



Multi-criteria analysis and comparative study between budget approaches

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Abstract: Budgets are subject to much criticism. The questioning of the budgetary process has increased in recent years, especially in times of crisis when the environment has become increasingly uncertain. Different approaches have treated the different definitions of the budget, the roles it provides over the decades, and the limitations it presents according to each current. In this article, we will have to realize a comparative approach and a multi-criteria analysis of the budget approaches.

Key Words: Budget, Budget control, Budget approaches, Multi-criteria analysis, comparative approach

1. INTRODUCTION

Budgetary control is defined as a set of procedures in management control that includes defining objectives for responsibility centers, developing annual forecasts and action plans formalized in quantified budgets, monitoring the progress of these budgets, and taking corrective action resulting from it (Alcouffe, S., Berland, N., Levant, Y., 2002). Budgetary control appeared at the beginning of the 20th century and has become an essential element in the management of companies, and is considered to be one of the most widely used management control systems (DFCG.,1994; Chenhall R. H., Langfield-Smith K.,1998; Jordan H.,1998; Ekholm B-G., Wallin J., 2000; Guizani C., Brunhes-Faure M., 2002).

The majority of companies have opted for a budget system to ensure good management; they prepare budgets and follow them (Kennedy A. Dugdale D., 1999).

The budget has several roles. The budget expenses control, forecast results, plan, motivate, evaluate, coordinate and educate (Otley D.T.,1977; Barrett M.E., Fraser L.B., 1977). It ensures planning, control of responsibilities, control, and evaluation of performance and influence on the behavior of the budget holders (Samuelson, L. A.,1986; Lyne, S. R., 1988). On the other hand, the budget has formal and informal roles, it represents a ritual (Zrihen R., 2002) and manages financial balances (Gignon-marconnet I., 2003).

In a research study by Burrell and Morgan (Burrell, G. & Morgan, G.,1979), four types of approaches have come from the sociology of organizations, namely the classical approach, the Marxist approach, the neo-institutional approach, and the Foucauldian approach.

Our research questions are: what are the differences between budget approaches? and what are the criteria for comparing these approaches?

To answer these questions, we will therefore begin, in the first part, with the definition, roles, characteristics, and approaches of the budgetary tool. The advantages and disadvantages of the different approaches will be discussed to establish a SWOT analysis, which will form the basis for the comparative analysis. In the second part, we will develop a multi-criteria analysis of the budget approaches.

2. LITERATURE REVIEW

A. Budget

2.1 Budget Definitions

In Etymology, "the budget" is an expression that comes from the word "bougette" in French which means a purse hung on the saddle of the travelers' horse in which one squeezed one's ecus. The term was later transposed to mean financially for governments and figuratively for private individuals (Hofstede G.H., 1967).

A journey, especially a long one, cannot be improvised, it is necessary to foresee, plan the phases, and have sufficient resources, this is the role of the "budget". This term was taken over by the English and became "budget" which designates the sum of money allocated by a vote of the

parliament to an administrative entity for its functioning. Each minister has a "budget" to run his entity. It is then a concept of public law.

According to Anthony, the budget is a generic term that designates "a plan for the coming year generally expressed in monetary terms" (Anthony R.N.,1988). It covers most short-term plans. The budget is the most convenient way to express the magnitude of planned inputs and outputs. Monetary amounts can be aggregated, but physical quantities cannot (monetary dimension) (Anthony R.N.,1988).

According to Argyris, the budget can be defined as the set of accounting techniques used to control costs by controlling people. It serves as the basis for assigning rewards and sanctions. Achievement of goals leads to rewards while failure to achieve them leads to sanctions (Argyris, C., 1952).

The budget can also be defined as a numerical document that brings together in one place the objectives and resources of an entity.

Hope and Fraser defined budgeting as the process of preparing and negotiating the annual budget as well as measuring company and individual performance against that budget (Hope, J. & Fraser, R., 2003).

