Manufacturing Cost Policy Deployment (MCPD) Transformation

Uncovering Hidden Reserves of Profitability

Alin Posteucă

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List of Abbreviations

ABC	Activity-based costing
AMCIB	Annual manufacturing cash improvement budget
AMIB	Annual manufacturing improvement budgets
BPC	Best practice cost
CAL	Current admissible losses
CCILW	Costs of current inadmissible losses and waste
CCLW	Critical costs of losses and waste
CF	Continuous flow
CIL	Current inadmissible losses
CPM	Company productivity mission
CPS	Company productivity strategy
CPV	Company productivity vision
DCM	Daily cost management
DLT	Delivery lead time
DMAIC	Define, measure, analyze, improve, and control
DMIs	Daily management indicators
ECRS	Elimination, combination, rearrangement, and simplification
ELT	Equipment loading time
EWH	Equipment working hours
FLT	Factory lead time
IE	Industrial engineering
JIT	Just-in-time
KKIs	Kaizen and kaikaku indicators
KPIs	Key performance indicators
LM	Lean manufacturing
MACPD	Marketing and administrative cost policy deployment
MaLT	Material lead time
MB	Management branding

MBO	Management by objectives
MBR	Management by results
MCI	Manufacturing cost improvement
MCICP	Manufacturing cost improvement catchball process
MCImi	Manufacturing cost improvement means impact
MCKP	Manufacturing cost key point
MDC	Methods design concept
MKP	Manufacturing key points
MLT	Manufacturing lead time
MR	Means reference
MRT	Means-reduction target
MTT	Means target touch
OMIs	Overall management indicators
OPF	One-piece flow
OPL	One-point lesson
OTIF	On-time in-full
PBA	Price benchmark analysis
PBM	Productivity business model
PCBG	Productivity core business goals
PDCA	Plan–do–check–act
PFC	Product family cost
PL	Physical loss
PMP	Productivity master plan
PST	Problem-solving techniques
R&D CPD	R&D cost policy deployment
RCA	Root cause analysis
RMCA	Reverse manufacturing costing analysis
ROI	Return on investment
SC	Standard costing
SCCPD	Supply chain cost policy deployment
SCM	Supply chain management
SKPMP	Strategic key points on manufacturing processes
SMART	Specific, measurable, attainable, realistic, and timely
SOP	Standard operating procedure
SWOT	Strengths, weaknesses, opportunities, and threats
TCCLW	Total critical costs of losses and waste
TCLW	Total costs of losses and waste
TCPD	Total cost policy deployment
TLT	Total lead time

TLW	Total losses and waste
TPM	Total productive maintenance
TQM	Total quality management
TRL	Time-related loss
TTP	Time-to-production
TTSP	Time-to-start-production
VAOT	Value-adding operating time
WCM	World class manufacturing
ZCLW	Zero costs of losses and waste

Preface

Achieving a long-term acceptable level of manufacturing profitability through productivity requires the total commitment of management teams and all staff in any manufacturing company and beyond.

Achieving this acceptable level of productivity or multiannual manufacturing target profit can be accomplished by meeting the external target profit expected from sales and by achieving the internal target profit by continually improving the manufacturing costs. The role of productivity is decisive, both in meeting the external target profit, by providing the manufacturing capacities needed to support sales plans (effectiveness or maximizing output by reducing or eliminating the noneffective use of inputs—losses), and in achieving internal profit through continuous improvement of manufacturing costs (efficiency or minimization of inputs by reducing or eliminating excessive amounts of inputs—waste).

Awareness and continuous improvement of manufacturing costs behind losses and waste is the core goal of the Manufacturing Cost Policy Deployment (MCPD). Achieving this goal will continually uncover the hidden reserves of profitability through a harmonious transformation of the manufacturing flow, coordinated by the continuous need to improve manufacturing costs. Setting annual targets and means for manufacturing costs improvement, more exactly for costs of losses and waste, and the exact fulfillment of these, requires mobilization of all people in the company to carry out systematic improvement activities (kaizen) and systemic improvement actions (kaikaku) of the processes of each product family cost.

The MCPD system was born out of careful observation of the challenges, principles, and phenomena of manufacturing companies and the profound discussions with the people in these companies at all levels. At the same time, the associated theories available were analyzed.

