

DASHBOARD - INNOVATIVE INSTRUMENT FOR THE EVALUATION OF PERFORMANCE IN MINING INDUSTRY

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Abstract

In this study we aim to approach the Dashboard from an innovative perspective with emphasis on the way of elaboration and implementation in the performance management of the mining and energy organization. In the foundation of our study we use key performance indicators and key risk indicators designed in charts, maps and dashboards, to allow the company to focus on the most important value-generating activities for the organization. The result of our study consists of the projection of the information provided by the dashboard on a single screen in a clear way, to be understood by stakeholders as a basis for evaluating and measuring the performance of the company, understanding the organizational units and the business processes in order to correctly identify and punctual of the managerial decisions implemented in correlation with the economic results obtained by the entity.

Key words: economic performance, organization, innovation, recovery of activity, evaluation and control

JEL codes: D20, L72, Q30, Q40.

1. Introduction

The dashboard is a modern tool for evaluating and piloting the organization's activity, oriented towards increasing the resource allocation performance in correlation with the business strategy pursued by the management. The information acquired by the top management of the company through the use of this tool helps to identify the gaps existing in the management system or in the technological flow, in order to elaborate the decisions that are required to eliminate the non-conformities detected in the activity of the company.

The information provided by the Dashboard aims to be effective. For this, it is necessary to contain features and indicators in a limited number to avoid suffocation of the manager with an avalanche of figures and achievements. To limit the number of indicators, the dashboard must be aligned with those information sequences that could lead to short-term managerial decisions and liaison points in the management of the company.

The data processing in the organization's accounting allows the management dashboard to be built on the existing structure of accounting in an entity by applying the same principles of deviation analysis, to correctly diagnose its activity.

2. Research methodology

In this study, quantitative research is effectively combined with qualitative research for a broad construction of the study developed in this paper. The scientific approach taken in this study is based on the premise that it is necessary that the theoretical research elaborated in the paper be corroborated with the applied (practical) research within the company under study. Qualitative research allows deductive approach, starting from concepts, theoretical notions and regulations specific to the study area and continuing with practical applications based on the financial statements reported by the organization. The research methods used in our study are: observation, grouping and comparison.

3. Literature review

According to the opinion expressed by Sgârdea F. (2009), the dashboard contains "a set of indicators accessible by number, designed to allow decision makers to properly and timely inform about the patrimonial situation, the economic evolution they are piloting, including developing trends in a short period". The same author shows that, the dashboard represents "a system of indicators and essential information that allow a relevant analysis on the progress of the company, of the slippages and disturbances manifested meanwhile, including taking corrective measures to reach the objectives set by the business strategy". [8].

In the specialized literature there are some significant approaches regarding the dashboard: Briciu S. et. al., (2015) [2] considers that the Dashboard presents "the status of the economic entity at a given time and is a management tool that allows the comparison of the current indicators with the planned indicators of the objective". Kerviller I. and Kerviller L., (2000) [6] rule on the Dashboard as a tool for informing and signaling significant deviations, representing a tool for dialogue and objective evaluation of performance support for managers in different fields. hierarchical. According to other authors (Căpușeanu S., et al., 2012), [3] the dashboard represents the pilot's instrument that highlights significant deviations as a tool for diagnosis and progress. Guni C, (2011) points out that the Dashboard is a way of framing, selecting, arranging and presenting the indicators that allow a view on the evolution of the general trends permanently monitored. [5].

According to Ciurlău L. (2016), the Dashboard is a tool built so that the term for too voluminous documentation action can be unusable. This is why it is important for efficiency to contain only features and indicators in a limited number to avoid choking the manager with an avalanche of figures and achievements. To limit the number of indicators, the dashboard should be aligned to those information sequences that could lead to short-term managerial decisions and liaison points in the management of the company. [4].

Using data from management accounting and the budget system, the management dashboard can be built on the existing structure of accounting in an entity by applying the same principles of deviation analysis. In other words, the dashboard consists of that set of standard indicators that the management of the economic entity analyzes on a regular basis to evaluate its activity.

Sgârdea F., (2009), argues that "due to the large number of information used in the management activity of the company and their complex nature, the widespread use of the dashboard was required. The implementation of the dashboards implies the establishment of the following rational criteria for drawing up: selection of existing information, better organization of management and organization through a good structuring and provision of the necessary information, taking timely decisions in relation to the primary signals, ensuring the information necessary for future scenarios and strategies and analysis of information flows following their direction to the authorized persons". [8]

The study undertaken by the authors Bradea I. et. al (2014) reveals that one of the most important benefits of using the dashboard is that managers can analyze a single screen in which key risk indicators or key performance indicators are monitored, can make decisions and activity risk mitigation and business performance improvement. [1]

In the construction of the dashboard it starts from establishing the entity's objectives, it continues with the identification of the key success factors and it ends with the establishment of the relevant indicators.