According to Johnson and Kaplan (Johnson H. T. & Kaplan R. S.,1987), the budgeting technique is considered to be the primary tool for controlling the performance of large industrial companies (Berland N.,1999; Berland N., 2002).

The budget does not necessarily mean budgetary control. The latter corresponds to the use of the budget to plan and control the performance of managers and, more generally, the company. According to Gervais (Gervais M., 1983), budgetary control is the permanent comparison of actual results and the numerical forecasts included in the budgets to:

- Search for the causes of variances
- Inform the different hierarchical levels
- Take any necessary corrective measures
- appreciate the activity of budget managers.

Budgetary control was gradually extended after the Second World War to become the primary management control tool during the 1960s and 1970s (Gervais M., 1983).

The budget is therefore a central tool of management control, but it is nevertheless subject to numerous criticisms (Berland N., 2004).

Among these criticisms, it takes too much time to generate too little added value, it makes it possible to manage costs and not value, it is much more interested in the short term to the detriment of the long term, and it makes the company rigid, it encourages bargaining and individualism and thus forgets the competition. (Hope J., Fraser R., 2000; Wallander J., 1999; Zécri J.L., 2000). The school of human relations in management control confirms that the budget has negative repercussions on the motivation of employees, and is therefore a means of pressure that creates tension at work, destroys cooperation, and causes stress. The budget proves to be rigid and sometimes unrealistic because it is only interested in past performance, which questions the contribution of the budget to the performance of the company (Argyris, C., 1952; 1953).

The budget has been criticized for being the source of opportunistic behavior, discouraging cooperation, causing conservative behavior, and being irrelevant in an uncertain environment. It has also been criticized for preventing innovation, for being a ritual, for establishing a culture of control instead of a culture of involvement, for making short-term profitability predominant to the detriment of long-term profitability, and to be spread over an annual scale rather than accompanying the operating cycle of companies (Hope J. & Fraser R., 2003; Bescos, P.-L. & al.,2004).

Despite all these criticisms, the budget remains a central element in the majority of big companies (DFCG,1994; Chenhall R. H., Langfield-Smith K,1998; Bunce P., Fraser R. & Woodstock L,1995). Two remedies are proposed to address some of these criticisms (Hansen, S. C., Otley, D. & Van der Stede, W. A., 2003):

- Improving the budget through Activity Based Budgeting (ABB)
- Eliminating the budget by Beyond Budgeting (BB).

2.1.1 Activity Based Budgeting (ABB)

Budgeting by the "Activity Based Budgeting" method is not a new management idea. The first authors of this subject treated it at the end of the 1990s.

This method seeks to transform strategic plans into activities and implement a process-based allocation to define the level of resources that will be allocated to each activity (Brimson, J.A. & Antos, J., 1999).

The ABB method requires determining the costs of activities based on their size and the expected resources they consume.

The activity-based budgeting procedure takes the activities that are important or necessary to produce the products or services demanded by customers as a starting point for budgeting the resources consumed by the activities (Pietrzak Z., 2013).

The use of activity-based budgets reinforces the relevance of the strategy's representations and allows its control (Dupuy Y., Villesèque-Dubus F., 2003). It turns the strategy into activities and generates meaningful communication (Connolly T. & Ashworth G.,1994).

The main advantage of the ABB method is that costs can be associated directly and more precisely with activities, which makes the planning process more relevant and provides more effective corrective measures. The companies that use this method confirm that it has enabled them to establish more realistic budgets, identify resource needs in a specific way, have a better relationship between costs and results, and rationally assign costs and responsibilities to the company's staff (Retal F., 2020).

2.1.2. Beyond Budgeting (BB)

Management without a budget means that the budget process and control are eliminated. As such, budgets do not allow for future planning and budgetary control does not allow for the evaluation of strategy implementation at the

operational and the value creation (Hope J. & Fraser R., 2003; BBRT., 2009a; 2009b; 2009c; Bogsnes, B., 2008; Lyne S. & Dugdale D., 2004).

