



Improving the Efficiency of Budgeting in Industrial Enterprise: The case of Russia, Italy, and the Middle East

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Abstract

The study improved budgeting efficiency at industrial enterprises with evidence from Russia, Italy, and the Middle East. In the era of contemporary globalization and technological advancement, a budgeting system holds paramount significance in the effective management of the financial operations and activities, enhancing the overall efficiency of the firm's cash management, mitigating the risk of finance misallocation, and improving the overall financial performance of the enterprise. However, despite its effectiveness, there is a lack of evidence supporting budgeting automation and its efficiency in managing industrial enterprises. More so, limited theoretical and practical relevance is found in the context of Russia, Italy, and the Middle East. This research intended to fill the existing research gap where a qualitative research design was opted. Primary data were collected from the budgeting heads of 3 pharmaceutical firms, each located in Russia, Italy, and Iran. In-depth interviews with 3 budgeting heads identified that the conventional incremental budgeting system needed amendment and replacement with a consolidated and contemporary yet flexible approach to bring radical improvements at the macro-environment level within the industrial enterprise. The key findings led to the development of a model to improve budgeting efficiency, comprising three components: information and analytical/accounting support for budgeting, production accounting information, and a combination of the regulated operation prices. The consolidation of these three components can yield budgeting efficiency.

Keywords:

Budgeting;
Industrial Enterprise;
Budgeting Model;
Russia;
Italy;
Middle East.

Article History:

Received:	07	July	2022
Revised:	24	August	2022
Accepted:	14	September	2022
Available online:	07	November	2022

1- Introduction

1-1- Background

The budgeting system is one of the most important tools for handling and managing financial operations and activities. It significantly improves the efficacy and efficiency of cash management for businesses and prevents financial misallocation during planning or auditing processes. A mechanism of money relations is developed and

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DOI: <http://dx.doi.org/10.28991/ESJ-2023-07-01-013>

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created as a foundation and is necessary for producing and employing business capital and financial resources, such as business finance, in the business administration of a company. Budgeting must be done more effectively by categorizing expenses and revenues by function and available resources, collecting and analyzing economic data as different resources, and conducting company operations using income-expense. Budgeting is an inclusive system of scientifically robust selection and development of tactical business goals at the organizational level and its entire subdivisions [1]. In the budgeting action, approval strategy, and monitoring of the enforcement of budgets, the functions of sampling-budgeting targets are similar to those of the system of internal management. However, this research and many others have failed to specifically cater to improving budgeting efficiency in the industrial enterprise, as in the cases of Russia, Italy, and the Middle East.

Another study contends that a digitalizing budgeting system in industrial businesses is essential for decreasing the number of planning system constraints and serves as a strategic and operational management tool. However, it has certain drawbacks when used in a conventional system [2]. When the switch to an automatic budgeting system is complete, important indices of company activity increase, according to various economists implementing limited integrated budgeting systems in industrial businesses [3]. By reducing the amount of borrowing and receivables that industrial companies require, modernization and the digitalization transition techniques help increase profitability and revenue as well as the efficiency of equipment loading and production resources. The digitization of budgeting at industrial firms is carried out by IC software packages [4], and two models exist for running an autonomous budgeting system through the programs shown in Figure 1.

