

Problems Of Procurement At An Oil Company

Zagrebelskaya Milena Vladimirovna¹

PhD student, Tashkent State Technical University named after IslamKarimov, Tashkent, Uzbekistan¹

Abstract: *The article discusses the relevance of the Integrated Supply Chain Planning implementation at oil companies designed to reduce inventory costs and, consequently, operating costs, as well as optimize the whole logistics system. The modified Sales & Operations Planning (S&OP) proposed for implementation at an oil producing company. The proposed S&OP takes into account the strategic objectives of an oil producing company within Supply Chain and could be applied at oil producing companies of various sizes.*

keywords: *procurement, logistics, oil producing company, Supply Chain Management, Integrated Supply Chain Planning, Sales and Operations Planning.*

1. INTRODUCTION

From the point of view of management theory, logistic approach, the supply chain of a modern enterprise is a technical and economic system with a set of specific functions. Each of these functions are supposed to work in order to achieve a common business goal: maximize profits, increase market share, and more [1]. However, as practice shows not all companies are really a system. Most often, it is rather a combination of commercial and operational functions, the goals and objectives of which may conflict with each other.

The activities of oil companies is primarily due to trends in the oil industry. Since oil companies do not have the ability to conduct a flexible pricing policy, they can maximize their profits only by minimizing their own costs, starting from the price set by the market. In modern conditions, more and more attention is paid to reducing the so-called logistics costs, because it has been established that a reduction of 1% of such costs is equivalent to a 10% increase in sales [2].

Today, companies recognize that the supply chain is a key factor in achieving business success. Supply chain management enables the oil company to significantly reduce its production costs, as well as strengthen relationships with contractors, investors and other interested sides.

The supply chain logistics of oil companies, in contrast to the supply chain of finished products have features that largely make the process of managing them time consuming. First, the nomenclature of material and technical resources (MTR) of an oil producing company can reach hundreds of thousands. Secondly, the supply chain covers a large number of drilling, temporary storage warehouses, refineries and gas processing plants. Thirdly, the specifics of this capital-intensive activity under conditions of risk, requiring increased security measures, imposes its own characteristics on the formation of the production need.

In order to release financial resources spent on the purchase, transportation, storage, disposal (illiquid assets), labor remuneration, oil producing companies need to strive to reduce their

stocks and optimize the logistics system. It would be reached by applying an effective planning strategy at the enterprise based on the company's corporate strategy, which will also combine the planning process into a single integrated chain.

2. METHODS OF RESEARCH

Coordinated (integrated) supply chain planning is a pressing issue for all industrial companies, regardless of industry sector or size of market capitalization. Scientific and technical progress in the field of information technology gives us the opportunity to implement integrated supply chain planning and make it an important element of company management.

In addition to solving operational management tasks, integrated planning allows for strategic planning of the supply chain structure: develop supply chain plans, model different situations, evaluate the level of operations, and compare planned and current indicators [3].

The relevance of integrated planning in an industrial enterprise is obvious. The company needs to balance the different capacities, as there is a discrepancy in production, logistics and other capacities among themselves. In addition, the problems appear in situations when the demand exceeds supply, there are risks and uncertainties in the market, there is a long duration of production, logistics and other cycles, and therefore customer satisfaction does not occur on time.

Integrated supply chain planning for oil companies will improve business efficiency through the following optimization actions [4]:

1. Improvement of the material flow, due to the coordination in the chain;
2. Planning to optimize the supply chain on the basis of operational plans, global consolidated plans, and not vice versa;
3. Improving the reliability and productivity of mining and production through optimization solutions within the supply chain;
4. Coordination between structural business units, allowing the exchange of both information and resources;
5. Cost optimization due to the balance of operations;
6. Increase of performance indicators due to more accurate forecasts, perfect planning, rational use of resources, reasonable targets;
7. Improving the quality of service to the end user (both external and internal within the holding);
8. Increasing the company's flexibility to changing internal and external conditions.

