Carlo Baroncelli · Noela Ballerio *Editors*

WCOM (World Class Operations Management)

Why You Need More Than Lean

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Foreword

Why Do You Need More Than "Lean"

The title of the book represents the most frightening and dreadful question all authors of "Lean books" have ever found themselves confronted with. At the sunset of a crisp, windy, rainy day you are there, waiting and feeling rather cold in your best suit, your sweaty palms on your manuscript. As soon as the door opens, you can feel your heart beating as if it were in your mouth, hoping for a piece of advice or getting ready to receive some sort of criticism, but not expecting that question. You stand up to shake hands and you feel as if you were emptied, dizzy like a climber, shocked as if you were struck by lightning: you have never thought about that question before.

Both of us are academicians with twenty-or-so years of experience in teaching undergraduate, graduate, MBA, and Ph.D. students. At the same time, we like advising companies, firms, and businesses in the area of Operations and Supply Chain Management. Over the last couple of years, we have read and revised several books: some of them just for the sake of keeping updated about what's going on in our field; some others because they were written by colleagues, or to get some inspiration for our own textbook.

Never before have we spotted a book providing an angle so remarkably different from the ones we are used to. This is against all the odds and somehow even more surprising, as we share with Mr. Baroncelli the legacy of professor F. Turco (who passed away too early), both a former colleague of ours and one of the founders of EFESO.

The remarks above bring us to the main question of whether there is any need for this book. The answer is yes, definitely. Indeed, this book fills a twofold gap.

On one hand, it states WCOM™ as a phenomenon, whose ingredients are techniques, tools, practices, etc., including people and their behaviors, skills, competencies, etc. Actually, WCOM™ is different from these elements and you have to go through the book to find out what it is. Indeed, we have to consider that the literature on WCM/WCOM™ is almost sparse and nonexistent. If you google

"Lean books" you will find 59 million results, while by googling "WCM books" there are much less hits, including the books by R.J. Schonberger. WCOM™ produces almost no result, which is, to some extent, surprising as the WCM/WCOM™ approach has been adopted—besides the five interviewed companies—also by large multinational corporations like Fiat Chrysler Automobiles (FCA), Heineken, Procter and Gamble, Milliken, and many others.

On the other hand—and here we come to the reasons why you need more than "lean"—three major points are to be taken into account.

First, the shift from Breakthrough to Continuous Improvement. The lean transformation is by itself a breakthrough, rather than some sort of Continuous Improvement: WCM/WCOM™ systems put together two infinite loops. The former contains Kaizen, while the latter contains the Performance Control System (PCS), thus creating a never-ending recurrent system where improvement and variance control waltz together in harmony.

Second, the Human Factor. This book delivers the message that everything in our business is about people. This seminal concept within Autonomous Management is bolded in the third part of this book. People play a major role both on the shop floor and in the boardrooms, they are the key to unlock the potential gain of effectiveness everywhere and, by flipping through the pages, this element—at first almost unnoticed or considered just as one side of the coin—emerges as the main character of the book. This remark triggers some additional insights into the real need to go beyond "Lean." Above all, this book hands over a snap giveaway: "people first, then models." Interestingly, we are used to proceeding in the opposite way, by teaching models first—as if they were better run without people—and then we highlight the human side, the behavioral impact, etc.

Third, the long-term sustainability. Besides the infinite loop, the pillar system allows to orientate the organization to an inter-functional attack to losses. Indeed, this is based on the inherent inter-functional nature of losses, which makes the traditional organizational structures unfit for the need to eradicate the losses permanently. The pillar-based system leads to a learning organization capable to capitalize the knowledge for Continuous Improvement, which provides a long-term sustainability to the Continuous Improvement system almost unknown within traditional lean systems.

This book is arranged into four main sections. In the first section some success cases are told by the leaders of five large multinational groups, each one overviewing the reasons, successes, obstacles, hurdles, and recommendations for those who would be glad to set off for a WCM/WCOM™ transformation. The second section is devoted to describing the WCOM™ model: you will broaden your horizon far wider than the concrete walls of plants and manufacturing facilities to overlook the end-to-end supply chain. The third section focuses on the human side, dealing with the main principles of leadership and behavior. Finally, the fourth section provides an overview of the main contents connected to each pillar of a value chain.

In conclusion, this book could be a good read for whoever—managers, directors, students—is willing to get more insight into the WCM/WCOM™ approach, and into what you can find beyond Lean.

Milan, Italy

Roberto Cigolini
Andrea Sianesi

Preface

Saint-Gobain since several years has launched a program of World Class Operations Management, which is the application of Continuous Improvement principles to our industrial organization.

As all large companies, Saint-Gobain has to adapt itself to the new world created by globalization.

Consider the long heritage that Saint-Gobain has: it was established in France in 1665, 350 years ago, as *Manufacture royale de glaces de miroirs*, by Louis XIV. In 1684, Saint-Gobain won the order to create the mirrors that still adorn the Hall of Mirrors in the Royal Palace of Versailles, in the South of Paris. Since then innovation has been the core business and the group, in the different historical phases of its life, has always been leveraging to reinvent and adapt the business model to be at the cutting edge.

The globalization process we have gone through the last 15 years has meant mainly three challenges:

- a wider strategic field, leading to an increasing size of the Company, offering more opportunities for development;
- consequently more complexity in the Organization;
- more competition as well.

To take these three challenges, WCOM™ appeared as the most appropriate approach, because

- it creates results,
- it builds a common industrial culture, ensuring a factor of cohesion between persons working for the same company, but in different businesses, countries,
- it develops, through the common culture, the strategic flexibility and reactivity of the company,
- and most important, it empowers the people at the shop floor level and develops their autonomy to adapt and improve permanently the organization.

In the meantime the art of management has changed. It is not anymore the time when the managers tried to instill their thoughts in the operators pretending they execute. It is more the moment to create, in all decentralized organizations, the best conditions for success. The need for speed and for simple pragmatic solutions to operational problems makes it mandatory to empower the shop floor and make it proactive and autonomous (in problem solving).

In our world, the large Company cannot be managed by a few persons: problems have to be dealt and fixed where they happen, through a large number of empowered employees.

Of course, strategy imports, investments import, innovation imports, but the motivation and the knowledge of all the people is key. And what better way to motivate than to give more responsibilities, more influence on their work and performance, to all the operators?

We consider that, together with innovation and expansion to new markets, WCOM represents the third pillar of our growth journey. We are now extending the approach to the whole value chain, because we consider that, beyond the results already achieved, more is yet to come.

Jean Pierre Floris
Deputy CEO in charge of the Packaging Sector
and oversight of the Innovative Materials Sector
of Saint-Gobain
Paris, France

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Editors and Contributors

About the Editors

Carlo Baroncelli is Co-founder of EFESO with more than 35 years' experience in Operations Strategy and World Class Operation Management, leading programs for multinational companies, from Product Development to Supply Chain domain. His most relevant experiences fall into the field of capital intensive industries, in many industrial sectors such as paper, steel, packaging, mechanical, automotive, and pharma.

He has been a member of the Board of Directors since 2007 and was responsible for the Knowledge Development of EFESO Group in the past.

He holds a Master's degree in Industrial Engineering from Politecnico di Milano, postgraduate courses at MIT in USA and at JIPM in Japan.

He has been academically involved in multiple roles, is responsible for the Manufacturing and Logistics' Area at the School of Management at Genova University, and is lecturer at ISTUD and MIP (Master of the Politecnico di Milano) and at Bergamo University.

He is former Vice-President of the Italian Chapter of the Society of Logistics Engineers.

Noela Ballerio is Senior Knowledge Manager at EFESO, with 15 years' experience in knowledge & linguistics management and training.

She obtained a Law Degree specialising in Juridical Anthropology & Ethnology at Milan University.

During university she worked as a swimming teacher for children and disabled people.

After university she practiced as a lawyer and cultivated her passion for social sciences by attending a drama academy in Milan as well as seminars in drama therapy and conflict management.

She joined EFESO in 2001 covering the roles of Translation Manager, Knowledge & Communication Manager and Knowledge Senior Manager.

She is actually working in the EFESO Toolkit Team for knowledge development, especially in the Change Management area, as well as in training and people development.

She writes and draws children tales, translates books, makes readings.

Contributors

Mark Baker is pursuing a career in operations leadership and quality management spanning 30 years across 30 countries. He began his career as a mechanical engineer for Honda Motor Company, engaged in the development of production system technologies.After earning his MBA he spent the next two decades with Saint-Gobain, one of the largest industrial corporations in the world, engaged in a variety of operational and quality leadership roles. As former Executive Director of the Shingo Institute, Mark continues to be actively engaged in helping executives around the world to deliver world class performance in a wide variety of industries, including automotive, steel, high performance materials, financial services, and healthcare.

Roberto Cigolini is professor of "Supply Chain Management" and "Production Management" at the Department of Management Economics and Industrial Engineering of Politecnico di Milano. His main interests are primarily related to business planning and control, indirect procurement, contracts negotiation, and real estate management.

He graduated cum laude in Management Engineering from Politecnico di Milano. He is director of the Global Executive Master in Operations and Supply chain management (GEMOS) at MIP—Politecnico di Milano Graduate School of Business, where he was co-Director of the MBA program. He is also co-director of the executive course in Real Estate Management. He is a member of the teaching body of the Ph.D. in Management Engineering at Politecnico di Milano and founding member of the Technical Committee on Semiconductor Factory Automation (IEEE Robotics and Automation Society).

Yannick Courtial is the Operational Excellence Vice-President at Saint-Gobain. He is graduated in Materials Science and Engineering from INSA Lyon.

After 15 years at Danone, and 12 years at Saint-Gobain, he is Operational Excellence Vice-President (World Class Manufacturing/World Class Supply Chain) at Saint-Gobain.

Giovanni de Filippo is former Vice-President, Capital Equipment Tetra Pak.

He holds a degree in Electrical Engineering from Politecnico di Milano. After graduating, he joined the Pirelli Tyre Sector in Milan in 1976, as Technical Manager responsible for the Engineering and the Maintenance Services of the Pirelli factory in Patras, he then becams Plant Manager. Then he was appointed Director of the Industrial Efficiency Department of the Tyre Sector of Pirelli Coordinamento Pneumatici Spa. He then moved to Allied Signal Braking Systems

Europe, as Lean Manufacturing Manager Europe, where his main responsibility was to study and implement in European factories the most modern "Lean Manufacturing" methodologies, particularly TPM (Total Productive Maintenance).

He was appointed Director of the Aftermarket Operations organization, a new European Business Unit that he was responsible to create, organize, and staff; he maintained this assignment also through and after the acquisition of Allied Signal Braking Systems by Robert Bosch GmbH, in April 1996. He joined Tetra Pak in Modena in December 1998 as Director Converting worldwide. After that, he held several managerial positions until 2006, when he was appointed as Vice-President, Supply Chain Capital Equipment.

Giovanni retired from the company at the end of 2014.

Mario Galassini has an M.Sc. in Management Engineering from Politecnico di Milano. He joined EFESO in 1993 and has more than 20 years' experience in Engineering, Product Development, WCOM, and Supply Chain projects.

He has developed the most relevant experiences the field of Product and Process Development. Leader of Innovation Knowledge Group.

He has long experience in strategic NPD projects for multinational companies—New products, Greenfields, new processes, Industrialization and product range optimization, and experience in Service design and reengineering in various fields.

He has also developed the World Class Operation Management Practice for multinational companies and medium sized factories, from Product Development to Supply Chain domain.

Mario assists clients of many industrial sectors, from Automotive to Food, Personal Care, Mechanical and Engineering and Public Administration.

He has supported the development of EFESO Knowledge Management system, collecting many experiences of the group's international experts into the WCOM Toolkit.

Clive Geldard is Group Vice-President responsible for the global Retail and Supply Chain practice of international consultancy EFESO. He has 25+ years' experience in end-to-end supply chain, logistics and distribution channel management, both in Operations and as a Management Consultant.

He has worked in complex multi-channel B2B and B2C businesses in the UK, Europe, and developing markets in the Middle East and Africa. Initially working in the Automotive Aftermarket and Distribution sector, he moved into Retail and Consumer Products working with companies such as ECOLAB, Unilever, L'Oréal, Imperial Tobacco, Tetra Pak, and Apple and retailers such as Wal-Mart, Co-op, Pick n Pay, Primark and Jerónimo Martins. Most of his career has been spent managing and implementing change, working with clients to help them build the capability to support strategic supply chain transformations and continuous improvement.

Clive is co-author of research papers "Supply Chain in the Boardroom—Closing the Implementation Gap" and "Successful Supply Chain Strategies for Emerging

Markets." He has special interests in Complexity Management, Supply Chain Design, and Route to Market.

Mark Goodwin brings an unusually broad range of experience to a leadership role in Efeso, having had five different careers: in diplomacy, consulting, manufacturing, tropical farming, and psychotherapy.

Following his Master's in Nuclear Physics at Oxford he joined the Diplomatic service (UK Government) in the South Pacific, helping the Gilbert Islands attain independence as one of the last Colonial Commissioners.

He learned shop-floor consulting methods with Alexander Proudfoot in Europe and rose to become the Director General in 1983.

He was the founder and Chief Executive of Booker Tate, the world's largest tropical farmer between 1983 and 1990.

He was the founder and Chief Executive of Booker Tate, the world's largest tropical farmer between 1983 and 1990.

He was the Chief of Staff for Carnaud Metalbox in Paris, Europe's largest metal packaging company. This is where he hired EFESO to help him with a new factory culture.

He is a trained psychotherapist, being a member of the Institute of Group Analysis and the UK Council of Psychotherapists.

His global experience spans a large range of industries and includes experience in 166 countries.

Thomaz P. Gruber is Senior Vice-President, Supply Chain and Operations at Bemis NA (USA).

He reports to President of BNA and is a member of the executive leadership team. He is responsible for implementing the vision of the new Organization and for delivering the Safety, Quality, Service, and Cost metrics. He is functionally responsible for Manufacturing (25 plants, 6000 employees), Engineering, WCOM, Quality, Graphics and Supply Chain and Logistics.

His previous leadership experiences are in Toga Group in Brasil, in US, and in Bemis, Europe.

Thomaz P. Gruber has a Master's in Business Administration—Marketing and Finance Cornell University—S.C. Johnson School of Management and a Bachelor's Degree, Chemical Engineering at Mackenzie University (Sao Paulo, Brasil).

Francesco Lecis is a mechanical engineer.

He began his career in Tenaris–Dalmine (worldwide pipe steel company) covering different roles in production and manufacturing.

He joined EFESO in 2002. In EFESO he developed his expertise in operational excellence, mainly in lean transformations and supply chain reengineering for the mechanical assembly sector.

From 2012 he is Vice-President and drives worldwide projects of "Lean production" and "World Class Operations Management."

Francesco is now worldwide responsible for all business process practices and is currently leading large Lean implementation programs for multinationals.

Francesco is a Six Sigma Master Black Belt and has obtained the licence of "workload analyst."

Hubert Mayet is General Manager of the Bel Group in charge of Manufacturing and Technical Direction, and a member of the Executive Committee.

Since he joined the Bel Group in 1979 he has held different positions in R&D, Production as Plant Manager (Minibabybel) and Industrial Director for Processed Cheese Activity.

Hubert Mayet is a graduate from Agro Paris Tech (ENSIA).

Giorgio Merli is Professor in Milan Bicocca University, Pisa Sant'Anna Scuola Superiore, Bergamo Universities Strategy Master, and the author of more than thirty books published in several languages. He is former Country Leader of IBM Management Consulting Services (2002–2009), President and CEO of PriceWaterhouseCoopersConsulting Italy (1999–2001) and EMEA Leader for the Operations Strategy Service line of both, Senior Advisor to KPMG (2010–2011), Senior Partner of Galgano Group (1978–1998). In 2008–2009 he was also President of the Consulting Area of CONFINDUSTRIA (Italian Industrials Association) and member of Corporate Sustainable Development Panel of EDF (2009–2011). He is currently Senior VP at EFESO. A graduate engineer with a Master's degree in Manufacturing Management, Merli started his career at Philips, where he became Manufacturing Director. Consultant since 1978, he has carried out several reorganization projects in Italian and multinational companies. He has been particularly involved in the implementation of advanced Management and Planning Processes, Business Excellence Model and Lean Production/Lean Organization (WCOM). Presently he is studying, teaching, and consulting on Innovation matters and Business Model Evolutions.

Andrea Montermini has been working as a management consultant since 1998, having acquired core competences in business planning, transactions, cost management, supply chain, sourcing, organization.

He has mainly been assisting companies from various industrial sectors, such as Aerospace and Defence, automotive, transportation, electromechanical, and electronics.

Today as Vice-President of EFESO Consulting, he leads the Group activities in three practices, notably the Aerospace and Defence industry, the Strategic Cost Management practice and the Litigation Support business unit.

Before joining EFESO he was Director and co-founder of Blupeter in Italy, and formerly senior manager at Solving International and member of the Group's International Technical Committee.

He graduated in Management Engineering at Politecnico di Milano. He was born in 1972.

Tsumotu Nakamura after attending the School of Business Administration in Senshu University and graduating in 1989, joined the Japan Institute of Plant Maintenance (JIPM).

He has been covering different prestigious positions before becoming General Manager. He is authors of publications as Total Productive Maintenance, "Encyclopaedia of Statistics in Quality and Reliability" John Wiley & Sons Inc., 2008 February, "The source of the competitive power in the European company" Nikkei Monodukuri Magazine, 2007 January and "The Japan style manufacturing in the European manufacturing" Nikkei Monodukuri Magazine, 2005 December.

Andrea Sianesi is Full Professor at the Department of Management Economics and Industrial Engineering, and Dean of MIP, the Graduate School of Business of Politecnico di Milano.

He has extensive teaching experience in several Italian universities. He has also been visiting professor and researcher in foreign universities. He is a member of the Management Committee of ASFOR (Italian Association of Management Development) and of ANIMP (Italian Association of Industrial Plant Engineering). He has about a hundred articles published in renowned international journals and conferences.

Rajinder Singh is Vice-President and Managing Director of EFESO, India. He has over thirty years of hands-on experience in designing and implementing manufacturing systems based on Lean principles. He is a Professional Trainer, Mentor and Coach for Operational Transformation of Manufacturing and Service Organizations. His rich experience with multinationals such as Ford and Delphi, along with his passion for Lean thinking has made him one of the leading Lean consultants in India. As a consultant he has executed several high-impact projects with companies located in India, Dubai, Egypt, Singapore, Germany, China, and Mauritius.

Neil Webers is Vice-President and Managing Director of EFESO The Netherlands, and member of the group domain management team. As Performance Behavior expert he has published numerous articles and has written several books on his expertise: the connection between the behavior of people and the performance of an organization. He studied business and worked in retail operations before founding his own company on behavioral performance improvement, which was acquired by EFESO in 2013.

In his Performance Behavior book (US version published 2012), Neil reveals the secret of improving performance driven by a sustainable behavioral organizational change. He discloses how to make behavior measurable and explains different behavioral profiles, the steering and accountability structure and action indicators—crucial factors necessary in facilitating the measurement and steering of behavior. This unique approach sets the new standard in creating ownership, discipline, and responsibility to continuously improve a company's results.

Eric Wolff has a background in Food Industry and Biotechnology and a Ph.D. in Chemical Engineering. From a Research and Development career starting point, he moved to L'Oréal in 1992 and has covered different positions in Process development, Manufacturing, and Quality in Europe and North America. He was Quality Manager in the L'Oréal plant in Belgium, Quality Manager for the North America global Zone (covering 9 factories and a global lab) in the US, Plant Manager in Montréal (QC)—Canada, then Worldwide Corporate Manufacturing Manager and since 2011 he is Worldwide Corporate Quality and Manufacturing Director for the entire L'Oréal Group, directly reporting to WW Group COO.

Gaia Zampaglione has worked in EFESO as Consultant and Knowledge Expert from 2010 to 2015. She supported organizations and leaders to change for better their organizations. Her main areas of expertise are Operational Excellence and Lean implementation in the end to end value chain, in parallel with the capability to sustain the change with knowledge management activities and platforms. She is an Engineer from the Politecnico di Milano. Prior to working in EFESO, she has been a consultant in Kaizen Institute for two years.

Introduction

My first-ever encounter with what is today known as Operational Excellence occurred in November 1984 when, after some years working in the industrial office of a large electrical appliances company, I was fortunate enough to participate in a training program that entailed a long study abroad organized by the Japan Institute of Plant Maintenance. Back then, Japan was at the forefront in production systems and had near stunning conditions as compared to our industrial world. The performance and cultural gap was huge. We as visitors, a mixed group of delegates from universities and international industrial companies, were unable to even come up with the right "questions" to ask: we asked about their planning and control and IT systems, their automation implementation, their organizational structures, and they weren't able to comprehend our questions. They answered by saying their success was based on principles, philosophy, participation and involvement: it was as if we were speaking two different languages.

I finally began to understand a little bit more the following year when I attended lectures held by Richard Schonberger in the United States. Over a two-month period in summer 1985, alongside Filippo Mantegazza[1], we paid a series of visits to Japanese trans-plants and innovative companies. The "pull" system was explained to us by a very kind assembly line leader in Oregon at a brand new Hewlett Packard printing plant. Up until the previous summer, this woman had been driving tractors (she was a farmer that made the switch after the birth of the ICT industry on the west coast) and she did not have a predisposition to MRP or Wilson's formula for economic order quantity. With that being said, and without any sort of predetermined method, she adopted with ease the methods that, after Womak and Jones' research at MIT, would become known as "lean".

Since then, three decades have gone by, and the entire global industry has taken steps forward, transitioning from consolidated models based on Taylor and Ford's offerings to modern production methods.

[1]Filippo Mantegazza is the Chief Executive Officer of EFESO Consulting

Over the years, I have had the opportunity to collaborate with one of the most creative and innovative teams out there[2], one of the first in the western world to gradually introduce such auspicious methodologies and approaches.

From those first rudimentary attempts at introducing Just In Time production as well as Total Quality, supported by the Theory of Constraints, to the adoption of Total Productive Maintenance, to World Class Manufacturing and the most recent approaches based on Change Management, Performance Behavior and the Principles of the Shingo Institute, these 30 years have gone by in the snap of a finger, highly concentrated on demanding challenges, helping large groups to "change" in order to survive and prosper.

World Class Operations Management (WCOM™) is the combination of hundreds of successful cases in various continents, spanning all latitudes and various cultural conditions. In addition to harmoniously integrating Lean, TPM and Six Sigma, all of which explain the "what", the WCOM™ model adds value, compared to these previous approaches, by providing a robust explanation of the "why" and "how," which in this day and age are the most important questions to ask.

What separates this book from a management textbook is that it does not focus solely on the recipe for success, but tells real stories, with difficulties, obstacles and possible countermeasures.

Considering that we wanted this book to offer the best in the business regarding Operational Excellence, we tied together the experiences of large industrial groups as well as the most innovative and interesting approaches. Together, these elements created the foundation for the WCOM™ experience.

A special thanks goes out to all the contributors, whose experience played a big role in this book.

I believe that, with all these experiences meshed together, they combine for hundreds of years of work experience, the turnaround of various international groups and the switch to OPEX in thousands of different organizations.

Carlo Baroncelli

[2]The EFESO Team

Part I
Cases and Best Practices

Chapter 1
The Bel Case

Hubert Mayet

Company description
Bel is a 150 years old company, the 3rd worldwide in branded cheese

More than 400 million consumers
+400,000 tons of cheese produced in 2014
+17 billion portions produced in 2014
Individual Portions represent 58 % of Group sales
Bel cheese sold in nearly 130 countries
11,000 employees
30 international and local brands

1.1 What Was the Reason to Start the Programme?

At Bel we already had productivity programmes but we needed to go beyond the classic approach to be more efficient. Furthermore, there was no crisis that required us to start. This even surprised some consultancy companies when we started looking for a partner!

In fact, a first initiative had been initiated in a Dutch factory where we were facing big challenges in terms of cost competitiveness and capacity.

But before deciding to adopt a specific programme I needed to understand the potential risks and also opportunities. So I went to visit different companies that had already implemented Lean Manufacturing programmes and I understood that launching such a program was not just a technical decision. There were potentially

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big impacts on organisation and we needed to be careful on the combination of technical progress and evolution of human resources.

Then the plant managers' community (28 factories in the world) became aware of the benefits we could expect from this kind of programme thanks to a training session during their annual seminar in 2009.

The official start of the programme took place in early 2010 with 3 pilot sites, all of which volunteered.

In such a programme, communication is key, so we decided to give our programme a name: "Boost".

Since the start Boost has now been rolled out in all the Bel factories and the Dutch initiative has been included into the programme and is a reference for starting sites.

Another very important reason to launch Boost was to define Bel standards and common tools in order to be able to benchmark the performance of different factories internally.

In addition, the expected growth of the Company required one harmonised business model for the management of operations to which Boost can strongly contribute. For example we also decided to have a rule: in case we need to build a new factory, before starting it up, the Boost programme should be implemented, with its methods and standards, and people have to be trained accordingly.

1.2 What About the Payback and Results?

Before speaking of the payback and results you have to realise that you need to invest, because if you don't have resources dedicated to the programme you will never succeed. It is the reason why at the beginning we set up a small corporate team supported by external consultant in order to define the action plan and build the business plan. In addition it was key to involve the HR Direction from the beginning because implementing this kind of programme requires a change in management and adaptation of trainings. And finally, we need to empower all our management team and especially the plant managers who have to be engaged and committed to the success of the program. In this respect, we can say that Boost is more a change management and cultural change program than a technical one.

If we talk about payback, our six years' experience tells us that the return of investment is at most between 18 and 24 months. Our clear objective is also the empowerment of our workers which brings more efficiency.

The Boost programme allows Bel to optimize the productivity capability. We have learnt to optimise the existing machines and lines and thus avoided to buy new ones.

We oriented the programme on visual management. We created a communication on the performance and placed it everywhere; this changed the mind set at the shop floor. The way operators are working nowadays is completely different from the past.

I do regularly visit the factories and see different realities, but the common aspect is that operators directly explain the performance of their machines and how they

optimise. Before it was the middle management who explained this. Now through the Boost programme there is a process of ownership of performance management by the operators.

I also need to mention the strongest impact of KPI standardization to improve reliability of numbers which enables a relevant benchmark between our factories and therefore allows us to enhance our global performance. We mean that the benefits are bigger than the mere conversion costs.

And we can see some examples of the change in culture in the day-to-day activities: some maintenance guys drawing a quick Five Why Analysis to solve a problem, proposals to raise objectives from the workers themselves, etc.

In conclusion, the balance is very positive even though we of course met difficulties and resistance to change.

1.3 How Did You Manage to Change the Relationship Between Operators and Middle Management?

Managers are more difficult to engage than shop floor workers, although managers say it is the other way around.

As mentioned above, leadership and delegation is really something we need to work on in such programmes. We know that in all companies the most important impact concerns middle management. It was also true for us.

Why? Because this programme asks them to change their way of working in a way which is not so easy to admit and understand. They have to delegate and create autonomy and responsibility in the operator. It is a process you do step by step, to avoid to destabilise your people. The operators in the end become autonomous, responsible and feel empowered, they are proud of their job and give proactive contributions and solutions in case of issues.

As mentioned previously the role of HR is absolutely key. The Boost programme is not just tools: it is required to train people and coach them, monitor their behaviour and highlight the changes so that they become positive influential examples. For instance, we have developed a full training module to explain the basics of Boost to all our workers. It is now being translated in several languages throughout the Group.

1.4 Did You Experience Any Difficulty in the Beginning?

In the beginning people tended to think that Boost was a project, and as a usual project it will terminate, which is not the case. Continuous improvement is a permanent journey. They also tended to think that they were already in the programme, just because they knew or used some of the tools. Understanding the difference and the need of a complete system takes time.

Concerning the obstacles we could mention the "not invented here syndrome", limiting sharing, and generating some resistance.

Previously we never interfered in the way a plant manager organised his/her things locally. A management control system was applied to some assets and performance: machines and investments, safety, quality and HR. The way the plant managers organised his/her meetings, the role and responsibility of meeting participants, the communication style, the operator's behaviour in the production line was not questioned in detail. With Boost this changed.