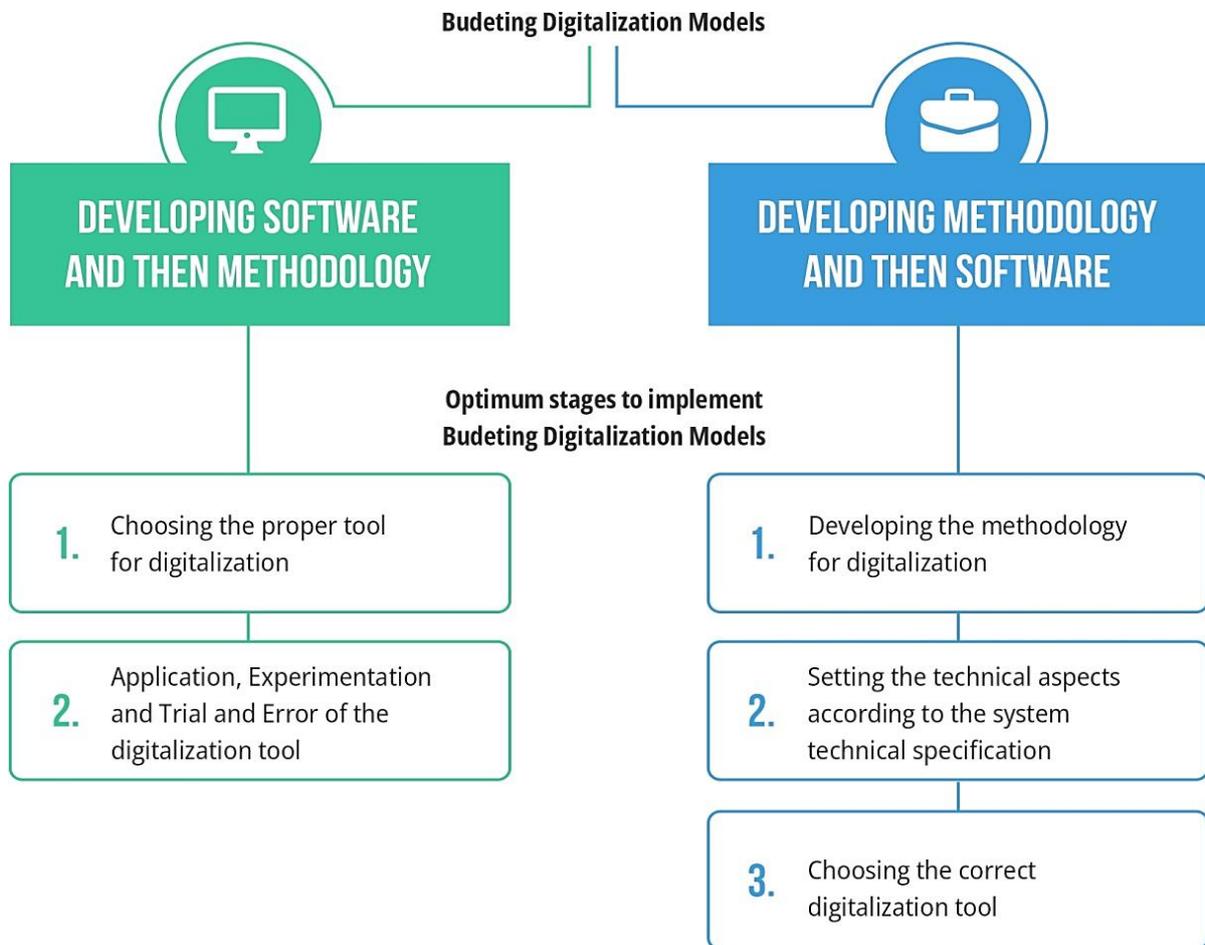


Figure 1. Models of budgeting

It is discussed that, to enhance the budgeting efficiency of industrial enterprises, developing a methodological foundation for the digitalization of this procedure is critical. It comprises the following: (1) the idea of budgeting with comprehensive details of the instructions for the function of the budgeting system and management accounting, (2) regulating the responsibility centers for the financial system of the enterprise with categories of types of costs and the key lines of activities of the enterprise, the mechanism of responsibility structure, and the enterprises [5]. Concerning Russia, it is stated that effective budgeting enables businesses to minimize expenses since investment in development is crucial to a company's long-term success. As the Industrial Rubber Products and Institute of Rubber are in charge of improving the quality of rubber and updating and developing equipment, and as their activities are meant to make the company more competitive, it has been suggested that budgeting will improve investment prospects.

1-2- Rationale

Improving budgeting efficiency is critical for companies/enterprises to reduce expenses, effectively manage business operations, control finances, accomplish business objectives, make prompt financial and strategic decisions, and ensure sufficient capital is present for future investment. Thus, considering these benefits of budgeting efficiency, it was critically important to analyze how industrial enterprises from countries like Russia, Italy, and the Middle East are improving their budgeting efficiency and what types of benefits they received from a financial and organizational perspective. Additionally, researchers have also been unfocused on the cases of the said countries. Therefore, there is a large scope to examine and investigate this area, which motivates researchers to consider these countries in the context of budgeting efficiency, which has significant financial, organizational, and strategic consequences and advantages for industrial enterprises. The previous literature in the context of improving the efficiency of budgeting in industrial enterprises in countries like Russia, Italy, and Iraq is limited and covers much detail. The abovementioned studies are just a few pertinent ones related to the research topic that can help achieve the research objectives and offer academic support to the research findings. However, this research and many others have failed to specifically cater to improving budgeting efficiency at industrial enterprises in Russia, Italy, and the Middle East. Limited studies have focused on these selected countries. Therefore, it is important to evaluate how improving the efficiency of budgeting helps enterprises manage their operations and finances in countries like Italy, Russia, and the Middle East.

1-3- Problem Statement and Significance

Budgeting is important because it helps businesses anticipate revenues, control spending, plan expenditures, and ensure money is allocated to areas that support achieving their strategic goals. Understanding the business's priorities requires having a well-organized, transparent budget. Furthermore, creating a budget presents chances for workers, encouraging them to participate in the enterprise's vision and compare and assess the budget with earlier financial statements, highlighting the company's strengths and weaknesses [6]. Although prior research has made a substantial contribution to understanding and examining budgeting efficiency [7], there is a dearth of literature addressing budgeting efficiency in the context of industrial companies. While some studies have discussed budgeting in the context of Russian industrial enterprises, there is little empirical research and recent literature regarding Italian and Middle Eastern industrial enterprises, how they can improve budgeting efficiency, and what advantages they can gain. Due to this vacuum in the literature, this study is crucial in providing an in-depth and thorough examination of the effectiveness of budget from the perspective of an industrial firm, covering the cases of Russia, Italy, and the Middle East, which are less well studied [8].

The study is important academically because it adds to the body of knowledge and offers a full and in-depth qualitative analysis of the effectiveness of budgeting in industrial companies. The results are expected to aid financial and accounting experts and academics in their future investigations of the effectiveness of budgets concerning SMEs, big businesses, and manufacturing and service companies in nations other than Russia, Italy, and the Middle East. The study also has financial and policy implications for how different nations attempt to improve budgeting to lower costs and expenses, boost sales, and achieve the goals of their strategies. That is because it looks at budgeting efficiency from the standpoint of an industrial organization.

