracted some selected indicators, for example, the indicators used in the budget and management control department, which include the following:

Electricity customers: they are low voltage customers, medium voltage customers and high voltage customers.

Gas customers: They are low pressure customers, medium pressure customers and high pressure customers

The indicators differ according to each section, as they are characterized by stability with the periodic change of data, which enables decisions and corrective actions to be taken.

-Collecting information: to make it easier for managerss to read and use the information. The information obtained is collected and arranged in an easy and appropriate arrangement, ensuring the availability of information based on the list of indicators specified in the previous stage, as well as identifying their validity period.

-Choosing information systems: After the process of transferring and arranging information in a specific order, the directorate must choose a system to display this information. The Directorate of Electricity and Gas Distribution in Batna uses tables, and sometimes columns and curves, to display its dashboards.

Among the other distinguishing features of the enterprise dashboard are the following:

The dashboard is released monthly, quarterly and annually.

The directorate's dashboard shows the deviations that occur in performance.

The director of the Distribution Directorate issues orders to each department in order to correct the deviations that appear in the dashboard, and the correction is made in a timely manner.

The results in the dashboard are discussed by setting up a meeting, where each department official explains the results of his department's dashboard.

The dashboard in the organization is seen by department officials and worker representatives.

Maximum use is made of the organization's dashboard, where it shows the extent to which it has reached its goals.

**2- Dashboard models for the directorate under study**

The process of displaying the organization's dashboards comes after the completion of the previous stages, which are in the form of tables, and each section has its own dashboard that allows the administrator to follow his activity. We will review some of the used dashboards models in some important departments: the budget department and management control, and this is due to the large size of the institution. The dashboards of the Budget and Management Control Department contain a set of information as follows: Contributions of electricity and gas customers, number of electricity and gas customers, purchase, sale and loss percentage of electricity and gas, sales development, sales of electricity and gas, electricity and gas turnover.

**Dashboard for customer contributions**

**A. Electricity customer contributions**

**Table No. 01: Electricity customers' contributions**

| Nature of customers | 11/2021 | 11/2022 | Development rate | Goals | Acheivment |
|---|---|---|---|---|---|
| Low voltage customers | 8377 | 8066 | -3.71% | 9950 | 81.07 % |
| Medium voltage customers | 33 | 60 | 100.00% | 72 | 83.33 % |
| High voltage customers | 0 | 0 | / | 0 | / |

Source: Sonelgaz Corporation

From the table, it is noted that sales of electricity have recorded a growth rate of 11.79% between the years 2021 and 2022 %. As for electricity purchases, it witnessed a development of 10.60% in the period 2021-2022 with 100 GWh. The electricity wastage percentage estimated at 9.77%

indicates that the institution is not fully benefited. In addition, the reasons that lead to such loss of electricity are fraud from some customers and loss when there are interruptions affecting electrical wires.

**B. Purchases, Sales and Wastage Percentage of Gas in (MTh)**

Table No.04: Purchases, Sales and Wastage Percentage of Gas

| Gas | Purchases & sales (HP) | Purchases (BP+MP) | Sales (BP+MP) | Wastage (MTh) | Wastage percentage |
|---|---|---|---|---|---|
| 2021 | 2922.90 | 1407.79 | 1475.37 | -67.59 | -4.80 |
| 2022 | 2922.76 | 166.27 | 1515.54 | 180.73 | 10.65 |
| Objectives | 3563.60 | 1831.41 | 1780.38 | 51.03 | 2.79% |
| Development rate/change | -0.00% | 20.49% | 2.72% | -367.40% | 321.92% |
| Achieved percentage | 82.02% | 92.62% | 85.12% | 354.16% | 381.88% |

Source: Sonelgaz Corporation

From the table, it is clear that the sales value increased by 2.72% during the period 2021-2022 with an additional value of 40.17 MTh. As for purchases, its development rate is 20.49% during this period, with a value of 288.48 MTH. Both sales and purchases resulted in a loss of % 10.65% in 2022 compared to 2021, which had a loss ratio of -4.80% compared to the marked goals 2.79%.