One of the biggest difficulties was for the managers at all levels to accept delegation and empowerment, and to become guides, instead of having the good ideas and making all decisions.

In addition to this we realised that the culture and mentality are very different from country to country. We had standards but every country interpreted and measured differently. The cultural aspect is an element to be understood and taken into consideration to have success. For instance, in the beginning of Boost some countries reacted with a lot of enthusiasm and started losing energy during the implementation, while other countries had slow start-ups but increased their speed on the road to Excellence.

But if we have to tackle the obstacles, we need also to recognize and share the success. We have to congratulate the teams and support them permanently. The "shop floor" teams have to feel that the top management is also involved. At Bel, the CEO knows Boost very well, he is periodically updated about it and everybody knows they can count on his support.

1.5 Is There Something You Would Have Done Differently and What Are Bel's Expectations of the Future?

We have an ambitious growth plan for the coming years and our industrial footprint will be more international. We will continue to deliver every time the best level of quality, cost and services to our consumers and Boost will obviously be part of our strategy.

Furthermore, Boost is a remarkable factor of cohesion for the teams. It strengthens our three values: dare, care and commit.

1.6 Do You Have Any Plan of Expanding Boost to the Entire Value Chain?

Yes, we will to extend it in two departments: Engineering and Supply Chain. It will start this year. And we are also thinking of expanding in the future to Corporate functions like Finance and Marketing. I believe that there are a lot of learnings and methods that can be applied in other departments outside Manufacturing. Thinking in a leaner way can be fruitful everywhere and it is a management responsibility.

1.7 Do You Have Any Recommendation for Beginners?

1. The top management and CEO engagement is the main initial prerequisite
2. Specific internal resources have to be allocated and consecrated to the programme development, they need to be trained and constantly engaged
3. The external assistance of Consulting is essential to acquire the knowledge and tools to lead the programme
4. Take into consideration the cultural differences in the different countries as the successful implementation of the programme depends on this understanding: you have to lead differently to get to common achievements
5. Consider the WCOM programme as a long term program: the low hanging fruits will come soon and there will be visibility on the initial benefits, but you have to accept that implementation of such a change in some phases can run at low speed or run into other issues, as the change is not always linear and takes time to stick
6. The middle management has to continuously steer and show the direction to follow
7. It is paramount to involve the HR department in such a process as this programme has a very strong human dimension, it is a Change program
8. Make it very clear in communication that the programme's aim is to improve the global performance of the company, not the reduction of the number of resources in production. What will change won't be the number of operators but the content and the spirit of their job
9. And don't hesitate to share recognition and smiles!

Chapter 2
The Bemis Case

Thomaz P. Gruber

Company description
Bemis is a global manufacturer of flexible packaging with 2014 net sales from continuing operations of $4.3 billion. The company's leadership position rests on its strong technical foundation in polymer chemistry, film extrusion, coating and laminating, printing and converting. Focused growth and accelerated innovation are key corporate strategies. Material science continues to be the primary instrument for creating sustainable competitive advantage. As the company's technologies have grown more complex, Bemis continues to penetrate new markets by bringing together unique capabilities to meet customer needs. Innovations in barrier films, package constructions, and packaging machinery are continuously evolving to meet the ever-changing demands of the modern world. Bemis is headquartered in Neenah, Wisconsin and employs approximately 17,000 people in 60 manufacturing facilities in 11 countries around the world.

2.1 Which Were the Reasons Which Lead You to Start the programme?

At the time that we started our strategy had three main initiatives: Customer Intimacy, Innovation and Operational Excellence. The current theories said that most companies had to choose one of them: either to be customer oriented, or low

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cost producer or innovative, but we decided that we could implement the three of them if we had the right strategy for each one.

So the first reason that lead us to WCM was that under Operational Excellence the company was already using some TPM elements, but not in a comprehensive way. We were capturing data, but not applying the 5S principles although we had a very clean environment for a Manufacturing company. We were looking for Continuous Improvement but **we didn't have a way to improve and sustain our operations** to benefit from it.

The second reason was that we visited **our major customer** in Brazil, a global food company, in particular one facility which was a margarine manufacturer. At the end of the tour, after having seen the results and improvements accomplished with the implementation of the TPM program on productivity, waste, cost reduction, and quality, their Supply Chain Vice President for Latin America told us that **if we wanted to continue to be their supplier in the future we had to use TPM**, as they would only maintain vendors who had implemented similar TPM Programs.

We then decided to start TPM with the same Japanese consultant that our customer utilized in a pilot facility where we did extrusion, thermoforming and printing for tubs and lids for margarine, yoghurt, water and candies. It was the year 2000.

At that time, one of our shareholders was also the shareholder of a paper board manufacturer in Brazil, one of the major suppliers of Tetra Pak which was also implementing TPM, however with a different approach called WCM. We visited one of their facilities and saw the benefits of their WCM program in comparison of the TPM program we were applying. WCM had provided quicker results: the TPM had provided some solid results but the original steps envisaged to 'restore basic conditions' on all the equipment before looking for other losses took a long time. That meant the first phase of the program would have lasted three years for us, because we had an excess of sixty manufacturing machines to restore before we could go to the next phase. We made the restoration, captured the benefits, but we decided to implement the WCM program on all our facilities.

2.2 What Was the Major Factor Who Directed Your Choice Towards WCM Instead of TPM?

The TPM approach would take a longer time and therefore deliver results later, so being a public company, we were pressed for more immediate results. The WCM routes were very similar to TPM's but the WCM approach was better suited for Western Companies.

2.3 Did You Expand the Program in the Company?

We first expanded WCM to all the Dixie Toga facilities in South America and in the year 2005 Bemis acquired Dixie Toga and after one year I was asked to go to Europe to be the Vice President of Operations. My goal was to integrate the five European plants and apply the WCM approach.

Bemis Europe has grown through acquisitions so each plant had its own culture and there were no synergies between them. These plants were located in Belgium, France, Finland, UK and Whales.

After visiting them for the first time I envisioned a green field for applying WCM. As an example, in one of the facilities when I asked what was their waste they did not know what it was. I told them how to calculate it according to the WCM approach and it was very high. I then searched for companies that could help me implement WCM in all the countries we had plants and Efeso was one of the companies I asked to bid: based on EFESO's knowledge and on their consultants availability all over Europe, where language barriers needed to be eliminated, we decided to move forward with EFESO in all five manufacturing sites.

We deployed WCM in phases, first running the pilots and having what we called "the big bang", the expansion, and then the stabilization. We started in 2006 in all facilities applying first the main pillars: the Progressive Quality Pillar, the Focused Improvement Pillar, the Education & Training Pillar and the Autonomous Management pillar.

2.4 What Were the Successes, the Results, the Strategic and Organizational Impact and the Difficulties You Encountered?

In Europe we had two interesting stories I can tell: one in Finland and one in Whales.

In **Finland** we had purchased a flexible packaging company that was originally built by a paper company. It was pretty lean, almost a paperless factory, very oriented to efficiency and very proud of the results accomplished so far. So to Introduce WCM was a real challenge.

The opportunity I found to show them the benefits of this programme came through the implementation of what I call '**the foundational elements**' **that you need before you start the WCM program**.

The three foundational or prerequisite elements are:

1. **Have a safety culture**
2. **Apply 5S** to have an organised and clean working environment
3. **Capture data**.

You can't start a WCM programme if those three elements are not there.

The Finnish facility had all the required data and a good safety culture but it needed improvement on 5S. I was visiting each facility once a month, and in my second visit to Finland I told them to deploy 5S and asked if they needed help to do it. They said they already knew 5S and they didn't need help to implement it!

That was very exciting, and after a month, on my third visit they made a presentation where they showed the results of 5S through step three. I was happy to see their progress and eager to tour the facility and see the results in the shop floor.

We went to a plant tour and the visit was embarrassing: they were clearly not doing 5S.

I interrupted the tour in the middle and asked the plant manager to bring the department managers in the meeting room to discuss 5S. I showed them a Power Point presentation on 5S and went through each step and their relevant deliverables. At the end I invited them to tour the plant together to allow me to make directly to the department managers my observations on why 5S was not being well implemented. We listed in detail on every machine and department what was wrong and then went back to the meeting room. Their own conclusion was: "Let's restart the programme and let's do it right".

I then asked them to give the 5S programme ownership to the Quality Manager, as there are several audits that come together with the 5S programme and quality people are very good in creating audit programs.

A couple of months later, on a following visit, I asked the quality manager why did they fail in their first attempt, while they were all very motivated and energized to start it. He replied: "You know, we just thought it was another programme that would come and go, it wouldn't stick"!!! This is a common problem in companies that are constantly applying the latest techniques developed in the market but that are not proven and are not timeless.

This was an eye opener on the importance of engaging the employees in the programme: if the employees did not believe in the program and were not properly trained they would not engage in the change and the programme would not be successful. I thanked him for the info and I pulled the leadership team of the plant together to reaffirm that WCM was going to be implemented, and it had to become the new way of managing the plant.

We did have to focus internally on the people and in the launch of WCM we reinforced the Education & Training programme to evaluate the people capabilities, assess the skill sets, train them to have them engaged, understand what WCM meant and how to run teams, how to interpret data and find the road blocks in the program to apply countermeasures. We also tied incentives on the shop floor to the deliverables of the programs. Then it was a success.

The second story was in **Wales** and it is a success story, even though it started very badly because of the situation where they were. We started from the foundational elements that we needed for WCM and it was such an eye opener for them: the amount of opportunities just under their nose were huge and they finally could see and measure them. They embraced WCM in a way that no other plant has embraced, especially the plant manager: he very quickly started managing the plant

through WCM. This was the facility where in my first visit they did not know their waste and I had to go back to the finance manager and tell him how to calculate it: it was 24 %. In our business success means low single digit waste.

An anecdote: in one of the departments of this facility we had just two machines, and when I asked the department's manager about his waste he said they had negative waste! "Are you getting more material out of the process than you put in?" I asked, and when they showed me their KPI I discovered they were measuring their input and output in feet. The process they applied heated up the material so it stretched in the machine. Getting more feet out than they were putting in, they thought they had negative waste!

"Tell me how many pounds you get in and how many pounds you get out and I will tell you what your waste is". I told them that they had to weigh the material, to measure using scales, not by length in feet. That was the first road block of the program. When the finance manager for the company in Europe saw the purchase order for 15 thousand sterling pounds to buy scales for one plant he called me to ask if I was crazy and why I was spending so much money on scales. I said there were plenty of opportunities that could come from that small investment and explained it to the entire leadership team. He approved the purchase order, we measured waste and we discovered it was 2 % in that particular process. We could cut in half that waste by applying the WCM principles. So we bought scales and installed them in all our plants.

The beauty of getting data and measuring things is that what gets measured gets attention. The waste went down from 24 to 18 % just by measuring it and providing visibility through machine and department boards.

At that time that facility was asking to build an outside warehouse because they were running out of space. When I visited the first time the facility I thought I would get lost because I couldn't even see where the machines were because they were behind inventory and scrap. I said no, and suggested to get rid of the scrap to open up enough space for good inventory.

They did an outstanding job with 5S because they saw quickly the benefits and we had a good foundation to start WCM program, plus we didn't build an outside warehouse.

Data was also a big issue: in neither of our facilities we had automated data capture. We had to create forms and train our people to capture data and show them the benefits, using the machine boards and giving back the data to the operators. The successes in these facilities came first by their understanding of the benefit of 5S and then from transitioning to WCM.

At the pilot phase we built the **Factory Model**, which is also an eye opener: it shows in money what the size of the overall opportunity is, and generally it is much higher than what the people usually think.

We developed the WCM program on all our facilities, and we set improvement goals year over year: at least 10 % improvement on waste and at least 2 % net improvement on productivity and we were getting those results.

2.5 Did You Have Other Obstacles?

In some places we had some road blocks; in Finland when we asked to run the machine boards, they had their reporting system and did not want to change the way they looked at their KPI's and applied their standards. It was developed prior to WCM, so its implementation was always harder. We had to work a lot with the people to standardize the way WCM was implemented and get the synergies between the facilities.

One of the beauties of the WCM System is that you are applying the same methodologies, looking at the same losses in the same way, you report KPI's, team results, objectives, standards in the same way, use the same boards so you can learn from other plants and apply those learnings quickly with some Kaizen teams, without reinventing the wheel.

We also organized yearly WCM meetings were all the WCM or 'continuous improvement managers' met to exchange their success stories. We were very successful in our first three years journey in Europe and the company then asked me to go to implement the WCM in USA and to become the president of Curwood. I started the same journey by first assessing the 3 foundational elements (Safety, 5S and data). We then started applying WCM in eleven plants, which became fifteen in 2010 and then twenty-five plants due to mergers and acquisitions. In 2012 Bemis decided that every one of the sixty global facilities had to apply WCM: Latin America, Europe, North America and Asia.

We were being successful in finding losses, deploying teams and eradicating losses but we were not consistent in sustaining the improvements. PCS (Performance Control System) helped us in this and in accelerating capturing opportunities and delivering results.

We continue to target 10 % improvement on waste and at least 2 % net improvement on productivity and we are heavily focused on people, on training them and making sure the middle management is on board on the WCM journey. We are also engaging and training top management to define what are the main elements of WCM you have to look at when you visit a facility, so that we are not sending mixed messages.

I will tell another anecdote that helped us **gain the hearts and minds of the people**.

We always told the plant manager that all the data we were gathering was to identify the biggest opportunities and also to give it back to the operators so that they understand if they were doing a good job and also to drive ownership on their equipment.

When I was in Europe, every time we toured the plant we observed safety, data and 5S. One of the things I was always annoyed of was how operators and maintenance people used the machines as tables and boards, leaving tools on top of them, putting notes and post its on their frames, cabinets and HMI's. I came up with a very simple question when I found those issues: "Do you know how much this machine cost?". They would look at me and say: "Not really, but for sure it is expensive".

And I replied: "This piece of equipment costs 2 million Euros, but forget about this number and look at this as being the equivalent cost of eight Ferraris. Imagine if you have just one Ferrari in your garage, would you put tools on top of it, stick post-it notes and keep it as dirty as you keep this machine?" They understood the message and started taking care and ownership of their equipment, and we keep on using this example.

2.6 Did You See Any Cultural Difference in Implementation in the Different Areas You Managed: South America, Europe, North America?

In **Latin America** we had a very entrepreneurial work force, they were eager to learn new techniques and not afraid to experiment. They don't have the 'not invented here' syndrome. It was easy to implement WCM, the challenge is always to sustain it, not lose focus on it.

This depends a lot from the Plant Manager: if he/she is sold out on the approach and manages the facility through WCM it works. The difficulty occurs in the facilities were people consider WCM as a parallel project. They always try to go back to the old way of doing things. You have to break this tendency and lead the facility through the steering committee and the pillars. **You also have to quickly assess if the leadership of the facility has that mindset, and, if they don't, you have to change the leadership**. You cannot accommodate.

Europe has a lot of different cultures. My management style was always to delegate and control and try to reach consensus, as I think people need to understand *why* to do things.

In **Finland** it was difficult to reach consensus and I had to give marching orders. In **UK** and **Wales** they were very entrepreneurial, open to change, and we were very successful. In France and Belgium they always had an excuse for why things could not be done. Unions and management had to understand the benefit otherwise they undermined the program. In the **US** there were mixed results in the beginning as we were undergoing a big change management project: in 2010 we had doubled in size merging with Alcan. At the same time that we were applying WCM principles, we were merging two different cultures. Alcan facilities had a very formal Continuous Improvement program based on Lean Six Sigma principles. Those plants understood the benefits of WCM because we built WCM on top of the CI program and they quickly realized that WCM was closing the loop on a gap their program had: sustaining the gains. They had their annual meetings where they looked at their losses and prepared the deployment of loss eradication teams for the following year to reach their goal but they did not have a system in place to sustain their gains.

The legacy Bemis facilities had a program which they called War on Waste: they created a business process improvement department were they took some of their

R&D engineers and they assigned them to the plants to reduce waste. At that time waste was high double digits, there were a lot of low hanging fruits for that team to tackle: however not everything they were doing was sustainable. They welcomed the WCM approach, which was more disciplined than 'war on waste', especially because the low hanging fruits were gone and it was harder and harder to maintain the success they had previous to WCM.

The point is that WCM is a complete system while other approaches are not. A system must encompass loss intelligence, loss eradication and loss prevention because this guarantees you will have long term success, otherwise the risk is to make a beauty parade of the early successes and after four five years there is no maintenance and results decrease.

2.7 You Said that Your Management Style Was Delegation and Control: Did You Apply It in All Facilities or Adjusted?

I always applied delegation and control, as I was always very analytical and very hungry for data and KPIs, however I did not adapt where consensus was not reached: there I gave the marching orders to follow and if they did not follow I had to change the management. You need leaders at each facility that are passionate about WCM and fully embrace it.

2.8 For a Company Who Is Beginning to Apply the Program Which Leadership Style Would You Recommend?

1. First **be fully aligned with the company strategy vision**.
2. **Be passionate about WCM**.
3. Work on the foundational elements before you start the WCM program: Safety, 5S and Data.
4. **Make sure everybody is on board**: it is all about people, and who doesn't want to be on board should know there's no place in the company for him/her.
5. **Do not to forget your strengths** in manufacturing, like innovation and technology, while you are in this journey for Operational Excellence. You have to continue to work on your standard operating procedures and controls.
6. **Don't be aggressive towards the company culture after an acquisition**: there is a reason why that company exists and was successful. We all know that *what brought us here won't take us there*, however the change needed for adapting to the new challenges are usually not as big as we assume. Identify first what are the things that you don't want to change in that company, its strengths on

people, processes and technology, and continue to reinforce them. Then focus on the things you want to change: a value, a principle, a way of doing things, the type of talent you need.

2.9 How WCM Helped the Group in the Post Merge and Acquisitions Process?

WCM provides a quick and strong way to create a common culture: from day one you defined the culture you want to implement in all the plants, it is a clear message that provides alignment and facilitates execution of your strategy to reach the targets you want to accomplish.

Chapter 3
L'Oréal Case

Eric Wolff

Company Description
For more than a century, L'Oréal has devoted its energy and competencies solely to one business: Beauty. L'Oréal is the no. 1 Leader of the Beauty Industry across the world. L'Oréal has chosen to offer expertise in the service of women and men worldwide, meeting the infinite diversity of their beauty desires. L'Oréal is committed to fulfilling this mission ethically and responsibly.

With its unique portfolio of 32 international, diverse and complementary brands, the Group generated sales amounting to 22.5 billion Euros in 2014 and employs more than 75,000 people worldwide. As the world's leading beauty company, L'Oréal is present across all distribution networks: mass market, department stores, pharmacies and drugstores, hair styling salons, travel retail and branded retail.

Key numbers L'Oréal Operations: 43 plants around the world for more than 6 billion cosmetic products, 153 distribution centers and 450.000 Points of Delivery.

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3.1 L'Oréal is a Model Enterprise, Excellent in Product Quality, in Innovation, in Marketing: Why Such a Reality Decided to Start an Improvement Programme?

The story started about ten years ago, when the strategy of the group was established for the conquest of a **new billion consumer** worldwide. Knowing that one billion consumers are what we already reach in sales, this would have meant roughly doubling the production capacity. For L'Oréal Operations it was clear that this couldn't be done just copying the existing production model to reach the goal. It was obvious that l'Oréal needed to work on the optimisation of the existing assets and in parallel, find its journey to target the emerging countries where we had to accelerate our existing production capacity. When we started to work in this direction we realised that, compared to other industrial areas, we had some room for improvement on one hand, and that we had also to develop a differentiate model for emerging countries: and here, for both challenges, we had an interesting margin of improvement on OEE (Overall Equipment Efficiency) … and that's where we started from.

3.2 From Where Did You Start?

We started to analyse the tools, methods and processes we already had, and how we were using them. We made some benchmark and went also to visit and discuss with companies in other industrial areas like mechanical engineering, automotive, food etc. We saw concretely all those methodologies related to Continuous Improvement, like Lean, Six Sigma, TPM, that we had already started but that we needed to scale up and professionalize on a rapid mode. We tried to thoroughly understand our industrial environment and specificities and looked around for best practices.

We decided then to run four pilots, three in European plants and one in the United States. We got the support of four different external consulting companies. The four pilots launched did run well and enabled to learn the methods, to build some experience and to get first positive results. We understood an additional key factor of success, the adaptation of the practices and methods to the culture, to the language of L'Oréal so that we could create our own way.

At the same period, we also created a taskforce internally, with some chosen plant managers of our L'Oréal plants: they did elaborate the practices they used to achieve their high level of performance, which was superior to the average level of our plants worldwide. From there we defined a set of twelve Best Practices and we started to implement them in all the 43 plants of the group.

Our industry is on a very dynamic and demanding market: a big portion, above 25 % of our product portfolio, changes every year, with new and innovative products coming and others leaving. It introduces a specific challenge of change agility compared to some other industries. We needed also to find methodologies adapted to this high product portfolio change. By the way, this is most probably the reason why in the past, even if we had already worked hard on performance improvement, we were not reaching the sustainable performance level we were aiming for.

With the twelve Best Practices and the four pilots we found a balance between technical practices, equipment technical knowledge, maintenance techniques, SMED, and something very new for us: a managerial structured approach, "bottom-up", as we like to say. The idea is to have managers on the shop floor, listening in a more structured way to the workers and technicians working on the production and packaging lines in identifying and implementing solutions. This became little by little the new behaviour. It was **a cultural change** which rooted progressively, and we made a significant investment in training and coaching to get everyone on board from the line workers to front line managers, middle managers, production managers, on the improvement practices as well as on the technologies.

After the pilot experience with the four sites and the definition of our Best Practices, we started the expansion phase to all the group sites. In this phase we created the structure to sustain the programme: in every plant, a Performance Manager was appointed, he or she being member of the Management Committee of the plant. His or her role is to follow the deployment of the best practices in the plant and to make sure that the programme gets well implemented. In parallel, we aligned all KPI across the planet and rolled out a WW ERP for our factories, allowing practices, reporting and improvement measurements to be shared and benchmarked everywhere.

3.3 How People Reacted to the Cultural Change?

The reaction was globally speaking positive: we rapidly saw that the methodologies implemented had provided positive results, and this raised the interest of most of the people in the company.

We also made the effort to communicate the results in such a way that everybody could understand the benefits and improvements done. We felt it was very important to **provide people with the sense** of what was going on, the reasons why we wanted to change using the performance improvement programme. The sense was given by our 'One Billion New Consumers' company strategy: how to get there optimising the production without making massive investments? The sense was also to create a better shop-floor environment, with ergonomic improvements, with

machines working properly, in a tidy and clean place to work. We have accompanied all these improvements of performance by much better working conditions and environment. We wanted also operators to feel responsible and proud of their workplace and in the delivery of results.

In every plant there were slightly different priorities, due to the product mix and business model, but also because of different base lines, and we decided to work differently in every plant: it was one move, one same set of objectives but a tailor-made approach, adapted to each factory's specificity. We adjusted the improvement programme with and through the Performance Manager of every site, in function of the site's targets. In the end, there were plants where flexibility was the priority and they worked especially on the set-ups, while other sites mainly worked on losses, others on capacity etc.

3.4 Did You Meet Any Obstacle?

In general it was a success and we had very satisfying results for the five first years. After that period we went also under some big sites re-engineering, machines were transferred from one site to another, some sites were subject to an important change of production scope, we acquired new companies into L'Oréal that we had to on-board also, and this impacted the improvement dynamics. People were focused on the transformation process, and this impacted the results. What we understood from such an experience is that, to have a permanent sustainable system in place, the performance improvement culture needs to permeate every aspect of the daily work and reflect on everything that is done: and this grounding takes time.

Concerning the question you were asking about the obstacles, one of the answers may be: "**Patience is required**". This is a point that is not easy to be accepted in the world of fast moving consumer goods. It is not something you get snapping your fingers: of course you get quick wins, but for a permanent sustained improvement system you need a team commitment: the shop floor people, the front line managers, up to the operations directors must be on board. There are some practical aspects which are easy to set-up, but **sustainability is a long term achievement**. Our motto could be "**the complete success is when the Best Practices have become THE Practice**".

In addition it is necessary to **build a strong hierarchical consistency**. The programme can't be the initiative of a single site or production unit. **A corporate structure** has to help the implementation connected with all the plants worldwide, making the function as the reference point, the hub where the practices and methodologies are capitalised and shared, benchmarks prepared and communicated. At L'Oréal we have implemented an **Operational Excellence Management System** where knowledge is consolidated, communicated and shared among the plants to create the best synergy, so that everybody can follow and learn from the pioneers in one or another of the practices.

We have also a **Performance Company Social Network**, so that all the people can communicate and build through this network, reach them instantly.

3.5 Was it is Easier for the Managers or for the Line Workers to Buy-in the Concept of Continuous Improvement?

The **top management** was supportive and committed from the beginning. It found the sense of it as a key solution to work on the target of One Billion Consumers. The **line workers** contributed pro-actively to the programme as they had the possibility to participate, give advices to solve the problems and improve the production lines or skids, in a bottom-up approach, and become more responsible of their work.

The population we had to accompany more in the beginning was the **middle management**. We had to make them understand how it their role would have changed: "It is no longer just to solve problems, but to help the line workers to identify the problems and find their own solutions. You are not the only problem solver anymore, you are the coach, you are the line manager". It was a strong opportunity for them to develop their managerial abilities, on the top of their technical competencies.

3.6 What Do You Think is Most Difficult for Them?

The sense of vacuum that this change could initially bring, the fact that "If I am not the problem solver, what am I supposed to do now?".

The point is that their agenda changes with the new interpretation of their role: that is why usually one of the topics of the training and coaching with front line managers is to work on their standard agenda, the routines which should be followed and checked, the organisation of their daily work, their new tasks.

3.7 If You Should Describe Your Organisation in the Production Area?

In regards with our Excellence programme, we could say that our production organization was too much organized by silos: we have Quality, Production, Safety, Environment, Logistics areas.

The best practices that we have put in place have shown that we had to develop consistency between all the areas at the same time if we wanted to improve the performance. In one word we needed a cross-functional approach. For instance,

Quality followed logics based on control. When we started implementing the Performance Improvement System, for the first six months the people on the floor were talking only about their technical and mechanical issues. After the first six months the technical problems were solved, and people started talking about quality, giving practical suggestions to improve the production. They also talked about ergonomics. The people of the shop floor had shown us that **the development of continuous improvement impacted on the uptime ratio of the equipment of course**, but also that the **performance without quality or safety was not possible.** These items are too connected not to influence each other. A much more collaborative way of working was one part of every solution.

We made the effort to build a **common language** and coherent methodologies on all those subjects. Today a Performance Manager is able to help to the improvement of productivity, of losses, of water consumption, quality, etc.

3.8 Did You Implement the Pillars?

We started to do it but it was quite difficult to make clear the pillar philosophy, the inter-functionality of the pillar. In our organisation we already have a Quality manager, a Safety Manager, a Performance Manager, so the pillar logic did not work, the people did not get what the pillar philosophy could bring in addition to the current organisation set up. Some sites developed groups of pillars, which still run, but at group level this has not been expanded.

3.9 What Are Your Ideas for the Future?

We can say that the first chapter of the performance improvement programme has been to **implement the improvement methodologies and to put in place a sound managerial organisation** able to sustain the **Performance Improvement Process**.

If we look at the losses we still have, we realise, they are due to reliability issues of the machine, and we need to work further on our maintenance programme. The other topic in such a fast moving market is to work on set up times to ensure the best flexibility. And of course, change management, early equipment management.

The second chapter for us should be to create a stronger link between the definition and functioning of the equipment and the managerial processes. That means we have to improve how we work on all the maintenance aspects, we have to re-work on the conception of our equipment, to make the maintenance easier, simplify the set-up part which is complex as we are not a mono-product industry, the SMED, the set-up time. In other words the next chapter is to **rebuild in a stronger way the link between equipment and process**.

3.10 If You Judge the Improvement Programme, Do You See the Competitive Position of L'Oréal in Operations Has Changed?

Yes, in the last seven years we have saved, or if you want, freed up, twenty percent of capacity. This is strategically very important in view of the "One Billion New Consumers" strategy. We have also worked on improving the line's speed, and all this cascaded in productivity improvement.