1-4- Research Objectives and Questions

The study investigates the improvement of budgeting efficiency in industrial enterprise, focusing on the cases of Russia, Italy, and the Middle East. From this perspective, the following are the main objectives and research questions;

- To examine the significance of efficiency of budgeting for organizations;
- To discuss the benefits of improving the efficiency of budgeting at industrial enterprises;
- To analyze the budgeting efficiency of Russian, Italian, and Middle Eastern Industrial Enterprises.

Q1. How do the industrial enterprises in Russia, Italy, and the Middle East improve the efficiency of budgeting, and what benefits do they gain in terms of their finance and business operations?

1-5- Research Structure

This research has the following key chapters;

- The background information, rationale, problem statement and significance, and research objectives are discussed in this chapter, followed by a brief structure of the study;
- A critical and in-depth review of the previous empirical literature is presented in this section related to the key construct of the study and highlights the gap found in the studies;

- The research methods and data collection process are explained in detail in this chapter, along with the data analysis techniques;
- The findings and results are discussed in this chapter, along with a comprehensive discussion in support of previous findings;
- The study's limitations, strengths, and recommendations are highlighted, along with an overall conclusion. Besides, the scope for future research is also added in the end.

2- Literature Review

Budgeting is considered one of the fundamental components of any business, as it provides a clear direction for achieving the key goals. Enterprise budgets facilitate the estimation of the overall costs and the rate of return. Similarly, budgeting is crucial for estimating future demand and resource needs. It allows enterprises and firms to enhance overall operational efficiency, appropriate cash flow management, and increase returns through cost reduction. Enterprise performance is directly linked with budgeting as it assists in managing, planning, and handling business finances. The research was conducted to determine the effect of the adoption of budgeting on small and medium-sized enterprises (SMEs). The research reveals that the overall budgeting process significantly impacts the performance of small and medium-sized enterprises (SMEs). Several variables can be used to understand business performance. However, with the budgeting process, it has been seen that strategy implementation, organizational commitment, business planning, and managerial control have been greatly improved, which has increased the overall level of enterprise performance [9].

Strategy implementation indicates transforming plans into actions to attain the desired results or objectives [10]. Therefore, strategy implementation is directly linked with enterprise performance as its main aim is the efficient execution of the key processes. On the other hand, organizational commitment indicates the bonding of employees with the enterprise. However, the conversion of business ideas into the business plan and implementation strategies based on these ideas states business planning. Furthermore, managerial control is used to be an asset in creating organizational activities [11]. Therefore the study focused on these variables and found that all these variables played an important role in boosting enterprise performance by implementing effective-budgeting processes.

Big data is one of the new technological advancements that have changed the financial decision-making process. Financial firms and enterprises are using big data to improve the overall efficiency of budgeting. Big data can generate new revenue streams based on data-driven techniques, develop a competitive edge based on the detection of the market opportunity and provide better services [12]. Big data has changed enterprises managing financial data, such as the processing financial information becoming complicated and difficult with big data as it alters the depth and breadth of financial management [13]. As a result, big data have significantly impacted the efficiency of financial management. Big data in the budgeting process is proven to be beneficial in terms of efficiency improvement.

Consequently, financial data have associated several types of risks with it, so overcoming the financial risks is challenging. Big data is crucial in controlling financial risks as it allows the whole process of budgeting to detect the risks as soon as possible and work to minimize the risk. The research was conducted to analyze the impact of big data on budgeting and the overall financial decision-making process. The results indicated that financial management is one of the key components of any firm or business. Big data has a positive impact on enterprises' financial performance as it can make accurate decisions based on large data. However, big data should be capable enough to cope with the challenges that arise with large data sets. Hence, it was concluded that big data plays an important role in improving the overall efficiency of budgeting. The large data set can increase the enterprise's decision-making abilities by breaking financial barriers and optimizing decision-making. The results also reveal that big data in the budgeting process can improve the prediction related to the early warnings. However, the application and implementation of big data can be an important tool in developing enterprise value [13].

Recently, it has been observed that the corporate or enterprise structure of an organization is comparatively more complex than the past. This is mainly due to globalization as daily operations have increased in data control. Similarly, the business environment also affects the overall enterprise data handling. Therefore data handling is considered one of the biggest challenges, and to reduce these challenges, enterprises prefer advanced information systems. It is a factual point that currently, the information has become digitized as it combines the digital data with the conventional data of the company. The transformation of the data structure from traditional to advance indicates the advancement in business analytics and accounting management [14]. The research was conducted to illustrate the impact of Enterprise Resource systems and Business Analytics on effective accounting practices at the enterprise level, such as budgeting. The enterprise resource system ensures that the accounting system is automated and simplifies the overall operations by compiling the data easily. Enterprise resource systems facilitate the overall process of financial management by improving the efficiency of the budgeting at the enterprise level. The results reveal that enterprises should move to a comprehensive accounting system as they are currently working on the traditional accounting structure. The adoption of an analytics-based resource system creates ease and assists in resource management. The Enterprise Resource

Planning system is also capable of helping in the management of the accounting activities such as budgeting [14]. Hence, the findings illustrate that the ERP system can improve the efficiency of budgeting in the industrial enterprise as it allows the capital budgeting and performance measurement to operate accurately and quickly. However, there are some negative impacts of implementing enterprise systems, but still, the weight age of positive impacts is greater; that is why accountants prefer this for increasing the overall efficiency [15].