Hope and Fraser (Hope J. & Fraser R., 2003) propose 10 principles that characterize management without budgets:

- Beat the competition, not budgets: The budgeting process does not consider the environment in which the company operates, it relies on the internal data of the organization (Hope J. & Fraser R., 2003; Bunce, P., Fraser, R. & Hope, J., 2002; 2004; Player, S., 2003). So, in a competitive environment, a company's sustainability is guaranteed if it can have a significant market share compared to its competitors. Therefore, the budget is considered an unreliable tool.

- Make strategy a continuous process, not annual rhetoric: Strategy is defined and then revised in real time as per fluctuations in the environment, which is not compatible with the annual rhythm of even flexible budgets (Bunce, P., Fraser, R. & Hope, J., 2004; BBRT.,2009d; Libby, T. & Lindsay, R. M., 2009; Neely, A., Bourne, M. & Adams, C., 2003).

- Promoting radical changes: The budgeting process allows for incremental, continuous changes that allow the organization to evolve without major upheavals that challenge the deep structures of the organization. They are slow and allow for changes of a depth limited to the organization's tolerance.

- Manage resources over the long term instead of allocating them: The budgeting process is, by nature, about allocating resources to various responsibility centers which eliminate resources that are not going to serve the interests of the organization (Hope, J. & Fraser, R., 2003; Covaleski, M. A. & Dirsmith, M. W., 1986). Whereas without budgets, this is overcome and allows managers to continuously assess the value generated by each monetary unit from a long-term perspective.

- Managing cause and effect relationships, not numbers: Budgetary control allows for measuring the gaps between what was planned and what was achieved in terms of budgets without understanding the cause of these gaps. In management without budgets, managers search for the cause of variances if it is caused by the environment and internal management of resources and operations and then take corrective action (Bogsnes, B., 2008; Hope J. & Fraser R., 1999)

- Manage value, not costs: Managing without a budget focuses on value, not costs.

- Building the future instead of staying on track: Managers need to project into the future to deal with the various fluctuations in the environment and not just analyze the past (Hope, J. & Fraser, R., 2003).

- Exercise focused control

- Promote teamwork, not individualism

- Emancipate and empower managers.

2.2 Roles of the budget

The budget has several roles in organizations according to several studies by different authors, budget practices are also different.

Study	Budget roles
Otley, 1977	Expenses permission and control, forecasting of results, planning of financial requests and results and operational activities, communication, coordination of activities, motivation, evaluation of entity, and managerial performance.
Barett et Fraser, 1977	Planning, motivating, evaluating, coordinating, and educating.
Samuelson, 1986	Planning (planning, coordinating, results control), responsibilities control (determining financial commitment, performance evaluation), budgeting behavior influence (motivating financially decision making founded and financial education), passive roles (ritual, habit or usage).
Lyne, 1988	Forecasting future performance, communication between managers and employees, performance control by calculating and analyzing the gaps, performance evaluation mode, and calculating bonus and motivation.
Bunce, Fraser & Woodcock, 1995	Financial forecasting, cost control, cash flow management, objectives setting, investment expenses commitment, communication of plans, resource forecasting, performance evaluation, set transfer prices, and set standard costs.
Berland, 1999	Forecasting-planning (forecasting, expenses permission, informal evaluation), coordination-socialization (coordination, evaluation-communication), evaluation - sanctioning (motivation, commitment, strict financial evaluation).
Zrihen, 2002	Formal roles, informal roles (instrument of power, organizational rituals, rational myth, defense process against anxiety).
Gignon, 2003	Management of financial balances (forecasting, financial communication, allocation of financial resources), organizational adjustment (implementation of strategy, emergence of strategy, integration, coordination of activities, communication of objectives), performance management and evaluation (management of operational performance, evaluation, and motivation of individuals), behavioral orientation (reflection, allocation of resources, reference, motivation by ambitious objectives, motivation by empowerment, participation and valorization, training in economic concepts), securing of individuals (reference, benchmark, conformance to habits, norms and rites).
Bouquin, 2010, p432	Coordination-communication, management planning, delegation-motivation, and learning at management.
Sponem, 2004, p220	Human management and prompting tool (performance evaluation, motivate operational managers, define responsibilities and contractualize commitments, communicate between the different hierarchical levels), strategic tool (deploy strategy, forecast financial needs, manage risks, coordinate activities, manage activities), permission's tool expenses and allocating resources, communication's tool with external actors.