✓ Dashboard for the number of electricity and gas customers

**A. Electricity customers number**

Table No.05: Electricity customer's number

| Nature of customers | 11/2021 | 11/2022 | Development rate | Goals | Acheivment |
|---|---|---|---|---|---|
| Low voltage customers | 209030 | 215931 | 3% | 221755 | 97.37% |
| Medium voltage customers | 1387 | 1422 | 3% | 1507 | 94.36% |

| | | | | | |
|---|---|---|---|---|---|
| High voltage customers | 2 | 2 | 0% | 2 | 100.00% |

Source: Sonelgaz Corporation

We note that the rate of increase achieved in November of the year 2022 for electricity customers is estimated at 3% for both low and medium voltage customers, and this is compared to November 2021. The increase for low voltage customers (BT) is estimated at 6091 customers.

**B. Gas customers number**

**Table No.06: Gas customer's number**

| Nature of customers | 11/2021 | 11/2022 | Development rate | Goals | Acheivment |
|---|---|---|---|---|---|
| Low pressure customers | 100591 | 106179 | 6% | 108956 | 97.45% |
| Medium pressure customers | 170 | 182 | 7% | 185 | 98.38% |
| High pressure customers | 5 | 6 | 20% | 8 | 75.00% |

Source: Sonelgaz Corporation

From the above table it is noticed that the rate of increase achieved for gas customers is 6% for customers of low pressure between the two periods November 2021 - November 2022, with a difference of 5588 customers. As for medium pressure customers, the increase is estimated at 7%, with a difference of 12 customers. For high pressure customers, the increase is estimated at 20%, with a difference of one customer between the period between November 2021 - November 2022, where the percentage of achieving goals exceeded 75%.

## Dashboard for sales of electricity and gas

### A- Sales of electricity estimated in (GWh)

Table No.07: Sales of electricity

| Electricity | 2021 acheivment | 2022 acheivment | 2022 objectives | Development rate | Acheivment/obj |
|---|---|---|---|---|---|
| Regular customers | 540.38 | 584.08 | 606.00 | 8.09% | 96.38% |
| FSM | 75.44 | 81.66 | 84.00 | 8.24% | 97.21 |
| Low voltage customers (LV) | 615.82 | 665.74 | 690.00 | 8.11% | 96.48% |
| medium voltage customers (MV) | 251.09 | 267.29 | 270.00 | 6.45% | 98.99% |
| LV+MV | 866.91 | 933.03 | 960.00 | 7.63% | 97.19% |
| High pressure customers (HV) | 471.39 | 457.29 | 475.00 | -2.99% | 96.27% |
| Total | 1338.30 | 1390.31 | 1435.00 | 3.89% | 96.89% |

Source: Sonelgaz Corporation

From the table we can deduce the following:

- **Ordinary customers:** We notice an increase in the amount of electricity consumption by 43.7% during the year 2022 compared to the year 2021, with a growth rate of 8.09%.

- **Low voltage customers (LV):** We notice an increase in the amount of electricity consumption by 39.23% during the year 2022 compared to the year 2021, with a growth rate of 8.11% between the two periods.

- **Medium voltage customers (MV):** we notice an increase in the rate of electricity consumption by 22.1% during the year 2022 compared to the year 2021, with a growth rate of 6.45% between the two periods. The achieved results were estimated at 98.99 % compared to the planed goals 2700.00.

- **High tension customers (HV):** we notice a decrease in the amount of electricity consumption by – 14.1% during the year 2021 compared to the year 2022 with a development rate of -1.99% between the two periods, where the achieved results were estimated at 96.27 % compared to the set objectives 475.00.

**B- Sales of gas estimated in (MTh)**

Table No.08: Sales of gas

| Gas | 2021 acheivment | 2022 acheivment | 2022 objectives | Development rate | Acheivment/obj |
|---|---|---|---|---|---|
| Regular customers | 1124.84 | 1191.06 | 1160.00 | 5.89% | 102.68 |
| FSM | 54.73 | 56.56 | 58.00 | 3.36% | 97.52 |
| Low pressure customers (LP) | 1179.56 | 1247.63 | 1218.00 | 5.77% | 102.43 |
| medium pressure customers (MP) | 71.10 | 73.27 | 75.00 | 3.05% | 97.69 |
| BP+MP | 1250.67 | 130.90 | 1293.00 | 5.62% | 102.16 |
| High pressure customers (HP) | 3572.10 | 3485.05 | 3609.86 | -2.44% | 96.54 |
| Total | 4822.77 | 4805.90 | 4902.86 | -0.35% | 98.02 |

Source: Sonelgaz Corporation

From the above table it is noticed that:

- **Regular customers (RC):** We note an increase in the amount of gas sales of 66.2 between 2021-2022, where the rate of development is 5.89%, and this is due to the large demand and consumption of this substance in the winter season.