At present, there is a vast variety of methods, which significantly complicates the choice of the necessary technology, taking into account the specifics of a particular company.

Integrated business planning allows an oil producing company to maximize the use of company resources, increase business value and create value for stakeholders at each stage of activity. In addition to solving operational management tasks, supply chain planning allows for strategic planning of the supply chain structure: develop supply chain plans, model different situations, evaluate the level of operations, compare planned and current indicators [3].

The main objectives of integrated supply chain planning are:

1. Coordination of plans for production, production, supply, distribution among all

participants in the supply chain.

2. Coordination of decision-making actions between the strategic, tactical and operational levels of planning.

3. Balance of influence of macroeconomic factors (price and demand for oil on the market) and the volume of production, purchasing, logistics, production and other capacities in the supply chain.

Supply chain planning occurs at the strategic, tactical and operational levels.

The following typical problems of oil companies in the field of organizing the integrated planning process should be noted:

- Lack of a unified planning methodology (even within one company, one plant);
- Low quality of regulatory and technological information;
- Problems of accounting for the fact;
- Discrete monthly planning;
- High proportion of manual labor.

At the same time, the positive effect of integrated supply chain planning due to well-structured management strategies, minimizing transaction costs and streamlining the logistics process will significantly increase the efficiency of the oil company as a whole (Table 1).

Table 1

The positive effects of the introduction of integrated planning at oil companies [5]

Activity	Typical business benefits
ProjectOrchestration	Capital project costs: -2%–3% Project cycle time: -5%–20% Cost of shutdowns, turnarounds, and outages: -5%–15% Incidents: -10%
HydrocarbonProduction	Production: +3%–5% Lease operating costs: -5%–10% Well downtime: -15%–25% Rate loss deferments: -25%–50%
HydrocarbonLogistics	Refining and sales margins: +2% Hydrocarbon inventory: -6% Capitalexpenditures: -4%
OperationalIntegrity	Return on assets: +5% Unplanned asset downtime: -15% First-time fixed rate: +25% Operators extra expense: +15%
HumanResources	Procurement function cost: -15%–20% Worker acquisition time: -30%–40% Days payables outstanding on targeted spend: -2–5 days
Finance	Days to close annual books: -40–50 days Budgeting and forecasting cost: -25%–50% Audit cost: -20%–40%
Procurement	Lower cost of time and attendance functions HR full-time equivalents: -44%

These data indicate the presence of large reserves of improving the efficiency of planning at oil-producing companies.

The best solution for oil companies with a lack of integrated planning within the supply chain is to implement the Sales and Operations Planning (S&OP) logistics concept.

According to the definition, Sales and Operations Planning technology is defined as a set of business processes that form the basis for maintaining the balance between demand and supply at the volume level. This technology is a set of weekly meetings, combined in a monthly cycle, which combines all the functions of business at all levels of the company [6].

The advantages of implementing S&OP technology for the functioning of the logistics service [7]:

- An average reduction in reserves of about 40%, in some cases, it can be up to 70%;
- Improving cross-functional communication, and in coordinating decision-making by improving management efficiency and inter-organizational coordination;
- Predicting possible problems with resources;
- More efficient within functional and within organizational interaction; the possibility of a monthly adjustment of the business plan;
- A single plan for all departments: logistics, marketing, sales, production, finance, etc.;
- Better control of the business.

The aim of this logistics concept is to ensure the compliance of tactical and operational objectives with strategic goals and objectives [8]. It is logical to assume that in its standard version this logistics technology will not be suitable for implementation at an oil producing company due to the specifics of the industry. However, its modified version can take into account the peculiarities of the supply chain of an oil producing company.

3. RESULTS

It is necessary to expand the planning horizon to a strategic level in case of this technology implementation at Oil Company. The reason of the planning horizon increasing is a view of the need for creating economic plan that takes into account not only internal factors, but also external - macroeconomic ones. Given the expansion of the planning contour to strategic, the planning process will be presented as follows: Planning horizon - 18-24 months; Planning period - month; The frequency of review is monthly.

