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Domeniul de doctorat: Management**

Sistem de indicatori pentru evaluarea managementului finanțării activității partidelor politice parlamentare

Rezumatul tezei de doctorat

**Conducător științific:
Prof. univ. dr. MOGA LILIANA MIHAELA**

**Doctorand:
CĂLIN (UNGUREANU) ECATERINA-CORNELIA**

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Introduction

The revenue budget of the Romanian political parties in the 2016-2020 legislature amounted to 1,010,069,196 lei (approximately 204,467,449 euros), with an annual average of 252,517,299 lei. Of this amount, 76%, the equivalent of 765,058,650 lei is public money and only 24%, the equivalent of 245,010,547 lei, is a financial contribution from private sources. This distribution highlights the fact that national parliamentary political parties are financed mainly by state budget revenues, like many other political parties in Europe.

Research on the management of political funding in Romania is less developed, compared to other fields and other European countries, although the topic is of interest to both political parties and civil society and experts in the field.

This doctoral thesis addresses the opportunity to evaluate the management of the activity of financing parliamentary political parties and aims to design a framework for analysis from a multidimensional perspective, through specific performance indicators, applicable to parliamentary political parties.

The theoretical part of the doctoral research refers to the current state of knowledge with reference to scientific studies carried out by other researchers (especially at European level) regarding the management of the financing of parliamentary political parties. The study was based on an understanding of the importance of political parties in a democracy, the role and functions they play in society. The theoretical part also focused on the approach of the political party as an organizational entity, marking the differences between political and economic organizations. The principles of the management of a political organization and the factors that condition the achievement of the performance of such an organization are described. Reference was made to the topic of performance and performance indicators defined in the literature and a classification of political performance was made through them.

The most important contribution is the description of the theoretical model for measuring performance - Balanced Scorecard and its adaptation to the specifics of a political organization, by designing a system of indicators specific to the activity of political parties. Greater importance has also been given to the system of political funding at European and national level. The sources of political funding corresponding to the performance indicators components of the financial perspective from the proposed BSC model have been described.

The application part of the scientific approach follows the research methodology based on the need to implement a system of indicators in order to measure the performance of the funding activity in the case of parliamentary political parties.

The evaluation framework is based on 5 dimensions:

- Analysis of the current performance of a parliamentary political party related to the history of its own activity, through the Balanced Scorecard model adapted to the specifics of a political organization. A case study conducted using the computer application Balanced Scorecard Designer Light is presented. In line with the other perspectives, the research at the level of 2020, focused on the evaluation of the performance indicators related to the Financial perspective from the theoretical model proposed for a parliamentary political party in Romania. The empirical analysis led to the obtaining and interpretation of a final score, resulting from the weights of the individual scores of the 4 perspectives in the proposed model, which in turn were influenced by the scores of indicators and sub-indicators of each perspective. The assessment of performance could be done both individually based on the results of each

perspective and on the basis of the final score obtained by aggregating the results of all perspectives of the proposed model.

- Visual comparative analysis of the performance of the political financing activity for a political organization, related to the political competitors, through the Microsoft Power BI Desktop application. For the same parliamentary political party in the case study, the evaluation was extended by designing an interactive analysis report. The comparative visual analysis of the performance indicators and sub-indicators from the Financial perspective related to the main competitor's indices highlighted the opportunity to use a business intelligence application in order to substantiate quick decisions.

- Forecasting the sub-indicators Subsidies and Contributions related to the exemplary parliamentary political party, with the help of two analysis models based on time series: ARIMA and Facebook Prophet. The use of time-based forecasting models has highlighted possible future outcomes for the increase in the values under the Subsidy Sub-indicator and the decrease in the values for the Sub-indicator Contributions in the case of a parliamentary political party.

- Experimental application of Machine-Learning (ML) algorithms by using the XGBoost predictive analytics model to predict the Private Finance indicator and the Contributions sub-indicator and validate the following research hypotheses:

Hypothesis no. 1: county parliamentarians and councilors play an important role in determining the Private Financing indicator;

Hypothesis no. 2: MEPs, parliamentarians and local government representatives play an important role in determining the Contribution sub-indicator.

- Unidirectional analysis of the Kruskal – Wallis variation to compare the samples of 4 groups, corresponding to the same number of parliamentary political parties, in order to prove Hypothesis no. 3 work: significant differences between contributions at national level, do not imply significant differences between contributions at regional level.

Based on the research, a series of conclusions could be drawn.

The use of a managerial tool on the proposed Balanced Scorecard model brings to the fore the opportunity to implement at the level of a parliamentary political party an evaluation model based on performance indicators.

Also, the indicators defined on the specifics of the activity of a parliamentary political party can be subjected to an interactive visual comparative analysis, by using a business intelligence platform, which would facilitate quick decision-making.

Management's decision to apply time series forecasting methods (ARIMA, Facebook Prophet) or the use of predictive analytics (XGBoost algorithm) leads to forecasting future revenues and facilitates the design and execution of revenue and expenditure budget party.

The tools, techniques and methods presented can be taken over by political parties and implemented in the current activity giving them the opportunity to identify problems efficiently and objectively, to compare the results obtained in real time both from the perspective of their own activity and related to the activity of political parties. competitor. They can also provide an idea of possible future results based on the predictive analyzes exemplified in the thesis.

Currently, the need to reform political parties is predominantly declarative, but with the technological development and rapid change of economic and social factors, the performance of political parties from all perspectives, not just financial, will be an essential condition for their survival in a democratic nation.

The structure of the doctoral thesis

The paper was structured in 8 chapters, addressing both conceptual and pragmatic, experimental aspects, as follows:

- *Chapter 1, General considerations on political parties provides an overview, based on the analysis of the literature, on the role and functions of political parties. Approaches the political party as an organizational entity and marks the differences between political and economic organizations;*
- *Chapter 2, The management and performance of a political organization, brings to attention the notions of management and performance within political organizations and the issue of changing political parties;*
- *Chapter 3, Analysis and measurement of the performance of the activity of political parties, approaches the measurement of performance in the political field by presenting eight descriptive performance indices corresponding to the areas of interest of political parties;*
- *Chapter 4, The performance measurement model - Balanced Scorecard, presents the theoretical performance measurement model - Balanced Scorecard (BSC);*
- *Chapter 5, The implementation of the Balanced Scorecard model within a political organization, focuses on adapting the theoretical model of the BSC to the specifics of the activity of a parliamentary political party;*
- *Chapter 6, Balanced Scorecard within a political organization, the Financial Perspective - the analysis of performance indicators, is dedicated to the development of the Financial Perspective and Comprehensive Indicators and Sub-Indicators, specific to parliamentary political parties including international provisions on political funding and the Romanian legal framework. Each source of funding is developed separately and exemplified by the results recorded in the national practice;*
- *Chapter 7, Research on the evaluation of performance indicators of the management of the financing of parliamentary political parties, presents a case study developed on the activity of a parliamentary political party in Romania using the new concept of the BSC method. The evaluation is extended by a visual comparative analysis between the analyzed party and a main competitor, based on a business intelligence tool and a series of forecasts and forecasts on the evolution of some indicators from the Financial perspective are presented using two analysis models based on series. temporal: ARIMA and Facebook Prophet. It includes the experimental application of a Machine-Learning algorithm to demonstrate working scenarios on the Private Financing indicator and the Contribution sub-indicator, using the XGBoost predictive analytics model and the application of the Kruskal-Wallis Statistical Test on the Contribution sub-indicator of a parliamentary political party;*
- *Chapter 8, Final conclusions, personal contributions, managerial implications, limits of the research and subsequent research directions, present in a synthesized way the results of the studies undertaken in this paper.*

Synthesis of the chapters of the thesis

Chapter 1, General considerations on political parties provides an overview

At the level of a democratic society, the activity is carried out not only through the state, the institutions and bodies belonging to the administrative apparatus of the state, but also through a vast and complex network of related organizations and institutions. An important component of this system is the political parties.

Three basic elements distinguish between social or economic organizations and political ones:

- the political party is a free-standing association established on the basis of free consent;
- the political party has as a binder an ideology or a certain political doctrine;
- the political party acts on the basis of a program platform to gain power through electoral consultations and to exercise it directly.

Political organizations perform four fundamental functions:

- the first function concerns the identification of objectives according to ideologies and the design of party programs. Political parties must be able to provide the electorate with a coherent political agenda. In the case of participation in government, that program will be the basis of government activity. The program also plays an important role for opposition parties, helping to define the priorities of government criticism and provide voters with an alternative that could materialize after the next election;

- the second function, referring to the articulation and aggregation of social interests, associates the policy of economy and civil society. The aggregation of the three elements produces individual interests which are then propagated through the pressure groups in the system. Political parties are the only entities capable of pursuing fragmented political interests, turning them into the foundation of political decisions;

- the function of mobilizing and socializing the general public, especially during the elections, associated with the ability of the parties to induce the participation of the electorate in the political process. The degree of interest regarding the involvement of the members of the society in the activities of a political party can be achieved by monitoring two performance indicators: participation in elections and the elective results of the elections;

- the effect of elite recruitment and government formation - being a role that has been consolidated over time, is associated with ensuring access to resources, respectively with political support.

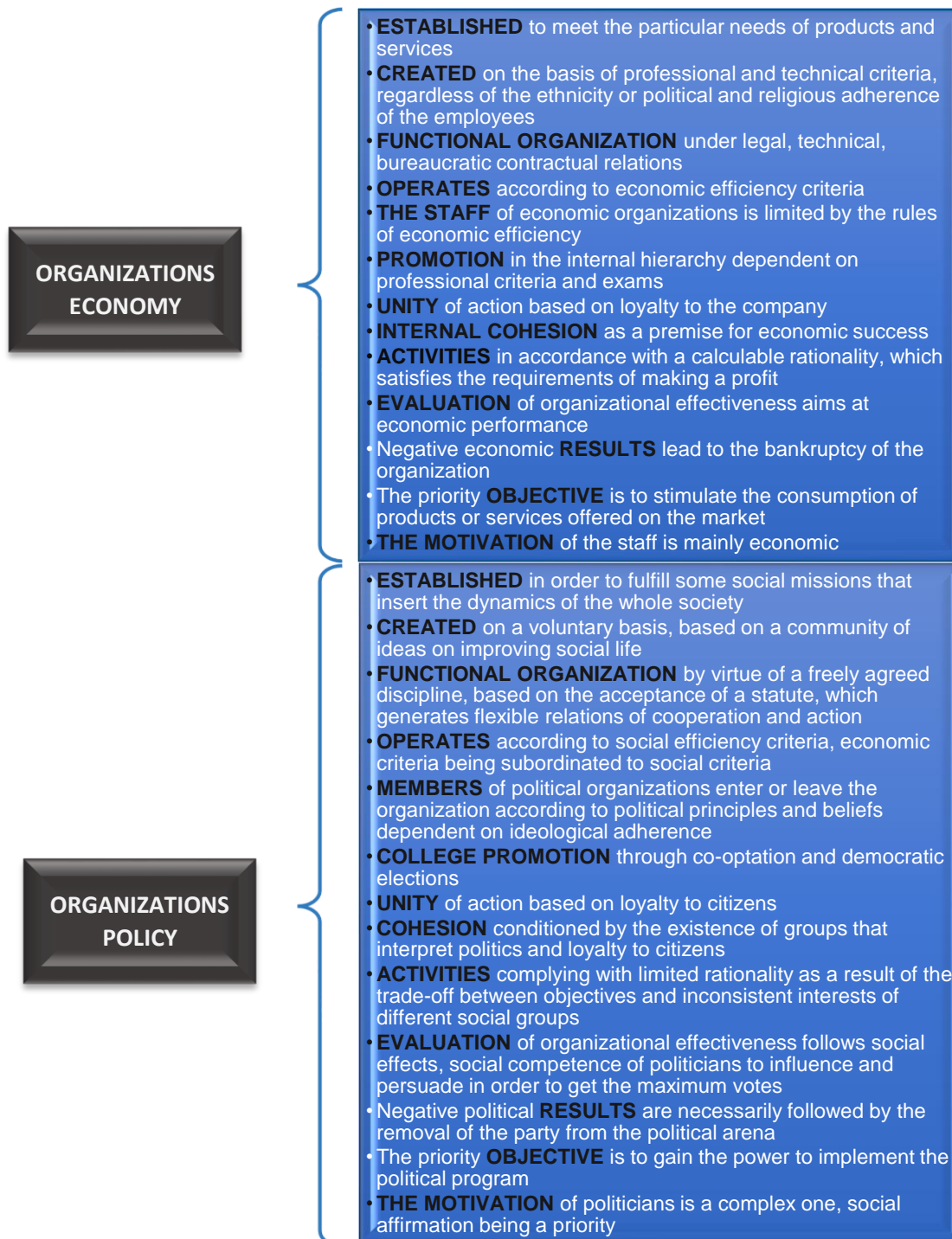
The component activities of organizing the activity of a political party:

- organizing the internal life of the party;
- supervising the observance of the statutory provisions;
- managing staff issues;
- organizing relations with other parties in the country and abroad;
- coordinating relations with NGOs;
- communication with the media;
- creating communication channels between parties and citizens;
- control of the finances of the political party;
- managing the assets of the political party

The specialized literature in the field of management attributes to the organizations, regardless of the typology, four fundamental elements:

- task: the general purpose or objective from which the specific objectives derive;
- internal structure: vertical / horizontal, reports and hierarchical relations;
- techniques: tasks related to material resources and technologies;
- actors: members of the organization.