Artificial Intelligence is a useful tool for managing enterprise workflow and day-to-day operations. The fundamental objective of artificial intelligence is to enable computers with advanced technologies to perform tasks without the intervention of humans and to make decisions appropriately by processing the available data. It is possible just because of the advanced and innovative technologies. Artificial Intelligence can impact the performance in budgeting and other financial operations. This research examined the potential of artificial intelligence in enterprise and government decision-making for resource allocation. The results reveal that Artificial Intelligence-based technologies create such environments and cases, which facilitate public spending allocation by using genetic algorithms. However, this study had many limitations regarding the crucial aspect of budgeting [12]. AI is one of the useful approaches and components in the creation and development of budgeting. The whole process of budgeting is highly dependent on the scenarios and forecasting; that is why fixing an appropriate value or balance in the right place is a challenging task. Artificial Intelligence can detect the right place for balance quickly [16]. Artificial Intelligence can quickly highlight where and when the resources will be required and based on this. Artificial Intelligence can automatically add numbers or balance. Similarly, in budgeting, AI can automatically detect where the amount of capital is needed to increase or decrease based on the given data [12].

Moreover, with technological innovation and creativity, the overall budgeting process is becoming easier and more useful. New technologies such as Cloud computing, Artificial Intelligence, and enterprise software, reduce human intervention and provide desired results on a timely basis [10]. However, technology can build advanced systems that automatically sync with the general ledger. That can facilitate keep the overall data accurate, not the hours but the seconds. In this way, advanced approaches to budgeting reduce the risk of errors and try eliminating these challenges. Furthermore, improvement in the overall budgeting process leads to accurate decision-making, consequently improving the enterprise's financial performance [17].

3- Research Methodology

This research has undertaken a qualitative method and has followed the subsequent methodological steps: (Figure 2).



Figure 2. Qualitative analysis stages

3-1- Introduction

This section emphasized the data collection and research methods used for collecting the research data and analysing the results. It includes the following section, research approach, design, data collection source and methods, and data analysis techniques.

3-2- Research Approach

The research approach is critical in the methodology section comprising qualitative, quantitative, and mixed-method approaches. The use and selection of these approaches depend upon the study's assumed research philosophy and overall objective. The qualitative approach focuses on an in-depth investigation of non-statistical data and relies more on narrative form. The quantitative approach emphasizes using statistical means to collect and analyze data using numerical and statistical tools, while the mixed-method combines both approaches [18]. This study undertakes a qualitative approach to comprehensively analyze the data linked to budget efficiency at industrial enterprises in Russia, Italy, and the Middle East. In contrast, the use of the quantitative approach is unsuitable for achieving the key objectives because of its dependence on statistical tools.

3-3- Research Design

The strategy of the study is referred to as the research design that helps achieve the research objective and to collect valid and reliable data. The research designs are of different types, and their use depends on the assumed research philosophy and approach. It includes descriptive statistics, correlation design, review-based, meta-analysis, experimental, and semi-experimental [19]. As mentioned, this study has opted for a qualitative design; therefore, in this reference, a descriptive design is selected, comprising a case study and a survey strategy. Using a survey strategy may not have been feasible with this study as no participants were involved in the survey and collecting primary data. Therefore, an interview-based design is selected, which appears relevant and appropriate. It includes the responses from Russian, Italian, and Middle Eastern industrial enterprises focusing on their budgeting efficiency. It is discussed that the interview is normally applied in qualitative studies and is an empirical inquiry that focuses on phenomena or circumstances in a real-life context and is based on a comprehensive investigation of either an event, group, or individual to discuss the causes of the underlying principle. Therefore, it is more of an exploratory and descriptive analysis of an event or group [18]. Thus, the cases of Russia, Italy, and Middle Eastern industrial enterprises are discussed in the context of improving their budgeting efficiency through an interview design.

3-4- Data Collection

The data collection process relies on using two important sources, including primary and secondary. The primary source is a precursor in quantitative research; however, it is also applicable and adopted in qualitative research depending on the purpose and objective of the study. The primary source includes the use of the data or information collected directly from the participants using interviews, surveys, focus groups, etc. It is normally first-hand, new, recent, and updated finding that is reliable, has authenticity, and validity. Additionally, primary sources can also be government documents, official reports, historical evidence, papers, etc. Using primary sources is time-consuming and costly and thus requires more effort and time from the researcher to collect, interpret, and analyze data derived from primary sources [18].

In contrast, the secondary source comprises articles, journals, books, magazines, website sources, blogs, documents, magazines, newspapers, etc. This source is an already published, publicly available, and accessible source that can be used in accordance with the purpose and objective of the study and can be molded accordingly to match the requirements of the study. Additionally, it is inexpensive and easily available compared to the primary source; however, the authenticity and validity of the secondary source need to be checked and evaluated, especially those retrieved from online sources like blogs or websites [18]. A primary source of data collection is used to collect qualitative data regarding the efficiency of budgeting using semi-structured questions asked by 3 heads of budgeting/finance departments of three pharmaceutical companies, namely, Protek (Russia), Angelini (Italy), and IPI PHARMA Iraq.