When we started to work on competitive advantage we were average, or average/low. Today we are medium, or medium/high: we are not best in class, we have still room to improve, but we are on the good track to become best in class.

What is also important concerning the coherence between Quality, Safety and Performance, and line workers have demonstrated it to us, is that improving our uptime ratio and capacity has helped to improve Quality and Safety, even if we were already at excellent levels in those fields. But this dynamic has allowed us to move further even in those fields: on safety today we have excellent results, and for Quality, within the cosmetic industry, we are also in the best in class in the world.

The performance programme had more focus on uptime ratio, because of the strategic goal, but what we learned has had very significant side effects.

3.11 So We Can Say That, Outside the Factory, in the Global Business, The Competitive Position of L'Oréal Manufacturing Has Changed. What About Agility, Lead Time, Customer Service, Speed to Market. Do You Feel These Topics as Priority?

It was not the goal of the programme upfront, but as we moved on, we started to consider two further themes.

The first is "**How can we better use this performance programme in the conception area?**"

We have a quite huge turnover of products, and the right the first time is very important for the Operations Performance. Continuous improvement programme, Early Equipment Management and Risk Analysis were little by little pushed through the conception teams to improve packaging conception, for example. In processes and definition of the manufacturing "recipes", we have started to do the same. In 2014, we have completely reviewed the conception management system for packaging and processes.

The second theme is "**How can we find ways to improve time-to-market?**". It is very important in the cosmetic market, where trends are so fast, and we need to

put on the market very fast. Some work has been done in the product development teams to define a more optimised ways of development in relation with the complexity that is evaluated upfront on each and every programme/product that will be launched. Before we used to say "One size fits all". Now we have a much more segmented approach to make sure that each project will be done right the first time and in the most efficient manner.

3.12 If You Should Describe L'Oréal Culture in a Few Words?

We are a network organisation focused on performance and excellence. A WW network of equivalent position around the world that share its findings and enhancements that everyone can apply in its field of responsibility. We also empower people and promote entrepreneurial spirit.

We also believe in individuals, in the individual's ability, creativity and performance and diversity: that enrich the solution instead of only apply 1 solution on a "top-down" way. It is a mix between a central team establishing the big programme, system and process, building the trainings and organizing the best practices sharing and the local operational implementation and delivery of performance while enriching the WW solutions by local findings and initiatives.

3.13 How Do You Conjugate Your Value, 'Entrepreneurial Spirit', With Alignment?

It is always a balance between a quite strict frame, as we have very structured quality systems, safety systems, and giving room for initiative, individual development: we look for the ability of people to improve performance within this frame.

There are many reasons for the existence of the frame. On one side we are a regulated industry, in cosmetics we have Authorities clearly defining what you can do and what you can't.

Then as leader in the Cosmetic industry, our responsibility is to be an example for the others on many aspects. When we speak about safety or quality, it is because we want to protect our people and the consumer. But there is still room for initiatives that then become new standards: it is this network performance spirit described previously.

3.14 If You Could Change the Programme What Would You Do Differently?

I wouldn't do it in another way in the deployment. In a company like L'Oréal, we are not so top down. You need to convince people, and we did it by making pilots and showing results, engaging the leaders and having the leaders of those pilots as the testimonials of the programme, telling the others that it was convenient to implement and that it worked.

This is what helped us to move forward. We would have never been successful if we had said: "This is the programme to be put in place worldwide, that's the way to go, now go".

What perhaps should be more looked at from the beginning is giving the sense of the initiative: clearly define the sense of the programme, translate it and find a sense for everyone, because it doesn't mean exactly the same for a plant manager, for a shop floor line manager and for a mechanic on the line. This is something we have not done well enough at the beginning.

Another thing I would work more on is the sense to give to KPIs. I would try from the beginning to see how can I better link the organisation's important KPIs to the performance improvement programme: for instance improve quality by looking at consumer complaints is quite obvious, but I mean also looking at up-time ratio, making the link with productivity, direct cost, cost of the product, capacity.

3.15 In Other Companies They Found it Difficult to Involve HR or Supply Chain and Distribution and Sales. In Companies with Matrix Organisation Country Managers Were Not Supporting Locally the Global Initiative…

We might have had this problems but we didn't, as we are not that much top-down. When you have forty plants that are moving the right way and five that don't, it is not that you ignore those five, but at some point they will come on board, or, if not, they will have to explain why they are bringing different results from the other thirty five. If you make a clear link between the results and the programme it becomes difficult for managers not to follow the program.

3.16 What are the Recommendations for Someone Starting an Improvement Programme?

1. Adaptation is important: the system and the methodology have to be tailored to the culture and the organisation adopting it
2. Always give sense to what you are doing: Performance is not done for performance, there is always a reason upstream and everybody has to know it.
3. Be patient: the programme does not give permanent results in three months, to do something sustainable you need some years
4. Benchmark: It is interesting to ask for support of expertise outside the company
   - to share and benchmark ideas and confirm priorities, how to start …
   - to go deeper in the knowledge connected with the programme, the reason behind, the methodologies, the tools
5. Get sponsors: Identify inside the organisation people that will push to put the programme in place and sustain it all the time
6. Be prepared to change: be aware that the organisational changes are part of the game
7. And to conclude actively listen to people: be as much empathic and supportive as you can. It is a journey you do in team.

Chapter 4
The Saint-Gobain Case

Yannick Courtial

Company description
Saint-Gobain boasts 350 years' experience and is composed by four business sectors: Innovative Materials, Construction Products, Building Distribution, Packaging.

Key Figures
Sales: €41 bn
More than 180,000 employees
79 % of sales on the habitat market
Present in 66 countries
945 production sites
Almost 4400 sales outlets
One of the world's 100 most innovative companies

4.1 Which Were the Reasons Which Led Saint-Gobain to Start the Programme?

The decision to adopt it goes back to September 2006, when a strategic top management meeting was held in Saint-Gobain and the Programme was sponsored for the first time. In this meeting two relevant experiences were reported.

The first was British Gypsum, the UK operating arm of British Plaster Board, acquired by Saint-Gobain in 2005. Gypsum had implemented a WCM program TPM

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approach with Professor Yamashina of the Japan Institute of Plant Maintenance. They had 80 plants around the world and, although having the same technology anywhere, some sites delivered better results than others. Gypsum needed a continuous standard process everywhere, with no-stop lines and the proper speed: it was necessary to eradicate the short stops, speed losses and breakdowns affecting the lines. Their TPM experience had been very successful: in two years they had highly improved their output whilst dramatically reducing their losses.

The second good experience was Saint-Gobain Brasil where a Lean Manufacturing approach had been adopted in different technologies, as Saint-Gobain Brasil has different divisions such as Abrasives, Ceramics etc. while British Plaster Board had just one technology. This demonstrated that the Lean principles worked well for every technology.

That's why in 2006 the pragmatic decision was taken to adopt a WCM Programme in all industrial divisions of Saint-Gobain, based on the evidence that it could work.

4.2 What Was the Sense of Urgency to Adopt the Programme?

Saint-Gobain is number one or two in all its activities. The competition is always very high and embracing such a Programme was necessary to **sustain and improve leadership and make the difference in the market**. Our strategy was to have not too many high priced, very innovative products at a sustainable cost. The difference should be made on the cost, based on better quality and service. We needed to make sure we could keep on being the most reliable supplier. The big question we raised was: "How to sustain results?". Our sense of urgency was to be a step ahead of the competitors while at the same time being a reliable supplier to our clients.

4.3 How Did You Deploy the Programme?

We started **completely from scratch**: very few organizations were ready to launch the Programme, as at that time we did not have change leaders or Programme coordinators; the governance had to be built step by step. It is true that British Gypsum had had an experience, but it represented only 5 % of Saint-Gobain, so it was not possible to have Gypsum to lead the Programme for the entire company.

We needed a consulting partner to help us launching the program worldwide and share their knowledge on the Programme with us, so we issued a tender to be able to choose.

Saint-Gobain is divided into divisions and each separate division has its own resources. At corporate level there are a few organizations; the Finance Team with

the CFO, the HR team and the H&S team. When you go down into Operations there is the Innovative Materials division. Below the Division Head there are the General Managers, then the Quality Manager and the Industrial director, etc. There was no Industrial or Operation director at corporate level. The Health and Safety Director was assigned to set up a steering committee and to identify the team who would coordinate the Programme.

Jean Pierre Floris, general delegate for the Brazilian region and big sponsor of the Programme, was assigned to report progress to the board.

I personally joined Saint-Gobain in 2003 as Quality Director of a division that made glass bottles for perfumes, cosmetics and the pharmaceutical industry. I had been working in Danone for 15 years, where I was Vice President for Quality in a division where I was running a WCM Programme: that is why Floris asked me to move from Danone to Saint-Gobain. In March of 2007 I changed job and became H&S and WCM director of the High Performance Material sector, which includes Abrasives, Ceramics, Plastic and Fiber glass. The idea was to be able to start leading the WCM Programme not as an additional role, but to embed it in my role, and I felt comfortable with it.

4.4 Can You Tell Us How the Programme Deployment Was Implemented?

I chose the WCM Programme of EFESO for the High Performance Material division because they could provide services worldwide for all our different divisions and technologies. This was paramount, given the high level of diversity in our group. I believed that **the structured WCM approach**, the **loss intelligence** philosophy, the **methodology routes**, including the **pillar system**, **could make the difference**. Additionally EFESO had a **knowledge toolkit** which is translated into all the languages we needed, and this was something that would facilitate the engagement of local cultures and transfer of know how.

We decided not to create a huge additional structure within the existing organization. We wanted to **develop the Programme working with the managers we already had**, giving them more tools and methods, developing their skills based on the WCM training. We wanted to avoid the risk of creating a parallel structure which would have taken responsibility away from the managers.

We started by **identifying the pilot plants** where the programme would be launched with our consulting partner. I had 250 plants in my scope. We decided to have a pilot plant per division in every region. In the beginning we involved **twelve plants** and their local management. To do it in a standardised way we created a master plan with a road map documenting all the program phases. I participated in the design of the roadmap to launch the Programme in the first plant. The first step was to organize the Start Up Meeting with the plant management to explain the Programme. We made a two day seminar where the main points on the Agenda

were the Lean Principles and how to make a Value Stream Mapping. The big advantage of the Value Stream Mapping is to share the vision on how the processes are organized in the plants: we saw the barriers we actually had and the managers understood that to implement that Programme the only possibility was that they worked together. This created a team spirit and the awareness that the current way of working had to change. The Value Stream Mapping also helped us identify the first wave of projects. Each pilot plant ran some pilot projects following the WCM approach based on Kaizen and following the loss eradication principles. The pilot phase lasted six months but the first projects were concluded after three months and provided very good results. Thanks to the results in all twelve plants, **in 2008** we globally rolled out the program for all **250 plants**. We decided to have a WCM coordinator at plant level and a WCM director per division to guarantee the program's leadership at division level. We made coaching in the plants and in parallel I organized a WCM Green Belt training of four days where we explained the approach and pillar concept and relevant methodologies to the Production, Maintenance, Customer service and Quality managers. They then took an exam by delivering a presentation of an improvement project by the trainees and then received a certification.

As a central manager I designed the specific WCM Programme for Saint-Gobain with eight pillars and the relevant **vision**: **challenge the best performance in each shop floor activity in the world and increase our competitive position**. WCM was the way. The foundation helped to organize the Change Management part of the programme, to make sure we involved everybody in the training and in the changing of the working conditions. We pragmatically implemented the working conditions, the 5S, the Autonomous Management and the Early Equipment Management (EEM). We also implemented the Daily Control System and the Visual Management.

4.5 What Was the Reaction of the People?

When I took the lead there was no enthusiasm for WCM: a lot of people said that the company had already worked with Continuous Improvement and they did not see the value of having an additional Programme.

The first reaction was: "**What's new, why do we need to change?** We have already done PDCA and KAIZEN and Lean and Six Sigma. We already know what to do, and we are strong enough to manage our activities".

It was **the success of the WCM pilot projects** that **demonstrated that further improvement was possible** and that better results could be achieved once **the Loss Philosophy** was properly understood. In Saint-Gobain the managers are very good engineers accustomed to react to deviations and to follow KPIs, but at that time they were more used to explain why problems occurred than to identify losses and prevent them.

In addition to this you have to consider that the managers had already a lot to do, and the Programme demanded additional time. Also here the pilots demonstrated that it was valuable to spend the extra time, as it was clearly beneficial and saved time afterwards, by reducing the firefighting and quick fix responses by involving everybody in the processes.

4.6 What Was the Key Factor to Success?

Choosing pilot plants to demonstrate that WCM could work.

Another crucial factor was that we identified and decided to **work with positive people**. We have 1200 plants in 50 countries, and we decided to select the more proactive managers to be the sponsors of the Programme, not the resistant ones. We chose plant managers who wanted to start, with a strong leadership and who felt ready to change. They were able to cascade the change in their organization to reach the shop-floor.

First we made the **cost deployment** to understand the areas where we need to work. At that point the human factor became crucial: if the top management is not with you the programme will not succeed.

The first waves were successful. In all the teams operators were involved and in France, Germany and Italy we also involved Unions Representatives, to allow them to understand the Programme.

The Unions can see it negatively, as they think the programme is just aimed at reducing headcount: we call it *the dark face of Lean*. I decided not to use Lean terminology to avoid such a misunderstanding, but I used the Lean tools I needed. This allowed us to convince more and more managers.

4.7 What Were the Successes, the Results, the Strategic and Organizational Impact, and the Difficulties You Encountered?

We succeeded in many plants and we received a lot of positive feedback.

At the beginning the management had to make efforts to learn new tools and a new way to manage. The hardest was to convince them that if they used some extra time to insert WCM in their activities they would have had less breakdowns and less accidents afterwards, since they were investing in prevention and anticipation.

I focused on creating the conditions to show immediately good results, creating a visual plant and making sure that everyone, starting from the operators, could benefit from that in their personal daily activity.

In 2010 we asked all the plants to implement WCM.

In the beginning we made a **silent implementation**: there were no evident changes in the plants, even though we delivered benefits and we were starting to implement pillars. **Then** we implemented **more visual management** and now when you arrive in a Saint-Gobain plant you can see the huge difference; WCM is immediately visible, the machines are under control, the external visitor can perceive that the plant is well managed. Operators are more comfortable, they have better safety and working conditions, less interaction with machines due to less adjustments, less stops and less breakdowns. The DCS (Daily Control System = Machine Board) and the machine conditions monitoring with Visual Management create the condition for operators to identify in real time if there is deviation or not in the lines.

Before a lot of data collection was done in computers and the day after the managers were able to see the results, which was too late. Now the way we treat the performance is completely different: the operators are able to continuously monitor if everything is under control, hour by hour. If there is a deviation the operator intervenes before a breakdown, a speed loss or a short stop occurs. At the end of the shift we always know if we are achieving the performance or not and we act consequently. We have a bottom up approach, we call it Performance Control System and it drives the preventive approach.

4.8 So We Can Say You Passed from Problem Solving to Problem Prevention and Anticipation: It Is a Paradigm Change

After three years we have designed **our Saint Gobain WCM model with eight Pillars and three Foundations** and we entered the Expansion Phase; so we decided to expand the loss prevention system with a strong pragmatic change management approach, where not only projects are delivered but **"Model areas"**, where we implement the Pillar steps and Foundations are developed. In addition to this we have created an **Audit System** and a **Recognition System**, starting with a **Bronze Award** to give recognition the best plants. To obtain the Bronze Awards two conditions must be satisfied in the plant: the results from the Programme (Health and safety pillar, and plant priority Pillars like Quality and Industrial Efficiency) and the performance delivered by the Model Area have to reach a benchmark level. This is very motivating and people are proud to achieve it.

Now we have **30 plants in the world with Bronze Award**, which is 8 % of my area. It is not easy to achieve it but it is positive because it demonstrates the feasibility of the Programme. We have Bronze plants in different regions of the world: Poland, France, Czech Republic, Germany, Spain, but also in India, in US, in Mexico, in Brazil, in China and in different type of industries (Continuous

process; workshop, handmade …). We have Bronze plants from 24 people to more than 1000 people. This is the challenge: more and more plant managers want to achieve it and it creates a positive approach.

Our communication repeats and repeats this: let's focus and highlight the best.

Now the fast runners challenge the Silver level and we are working to enlarge the change management Programme with the plants who have achieved the Bronze Award. They want to do even better and move to the **Silver Award**, which is defined as having 80 % of the critical machines at top level performance; best OEE, best quality, best safety conditions, in other words a plant that is very stable.

After 6 years of Programme, thanks to the Audit System and to the Bronze Awards examples we are able to cover 90 % of the perimeter of industry factories. We have succeeded to train most of the managers and a big part of the operators. We have **trained more than 5000 Saint-Gobain managers** as WCM **Green Belts** and **10,000 Yellow Belts in all the regions worldwide**. This is really important a result.

We have already succeeded in the cultural change and in the "bottom up managerial approach", and now we have autonomous operators able to control the performance in real time. Concerning financial results, we regularly deliver significant savings. We have multiplied of 2,5 the yearly results since 2007. The technical indicators like **OEE, Defects, Breakdowns, WIP** as well as our **safety record and environmental footprint** have **dramatically improved.**

We have 30 Bronze plant but still 470 plants have not reached this level yet, so there is room for improvement. This can also relate to the ability of local management to deploy the Programme: the central WCM team gives the same objectives, guidelines and training everywhere, then the implementation depends on the adoption by local management and division management. Sometimes they claim they do not have the time and the resources and that they have other priorities. After six years we still have managers who are not totally convinced that the Programme can help. We are a big group, with 170,000 employees and more than 1000 plants across the world.

4.9 If You Should Start Again What Would You Do Differently?

In relation to the Programme we have built a capability and the organization has integrated the Programme.

We could **put more internal resources on the pilot plants**, especially in certain divisions. The balance between the number of internal resources and consultants is crucial: paying too much consulting fees is not always accepted, but not having resources creates issues.

As a matter of fact the divisions where the Programme has been developed with a good number of resources are working very well.

4.10 Recommendations to Everybody?

Ensure the first team waves are successful based on two main criteria:

1. Work with a good partner to deploy and implement the Programme and understand the methodology
2. In three months you have to deliver the first positive results

In general

1. Involve the most proactive people willing to be part the change. Involve operators and Unions where required
2. Identify pilot plants and make them the benchmark for the others
3. Deploy the resources needed, no less, and use the consulting to guide and coach
4. Develop and train the managers to expand the implementation, they are the change leaders. Do not build parallel structures
5. Balance management of resources and shop floor autonomy
6. Balance external consultants and internal champions
7. Moving from firefighting to prevention thus create a prevention mindset
8. Consider that the implementation speed for every plant is different
9. Learn from front runners experience, capitalize and customize to local reality.

4.11 Outside Manufacturing You Are Going to Expand the Programme to the Entire Value Chain. What Are the Main Issues You Could Find?

We are working to expand it to **Supply Chain**. Here you have senior managers with high level background and they all think they know enough. In manufacturing you demonstrate results, here it is more difficult. But we have launched some good projects and we will be able to succeed as soon as we can give results and have the internal force trained. The next perimeter is **World Class Purchasing** and **Sales & Marketing**. We have not yet started R&D, but at the same time we know that we face issues when we launch new products.

Here in Saint-Gobain the top managers do not force people to implement until they feel they are ready. They try and show evidence because they have seen that results convince more than words and directives.

Chapter 5
The Tetra Pak Case

Giovanni de Filippo

Company description

"**A package should save more than it costs**", was Ruben Rausing tenet.

While new companies often start up by marketing a technical invention, Ruben Rausing started his own business by studying the market, to be able to map out what his future company should be able to do. Following which he researched the technical requirements. Rausing had a strong ambition to create something new, and his fundamental idea was to rationalize the distribution of groceries by means of practical consumer packaging and proper packaging for transportation.

He was the initiator of the development of the tetrahedron shaped package: his idea was forming, filling and sealing packaging from a paper tube.

The packaging company was born in Sweden based on Rausing's idea and the capital injection by his partner Erik Åkerlund.

In spring 1933 Rausing became the sole owner of the company.

In September 1952 the first Tetra Pak machine was delivered to Lund Dairy Association. In November of the same year, the dairy started to sell cream in one-deciliter tetrahedron formed packages. Since then the company has dramatically improved.

Tetra Pak is the world's leading food processing and packaging solutions company.

Products are divided into Packages, Processing equipment, Filling machines, Distribution equipment, Service products and each day meet the needs of hundreds of millions of people in more than 170 countries around the world. The group has more than 23,000 employees based in over 85 countries.

Today Tetra Pak is still a family company, 100 % owned by the grandchildren of Ruben Rausing.

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Could you tell us about your adventure with the WCM Programme?

In 1998 I joined Tetra Pak as the Director of the Converting department, which deals with the production of packaging materials.

I was coming from Pirelli, where the top management had introduced the TPM Programme cascading it top-down in the company.

At Tetra Pak, however, only I was familiar with the Programme.

In my initial phase of analysis I decided to visit the Converting Factories around the world to understand the state of the art. The overview I could see during my visits was the one of a **strongly independent and autonomous organization**, with a powerful internal networking system. It also became clear to me that Converting was providing a big contribution to business success, and that this was not always recognized at a corporate level.

The plants were mainly managed from a technical standpoint, as the direction of the plants was in the hands of engineers: the plant directors knew the machines in impressive detail. For example, during my visits the factory managers could readily provide accurate data regarding the speed of their key equipment, as the printing press for example. But when I asked about product quality or the OEE, details were far sketchier.

The **productivity improvements** were **achieved** through **investments** such as the purchase of new, better-performing machines or the administration of hefty modifications to existing machinery. Like in many multinationals before the Internet Era, in Tetra Pak **each factory made measurements independently from the others**; in fact, the headquarters required a series of data that were nominally the same, yet a unified measurement system with standard definitions had still to be created and shared. The data was seldom reprocessed and benchmarking between factories was rare. In addition, the previous CEO had launched the mantra that **every factory should compete with others** in getting orders from the market, creating an *enclave* factory that managed improvement internally, without communicating it, to present the lowest costs as well as an ability to get orders.

Like in many other companies with such a large geographical distribution, the profound independence of plant managers, who also made decisions about the production system, meant that the product was not always geographically uniform: packaging materials produced in India could be slightly different when compared to packaging materials produced in Brazil.

This configuration must be contextualized in the market of those years. In fact, the independence of the factories was the determining factor in the success of Tetra Pak. The company was built by pioneers: real entrepreneurs who arrived to various countries across the globe with samples of the product, opening offices and creating the market themselves. The great entrepreneurship and autonomy of these people **created** the Tetra Pak market: **the paper packaging market**.

What drove the company to question the autonomy of the factories?

In 2000 the market was shifting, the competition was growing, plastic was advancing and change was becoming more necessary. The organization framework, which had been historically functional, needed to open up to the new market landscape and change accordingly.

At that time I had only three collaborators, who were each head of a geographical area where the Converting factories were located. Also my three collaborators, as the other engineers, possessed vast technical knowledge and qualities of independence.

My analysis had pin-pointed a dual-track strategy: the first track consisted of **measuring**, so as to have a picture of the state of the art, identifying the improvement areas, set targets and implementing the relevant action plans. The second track involved the **implementation of the WCM Programme**.

Along with the controller that had just arrived in the Converting department, we started identifying the simple measurements that were easy to connect to the operations, since it was clear to us that any complexity would lead to disuse or misuse.

Once twenty measurements had been identified, we defined each of them and talked to all the plant managers in a number of meetings to align them, incorporate their views, make the necessary corrections, refine the definitions in order to obtain a set of measurements and formulas shared by all, and that everyone was committed to use.

We took the **reporting system** of the measurements from its original quarterly timeframe to a **monthly** one, in spite of some resistance. We then sent a request to all factories asking that for the following month, which was August, they relay, using the agreed definition, the redefined data from the previous year, the budget for the current year and the status of the month and the year to date, and we were pleasantly surprised that all the factories responded on time: we finally achieved a state of the art.

Another factor changing the corporate culture was the following: when we received all the data from the plants, we analyzed it, consolidated it, performed benchmarking between the factories and **we sent the data, the analysis, the consolidation and the benchmarks to all factories**, to the **factory managers** and the **managing directors**. Furthermore, the data was sent to the **headquarters** and to the **CEO**.

Everyone had everyone's data: it was an overturn of the previous paradigm that ignited the **competitiveness between the factories**, feeding a sense of secrecy when it came to data and improvements. It was a **cultural shock**, and quite understandably not everyone embraced the new ideas from day one. This was, after all, a totally new approach to managing the facilities.

The guiding principle of the **new paradigm was still competition: a virtuous model benefiting the group as well as the individual factory**. The consequence of the new approach was that, having benchmarks and data at their disposal, **the factories began copying each other**.

In 2000 the director of a Brazilian factory became the coordinator of the World Class Programme, and together we created a system of internal benchmarks that

was the first one I had encountered that was working properly: all the factories sent to the center their improvements, could build virtual teams, and use a search system so that, if a problem was encountered, they could verify possible solutions already implemented in other factories.

Our motto was "**the more we put in, the more we get out**", which is the basic principle behind the economy of a shared knowledge management. Following this virtuous path we generated the "**Copy with Pride**" reward system: we rewarded factory managers that copied and implemented the greatest number of ideas.

On a visit to a plant, I remember the director's pride in saying: "***We are the most copied establishment and the one that copies the most***".

The system provided twenty KPIs, not only technical, but also managerial, according to the **QCDH (Quality**, **Cost**, **Delivery**, **Human Resources)** model that is still used by large multinational corporations. The breakthrough element was **holding monthly meetings** with the plants together with my collaborators **based on KPIs**, in lieu of discussing only technical matters. During those meetings I was holding coaching sessions in which, starting from an indicator, I was explaining the interconnections with other indicators and with the Operations.

Another revolutionary contribution was **the OEE**, which forced a change of mentality: no longer was the speed of the machine considered an absolute measure, but now it had to be combined with the OEE.

At first it was hard to get this concept across: if a machine goes at 550 m/min with a 10 % OEE and another machine goes at 400 m/min with a 50 % OEE, the machine should be set to 400 m/min.

Up until then, speed had been the mantra, and it had contributed to increase the machines efficiency, but they had not considered that it had to be sustainable for considerable amounts of time, such as on a shift, for example.

From a strategic point of view, why was it important for Tetra Pak to become efficient and adopt the WCM Programme?

There were other paper packaging companies, and the competition with plastic, where some Programmes to reduce costs and save materials were already applied, was more intense than ever. To remain competitive, the company had to make paper factories more efficient, thus reducing the cost of paper production. We then realized that the WCM system could be of help.

To put the proper emphasis on it we introduced WCM as a **new and different system of management**, not just as a system to merely improve the machinery and the factory.

How did you manage the communication of the Programme?

Communication on the Programme was based on the following points:

1. The WCM Programme is not applicable internally without the **support of external experts** with the skills and knowledge to implement it.
2. For the successful implementation it is necessary to refer to an unbiased external observer, as "**We cannot judge ourselves by ourselves**".

3. The **WCM is not a toolbox**, but a **system that entails the engagement of the people, the mentality, and the approach to the work**, and only synergic to this, learning how to use specific tools. This is the most complex change to achieve, since the temptation to reduce the Programme to a box of tools can be very strong.

We were monolithic in the introduction of the Programme. I was speaking of World Class in every presentation and, when I was visiting a factory, I was always auditing their World Class journey. My concerns at one point were that World Class would be seen as an imposition of authority, and then that, without oversight on my part, it could risk collapsing.

At that time I visited a factory of ours: I knew that I had sunk into a difficult situation, and when I saw the plant I thought that it would have been very difficult to change it. One Saturday morning I presented the Programme to the factory director, labeling it as the last chance to recover the plant, and fostering a sense of urgency needed for change.

I returned after a year, and, knowing that the Programme had a great start, I sensed an air of embarrassment that I could not comprehend.

Let me start by saying that to launch the Programme we settled on a logo: a little man inside a gear wheel with the words World Class Manufacturing.

