

THE PRODUCTION PROGRAM OF ECONOMIC ENTITIES: DEVELOPMENT AND CONTROL

MARIANA ZAMFIR*

ABSTRACT: *Production activities represent the largest share in the activities of economic entities producing goods. In the present research paper, understanding the concept of a production program is the first issue to be addressed. The steps needed to develop it are described here. The focus is on establishing the production program in accordance with the sales program and with the stock policy of the enterprise. Research continues with the analysis of the distribution of production forecasts by business units and by periods of time. The theoretical presentation is accompanied by applied research in an economic entity whose activity is furniture manufacturing and marketing. The research is completed by emphasizing the importance of production control. Research results highlight the fact that the production program remains an essential component of the budgetary system of economic entities. The research results can be used by any economic entity having a production activity in the justification and control activities of the production program.*

KEY WORDS: *production, program, budget, control, stock, sales.*

JEL CLASSIFICATIONS: *M41, M11.*

1. INTRODUCTION

Over time, many authors have tried to define the budget. The word budget is a generic term referring to short-term plans of any kind. The budget facilitates goal convergence, improves the efficiency and effectiveness of the organization. Alain Burlaud and Claude Simon define the budget as a set of quantified, realistic and voluntary forecasts (Burlaud & Simon, 2003). It is a set of forecasts whose horizon is generally annual.

The production budget is one of the main budgets of an economic entity. It determines the quantity of products to be manufactured during the budgeted period as well as the production costs for this quantity. The production budget is drawn up in

* Assoc. Prof., Ph.D., "Valahia" University of Târgoviște, Romania, meri.zamfir@yahoo.com

two stages: development of the production program and its evaluation (development of the production expenditure budget).

Establishing the production program requires solving the problems of optimal allocation of resources. In the course of the activity, the achievements are compared with budget values, the deviations are identified and corrective measures are taken. This makes the budgetary control of the production activity.

2. OBJECTIVE AND RESEARCH HYPOTHESES

The objective of this scientific paper is to create a surplus value by carrying out a study in the field of management control aimed at elaborating the production program in line with the sales budget and the stock policy in Romanian furniture manufacturing companies.

The hypotheses formulation complements the definition of the proposed objective. In order to meet the objective, we proposed the following research hypotheses:

Hypothesis 1: The production program is an essential component of the budgetary system of economic entities;

Hypothesis 2: Monitoring the achievement of the production program contributes to increased performances of the economic entities.

3. RESEARCH METHODS

Elaborating the production program involves determining the quantity of products to be manufactured. The production program must be realistic and achievable and allow achieving sales budget targets. The production program is mostly determined by the expected production to be sold (the sales program). In addition, it is also considered the production capacity of the enterprise, the storage policy of the finished products, available resources (human, financial, technological), the terms that have been negotiated with customers and which have to be respected, the operations of technological preparation of production, the maintenance activity - repairs, relations with suppliers, etc.

The production program should answer the questions (Bărbulescu & Bâgu, 2002): what will it produce?, how long will it produce?, when it will produce?, how it will produce?, for whom will it produce?

The data needed for the research were obtained from the current records of the furniture manufacturers. Documentary theoretical research was essential for this scientific research. Some information was obtained by interviewing the staff working in the accounting and management control departments and in the production departments of the furniture manufacturers. After interviewing the staff, we turned to the financial accounting documents, the statistical data needed for the study.

Applied research complements the theoretical approach. For the empirical research, we focused on furniture manufacturing companies in Dâmbovița County, focusing on S.C. Anton S.R.L.

4. ESTABLISHING THE PRODUCTION PROGRAM

Two activities are to be completed for the production program (Radu, 2009): a) the preparation of forecasts on quantities of goods to be produced (products, services, works); b) the distribution of forecasts over time periods (semesters, quarters, months, etc.) and on exploitation units.