- **Low pressure customers (LP):** we notice an increase in the amount of gas sold by 68.07 between the years 2021-2022, and the rate of development was estimated at 5.77% with an achievement rate of 102.43% compared to the set objectives 1218.00. This is due to the large demand for this substance, especially in the winter for this category.

- **Medium pressure customers (MP):** we notice an increase in the amount of gas sold in a weak way, with a difference of 2.17 between the years 2021-2022 with an achievement rate of 97.69% compared to the set objectives of 3.05% for the year 2022.

- **The total bill:** We notice a decrease in the gas consumption rate during the year 2022 compared to the year 2021, with a development rate of -0.35% between the two periods, where the achievement results are estimated at 98.02% compared to the set objectives 4902.86.

Sales development dashboard:

**Table No.09: Sales development**

| Type | 31/11/2021 | 31/11/2022 | Development size % | 31/12/2021 | The growth rate % | Objectives | Value% |
|---|---|---|---|---|---|---|---|
| Regular customers | 286.8 | 370.69 | 29 | 90.3 | 311 | 81.3 | 21 |
| FRM | 7.1 | 6.23 | -13 | 4.9 | 27 | 4.41 | 0.35 |
| Low pressure MP | 72.1 | 64.66 | -10 | 47.5 | 36 | 42.32 | 4 |
| High pressure HP<br>High voltage HT | 1.1 | 47.24 | 4073 | 1.1 | 4191 | 1.13 | 2.63 |
| Total | 367.2 | 488.81 | 33 | 143.4 | 241 | 129.16 | 27 |
| FSM/ADM | 475.3 | 555.46 | 16 | 397.4 | 40 | 362.44 | 31 |
| MT/MP ADM | 526.1 | 546.38 | 4 | 500.6 | 9 | 492.88 | 30 |
| ADM total | 100.4 | 1101.84 | 10 | 898.4 | 23 | 855.32 | 61 |
| Energies total | 1371.5 | 1590.65 | 16 | 1041.80 | 53 | 984.48 | 89 |
| A.C.I works | 211.4 | 18.85 | -91 | 16.8 | 12 | 15.1 | 1 |
| A.D.M works | 23.0 | 183.20 | 696 | 194 | -6 | 174.57 | 10 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Works total** | 234.4 | 202.05 | -14 | 210.7 | -4 | 189.67 | 11 |
| **Energies total + Works total** | 1604.8 | 1745.47 | 9 | 1251 | 40 | 1173 | 97 |
| **Grand total** | 1605.93 | 1792.71 | 12 | 1253 | 43 | 1174 | 100 |

Source: Sonelgaz Corporation

From the above table it is noticed that:

- Sales of energy and works witnessed a growth of 97% in the year 2021 with a value of 1604.8 and in the year 2022 with a value of 1251.

- As for ordinary customers, the growth rate increased to 29%, compared to 2021 (286.8) and 2022 (370.69).

- Sales from ADM increased by 61% compared to the year 2021 (898.4) and the year 2022 (1101.84).

- Sales of energy increased by 89% compared to the year 2021 (1041.80) and the year 2022 (1590.65).

- Works decreased by 22% compared to the years 2021 (1215) and 2022 (1745.47).

**Electricity and gas turnover**

**A. Electricity turnover**

**Table No.10: Electricity turnover**

| | **Achievement 2021** | **Achievement 2022** | **Objective 2022** | **Development rate** | **Achieved objectives 2022%** |
|---|---|---|---|---|---|
| **Regular customers** | 2318582 | 2547617 | 2745786 | 9.88% | 92.78 |
| **FSM** | 342516 | 397591 | 380504 | 14.33% | 102.89 |
| **Low voltage customers (LV)** | 2661098 | 2939208 | 3126390 | 10.45% | 94.01 |
| **Ledium voltage** | 999310 | 1069055 | 1064610 | 6.98% | 100.42 |

| | | | | | |
|---|---|---|---|---|---|
| customers (MV) | | | | | |
| LV+MV | 3660408 | 4008263 | 4191000 | 9.50% | 95.64 |
| High voltage customers | 1160297 | 1114206 | 1239275 | -3.97% | 89.91 |
| Total | 4820705 | 5112469 | 5430275 | 6.26% | |