Differences between an economic organization and a political one:



Comparative elements: political organization versus economic organization

Chapter 2 Management and performance of a political organization

In the economic literature, the term performance is associated with the three notions:

- economy - procuring the necessary resources at the lowest cost,
- efficiency - to maximize the results obtained, starting from a given amount of resources, or to minimize the amount of resources for a predetermined result;
- effectiveness - the results obtained to achieve the expected results.

A series of papers describe the notions as follows: “organizational efficiency applied to a democratic regime means effectiveness (adequate responses to the needs of democracy, these needs of citizens are constantly growing) over costs (those responses do not waste funds and human resources from political parties on taxpayers' money, but costs as low as possible, although the common idea is that "a democracy costs)". In order to achieve performance in a political organization, it is recommended: “political managers of parties and government agencies should take the example of those in the private economy)”, Referring to the implementation of management techniques and tools used in economic organizations.

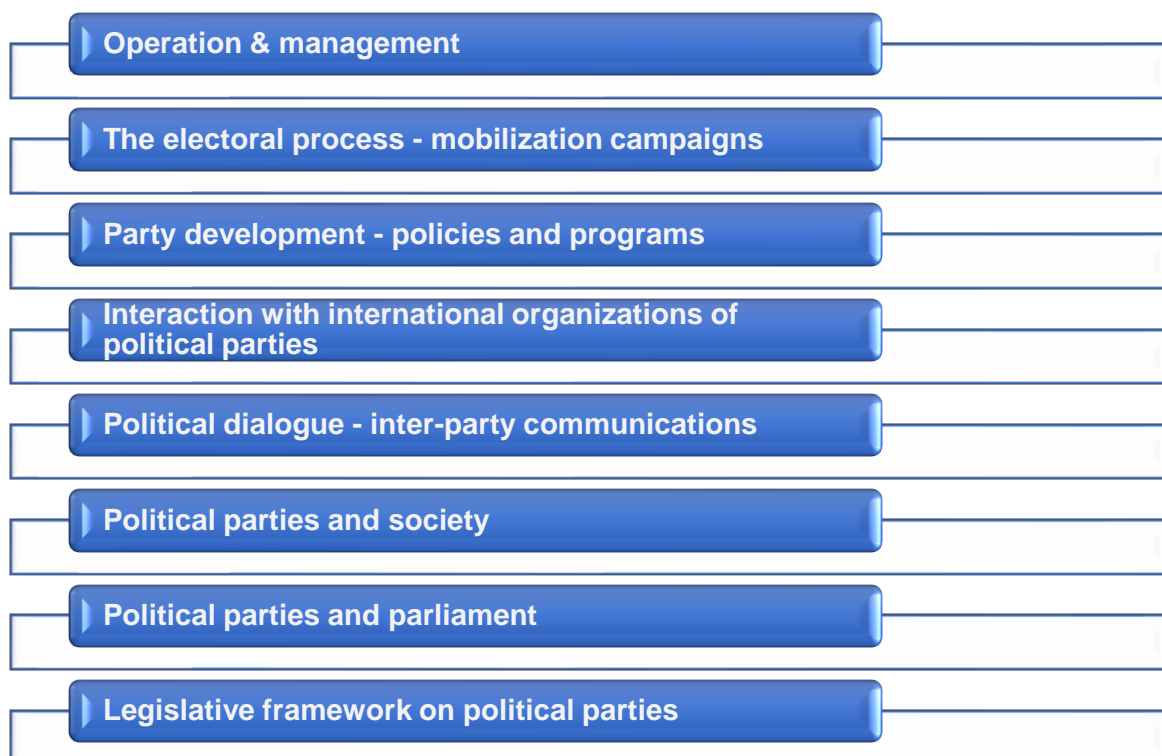
Political organizations are based on the following principles:

- maintaining the position on the political scene is the basis for the existence and development of a political party;
- division of functions in the party by adapting the need for specialization. The expertise of the members corresponds to the formal education and vocation of the party leaders, which contribute to the efficiency of the management of the political organization;
- the authority of the political party leader associated with the political decision;
- party discipline aimed at party members regarding the implementation of political decisions consistently by the lower levels of the party;
- aggregation of the issuance of party tasks by designating a single hierarchical superior from whom the lower echelon receives orders and with whom it communicates directly;
- leadership aggregation, a principle according to which all activities with the same goal are interconnected and are managed by the same hierarchical superior, which allows for effective coordination;
- subordinating individual interests to general interests, so that the interest of the political party is above the interest of an individual or a group;
- the development of human resources, the main holders of political functions, in order to increase the motivation of the members in order to achieve the objectives and mission of the organization;
- reward as a stimulating principle in the sense of satisfying the interests of the members;
- centralization, as a principle based on the balance between centralization of planning and control and decentralization of other functions;
- establishing the hierarchy of the decision-making system that includes all levels of the organization, both members with management positions and members with executive functions;
- position in the hierarchy, a principle based on the phrase “the right person in the right place”, in order to know the abilities of the members for their positioning in the political organization;
- equity as a means of increasing motivation and efficiency, as a result of promoting fair interpersonal relations within the party;

- the stability of the members in order to counteract the phenomenon of “political trajectory”;
 - the initiative, through which the creativity, innovation and continuous adaptation of the political organization to the changes demanded by the civil society are stimulated;
 - team spirit with direct benefits in the efficiency of the political organization.
- The performance of political parties depends on a number of conditionality factors:
- legitimacy - carrying out the activity of political parties in accordance with a certain political, legal and ethical normative framework;
 - trust - organizations based on free and confident choice are longer-lived and more efficient than those strictly hierarchical and command-based;
 - degree of integration and cohesion - party unity and the act of governing are interdependent sides of a responsible political process;
 - level of participation - relations with other organizations, mobilization of members and supporters in the elaboration, adoption and fulfillment of decisions;
 - the type of political management and marketing practiced - the scientific approach to the activity of the political organization.

Chapter 3 Analysis and measurement of the performance of the activity of political parties

The Guide to Political Party Assistance Programs for Business and Strategies Europe focuses on eight areas of political party activity, monitored through descriptive performance indicators.



Descriptive performance indicators

Chapter 4 Performance measurement model - Balanced Scorecard

The tool aims to translate the mission and vision of an organization into real / operational actions through strategic planning. The model encompasses the planning and decision-making functions of management by providing an environment of action and a solid basis for evaluating performance through the direct involvement of members of the organization.

The four perspectives on which the BSC model is based are:

- **financial perspective** - the area of strategic development related to own financial management. Although an economic entity has financial objectives different from a political entity, financial resources are an intrinsic part of the performance of any organization. Lack of funding or underfunding is also counterproductive for political parties. The financing of political organizations can be both public, through subsidies from the state budget, and private, from the own contributions of the candidates in elections, donations or contributions of party members.

- **customer perspective** - customers / beneficiaries / partners / stakeholders - this perspective concerns the organizational performance from the point of view of the customer or other key stakeholders that the organization is designed to serve. From the perspective of the external client, the political parties would identify mainly with the electorate and in the subsidiary with the state institutions, NGOs, mass media, interest groups, donors. From the perspective of the internal client, the area would overlap with party members, activists and political party volunteers, who may have divergent interests depending on the category in which they operate.

- **internal processes** - the strategic area regarding the functioning of the organization regarding the internal bureaucracy and the management systems. It is thus necessary to identify those internal processes that have an effective added value within political organizations. These activities can be identified in the democratic election processes of the statutory forums of the parties or with the establishment of the statutes and internal regulations. In the same category are the actions of resource allocation, substantiation and implementation of political decisions, communication and management of media relations.

- **learning and growth** - strategic area regarding the satisfaction and retention of human resources in the organization. The actions include the design of staff training systems, team motivation schemes as well as the ability to develop in a dynamic environment. The processes regarding the human resources at the level of a political party concern the recruitment of new party members, the retention of the current members, the analysis of the phenomenon of political trajectory and the attraction of new volunteers in the executive structures. Training and propelling new party leaders, image vectors and specialists in key areas of the economy and society are priorities embedded in this perspective from the BSC model.

The balancing of the BSC model is done through the interdependence of perspectives. Therefore, the fulfillment or non-fulfillment of an objective from one perspective leads to the fulfillment or non-fulfillment of another objective from another perspective.

The basis of the Balanced Scorecard is the four standard perspectives, in which strategic objectives are monitored using indicators. The setting of performance indicators allows the evaluation of the degree of achievement of the objectives by reaching the values of the set targets.

Within each perspective there are 4 important elements:

- **Strategic objectives** - is the main component of a Balanced Scorecard. The concretization of the strategic directions is achieved by achieving the strategic objectives assumed by the political organization through the strategic plan.

- **Indicators** - represent the unit of measurement of the strategic objective. Several indicators can be proposed for a strategic objective, each of which can cover a certain component of the achievement of that objective.

Chiocchetti, (2016) points out four components that underlie the definition of performance indicators of a political organization:

1. electoral component - votes,
2. the participatory component - organizational structure and party members,
3. component of government - seats obtained in Parliament
4. financial component - public and private financial resources.

- **Targets** - represent the value assigned to each indicator. They can have values defined for several years (election cycles / election years). The targets being values of some indicators assigned to the strategic objectives, in order to be relevant, they must have a multi-annual validity. Being a planned value, the target value is the result to be achieved within the indicator.

- **Initiatives (activities)** - is the way to achieve the proposed goal, through a number of measures taken by the hierarchical level responsible for that goal.

The implementation of the BSC within a political organization confers advantages on:

- the general image of the state of the organization and the positioning in the environment in which it operates;
- clarity and good understanding of strategic priorities, objectives, indicators, targets and measures;
- operational efficiency - BSC interconnects the strategic management component with the operational management component. It can be implemented at every level of management, including at the personal level, if this degree of detail is required. Also, through operationalization, the priorities of the management can be established on those measures that create added value within the organization;
- consensus - strategic priorities are communicated through the BSC. All hierarchical levels contribute through their actions to their implementation in the organization;
- dialogue - facilitates communication and understanding of strategic objectives by all levels;

- prioritization in the efficient allocation of resources;

The function of BSC controlling tool leads to a clear picture of the degree of achievement of an objective by comparing the assigned values and those achieved.

By customizing the BSC tool at the level of a political organization, the use of the method can generate the following positive aspects for a political party:

- the possibility to plan, monitor and evaluate in real time the performance of the party;
- increasing the degree of flexibility and adaptation of the party to technological development, to economic and political changes at the international level;
- strengthening the relationship and streamlining the communication between the party and the citizens;
- increasing the degree of transparency at the party level and awareness of the importance of the role of each territorial organization in consolidating the party;

- good knowledge and understanding of the environment in which the political party operates, receiving signals and trends from the national and international political level.

Restricting the practical applicability of the model refers to:

- The BSC can only be implemented in mature political organizations, in which there is a system of control and a strategic orientation defined by party leaders. It is conducive to the use in the activity of large political parties, with functional territorial structures and organizations, with a significant number of active members.

- The implementation of the BSC must be promoted and supported by party leaders with strong and categorical acceptance and involvement of territorial structures. The influential people in the party leadership become responsible for coordinating the implementation of the BSC at the level of the whole party and not only in its central structure.

- The clarity and efficiency of the BSC implementation may be lost if the strategic objectives do not contribute to the achievement of the mission and vision and if the activities / initiatives do not lead to the achievement of the strategic objectives. Accuracy is also lost if the indicators by which the objectives are measured are irrelevant to those objectives or if the targets of the indicators are too ambitious and seem impossible to achieve. In these cases there may be a lack of motivation and a fragmentation of interest in using the tool.