In furniture manufacturing companies, each order (each piece of furniture) is not treated individually but it is included in a manufacturing schedule which is then ordered in terms of manufacturing durations and production capacity loading. Steps that are needed to elaborate a production program can be synthesized as follows:

- starting from the sales program is determined the need for production for the budgeting period. It will be considered the enterprise's stock policy with regard to finished products and work in progress;
- starting from the already determined production need, it is calculated the necessary of components that the enterprise has to produce;
- it shall be verified if the production capacity is sufficient. If the level of production capacity of the enterprise differs from the level of production capacity necessary to obtain production, various adjustment actions are carried out;
- it is calculated the necessary of raw materials, labor and other resources needed to obtain the intended production. To the extent that the resources are insufficient, the production program will be reconsidered according to the existing constraints;
- when adjustments do not allow the achievement of sales program, new sales targets are being developed;
- the production program shall be elaborated in the light of all the foregoing.

4.1. Establishment of the production program correlated with the sales program and enterprise's stock policy

The sales process is what determines the production. The level of production demanded by the market (established through the sales budget) may not be in line with the likely output being achieved under a proper use of production capacities, a situation requiring appropriate management to take appropriate measures. There must be a balance between the sales budget and the production budget: it is not possible to foresee the quantity of products to be sold if the production capacity of the company is not known (the manufacturing potential), as it is not possible to foresee the quantity of products to be obtained without taking into account the possibility of sale.

Starting from the budgeted sales level, it is established the manner in which the company's production will cover this level. Managers and management controllers must set the production program in such a way that the long-term profitability is as large as possible, but at the same time it must take into account the existence of constraints (Moldoveanu, 1996).

When preparing the production program it should be considered both the sales budget forecast, the constraints existing in the company and the storage policy. The physical volume of the production envisaged is determined according to the relationship:

$$Q_p = Q_v + S_f - S_i \quad (1)$$

where:

- Q_p – the quantity of products to be obtained;
- Q_v – the quantity of products to be sold;
- S_f – final stock objective of finished products;
- S_i – initial stocks of finished products.

At the economic entity under research, S.C. Anton S.R.L, the starting point in sales budgeting is the number of permanent customers (furniture salons, shops, etc.) and potential (new customers), an aspect uncontrolled by the enterprise. The budget is prepared both quantitatively (Table no 1) and in value. Once the sales budget has been compiled, other budgets can be prepared.

Table 1. Sales program (extract)

No	Piece of furniture	Units	Price Lei/pcs	Quarter I	Quarter II	Quarter III	Quarter IV	Total
1	Hanging piece Maria	pcs.	200	10	20	20	10	60
2	Wardrobe with 2 doors Maria	pcs.	450	10	15	15	10	50
3	Bed Maria	pcs.	500	10	15	15	10	50
4	Nightstand Maria	pcs.	100	20	30	30	20	100
5	Hollway hanger Ionela	pcs.	125	20	20	20	20	80
...

Stocks avoid problems stemming from variations in sales rhythm and rhythm of production. They have a regulatory role. In deciding on the setting of inventory targets, the economic entity aims that the cost level (C) that is associated with their non-existence or existence, to be minimal (Moldoveanu, 1996).

The production program of S.C. Anton S.R.L. is presented in Table no. 2.

Table 2. Production program (extract)

No	Piece of furniture	Si	Qv	Sf	Qp
1	Wardrobe with 2 doors Maria	0	58	3	61
2	Hanging piece Maria	2	68	1	67
3	Bed Maria	1	52	3	54
4	Nightstand Maria	8	70	2	64
5	Hollway hanger Ionela	4	50	2	48
...

4.2. Distribution of production forecasts by periods of time and by operating units

The distribution of production forecasts in furniture manufacturing enterprises implies:

- preparing the production programs for the budget year for the total enterprise broken down by quarters and months, correlated with the available production capacities;

- breakdown of plant production loads (if any);
- preparing the production programs for departments, workshops, technological lines, etc., with the drawing of the working graphs, specifying the delivery terms both outside and between the departments.

The distribution of production program into departments, workshops, is an important activity as it establishes, for each organizational subdivision, the level of activity required to prepare the corresponding expenditure budget. Each department will thus have its own production program.