Table 1. *The roles of the budgets (Miroir-Lair I., 2012)*

2.3 Characteristics of the budget

According to Fisher (Fisher J.G., 1998), the budget has different characteristics, the main ones of which can be summarized as follows:

- Participation of the manager in the budget making
- Facility for achieving budget objectives
- Possibility of revising budgets
- The amount of slack in the budget objectives. Slack has been defined as the intentional underestimation of revenues and production capacities and/or the overestimation of costs and resources required to accomplish a task (Dunk A. & Nouri, H., 1998).

- The frequency of budget reporting,
- The link between the budget process and the plan
- The level of detail in the budget.

2.4 Budget Approaches

To analyze the differences between the budget approaches and to compare them, we will maintain the distinction of Burell and Morgan (Burell G., Morgan G., 1988) who list four types of approaches in organizational sociology about the budget which are:

- Functionalist (classical) approaches
- Neo-institutional approaches

- Marxist approaches
- Foucauldian approaches (Sponem, S., 2004)

Each approach presents a side of budgetary control. While some see the budget and its use as an instrument of performance or legitimization of the organization, others see it as a disciplinary instrument.

2.4.1 Classical (functionalist) approach

2.4.1.1 The Harvard School

The main authors of the Harvard School on the concept of the budget are Anthony and Simons. For these authors, the budget is defined as a tool given to managers to guide the behavior of the controlled towards the strategy of the organization.

These two authors have each created a model to achieve budgetary control, which can be represented as follows:

- According to Anthony, effectiveness and efficiency are the criteria on which managers are judged (Anthony R.N., 1988). The role of the budget is essential to achieve this effectiveness and efficiency because it allows for management of activities, coordination, motivation of actors, and modeling.
- Simons differentiates between diagnostic control and interactive control in the use of the budget tool (Simons R., 1995) after having applied Anthony's model by using the tight budget to achieve budgetary objectives (Anthony R.N., 1988).

2.4.1.2 The Human Relations School

For the researchers of the human relations school in management control, the budget is considered a tool that should enable the efficient functioning of the organization by motivating the controlled, involving them, setting the objectives, and rewarding them when these objectives are achieved (Ngantchou A., & Mouffa Nouassi M. J., 2020).

This current differs from the Harvard School in that, for behaviorists, manager satisfaction is the central element that allows them to be considered effective.

2.4.1.3 Contingency theory

In this theory, "there is no one effective structure for organizations. A structure can only be optimal by varying according to some contingency factors" (Donaldson L., 1996). The organization can therefore implement the management control systems that are most adapted to them.

The authors of this approach have associated budget characteristics with organizational characteristics by emphasizing some contingency factors. The performance of the organizational structure, therefore, depends on contingency factors such as:

- Environmental uncertainty: The more uncertain the environment, the more difficult forecasting is and the more ambiguous budget target making is (Lawrence P.R. & Lorsch J.W., 1967; Thompson J.D., 1967).
- Technology: The more complex the technology, the more important the tracking of gaps and the more important the

use of budget data (Thompson J.D., 1967; Brownell P. & Merchant K.A., 1990; Perrow, 1967).

- Strategy: Strategy is developed to ensure coherence between the organization and its environment to ensure performance (Donaldson L., 1996).

- The structure of the organization and its level of decentralization: The most decentralized companies give more importance to budgetary control (Merchant K.A., 1981).

- The size of the company: The larger organization, the stricter the management with exception of budgetary control.

In the contingency theory, the characteristics of the budget process (budget participation, the difficulty of objectives, management involvement, gaps tracking,...) must be adapted to the requirements of contingency to ensure the efficiency of the organization.