- The use of BSC must be constant, throughout the current activity of the party and not only during election periods, when the activity of the party intensifies and the degree of involvement of party members increases.

Chapter 5 Implementing the Balanced Scorecard model within a political organization

In order to measure and evaluate the results of the activity of political parties, the purpose of this research is to explore the extent to which the managerial tool used in economic organizations - Balanced Scorecard, can be adapted to the specifics of a political organization.

The synthesis of some studies on this subject indicates other initiatives regarding the implementation of BSC in several typologies of organizations or in several fields of activity.

Therefore, starting from the stratification of the four perspectives of the BSC model:

- financial perspective,
- customer perspective,
- internal business processes,
- learning and growth,

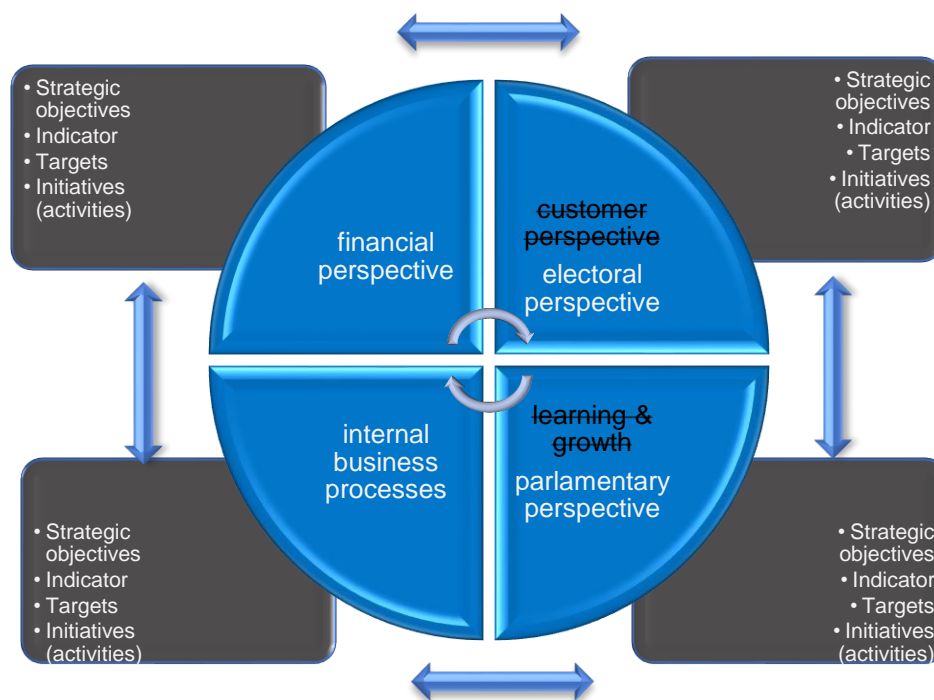
and their correlation with Chiocchetti's (2016) approach to the four components on the basis of which the performance indicators of a political organization can be defined:

- the electoral component,
- participatory component,
- the governance component,
- financial component,

a new approach to the Balanced Scorecard model adapted to the specifics of a political organization was obtained.

The proposed BSC model can operate similarly with four perspectives, two of which are similar to the classic BSC model. Thus, the financial perspective and that of the internal business processes, remain common to both models and the transformation of the other two perspectives, allowed the association of the client's perspective with the electoral perspective and the learning and growth perspective with the parliamentary perspective.

Graphic representation of the proposed model:



Adapting the Balanced Scorecard for a political organization

The next step in the transformation of perspectives involved defining the performance indicators for each perspective.

Thus, for the Financial perspective of the new BSC model, two performance indicators have been defined. The allocation was made in accordance with the ways of attracting financial resources, respectively:

- Private financing
- Public funding

For a detailed analysis of the financial performance of a political party, it was necessary to set sub-indicators within each of the indicators defined above, in order to monitor each source of funding. Therefore, in the composition of the indicator Private financing, the following indicators have been established:

- Contributions
- Donations
- Loans
- Income from other sources

and in the composition of the indicator Public financing, the sub-indicators were defined:

- State subsidies
- Electoral revenues

The design of the indices from the Electoral perspective was made on the basis of the structure of the Romanian Parliament which is bicameral and according to the essential elements of the parliamentary election legislation. The stake in the legislative elections is the number of votes obtained for each House, which then gives the number of parliamentary seats for each party. Obtaining a parliamentary majority depends on the number of seats assigned to a political party. On this thinking, the relevant performance indicators established for the Electoral perspective were:

- Votes for the Senate

- Mandate Senate
- Votes for the Chamber of Deputies
- Mandates of the Chamber of Deputies
- Parliamentary majority

The determination of the indicators of the Parliamentary perspective was also based on the structure of the Romanian Parliament, and when defining the sub-indicators, the specifics of the parliamentary activity were taken into account. Based on this principle, the two indicators defined in the Parliamentary perspective of the proposed model are:

- Senate activity
- Activity of the Chamber of Deputies

The identified sub-indicators that may underlie the performance evaluation are in line with the actions that involve some of the quantifiable responsibilities of a parliamentarian. Thus, both for the Senate Activity indicator and for the Chamber of Deputies Activity indicator, the sub-indicators are:

- Legislative proposals
- Questions
- Interpellations
- Political statements
- Amendment
- Motions of censure

The establishment of indicators from the perspective of Internal Processes, started from the structure of the activities that define the management of the activity of a political party that can be quantifiable, measurable. As in the case of the other perspectives and for the perspective of Internal Processes, two indicators were identified:

- Communication
- Organization

The definition of the sub-indicators related to the Communication indicator took into account the communication mix used by the political parties. In this way, each communication channel has a sub-indicator, resulting in the following sub-indicators:

- TV
- Radio
- Press (written, online)
- Public events
- Social media
- Outdoor
- Press releases / statements
- Survey

The detailing of the analysis of each sub-indicator can be continued by setting new sub-indicators. For example, as part of the Social Media sub-indicator, the Facebook sub-indicator may be set, and new sub-indicators may be set to measure:

- FB_posts
- FB_likes
- FB_comments
- FB_shares

In order to define the sub-indicators related to the Organization indicator, specific elements of the party organization were taken into account:

- Party members
- Territorial organizations
- Parliamentary migration
- Gender representation (female)
- International affiliation

Chapter 6 Balanced Scorecard within a political organization - Financial perspective - analysis of performance indicators

The summary of the values of all indicators and sub-indicators of the Financial Perspective from the new BSC model for all parliamentary political parties in the 2016-2020 legislature is provided using the following table.

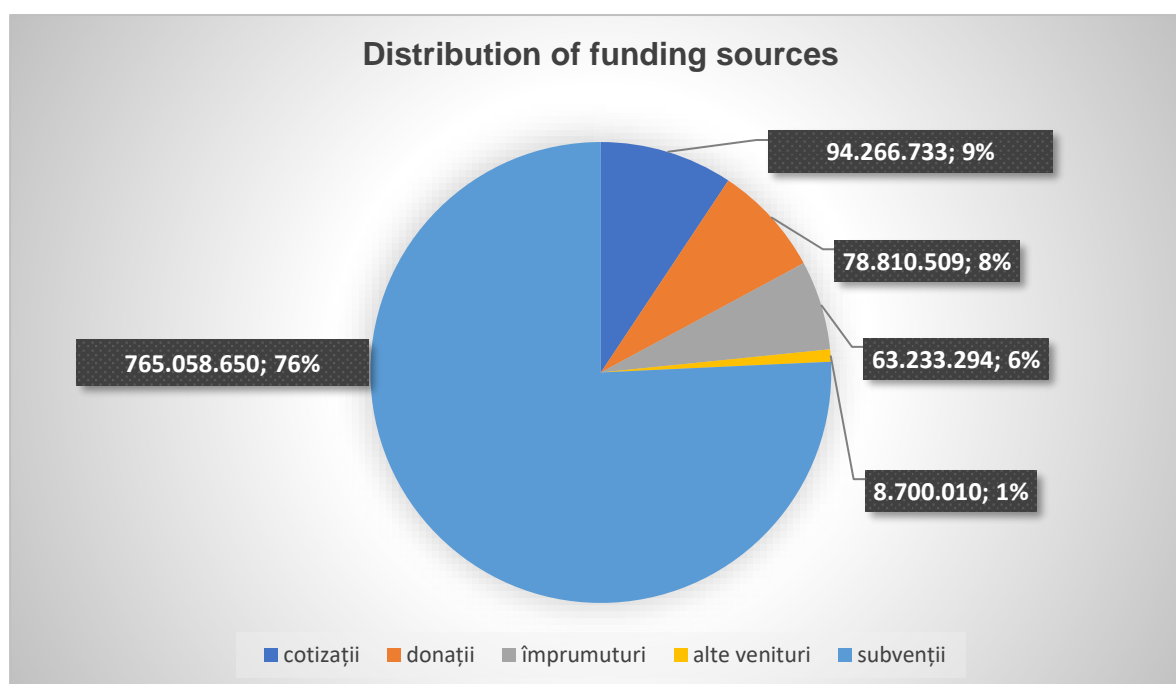
The amount of funding for parliamentary political parties in the 2016-2020 legislature

Perioadă	Sursă Finanțare	PSD	PNL	USR	UDMR	ALDE	PMP	PRO ROMANIA	Total
2017	subsidies	16.449.371	8.072.689	2.315.426	0	1.923.042	1.273.391	0	30.033.920
2018	subsidies	96.849.680	44.441.815	13.061.605	0	9.681.537	6.306.838	0	170.341.476
2019	subsidies	143.751.950	65.861.723	19.368.144	29.436.580	14.315.729	9.321.655	0	282.055.781
2020	subsidies	124.124.729	70.297.121	19.653.636	32.311.890	14.498.483	9.361.363	12.380.251	282.627.473
2017 2020	funding public	381.175.730	188.673.349	54.398.811	61.748.470	40.418.792	26.263.247	12.380.251	765.058.650
2017	subscriptions	8.538.187	6.653.777	250.262	950.130	1.373.367	667.301	0	18.433.024
2018	subscriptions	8.499.854	6.770.056	907.205	1.415.340	2.648.862	656.181	250.603	21.148.101
2019	subscriptions	10.062.248	6.407.065	2.349.739	1.592.041	3.970.228	678.389	1.783.391	26.843.100
2020	subscriptions	11.070.764	7.417.088	3.161.262	1.875.567	1.094.976	850.955	2.371.897	27.842.509
2017 2020	Total subscriptions	38.171.052	27.247.986	6.668.468	5.833.078	9.087.433	2.852.826	4.405.891	94.266.733
2017	donations	119.855	562.807	278.952	119.442	0	900	0	1.081.956
2018	donations	69.000	203.805	117.349	691.147	60.050	25.000	0	1.166.351
2019	donations	46.000	7.211.571	413.000	361.893	0	26.290	130.306	8.189.060
2020	donations	411.000	59.602.550	236.640	7.951.093	0	23.000	148.860	68.373.143
2017 2020	Total donations	645.855	67.580.733	1.045.941	9.123.575	60.050	75.190	279.166	78.810.509
2017	loans	0	44.295	0	0	0	2.900	0	47.195
2018	loans	0	49.500	0	0	0	1.930	0	51.430
2019	loans	930.000	60.000	5.095.717	0	1.000.000	7.400	21.563.932	28.657.049
2020	loans	12.709.025	126.500	4.602.395	0	0	0	17.039.700	34.477.620
2017 2020	Total loans	13.639.025	280.295	9.698.112	0	1.000.000	12.230	38.603.632	63.233.294
2017	other incomes	935.900	1.832.367	60	108.717	32.138	39.450	0	2.948.633
2018	other incomes	899.917	1.346.027	6.663	99.490	38.904	2.310	0	2.393.310
2019	other incomes	729.984	1.356.107	1.271	102.824	49.920	2.743	8.533	2.251.382
2020	other incomes	468.141	415.127	124	113.703	7.944	1.210	100.437	1.106.686
2017 2020	Total other incomes	3.033.942	4.949.629	8.118	424.734	128.906	45.713	108.970	8.700.010

2017 2020	private funding	55.489.874	100.058.642	17.420.639	15.381.386	10.276.389	2.985.958	43.397.659	245.010.547
2017 2020	Total funding	436.665.604	288.731.991	71.819.450	77.129.856	50.695.181	29.249.206	55.777.910	1.010.069.196

According to the data in the table, in the period 2017 - 2020, the Romanian political parties had at their disposal a total financing budget amounting to 1,010,069,196 lei, approximately 204,467,449 euros. The annual average of political financing was 252,517,299 lei, approximately 51,116,862 euros.