They timidly asked me if they could use a different image, because they had had a discussion with the whole factory to find a logo that represented their Programme, and they had found one.

It was that the moment when I realized that **people were beginning to identify the Programme as their own, that they really believed in it**: I encouraged the initiative with a big applause.

We then decided to make a worldwide tender for the Programme image, in such a way that the process of the initiative appropriation could expanding everywhere.

The general group's objective was to achieve a consistency in approach, but some "differences" were accepted because they stood for creativity and an intelligent development of the method.

The pilot plants of the WCM Programme were in Brazil, in the USA, and Singapore in Asia. USA has had exceptional results: both the factory director and I dedicated hearts and souls to the project. Today he is one of the most respected gurus of World Class, in addition to being promoted to the highest levels.

We also had a few difficult cases. For example, in one factory, the director did not distribute the KPIs on the basis that they were sensitive data.

In Change Management we ironically say, "*If you cannot change the people change the people*": in your opinion, what could be the reasons of defiance?

Excluding the ordinary obstacles that can be removed in the factory life providing people with the proper empowerment and training, still there are people who are defiant in character, and it is very difficult to change them. If you dedicate too much time to them, you may have many people who, having embraced the cause with full

commitment, end up being neglected because of one 'black sheep', with the risk of losing them.

A situation we have found is that factories with a stronger corporate culture are more resistant to change. What do you think about it?

I must say that 90 % of factories responded well. I recognized that the historical Swedish establishment where Tetra Pak was originally founded has certainly suffered in the acceptance of the fact that the place where it all started should change to improve.

I also remember finding a difficult situation in a factory in South America, during which I had to take the factory director aside to inform him that the situation was unacceptable.

I was challenged some of my colleagues, who had always had an encouraging attitude towards the factory. Six months later the factory director thanked me for my realistic stance that had spurred him to change the situation and improve the factory.

What were the factors behind the Programme's success?

A factor of success was **doing a rollout on a voluntary basis**. All the other factories complied because they saw the success realized by the pilot plants

The **commitment of top management** was another crucial factor. For example, after having visited one factory in the U.S., I met the managing director of the Country, and I told him that I knew the system to improve the factory results, but that I could not demonstrate it to him; he had to trust me and let me implement it. He gave me carte blanche, accompanied me in the visits and gave me strong support. The results, as I already said, were outstanding, and in the annual Top Management Conference in which I presented the World Class Manufacturing, he gave me a huge boost by saying that the savings in the USA factory had considerably contributed to the North American results, and showed a slide with my phone number saying, "Give him a call if you would like to try."

Another factor on which we insisted a lot, to steer the change, was the "**You don't know what you don't know**" concept.

The point is that you should manage and lead not only providing the solution to collaborators, you have to coach them, who are closer than you to the problem, to help them find the solution by themselves. This is especially important for managers who have a technical approach to the problems: the managers claiming of providing solutions do not contribute to the development of the employees. The managers' task is instead to give employees the methods to find solutions. The directors of the factories should not necessarily be technical, but they should certainly be managers.

In addition to giving the right answers, we need to be asking the right questions…

Exactly. The plant manager must know the machines and the production process of course, but, above all, he/she must know how to manage and lead people. All these factors have triggered the change: share the know-how, share the results, copy each

other, make sure that people understand how to recognize a problem, analyze and solve it and try to be humble. It may be that the solution is not in our hands, but certainly methods and tools are. If we try to be humble with "**You don't know what you don't know**", and support each other, we will find the solution much more easily and quickly.

Another factor that brought it all together was to organize the **President's Audit**: I was accompanying the CEO of the Company visiting some of the factories. During the visits he was reviewing their WCM initiative: it was impressive seeing how people were eager and proud to show the results they achieved to the president!

How has Tetra Pak's position changed?

We had huge waste reductions and significant reductions in claims right away. The OEE has improved and we have drastically reduced investments without buying new machines. Tetra Pak makes three times the volume that it did ten years ago with the same machines. We have received much praise: many Tetra Pak plants have received awards such as Excellence in Consistent TPM Commitment (JIPM Award), the Special Award for TPM Achievement (JIPM Award) and the TPM Excellence Award (JIPM Award), all of which are issued to excellent companies by the prestigious JIPM (Japanese Institute of Plant Maintenance).

Backed by the successful Converting Department experience, the Programme was applied to the Machines Department. While in Converting it is a matter of high volumes and low mix, on Machines it is a matter of low volume and high product complexity. What was the main difference in the WCM Programme implementation?

While in Packaging there is a clear production process, which goes from raw materials to the finished products, with machines this is not the case: we received the finished modules from the suppliers and we assembled them and performed the final functional testing. For example, in the Machines production environment is not possible to apply the Autonomous Maintenance in the traditional way, which is focused on man/(production) machine relation. We then introduced the TOM, Total Operational Management, the Autonomous Teams. We put together the right people to develop a sense of autonomy in an area where the Autonomous Maintenance principles couldn't be applied. The objective was to let the people working in the teams improving their working methods and procedures, and fostering the benchmark among the teams. The final aim was to get the Autonomous Team Leader participating in regular meetings with the production manager and, knowing in great detail the amount of time necessary to build each different machine model, contributing to define the best possible allocation of the work load to the teams in order to increase the production output.

What recommendations would you give to those who are beginning to implement the WCM?

1. The Programme requires a profound conviction and total participation. You cannot do it solely because it is *in*; you must deeply want it. Being distracted by other priorities will for sure endanger the initiative implementation, since our people, who are looking at us for inspiration and guidance will immediately perceive our change of priority and will lose the interest and the commitment.
2. It is necessary to drench yourself in humility. To believe that "**You don't know what you don't know**". Starting from the assumption that not knowing everything is an opportunity that allows working successfully with other people. If you have four hundred people in a plant, they can widely control it in detail. **What you do not know is what they know**: your job is to help them understanding it and collaborating. Going in this direction allows for implementation of a cultural change, which involves *in primis* the mindset change of the leader of the Programme.
   You must be convinced that this is the way for improvement: you are the master of the improvement process and you have to take responsibility to lead it.
3. Processes often fail in spite of the strategy because of a lack of **commitment from management**. In fact, at the beginning of the Programme the workload increases: it is necessary to make some additional tasks that then override other activities, leading to a return to a better and more productive workload. The program will take root only if management leads and actively participates in it.
4. **Measure** using **simple indicators** that are comprehensible for those who will have to use them.
5. There is a **methodology** and it should be followed very scrupulously, especially in the beginning.
6. **Don't jump to conclusions**, because 99.9 % of the times you will be mistaken.
7. **Transform improvement teams audits into a support tool for improvement**. The audit was initially viewed with fear, as a tool of punishment and judgement. Everyone focused on the numerical score and on the presentations, and the improvement approach logic was lost. I suggested removing the scores and, instead, to make an assessment where to discuss the methodology, check whether the Programme's methods were followed, ask for the reasons behind non-compliances, suggest different approaches: the results were surprising. I advised the auditor to rely on the logical flow of explanations given by the teams, as, for many teams, the auditors did not know their work in detail: in these cases, if the auditor, when listening the explanations noticed a logic gap, he/she should stop the discussion and demand further explanations. This because, usually, under a logical gap in an explanation a problem is hidden. Discussing it in depth with the team would help them in their improvement work.

In this way we went from a pure ***performance review*** to a ***performance and logic review*** in which the main question was 'why' and not 'how much'. People is nowadays requesting the assessments to help solving their impasses and receiving guidance, instead of fearing them.

Authoritarianism and authority: you speak of initially leading the Programme in an authoritarian manner, only to realize that for its sustainability it was necessary to build a climate of trust, making people responsible and reliable, and then veering towards a more authoritative leadership. How was this transition?

At first it was very hard. The Programme took off in two years, and we very early delivered the first positive results. This fast approach requested a very strong management, and I admit that I had not realized, up to a certain point, that people feared me.

The change took place in the company but also in me. Managing this Programme made me a different person, because what I was preaching was something I internalized, and it has become a part of me, all starting from "*You don't know what you don't know*". The Programme not only changes the factories and organizations, but it changes people, including managers who guide the process. If this doesn't happen, neither does the change. I have changed so much that this system has become so natural to me that I apply it in all areas of my life. It is a different mindset: **dive into change while you lead the change**, following logic and not solely instinct.

Part II
The WCOM™ Model

Chapter 6
Intro to WCOM™, Why and What: The Loss Concept

Carlo Baroncelli

6.1 Some Operations Are More Successful Than Others

The cases described in the previous pages reveal that some organisations do better than others.

Success for these organizations is not limited to a few years of growth; these businesses demonstrate long trends of success and are consistently outstanding in their performance.

It may not be immediately clear to the casual observer as to what sets these companies apart, which, superficially, **may resemble other** less successful companies in a number of ways. For example, we can report a real business case in the packaging industry in which a company with a very positive, continuous and traceable track record since 1999, has outperformed many of its competitors over the past 15 years across a number of Key Performance Indicators (KPIs), as shown in the following Fig. 6.1.

What are the key success factors?
There are a number of reasons that all come together to define the formula for its success. This company continuously improves **relationships with its clients**, which in turn **reduces claims, waste and material costs**, while at the same time **striving for ever-increasing productivity and output**. If you were to walk across the production floors of this company, you would also notice something different in the air compared to what you might find in another similar establishment: **people have a more positive attitude**, there is a clear purpose to activity and the setting itself is state-of-the-art, clean and a pleasure to work in.

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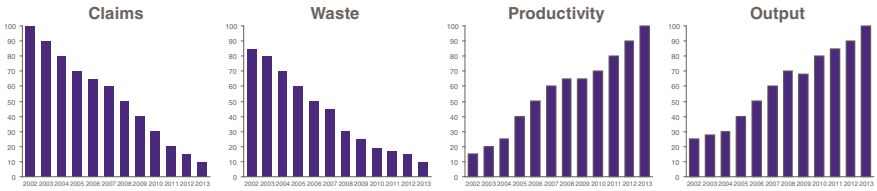

Fig. 6.1 Key Performance Indicators (KPIs) (*Courtesy* EFESO Consulting ©)

These almost intangible assets are not a coincidence, and it is from companies like this packaging business that we can identify key traits that set them apart: **an excellent strategy and world-class execution delivered by a high performance team**.

6.2 Three Common Observable Elements Are Core to Success

A favourable wind only comes to the ship that knows where it is going

Seneca, repeated by Montaigne 1570

The Company has a **clear direction**, an oriented strategy with a clear map of the regatta field, clearly understanding and taking advantage of the wind direction.

The Company has an **excellent execution** of the strategy.

The implementation, the actual daily interpretation of the strategy, is flawless, proactive and effective. Strategy is not considered untouchable and unchangeable; instead it is continuously adjusted to internal and external winds, to the characteristics of the team available, to stakeholders and to the company assets. It is strongly grounded to where the company is rooted and it has its main interactions. It is not an uncritical execution, creativity is put at the service of implementation to find the solutions required.

A great team is the main actor of the strategy execution. Every member is on board, participating in the journey with commitment and strong engagement. Creating such a team requires top engagement abilities in the company leaders: they have to be able to select the right people, empower them by removing the obstacles, make everyone feel accountable, autonomously motivated and interdependent, recognized for his/her working efforts towards the common goal.

A High Performing Team is fundamental in brilliantly developing and interpreting a winning strategy and executing it flawlessly (Fig. 6.2).

In the following chapters we will explore these concepts in their main aspects, starting from a common set of definitions.

Fig. 6.2 The recipe for success (*Courtesy* EFESO Consulting ©)

6.3 Definitions

6.3.1 What Constitutes Operations?

Operations are the set of processes that execute the strategy.

Excellent operations are a key component to the success of any company.

They are a fundamental element across the entire Value Chain ensuring execution of all the interconnected phases of planning, designing, sourcing, making, moving, selling, servicing, and returning.

When mentioning operations the focus is generally on the 'making' phase, the plant and the manufacturing area, but **operations are not just manufacturing**. Even though we will often refer to a "plant" or a "unit", as "the place for Operations", by assuming that all processes are performed in a typical unit, Operations can be as relevant for a Hospital or an Airport, only the activity content of the processes is different.

Much of execution is also in the selling phase which is not typically considered operational. It is not only market strategy but also operational activities, as order-management, customer service. This dramatically impacts on operational performance.

For many years the management literature has been mainly concentrated to strategy. In the last 20 years we have been assisting to the rediscovery of the importance of the execution.

At the end of the day the relationship with the client is in the hands of who is answering the phone. It is him or her who will give the client the proper answer. We call it "*the moment of truth*", the moment when you will know if your strategy has been properly executed or will remain on paper.

Steve Jobs had a creative mind and was obsessed with execution. A concept is not perfect in itself, it is when it becomes a product which reveals its goodness in

reality: then packaging should be perfect, software should be flawless, everybody should have the possibility to buy it upon request, with as little effort as possible.

The **Value Chain Model** is an important tool in describing and understanding what Operations are and how they affect a company as a whole.

The **Value Chain Operations Model** displays the eight steps of the Operations: the chain transforms a business idea into a sellable product (or service) and deploys it to the market.

Along the Chain, the Strategy gets executed and the process creates value for the Company (Fig. 6.3).

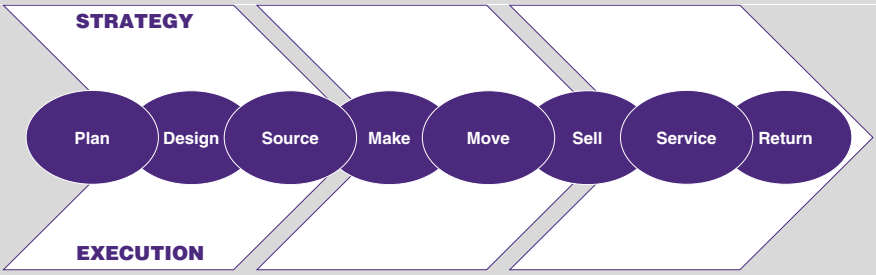

Fig. 6.3 The value chain operations model (*Courtesy* EFESO Consulting ©)

In general, when we talk about Operations we always think of a factory. This is not strange, as the Factory is the place where historically the transformation process happened. But there are several more Operational steps in the chain: taking the sixth process in the models an example, we intuitively understand that a Marketing and Sales Strategy is in place and that its ultimate goal is the sale of a good or service. What might be less intuitive is the full extent of the operational aspects needed to close the sale, including order management, sales forecasting and planning—critical components for a successful "Selling" execution.

As outlined in the introduction to this book, we are particularly interested in exploring and understanding the vital role that Operations play in the success formula of a given company.

6.3.2 What Does It Mean Excellence in Operations?

The Story of the Tailor
I have been going on holiday for ages in a small village in Tuscany, Maremma, an area known for traditional boar hunting and the beauty of landscapes and medieval villages.

In the village lives an old artisan, a tailor who produces craft hunting jackets which are now a well-known fashion product. He works in a modest lab situated in an alley of the medieval village and I discovered he has a huge order list. Among his clients there are celebrities like Mick Jagger and it takes 2 years to have a jacket due to his order pipeline.

He makes a high-quality product with a flawless production system, the client is satisfied and buys again and again, he is perfectly happy with his results, his collaborators are happy and have been with him for 40 years. He pays his taxes and in his village he has quite the reputation. Residents are happy to have him in the community as it brings prestige. He is excellent.

The challenge is to replicate this excellence in the industrial world and make it re-applicable when we have to produce millions of pieces in the series.

Excellent is how your stakeholders see you.

Managing stakeholder perspectives and meeting their needs in the pursuit of excellent results is the basis for defining Excellence.

Our perspectives of Excellence include the four different stakeholder groups (Clients, Employees, Shareholders and Society) and their expectations across a number of key drivers or families of KPIs: **Q**uality, **C**ost, **V**olume, **D**elivery, **I**nnovation, **S**afety, **M**otivation and **E**nvironment (Fig. 6.4).

This perception of excellence for one stakeholder group may or may not be shared by one or more of the others. For example, **clients** will perceive a product or service—and the company responsible for it—as excellent if the **quality** of the product is superior, the **cost** is within their expectations, the **delivery** is simple and convenient, and it is perceived as **innovative**. Conversely, the very same product might be perceived very differently through the societal perspective should there be **environmental** or **safety** concerns such as a production plant polluting a nearby stream, or a local company not being a responsible corporate citizen in supporting the surrounding community.

In common terms, Excellent operations must be excellent from all perspectives: excellence is multidimensional, an organisation cannot be successful from a single stakeholder perspective. In fact, many people describe Excellence as Customer Satisfaction (Quality, Cost, Delivery) only, but this is not enough. An Excellent Operation must be able to **satisfy all Stakeholders**, in order to ensure long term sustainable success. A plant that is focused on Customer Satisfaction only might think they have the right to pollute or use child labour.

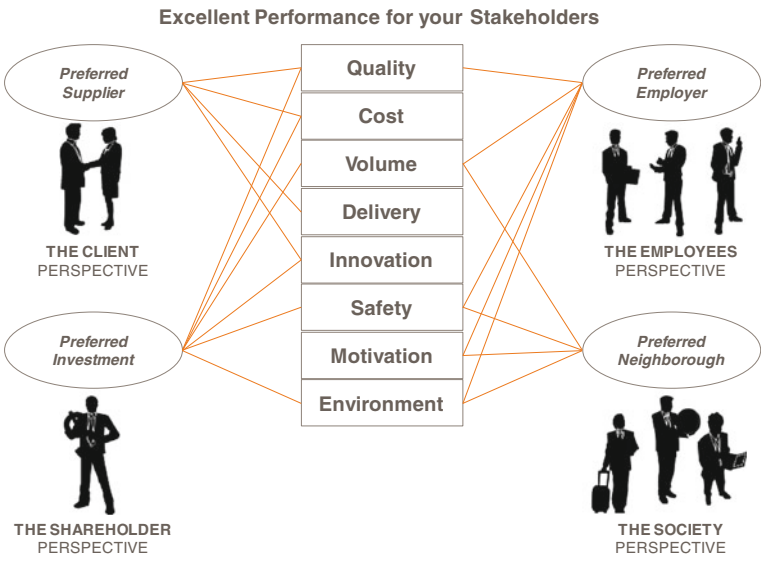

Fig. 6.4 The four stakeholders (*Courtesy* EFESO Consulting ©)

An Excellent Plant is excellent by many perspectives, such as Employee Satisfaction, which ensures long term loyalty from Employees, by ensuring a working environment that is safe, people-friendly and fair, developing people's talents, and giving opportunities to grow. Some of these plants have been awarded by the 'Great Place to Work® Institute'. (Great Place to Work® is a global human resources consulting, research and training firm specializing in organizational trust. The Great Place to Work® Model is built on 25 years of research and data collected through the Trust Index© Employee Survey, which is taken by over 10 million employees annually worldwide).

Further elaborating, this "Excellent Plant" obviously must be a good neighbour to Society by not polluting and not going to Social Plans every now and then.

Eventually this "Excellent Plant" will outperform competition and will ensure sound financial results to their Shareholders.

6.3.3 What Are the Common Traits in Implementation Model?

We started with a question regarding the success of companies, looked at existing models and frameworks detailing the role of operations as well as having addressed the importance of acting upon different Stakeholders perspectives. The next step in understanding the role of World Class Operations Management in making companies successful, is to generate a working definition on what Operational Excellence is.

Amidst the hundreds of models and definitions, many companies and organizations tailor Operational Excellence systems that meet their own specific needs, requirements and culture based on existing standard models, i.e. Lean, Total Productive Maintenance (TPM), Six Sigma.

The Roots of WCOM™

The **Lean** original focus is **Zero Stock**. The concept originated in the Japanese manufacturing industry, it focuses on effectiveness and the reference KPI is Lead Time.

The **Six Sigma** original focus is **Zero Defects** (or Zero Variability). The concept originated in the USA, in the high tech industry (semiconductors). It focuses on advanced statistics and its reference KPI are CP and CPk (process capability explains the acronym).

The **TPM** (Total Productive Maintenance) original focus is **Zero Breakdowns**. The concept originated in the Japanese process industry. It focuses on overall plant reliability and its reference KPI is OEE (Overall Equipment Effectiveness).

However, common elements across these bespoke systems do exist and are readily identifiable.

Operational Excellence approaches in fact share three main common building blocks: One Improvement Philosophy, One Language and One Roadmap.

One Improvement Philosophy The Operational Excellence journey is the continuous and consistent quest to eliminate losses in all processes through the active participation of all the organization's employees.

The most basic, crucial element that many large organizations' OPEX (Operational Excellence) models share at their core is the **quest for zero losses** and the desired Profit and Loss improvements (P&L) from the successful completion of this quest.

One Language Many big groups have a history of mergers and acquisitions resulting in different approaches to operations, different jargon, KPIs, paradigms, etc. This leads to the impossibility of sharing experiences and facilitating a common growth.

As companies fine-tune and grow in their quest for zero losses, additional common elements include creating a common language, methodology and culture.

Common language and culture are fundamental.

For example, if a multinational company is not able to generate a common language and culture, it will not be able to act as "one company", losing the opportunity to take advantage of being a multinational.

Each plant will behave like a single unit rather than as a community, not sharing best practices. There will be no advantage in belonging to a Group. Every plant will compete with local competitors sustaining the cost of a multinational, not taking advantage themselves of the competitive capability of the multinational. But if the

plants share, then they will be able to "go down" the Experience Curve, taking a strategic advantage on costs and volumes.

The Experience Curve theory shows that production costs go down as experience increases. The company that produces more pieces becomes the low cost producer: that is the motivation of how the bigger becomes the biggest and has more sustainable costs.

The Copy with Pride Story
A large packaging group invented the "copy with pride" award for the Plant Managers that were great in sharing best practices (One Point Lessons), to fight the "not invented here syndrome". One day, I met a Plant manager who was very proud of being awarded as the "best copier" and the "most copied" in the Group.

In common terms, different companies develop different OPEX systems to suit their own needs and natures. However, a common theme is OPEX's role as a lever for strategy implementation; a common language methodology culture; and an accelerator for improvement dynamics in the pursuit of the quest for Zero Losses.

One Roadmap A roadmap is the **one best way**, a univocal road to excellence, shared throughout the entire company. A big company has to follow a single model to achieve excellence; this is to avoid "religious wars" in order to concentrate energy on achieving results.

The road map of a global Corporate should comply with two fundamental principles:

- To implement a reasonable standardised structure including clear and comparable milestones to guide the excellence transformation in all the units
- To customise the road map to include all the diversities in terms of culture and change readiness, strategic issues, size, etc.

6.3.4 The Starting and Crucial Point Is the Quest for Zero Losses: What Is a Loss?

The capability to transform all the energy in work and not in entropy has **an ethical base which is the root of the war on losses**. An advanced society must be able to exploit resources in a most intelligent way, in the global respect of the environment.

A **loss** is the difference between **the total resources we use in a transformation process and the resources theoretically and strictly needed for creating value** for the customer (or company). The difference between the two represents the **resources that are wasted in the process**. This is a quantifiable unit that can be economically measured and represents an opportunity.

Zero-loss level is a philosophical approach in Operations Management. It means we cannot just target "benchmarks" or "best in class" or "Standards" to set targets, but we have to focus on the **theoretical physical limit**.

In the cable industry in the past, all opportunities for improvement on material loss were checked against a "best in class level" as well as gaps between actual and standard. Only after the adoption of TPM did the Industry start to value material losses versus theoretical limits, calling such a method "zero level analysis".

The same happened with OEE, in fact most industries were benchmarking their "line performance" indicators versus "the best achievable speed" or the Constructor's speed standards. Only after the wide adoption of OEE measurements, the benchmark has been set to "the theoretical speed" as the maximum physical speed limit achievable by the current technology.

To identify a loss means to identify an opportunity for improvement, to find a possibility to improve competitiveness.

The worst situation you can face in front of an operations manager is when the plant is losing money and opportunities to improve are not visible as the plant is properly performing.

If we are capable of detecting the losses the road to prosperity is ensured.

Illuminated managers know that detecting losses is fundamental.

We use cost as an equalizer to have commensurable measurements, but the aim is not limited just to the cost reduction. We use cost to evaluate material losses as well as manpower or capital losses. In this way we give a commensurable definition. When we measure losses we identify the part of **cost that creates value** for the client and that part of **cost which does not create value** for the client.

We can divide the costs which do not create value into **recoverable costs** vs **non-attackable costs** with current technologies.

For example, the manufacturing of a chemical product with current technology, has a theoretical yield of 95 % in converting the raw materials into the finished product. If the total performance of the process is 87 %, we can see that there is an overall loss of 13 %, of which 8 % can be attacked and recovered, while the remaining 5 % can not be attacked with the existing technology.

Example of Costs and Losses in a Paper Production Line.
If we look at a paper production line, there are a number of elements that interact during production such as fibre, manpower, machinery, chemicals and energy.

Some of these materials are invariably wasted for a number of reasons. For instance, one could be the very end of a paper roll that is unusable due to technical limitations, another could be the minimum technical material wasted in a changeover. This waste determines a transformation cost that cannot be attacked.

We then have some materials that can be recovered, for example by improving on the machinery in use and the production process itself, or a reduction of stops and delays due to better maintenance or improved process. This waste represents a transformation cost that can be attacked and is an opportunity (Fig. 6.5).

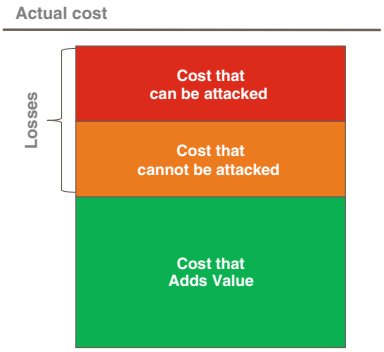

Fig. 6.5 The loss composition (*Courtesy* EFESO Consulting ©)

The paper line is a representative example of what is commonly found in production lines across industries: 40–50 % of transformation costs are losses, but about the same percentage of those can be recovered and transformed into value.

This means that 50 % of the resources used in the production process are wasted and are considered losses. Finding these losses is good news as they represent opportunities that can be transformed into value for the company.

Material losses (waste) that can be transformed from a loss into added value represent a significant opportunity for many companies and may be generated in a number of different circumstances.

There are **different kinds of material waste** that can affect products: **Process Incidents, Quality Checks, Testing** and **Process Operations** all take place on the production line and are readily identifiable as such, as described by Fig. 6.6.

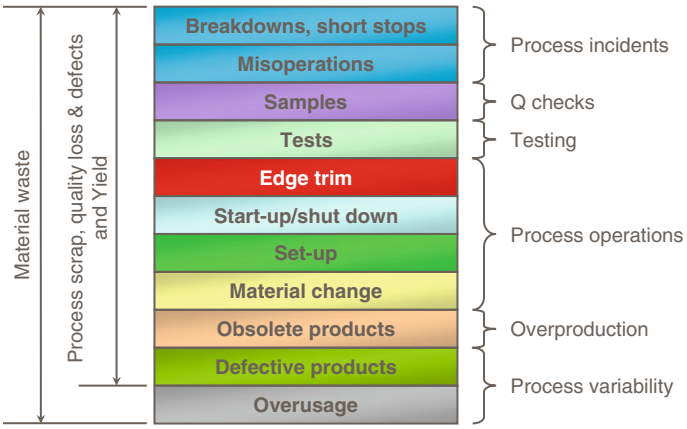

Fig. 6.6 The waste composition (*Courtesy* EFESO Consulting ©)

Waste created by **Overproduction** is not immediately visible at the factory level. In fact, it becomes waste after years of residing unsold in a warehouse when it becomes obsolete and then needs to be scrapped and disposed of.

Process Variability waste, particularly Over-usage, is a very subtle kind of loss that often is not visible but can be quite problematic. Over-usage means **selling a product that has a higher content of materials then what was strictly needed in the specifications**; for example, too much beer put in a bottle to compensate for the machine not being precise enough, and thus erring on the side of over-calibrating the machinery. Over-usage is a kind of waste found across all industries, and although seemingly a boon to the end consumer, it can actually generate inconveniences or dangers. For example a heavier tire might result in poorer manoeuvrability of the car, and making seats on an airplane heavier than the requirements might constitute a loss, increasing the Life Cycle Cost of the Plane.