2.4.2 Neo-institutional approach

Neo-institutional theories propose to take into consideration the institutional environment, i.e. all legal or cultural rules and obligations to which organizations are subject (Scott R.W. & Meyer J.W., 1991).

In the neo-institutional approach, the use of the budget allows organizations to legitimize themselves in their institutional environment.

For the neo-institutionalists, management control, and more precisely budgetary control, would make it possible to go beyond the objective of performance to give the illusion of rationality to internal and external actors and to legitimize the organization's activities. From this perspective, the budget would be used primarily as a tool to legitimize itself in the eyes of stakeholders to obtain resources (Covaleski M.A. & Dirsmith M.W., 1988a; Covaleski M.A. & Dirsmith M.W., 1988b).

The budget provides social legitimacy to the members of the organization and their actions by allocating an illusion of rationality making its use proof of good management.

2.4.3 Marxist approach

The Marxist current considers the budget and budgetary control as not being neutral, it is a tool for controlling the workforce in addition to its role of searching performance in the organization. It thus makes it possible to legitimize partisan interests by helping to control and domination of work and by consolidating the dominant mode of production, i.e. the capitalist company (Covaleski & al., 1996).

Budgetary control then makes it possible to exploit workers by providing information to managers on the achievement of objectives that will satisfy the owners of capital (Armstrong & al., 1996; Armstrong P., 2000; Hopper, T. & Armstrong, P., 1991).

2.4.4 Foucauldian approach

In the Foucauldian approach, budgetary control involves monitoring the activity of others irrespective of geographic distance and field of activity.

Budgetary control is therefore a disciplinary technique that makes individuals governable in an organization.

The budget is thus considered a mental prison that allows control and monitoring at any time without being seen (Sponem, S., 2004).

3. METHODS

The comparative study of budget approaches will emphasize the advantages and disadvantages of the budget addressed by the different budget approaches listed above to realize a SWOT analysis.

3.1 Advantages and Disadvantages

3.1.1 Advantages

3.1.1.1 Classical approach

The classical approach has some advantages related to the budget. We list:

- The budget is a tool at the service of managers to guide the behavior of the controlled so that they act in the direction of the strategy.
- The budget is a tool that should allow the organization to function efficiently by motivating the controlled staff, involving them, setting the objectives, and by rewarding them when these objectives are achieved.

3.1.1.2 Neo-institutional approach

The neo-institutional approach considers that the budget has some advantages such as:

- The budget makes it possible to go beyond the objective of performance to give the illusion of rationality to internal and external actors and to legitimize the action of managers and therefore of the organization.
- The budget gives social legitimacy to the members of the organization and their actions
- The budget gives an illusion of rationality, making its use the proof of good management.
- The budget is used as a tool to have resources from stakeholders (Covaleski M.A. & Dirsmith M.W., 1988).

3.1.1.3 Marxist approach

The Marxist approach grants the budget advantages such as:

- The budget is not neutral, it is a tool of control of the workforce that does not serve only for the search of the performance of the organization.
- The budget contributes to the control and domination of work and boosts the dominant mode of production.
- The budget allows for the exploitation of workers by providing information to managers about the achievement of objectives.

- The budget makes it possible to satisfy the owners of capital through the control applied.

3.1.1.4 Foucauldian approach

The Foucauldian approach, other than the other approaches, has the following advantages to the budget:

- The budget is objective, so it is less questioned by those over whom it is applied, than other control techniques (Knights, D. & Collinson, D.,1987).
- Budgeting based on accounting knowledge allows monitoring of the activity of others, regardless of geographic distance and area of activity.
- The budget is a disciplinary technique that makes individuals in an organization governable.
- The budget makes it possible to control and monitor at any time without being seen.