The distribution of funding sources indicates a sharp disproportion between the Subsidy sub-indicator for the Public Financing indicator and the Private Financing indicator.



Distribution of political funding parliamentary political parties period 2017 – 2020

Of the total budget of political financing, 76%, the equivalent of 765,058,650 lei, represents public money and only 24%, the equivalent of 245,010,547 lei, represents financial contribution from private sources. This distribution highlights the fact that the national parliamentary political parties are financed mainly with revenues from the state budget.

The accelerated growth of the Subsidy Subsidy in 2019 was due, as we mentioned before, to the legislative changes in 2019, and the ceiling in 2020 was due to the amendment to the state budget law in 2020. The decrease of the subsidy of the Social Democratic Party simultaneously The subsidy of the National Liberal Party and the ProRomania Party was due to the migration of PSD parliamentarians to the other two parties. Even in these conditions, in the 2016-2020 legislature, PSD was the party that benefited from the most money coming from the state budget. During the analyzed period, 49.82% of the total public subsidy was allocated to PSD, followed by PNL with a share of 24.66%, half as much as PSD and USR with a share of 7.11% of the entire budget. The difference of up to 100% went to the other political parties in the composition of the Parliament, including the Hungarian Democratic Union in Romania. Starting with 2019, due to the considerable increase of public funds allocations and to avoid double financing, UDMR opted for the Romanian subsidy, returning in the last two years of the legislature the amount of 61,748,470 lei.

The most important sub-indicator in the Private Financing indicator is the Contributions sub-indicator with a weight of 38.47% within the indicator. The total value of the contributions in the reference period was 94,266,733 lei. Of this total, PSD has the highest share, of 40.49%, followed by PNL with 28.90%. The two major competing parties hold 69.39% of the total membership budget, due to the large number of contributing members and the consolidation of the party's financial discipline over time. The performance of the newly established ProRomania party is also notable. In just 3 years, it reached a contribution volume of 4,405,891 lei, exceeding 1.54 times the contributions collected by PMP over 4 years.

In the period 2017-2020, the hierarchy of the Donations sub-indicator changes considerably, PNL being on the first place, with 67,580,733 lei. The amount represents 85.75% of the total donations collected by all parliamentary political parties, followed by UDMR with 11.57%, the equivalent of 9,123,575 lei and USR with 1,045,941 lei. For PSD, which holds the most local parliamentarians and elected officials, the amount collected from donations is insignificant (645,855 lei) compared to the global financial strength of the party. From the comparison of the first two parliamentary parties, the value of the Donations sub-indicator related to PSD is approximately 1% of the value of the Donations sub-indicator related to PNL.

Regarding the evolution of the Loans sub-indicator, ProRomania is the party with the highest share of the Loans sub-indicator in the total of the Private financing indicator. ProRomania attracted 43,397,659 lei from private sources, of which 88.95%, the equivalent of 38,603,632 lei, represent money from loans. Compared to the other parties, the value of loans in the case of ProRomania represents 61.04% of the total sub-indicator Loans related to all political parties in the legislature. Starting with 2019, PSD also used this form of financing, the sub-indicator Loans having a share of 24.57% in the total value of the indicator Private financing related to the party. In the case of PSD, accessing loans was the second method of financing the party's current activity, after contributions.

Regarding the analysis of the sub-indicator Revenues from other sources, in the reference period PNL registers the highest value of the sub-indicator, in the amount of 4,949,629 lei, followed by PSD with 3,033,942 lei. In the case of PNL, the value of the sub-indicator Revenues from other sources exceeds the value of the sub-indicator Loans. The situation is reversed in the case of PSD, where loans exceed revenues from other sources.

In order to evaluate the multidimensional system of financing the current activity for a parliamentary political party in Romania, it is necessary to know the importance of the determining parameters of the mechanism. The application of the specific legal provisions has shown that the value of the indicator Public financing - sub-indicator Subsidies, is determined by the number of parliamentarians and the number of county councilors. The analysis of the data from the financial statements of the parties, corroborated with the analysis of reports on the identity and number of members who contributed or donated amounts whose total value exceeded the scale of 10 salaries (gross minimum base in the country), facilitated the takeover of and in the case of the Private Financing indicator.

Based on these considerations, a first form research hypothesis has been formulated: ***county parliamentarians and councilors play an important role in determining the Private Financing indicator (Hypothesis no. 1).***

Given the share of the Contributions sub-indicator in the total revenues of a parliamentary political party and the degree of detail of the contributions data, the predictive analysis on this sub-indicator was also extrapolated. Knowing the results obtained in 2020 by the Social Democratic Party in the local and parliamentary elections, a new scenario was validated: ***MEPs, parliamentarians and local public administration representatives play an important role in determining the sub-indicator Contributions (Hypothesis no. 2).***

As the legal form of reporting the contributions requires the publication of their value at the level of the county organization, the analysis of the information allowed the evaluation of the sub-indicator at the regional level. This resulted in a last hypothesis to be demonstrated for the sub-indicator Contributions: ***the significant differences between contributions at national level do not imply significant differences between contributions at regional level (Hypothesis no. 3).***

Chapter 7 Research on the evaluation of performance indicators of the management of the financing of parliamentary political parties

Case study - Evaluating the performance of the financing of the financing of a parliamentary political party in Romania using the computer application BSC Designer Light

The objective of the research was to evaluate the practical system of indicators defined in the BSC model adapted to the activity of a parliamentary political party in Romania with an emphasis on the indices of the Financial Perspective. The evaluation was made using the computer program - BSC Designer Light which is based on the classic Balanced Scorecard model for measuring performance. The application was adapted to the new BSC model specific to a political organization and was populated with the results of the analyzed entity for the activity carried out in 2020, related to the history (2017, 2018, 2019).

Based on the established objective, for the relevance and complexity of the study, a parliamentary political party from Romania - the Social Democratic Party - was selected for research. Being a traditional political party (founded in 1992) and ubiquitous in the Romanian Parliament, including the 2016-2020 legislature, PSD had a vast parliamentary activity that allowed the analysis.

The popularity of the computer program BSC Designer Light with the specific data of the respective political party analyzed was based on the comparison of the results of 2020 with the history of the party in the 2016-2020 legislature, respectively with the years 2017, 2018 and 2019.

Starting from the basic concept of the Balanced Scorecard method, after determining the perspectives of the model, for each of them, the performance indicators defined in the new theoretical model were set in the computer application. Each indicator was assigned a weighting in perspective and a score so that the sum of the weights within a perspective does not exceed 1 (100%). Similarly, the sum of the weights of the indicators within a perspective must be equal to 1 (100%), the principle on which the model works.

According to the user manual of the BSC Designer Light software, the final score of the match is calculated in the form of a progress, which represents the performance of the analyzed match. The resulting score is obtained by applying the weighted average formula both for each perspective and component indicator and for the whole. The obtained score depends on the setting of some parameters in the computer program.

In the minimum version of the application (Light version used), the progress of the indicators is calculated according to 3 parameters: "value," "baseline" and "target", in the form of a score, obtained by applying the formula: $Progress = (Value - Baseline) / (Target - Baseline)$.

For each perspective and for each component indicator, its share in perspective was set, as well as the share of perspective in the total BSC framework. The weighting was calculated based on the arithmetic mean, based on the number of defined perspectives, indicators and sub-indicators.

Progress of indicators and sub-indicators from the Financial perspective

The concept of the new BSC model adapted to the parliamentary political parties provided 2 performance indicators within the Financial perspective. Each indicator was assigned a weight of 0.5 (50%), so that their amount is equal to 1 (100%).

The first indicator, Private financing, contains in the structure 4 sub-indicators, corresponding to each respective source of financing: contributions, donations, loans and income from other sources, each with an equal share within the indicator of 0.25 (25%) to comply with the principle that the sum of the weights should be 100% or 1.

The second indicator, Public Financing, is composed of 2 sub-indicators: the Sub-subsidy sub-indicator and the Electoral Revenue sub-indicator. The first sub-indicator represents the money coming from the state budget, the second sub-indicator refers to the revenues from the electoral campaign for the parliamentary elections. As in the previous cases, their share is equal, 0.5 (50%), for each component sub-indicator.

In order to evaluate the progress of the 6 sub-indicators related to the Financial perspective, the score was calculated as a unit of measurement, calculated by applying the formula mentioned in the methodology.

The case study was conducted based on the own results obtained by PSD in 2020, values that were allocated to the value field. The setting of value targets for the target and baseline parameters, started from the history registered by PSD for the 2016-2020 legislature.

Thus, as a principle for evaluating most of the sub-indicators of the Financial Perspective, the baseline parameter was assigned the minimum result that the party obtained in one of the years 2017, 2018 or 2019, and the target parameter was assigned the maximum result that the party obtained in one of the years. respective.

The summary of the progress of the indicators and sub-indicators of the Financial Perspective and the values of each parameter are highlighted in the following table.

Progress of indicators and sub-indicators from the Financial perspective

Indicator	Progres	Value	Baseline	Target	Măsură	Pondere
FINANCIAL PERSPECTIVE	105,04%	-----			%	0,25
Private funding	132,90%	-----			%	0,5
Subscriptions	164,55%	11.070.764	8.499.854	10.062.248	Scor	0,25
Donations	494,21%	411.000	46.000	119.855	Scor	0,25
Other incomes	-127,16%	468.141	729.984	935.900	Scor	0,25
Loans	0,00%	Da	Da	Nu	Da/Nu	0,25
Public funding	77,18%	-----			%	0,5
Subsidies	84,58%	124.124.729	16.449.371	143.751.950	Scor	0,5
Parliamentary election revenues	69,79%	47.939.214	14.959.061	62.217.000	Scor	0,5

Scorul perspectivei Financiare din modelul BSC pentru Partidul Social Democrat în anul 2020, calculat pe baza ponderilor și a parametrilor setați în programul informatic BSC Designer Light, a fost de 105,04% fiind semnalizat de aplicație cu marker de culoare verde, conform capturii de ecran de mai jos.

Name	Progress	Value	Baseline	Target	Measure	Weight
BSC_PSD_2020	62.14 %					
Perspectiva financiară	105.04 %	105.04	0	100	Score	0.25
Finanțare privată	132.90 %	132.9	0	100	%	0.5
Cotizații	164.55 %	11.1M	8.5M	10.1M	Score	0.25
Donații	494.21 %	411K	46K	119.9K	Score	0.25
Venituri din alte surse	-127.16 %	468.1K	730K	935.9K	Score	0.25
Împrumuturi	0.00 %	Yes	Yes	No	Yes/no	0.25
Finanțare publică	77.18 %	77.18	0	100	%	0.5
Subvenție	84.58 %	124.1M	16.4M	143.8M	Score	0.5
Venituri alegeri parlamentare	69.79 %	47.9M	15M	62.2M	Score	0.5
Perspectiva parlamentară	24.01 %	24.01	0	100	%	0.25
Perspectiva electorală - alegeri parla...	23.17 %	23.17	0	100	%	0.25
Perspectiva procese interne	96.34 %	96.34	0	100	%	0.25

The progress of the Financial Perspective

The final score of a parliamentary political party based on the BSC model

The final result obtained by the Social Democratic Party as a result of the implementation of the new personalized Balanced Scorecard model for a parliamentary political party in Romania, was 62.14%.

The score of the entire BSC model proposed and evaluated using the BSC Designer Light software was calculated based on the weights of the 4 defined perspectives in the composition of which 11 indicators were set, which in turn generated 25 sub-indicators.

The final score on the activity of the Social Democratic Party in 2020 is shown in the following table.

The progress of a parliamentary political party based on the BSC model

Indicator	Progres	Măsură	Pondere
BSC_PSD_2020	62,14%	%	-----
FINANCIAL PERSPECTIVE	105,04%	%	0,25
ELECTORAL PERSPECTIVE	23,17%	%	0,25
PARLAMENTARY PERSPECTIVE	24,01%	%	0,25
INTERNAL PROCESSES PERSPECTIVE	96,34%	%	0,25

The progress is signaled by the application with a green marker and is detailed according to the screenshot.