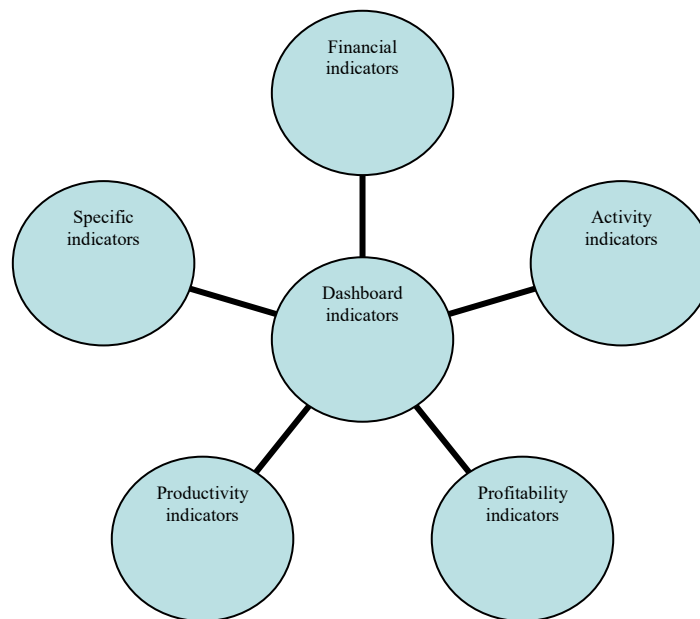
4. The system of indicators used in the construction of the Dashboard

There are no universal indicators that apply to all companies, which proves the orientation of the management in order to achieve success by the company. In order to have the qualities of a measuring instrument, an indicator must have certain characteristics:

- To be faithful and objective in measuring performance;
- Has the ability to vary as well as the phenomenon that is subject to measurement;
- It allows to obtain it quickly in order to analyze and interpret it in a timely manner.

Mourlot N., (2001) mentions that in order to ensure the coherence and visibility of the system of indicators in the dashboard, they are divided into several categories (Figure no 1). [7]

Figure no. 1. The system of indicators used in the construction of the Dashboard



Source: Mourlot N., „Tableaux de bord”, Lentreprise, no. 185, 2001

Financial indicators have gained an important place in the construction of the dashboard. They depend on several factors: the power of the company to impose certain payment terms on customers and suppliers, relationships with the bank when negotiating commissions and payment terms.

The activity indicators reflect the turnover realized by the company, useful in monitoring the evolution of the activity level, representing the cornerstone of any dashboard. Cost measurement indicators are cost indicators calculated on the basis of data from management accounting, provided that such an instrument exists and is relevant, regardless of the type of expense indicators, analyzed according to their nature and their causal relationship with turnover.

Profitability indicators. This type of indicator has applicability over a long period. The profitability analysis can be carried out quarterly, but we consider it appropriate to analyze it permanently in order to adopt the corrective measures in a timely manner.

Productivity indicators. Productivity pursued is measured by means of indicators that analyzed the particularity of the objectives, giving a clear indication of the subactivity or overactivity of a line of activity.

The modern dashboard displays key performance indicators and key risk indicators in charts, maps and scorecards, to allow the company to focus on the most important performance activities. The purpose of the dashboard is to display information on a single screen in a clear manner, to be understood by everyone. The dashboard is an application or user interface that helps measure enterprise performance, understanding organizational units and business processes.

5. Construction of the Dashboard in the energy mining industry

Based on the theoretical notions highlighted in this study, we highlight the representative indicators that will be analyzed when preparing the Dashboard of the company.

Analyzing the production activity of a representative company in the mining-energy sector during the period January - December 2018, we highlight the results obtained in comparison with those programmed for the volume of the organization's activity (Table no. 1).

Table no 1. The total volume of material excavated during January-December 2018

- thousands of tons -

Month	Mining exploited		Coal extracted		Sterile mass resulting	
	Planned	Realized	Planned	Realized	Planned	Realized
January	1550	1114.5	275	190.2	1275	924.3
February	1500	1212.7	290	215.8	1210	996.9
March	1650	1354.1	310	224.3	1340	1129.8
April	1660	1589.3	330	311.2	1330	1278.1
May	1700	1561.8	350	352.1	1350	1209.7
June	1750	1486.2	370	371.3	1380	1114.9
July	1650	1317.4	365	299.3	1285	1018.1
August	1600	1394.1	360	236.5	1240	1157.6
September	1750	1483.2	290	281.3	1460	1201.9
October	1800	1415.3	285	199.4	1515	1215.9
November	1700	1384.3	280	186.2	1420	1198.1
December	1650	1301.5	275	150.3	1375	1151.2
TOTAL	19960	16614.4	3780	3017.9	16180	13596.5

Source: Own processing

The data presented in table no. 1 show that the analyzed company failed to complete the activity plan in accordance with the provisions of the budget of revenues and expenditures for 2018 due to the difficult conditions of coal extraction and the decrease of the demand for coal in certain periods of time, causing an oversize. of coal storage spaces at risk of self-ignition or other undesirable effects.