This book is organized in three sections. The first section presents the concept and the need for an MCPD system from a managerial perspective. In the second section, the transformation of manufacturing companies through the MCPD system is presented, more precisely the details of the initial steps of the implementation of the MCPD, the three phases and the seven steps of the MCPD, and the elements necessary for a constant and consistent application of the MCPD. In the last section, there are two examples of the MCPD implementation in two different types of industries, namely, manufacturing and assembly industry and process industry, and two case studies for the improvement of manufacturing costs for each (cost of equipment setup loss, using kaizenshiro; replacement of bottleneck equipment and associated costs of losses, using kaikaku; cost of quality losses with improving operators' skills to sustain quality, using kaizen; and cost problem solving with the consumption of lubricants for one of the equipment, using A3).

The main audience of this book is made up of top managers, middle managers, and professional support staff who manage manufacturing areas. The continuous coordination of all manufacturing improvement through the need to improve manufacturing costs requires a close collaboration between engineering specialists and those in economics, especially in cost and managerial accounting.

Therefore, the author's hope is that the MCPD system will provide a way of addressing the difference between manufacturing targets profit and external targets profit expected from sales by continuously uncovering the hidden reserves of internal profit that are obtained directly from manufacturing processes by increasing productivity.

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Since MCPD is the result of long synthesis and distillation, being successfully implemented, totally or partially, in several manufacturing companies, I thank all managers from different positions in these companies for giving me the chance to observe and discuss production phenomena and principles and all those who contributed directly or indirectly to the development of MCPD system.

Last but not least, I sincerely thank and dedicate this book to my family. In this regard, I thank my wife Emiliana for her total support and constantly inspired confidence to write this book. Full of hope and confidence, I thank my daughter Andreea and my son Ștefan for their understanding and for the many moments with them that added to my inspiration.

Alin Posteucă

About the Author

Alin Posteucă is a management consultant in profitability, productivity, and quality and managing partner of Exegens Management Consultants (Romania). Prior to this position, he held top management positions in manufacturing and service companies.

His recent research includes the development of the Manufacturing Cost Policy Deployment (MCPD) system for multiannual targets profit by identifying new manufacturing profit opportunities by exploiting manufacturing cost improvement through continued productivity growth. The main purpose of the MCPD system is to meet the annual manufacturing cost improvement goal. The annual manufacturing cost improvement goal is the difference between the annual manufacturing target profit and the annual external profit expected from sales, for each company in the group and for every product family cost of each company.

He has been actively involved in various industrial consulting and training projects for more than 20 years in Romania and has published in various research journals and presented papers at numerous conferences, regarding productivity, profitability, and quality.

He received his PhD in industrial engineering from the Polytechnic University of Bucharest (Romania) and his PhD in managerial accounting from the Bucharest University of Economic Studies (Romania). He received his MBA from the Alexandru Ioan Cuza University of Iaşi, Romania. Also, he is a certified public accountant in Romania.

Introduction

The Manufacturing Cost Policy Deployment (MCPD) system is about achieving the multiannual manufacturing target profit by targeting strategic productivity improvements over the long, medium, and short term.

The multiannual manufacturing target profit is achieved through the multiannual external profit expected from sales and through the multiannual internal profit achieved through continuous productivity improvement. The multiannual external profit expected from sales is the usual way to plan and earn profit starting from the sales plan (connected to the productivity vision and mission—sales volumes, market share, and profit) and then through developing the production plan, the supply chain plan, the human resources plan, the inventory plan, and the administrative and funding plans. The multiannual internal profit is determined by the difference between the multiannual target profit and the multiannual external profit expected from sales, in order to ensure a reasonable level of profit for an acceptable development of a manufacturing company. At one year, the difference between the annual target profit and the annual external profit will be achieved from either the increase of the annual external profit from sales (by increasing the volume of production sold, implicitly the use of production capacities) or the reduction of annual expenses (through manufacturing cost improvement, MCI). The difference between the annual target profit and the annual external profit from sales already adjusted is called annual manufacturing cost improvement goal (annual MCI goal). The annual MCI goal is planned to be achieved for each company within the group and for every product family cost (PFC) of each company. The PFCs are those product groups that have about the same pressure for MCI, the same need for cost reduction and unit profit growth, and which have about the same opportunities to improve losses and waste as they run around the same manufacturing flow processes.