The discussion group should include: CEO, S&OP leader, financial director, marketing director, sales director, logistics director, planning manager, director of the production and production department, director of the project management department, director of the investment department, head of the development department, general managers of structural production business units [9].

The implementation of the main planning cycle should be carried out at the corporate level, in view of the possibility of making consolidated decisions for all structural divisions and business units. The proposed integrated planning process, based on combining the standard model of Sales and Operations Planning and the Integrated Planning Concept and designed to optimize the logistics process at an oil company, is shown in Figure 1.

Strategic planning in the field of exploration and production should take into account the achievement of an optimal level of production, taking into account the projected price in the market and the projected volume of demand for finished products, as well as cost control in the controlled portion of unit costs. Within the framework of the proposed integrated planning model, the strategic level forms tasks on the basis of which decisions will be made at the tactical level. In turn, the results of the tactical level of planning will be reflected in order to operational planning and level of execution.

The tactical level of planning is presented as a monthly cycle, broken down into 4 meetings, one per week.

1st Meeting “Analysis of activities and Innovation Plan”. The types of activities of the past month are discussed, plans are adjusted for the planning horizon, that is, updating existing plans and adding another 1 month to planning, as well as an innovation activity plan (R&D). The results of the meeting should be: an agreed calendar, budget, evaluation of ROMI activities, an approved innovation plan (R&D) for the planning horizon.

2nd Meeting “Price forecast and sales plan”. The main goal is not only forecasting the demand for oil / gas, as opposed to the standard Sales and Operations Planning (S&OP) model, but rather forecasting the price of finished products on the market for the coming months, and determining the estimated volume of demand by months in accordance with the forecast price. This stage is fundamental for planning the activities of an oil company. Forecasting demand is carried out for each group of goods. The result of the meeting should be: an updated and agreed forecast of the price, structure and volume of demand (sales) for the planning horizon.

3rd Meeting “Development of a capacity plan”. The meeting is dedicated to the coordination and approval of exploration, mining and production plans. The main objective of this process is to balance the available mining and production capacities in accordance with the demand for finished products.

The outcome of the meeting No. 3 “Capacity Planning” should be the approved plans for three areas of the oil company activity: exploration, mining, production, inventory forecast, assumptions and cost estimates, scenarios for eliminating identified restrictions.

4th Meeting “Material Management and Logistics, Approval of Final Plans”. This meeting can be divided into two parts or held with a break of several days. The logistics plan should include a Material Management Plan taking into account the volume of mining and production, Logistics Plans for each structural business unit, as well as transport and storage plans (distribution plan for materials and equipment, warehouse plan, distribution plan of goods). The result of the meeting should be an agreed Material Management and Logistics Plan for the planning horizon and formed and signed contracts for the supply of materials and equipment.