3.1.2 Disadvantages

3.1.2.1 Classical approach

The classical approach has some disadvantages related to the use of the budget by organizations:

- Without motivating managers, the company is inefficient. The budget can therefore have negative effects on motivation through the needs for security, belonging, consideration, accomplishment, and autonomy.
- Management under budget constraints generates stress for managers because they have to respect their budget at all costs, which leads to a deterioration in hierarchical relations, and encourages them to favor the short term to the detriment of the long term.
- Management without accounting, where the evaluation is based essentially on the manager's interpretation, the budget and the accounting then have a very small role in the evaluation made by the superior.
- A misuse of the budget by the manager could have negative effects on coordination.

2.1.2.2 Neo-institutional approach

The neo-institutional approach has some limitations that may follow the use of the budget as a management control tool, we can list :

- The budget is a ritual that legitimizes itself through tight budget negotiations and high standards that are never achieved (Fernandez-Revuelta Perez, L. & Robson, K., 1999).
- It is difficult to use the budget to discuss in extern without using it internally: the uncoupling of the external image from internal use is difficult to achieve (Covaleski, M. A. & Dirsmith, M. W.,1983).

3.1.2.3 Marxist approach

The Marxist approach focuses more on the advantages of using the budget tool than its disadvantages. Limitations include:

- Exploiting workers to give managers information about the level of achievement of objectives, can only be done if the workforce is flexible and in case it will not be able to fight or

resist the capitalists (Armstrong & al., 1996; Armstrong P., 2000; Hopper, T. & Armstrong, P.,1991).

3.1.2.4 Foucauldian approach

The Foucauldian approach, considering the budget as a disciplinary technique, can have the following disadvantages:

- The budget is a mental prison that allows monitoring of bodies and minds, which can have negative effects on the human resources of the organization (stress, demotivation,...)

3.2 SWOT analysis

In this section, a SWOT analysis of the strengths and weaknesses of different budget approaches will be realized:

Classical Approach	
Strengths	- The budget is used as an instrument to optimize the functioning of companies. - The budget is used to make rational decisions to ensure the performance of the companies. -The budget guarantees the orientation of the behavior of the controlled and their motivation.
Weaknesses	-Possibility of perverse effects on the controlled (stress, tension...) -The budget can make managers dissatisfied and therefore demotivated.
Neo-institutional approach	
Strengths	-The budget exceeds the performance objective. -The budget gives the illusion of rationality to the internal and external actors of the companies. -The budget legitimizes the company's actions.
Weaknesses	-The budget may focus on high standards that are never achieved.
Marxist approach	
Strengths	-The budget is a tool for controlling the workforce. - The budget allows for the control and domination of workers. -The budget helps to intensify work.
Weaknesses	-The budget allows for the exploitation of workers. -The budget is only useful if the workforce can be used as an adjustment variable.
Foucauldian approach	
Strengths	-The budget allows to monitor of the actions of others irrespective

	of geographic distance and field of activity. - The budget makes it possible to distribute, and monitor bodies and minds by making it possible to see at any time without being seen.
Weaknesses	- The budget can be considered a mental prison.

Table 2. Swot analysis

4. RESULT AND DISCUSSION

To compare the different approaches by some criteria, there are several possible mathematical methods. Multi-criteria comparative study divides into three categories according to how the judgments are aggregated (Lehoux, N., & Vallee, P., 2004; Ibn batouta, Z. & al., 2015):

- Complete aggregation (top-down approach): This method aggregates the n criteria to reduce them to a single criterion.
- Partial aggregation (bottom-up approach): this method compare potential actions or rankings with each other, and makes out-ranking relationships between these elements.
- Local aggregation: This method starts by finding an initial solution first. Then, an iterative search is done to find a better solution.

4.1 Weight Sum Method (WSM)

For our analysis, we chose the weight sum method (WSM). Indeed, this method allows us to find the best possible approaches by giving weight to each comparison criterion, it allows us to take all the criteria according to their value and the absence of a criterion penalizes the other criteria (Scharling, A., 1985).