Material losses are not the only kind of loss. **Machine, Manpower** and **Time** losses also need to be looked at to address the costs that can be attacked and transformed into value.

Machine losses are typically measured by **Overall Equipment Effectiveness (OEE)**, now a global standard introduced and defined by the Japan Institute of Plant maintenance (JIPM) that quantifies how well a manufacturing unit performs compared to its designed capacity during the periods when it is scheduled to operate.

The example of the operator's eight-hour shift

A machine operator, begins work at 6 a.m., but it takes almost an hour to ramp-up to full production capacity, at which point, however, due to risks associated with running at maximum speed, such as jams or short stops, it does not operate at its fullest. At 8 a.m. and 8.40 a.m., the machine suffers two short stops, halting production completely for 10 min each time. Around 9.30 a.m. due to production of non-conformities—defects—production does not perform again as it does during a significant breakdown around 10.40 a.m. which takes the machine offline for almost an hour. Finally, at around 12.30 p.m. there is a product changeover which requires additional set-up and adjustment time during which nothing is being produced. The shift ends at 2.00 p.m. and he goes home. He worked hard, but…

Total productivity should have 8 hours multiplied by total production of the machine. But the value added is just the green area, the rest is waste. You can't blame the operator: he has worked throughout the day but the actual output is 50 % of the desired output.

In our shift example, total productivity should have been 8 hours multiplied by the total production capacity of the machine. But because of all the issues we have seen, only the light green area is creating value, the rest being wasted resources. The operator is not to blame as he has worked throughout the day and even brought the machine back online several times, but still production results in only 50 % of the desired output.

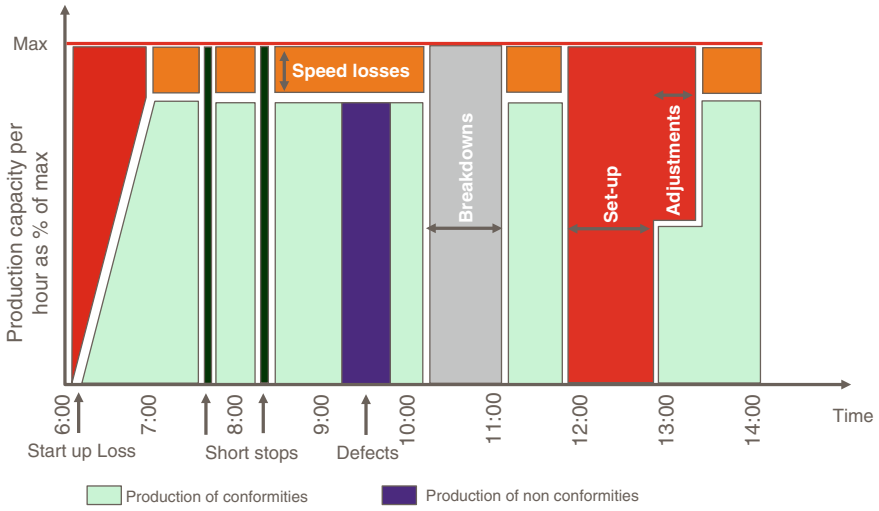

Fig. 6.7 The six big losses in a typical eight-hour shift

In the production line example, machine losses account for 50 % of the desired production output. Although 'the operator shift' is a fictional scenario, the percentage of waste is not. It is common for production lines across most industry to have between 30 and 60 % of waste of their total resources as illustrated in Fig. 6.7.

While working in several plants around the world, I have noticed that bottling lines in many companies run at about 50–70 % OEE maximum, while packaging lines in Pharma often run at about 30–50 %.

In the Process Industry (like Chemical plants) the real OEE is often no higher than 80 %: some show higher numbers, but it is always necessary to check if the speed is really the maximum theoretical speed, or if there are hidden opportunities for improvement.

And in the process industry, which has expensive fixed capital assets, plus or minus 3 % can make the difference between a winner and a loser.

Manpower losses In general the point is always the intelligence in the use of the resources. The same is true for Manpower losses, the organisational losses: the worker does not create added value.

In manufacturing non value adding activities account for more than 70 % of work content. Typical examples of significant problems are: long searching time, non-ergonomic positions and control activities, use of inappropriate tools for the specific operation, lack of order in the workplace and lack of organisation in the parallel activities. All these situations increase the operator time dedicated to the transformation of the product.

Time losses Losses along the Supply Chain usually represent the 99 % of total lead times.

In a research that conducted at Politecnico di Milano for Medio Credito Lombardo by prof. Turco and Bartezzaghi with the support of Carlo Baroncelli (*Indagini sull'applicabilità delle tecniche di gestione della produzione Just in Time alle piccole medie imprese manifatturiere, Mediocredito Lombardo, 1990*), it was detected that out of 46 mechanical plants, only 1–5 % of the time spent by a part in a plant was adding value, whereas the rest was just waiting time. The flow index (Lead Time divided by Cycle Time) describes this fact very well. However, if we measure the real Value Adding time in the cycle time, we see that most of it is often spent in feeding, positioning, moving, unloading, leaving the real Value Added activities among very few process steps (drilling, boring. etc.). In fact, **Value Added occurs only when a process changes the physical properties or dimensions of a part**.

Operation losses are everywhere in the value chain and widely impact company performance.

Enlarging our scope to the full supply chain, we see that losses are everywhere, **not just in manufacturing**, where one traditionally would expect them. Losses are inter-functional and pervasive across the organisation.

They can be strictly connected to the main components of ROCE (Return on Capital Employed) significantly affecting company performance. Losses in **turnover**—such as claims leading to discounts or lost orders—can directly affect a company's top line. **Cost losses** are also very often significant. For example, material overspend caused by technical over specifications often drives purchasing departments to buy materials that are needlessly over expensive.

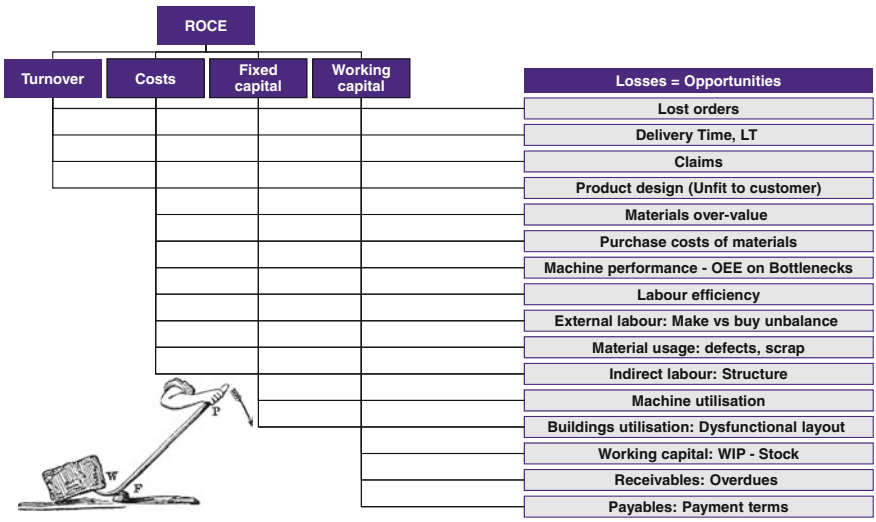

Fig. 6.8 Losses and profitability (*Courtesy* EFESO Consulting ©)

Another kind of loss that directly affects a company's finances are those related to **Fixed and Working Capital which include those caused by overdue receivables, due to** administration errors that lead to customers not paying, or doing so with considerable delay, in turn causing problems to cash flow and other systems.

Capital employed can also be a loss: such as the underutilisation of machines and buildings, or circulating capital financing credits with receivables beyond their due date. For example, in an analysis we made first in an international paper group and then in an international cable manufacturer, we saw that most of the credits were overdue. The causes were banal. Most of the issues were mistakes in packaging, invoicing, and late deliveries. In conclusion, the quest for zero losses is transversal to the organisation, and can be a long-term sustainable road for improving the ROCE as we can see in Fig. 6.8.

Chapter 7
Strategy Deployment

Giorgio Merli and Gaia Zampaglione

Before entering into the Loss Intelligence chapter, it is necessary to analyse the bigger picture, understanding how to translate the company strategy into a strategy for operations and what is the management process which is in charge of the translation of the strategy into concrete actions.

The alignment between the priorities in terms of losses to attack and the company priorities can be made using Giorgio Merli's reference model which demonstrates that when we attack losses, we need to align our priorities to the company's priorities (Managing by Priority, Giorgio Merli, John Wiley and Sons, 1996, Chicester, UK; Surpetere, Giorgio Merli, Guerini e Associati, 2010, Milano, Italy; I Nuovi Paradigmi del Management", Giorgio Merli, Il Sole24Ore, 1999, Milano, Italy).

7.1 Strategy Deployment

The strategy deployment process starts from the company's bigger purpose, **why**, which is described in the Vision and Mission and then translated into an executable strategy. In the framework shown in Fig. 7.1, the strategy is formulated in a set of strategic objectives and goals, then integrated in a plan. The plan describes **where** the company is going to act and the targets to achieve, and it needs to embody also the **what**, coming from the business perspective (stakeholders needs, market perspective, anticipation of future customer needs, etc.), and the **how**, coming from the internal capabilities perspective (organisation, company culture, competencies, professional skills, etc.).

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Fig. 7.1 Elements of the strategy process from vision to targets (*Courtesy* EFESO Consulting ©)

The **integrated planning** is the starting point of the strategy deployment process, as it is a fully integrated picture including all the elements described above. The integrated planning is also a tool that clarifies which are the key management priorities, or **breakthrough objectives**. These can be identified as highly challenging goals, especially from the time perspective in terms of speed. They can be considered the top company priorities, often generated by contingency and not planned in advance.

For example, the need of a drastic increase in production capacity to meet a new market opportunity, a possible delivery delay associated with high penalties, or a need for drastic reduction in working capital.

According to the type of objective, a different **management system** needs to be put in place to achieve it. A management system is the framework describing the escalation process, the procedures and the responsibilities assigned to ensure that an organisation can fulfill all the necessary activities that are required day by day, to achieve the macro-objectives included in the integrated transformation plan.

The choice of the management system depends on the importance of the objectives in relation to the achievement of the company strategy and to the urgency in achieving them. Depicted in Fig. 7.2 are the three management systems in relation to the two axes.

As mentioned, the priority objectives (high urgency and high importance) will be tackled with a specific system called breakthrough management.

The goals found in the strategy deployment that require performance improvement in operations can be pursued with effectiveness and efficiency using the methods and capacity of WCOM™. This is indicated as “Loss intelligence” (High importance, Low urgency) in Fig. 7.3. WCOM™ itself can be considered as a medium to long-term strategy, as WCOM™ is considered a strategic competitive edge.

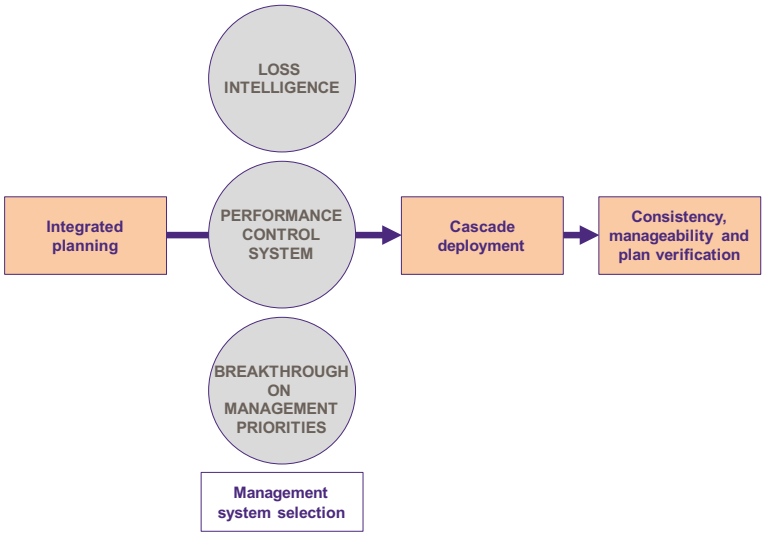

Fig. 7.2 The roadmap for strategy deployment (*Courtesy* EFESO Consulting ©)

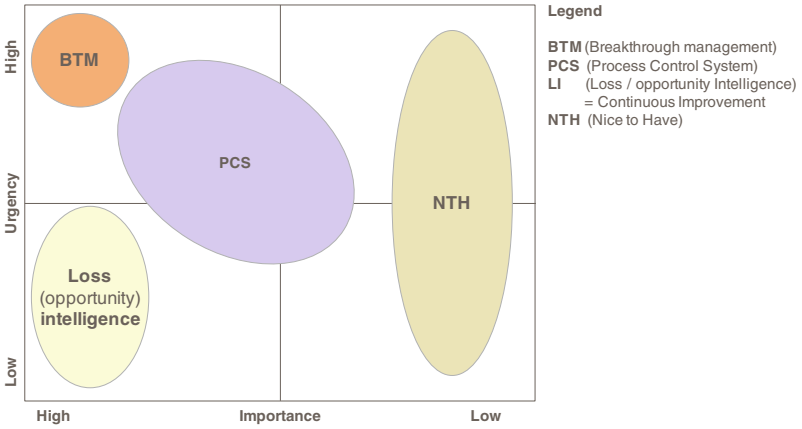

Fig. 7.3 Management systems according to urgency and importance of the required change (*Courtesy* EFESO Consulting ©)

One key aspect of the strategic objective definition is that it has multiple dimensions; it is not sufficient to define the indicator and the target to achieve in the time span, but it is also necessary to describe what are the guidelines and macro directives to achieve it, the constraints and the organisational approach to be taken. Only in this way will it be possible to build credibility and ownership in the person or team responsible for achieving it.

The Performance Control System (PCS) is the process that includes the continuous monitoring of Key Performance Indicators, from yearly to monthly to daily control through a KPI tree that encompasses the main company performance at all levels of the organisation. This system cannot be independent from the "business as usual", and is a fundamental part of the WCOM™ model.

Focusing on the process described in Fig. 7.3, in each step of the strategy deployment process there are tools that can ensure the consistency and effectiveness of choices. The integrated transformation plan is the tool to visualise the combination of the business objectives for the following years and the choice in terms of actions to achieve them. See the example in Fig. 7.4.

The actions can belong to the domain of **capability improvement**, of already **planned initiatives** and of the **management priorities** described.

For the first two domains, the relationship between the elements in each column is of cause effect in relation to the business objectives, while the achievement of priority objectives can include contingency elements.

In the cascade deployment phase, the priority objectives are deployed step by step into a coherent tree diagram considering among all the possible leverages, the ones that can be implemented in the business and are coherent with the overall guidelines. The objectives need to be transformed and translated according to the level of the organization that is responsible for achieving them. It is not sufficient to keep the same indicator deploying it at smaller levels in the "cascade" phase: for example, the target of increasing market share for the whole business is something owned at executive level, that can be translated in a reduced price on the market for the business group director and a target to decrease material waste for the plant manager.

The iteration of this process allows a **move from the breakthrough management objective to the action/project level**, making the target reachable with a set of coherent actions.

The **X-matrix** (see Fig. 7.5) is a possible tool that can help to verify the coherence and consistency of the actions and projects overall, not only at deployment level but also between the what and the how, to evaluate if the identified actions and project are manageable with the resources and capabilities identified.

BUSINESS OBJECTIVES (WHAT)					CAPABILITY OBJECTIVES (HOW)		SPECIAL MANAGEMENT OBJECTIVES	MAIN PLANNED ACTIVITIES (HOW)
YEARS	ECON - FIN OBJECTIVES	STRAT. OBJECTIVES	YEAR'S SPECIFIC OBJECTIVES	SOURCE	CULT /ORG TECH. OBJECTIVES	WHERE	PRIORITIES / BREAKTHROUGHS	INITIATIVES / ACTIONS
YEAR 1	MFG VOLUME: 95300PCS	INDUSTRIAL COST: -7%	CLIP: 95%	GRID	INCREASE INFO TO CLIENTS	BA A		OUT SOURCING ASSEMBLING ACTIVITIES
	SALES 470 MLN	ITALIAN MKT PENETRATION: 5%	LEAD TIME: 10 DAYS	BENCH	SERVICE/CUSTOMER CARE IMPROVEMENT	BA Y		ORGANISATION IMPROVEMENT
	INDUSTRIAL MARGIN: 44%	FOREIGN MARKETS:			COMAKERSHIP WITH 50% OF SUPPLIERS	BA Z	I	DAILY SCHEDULING
	COMMERCIAL MARGIN: 32,7%	FRANCE: BUDGET + 150 PCS	MAN POWER COST REDUCTION -7%	BENCH		BA C		50% OF DEDICATE SHIPMENT
	OPERATIONAL MARGIN: 15%	BELGIUM: BUDGET + 50 PCS						EVALUATING 70% OF SUPPLIERS
	PBT:-2,7% MLN	EAST: BUDGET + 300 PCS			DESIGN BY PLATFORM	BA F		FE/QFD ADOPTION
	CASH FLOW: 7%	FAR EAST: BUDGET +200 PCS			DELAYERING (3 LEVELS)	BA G		TECHNICAL GROUPS DEFINITION
					OH REDUCTION	BA N		CUSTOMER COMPLAINTS MONITORING
								DELIVERY RELIABILITY IMPROVEMENT
YEAR 2	MFG VOLUME: 100000PCS	INDUSTRIAL COST: -3%	[illegible]: 95,5%	GRID	SERVICE / CUSTOMER CARE IMPROVEMENT	BENCH / STRAP		EVALUATE 70% OF SUPPLIERS
	SALES: 490 MLN	ITALIAN MKT PENETRATION: 7%	LEAD TIME: 9,5 DAYS	BENCH	COMAKERSHIP WITH 70% OF SUPPLIERS	GRID	LEAD TIME: 9,6 DAYS	TECHNICAL TRAINING TO EUROPEAN SALERS
	INDUSTRIAL MARGIN: 46%	FOREIGN MARKETS:	MAN POWER COST REDUCTION -5%	BENCH	TTM REDUCTION (-30%)	BA P		FUSION WITH FRANCH FIRM
	COMMERCIAL MARGIN: 33%	FRANCE: YEAR 1 + 400 PCS			OH REDUCTION -10%	BA L		CUSTOMER SATISFACTION SURVEY
	OPERATIONAL MARGIN: 15,3%	BELGIUM: YEAR 1 + 200 PCS			SET NEW ORGANISATION	BA C		SEARCH FOR JOINT VENTURE IN FAR EAST MARKET
	PBT: -1,5% MLN	EAST: YEAR 1 + 1000 PCS			DELIVERY RELIABILITY INDEX +10%	BA J		
	CASH FLOW: 6%	5 NEW PRODUCTS LAUNCH						

Fig. 7.4 Fully integrated transformation plan (*Courtesy* EFESO Consulting ©)

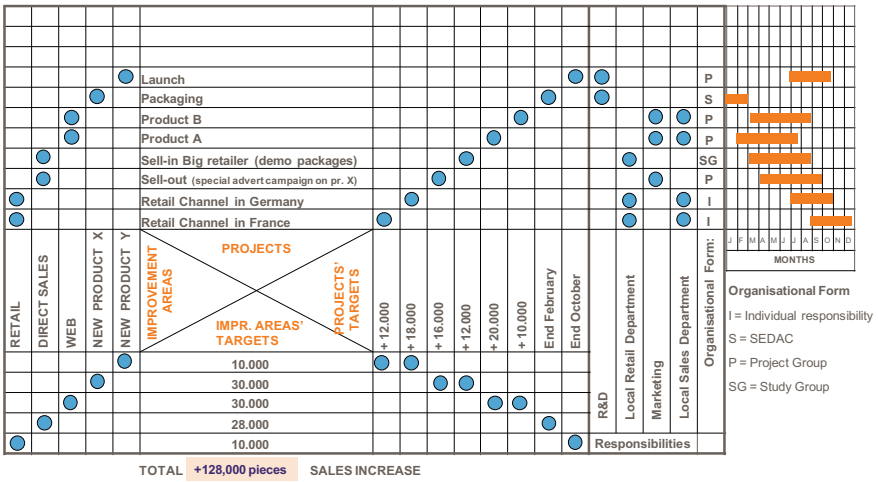

Fig. 7.5 Example of X-matrix (*Courtesy* EFESO Consulting ©)

7.2 Breakthrough Management: The System to Put in Place to Mobilize the Organisation

The strategy deployment process gives a holistic view on the what and the how the organization needs to do to achieve the strategic objectives at short and long term. Moreover, this entrepreneurial process ensures one common and shared visualization of the company vision and how to get there.

How to ensure that the strategy deployment is then followed by an effective execution? There is a need to put in place **a system to manage priorities** that guarantees that:

- management is taking place in real time to allow rapid steering and decision making
- measurements are focused on what is important
- there is immediate visibility in case there is a decline or an improvement
- the effect of the actions taken is shown and clear

One system that can pursue these objectives and also allow the involvement of all employees is the utilization of the **SEDAC**, **Structure for Enhancing Daily Activity with Creativity**. (The inventor of SEDAC is Ryuji Fukuda, 1997, Building Organizational Fitness: Management Methodology for Transformation and Strategic Advantage, Productivity Press). The SEDAC diagrams allow running of the Plan–Do–Check–Act (PDCA) phases simultaneously on different process activities at different level to reach the target. The SEDAC diagrams are built with a main target set in line with the output of the strategy deployment, that can be achieved if the components of it are also going in the right direction. For example,

one master SEDAC can be focused on the “Monthly Total production cost”, that will be reached if the productivity, energy and material losses are also reaching the target. For each item mentioned above, it is necessary to set the indicator that will be monitored and define how it is measured, the monitoring interval and frequency of updating and the target level.

Each SEDAC is assigned to a specific leader who is the owner of the result. Every day (or according to the monitoring interval), in the occurrence of a deviation, every person working in the area can highlight the deviation, the problem occurred and its cause using the “cause cards”. After the problem is described, the team can propose actions to eradicate the root cause or make proposals for improvement oriented to the specific objective using the “idea cards”. The ideas are then selected, applied and evaluated (“idea test” card) and if the output is positive, they become the new standard for the department involved. This closes the PDCA cycle on a specific deviation and prevents its reoccurence. In this reporting that is happening bottom-up, the people can ask for help and support as soon as difficulties have been identified, if there are problems in solving them locally or in case of delays in the realisation of the countermeasure (Fig. 7.6).

The utilisation of this system ensures that the target setting is happening top down and that the control loop is going bottom-up: the escalation process makes sure that the management can focus on the key bottlenecks.

Periodically, also at top level, the responsible of a specific area will control the measurement and in case of problems (for example an unexpected result, bad performance or an unreached target) can identify which branch of the fishbone represents it. After this, the manager can go down cascading the problem until the

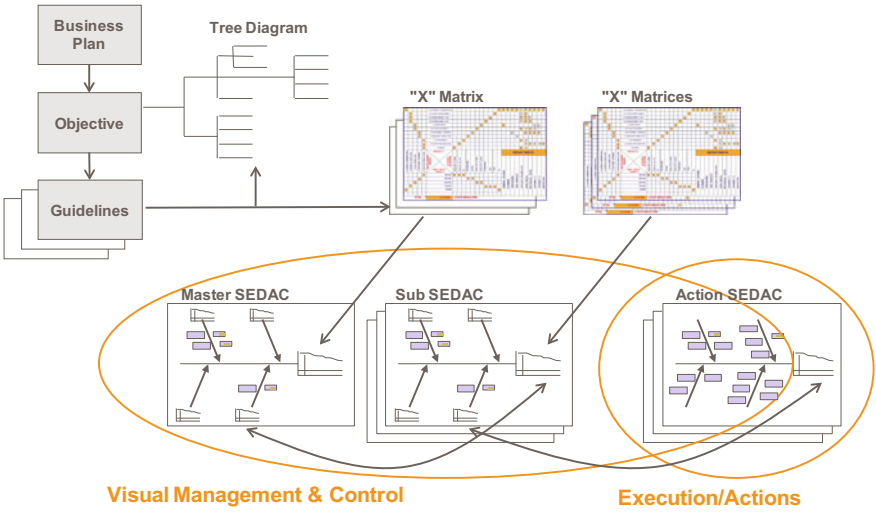

Fig. 7.6 How SEDAC supports the execution and steering of the business plan (*Courtesy* EFESO Consulting ©)

local level is reached: it is at this level that the manager can focus to remove the bottleneck, concentrating there the needed resources.

The SEDAC is a very visual system where priorities are managed day by day and the management can control and monitor the measurements continuously, acting on the key bottlenecks as they arise. In this way, the whole organisation is committed and engaged in achieving the breakthrough objectives since the system is providing all the necessary information to take prompt and real-time decisions. It avoids the need for dedicated reporting, because all the information is available and easy to visualise. The high visibility is also encouraging support of all team members implicated in contributing to progress towards the company goals.

Chapter 8
The Three Phases of WCOM™

Carlo Baroncelli

Therefore I say; know the enemy and know yourself;
in a hundred battles you will never be in peril.
When you are ignorant of the enemy but know yourself, your chances of winning or losing are equal.
If ignorant of both your enemy and of yourself, you are certain in every battle to be in peril.

Sun Tzu, The Art of War Sun Tzu, (Boulder, Westview 1994)

How should you conduct the quest for zero losses? Given that we identified **loss** as the central enemy in the war, it is necessary to devise a management system to drive this war.

A management system is typically based on three main elements (Fig. 8.1):

1. Getting to know your enemy and deploy your army accordingly
2. Fighting your war
3. Consolidating your gains

The WCOM™ Model envisions three basic phases accordingly:

- LOSS INTELLIGENCE (getting and deploying)
- LOSS ERADICATION (fighting)
- LOSS PREVENTION (consolidating).

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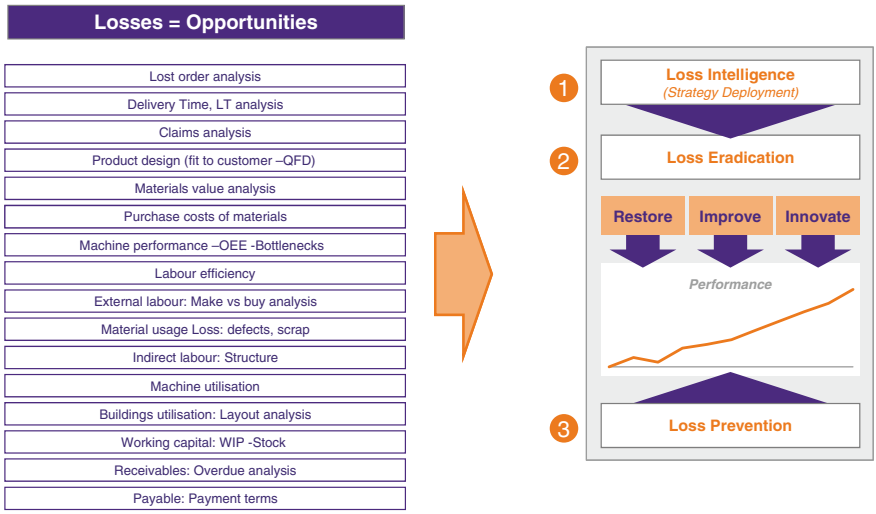


Fig. 8.1 The three phases of the war on losses. *Courtesy* EFESO Consulting ©

8.1 Loss Intelligence

Once we have obtained the strategic alignment, detailed in the previous chapter, we need to develop the Loss Intelligence phase.

Imagine the company strategy established quality targets as priority number one. How do we translate such wide targets into something manageable, attackable and obtainable by engaging all company resources in this war on loss? The answer lies in taking a big problem and slicing it into smaller, more affordable targets at loss level. We can then distribute the resource efforts among the organization.

Let's give an example. In company XY the biggest quality problem involves quality claims.

You can see the process in Fig. 8.2.

The first step is prioritizing claims by level of importance through a Pareto analysis (e.g. percentage of type of claims on the total amount). Since we found the reliability-related claims to be the most relevant, we have to deploy one level further to understand exactly which reliability-related problems are the most influential.