3-5- Data Analysis

This research, as highlighted, aims to emphasize improving the efficiency of budgeting at industrial enterprises with a focus on Russia, Italy, and the Middle East. In relevance to the selected approach, design, and data source, a thematic analysis technique is suitable for analysing the collected data. Thematic analysis is a part of the qualitative method in which the emphasis of the research is on the topic and it evaluates and interprets the data gathered from observations, surveys, or case studies. In this case, an interview comprising of semi-structured questions was used to collect the data; therefore, the use of thematic analysis is compatible with the considered design [18, 19]. Using thematic analysis helps the researcher comprehend the data by grouping the commonalities and similarities and coding them together to interpret the data easily. That provides a sound idea of the critical insights shared by the respondents based on their personal experiences, skills, and knowledge [20]. Evidence from previous literature also supported the study's findings, based on the qualitative design, and therefore supported study's overall results. In contrast, the use of the quantitative analysis method was not appropriate because the study does not rely on statistical evidence to collect or analyze the research data. Therefore, the thematic analysis successfully analyzed data linked to Russia, Italy, and the Middle East's budgeting efficiency.

The flowchart of the research activities is demonstrated in Figure 3.



Figure 3. Qualitative analysis stages

4- Results and Findings

Based on the interview scripts of the three finance/budgeting heads from Russia, Italy, and Iraq, a thematic analysis of the collected data was conducted to identify the major theme and delineate all the major factors that can be incorporated for developing a highly efficient budget. As a result, the budgeting model (figure 2) proposed at the end of this section is developed based on the essential budgetary factors and the industrial enterprise's production activities proposed by the interviewees.

4-1- Flexible Budgeting

One of the key themes identified from the responses of the three Budgeting heads was the need to replace the existing budgeting techniques with flexible budgets. For example, the budgeting head of Protek (Russia) asserted:

"Currently, the company follows an incremental budgeting technique as only minor changes are made to the budget based on the results of the preceding budget. However, this budgeting system is characterized by various inefficiencies. One of the major problems is the high spending of the departments. Knowing that the next year's budget will be based on the operational expenditures of the preceding year, the department tries spending high amounts of money on their activities in anticipation of a similar or greater amount in the next budget. The budgeting also disregards the changes in the industrial activities and the changes in the industry."

The budgeting head of IPI Pharma (Iraq) also emphasized that the existing inefficient budgetary techniques should be replaced with more flexible budgeting techniques that are more efficient. The budgeting head of IPI Pharma asserted:

"The use of the incremental budgeting model contributes to a lot of unnecessary spending within the company. In simpler words, all the functions in the firm usually end up spending the entire budget allotted to them at the beginning of the fiscal year to ensure that they are allocated a similar budget for the next year. In this context, the incremental budget appears to be in a position to increase each part of the budget by a specified amount each year, which makes it costly and significant. Some departments may not even need more or the amount of money allocated to them, but they still end up getting additional funding just because an incremental approach is used for the budgeting. This is the reason the existing budgeting techniques are characterized by a lot of waste and cannot be deemed as optimally efficient."

"Another major issue is that the use of the incremental budgeting technique does not allow for addressing changes in the industry as well as disruptions that may result from unforeseen circumstances or unexpected factors."

Lastly, the budgeting head of Angelini (Italy) also gave a similar response and directed attention to the inefficiencies in the current traditional approach to budgeting. Specifically, the budgeting head of Angelini asserted

"The current model of budgeting in most of the industrial enterprises in Italy follows a traditional approach that lacks the capability to fully assess the ongoing changes in the industrial enterprises, make investments more attractive, and guarantee the recovery of the investment and sustainable development. The budgeting model does not consider the effects of macroeconomic factors, and thus, the desired results in terms of efficiency cannot always be achieved."

4-2- Information and Analytical Support

From the interviewees' responses, it was deduced that to develop an efficient budgeting system within the industrial enterprise, it is imperative to incorporate an objective information base for the allocation of budget. The economic analysis of operational budgets or production activities should be as comprehensive as possible to the composition of the data contained therein. The budgeting head of IPI Pharma (Iraq) asserted

"The managers of the budgets should be held accountable for achieving specific financial results, even if many variables that determine those results are uncontrolled. For effective budgeting, it is important to develop information support on the basis of which the entire budgeting can be done. There are many ways to create an analytical information-based budget for an industrial company, and most of them are universal with the application for a wide variety of companies. However, from the perspective of effective corporate governance and to motivate executives and senior management in planning financial flows, the starting point is the production information, such as production volumes and sales, etc., of the company under consideration in the micro and macro-context."