This method is based on five key elements which are:

- Set of potential actions
 $A = \{a_1, a_2, a_3, \dots, a_n\}$ a_i where $i = 1, 2, \dots, n$
- Different criteria
 c_j where $j = 1, 2, \dots, m$
- Weight of the criteria
 p_j where $j = 1, 2, \dots, m$
- Evaluations or judgments
 e_{ij} where $i = 1, 2, \dots, n, j = 1, 2, \dots, m$
- max or min $\sum e_{ij} * p_j$ for $i = 1, 2, \dots, n$

In our case, we need to maximize this function to have the best solution.

4.2 Comparison Criteria and Weights

In this chapter, we present the eleven comparison criteria on which the comparative study will be based. We note that these criteria are based on the characteristics of each of the approaches presented in the comparative study and SWOT analysis already presented above. We have summarized all the characteristics (strengths and weaknesses) in eleven of the global criteria to ensure a better analysis and optimize the comparison, these criteria are:

- C1: Strategy: It is important for the constitution of the budget and budgetary control.
- C2: Organizational effectiveness: More effective the organization, the more accurate the budget and the more they are to achieve the objectives.
- C3: Organizational efficiency: More efficient the organization, the more important budgetary control is.
- C4: Organizational performance: More effective the approach, the better the organizational performance.
- C5: Uncertainty of the environment: More certain the environment, the more accurate the budget data.
- C6: Stakeholder Rationality: If the budget is considered a rational mirage, it provides evidence of good management.
- C7: Control of activities: Activities are well controlled if budgetary control is achieved.
- C8: Control of people: People are directed and controlled if the budget process is well followed.
- C9: Staff motivation: Staff motivation can be derived from effective budgetary control to achieve objectives.
- C10: Technology: Advanced technology implies greater use of budget data.
- C11: Information: It can be an indispensable tool for defining the budget process.

These different criteria can be ranked in order of importance as follows:

Strategy = Organizational effectiveness = Organizational efficiency = Organizational performance > Environmental uncertainty = Stakeholder rationality = Control of activities = Control of people > Staff motivation = Technology = Information.

Therefore, the weight given according to the WSM method is represented in the following table:

Criterion	Weight
Strategy - Effectiveness of the organization - Efficiency of the organization - Organizational performance	4
Uncertainty of the environment - Rationality of stakeholders - Control of activities - Control of people	3
The motivation of the staff - Technology - Information	2

Table 3. Weight of the criteria

To apply the WSM method, the first step is the multi-criteria choice matrix.

The columns of this matrix contain the approaches to be compared. The rows of this matrix contain the different criteria already determined with the weight of each of them according to their importance.

In the cells, there is a score attributed to each approach per criterion based on a comparative study of the approaches. This score can have three values: 3, 2, and 1. A score of 3 means STRONG, 2 means MEDIUM, and 1 means LOW.

Thus:

3: This means that the planned approach is good for the given criterion.

2: means that the planned approach is average for the given criterion.

1: This means that the planned approach is weak for the given criterion.

The following table shows the results of the multi-criteria analysis matrix:

Criteria / Solution	Classical Approach	Neo-institutional approach	Marxist approach	Foucauldian approach
Strategy	3*4	3*4	2*4	2*4
Control of people	3*3	1*3	3*3	3*3
Staff motivation	3*2	1*2	2*2	3*2
Information	3*2	3*2	3*2	1*2
Organizational efficiency	3*4	2*4	1*4	2*4
Technology	3*2	1*2	1*2	1*2
Organizational performance	3*4	3*4	2*4	2*4
Uncertainty of the environment	3*3	3*3	1*3	1*4
Stakeholder Rationality	1*3	3*3	1*3	1*4
Organizational effectiveness	3*4	3*4	2*4	2*4
Control of activities	2*3	1*3	3*3	3*3
WSM	1,94	1,63	1,78	1,89

Table 4. Matrix of the multi-criteria analysis

Comparison Curve and Histogram:

The following figure shows the distribution of the four curves representing the final scores for each approach against the comparison criteria.