Within departments, the nomenclature of manufactured products differs from the nomenclature of the products of the enterprise. If at the level of the enterprise is intended the execution of the finished good, at the level of the department (located on a certain stage along the production cycle of the finished good), the achievement of the semi-finished products, subassemblies, component parts of the product is also pursued. Consideration is given to the time gap regarding the execution of the components in relation to the finished good (Moldoveanu, 1996).

In the economic entities producing furniture, the assignment of production tasks begins with the general assembly or finishing section as benefiting section. From this point on, the tasks of the other supplying departments, expressed in their specific production, shall be determined also considering the need for semi-finished goods for third parties and the variation of the unfinished production stock.

$$\begin{aligned}
 \text{Quantity to be released} &= \text{Production program of the department} \\
 &- \text{Unfinished production } N \\
 &+ \text{Unfinished production } N+1
 \end{aligned}
 \tag{3}$$

In order to ensure the continuous development of the manufacturing process, the production programs of departments between which there are connections of supplier-beneficiary type must be correlated with each other. In order to ensure the correlation between departments, the “Sheet of distribution of the production tasks by departments” is used. A model is presented in Table no. 3. (Moldoveanu, 1996).

Table 3. Sheet of distribution of the production tasks by department, August (extract)

Product	u.m.	Monthly production program of the enterprise	Assembly section			Mechanical treatment section				
			Production program of the section	Unfinished production		Quantity to release	Production program of the section	Unfinished production		Quantity to release
				N	N+1			N	N+1	
Wardrobe with 2 doors Maria	pcs.	6	6	2	1	5	5	2	2	5
Hanging piece Maria	pcs.	7	7	2	1	6	6	1	2	7
...

In addition to the distribution by departments, there is also a distribution by periods (months, decades, days etc.). The fundamental objective of this statement is to meet pre-established delivery terms for order fulfillment. Thus, in furniture manufacturing companies, significant attention is paid to the continuity of the production process.

The production program takes into account the stocks of finished goods that company wishes to have at the end of the budget period as well as the stocks of finished goods available to the company at the beginning of the budget period.

For S.C. Anton S.R.L., an extract from the production program, broken down by quarter, is presented in Table no. 4. In the quarter the breakdown can be done by months.

Table 4. Production schedule broken down by quarters (extract)

Piece of furniture	Quarter I	Quarter II	Quarter III	Quarter IV	Total
Wardrobe with 2 doors Maria	14	18	17	12	61
Hanging piece Maria	12	23	20	12	67
Double bed Maria	14	18	17	12	61
Nightstand Maria	20	32	32	20	104
Hollway hanger Ionela	20	22	22	22	86
Hollway hanger Antic	15	23	22	20	80
...

For the first two goods (Hanging piece Maria and Wardrobe with 2 doors Maria), the information regarding the stock targets from the Enterprise Production Program reveal figures shown in Table no. 5.

Table 5. Production schedule broken down by quarters and by stock targets (extract)

Indicators (pcs.)	Quarter I	Quarter II	Quarter III	Quarter IV	Total year
Wardrobe with 2 doors Maria					
Forecast sales	12	17	17	12	58
Final stock target	2	3	3	3	3
Initial inventory forecasts	0	2	3	3	0
Expected production	14	18	17	12	61
Hanging piece Maria					
Forecast sales	12	22	22	12	68
Final stock target	2	3	1	1	1
Initial inventory forecasts	2	2	3	1	2
Expected production	12	23	20	12	67

Once the production program has been established, it can begin to be evaluated, that is, to budget the production costs. Production cost budgets are prepared on subdivisions of economic entities, which represent a favorable application for cost management.

5. HIGHLIGHTS ON PRODUCTION CONTROL

The production control aims at establishing the stage of production (the degree of advancement of production), interpreting the results (analyzing the deviations and causes that led to the occurrence of those deviations), taking corrective measures for

the next manufacturing periods, coordinating the activities between workplaces. No matter how well the production planning is organized and even if all the variations that may occur during the production activity were taken into account, there are a series of disruptions caused by causes that could not be estimated from the beginning (Moldoveanu, 1996).

During the production process, situations where the scheduled demand differs from actual demand may occur. If these deviations are incidental and if they fall within a tolerable range, it is not necessary to modify the production programs. If deviations are high, the production programs need to be adjusted.