The budgeting head of Angelini (Italy) also emphasized the need to develop the information support pertinent to the production activity and macro and micro-data for improving the efficiency of budgeting within the industrial enterprise. As the budgeting head of Angelini asserted:

"An improved method of the development of the budget of an industrial enterprise should be based on highly accurate target analysis data and accurate production activity as well as industrial information. Also, it is important to base the budget on the regulated operating price adjusted to the specific business of a specific company"

4-3- Production Accounting Data and Basic Set of Normative/Regulatory Operating Prices

One of the major themes identified from the interviews of the three budgeting heads is the alignment of the operational budget of the industrial enterprise with the accounting information of the budget. Per the budgeting head of Protek (Russia), *"When developing the operational budget for the year, it is essential to incorporate the production accounting information in the planning. The production accounting information can be obtained from production reports, accounting registers, budgets for the salaries and compensation, production budgets, reports for division material."*

In a similar context, the budgeting head of IPI Pharma (Iraq) stated that; *"it is essential to create a regulatory operating price unit. The analytical indicators for developing the normative operating price would be the inputs by the labor, the cost of equipment and material purchase and the operating cost of the machines, mechanisms, and technologies incorporated in the industrial enterprise."*

The data obtained from these sources will enable the management to oversee the development of the budget in to align the budget with the production activity levels of the industrial enterprise. The model for the industrial enterprise budgeting is based on an analysis of the production activities of industrial enterprises. The information for developing the budget will be obtained from the accounting and financial reporting ledgers, corporate social development plans, salary and compensation plans, budgets for the use of machines and mechanisms, reports on labor and employment safety movements, and overall production budgets for the enterprise. Additionally, an integrated information unit or regulatory operating price will be created. The components of this unit will be standard levels of overhead costs, standards of technical work in process, and finished products remaining in the warehouse and technical lads. The information infrastructure for the budgeting will also be formed by individually developed standards and is summarized in Standard Operating Price (SOP), Production Accounting Data, and Information and Accounting Support.

4-4- Model for Efficient Budgeting in the Industrial Enterprise

Based on the information gathered from the three interviews conducted with the budgeting heads of the pharmaceutical companies in three countries (Russia, Italy, and Iraq), the following three essential components have been identified for developing an efficient budgeting system for an industrial enterprise:

- The first component of the model is the information and analytical/accounting support for budgeting that entails information obtained from the accounting records and financial statements such as balance sheets.
- The second component is the production accounting information about the specific features of the specific operations of the industrial enterprise, such as material and equipment used in the production, labor working time and cost, technology and technical support required for the overall production, and technical and technical support, rational and coordinated details of production, standard level production capacity specific to the firm, current production and finished product inventory activity.
- The third component is the combination of regulated operation prices, including the inputs by the labor, equipment and material purchase costs and the operating cost of the machines, mechanisms, and technologies incorporated into the industrial enterprise.

Based on these three components, the following model for efficient budgeting in the industrial enterprise has been developed (Figure 4):

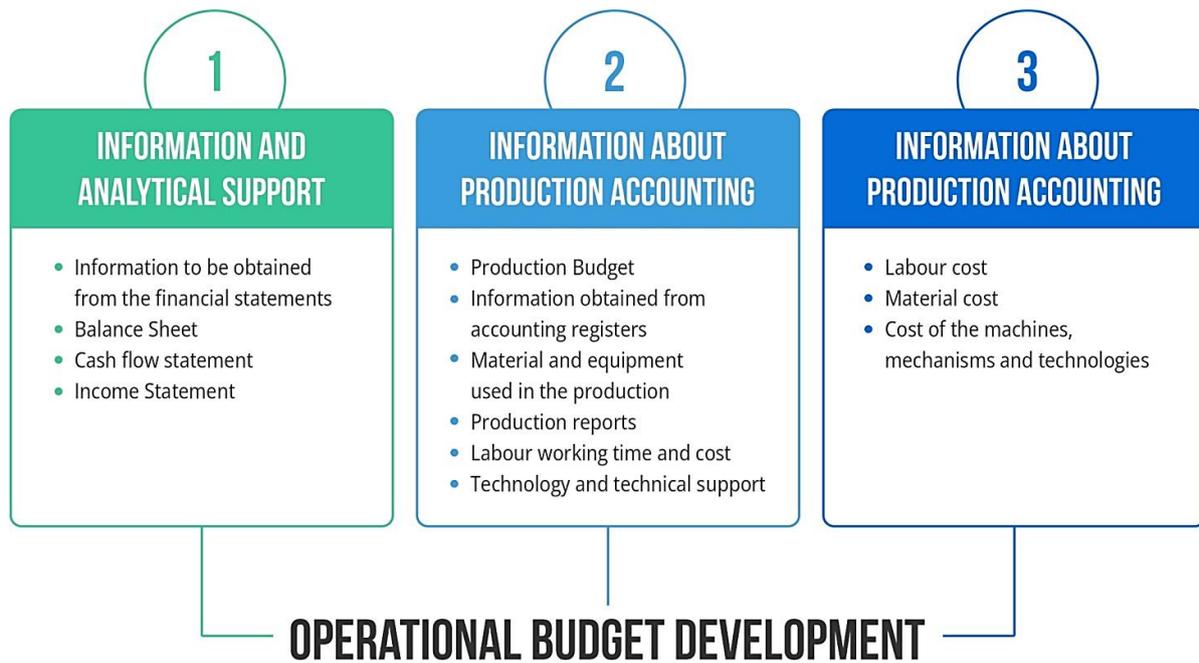


Figure 4. Model for improving the efficiency of budgeting at industrial enterprise