Source: Sonelgaz Corporation

From the table provided, we note that during the year 2022 the total turnover of the Corporation due to its sale of electricity was estimated at 5112469 dinars compared to the business number for the year 2021 estimated at 482705 DZD. The rate of development reached 6.25% between the two periods, with a rate of achievement of 94.33 of the objectives set for 2022 and this is a remarkable development for the Directorate

**B. Gas turnover**

**Table No.11: gas turnover**

| | Achievement 2021 | Achievement 2022 | Objective 2021 | Development rate | Achieved objectives 2019% |
|---|---|---|---|---|---|
| Regular customers | 2318582 | 2547617 | 2745786 | 9.88% | 92.78 |
| FSM | 342516 | 397591 | 380504 | 14.33% | 102.89 |
| Low pressure customers (LP) | 2661098 | 2939208 | 3126390 | 10.45% | 94.01 |
| Ledium pressure customers (MP) | 999310 | 1069055 | 1064610 | 6.98% | 100.42 |
| BP+MT | 3660408 | 4008263 | 4191000 | 9.50% | 95.64 |
| High pressure | 1160297 | 1114206 | 1239275 | -3.97% | 89.91 |

| | | | | | |
|---|---|---|---|---|---|
| **customers** | | | | | |
| **Total** | 4820705 | 5112469 | 5430275 | 6.26% | |

Source: Sonelgaz Corporation

From the above table, we note that the turnover for gas is 1170245 dinars in the year 2022 compared to the year 2021, whose value was 112987 DZD, with a difference of 1057258. The rate of development is estimated at 3.56% between the two periods, with a rate of achievement of 92.26% of the goals set for the year 2022. This is due to the increase in the number of those involved in all forms of the state network, especially with the development movement that the state is experiencing at the level of all economic activities, which contributed to the increase in the institution's capital in the year 2022.

**Conclusion:**

The administrative dashboard can be a tool that facilitates monitoring and evaluation processes for managers, but it cannot replace the information system or be comprehensive. It is a decision support tool, but it cannot replace managers in making decisions and diagnosing and analyzing problems.

We have tried, through our study, to drop the theoretical aspect of the study, as we were able to find out how to prepare the dashboards in the Directorate of Electricity and Gas Distribution in Batna. We provided an overview of the organization, as well as how the organization designed the dashboards and how they are displayed, in addition to commenting on the tables.

The dashboard is a distinct tool with a dual language that combines numbers, statistics and graphs that are full of adequate explanations and reports. This gives the managers the ability to lead the organization by defining the main objective and the sub-objectives emanating from it. As for how this can be achieved, it is presented in the form of indicators that include the available capabilities and energies, as well as the obstacles that it may face and the formulas that can be resorted to for the purpose of overcoming them. In addition, it shows the strategy to be followed and the alternative strategy.

**Through our study we reached the following results:**

- The dashboard allows the appropriate corrective actions to be taken quickly, which improves the economic performance of the enterprise.

- The objective of the organization's dashboard system is to make sure that the actual recorded results match the preset goals.

- The dashboard is prepared on a monthly basis and is not daily updated, and this is what makes it lose the advantage of speed in the delivery or processing of information.

- The corporation relies on tables full of numbers and neglects the graphs that make a better presentation.

- The corporation does not rely on the facades in publishing the dashboard, but it is kept in a form of documents that are placed next to the accounting documents.

**Recommendations:**

Based on the results obtained, recommendations can be presented for improving the display of the dashboard. Summarized below are these recommendations.

-Informing and raising awareness among officials and subordinates about the importance of the dashboard in the organization.

- Training executives and implementation staff on the mechanisms of preparing and designing the dashboard and its components. Utilizing it for management and performance improvement purposes, not just for achieving regulatory objectives.

-Focusing on the presentation style of dashboards by relying on graphics and charts using attractive and expressive colors. It is also recommended to use alert systems to facilitate the detection of deviations.

- Establishing a sustainable dashboard at all times to make it significant within the organization and assist in the management process.

- Finally, researchers can be directed to investigate the obstacles to adopting dashboards in Algerian institutions, particularly when they are adopted as a management tool rather than just a control tool.

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