In the case of production on orders, the quantitative control aims at respecting the delivery deadlines stipulated in the customer orders. In serial or repetitive production, the quantitative control consists in tracking compliance with the scheduled production rate to meet sales needs and to keep stocks of parts, raw materials, and finished goods at the minimum necessary levels (Jaba, 2002).

The methods that can be used to identify deviations include the use of control tables or production tracking charts such as Gantt chart. The Gantt charts are used in large scale production units with a complex production control system. They are useful tools in scheduling production and setting time schedules. The Gantt charts allow estimation of the production time, the necessary resources and the order in which tasks are to be performed. During the manufacturing process, they are useful in monitoring the progress made. The objectives that should be reached at a certain moment can be observed and measures can be taken to re-establish the project.

Another method used to identify deviations consists of comparing the actual production with the one programmed based on the information contained in the economic documents (programming sheets, technological sheets) (Ionescu & Păunescu, 2001). This method is generally used in economic entities producing small furniture with a simple production control system. The indicators to be followed are: the programmed quantity, the execution time, the duration of the operations, the manufacturing cycles. By comparing the values that have been budgeted and that are included in the programming sheets or the technological sheets, with the values in the execution reports drawn up by the foremen, the deviations from the budgeted level can be determined. Deviations are a basis for identifying and analyzing the causes of interruptions as well as for taking action to remove them (Zamfir, 2018).

6. CONCLUSIONS

By definition, budgets are predictive situations. Budgets coordinate the actions within the enterprise, through which is carried out the forward planning that allows the enterprise to prepare itself for the near future. The production budget remains one of the main budgets prepared by an economic entity. Within it, the production program occupies a significant place, as it allows establishing the quantity of goods to be manufactured during the budgeted period.

When determining the quantity of products to be manufactured, it is considered the production capacity of the enterprise, the available human resources, the deadlines negotiated with customers that must be respected, the financial resources available to

the company. Starting from the production program, the quantities of raw materials and materials to be consumed will be calculated, then supplied, as well as the amount of direct and indirect production costs to be incurred, which validates the first hypothesis, namely: The production program is an essential component of the budgetary system of economic entities

It is necessary, as far as the activity is developed, to carry out the production control, aiming at identifying the stage of production, identifying the possible deviations that may arise between actual and budgeted production, the causes that determined those deviations, and taking the measures required. Therefore, hypothesis 2 is also validated: Monitoring the achievement of the production program contributes to increased performances of the economic entities.

REFERENCES:

- [1]. **Bărbulescu, C.; Băgu, C.** (2002) *Managementul producției, Vol. II*, Editura Economică, București
- [2]. **Burlaud, A.; Simon, C.** (2003) *Comptabilité de gestion. coûts/contrôle, 3e édition*, Editeur: Vuibert
- [3]. **Cucui, I.; Man, M.** (2004) *Costurile și controlul de gestiune*, Editura Economică, București
- [4]. **Dupuy, Y.; Rolland, G.** (1991) *Contrôle de gestion*, Dunod, Paris
- [5]. **Ionescu, S.; Păunescu, I.** (2002) *Managementul producției*, Editura Eficient, București
- [6]. **Jaba, O.** (2002) *Gestiunea producție și operațiilor*, Editura Economică, București
- [7]. **Moldoveanu, G.** (1996) *Managementul operațional al producției*, Editura Economică București
- [8]. **Radu, M.** (2009) *Metoda standard cost. Aspecte teoretice și practice*, Editura Valahia University Press, Târgoviște
- [9]. **Radu, M.** (2011) *The budgetary process—reason for dissatisfaction*, Annals of the University of Petroșani. Economics, 11, pp. 255-262
- [10]. **Zamfir, M.** (2017) *Controlul de gestiune prin sistemul de bugete*, Editura ProUniversitaria, București
- [11]. **Zamfir, M.** (2018) *The physical control of purchased supplies: model and importance*, Annals of the „Constantin Brâncuși” University of Târgu Jiu, Economy Series, Issue 3, pp. 34-40