

SUPPLY CHAIN PLANNING METHODOLOGY FOR METALS

Ass. Prof., Candidate of Technical Sciences, Solodovnikov V.^{1,2}

¹ LOGIS Research and Development Laboratory, Frenstat pod Radgostem, Czech Republic

² National Research University Higher School of Economics, Moscow, Russia

E-mail: vsolodovnikov@hse.ru

Abstract The paper contains the results of the study on the systematization and formalization of specialized approaches to planning supply chains of leading metal companies and comparison of these practices with the standard supply chain management models SCOR & CCOR & DCOR and GSCF. The paper defines the main directions of development of the methodology of supply chain planning in terms of its adaptation to the specifics of metals.

KEYWORDS: SUPPLY CHAIN MANAGEMENT, METALLURGY

1. Introduction

A series of changes in global markets led to a significant transformation of the supply chain management systems of leading metallurgical companies [1,2]. To improve competitiveness companies were forced to restructure their business processes and increase efficiency. Leading metal companies have developed specialized supply chain management approaches which in practice proved to be highly efficient around the world.

These methods in order to be used have to be formalized and studied. In this article, the author formalizes the main directions of development of the methodology of supply chain planning in terms of its adaptation to the specifics of the metals.

2. Preconditions and means for resolving the problem

The result of the survey conducted by the author were the systematization and formalization of the processes and their interactions, a comparison of these processes with the standard supply chain management models like SCOR + CCOR + DCOR [3,4,7] and GSCF [5-7].

The study was based on the analysis of public data of leading steel companies such as TimkenSteel, USA; Trinecke Zelezarny, Czech Republic; Severstal, Russia; MMK, Russia; OMK, Russia; Mechel, Russia; VSMPO-AVISMA Corporation, Russia and many other. A large contribution to this study has made materials from the leading providers of Advanced Planning and Scheduling software for the metallurgical industry: LOGIS, i2 Technologies, and others.

Figure 1 shows the organization of key planning processes in Metals. It is a generalization of the best practices of the abovementioned companies in the area of processes and supporting systems.

3. Results and discussion

From Supply Chain Management (SCM) point of view there are two most common cross-industrial SCM standards in the world: the SCOR model with extensions CCOR and DCOR from Supply Chain Council (SCC) and the model from the Global Supply Chain Forum (GSCF).

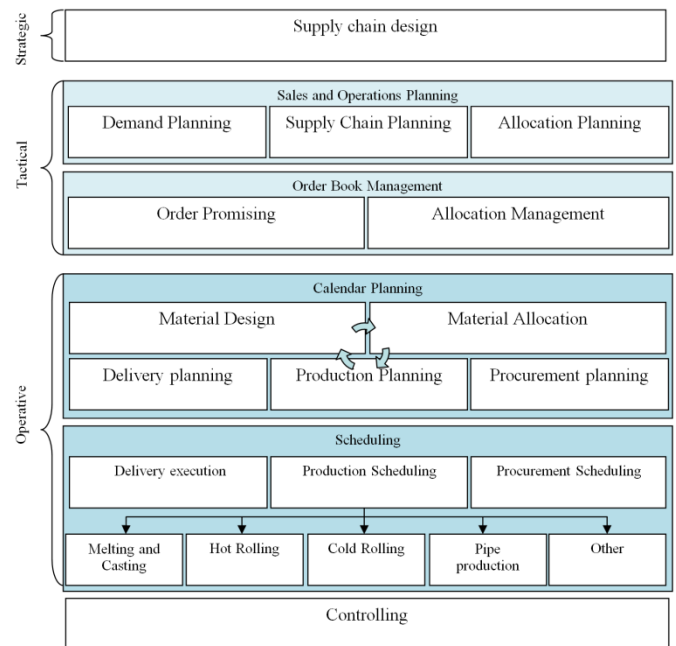


Fig 1 Organization of key planning processes in Metals

SCC is an independent, non-profit organization formed in 1996 by the global consulting company Pittiglio Rabin Todd & McGrath (PRTM) and research company Advanced Manufacturing Research (AMR) from Cambridge. At the beginning of its activity, SCC included 69 companies; today the list of participants includes more than 1000 companies.