Synergy of the MCPD System at the Process Level

Once the annual MCI goal level at a PFC level, the top-down approach, or the annual demand for MCI is established, the annual MCI targets will be set for each manufacturing flow process (for each PFC, for existing and future products). The annual MCI targets will be set for the cost of losses and waste (CLW, the chronic cost problems) and for the critical cost of losses and waste (CCLW, the acute cost problems). CLW represents the transformation of losses and waste into costs through a scientific approach to unnecessary minutes and unnecessary material consumption. CCLW is the systemic approach to CLW, namely, the approach to CLWs that produce chain effects across the entire manufacturing flow and beyond. The annual CCLW sums up part of the annual CLW. The annual CLW and the annual CCLW represent the total offer for MCI. From this offer, one will use exactly what it takes to meet the annual MCI goal by setting annual MCI targets based on annual MCI means. Through the annual reconciliation between the demand for MCI (annual MCI goal) and the offer for MCI (CLW and CCLW), the *annual uncovered hidden reserves of profitability obtained by continuously transforming the manufacturing flow of each PFC according to the market signals* (price and profit) are determined. The annual reconciliation is based on the MCI catchball process through which, following several rounds of negotiations between managers and specialists at all levels of the company, an annual consensus on the level of MCI targets and means to meet the annual MCI goal is obtained. The true value of a manager is his ability to accurately plan the winning activities.

The strategic approach to productivity improvement is to establish annual MCI means to meet annual MCI targets at the process level of a PFC. Establishing annual targets and means for MCI for each PFC process represents the annual MCI policy deployment. The annual MCI means are defining both the strategic improvement project (systematic, kaizen, and systemic, kaikaku) and solving the daily problems of MCI targets. In establishing the annual MCI targets, the priority is given to PFCs with the highest external pressure on MCI, and in setting MCI means, the priority is given to CCLW targets (addressing the root causes to meet the annual MCI goal). The setting of annual MCI means targets is achieved by setting targets for losses and waste that are converging to meet the annual MCI targets.

The MCI targets and means (*Phase 1: Manufacturing Cost Policy Analysis; Step 1: Context and Purpose and Step 2: Targets and Means for MCI*) are

achieved through the development and implementation of the annual manufacturing improvement budget and the annual action plan for MCI means (*Phase 2: Manufacturing Cost Policy Development; Step 3: Annual Budgets for MCI and Step 4: Action Plan for MCI*), engaging the workforce to achieve the MCI targets, MCI performance management, and daily MCI management (*Phase 3: Manufacturing Cost Policy Management; Step 5: Engage the Workforce for MCI, Step 6: MCI Performance, and Step 7: Daily Management*). All these together represent the MCPD system (three phases and seven steps).

In this context, the MCPD system addresses the top management that has the need to meet the multiannual and annual target profits through strategic and operational enhancement of productivity improvements.

How This Book Is Organized

This book is organized in three sections. The first section (Introduction to the MCPD System) describes the need for MCPD by presenting the connections between the need for continuous reduction of costs and MCI (Chapter 1) and presenting the MCPD system within the dynamics of business contexts (Chapter 2). The second section (MCPD Transformation) presents the establishment of an MCPD system and steps to begin (Chapter 3); the three phases and seven steps of the MCPD system implementation, by designing, building, and full development at the level of each PFC (Chapter 4); and how to apply constantly and consistently the MCPD system (Chapter 5). The third and final section (MCPD Practical Implementations and Case Studies) presents two transformations of the manufacturing flow through the MCPD system, aiming at achieving the annual MCI goal and the annual target profit, in two different types of industries, namely, manufacturing and assembly industry and process industry (Chapter 6).

The following is an overview of the six chapters in this book.

Chapter 1: Starting from the Need for Continuous Cost Reduction

This chapter begins by presenting the need for the MCPD system. Five main barriers for the consistent and harmonious transformation of manufacturing companies are presented. Then the MCPD system is defined, described, and positioned within the manufacturing companies to show the connection between the need for continuous cost reduction and

MCI. This connection is based on the seven principles of the MCPD system described in this chapter, along with the basic features of the MCPD and with the help of transposition of the cost strategy into action (top-down and bottom-up approaches of MCI). Further on, a synthetic example of implementing the annual MCI policy deployment is presented to understand how to set up the annual MCI targets and means. The chapter ends by presenting the stakes of the MCPD system: *uncovering hidden reserves of profitability*.