In this case, we can attribute this role to a heating system malfunction. The next level of deployment entails understanding which kind of malfunction is the most significant, and, in this case, it would be temperature. Now, which modes of temperature malfunctions are the most important? In the example, the thermostat does not maintain the set temperature.

Why? Possible instigators of the failure could be a circuit interruption or an unsoldered bimetallic strip. At this stage we are already in the LOSS ERADICATION PHASE and we look to the 5-"why" analysis to figure out the root cause and then the proper countermeasure for eliminate the root causes and the action plan.

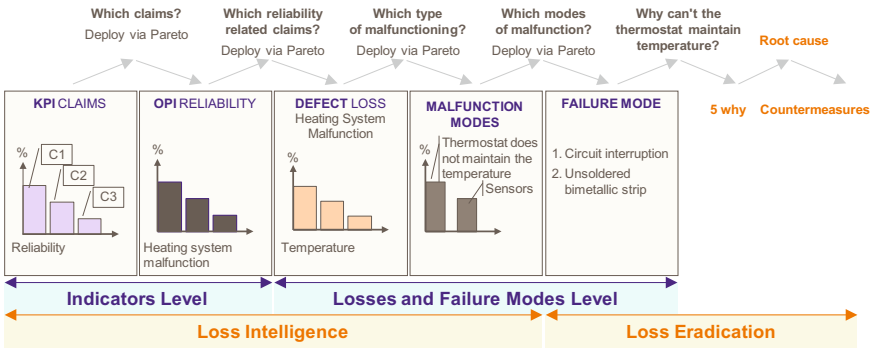


Fig. 8.2 Process example of a customer quality deployment. *Courtesy* EFESO Consulting ©

The global deployment process, which is the sum of all deployments (from KPIs to losses), is one of the processes **that creates more awareness about the capabilities required to recognize** the most relevant company **problems**.

Do we need a Tree or a Matrix? A combination To complete the deployment concept we need to know that the process expands beyond the tree structure of the claim example. It is actually a more complex process than what a simple tree would lead us to believe. In fact, if we take the cost driver we realize that using only a tree to deploy costs might take us nowhere. Meanwhile, losses are in reality linked to cost in the matrix structure.

The first time I realized this fact, I was working for a Cable Manufacturer. The Controller, Alejandro, a smart Argentinian guy, and me took the cost tree, made a big brown paper and then with several Post-its tried to dig down, splitting the tree into fine details: no good ideas came up to our minds. Let's take for instance Maintenance Costs.

We tried to make the Cost Deployment by splitting it by Pareto of Materials-Labor-Third Parties, then by Department, by Shift, by Line, but…still no good ideas on **how** to reduce costs. Only when we **crossed** the costs with the **losses, we found some good ideas!**

Crossing the Maintenance **Costs** with the **Losses** (repetitive Breakdowns, Short Stops, Accelerated Deterioration, etc.) we found good **ideas on "What and How" to attack first**. We repeated the same effort for Quality Costs, Labor Costs, Stocks, etc. and we got a complete Cost Deployment as illustrated in Fig. 8.3.

We can realize that a loss is linked to different kinds of cost drivers. For instance, the set up loss might influence material costs, labor costs, machine costs, consumable costs. We can conclude that the top part of the deployment process can be represented as a tree of many Pareto analysis specifics, but when we arrive down to the loss level, **losses are orthogonal to the KPIs**. In other words, they are transversal to the deployment tree.

In this way we know which loss to attack first in order to reduce which cost. We can even predict the effects on cost reduction by attacking one or more losses. On the other side, we can even apply the Target Costing technique to define to which extent we need to attack a certain loss.

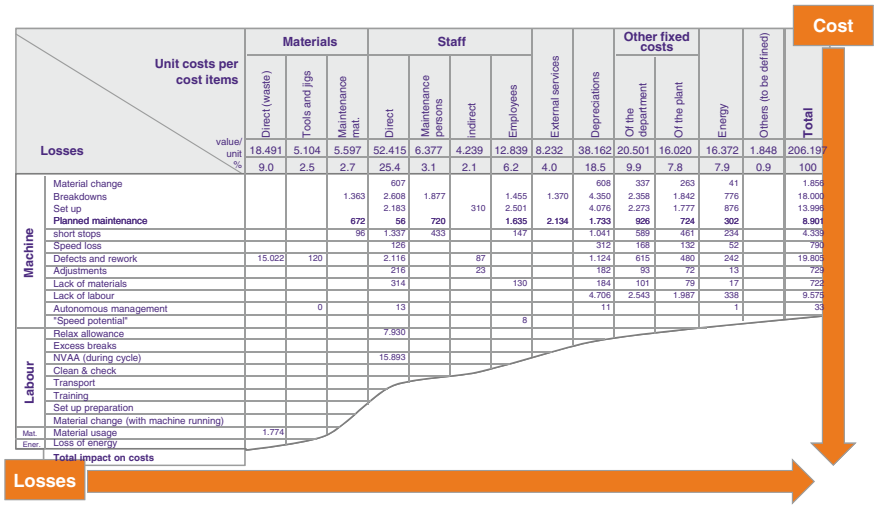


Fig. 8.3 The Loss and Cost Matrix example. *Courtesy* EFESO Consulting ©

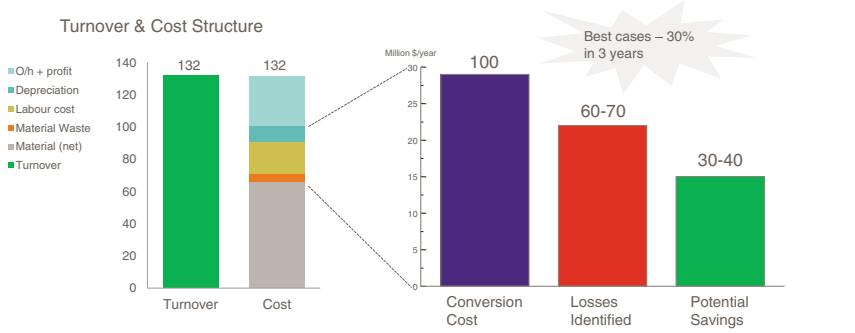


Fig. 8.4 Losses in converting cost. *Courtesy* EFESO Consulting ©

On an internal research on cost deployments we made in 20 factories some years ago, 60 % of the conversion cost was loss, and some 50 % of it was recoverable. Figure 8.4 represents a real case in manufacturing.

Closing the loop in the deployment processes Once we have deployed a big gap (e.g. a 20 % cost reduction) into small and affordable actions, we have the problem of ensuring that the sum of the actions will fill the gap of the overarching global target. The method (as shown in Fig. 8.5) that ensures this is called **Closed Loop Deployment**.

Using the waterfall charts we are able to understand if all the gaps have been filled. As a final wrap-up let's imagine the case of a company whose board defines targets in terms of EBIT and return on net assets. As the business defines

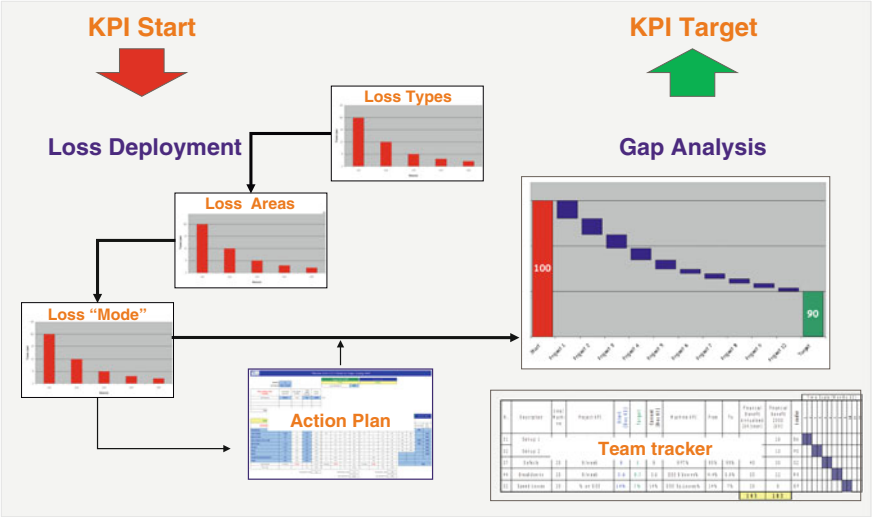


Fig. 8.5 A "Closed Loop Deployment" for each KPI. *Courtesy* EFESO Consulting ©

targets in terms of market shares, prices and target costs, the operations leaders have to deploy these targets into QCVDISME targets, molding QCVDISME for each KPI to frame the targets into actions and, thereby, closing the loop.

In the case of Fig. 8.6 you will notice that the volume targets can be reached through 'bottleneck OEE' improvement. In making our way through the illustration we can see that the set up time is the most relevant OEE loss. Thus, we have to define a set up time target that is challenging enough to reach the expected volume throughput.

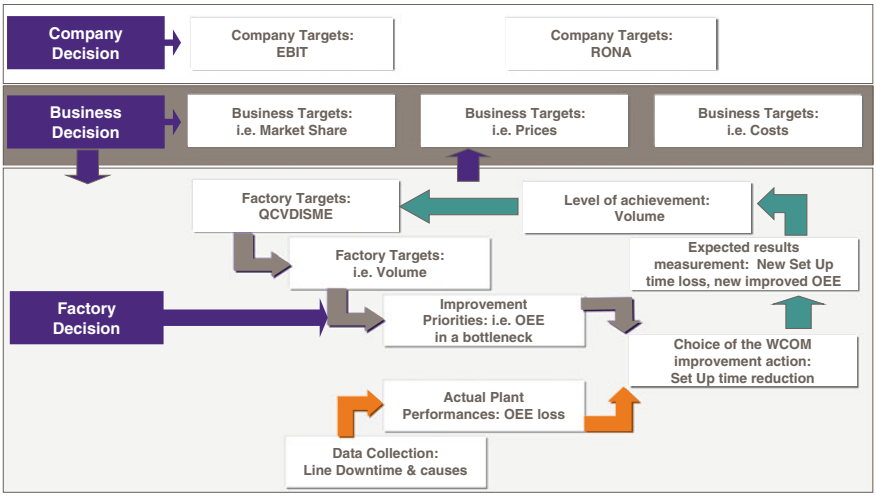


Fig. 8.6 From strategic decision to KPI target to loss reduction target and closing the loop. *Courtesy* EFESO Consulting ©

Key questions in the Loss Intelligence process

1. What is the current performance?
2. What is the target?
3. What are the losses?
4. What is the frequency and impact of each loss?
5. What are reasonable targets for each of these?
6. Would said target give us what we need?
7. Which capability will take responsibility for each piece?
8. When will it be done and by whom?

8.2 Loss Eradication: Edging Nearer to Victory in the War on Losses

After loss deployment, however, the armies have been lined up and are officially ready to strike. It is only now that we get our hands dirty and start making a difference. In essence, the big battle in this War on Losses begins here. Once we have a clear deployment, with clear priorities, the attack to losses must activate all levers. In fact Loss eradication is the core of the Operational Excellence System.

The eradication can be based either on **Innovation**, which includes **Equipment Innovation** and Product/Process Innovation and/or **Continuous Improvement**. The best companies are those able to combine these two approaches in a seamless way.

Equipment innovation Buying new machines to overcome loss is certainly a way to improve on current production conditions, but it definitely does not come without a cost. The reason for this is that it has a high dependency on company funds, a fixed cost increase in the medium term, and it is something that anyone with the proper funding can do. With that being said, it is a powerful means of improvement and a strong way to stave off losses, but is not necessarily meant to stand alone as a company's army in the War on Losses. The proof can be seen in some state funded enterprises, where very expensive machinery at the state of art of technology are poorly managed: the level of competitiveness is miserable.

Product and process innovation Companies are always eager to get the next step on producing the hottest product on the market but, as with equipment innovation, it is not reliable enough strategy to stand alone. Not every company has their very own Steve Jobs at their disposal, but even if they did, the problem with being dependant on product innovation means you are simply putting all your eggs in very few baskets, relying heavily on the few great minds of your company.

In this same sense, such an intellectual edge is completely unpredictable, lacking the consistency needed to improve.

Every month we see a Big Pharma dropping a project of a new product after years of heavy investments.

Continuous improvement Unlike the previous two approaches, calls for the slow pecking away of corporate problems, and therefore requires the commitment from everyone in management as well as a shared company vision and roadmap for achieving goals. Improvement should not stop at management level, however: it requires the involvement of all personnel within the organization itself. If company goals are cascaded to even the very end of an organization's structure, then a shared vision moving forward will lead to the consistency necessary for progress. Companies will benefit more from a continuous improvement that allows for a step-by-step approach to growth, opening up a more long-term vision that allows for the company itself to keep up with the workload without jeopardizing any sort of growing pains.

Improvement methods in a stock motorbike championship

For a more in-depth and applicable example of the above, let us have a basic look at how a stock motorbike championship works to understand the role that improvement methods have on production.

In such a stock motorbike championship, where at the beginning of the year all teams are given the same exact motorbike to use for races, some very interesting insights can be taken away. The bike in this example symbolizes the technology evident in a given company. Even though each team starts with the same exact bike (same technology level), after just a few races there are always a few clear favorite teams who lead the pack. The reason for this, above all, is that these teams are just more effective in improving their equipment by taking better care of it. This entails better fine tuning, adjusting and calibrating of materials that will end up directly influencing performance.

While the **Machine**, our first M, is in itself standard, there will always be ways to fix it up and maintain it in ways best-suited for track conditions. Our second M of the situation stands for **Method** and can be applied in both testing and racing. Such methods as implemented by both the driver and the team can drastically alter the performance come race day. Our next M stands for **Material**, because while the base equipment is equal for all competitors in the championship, different components can be mixed and matched depending on the conditions, such as tires, brakes and fluids, among many others. And finally, our last M stands for **Man** himself, as every team is always on the lookout for the most qualified person to steer to victory, not to mention the team as well, made up of expert technicians and mechanics. All these "M" elements together make a real difference in company performance, even if all competitors have the same equipment or competitive weapons to start with. Eventually the best Teams win the best sponsors, that allow them to hire the best pilots and the best mechanics: the result is a **Winning Team.**

Embedding Innovation and Kaizen will pave the way for competitive edge
Investment is undoubtedly a necessary feature for both growing and improving companies, as constant pressure from competitors and market-wide innovation make the decision easier than ever to raise the bar on company standards. A closer look at how companies handle innovation, however, will show us what really gives a company a true competitive edge over the rest of the market.

It is not the investment itself that makes or breaks the company's hold on market-wide innovation, but it is rather how the company acts in between investments that does the trick. If a company invests in a new machine, for example, they will likely experience a sudden improvement relative to the difference between old a new technology. After implementing the new technology, on the other hand, is the crucial part of the process. Companies that keep improving upon the new investments, for example providing proper and necessary maintenance intervention for new equipment, can actually gain even more out of the technology as time goes on, an almost contradictory concept given the old saying that technology is obsolete as soon as it is placed on the market. Compared to competitors who do not properly maintain or integrate their new investments, this company will be able to increase its competitive edge even during times of no investment, as we took away from the above stock motorbike example.

If investments are properly managed between investment periods, as stated above with motorbikes, when the time comes for new investments, it creates of sort of "compounding competitive edge". This means that one company has a slight competitive edge, continued to take proper care of its investments, and when new technology or equipment arrives, they only continue to gain more and more of an edge between investment periods. As shown in Fig. 8.7, the separation in

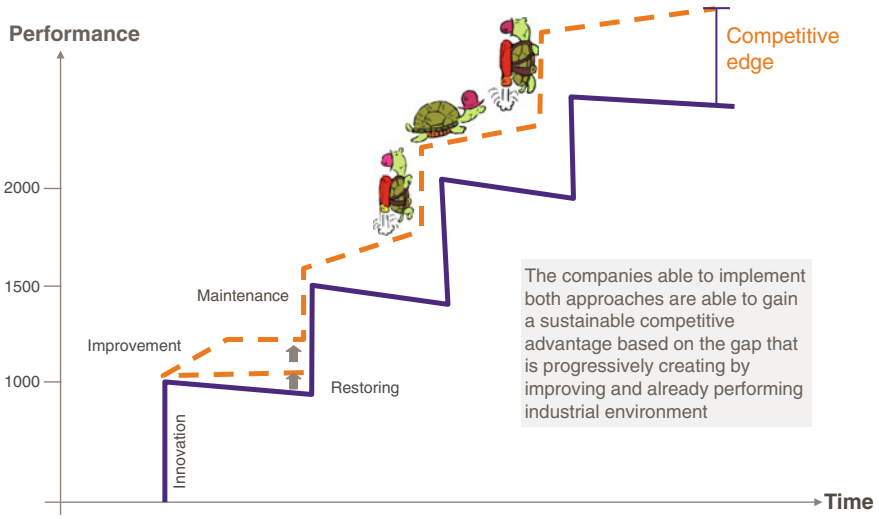


Fig. 8.7 Embedding Innovation and Kaizen represents the way to acquire a competitive edge.

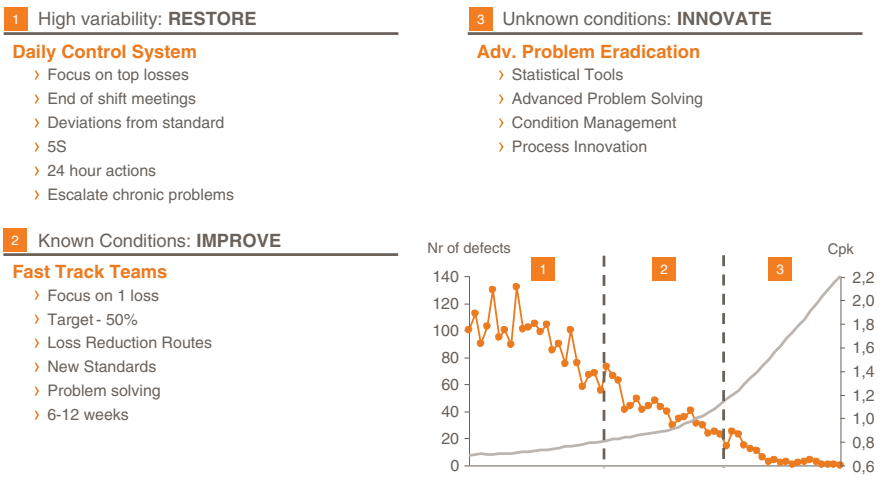


Fig. 8.8 The three stages in Loss Eradication. *Courtesy* EFESO Consulting ©

competitive edge can slowly grow between two companies, making the edge constantly compounding over time.

The blue line represents a company that makes occasional investments but holds a negligent, hands-off attitude regarding the proper care of its investments between periods. This leads to a decrease in performance between investment periods because the new investments become old and wear down as they grow older. The orange line, on the other hand, represents a company that is on top of its investments, handling them with necessary attention and care, and actually seeing an increase in performance from the investment implementation period until the next investment.

In Loss Eradication we need to attack the losses using a different approach in each stage (Fig. 8.8).

Losses can be pretty gruesome, and tackling them may seem like a monstrous project where you are left asking "Where do I even start?" The first step in Loss Eradication is clear and simple, but unique to the early stages of eradication: restore basic conditions. Before working on making that big step towards zero losses, a company needs to just get back to normal first.

Step one is restoring before improving and requires a unique restore approach, which can be obtained by focusing on top losses, restoring the 5M conditions to set standards, and any other activity that focuses on more evident and disruptive losses. In reality, most of the problems found within companies are not necessarily a Six Sigma problem. There is a lot of disparity in a given company, and sometimes things found on the surface can make a big difference, such as a large gap in skill sets between the workers on two different shifts or the generally poor level of machine maintenance, leadership, instruction or other areas of interest. If we

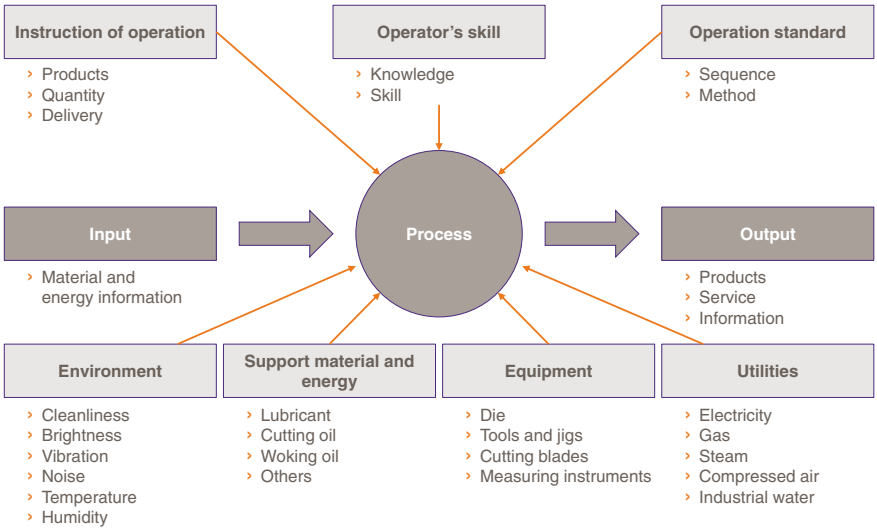


Fig. 8.9 The structure of single process production system. *Courtesy* JIPM ©

consider what we all do on a fairly regular basis with our cars, visiting the mechanic to get a check up is a very important moment in a car's lifecycle. However, the mechanic doesn't actually do anything to improve the car, but rather just restores its original conditions with oil or filter changes, new tires, etc.

Step 2 is improving known conditions and can be considered the improvement step, which requires improving the conditions that are only decent but haven't been fully exploited by not being used to the fullest. Where step one was more of a birds eye view of losses, the second step focuses on individual losses to truly start the improvement process.

In this phase the PDCA cycle apply. If the conditions are known but not fully exploited, we don't need "Rocket Science" to get to the root causes: 5Why, Ishikawa, ECRS techniques are enough.

What is the meaning of conditions? In Fig. 8.9 from Professor Fukuda of JIPM we see the structure of Single Process Production System. Conditions can be described as the **process parameters that can influence the process transformation**. They can be summarized also a the 5M + 1E = Man, Material, Machine, Method, Measurement and Environment. If these conditions are not met a loss will occur (Breakdowns, Defect, Stop…).

Step 3 is improving unknown conditions and is known as innovation, or as some might say, black magic. This term is used comically to describe companies that generally want to start directly at the third step, hoping to come up with some sort of potion that cures any and every problem within a company. Unfortunately, without knowing the real causes and without first restoring losses to their original conditions, it is too difficult to understand the right direction that a company would need to take in order to pull this black magic out of its sleeve. At any rate, getting to

the third step means enhancing previously unknown conditions and henceforth managing said conditions, working on process innovation, utilizing statistical tools and integrating advanced problem solving, all in the name of innovation.

The importance of restoring before improving: a case history

Some years ago I was working for a British textile manufacturer who produced high quality articles made with fresh new wool coming from New Zealand. They were experiencing problems in the wool's carding process, which is the first phase of the textile process. The first step is aimed at clearly outlining the fibers, starting from the beginning of the yarn process and seeing its first development in the transition from raw material to yarn. In this process, the yarn is rolled up on a shaft in order to turn it into what they call, based merely on its resemblance, "cheese". Afterwards, said cheese is taken to the spinning department in the last phase of raw material to yarn transition. The manufacturer, however, was experiencing serious problems in that every single piece had a different diameter. This created specification problems, as each strand was uneven and the loading and unloading of each piece to and from the spinning machine was a time-consuming, unpredictable task. In other words, the process downstream had become extremely inefficient due to this one aspect in the material.

Speaking with the manager, there was an almost apathetic resignation in solving the problem. He spoke of how wool was a natural fiber and therefore uneven and unpredictable. He spoke of how the conditions for cutting the wool off the sheep in New Zealand were unknown and therefore uncontrollable, essentially saying that the weather itself down under was a factor, as cutting a wet sheep's wool caught in the rain compared to a dry sheep made for a huge difference when it arrived in England. This kind of analysis, essentially labeling the problematic elements as impossible, meant the manager was simply deferring all problems to the "black magic" referred to above. (*...you cannot influence the weather in New Zealand from Britain...*).

So we took a spin around the facility and tried to identify any basic elements that may have gone wrong. In the loading and unloading zone, I noticed a forklift driver who was hurrying back and forth from the zone to the tumbler, which was the machine used immediately before the carding stage. Speaking with the driver, he said that, to be at the utmost level of efficiency and productivity, he performed LIFO (last in, first out).

After consequently speaking with the quality manager, he said that internal procedures in no way stated that LIFO was company procedure, but that they should instead be performing random loading and unloading. This way, they will avoid continually mixing the same lots in the tumbler. Through random selection, the mix that comes out of the tumbler will be stable and will mix the likes of all types of batches of wool cut in all sorts of conditions. On the contrary, the forklift driver's self-made LIFO procedure, essentially meant that the same batches were being mixed over and over again in the tumbler

and therefore, over time, not actually mixing anything, rendering this stage of the process completely useless. As a consequence, naturally, the carding process was fed unevenly causing the problems we observed.

The situation simply boiled down to the fact that no one actually trained the forklift driver, who was instead just trying to mix as much material as possible in as little time, thinking that LIFO would be the most efficient way to do this. He optimized the process itself, but never realized what kind of harm he was inflicting on the rest of the process. There was a chart hanging from the company wall explaining the actual procedure of retrieving material, only no one had ever explained its significance to the driver since he started with the company.

By analyzing a simple process in the warehouse, a severe flaw in the company's production process was pointed out and ameliorated. Whereas management was overlooking day-to-day activities and searching for its "black magic" potion to immediately cure any troubles, they first needed to restore conditions back to their original state, cutting down on those losses before then moving forward on their path to an actual black magic cure. This was resolved simply by observing conditions on the factory and warehouse floor and directing them back to what was initially stated in internal procedures. Only at this point can a company start to think about the bigger picture in moving towards zero losses.

Applying a single route to every loss The WCOM™ strategy is based on a customized route approach that calls for step-by-step action in attacking common losses. This is accomplished by Fig. 8.10, the Deming Circle, which is a PDCA (Plan-Do-Check-Act) approach.

As the PDCA cycle is followed in order to resolve the situation, specific tools are then put in place when required, as described in the defect reduction example in Fig. 8.11.

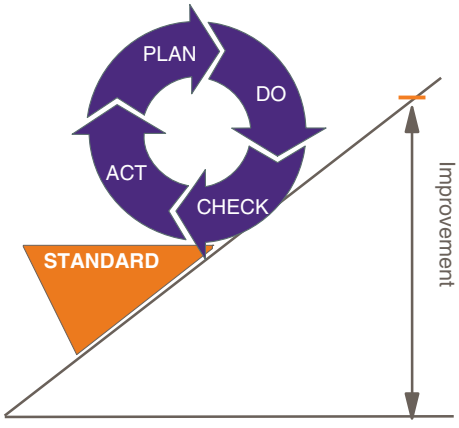


Fig. 8.10 The Deming circle

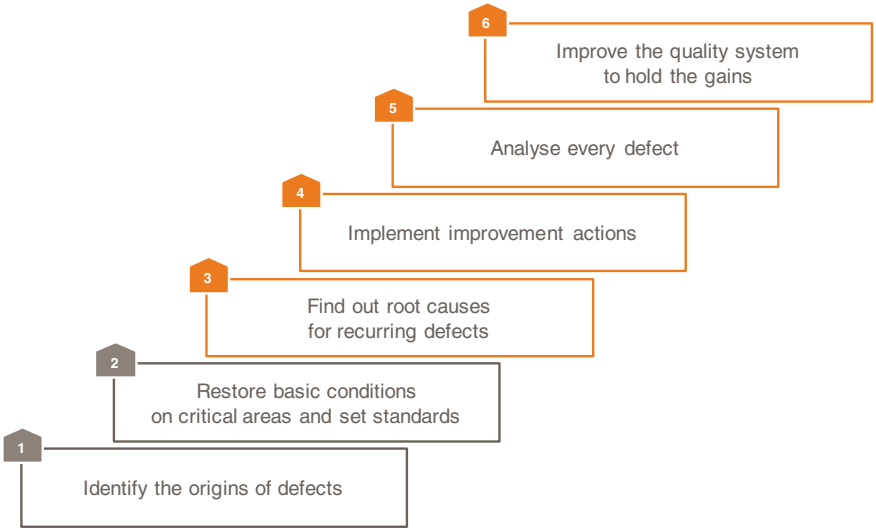


Fig. 8.11 The improvement route: example of Defect Reduction Route. *Courtesy* EFESO Consulting ©

Such a method, that comes from a brilliant intuition of Filippo Mantegazza,[1] has two very noteworthy advantages, which are the following:

1. **Tools are simply not enough on their own**. They are the raw material in the improvement process, meaning they are just a part of the solution. In fact, just the availability of the 5why's, Ishikawa diagram, SMED or any of the other millions of tools you can find on the internet do not help you in understanding "how" to use them. The availability of tools only provides you with the "know what", but leaves you hanging on the "know how" system, which is where the PCDA comes in handy, chalking up a proper system for implementation and regulation.
2. **It is more efficient to start from a loss-customized route** that is already handcrafted and ready to go, as opposed to having to head to the drawing board each time for a standard PDCA Cycle. As a matter of fact, if you start from PDCA, you first have to understand how to adapt it to your specific problem. If you have an established route, on the other hand, you will be able to better and quicker understand the situation and its solution while also being more effective in attacking a loss. These Loss Reduction Routes, are customized, directed and fine-tuned for the losses that you are attacking. Routes come from thousands of PDCA projects run on the same losses. They are an industrialization of the PDCA itself, and you have an advantage in this because you don't have to start

[1]Filippo Mantegazza is the Chairman of EFESO and one of the founding partners of the company.

from zero every time you need to implement PDCA, whereas you also know how to use said tools that have been implemented strictly to attack the aforementioned loss.