GSCF under the guidance of Dr. Douglas M. Lambert provides an opportunity for practitioners and theorists to investigate critical issues related to the quality of customer service and operational efficiency, regardless of the specific functional expertise. The professional community of GSCF includes about 14 leading international companies [5,6], recognized as leaders in their industries.

The results of the comparison of the best practices of the organization of business processes of supply chain planning of metallurgical companies with standard models of supply chain management are given in table 1.

For ease of use, the processes of the GSCF model are numbered from 1 to 8 according to the original sequence [6].

For strategic level sub-processes, the suffix S is introduced, for operational level - O.

Table 1. The results of the comparison of the best practices of the organization of business processes of supply chain planning of metallurgical companies with standard models of supply chain management

Main process/level	Subprocesses		Model xCOR	Model GSCF
Supply Chain Design	Supply Chain Design		M4SC: SCOR tools could be used for that purpose	4S OF 1S CRM 6S SRM
Tactical planning				
• S&OP	Demand Planning		CCOR:Plan sP1.1	1O CRM 3O DM: forecasting
	Supply Chain Planning		sP1	3O DM: Synchronization
	Allocation Planning		sP1	3O DM: Synchronization
• Order Book Management	Allocation Management		sP1	3O DM: Synchronization
	Order Promising		sD1.2 sD2.2 sD1.3/sD2.3 sD3.3	2O CSM 4O OF
Operative Planning				
• Calendar planning	Production	Material planning/design/technology development	DCOR:Design	7O PDaC
		Material Allocation	sD1.3/sD2.3 sD3.3	4O OF: Process Order
		Production Planning	sP3	5O MFM
	Delivery planning		sP4	4O OF
	Procurement planning		sP2	4O OF
	• Scheduling	Production scheduling		sM1.1 sM2.1 sM3.2
Delivery execution		sD1.3/sD2.3 sD3.3	4O OF	
Procurement scheduling		sS1.1	4O OF	
Efficiency evaluation	KPI		sED2 sES2 sEM2	Subprocess «Measure Performance» of corresponding GSCF processes

The presented comparative analysis of the best practices of planning in metallurgy with the known SCM models (SCOR, GSCF) determines the directions of development of these methodologies in terms of their adaptation to the features of supply chain planning of metallurgical companies:

1. Re-engineering the links of existing planning processes according to best practices in metallurgy planning.
2. Consolidating CCOR, SCOR and DCOR models into a single supply chain planning process system.
3. Adding clarification steps of the planning processes, introduction of additional if necessary.
4. Formalization of planning methods and models.
5. Requirements definition for supporting information technologies.

4. Conclusion

The formalization of the best practices of planning in metallurgy given in this article, as well as the results of their comparison with the standard models SCOR+CCOR+DCOR and GSCF, determine the main directions of development of the supply chain management methodology in terms of its adaptation to the specifics of planning in the metallurgical industry.

The need to systematize and develop the planning methodology is determined by the need for its application to ensure the competitiveness of metallurgical companies in a tough struggle in the global market.

5. Literature

- [1] PwC, Steel in 2025: quo vadis?, PwC, 2015.
- [2] KPMG, Global Metals Outlook, KPMG, 2015.
- [3] Supply Chain Operations Reference Model v 10.0, Supply Chain Council, 2010, p. 856.
- [4] V. Sergeev, Supply Chain Management, Uright, Moscow, 2015. P. 480. (in Russian)
- [5] GSCF <http://fisher.osu.edu/centers/scm/members/>
- [6] D. Lambert, Supply Chain Management: Processes, Partnerships, Performance. 3rd Edition, Supply Chain Management Institute, 2008, p. 431.
- [7] H. Stadler, Ch. Kilger, Supply Chain Management and Advanced Planning. Third Edition, Springer, Berlin, 2004, p. 512.