Next, we will proceed to determine the ratio between the amount of resulting tailings and the amount of coal obtained called the discovery ratio according to the data listed in table 2.

Table 2. Discovery mining report for 2018

Month	Ian	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	MEDIA
Planned	4.64	4.17	4.32	4.03	3.86	3.73	3.52	3.44	5.03	5.32	5.07	5	4.34
Realized	4.86	4.62	5.04	4.11	3.44	3	3.4	4.89	4.27	6.1	6.43	7.66	4.81

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The data listed in table no 2 means that by the end of the year the average sterile / coal ratio of 4.81 exceeds the planned level of 4.34 because the company makes a considerable effort to increase the amount of coal extracted, resulting in an increase in the resulting tailings.

Annalized the quantities of mining and coal exploited and the total number of employees we proceed to calculate the physical productivity of both the labor force and the total material excavated in the total coal extracted by comparing the quantities (planned or real) with the total number of employees (planned and current).

The number of employees registered during the year 2018 is highlighted in table no 3.

Table no 3. Situation of the number of employees in 2018

Month	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Planned	1182	1182	1182	1181	1180	1177	1172	1169	1167	1162	1160	1157
Realized	1182	1182	1182	1180	1179	1178	1177	1176	1175	1174	1172	1171

Source: Own processing

We observe from table no 3. that the reduction of the number of employees is expected as a result of the restructuring plan elaborated by the management of the company. However, the real number is decreasing (departures by resignation), however, being above the forecast level due to the suspension of the implementation of the restructuring plan.

The annual labor productivity for the exploited mining mass, respectively the quantity of coal extracted, is obtained by relating the quantities obtained to the number of employees during the analyzed period (table no 4).

Table no. 4. Annual labor productivity in 2018 (thousand tons)

Month	Labor productivity - Mining		Labor productivity - Coal	
	Planned	Realized	Planned	Realized
January	1.31	0.94	0.23	0.16
February	1.27	1.03	0.25	0.18
March	1.40	1.15	0.26	0.19
April	1.41	1.35	0.28	0.26
May	1.44	1.32	0.30	0.30
June	1.49	1.26	0.31	0.32
July	1.41	1.12	0.31	0.25
August	1.37	1.19	0.31	0.20
September	1.50	1.26	0.25	0.24
October	1.55	1.21	0.25	0.17
November	1.47	1.18	0.24	0.16
December	1.43	1.11	0.24	0.13
Annual average	1.42	1.18	0.27	0.21

Source: Own processing

Analyzing the production activity of a representative company in the mining-energy sector during the period January - December 2018, we highlight the results obtained in comparison with those programmed for the volume of the organization's activity (Table no. 5).

Table no. 5. General Dashboard for December 2018

INDICATORS	U.M.	Monthly values			Accumulated values			Cumulation n-1 REAL.	Trend 3 month
		REAL.	BUGET	%	REAL.	BUGET	%		
Coal production	million tons	150.30	275.00	54.65	3,017.90	3,780.00	79.84	2,565.22	▼
Stripping	million tons	1,301.50	1,650.00	78.88	16,614.40	19,960.00	83.24	14,122.24	▼
Sterile	million tons	1,151.20	1,375.00	83.72	13,596.50	16,180.00	84.03	11,557.03	▼
Total H.R	employees	1,171.00	1,157.00	101.21	1,171.00	1,157.00	101.21	1,135.87	▼
Average monthly earnings per employee	Thousands. RON	3.25	3.25	100.00	39.00	39.00	100.00	38.22	▲
Labor productivity - coal	tons / employee	130.00	240.00	54.17	210.00	270.00	77.78	189.00	▼
Total income	Thousands.	12,850.34	13,180.04	97.50	154,204.07	158,160.58	97.50	146,493.87	▼
Total expenses	RON	13,090.79	13,089.31	100.01	157,089.52	157,071.71	100.01	149,235.04	▲
Net income	Thousands.	-240.45	90.73	-265.02	-34.24	774.10	-4.42	-32.52	▼
Salary fund	RON	5,546.76	5,560.98	99.74	66,549.09	66,731.87	99.73	65,218.11	▲
Cost per hour work	Thousands / hour	27.86	27.93	99.75	334.30	335.22	99.73	327.61	▲

Source: own processing

Analyzing the data from the general dashboard of the company we can conclude that the production activity is on a downward trend due to the ones listed above but the operating costs are on an upward trend due to the modification of the legislation in this matter and to the increase of the negotiated wage package. with unions. Therefore, the decision makers have a difficult mission in the sense of taking those measures that will lead to an increase of the productive activity while reducing the running costs and the number of employees according to the restructuring plan elaborated by the senior management for the financial recovery of the organization.

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