BSC_PSD_2020 (PPBSC PSD 2020_teza final.bsc) - BSC Designer Light

File Edit View KPIs Strategy map Tools Reports Charts Help

Manage :

Name	Progress	Value	Baseline	Target	Measure	Weight
BSC_PSD_2020	62.14 %				%	
Perspectiva financiară	105.04 %	105.04	0	100	Score	0.25
Finanțare privată	132.90 %	132.9	0	100	%	0.5
Cotizații	164.55 %	11.1M	8.5M	10.1M	Score	0.25
Donații	494.21 %	411K	46K	119.9K	Score	0.25
Venituri din alte surse	-127.16 %	468.1K	730K	935.9K	Score	0.25
Împrumuturi	0.00 %	Yes	Yes	No	Yes/no	0.25
Finanțare publică	77.18 %	77.18	0	100	%	0.5
Subvenție	84.58 %	124.1M	16.4M	143.8M	Score	0.5
Venituri alegeri parlamentare	69.79 %	47.9M	15M	62.2M	Score	0.5
Perspectiva parlamentară	24.01 %	24.01	0	100	%	0.25
Camera deputaților	-10.24 %	-10.24	0	100	%	0.5
Propuneri legislative	11.11 %	183	175	247	Score	0.2
Întrebări	-40.84 %	362	694	1.5K	Score	0.2
Interpelări	-3.91 %	76	88	395	Score	0.2
Declarații politice	-46.41 %	114	670	1.9K	Score	0.2
Amendamente	28.86 %	434	292	784	Score	0.2
Senat	58.27 %	58.27	0	100	%	0.5
Propuneri legislative	63.08 %	160	119	184	Score	0.25
Întrebări	42.45 %	280	235	341	Score	0.25
Interpelări	27.54 %	184	165	234	Score	0.25
Moțiuni de cenzură	100.00 %	Yes	No	Yes	Yes/no	0.25
Perspectiva electorală - alegeri parla...	23.17 %	23.17	0	100	%	0.25
Număr voturi Senat	21.66 %	1.7M	1.4M	3M	Score	0.2
Număr mandate senator	40.54 %	47	32	69	Score	0.2
Număr voturi Camera Deputaților	17.27 %	1.7M	1.4M	3M	Score	0.2
Număr mandate deputați	36.36 %	110	78	166	Score	0.2
Majoritate parlamentară	0.00 %	No	Yes	Yes	Yes/no	0.2
Perspectiva procese interne	96.34 %	96.34	0	100	%	0.25
Comunicare	156.45 %	156.45	0	100	%	0.5
FB_postări	162.83 %	725	230	534	Score	0.2
FB_likes	119.27 %	657K	44.5K	558K	Score	0.2
FB_comments	106.76 %	229.4K	6.2K	215.2K	Score	0.2
FB_shares	288.09 %	99.1K	5.1K	37.7K	Score	0.2
Declarații de presă	105.29 %	799	580	788	Score	0.2
Organizare	36.24 %	36.24	0	100	%	0.5
Număr membri partid	100.25 %	509.6K	290.1K	509K	Score	0.2
Organizații teritoriale	66.67 %	47	43	49	Score	0.2
Migrație parlamentari	-85.71 %	209	221	235	Score	0.2
Reprezentare gen feminin	0.00 %	Yes	Yes	Yes	Yes/no	0.2
Afilierie internațională	100.00 %	Yes	No	Yes	Yes/no	0.2

Score of the proposed BSC model

The main purpose of this case study was to present a management tool to monitor performance indicators specific to the activity of a parliamentary political party and not to interpret the final score obtained by the Social Democratic Party for the activity of 2020.

The empirical analysis led to obtaining and evaluating a final score, resulting from the weights of the individual scores of the 4 perspectives in the proposed model. The outcome of the outlook was influenced by the scores of the related indicators which in turn were determined based on the progress of each component sub-indicator. The setting of targets was carried out according to the history of each indicator / sub-indicator, in accordance with the operational and strategic objectives of a political party, related to the specifics of the parliamentary activity.

The conclusion of the research is that the Balanced Scorecard is a performance measurement model applicable to a parliamentary political party. The model adapted to a political organization can facilitate the assessment of the degree of achievement of objectives by monitoring the evolution of indicators and sub-indicators according to the scores obtained. The BSC Designer Light application (the basic version) successfully indicated the areas in which the party registered a counter-performance as well as the objectives with results beyond expectations. The scores obtained in the Financial Perspective confirmed the financial performance of the evaluated party, achieved in an election year. The analyzed values being those related to the 2020 electoral year, foreshadowed to a certain extent a good final score of the Financial perspective. It is worth mentioning that the analysis was made according to the party's history, taking into account the year 2019 which was also an election year. The final score of 62.14% is an above average result, obtained due to the very good results of the Financial and Internal Processes perspective. The Financial Perspective recorded results above the target set for the two most important sub-indicators, Contributions and Donations. The Public Financing indicator also scored above average, thus confirming the position of leader, beneficiary of the largest allocation of public funds among all parliamentary parties. Regarding the Electoral perspective, the evaluation marked a result similar to the estimates of the opinion poll mentioned in the research, without being able to invoke a causal link between the model conceived and the estimated result of the poll. In the sense that a parliamentary political party that has not obtained a parliamentary majority in the elections cannot take above-average parliamentary action. In support of this conclusion is the evolution of the Senate indicator, the Chamber in which the party had a majority for a short period of time. For this indicator, the result was positive and above average, compared to the indicator of the Chamber of Deputies, whose score was negative. The progress of the Perspective of internal processes confirms the communication strategy of the party, both on the social media area, where it registered a constant growth and on the organizational side, PSD being a party with a good territorial organization and most members.

Another conclusion drawn from the use of the BSC method is the interdependence of perspectives. Winning parliamentary elections and gaining a parliamentary majority will influence both the score for the Parliamentary perspective and the outcome of the Financial Perspective. The conditionality between public funding and the number of MPs is clearly demonstrated by the text of the law governing the award of grants, and the relationship between the number of MPs and private funding will be demonstrated at the end of this chapter. The conclusion from this point of view is that the value of political funding is directly influenced by the results obtained in the elections by the evaluated party. Equally, the evolution of the sub-indicators and implicitly of the indicators of the Parliamentary perspective depends directly on the number of seats of deputies and senators resulting from the parliamentary elections. The higher the number of parliamentarians in a party, the higher will be the number of parliamentary actions initiated by them. A much above average result of the Perspective of the internal processes, especially of the indicator Communication in the electoral periods and not only, can contribute significantly to the improvement of the score of the Electoral perspective. The more a political party invests in the promotion of candidates using a communication mix adapted and focused on the appropriate communication channels, the higher the electoral chances of the candidates in the elections.

For these reasons, the interpretation of the final score of the BSC model for a parliamentary political party can be made in relation to the average value of 0.5 (50%). Any result of the Financial Perspective above 0.5 (50%) can be associated with a financially

sustainable political party, thanks to the consistent public financial resources and the direct and indirect financial contribution of its parliamentarians.

Visual analysis of performance indicators on the financing of parliamentary political parties using the business intelligence platform - Microsoft Power BI Desktop

To provide a multidimensional picture of the financial performance of a parliamentary political party, the Social Democratic Party's analysis was extended with an analysis session based on visual reports, designed and generated through the Microsoft Power BI Desktop application. Basically, the indicators and sub-indicators of the Financial Perspective were taken from the BSC model and were transformed into interactive visual elements in Power BI. The indicators and sub-indicators of the Social Democratic Party from the Financial perspective of the new BSC model were compared with the same indicators and sub-indicators related to the Financial perspective of the National Liberal Party.

In the reporting section, the analysis report was defined, which contains 7 pages, one page each for one or more of the indicators / sub-indicators monitored, thus analyzing in an interactive way the sub-indicators that are components of the Financial Perspective. 11 types of diagrams were defined, the visual elements of which could be customized to increase the degree of accessibility and easy understanding of the information. The unconnectivity of the dimensions led to the rapid interpretation of one or more sub-indicators, making it easy to switch from one party to another. By defining the type diagrams: "Stacked bars" and "100% stacked bars" it was possible to make a quick visual comparison of the sub-indicators Contributions, Donations, Loans, Income from other sources, related to the two parties. The "Funnel" diagram clearly organized the hierarchy of the two parties regarding the allocated subsidy, a sub-indicator in which PSD registered a double result compared to the competing party. The "decomposition tree" intuitively highlighted the value of contributions by dividing the total sub-indicator into contributions at county level, distributing them by year and month. Thus, at the level of 2019, the Hunedoara organization stood out, registering the second highest contribution value after the city of Bucharest. The "Points" diagram optimized the data by marking both the performing and the least performing branches, and the "Map" exemplified from a geographical point of view the respective territorial organizations. The "lines" marked the upward trend in the evolution of political funding between 2017 and 2020. The centralization of financial information was facilitated by a diagram of the "Matrix" and revenues were organized by the types of diagram "Radar Map" and "Tornado". Electoral expenditures were combined by using the "Grouped Column Column" chart, highlighting the categories in which the parties spent the most money to finance the 2020 election campaign.

The quick visual analysis of the data in the designed report, optimized in the form of interactive diagrams, highlighted the opportunity to use the Microsoft Power BI Desktop application for comparative evaluation of the performance of a parliamentary political party compared to the actions of competing parties.

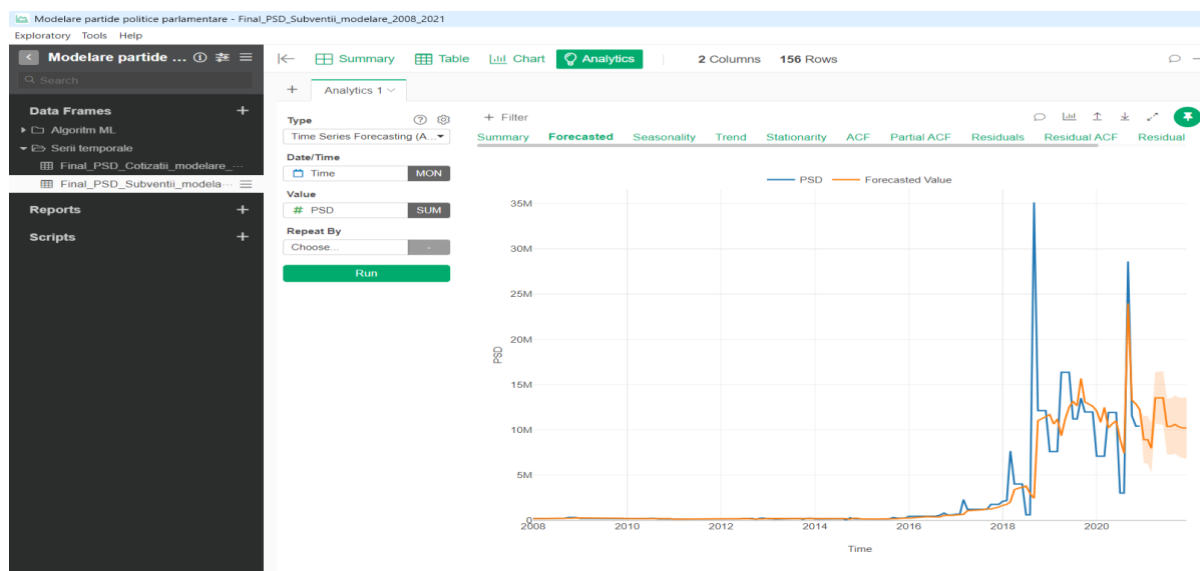
Case study - forecasts and predictions regarding the evolution of the Sub-indicators Subsidies and Contributions for a parliamentary political party in Romania, using analysis models based on time series: ARIMA and Facebook Prophet

The methods of analysis described so far have been aimed at assessing one or more perspectives in the BSC model adapted to parliamentary political parties and the corresponding indicators and sub-indicators, referring to actions already taken. For political party staff, the use of the BSC model and visual benchmarking allow for monitoring of indicators and sub-indicators even at the time of events, as political party analysts have

continuous access to real-time data. From these points of view, in order for the political organization to be able to achieve its strategic objectives as in the case of an economic organization, it is necessary to make future projections on the evolution of indicators and sub-indicators in the BSC model. Continuing the analysis session for the Social Democratic Party, forecasts and predictions were made using the analysis models based on the ARIMA and Facebook Prophet time series, for the Sub-indicators Contributions and Subsidies from the Financial perspective of the new BSC model. The practical performance of the analyzes was mediated through the Exploratory Public application.