Chapter 2: MCPD System: Overview and Dynamics of Business Contexts

This chapter presents theoretically the MCPD system and its medium- and long-term approaches. The chapter begins by presenting the transition from productivity vision to annual action plans for each PFC. The benefits of the MCPD system are presented for every hierarchical level in the company. Then the goals and approaches of the three phases and the seven steps of the MCPD system are presented. From the perspective of the MCPD system, the main ingredients of long-term manufacturing target profit is presented, namely, price benchmark analysis and synchronization of life cycle targets (for profit, price, sales, capacity, productivity, and cost) and of efficiency of investment and productivity. Finally, how to strategically align the opportunities for improvement to the need for MCI is presented.

Chapter 3: Establishment of an MCPD System: Steps to Begin

What are the steps preceding the introduction of the MCPD system? This is the question that is being answered in this chapter. The answers are two way: a technical answer (MCI targets deployment: preliminary steps) and an organizational answer (preparation for the implementation of an MCPD system). Therefore, this chapter presents first the preliminary steps needed to establish MCI targets, by presenting in detail: the market driven activities for setting annual MCI goal, the profit-driven activities for setting annual MCI targets and the annual management coordinated by MCI targets and means deployment. Further on, the organizational steps necessary for the adoption of the MCPD system are presented, as a way of fulfilling the multiannual production profit plan by productivity improvement;

more precisely, the elements underlying the MCPD system implementation decision and the prediction of its effects, the MCPD system organization, and the creation of its structures to support MCI and internal and external communication of the MCPD system purpose are presented.

Chapter 4: MCPD Implementation: Designing, Building, and Full Development

This chapter focuses on the detailed presentation of the three phases and the seven steps of the MCPD system. In the first phase of the MCPD system, manufacturing cost policy analysis, the first two steps of MCPD are presented. In these two first steps, the annual MCI targets and means are set for each PFC through annual reconciliation (top-down and bottom-up for setting annual MCI goals and annual MCI targets and means). The second phase, manufacturing cost policy development, addresses the annual manufacturing improvement budgets development for existing and new products and the annual manufacturing cash improvement budget, in order to support the annual MCI targets and means (step 3) and the annual action plan for MCI means, including the annual individual plans for MCI (step 4). In the third phase of the MCPD system, manufacturing cost policy management, the workforce is engaged to achieve the MCI targets through departmental organization for achieving MCI targets, through the development of an annual MCI training plan by running of the improvement activities and actions of the annual MCI means to meet annual MCI targets (step 5); the performance level of the current state of MCI against annual MCI targets is followed by developing the annual MCI performance management (step 6); and by daily MCI management (step 7), the tangible and intangible effects of annual MCI are monitored daily and the deviations of MCI targets and contextual managerial behaviors are solved.

Chapter 5: MCPD Constant and Consistent Application

How is the MCPD supported on the long term at all levels of the organization? What is the impact of the MCPD system on the continuous transformation of the manufacturing flow for each PFC? These are the questions that have been answered in this chapter. In order to answer the first question, the following were presented: the MCPD system information centers and horizontal and vertical communication, continuously collecting and recording the data and information; management branding and managerial support for the MCPD

system; and continuous monitoring of the annual MCI goal for each PFC (or the *annual uncovering of hidden reserves of profitability)*. To answer the second question, the impact of the MCPD system on manufacturing lead time and beyond, on work in progress (WIP), and on material stock was presented.

Chapter 6: Applications of the MCPD System

This last chapter presents two applications of the MCPD system in two companies in two different industries, namely, manufacturing and assembly industry and process industry. The main actions, activities, and challenges for starting the MCPD implementation are presented; the MCPD steps and two case studies for each company (MCI means) (only a few of the annual and multiannual strategic projects of productivity improvement to meet the annual MCI goal and multiannual internal profit and target profit) are also presented. For the first company, MCI by improving the equipment setup and adjustment time and associated costs (with *kaizenshiro*) (case study 1) and MCI by increasing productivity with the replacement of bottleneck equipment (with *kaikaku*) (case study 2) are presented. For the second company, MCI by improving operators' skills to sustain quality (with *kaizen*) (case study 1) and daily MCI management—cost problem solving for lubricants consumption for one of the equipment—(with A3) (case study 2) are presented. The results of applying the MCPD system in the two companies by continuously targeting productivity improvements through the need to meet the annual MCI goal and multiannual internal profit and target profit have been fully achieved.

I am confident that the MCPD system will help your company to meet multiannual and annual profit plans by improving productivity.

1 INTRODUCTION TO THE MCPD SYSTEM