What this Loss Reduction Routes system actually addresses, in fewer words, is that when a company is faced with a problem and henceforth the action of the problem, they do not have to seek out a specialized, highly skilled engineer to find a solution, seeing as how PDCA and tools are already mapped out for them (e.g. Black Belts).

Given that a large aspect of problem solving, as stated in the WCOM™ strategy, is involving the entire company, from top to bottom, in the War on Losses, it is important to have a process that is more hands-on, more self-explanatory and therefore more personalized. The Loss Reduction Routes allow every single person in the company to get their proverbial hands dirty in improving company conditions. This means that the system must bring the inquirer to the solution, and not the other way around.

Following the PDCA process as well as the 3 levels of attacking losses mentioned earlier (restoring conditions, improving known conditions and attacking the unknown), a Loss Reduction Route is a step-by-step roadmap allowing for the eradication of the most common, and therefore repetitive, losses. This will effectively wipe out very common but still complex problems that would otherwise require in-depth analysis by external experts who do not necessarily follow or even know of company vision or attitude towards the future.

8.3 Loss Prevention

Preventing losses from recurring entails managing conditions The final building block of the system is Loss Prevention, which is used to ensure long-term sustainability of the measures put in place in the previous two steps of Loss Intelligence and Loss Eradication. The only way to prevent losses from recurring is **managing conditions**, because the root causes of a loss is routed into the 5M conditions of the process (Fig. 8.12).

Fig. 8.12 The Heinrich pyramid applies to any event

To ensure sustainability, there are three necessary actions to put in place: **1. Consolidate improvements in company standards**. This means that once a company achieves its ideal conditions or even, in the wool textile example from earlier, simply restores original conditions, the next step is to solidify said improvements with **Standard Operating Procedures** and other methods that will allow employees to consistently carry out their work in a well-intentioned manner that reflects company aims. After all, once a system has changed, it is up to the employees themselves, from the offices all the way to the lines, to maintain these conditions.

In order to thoroughly implement Loss Prevention, **company standards** like the **OPLs (One Point Lessons)** need to be implemented that rely on visual, easy-to-access standards and proper training. OPLs are a quick, easy and effective way to consolidate and distribute knowledge. They are lessons from real instances which are then stored and saved with the idea of using them again and again. It is a sort of tool that can be used to reinforce a SOP (Standard Operating Procedure), but with the clear idea that sometimes less is more. We do not always need books upon books, which are often hidden away in lockers, while an OPL can be visible at the point of use.

The next step is training. A **skill matrix** must be completed before and after the training in order to map the actual gap of skill required to fill in order to manage the conditions (Fig. 8.13).

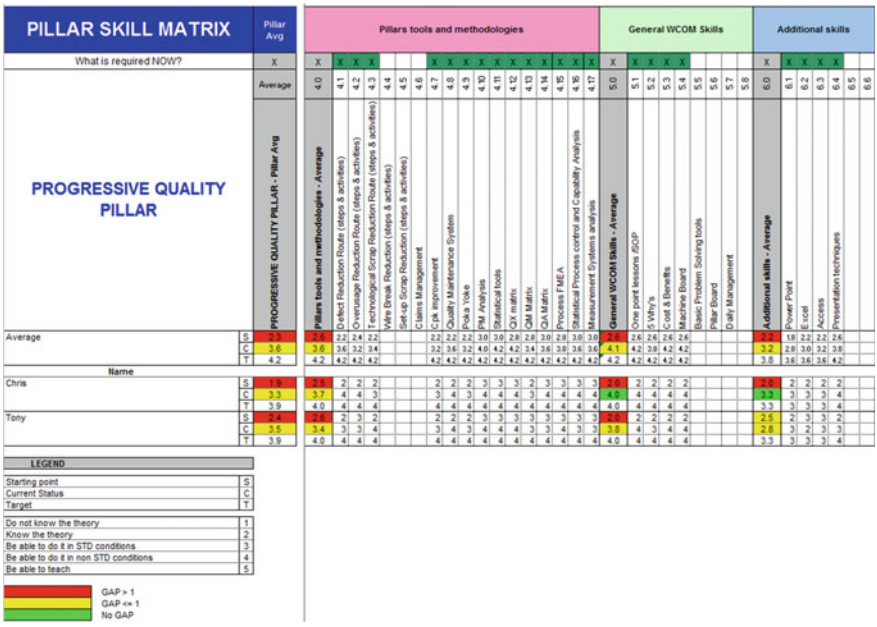


Fig. 8.13 Skill matrix example. *Courtesy* EFESO Consulting ©

This chart can be used to securely and flawlessly track progress in the realm of employee training, yet another example of how progress cannot just be made randomly, but rather in a systematic, tracked and gradual manner. Tracking the training progress of employees in itself is a representation of PDCA, pounding a reinforced culture of planning, doing, checking and acting.

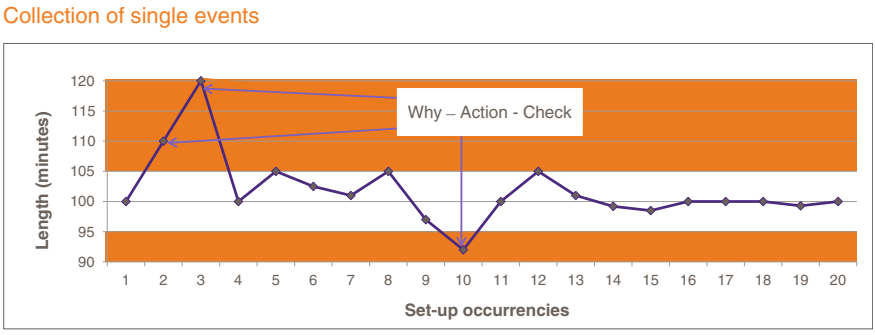
2. Prevention through conditions management. Put the 5 questions Basing on the everyday experiences, the positive results in loss reduction are frequently not confirmed because of **lack of maintenance on the root causes** that originated the problems. The prevention should start from the evaluation of the key parameters' maintainability and reliability.

By using a set of specific questions is possible to identify the level of control of the single machine condition in term of how much:

- It is clear and visible
- It is easy to set
- It is varying outside a specific range
- It is variation visible
- It is easy to restore

The aim is to identify the starting level and to understand how to improve. The continuous controlling process can be applied not only to machine parameters but also to material, method, manpower and measurement system conditions.

3. Following up on variations and closing the loop. Controlling variance in the post-loss action period is integral in truly understanding whether there is still work to be done. Let us have a look at a daily shift chart detailing the set up times on a machine (Fig. 8.14).



Anomalies	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
AAA		10	5																	
BBB			5																	
CCC																				
DDD			10																	
EEE										-7										

Fig. 8.14 Variation analysis. *Courtesy* EFESO Consulting ©

The orange blocks are set as the company established unacceptable ranges and therefore, with the new measures in place, there should not be any set up instances that break into this threshold. If, however, a company sees variances beyond desirable statistics, action is necessary (WHY-ACTION-CHECK).

While some more urgent problems might initially require daily or even hourly attention, **the essence of the variation control process** is that eventually the **problem needs to be checked less and less**. To properly regulate and prevent a problem in its later stages, perhaps only an OPL here and a control variation there will be required, allowing for brief but effective analysis of the measures employed to simply ensure that things are moving along smoothing and as planned.

Chapter 9
The WCOM™ Organisation: Teamwork, Performance Control, Pillars and Driving System

Carlo Baroncelli

As discussed in the previous sections, the WCOM™ system provides a company with the proper framework for instilling a new methodology of Operations. Such framework helps to sustain the Operational Excellence Management System by creating a "Loss-attack based organization" to win the so-called "War on Losses". The main components for successful sustenance are efficient teamwork, a quick and reactive Performance Control System consisting of daily management, a Pillar System and a Driving System.

This new operational system revolves around the development of a company's personnel capabilities, stressing the importance of creating and maintaining a true team culture where everyone is on the same page.

9.1 Teamwork Across the Board Makes for All-Around Implementation Improvement

The first organisational component on our list is Teamwork, which is a vast concept that does not simply mean throwing a bunch of employees in a room and seeing what they come up with. The primary idea behind teamwork is to **work efficiently**, recognizing the necessity to establish systems and tools, ensuring teams are able to function properly without any kinks that might be holding them back. This idea in itself is the basis of any modern organization and is an absolute must when it comes to working at an efficient rate.

Old styles of management traditionally making up a company's structure, tended to build hierarchical, command-and-control organisations that simply dictated while employees further down the line did nothing more than follow. This

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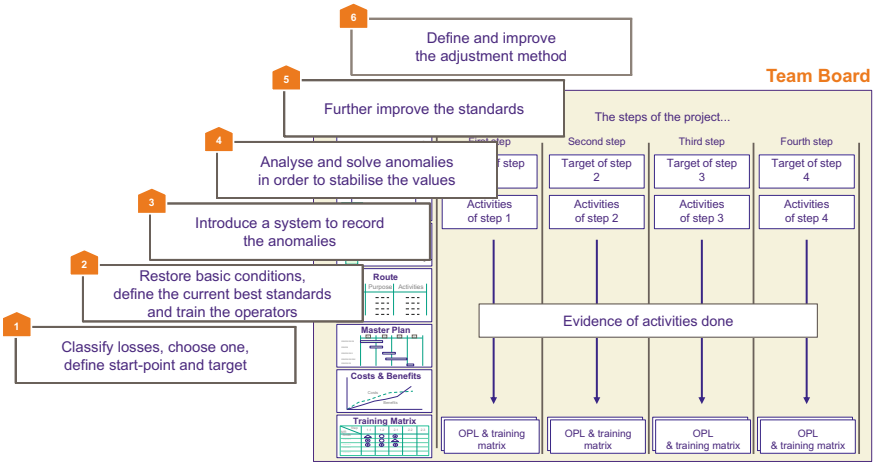

Fig. 9.1 Efficient teamwork (*Courtesy* EFESO Consulting ©)

meant that, while efficiency itself has always been important, efficient teamwork has been a bit of an afterthought. In **modern business organizations**, where thousands of teams are created and managed every year—influencing company output in a very strong way as well as consuming a vast amount of company resources—efficiency and teamwork go hand in hand as we see in Fig. 9.1.

Teamwork is an answer also to a change in the Society.

Initially, the typical company structure called for an **employee** who was **simply on-call** to react to company needs, if and when a situation called for it. In a certain sense, it was "body over mind" in that the company needed personnel from 9–5 to punch in, punch out and get on with their lives.

The next stage called for the introduction of technology, and therefore the need for **skilled personnel**, as well as management, to properly integrate and manage new structures. Of course a rise in responsibility required a rise in professionalism, as machine operators were now operating hefty and costly equipment.

In a very similar, almost reciprocating way, a rise in professionalism also led to a rise in the desire to be more than just a 9–5 employee, but rather a part of the team with a stronger will to be **recognized and listened** to as an active part of the Society.

To answer the call for a drastically different company, structures, intentions, and targets now revolve around across-the-board improvement: machines do their daily work autonomously while the employees supervising the equipment have the goal of **controlling, improving and innovating the process**.

Engagement, Methodology and Results So, what does efficient teamwork really mean? We can break this term down into the subcategories of Engagement, Methodology and Results. These three sections mean quite a lot when it comes to implementing a new, more complex corporate mentality within a company. The characteristics in the following chart display all six aspects contained within the three aforementioned topics, all of them are essential in providing thorough and well-rounded teamwork characteristics (Fig. 9.2).

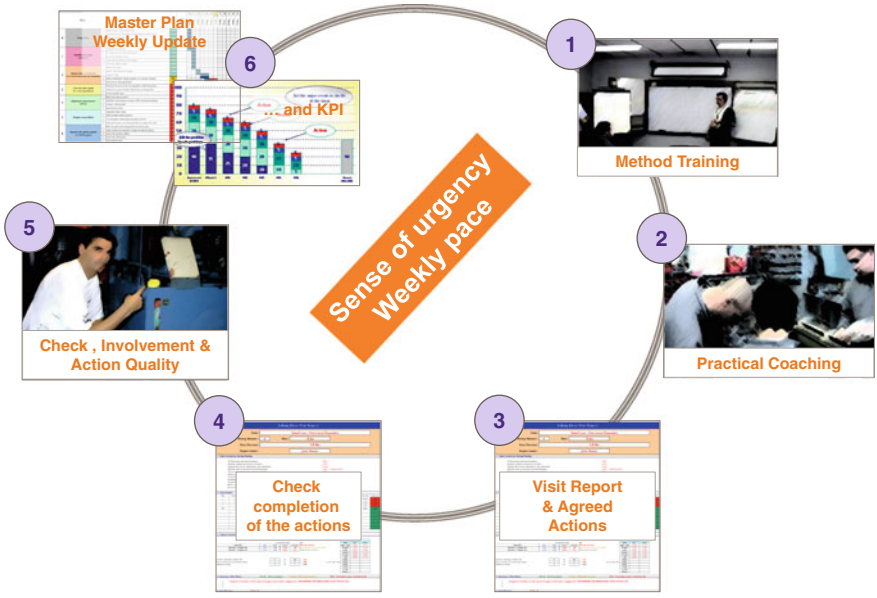

Fig. 9.2 Team weekly routine (*Courtesy* EFESO Consulting ©)

Let's take a further look at these three subcategories.

Engagement First off, a company with efficient teamwork must have a clear purpose and direction, which can be accomplished through productive and proper deployment processes, allowing for goals and visions to trickle down to all parts of the company. If expectations are flowing on a company-wide level, then the employees themselves are more invested and engaged in their own work.

Once this is established, the teams themselves take form. This requires quite a bit of analysis in mixing and matching skills, fostering team cohesion and leadership.

The first step to efficient teamwork is properly engaging employees, which is directly related to getting the most out of their capabilities. In this same sense, management must also spread the feeling of empowerment within their employees, leading every single team member to feel confident and in control of their decision-making.

Methodology Once the team and its role are established, a methodology then needs to take form. This entails a clear roadmap that every member can share and understand, coming directly from loss eradication routes and the training required to keep all personnel in the loop.

Aspects of methodology include being able to provide visual management and communication to employees. To increase these two factors within a company, strong and clear project management is necessary, which entails the elimination of escalated roadblocks along the way.

Plant and site leadership is the next step in providing efficient teamwork. Other potential checks and balances from up above can be provided through Gemba

walks, visits to the actual site of production to track progress and take note of anything peculiar, as well as an effective and frequent audit system.

Results To complete the picture, results are the third subcategory that require tight control over the figures coming in and setting up the correct measures for long-term sustainability of results themselves. Obtaining a quality result over a long period of time comes from both Performance Control System and the Pillar System, which we will explain in the Change Management chapter.

9.2 Performance Control System and Closing the Loop

Variation needs to be acted upon quickly An all-too-common characteristic of companies is that when employees monitor standards and trends and report variation, no sort of action is put into effect. Standards should already be implemented at this point, but a standard in itself is nothing more than an indication of whether something is moving along smoothly or haphazardly. Building off this idea, **proactive leadership needs to be ever-present on the production floor** to measure the variation and subsequently analyse, with relative speed, the problem. After proper tests and a clear idea of what exactly is causing the variation, countermeasures must be activated overnight to counter any sort of situation brewing that may soon enough turn into something even more complex. Timing is crucial.

The WCOM™ system stresses teamwork as a way of creating loss eradication and moving on to the implementation of standards. To maintain said standards, however, losses must be periodically targeted and pulled out of the system, with the final stage being prevention of these losses from recurring in the future.

The **Performance Control System** will take the necessary steps to fend off any sort of problems in the future, provided that there is a prevention system in place that will discover and report any variations that may arise. Within this system, all employees are positively challenged to analyse and solve problems, which require getting involved in the real processes and working towards meeting the necessary and desired targets. This idea shall be dubbed **"steering"**, given that a company may have the right vision and target planned, but must be steered in the proper direction by every person on board of the ship.

There are many companies that drain energy and resources trying to define indicators and variation trends without drawing up the proper steps to remedy these variations. In essence, flaws are recognized and analysed by management or the line workers themselves, but the urgent and necessary measures to sort out issues are simply ignored. In an ideal world, variations would be detected by sensors or workers, and a system to activate quick reactions, possibly resolving the problem during that very shift, would already be in place. A proactive leadership needs to be at the top of its game to measure this variation and analyze causes on the fly, putting into effect any sort of countermeasures to be implemented by the following morning, at the latest.

The following graphic shows how the Performance Control System utilises KPI deployment as top-down to get to the loss mode, as explained in the previous

chapter. As a system for variation control, on the other hand, the Performance Control System works from the bottom up, singling out specific variation sequences on a day-to-day basis and analyzing these with the necessary steps, as shown in the 1 Why breakdown in the bottom right corner below (Fig. 9.3).

In this very sense, the Closed Loop Management System takes its true form as a flawless, circular process that analyses variations in depth until the best way to tackle the problem has been figured out.

While it may be a common tendency to use this system as a guide and then jump to the Kaizen ancillary in order to brush up on the variation's kinks, the **Performance Control System** has been developed as a way to **delve into the very details of the loss**, eliminating any sort of time wasted on unnecessary tasks. In this sense, the Performance Control System puts its primary focus on the most important aspect of a company's problems, implementing a system that lets the loss itself help broaden management's understanding of how to dig itself out of the problem.

A good Performance Control System is a **strong management system**, which **changes the mindset of the organization**.

When we give a Shift Leader the control over a big amount of resources (Capital, Labour, Materials, Energy), we need the responsible person to be fully in charge. That's why, when we have a variation on the expected output, we expect the person in charge to be able to answer to the following key questions:

- How did it go yesterday?
- Which variations and why?
- Which corrective action at your level of empowerment did you take?
- Which actions do you want to be escalated?
- Is the action log updated? (action done, pending, to be logged on).

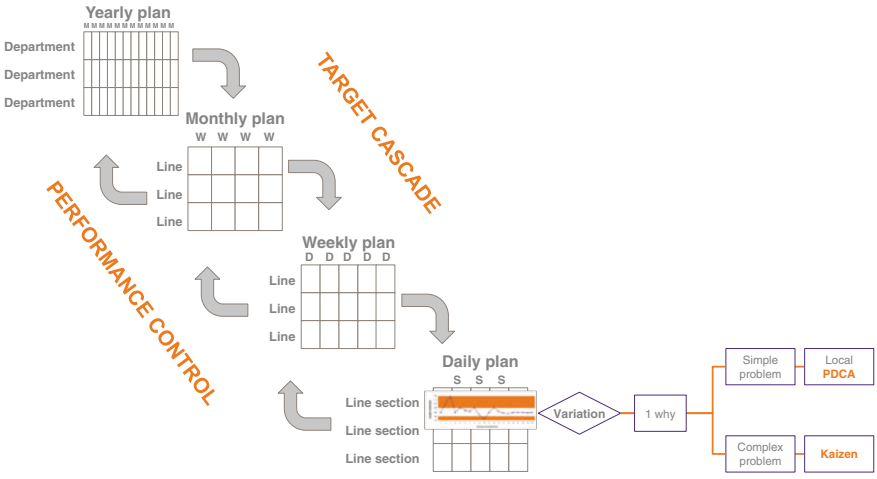

Fig. 9.3 Performance Control System structure (*Courtesy* EFESO Consulting ©)

9.3 Solving Cross-Functional Problems Means Implementing a Cross-Functional Organisation: The Pillars Organisation

As mentioned in the previous chapter regarding the loss matrix, a traditional organisation tends to revolve around functions short term targets like delivering the budget.

Reiterating the notion from the previous chapter that a given loss never appears in one single place in a company, it means that **the steps taken to completely eliminate loss need to be as cross functional as the loss itself**, spanning all areas that it may appear in. How exactly can a single function control losses that expand beyond its borders, into multiple departments or quality areas? As you might expect, **the traditional organisational structure**, focused on a short term task on a small area, **cannot account for an across-the-board War on Losses**, failing to address the magnitude of what a loss is capable of.

This mentality of old times certainly undervalues the vast reach of losses, targeting one distinct area of a loss and closing it out without realising what other aspects of production may be considered. For this reason, the WCOM™ system has labeled the traditional way of thinking as a **"Silo System"**, meaning that it is tall and overbearing but serves only one purpose and deals directly with the urgency of the issue. To counteract the short term mindset and the territorial culture of the aforementioned system, WCOM™ has introduced its signature **Pillars System**.

Pillars instead of Silos The Pillar System goes beyond the ordinary functions used to carry out loss reduction. In fact, Pillars represent all areas of loss, and can therefore address any area or issue when targeting loss elimination. With this system, the stages of loss intelligence, eradication and prevention can focus on specific losses.

The system calls for the assembly of a team of managers working together in order to break the functional silos that focus on short-term targets, leaving ordinary and effective functions in place while adding a stable, long-term approach.

This occurs in the full observance of the organisation's **functions**, who **keep on having the responsibility of the results and Key Performance Indicators**. The **pillars** act in **support** of the **functions** taking the responsibility of **loss eradication**, thus making **the results set by the functions achievable** (Fig. 9.4).

If the traditional organisation is sorted by functions, and focused to the short term…
… but the Losses are cross-functional, and require a long term commitment…
…why are companies still organized this way?

If we want to mobilise the organisation against the losses,
we need a cross functional organisation, focused on the long term.

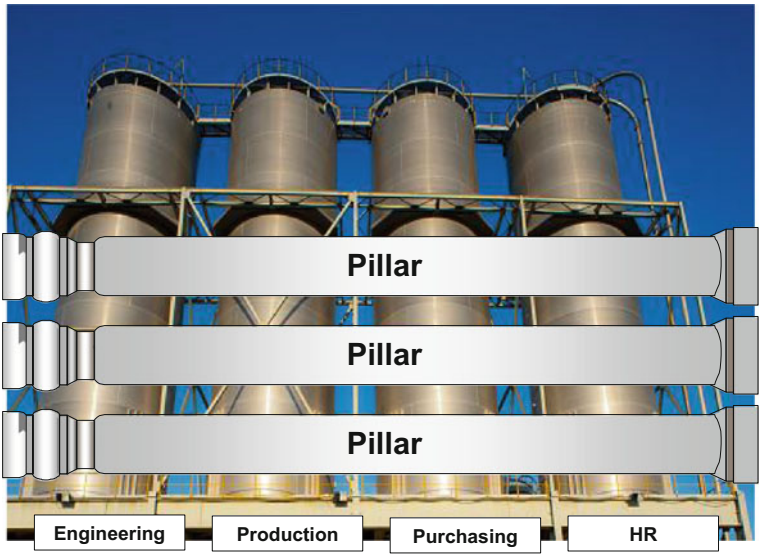

Fig. 9.4 From Silos to Pillars (*Courtesy* EFESO Consulting ©)

But what exactly is a Pillar? To get a better idea of this powerful regiment assembled to tear down losses, we need to look at what a Pillar can do for a company (Fig. 9.5).

Pillars are one of the more standout elements within the WCOM™ system. Putting Pillar activities in place means turning an improvement project into an improvement process, and it marks the stage where the gears really start grinding. The finished product is a **cultural breakthrough**; management drastically changes its methods of working as the focus turns to long-term improvement at the helm of corporate attitude, while traditional organisations lag behind in that they generally focus on single, sometimes invisible and isolated instances.

These Pillars deal with operations losses, business activities, lean flow and supply chain management and R&D. The wide range of Pillars is one of the leading factors for the naming of the system, which is WCOM™ instead of WCM. Given that the system provides for in-depth operations organization, the "O" is a vital aspect of the system and could not be left out of the name itself.

Pillars are implemented by cross-functional team of managers and specialists with the mission of eradicating a set of losses by coordinating, training, coaching and auditing all concerned teams before finally consolidating employee know-how.

These Pillar teams create and follow through with a **long-term improvement cycle**, which paves the way for a permanent improvement organisation that tackles losses and henceforth ensures improvement sustainability. The fourth section of this book will go into further detail regarding the main Pillars used when determining the broader company vision (Fig. 9.6).

Fig. 9.5 Pillar routine (*Courtesy* EFESO Consulting ©)

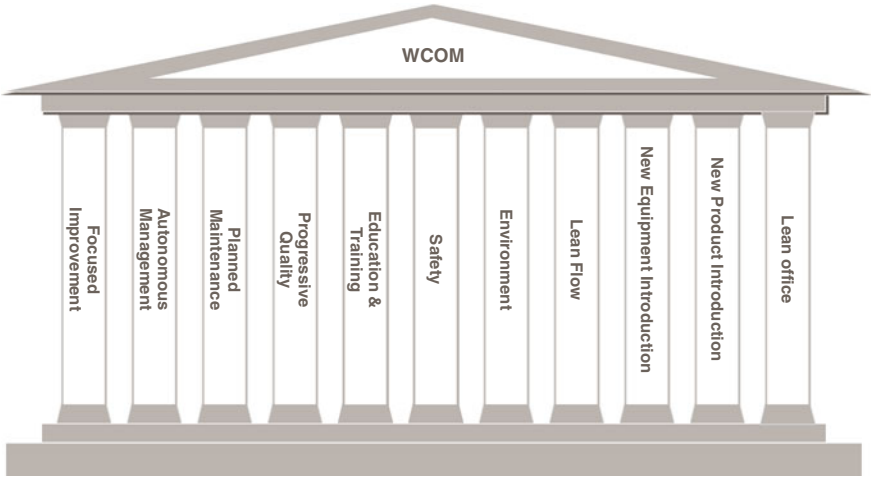

Fig. 9.6 Example of a Pillar Temple (*Courtesy* EFESO Consulting ©)

Each Pillar cannot be complete without going through its very own predetermined roadmap, with the final destination being zero losses within 3–5 years. This means that upon implementation of a Pillar when moving towards zero losses, each area of attack should offer up its own unique and specific course of action that will hone in on losses and set up a long-term strategy.