Research results using time series analysis model: ARIMA

In order to make 12-month forecasts for the Social Democratic Party for the Subsidies sub-indicator, information was collected on the 13-year subsidies allocated to the party, from 2008 to 2020 inclusive. For the accuracy of the analysis, it was necessary to centralize the monthly values regarding the amounts collected by PSD from the state in the reference period, thus resulting in a table with 156 rows, according to which the forecast was made. Forecast chart, for the sub-indicator Subsidies for the Social Democratic Party, for a period of 12 months, after 2020, based on the ARIMA model:

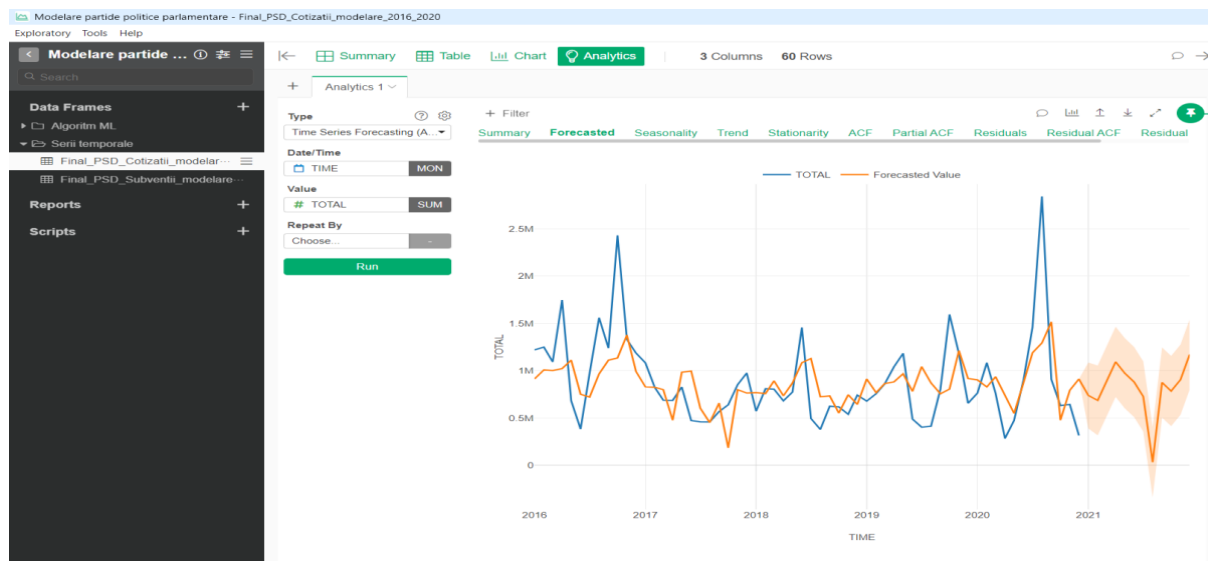


ARIMA model forecast - PSD Subsidies sub-indicator

According to the chart, the blue line follows the course of subsidies for the period 2008 - 2020 and highlights the increase in the value of public funding starting with 2018. The orange line indicates the projected values of the sub-indicator. The forecast followed the evolution of the subsidy with a small difference in 2019 when the projected value of the model was much lower than the actual value of the subsidy. The trend for 2021, predicted by the ARIMA method, is a slightly decreasing one, which indicates that the subsidy for PSD could decrease, keeping the periodic alternation of increases and decreases. In this regard, because at the time of completion of the research there were data available including the subsidy allocated to PSD in 2021, a comparison was made of the data projected by the ARIMA model with real data, according to which a good correspondence was found between the real values of the sub-indicator Subsidies and high forecast values of the ARIMA model for October, November and December 2021.

Regarding the sub-indicator Contributions for their forecast for a period of 12 months, the data related to the contributions of the analyzed party for the 2016-2020 legislature were centralized, for each month, resulting in a table with 60 rows.

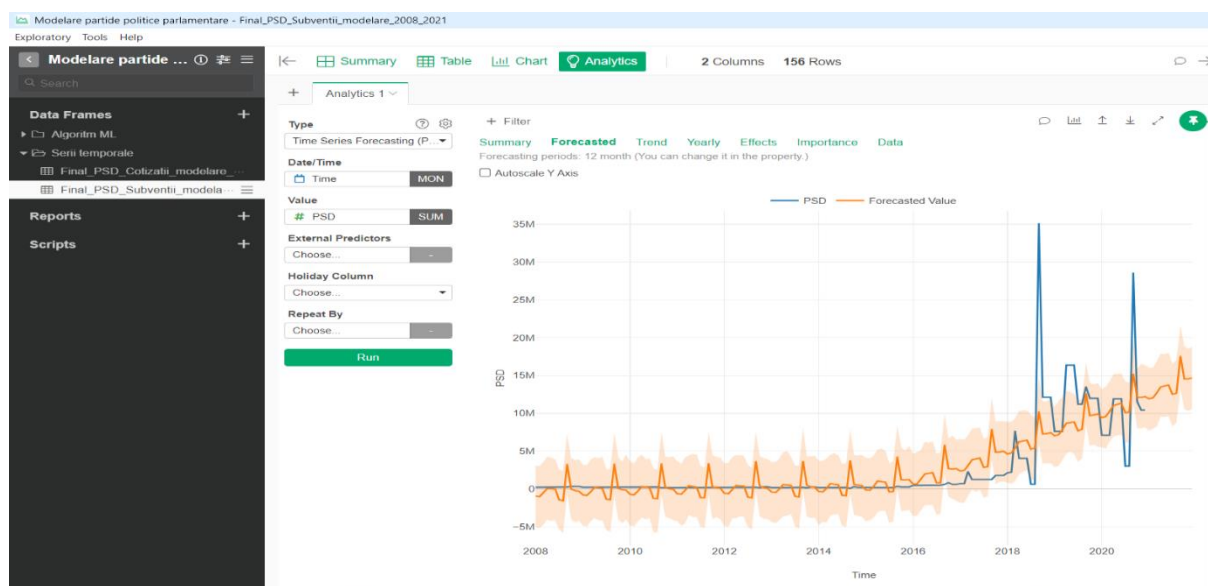
The forecast obtained based on time series on the ARIMA model, was made over a period of 12 months depending on the parameters "time" and "value". The graph indicates that the projected values of the model were in line with the real values, with differences in 2019 when the forecast values indicated an increase and the real values marked a decrease in contributions for that year. Also, in periods when both the blue and the real line and the orange line of the forecast values had the same trend, there were both increases and decreases in the forecast values, higher than the real values.



ARIMA model forecast - PSD Contributions sub-indicator

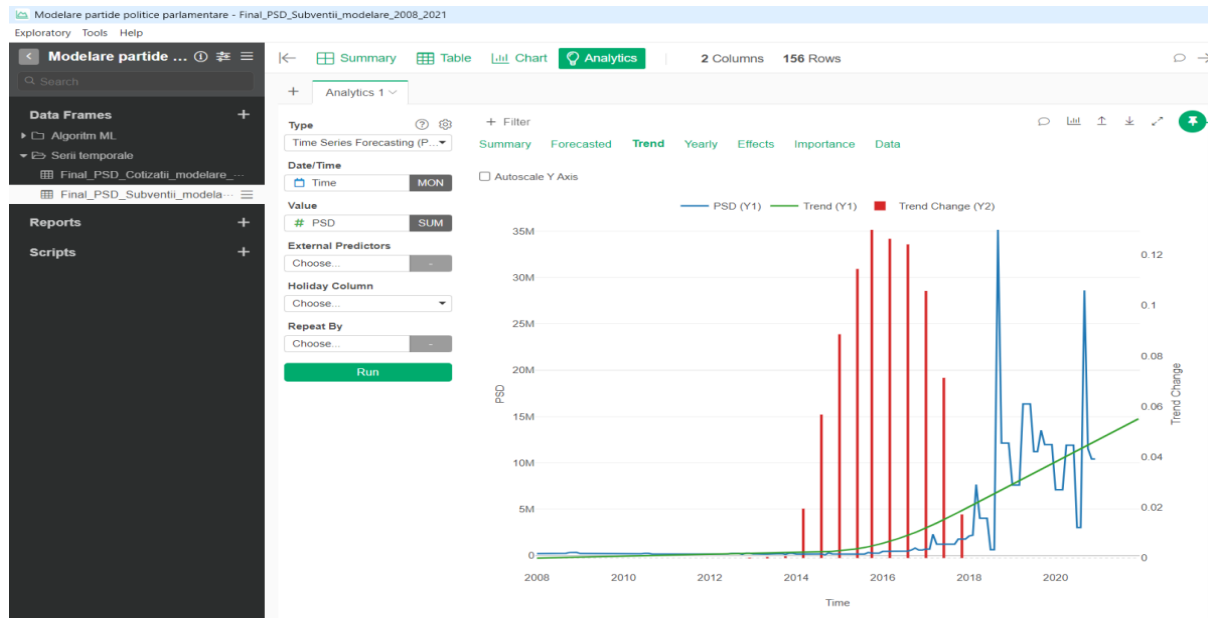
Research results using time series analysis model: Facebook Prophet

The analysis for the two sub-indicators was developed using another model also based on time series - Facebook Prophet. The same files with 156 lines for grants and 60 lines for contributions were used, and the forecast was made for a period of 12 months.



Facebook Prophet model forecast - PSD Grants sub-indicator

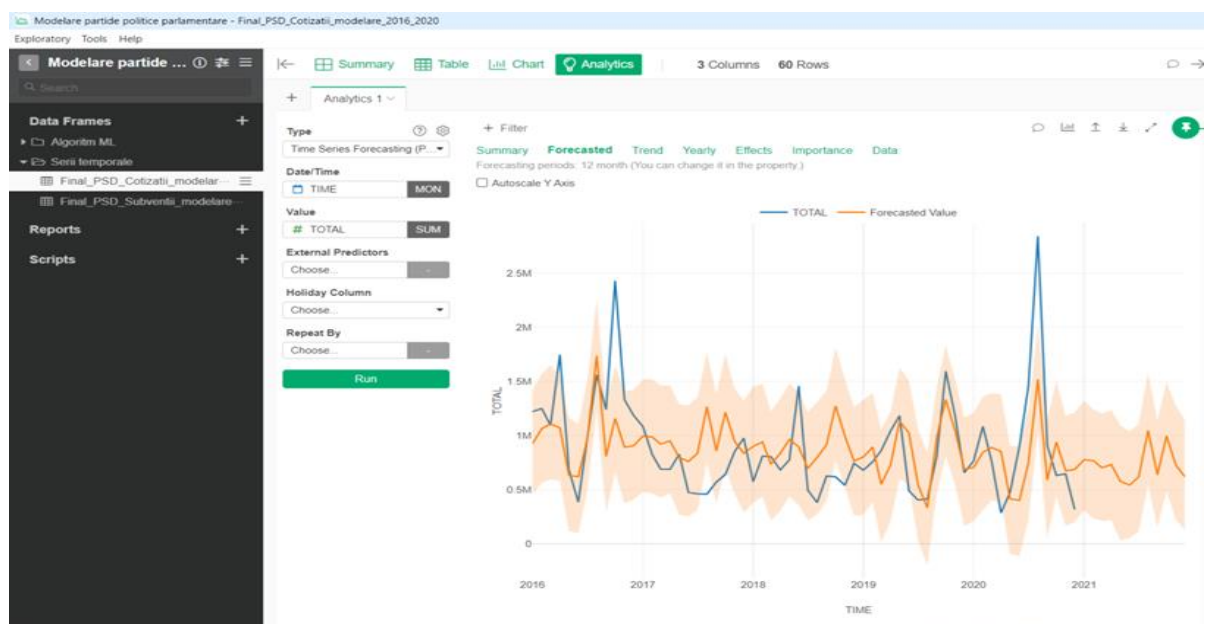
The Facebook Prophet model, like the ARIMA model, highlighted the rapid increase in the subsidy at the end of 2018, when the value received was much higher than expected. The model also reported a difference between the two lines' graphs towards the end of 2019, when the subsidy increased, although the forecast indicated a decrease. From the point of view of the trend, the forecast model for this party indicates for the year 2021 an ascending evolution of the sub-indicator Subsidies.