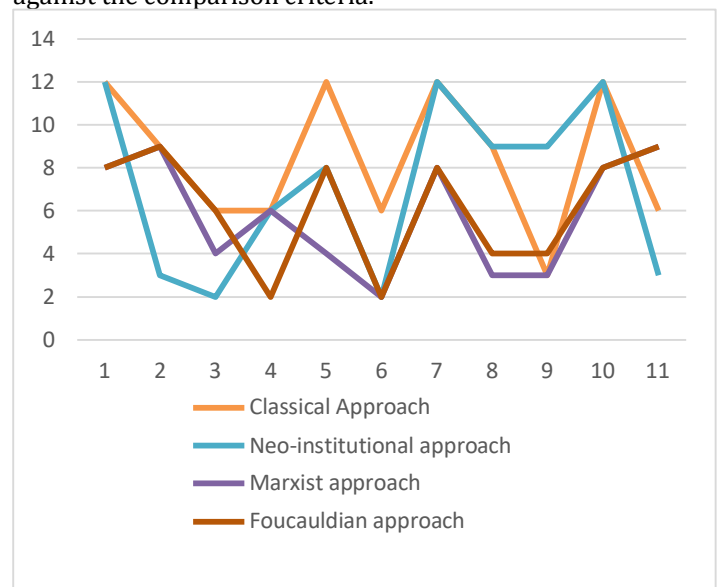


Chart 1. Distribution of the scores against the criteria

The following histogram shows the final score for each approach. The best score got is 1.94, which shows that the classical approach is more significant in terms of performance and effectiveness of the budget in the organization about all the selected criteria and relation to the other approaches. It is followed by the Foucauldian approach, then the Marxist approach, and the neo-institutional approach comes last.

We could notice that none of these approaches could reach the perfect 3/3 score according to this comparative analysis.

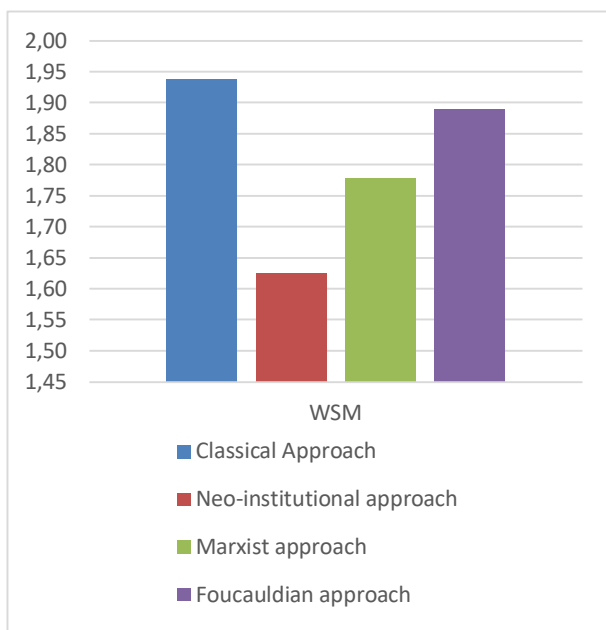


Chart 2. The final rating of the approaches

5. CONCLUSION

Research on budgets is increasingly numerous and shows the importance of this tool in management control, especially in the context of economic crises.

According to Burrell and Morgan (Burrell, G. & Morgan, G., 1979), there are four types of approaches that have emerged from the sociology of organizations, namely the classical approach, the Marxist approach, the neo-institutional approach, and the Foucauldian approach. These approaches allow us to present the different definitions, principles, roles, and objectives of budgets.

Each approach has advantages and disadvantages allocated to the use of budgets. These advantages and disadvantages have brought out eleven criteria for the multi-criteria comparative analysis adopted in this study, namely: C1: Strategy, C2: Organizational effectiveness, C3: Organizational efficiency, C4: Organizational performance, C5: Environmental uncertainty, C6: Stakeholder rationality, C7: Control of activities, C8: Control of individuals, C9: Staff motivation, C10: Technology.

This multi-criteria comparative analysis found that the classical approach is nearest to the organizational reality in terms of company performance and efficiency. However, no approach was able to achieve the perfect 3/3 score in the comparative analysis.

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