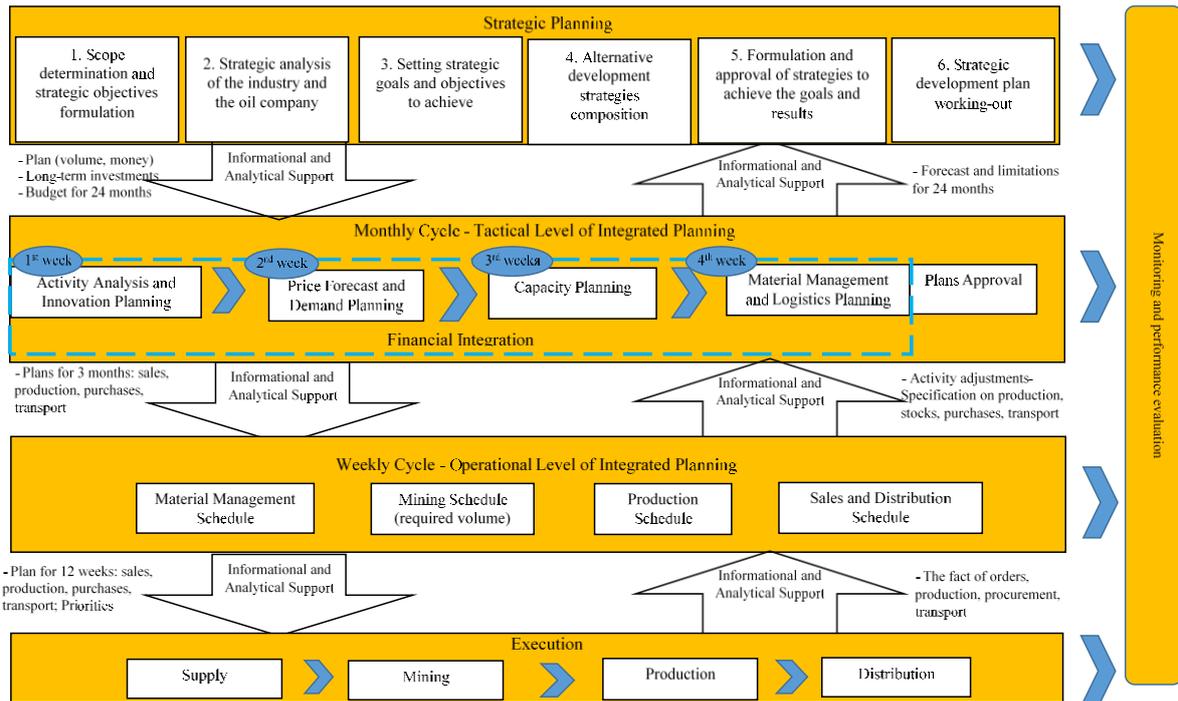


Figure 1. The Proposed Model of the process of Sales and Operations Planning for Oil Companies

Source: developed by the author (based on mix of Sales and Operations Planning standard model and Integrated Planning Concept [10])

The second part of the meeting is aimed the approval of the final plans, namely the coordination and approval of the Sales Plan, exploration, mining, production, Material Management and Logistics plans, budgets for the planning horizon. After coordination with the strategic goals of the company, the approved generalized plan is transferred to the level of business units, where it is used to calculate volume plans for Material Management, Logistics, Finance, etc.

The operational level of planning is represented by a weekly cycle with details for the next 12 weeks. The Material Management Schedule, Mining Schedule, Production Schedule, Sales and Distribution Schedule by product group are being formed on the basis of the approved Plans at the tactical level of planning, with goals prioritization.

The execution stage is represented by a characteristic cycle for mining companies, namely, Supply, Mining, Production, Distribution based on schedules formed at the operational level.

4. CONCLUSION

It is important to understand that it is not necessary to strive for the full integration of the main business processes and the interaction of all counterparties in the supply chain, since, given the scale of production capacities, the complexity of the production process and other specific factors of the industry, it is extremely difficult to achieve full integration. It is

enough to find the optimal level of integration to achieve the goals set for integrated planning[9].

Execution of the proposed planning cycle should eliminate the contradictions between the private goals of business units. It can also give an opportunity to react to market demand trends and make decisions about the development or conservation of production and processing facilities, as well as provide a tool for a sustainable connection of strategic goals and current activities of the organization.

The Sales and Operations Planning process will link the logistics plan with strategic planning and business planning. With proper implementation of this logistic concept and its correct functioning, the company will receive an increase in operating efficiency due to a well-designed management strategy, minimization of transaction costs and optimization of the logistics process. Integrated planning will improve the efficiency of the oil company by optimizing the movement of material flow, increasing the reliability and productivity of production, coordinated actions between the company's structural divisions, reducing operating costs, increasing the level of forecasting, rational use of resources, improving the company's adaptability to changing internal and external factors.

The proposed logistics technology S&OP takes into account the strategic objectives of the oil producing company within Supply Chain and could be applied at oil producing companies of various sizes. It maximally eliminates gaps in planning between the main chain links by integrating all chain links, in order to create a consolidated Supply Chain Plan.

5. REFERENCES

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