Trend evolution subindicator PSD Grants - Facebook Prophet model

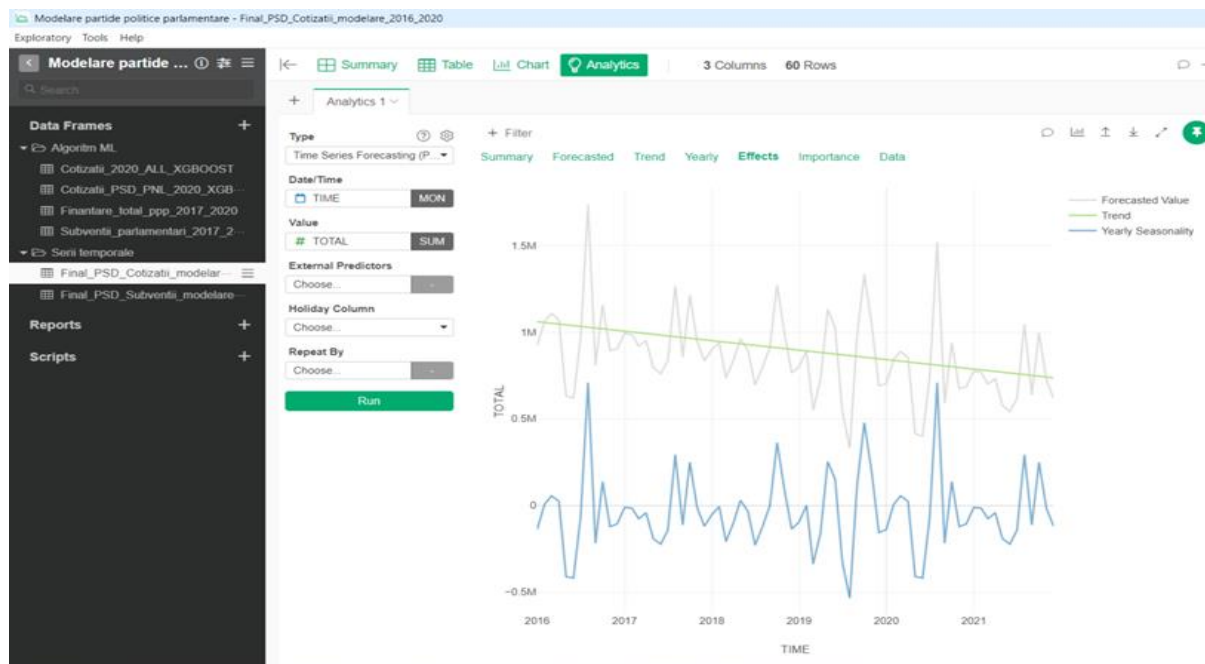
The vertical red lines signal unexpected, spontaneous events associated with “anomalies” and major trend changes, such as the increase in the subsidy from 2018 to 2019.

Applying the Facebook Prophet model in the case of the Contributions sub-indicator, its forecast showed a succession of periodic increases and decreases.



Prophet Facebook model forecast - PSD Contributions sub-indicator

As an evolution, this model reproduced an alternation of minimum and maximum values associated with seasonality, on a downward trend of the sub-indicator.



Trend evolution subindicator PSD Contributions - Facebook Prophet model

The forecast indicated a slight decrease in revenue from contributions in 2021, compared to 2020, but sharper compared to 2016.

In conclusion, in the case of the Grants sub-indicator, the values predicted by time series-based analysis models are consistent with actual data, with small differences indicating oscillations in different directions, meaning that both the ARIMA model and the Facebook Prophet model described relatively good forecast of the Subsidy sub-indicator. In addition, in the case of the Facebook Prophet method, the comparison between the actual values of the grant and the projected values, reported both a higher accuracy of the values and a correspondence over a longer period between data, respectively 5 months.

For the Contribution sub-indicator, both forecast models indicated an alternation of increases and decreases related to a seasonality regarding the evolution of this sub-indicator. That seasonality could actually correspond to the work schedule of parliamentarians. The periods in which the values of the contributions decrease could be associated with the parliamentary holidays, respectively the months of December, January as well as the summer months. The trend signaled by the Facebook Prophet technique on the real data related to the contributions indicated a decreasing trend during the years 2016 - 2020, which will continue in 2021.

Thus, the use of time-based forecasting analysis models in the case of a parliamentary political party highlighted the increase of future values related to the Sub-indicator Subsidies and the decrease of future values related to the Sub-indicator Contributions. The result of the forecasts regarding the evolution of the monitored sub-indicators confirms the real trend of financing the activity of a parliamentary political party mainly from public sources, a trend that has emerged since 2018, when the legislation was changed in this regard.

Case study - experimental application of Machine-Learning (ML) algorithms on the prediction of the Private financing indicator and the Contribution sub-indicator for a parliamentary political party, using the XGBoost model

The case study focused on the predictive analysis of the Sub-grants and Contributions sub-indicators, using the XGBoost model (eXtreme Gradient Boosting) from the category of overall type algorithms, in order to validate two working hypotheses:

Hypothesis no. 1: county parliamentarians and councilors play an important role in determining the Private Financing indicator;

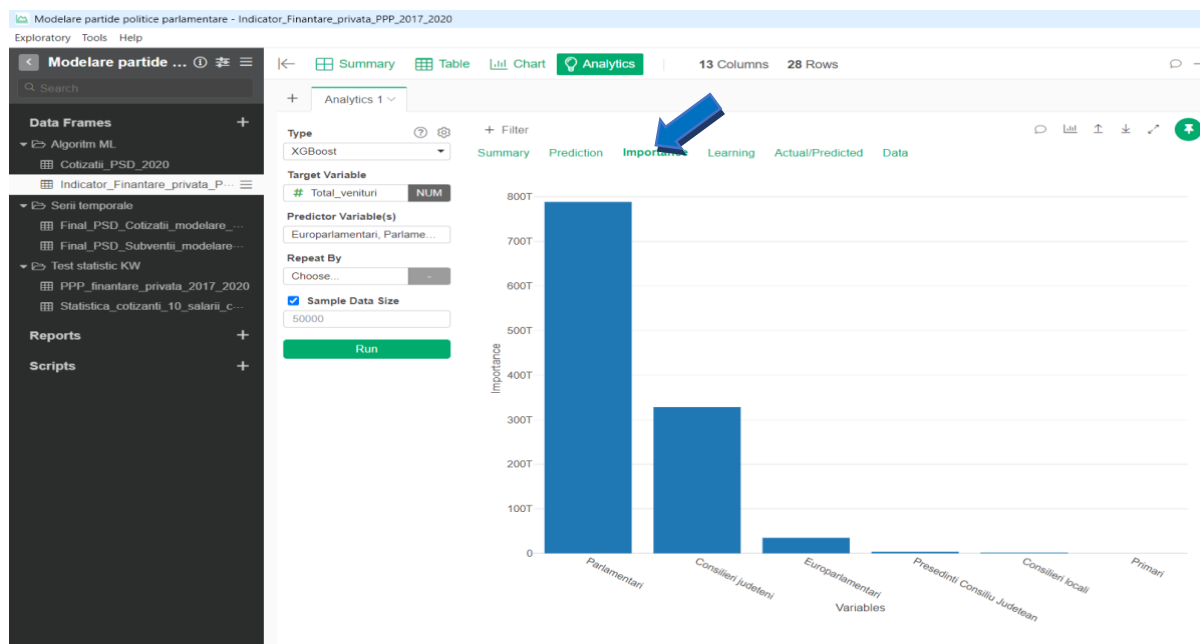
Hypothesis No. 2:: MEPs, parliamentarians and local government representatives play an important role in determining the Contribution sub-indicator.

In order to prove ***Hypothesis no. 1*** the first stage of the analysis was the centralization of the financial information of the parliamentary political parties from the 2016-2020 legislature, respectively: PSD, PNL, USR, UDMR, ALDE, PMP and ProRomania.

The structuring of the data for all the component sub-indicators of the Private Financing indicator was done in the form of a table with 13 columns and 28 rows. In the table thus conceived were introduced the value results related to the sub-indicators corresponding to the years 2017, 2018, 2019 and 2020, for each of the mentioned parliamentary parties. Individually, for each party, the table contained 6 electoral parameters, namely the number of MEPs, parliamentarians, county council presidents, county councilors, mayors and local councilors. In the case of MEPs, the mandate is for 5 years, for 2017 and 2018 their number was introduced as a result of the 2014 European elections, and in 2019 and 2020, the number of seats of each party was recorded, according to the result of the 2019 European elections. In the case of parliamentarians, even if the elections are every 4 years, in 2017 the number of parliamentarians resulting from the parliamentary elections at the end of 2016 was noted, and in the following years the number of parliamentarians according to parliamentary migration was mentioned, calculated based on the websites of the Romanian Parliament.

Therefore, using the Exploratory Public computer application, the XGBoost model, the Private Financing indicator was set as a dependent variable. The total of this indicator was calculated by summing the values of the sub-indicators Contributions, Donations, Loans and Income from other sources (other income), for each year and for each party. The model had as predictors the 6 stated electoral parameters that determined the prediction of the Private Financing indicator. Based on these criteria, the XGBoost returned an R-Squared value of 0.9531, the equivalent of a high accuracy of the model. In conclusion, 95.31% of the variation of the Private Financing indicator is explained by the variation of the mentioned electoral parameters.

For the validation of Hypothesis no. 1, under the conditions of an R-Squared of 0.9531 the model ("Importance" option) made a hierarchy of the importance of the independent variables necessary in making the prediction. The order of the predictors indicated by the XGBoost algorithm was as follows: on the first two positions were placed in order the number of parliamentarians, followed by the number of county councilors. In positions three and four were the MEPs and the presidents of the county councils. On the last two positions (5 and 6) were found the number of local councilors and the number of mayors, respectively. It should be noted that the predictive analysis performed by the XGBoost model for the Private Financing indicator returned the same order of importance of the two electoral parameters, namely the number of parliamentarians and the number of county councilors, as in the case of the Subsidies sub-indicator, whose hierarchy is validated by legislation.



Hierarchy of importance of predictors of the indicator Private financing - XGBoost model

The visual elements in the graph indicate the order and degree of importance of the predictors in the prediction made. Thus, if the number of parliamentarians and county councilors is known, the model can make a high-accuracy prediction of the Private Financing indicator. In making this forecast, the MEPs counted to a lesser extent and the presidents of county councils even less.

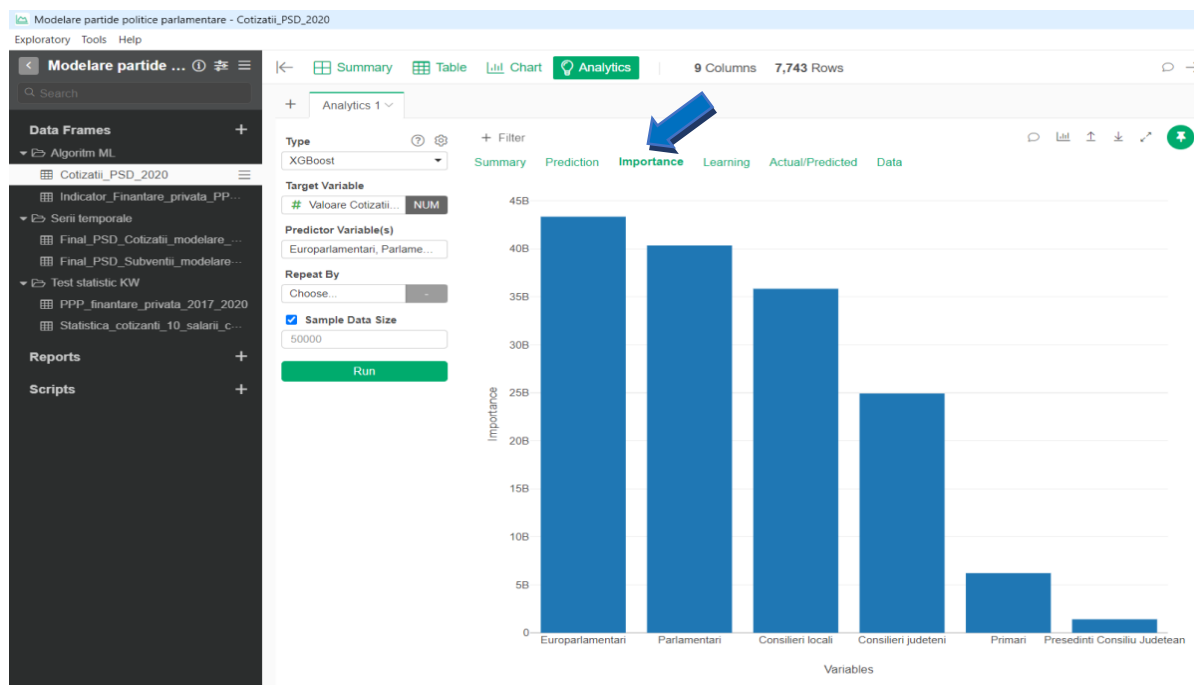
In conclusion, the prediction by the XGBoost algorithm of the Private Financing Indicator whose R-Squared is 0.9531, is based mainly on the first two predictors, namely the number of parliamentarians and county councilors to determine the value of all the dependent variable, without the need for knowledge. the number of mayors and local councilors.