To create a consolidated budget based on the proposed model, the management would need to add an analysis of the planned sales budget, overhead, and profit regulatory levels to a production process model. Its effective functioning, the overall budgeting will be executed in three phases. The first phase is the budgeting or budgeting planning, the second phase is the execution control of the budgeting, and the third phase is the plan-fact of the execution analysis of the budget. The first stage of the operational budgeting process creates a technical scheme for the production activity of the firm and a corresponding labor process scheme. In the second phase, the individual operations of the production activity are identified. Based on them, an evaluation of the operation is formed. Production ratios then correlate with industry-specific details of administrative costs, overhead regulatory levels that reflect the organizational conditions of the companies surveyed, and planned sales-to-profit ratios. The proposed model can be incorporated for efficient budgeting in the industrial enterprise. Budgets prepared according to the proposed model for budgeting at the industrial enterprises can be used as the basis for calculating reserves to increase the efficiency of production and management activities of industrial enterprises. Subsequently, improved operating budget methodology for industrial enterprise activities will be incorporated based on the factors that make accounting and analytical activities more efficient and adaptable to the industrial environmental conditions. It is found that budgets are entering a new development period currently, characterized by advancements in electronic information.

5- Discussion

The contribution of this paper to its scientific field includes theoretical-methodological justification of budgeting in industrial enterprises and identification of the prospects for increasing the enterprise efficiency in the cases of Russia, Italy, and the Middle East. The following Table 1 summarizes the key findings of the study in the form of themes, and on this basis, the discussion is carried out using the support of existing literature.

Table 1. Analysis of new scientific findings

Themes	Findings
Flexible Budgeting	Enterprises are following an incremental budgeting technique. However, they encounter high spending problems. Besides, incremental budgeting is found to contribute to unwanted spending.
Information and Analytical Support	The development of information support is important for effective budgeting. An improved method for developing the budget of an industrial enterprise should be based on highly accurate target analysis data, production activity, and industrial information.
Production Accounting Data and Regulatory Operating Prices	It is essential to create a regulatory operating price unit. Additionally, to develop an operational budget, it is important to add production-accounting information which can be acquired through production reports, account registers, compensation, salaries, and reports for division materials.
Model for Efficient Budgeting in the Industrial Enterprise	Efficient budgeting can be based on three essentials, analytical/accounting support for budgeting, production accounting information, and regulated operation prices.

The appropriate techniques employed for budgeting have a significant impact on the enterprise. In this regard, direct attention is exerted on inefficiencies that characterize the traditional approach in industrial enterprises (Pharmaceutical companies). In particular, budgeting leads to rising spending each year. Moreover, there is a lack of alignment between the budget of the enterprise and the macroeconomics factors. Therefore, there is a need to improve the existing budgeting method by closely linking the development of the budget with the production activities of the industrial enterprises and the changes in the industrial environment. That aligns with the findings of the previous studies [21–24], emphasizing that for efficient budgeting modeling, it is imperative to incorporate a more flexible approach that considers the rapidly changing industrial environment and the changes in the production activity level. For instance, an industrial enterprise must keep track of the production volume that can vary each year. Comparing these findings with the extant literature revealed that flexible budgeting techniques entail variable budgets that are used to accommodate changes at activity levels such as production volumes. Additionally, Tuan & Rajagopal [9] advocates that budgeting is a significant element of business and offers a clear way to accomplish important objectives. Budgeting, if carefully planned, can facilitate evaluating the rate of returns and overall costs. Likewise, estimating the required resources and future demands is pivotal and allows firms and enterprises to focus on increasing operational efficiency, cash flow management, and raising returns by reducing costs.

Moreover, flexibility in budgeting is found to affect enterprise performance as it helps handle, plan, and manage business finances. Likewise, [22, 23,- 25] add that during the budgeting period, fixed cost items such as rent will not change due to changes in production volume. Simultaneously, the variable costs will keep on varying in proportion to the level of production or sale. The strength of flexible budgeting is embedded in the fact that flexible budgets determine the production cost per production item by reassessing budget key figures concerning the actual production level achieved. As planned and actual costs are calculated at the same production stage, the management can analytically compare actual costs with budget funds for cost control purposes. In this regard, the model proposed at the end of this section would allow the management of the industrial enterprises to adapt their budgets to the production activity level in the industrial enterprises and the changes in the external industrial enterprise.

Regarding information and analytical support, it is observed that for developing an efficient budget in the industrial enterprise, the budget should be based on the information pertinent to the information obtained from accounting statements such as financial results statements, balance sheets, etc., and account registers. That aligns with the findings of the extant literature as it is asserted that for developing an effective budget for the preceding years, it is imperative to consider the information pertinent to the previous accounts and records [26]. Kotrikadze & Khuchua [14] added that information has become highly digitized as it links digital data with traditional data. The data changes from traditional to advanced show the growth in accounting management and business analytics. Thus, digitalizing the information is more helpful for enterprises in acquiring the support needed to develop an efficient budget. An information-based and supported budget is more likely to be efficient, and therefore, the findings strongly correlate with the previous literature on the significance of information support in budgeting. It is found from the analysis of the extant literature that in the case of the regulatory cost accounting method, various standards are available that guide the use of the resources and the accounting prices of the resources. The standards also guide the indicators for planning, controlling, and monitoring the budget. In this regard, the budget development is done based on the technically stable and reliable calculated values of material used for production, working time cost of the labor, and cost of other resources per unit of the overall production, which aligns with the findings of [27]. This regulatory technique appears quite effective for planning, monitoring, controlling, and managing the budgeting process. Based on this, it can be possible to develop a source of information that can be used to obtain the required product information to develop the budget.