Sectioning the analysis framework, by using the XGBoost model only for the predictive analysis of a single sub-indicator from the Private Financing indicator, for a single parliamentary political party and for a single year of activity, Hypothesis no. 2 of the study. Thus, the series of analyzes of the Social Democratic Party was continued, taking it as an example in this case study, in order to demonstrate **Hypothesis no. 2**.

The first stage was, as in the previous analysis, the one in which the financial data of PSD for 2020 were centralized for the Sub-indicator Contributions under the signature of a table with 9 columns and 39 rows. The data entered represented the values of the PSD members' contributions at the level of the county organizations, except for the branches from Harghita and Covasna which did not collect contributions in that year. Also, the same 6 predictors were used as in the case of the Private Financing indicator, and the values of the electoral parameters were determined in accordance with the results obtained by PSD at the level of each county, in the parliamentary and local elections organized in 2020. the total value of the Contribution sub-indicator was set as a dependent variable and the 6 electoral parameters listed were set as independent variables. Based on the above criteria, the XGBoost returned a value for R-Squared of 0.9452, which means a high accuracy in predicting the model. Thus, 94.52% of the variation of the Contribution Sub-Indicator is explained by the variation of the mentioned electoral parameters.

In conclusion, the prediction by the XGBoost algorithm of the Private Financing indicator whose R-Squared is 0.9452, is mainly based on the first four predictors, whose hierarchical order was: the number of MEPs, the number of parliamentarians followed by the

number of local councilors and that of the county councilors. On the last two positions were placed in order the mayors and respectively the presidents of the county councils. The graph reproduces the hierarchy of the importance of the electoral parameters in the prediction of the sub-indicator Contributions, corresponding to the year 2020, for the Social Democratic Party.



Hierarchy of importance of predictors of the PSD Contributions sub-indicator - XGBoost model

Unlike private funding indicator predictor analysis, carried out previously, if the Subscriptions sub-indicators, it is necessary to know the values least four predictors that were significant in the pattern and number of Mayor and counselors least county. PSD, contributions are the largest source of private funding party explained by the large number of contributors and Monthly discipline on their receipt. Membership fees are the largest party as the amount for MEPs, followed by contributions MPs. The analysis reports for the period 2017 - 2020, with information nominal party members who paid contributions whose aggregate value exceeds the scale 10 minimum gross salaries per country were identified as MEPs and MPs. Distribution functions of contributing members of this category was 17.30% MEPs, MPs and only 71.73% 10.97% other functions. Important are the contributions of local councilors and those of county councilors as they underpin the expense of local organizations. Importance is given by the number of contributors in this category. Also they have a significant contribution and contributions from mayors whose value is higher and can be found recorded in the accounts of the party in local / territorial. Presidents of the county councils may be up to each county level to relocate the last position of the ranking on the importance of predictors to determinarea value subindicatorului Contributions

In conclusion, XGBoost predictive analytics model, where the dependent variable - sub-indicators contributions **validates** hypothesis no. 2 that: **MEPs, MPs and local government representatives play an important role in determining the contributions sub-indicators.**

Experimental application type Machine-learning algorithms to predict indicator private funding and contributions demonstrated the importance predictor sub-indicators "number of parliamentarians" in determining future income of a parliamentary political party. Validation Case No. 1 as model predictive analytics XGBoost confirmed the importance of independent

variables "number of MPs" and "number of county councilors" in forecasting indicator private funding. As with income from grants, where the number of MPs determine 75% of the grant and that of county councilors determines 25% of its value model XGBoost has placed first in the hierarchy of predictors independent variable "number parlamentari" and place two "county councilors number" showing the major role of these predictors in determining future income indicator of private funding.

Regarding setting sub-indicators for the same contributions as the dependent variable model predictive analytics algorithm validated hypothesis no. 2, placing second in the hierarchy of importance predictors electoral parameter "number of MPs" and fourth in six parameter "number of county councilors." So a parliamentary political party, based on model predictive analytics XGBoost can predict total income from private sources, including fees, if it knows the number of MPs and the number of county councilors. Linking together the result with conditional grant allocation according to the same two parameters, namely the number of MPs and county councilors number, a parliamentary political party may predict so the entire budget of revenues to finance current activities.

Unidirectional analysis of Kruskal – Wallis variation

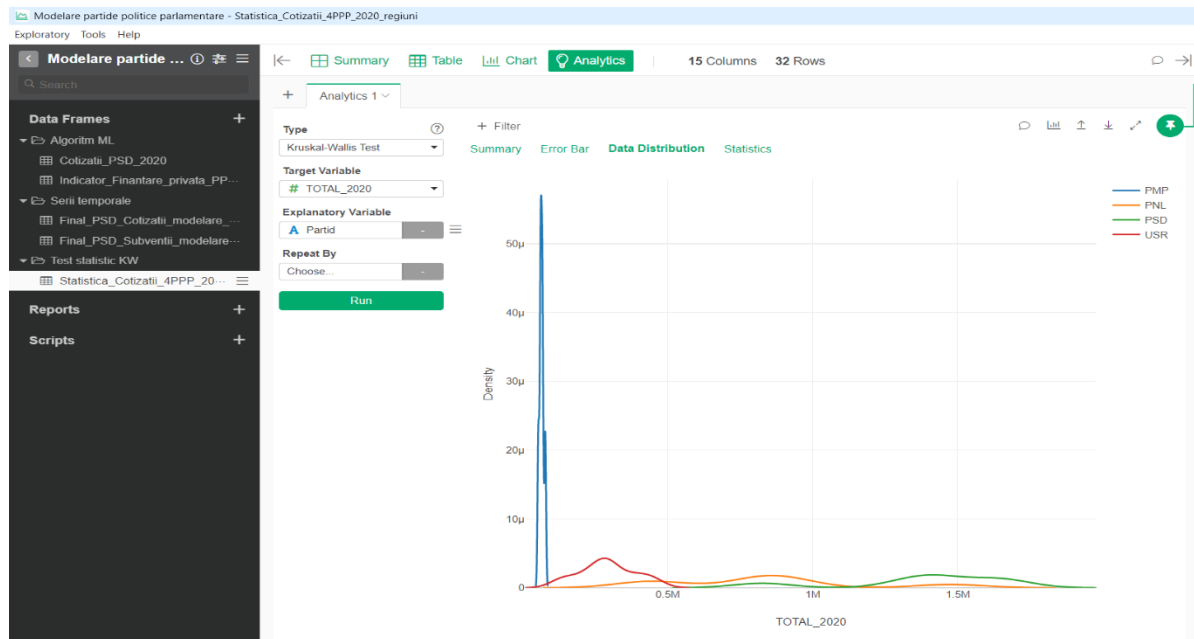
In order to prove Hypothesis no. 3 on the Sub-indicator Contributions for parliamentary political parties, the Kruskal-Wallis statistical test was used.

The testing was aimed at demonstrating **Hypothesis no. 3** research, according to which: ***significant differences between contributions at national level, do not imply significant differences between contributions at regional level.***

The test was applied for the Sub-indicator Contributions at the level of 2020, for 4 parliamentary political parties, respectively: PSD, PNL, USR and PMP, using the same computer application - Exploratory Public. As the reporting of financial data in the case of contributions is done at the level of the county organization, so that the samples are as equal as possible, the data were centralized in the form of a table on 8 regions (7 geographical areas and Bucharest). The table contains 32 rows (4 parties of 8 regions each) and the total value of the contributions for 2020, for each party and region. In the first stage, the analysis was done according to the explanatory variable "Party" and in the second stage according to the explanatory variable "Region". When performing the test based on the "Party" parameter, a "P Value" of 0.0000376 was obtained, which means that there are significant differences between the quotes of the analyzed political parties. The test examined the 4 groups formed by the 4 parliamentary political parties, detecting significant differences between their contributions. In other words, the observed data are inconsistent enough with the null hypothesis for the null hypothesis to be rejected. The null hypothesis of the Kruskal-Wallis test means that the medians of the 4 groups analyzed are equal, which contradicts the test result.

It was thus possible to prove the first part of Hypothesis no. 3, according to which, ***there are significant differences between national contributions.***

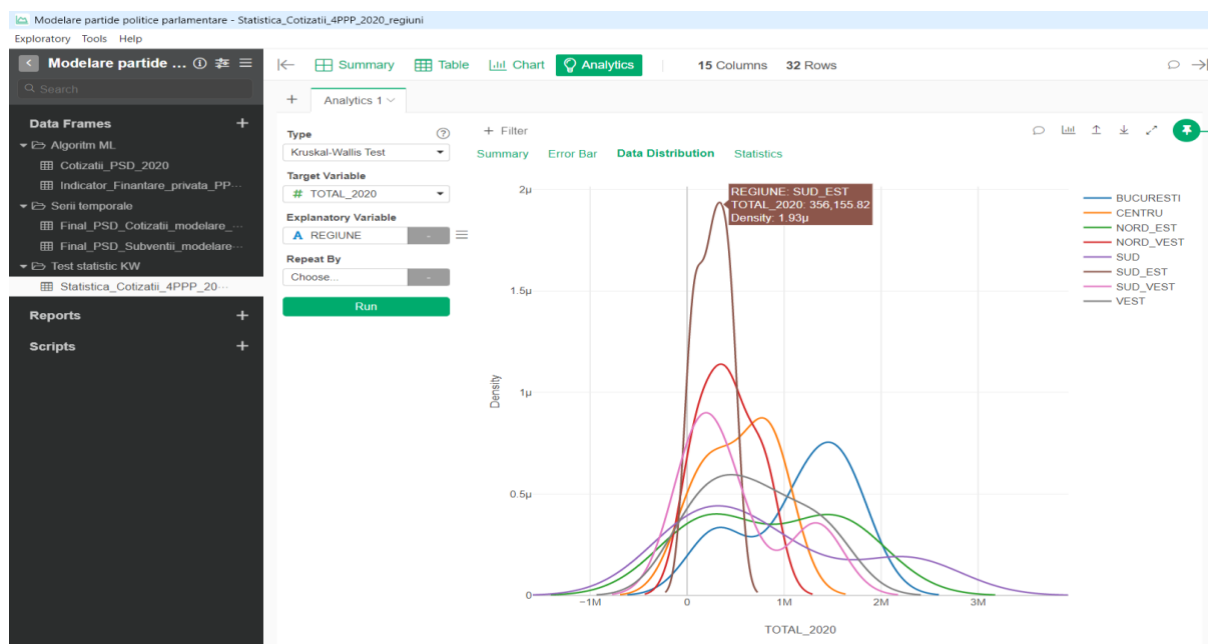
The statement is also supported by the test chart that shows the distribution of data of the 4 parties analyzed, each marked with a color.



Distribution below indicator Contributions - Kruskal Wallis statistical test

The X-axis of the graph indicates the total values of the contributions and the Y-axis shows the density that represents the distribution of the values of the contributions by intervals. In the case of PMP, the distribution differs significantly from the rest of the parties subject to testing. The distribution graph and the "P value" of 0.0000376 confirm this significant difference between the contributions.

Repeating the test for the Contribution sub-indicator, but this time related to the explanatory variable "Region", a "P-value" of 0.7692 was obtained. Being higher than the reference value of 0.05, it means that there are no significant differences between the contributions of the parliamentary political parties analyzed in the region. The graphics of the party lines confirm a relatively similar shape.



Distribution below indicator Contributions - Kruskal Wallis statistical test

The results of the Kruskal-Wallis statistical test on the Contributions sub-indicator show both the difference in value between the total contributions of the 4 parliamentary political parties and the fact that the two major parties, PSD and PNL, have a relatively similar distribution in terms of contributions. In addition, at the regional level, the lines follow practically the same shape, except in the south-eastern region where the density is higher, which means that the parties have a relatively similar "pattern" of contributions.

It was thus possible to prove the second part of Hypothesis no. 3, according to which, **there are no significant differences between contributions at regional level.**

Chapter 8 Final conclusions, personal contributions, managerial implications, limits of research and further research directions

The value of the studies presented in this doctoral thesis consists in the way in which they can be integrated in the process of analyzing the performance of the financing activity at the level of a parliamentary political party.

The design of a system of performance indicators for evaluating the activity of financing political parties by adapting the theoretical model of the Balanced Scorecard and demonstrating the stated hypotheses regarding the defined indicators / subindicators is the most significant personal contribution because it provides a multidimensional analysis and evaluation framework for party management. parliamentary politics. The tools, techniques and methods used can be taken over by political parties and implemented in the current activity giving them the opportunity to identify problems, to compare the results obtained in real time both from the perspective of their own activity and by reporting the activity of competing political parties. Political parties may also have an idea of possible future financial results based on the predictive analyzes exemplified in the thesis.

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