Besides, it is worth noting that the parameters in the model are selected based on the responses of the three budgeting heads. This research has combined all the parameters suggested by the budgeting heads to develop a comprehensive and reliable budgeting model. Their suggestions were compared with the findings that included all these parameters. With extant literature, it has been found that in the present times, some companies incorporate

various financial software for developing their overall budget based on the recent up-to-date data on production and industry [26]. In this regard, combining these literature findings with the model proposed by this study, the same proposed model can be used with the financial software to effectively use the network resources to enhance and improve the development of the budget. An automated system can be developed based on the proposed model for a highly efficient budgeting system in the industrial enterprise.

Moreover, it is also important to note that the budget acts as a valuable target system in the final stages of its implementation. Through rational review and evaluation procedures that reflect goals, completion should also serve as an incentive and fit within the scope budget. Therefore, it is imperative to establish an examination and evaluation system to ensure the development of an appropriate and reasonable budget for the enterprise [26, 28]. Thus, an appropriate budget appraisal system should entail budget preparation, use of metrics and appraisal indexes, staff composition, budget audit time and results, and budget audit. Proper evaluation systems and budget management are critical and must demonstrate objectivity, carefulness, and seriousness in budget development [29, 30].

6- Conclusions

This paper proposes a model to improve budgeting efficiency in industrial enterprises. In pursuit of this objective, the researcher consulted the budget heads of three pharmaceutical companies: Protek from Russia, IPI Pharma from Iraq, and Angelini from Italy. The study concluded that a need exists to replace the traditional incremental budgeting model with a more effective approach. The traditional approach focuses on making minor incremental changes to the budget based on the operational expenditures of the preceding year. The study highlighted the inefficiencies of this model, as it leads to unnecessary expenditure and disregards the changes in the industry. Therefore, a flexible budgeting approach must be implemented, according to which the budget must account for the level of production activity in the industrial enterprise and all the changes in the production level and the macro-environment of the industrial enterprise. For developing such a budgeting system, information support is essential for ensuring that the development of the budget in the enterprise is closely aligned with the production information of the enterprise. In this regard, it is essential to base the budget development on the information obtained from accounting statements such as financial results, balance sheets, etc., and account registers. In the development of the budget, the information will be obtained from the accounting and financial reporting ledgers, corporate social development plans, salary and compensation plans, budgets for the use of machines and mechanisms, reports on labor and employment safety movements, and overall production budgets for the enterprise. Lastly, a regulatory operating price unit shall be developed to provide information, including the inputs of labor, equipment, and material purchase costs and the operating cost of the machines, mechanisms, and technologies incorporated in the industrial enterprise. Thus, the budgeting in the industrial enterprise will be closely aligned with the information obtained from these three information units. Lastly, it is proposed that automated financial software can be developed using the proposed budgeting model in the industrial enterprise, which will aid in the development of a budget based on the most recent and up-to-date data of the production and industry.

This study redounds the theoretical and practical contributions to budget development and financial management. The study contributes to the extant literature by generating valuable findings on developing a flexible budgeting approach in an organization. The proposed model can be analyzed and further studied by other researchers. The study highlights a plethora of required parameters and the factors that must be incorporated for effective budgeting in the organization. Along with the theoretical contributions, the study findings also have practical value. The budgeting heads and practitioners can consider the findings to further improve the effectiveness of their budgeting.

One of the major limitations faced by the researcher is pertinent to the generalizability of the findings of this study. The proposed model is based on the opinions of three budgeting heads of pharmaceutical companies from three different economies. This limited selection of the participants to collect data may have limited the findings' reliability and impeded their ability to produce generalized results that can be implemented across industries and economies. The study results are based on the opinions and suggestions of the three budgeting heads, which limits the reliability of the findings and the proposed model. The authors recommend that future research conduct a more comprehensive study and survey a greater number of industrial enterprises to identify various best practices incorporated by different industrial enterprises across various companies. It is also recommended to integrate the identified practices to develop an efficient budgeting model that can be applied across various industrial enterprises.

7- Declarations

7-1- Author Contributions

Conceptualization, M.K.; methodology, M.V.; software, R.F.; validation, A.S.; formal analysis, N.K.; investigation, A.H.M., R.F. and A.S.; resources, A.S.; data curation, A.H.M.; writing—original draft preparation, N.K.; writing—review and editing, M.V.; visualization, R.F.; supervision, M.K.; project administration, A.H.M.; funding acquisition, not applicable. All authors have read and agreed to the published version of the manuscript.

7-2- Data Availability Statement

Data sharing is not applicable to this article.

7-3- Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

7-4- Institutional Review Board Statement

Not applicable.

7-5- Informed Consent Statement

Not applicable.

7-6- Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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