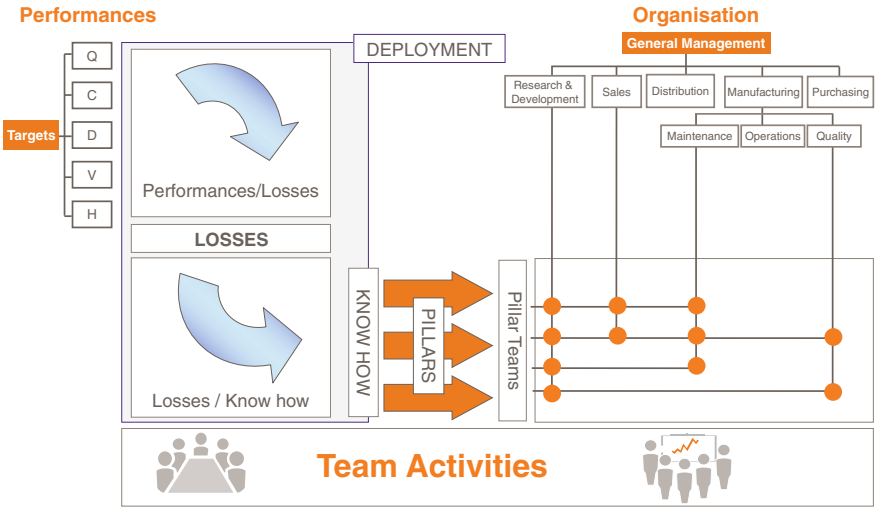

Fig. 9.7 From targets to action (*Courtesy* EFESO Consulting ©)

While we have pumped quite a lot of change into a company thus far, it is worth noting that the **WCOM™ organization does not** actually **change the structure of the company** it is working with, **but rather the way it works**: it is a matter of process rather than structure (Fig. 9.7).

The above structure represents the full-scale process implemented within a company using WCOM™. The structure itself still runs as normal, only the way it runs takes on a new orientation. Losses steal the spotlight and the understanding of the fact that what is breaking the legs of the company is actually the very source of its solution, as mentioned in detail in the previous chapter regarding loss deployment. Once loss is converted into know-how, it is up to Pillar teams to keep the metaphorical roof we have just built from collapsing.

9.4 The Steering System

What is a ship without its captain and shipmates?

Even if we build a beautiful boat ready to take to the sea, strong enough to battle any sort of storm that may come at it, it is worthless if it falls into the wrong hands during the journey.

To effectively steer the ship, we need to first know **where we are going** and **what we are aiming at**. A clear vision spread throughout the entire company is a must, and a company must have all employees on the same page to operate at the fullest.

Aside from knowing where to go, we need a crew that knows **how to operate the ship**. This does not mean a basic understanding, but rather an excellent foundation of knowledge.

Finally, when we are out there in the rough waters, we need to have a clear and easily **readable map** at hand that locates any rocks, icebergs or obstacles that may and will stand in our way.

All of the above factors make for the Steering System, necessary in the WCOM™ strategy to guide and incorporate change within the company. With this steering system, however, comes great responsibility and the need for immense focus, which is why it is absolutely essential to introduce a Steering Committee which will help guide the company through all these rather hefty company changes to ensure that all goes smoothly.

As you can see in the graphic below, the initial phases of improvement activity call for decision-making from the top down, as matters are taken into consideration by upper-level management: a Steering Committee alone is enough to coordinate a small number of improvement teams (Figs. 9.8 and 9.9).

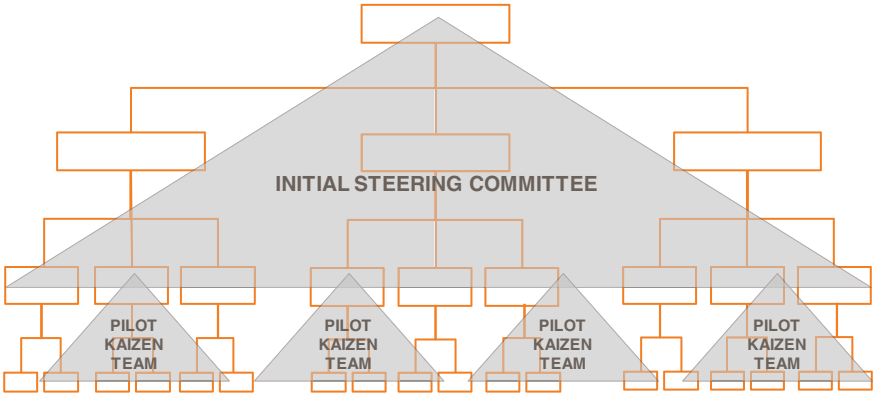

Fig. 9.8 WCOM™ Organisation in the pilot phase (*Courtesy* EFESO Consulting ©)

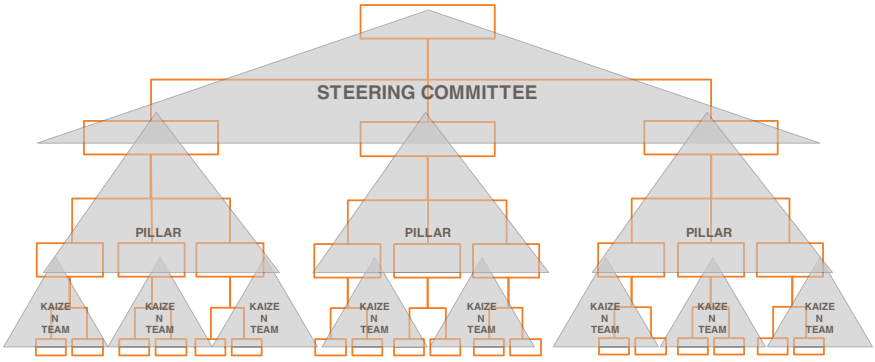

Fig. 9.9 WCOM™ Organisation evolution (The need for coordination of many more activities requires the setup of pillars) (*Courtesy* EFESO Consulting ©)

	Who / What	Central Coordinator	Steering Committee	Pillars	Teams	Supervision AM
1	**Loss Intelligence**	Benchmarking	Target setting	Deployment	Detailed Loss analysis	Data Collection
2	**Loss Eradication**	Communication Knowledge Sharing	Constraint removal	Training	**Loss reduction** route implementation	Support
3	**Loss Prevention**	Audit Consolidation	Close the loop, Audit	Std development, Audit, Prevention	Standardisation	Maintenance standards implementation

Fig. 9.10 Examples of roles (*Courtesy* EFESO Consulting ©)

As things start to pick up, however, and a company moves into the stages of expansion, improvement teams and activities start to be too numerous to be directly controlled by a single Committee. At this stage the Pillars come to act like Sub Committees, each taking care of the war to a single family of losses (e.g. Defects, Breakdowns, Accidents.), thus coordinating the relevant improvement teams.

In the below graphic, with an organisation that is complex and too large to manage problems simply through management calling shots and others following, the key is to **delegate leadership to all parts of the company** in order to give each section a more operative edge, also allowing for a stronger and more familiar level of support and problem solving.

The Steering Committee: its role and responsibilities The Steering Committee is in charge of KPI results and achieving teamwork targets. To get to the finish line, the committee examines and controls sector and department results regarding KPIs, the creation of corrective action plans and the accomplishment of weekly action plans. In this sense, the committee serves as a sort of controlling authority that checks up on the status of necessary actions.

This super task force also carries out corrective action whenever they deem it necessary. This means that they control the application of the action plan to keep everything in line and make sure nothing has gone askew. Beyond this, the group manages the availability of resources and tools needed to accomplish said actions. Lastly, when the going gets tough, the committee decides whether to supply additional sources if the situation so requires (Fig. 9.10).

The table offers a real-life example of what a steering committee aims to do, and in what realms. Alongside other moderators within the company, this group of advisors holds down the fort and always keeps the organisation focused and moving in the right direction, covering all aspects from corporate goals to problem-solving, as well as internal assessment to inch closer to objectives.

9.4.1 Steering the PDCA

A proper steering system, meaning one that can successfully address all company needs and therefore steer it in the proper direction, requires PDCA implementation across the board for all six of the key aspects involved in company structure. The

following list is a better description of the areas that a steering system must address, as described in Fig. 9.11:

- KPI Management: implementing a system that both measures and follows up on results
- Deployment System: an out-of-the-ordinary tool that indicates how to reduce costs to the fullest
- Project Management: a seven-step approach to managing and controlling project management planning at all levels
- Performance Control System (PCS): an organised system that utilizes meetings and reports to correctly and efficiently control variance
- Savings System: a management tool to pinpoint and monitor the benefits of improvement teams
- Maturity assessment (the WCOM™ Audit): this element checks up on WCOM™ implementations when matched up to business needs and operations excellence

Driving System—The Maturity Assessment One of the more interesting elements of the WCOM™ process is the **EFESO Maturity Assessment Platform**. It offers an innovative, three-dimensional evaluation of the company as it provides access to a one-of-a-kind comprehensive view of the improvement programme, from start to finish. As proper analysis should, the assessment platform allows for a full-scale look at company performance and engagement, but offers a rather complex and unique approach to analysing company data. The engagement axis, which pairs up workflow with the work environment, is integrated with global performance evaluation, or the comparison of the company in question on a global scale to truly grasp its current situation. This is all matched up to capability development in order to understand the actual ability and indicators at which the company should be performing at a given time.

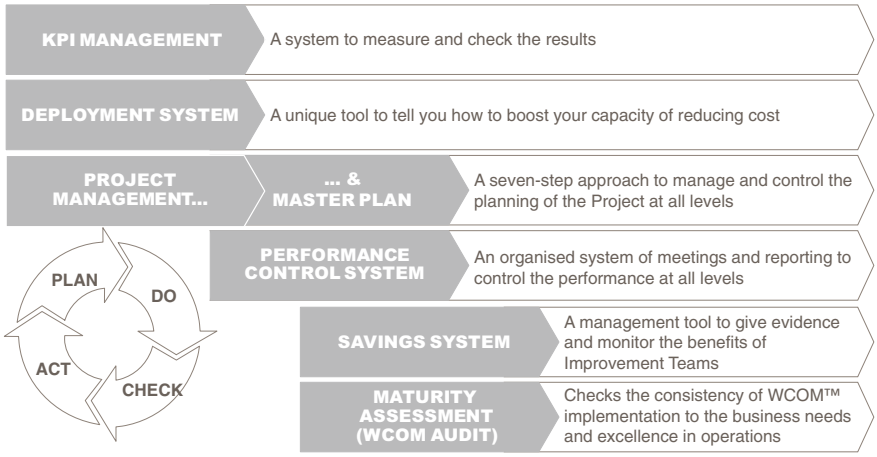

Fig. 9.11 Example of Programme Plan (*Courtesy* EFESO Consulting ©)

The takeaway from these indicators is that, in order to maintain a long-term focus over a large period of time, new and innovative tools and assessment must be implemented by the steering committee so that they do not lose track of the big picture. Every step must be in the right direction, no matter how little it may be, and having the right data to base decisions on is the most secure way to move forward and close the gap (Fig. 9.12).

As you can see in the below picture, the 3D perspective makes for a unique, birds-eye view on performance as compared to many other companies. Figures are used in both engagement and performance as an indicator for the satisfaction of a company's current state as well as future outlook and forecast.

The Maturity Assessment is carried out with evaluation questions that are presented in an intuitive way. Among the characteristics of the assessment are:

- Summary charts and action lists that are automatically generated
- Assessment reports that are immediately available online
- Reports that are standardised and extractable

To properly analyse the "improvement in maturity" that a company has achieved after improvements have been implemented, the three steps of Maturity Assessment Platform take their form:

1. Checklists are drawn up to evaluate the level of improvement achieved
2. Charts are issued that highlight what is still left to be done
3. An automatically generated list of plans and actions explains the next steps

The essence of the Maturity Assessment is to **measure gaps benchmarked against excellence level**. These checks and balances mean that there is constant control over both the current status of improvement and the reshaping or clarification of improvement goals. Through this evaluation and statistical analysis,

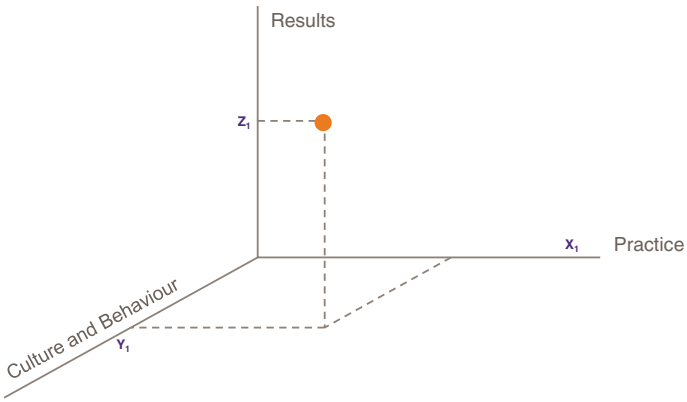

Fig. 9.12 The Maturity Assessment dimensions (*Courtesy* EFESO Consulting ©)

a company can then assess the need for any extra effort to eventually close the gap even further, as described in this graphic that shows constant, across-the-board detail regarding status updates and evaluations (Fig. 9.13).

Once this assessment process is established, there will be noticeable changes to the company, allowing for the possibility to:

- stimulate the self-evaluation process, seeing and addressing the required improvement activities
- introduce the cultural aspect of improvement in the evaluation process
- share good and best practices and integrate the company's combined knowledge into one platform

The Maturity Assessment system offers many advantages to a company, but most of all it will create virtuous improvement loops. After implementation, the end product of this system is the building and improving of **internal audit capability**, leading to a common improvement system that is relentless in sorting out internal problems. The system will also pitch in towards sustaining the cycle of knowledge gathering and dissemination of best practices. As any assessment system should do, there will be a clear identification of improvement areas, but what sets this system apart from the rest is that it also generates **a roadmap** and the eventual path **towards future direction and further improvement**.

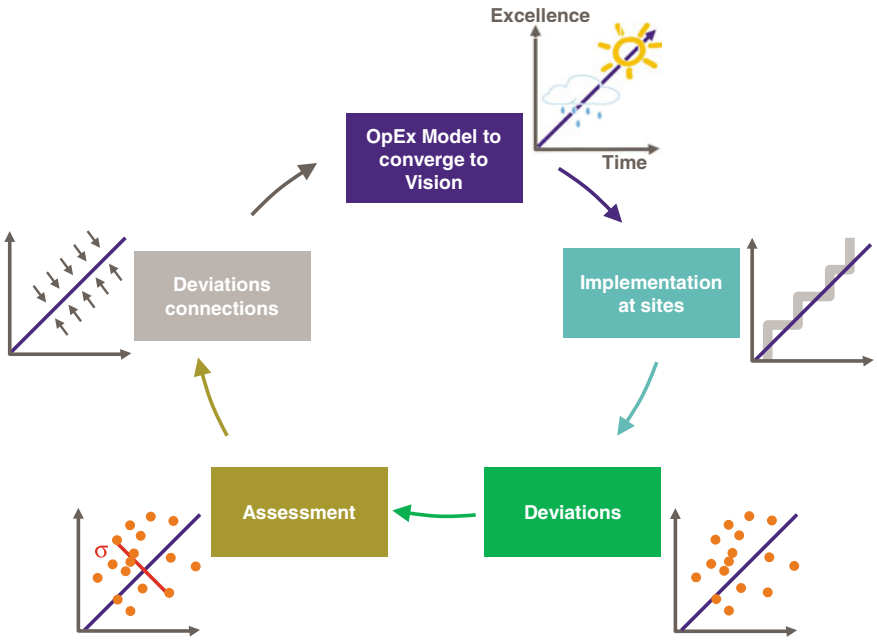

Fig. 9.13 The virtuous circle of the Maturity Assessment (*Courtesy* EFESO Consulting ©)

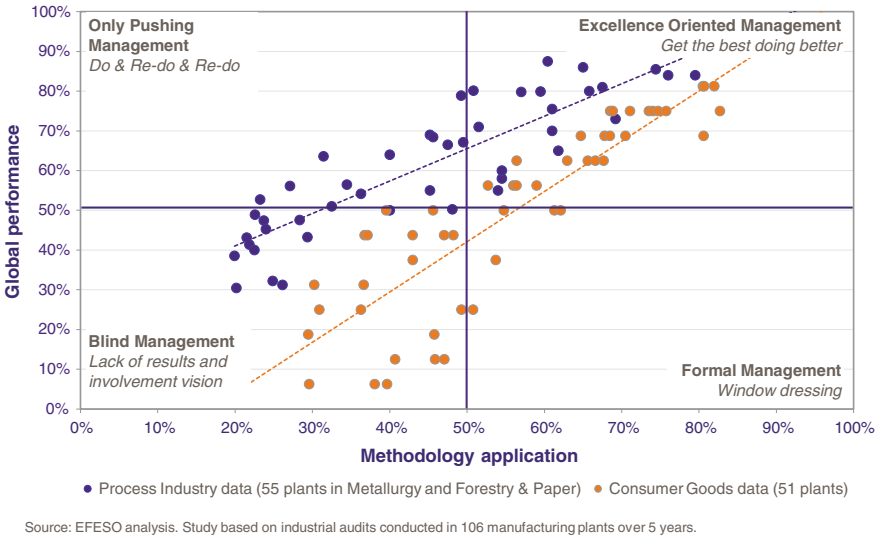

Fig. 9.14 Performance & Capability Development comparison (*Courtesy* EFESO Consulting ©)

A tried-and-true indication of WCOM™'s success was shown when we compared the Performance and Capability Development of 106 plants over the period of 5 years (Fig. 9.14):

The above graph was generated by Emanuela Nizzolini[1] based on the long-term experience of working alongside several international companies. The sectors in question were Consumer Goods and Process Industry, spanning four continents, all to show a rather common pattern in the data: for those who preach Excellence Oriented Management, there is an undeniable upward shift in performance on a global scale.

Outside the Coherence Diagonal (Low Capability-Low Results; High Capability-High Results) there are two areas where sometime the Management fails:

- Top left: high results-low capability. This is an area of non-sustainable results, as the results are obtained just by an extraordinary effort by a low skilled team.
- Bottom right: low results-high capability. This is the "country club" kind of management, (or worse, the "window dressing") where the latest management techniques are not focused to the results that really matter (Fig. 9.15).

[1]Emanuela Nizzolini is Knowledge International Expert at EFESO and **designer of the EFESO Maturity Assessment System**.

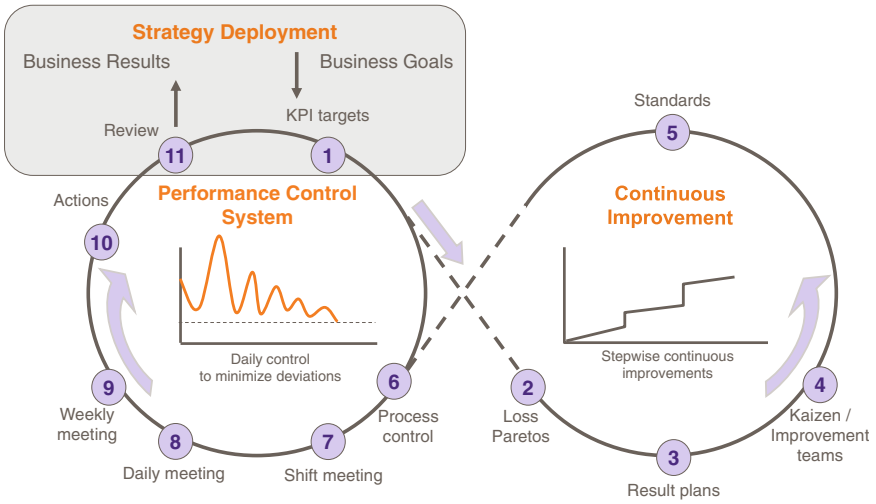

Fig. 9.15 The infinite loop system (*Courtesy* EFESO Consulting ©)

9.5 The Infinite Loop System

To sum up we can represent the WCOM™ system with an Infinite Loop, led by a Strategy Deployment which transforms business goals into business results by means of a Continuous Improvement Cycle and a Variability Control Cycle (from an intuition conceived by Bas Koetsier[2]). As shown in Fig. 9.15, the system becomes a series of steps that progresses from target to realisation all the way to performance follow-up.

The loop to the right represents Continuous Improvement, having as its various steps a "clock" which is measured out in weeks and months. It is mainly a top-down driven process. The loop on the left, on the other hand, represents daily control of variances, is driven bottom-up and has a "clock" which is measured out in hours. This is because at this stage reaction must occur as soon as possible in order to put things back in order and keep the system under control.

[2]Bas Koetsier, Vice President at EFESO.

Chapter 10
WCOM™ in R&D

Mario Galassini

10.1 What Is WCOM™ in R&D

When we think about WCOM™ in R&D we should focus on the effects (influence) of design on life cycle cost (or profit) rather than the pure cost of research and development activities.

As a matter of fact, Fig. 10.1 shows that the design cost typically represents a more 5 % of life cycle costs, even though the major decisions are made during this phase and determine the final cost, even though the major decisions are made during this phase and determine the final cost.

> For example, choosing a raw material that is already qualified instead of a new, cheaper one, can save someone hours for qualification but can impact the cost of the product BOM for its life cycle.

On top of decisions taken at the beginning, development is often affected by changes. The actual cost of a design change is dependent upon when the need for the change is discovered, and, clearly, the sooner a change is identified, the better.

The cost of a late change can be 1000 times the cost of an early change. Think of modifying the BOM of a product after its launch; it means re-launching feasibility analysis, industrialization, as well as probably submitting samples to customers, managing phase out and phase in of stocks, etc.

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C. Baroncelli and N. Ballerio (eds.), *WCOM (World Class Operations Management)*, DOI 10.1007/978-3-319-30105-1_10

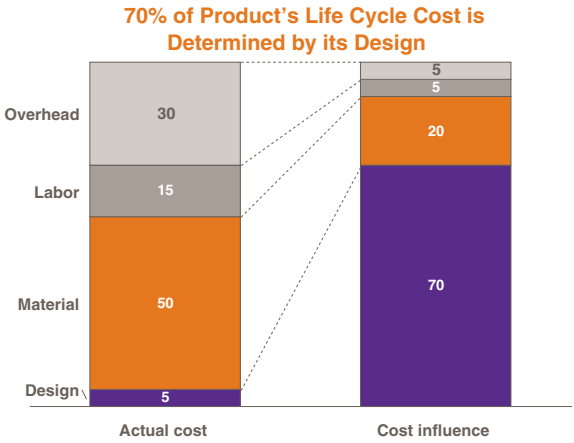


Fig. 10.1 Actual cost and cost influence of product design (*Courtesy* EFESO Consulting ©)

Design changes during development or during startup usually cause schedule delays that often translate into lost opportunity costs.

> For example, lost sales of entering the market as second player instead of first and having less influence on consumers in setting the industry standards.

We did not yet mention the importance of launching new products that meet customer needs into the market for the purpose of supporting future sales and profits.

One could conclude that the effects are more important than the R&D cost.

The truth is that a correct perspective should take into account the balance between R&D cost and its return in terms of value generation, though the return on investment of R&D.

WCOM™ R&D focus involves guaranteeing a **steady value generation** by preventing waste from R&D activities and from products and services.

Below you will find the big picture of innovation and its main elements.

You can see that the areas more directly affecting Operations are the ones on the right side.

The elements in Fig. 10.2 are the answer to five top issues for CEOs.

1. Innovation requires future thinking, anticipation; companies should learn to "dream the impossible" and build a vision to ensure competitiveness
2. Feasibility must be ensured in the early stages … and fast
3. R&D must ensure a reliable flow of profit generation consistently with business strategy through an iterative process of portfolio management

These first three areas fall outside the scope of this chapter and of this book.

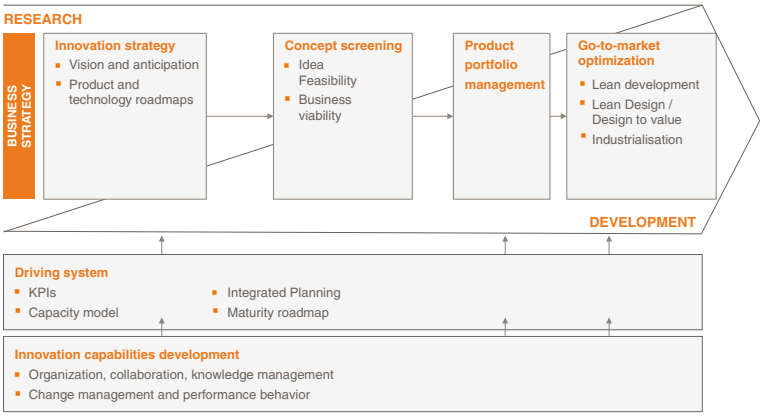


Fig. 10.2 World class R&D scheme (*Courtesy* EFESO Consulting ©)

4. Fast change rate of market needs require an acceleration of time-to-market and Optimization of life cycle cost:
    - Velocity of R&D process must be sufficient to keep the pace of market needs evolution
    - Lean/agile development is mainly focused on time to market reduction and respect of plan local pillars and schedule and resources
    - Lean design aims to bring added value to the concept and/or reduce the life cycle cost of products
    - Early Capex Management provides the right technologies at the right time to support both of aforementioned items
    - Technologies in use should be up-to-date and ensure the lowest possible life cycle cost in the future
5. Innovation teams needs to build capabilities to sustain innovation culture and growth:
    - R&D team must measure and adjust its level of capacity and competences
    - Need to motivate and retain talents, develop performance-oriented behaviour
    - R&D is more and more a matter of networks:
    - Who are the right partners we need to boost our innovation? Open innovation with customers and suppliers is more and more relevant
    - Knowledge and IP management become strategic assets
    - Rethink the organization in terms of knowledge and flow
        - *Often the organization is creating waiting time and is an obstacle to the flow*
        - *The organization is also very often determined by preservation of power rather than exploitation of knowledge*

- *Resources should be focused on value-adding activities*
- *Our evidence is that hardly more than 35 % of time is dedicated to core value-adding activities and less than 50 % on planned ones*

10.2 R&D KPIs

The KPIs for R&D are less common than KPIs for Manufacturing. Most of the companies are able to measure three of the six KPIs showed in Fig. 10.3 (customer satisfaction is the one that is measured less quantitatively). It is also easy to establish a direct link between the KPIs and the ROCE for Operations.

But when we get to second level KPIs (the second from the top, Vertical startup) the number of companies able to answer is reduced by half (Fig. 10.3).

It is a pity not being able to measure all those second level KPIs, which are much more useful for understanding in which direction the priority should go. Some examples can confirm this statement.

Time to market
Time to market is not only relevant for big innovations (where the starting point of idea generation is hard to define), but also for market-based calendar launches. A major player in cosmetics and personal care achieved a 50 % reduction of time to market for new collections. The effect of this achievement was being able to focus its resources to half of the collections.

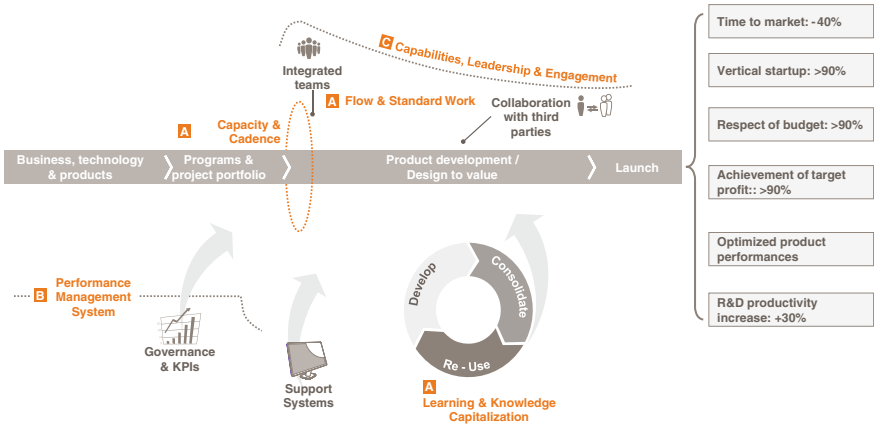


Fig. 10.3 Go-to-market optimization module and its KPIs (with typical improvement) (*Courtesy* EFESO Consulting ©)

The value of planning reliability (Vertical Startup)

The Vertical Startup is hardly measured but is the key indicator for time. One Executive Engineering manager of an American multinational company told me one day: "If I had to choose one key performance indicator for time, I would choose the Vertical Startup; because if you are able to make your startup vertical, time to market is probably respected, otherwise you can't make it".

Start-up of product and process must be vertical because resources can't be kept to support product or equipment launches one minute more than needed. The hidden cost of late startup is the enormous waste of your best people kept on site to solve (late) problems and preventing them from working on early prevention of issues of other products/equipment (Fig. 10.4).

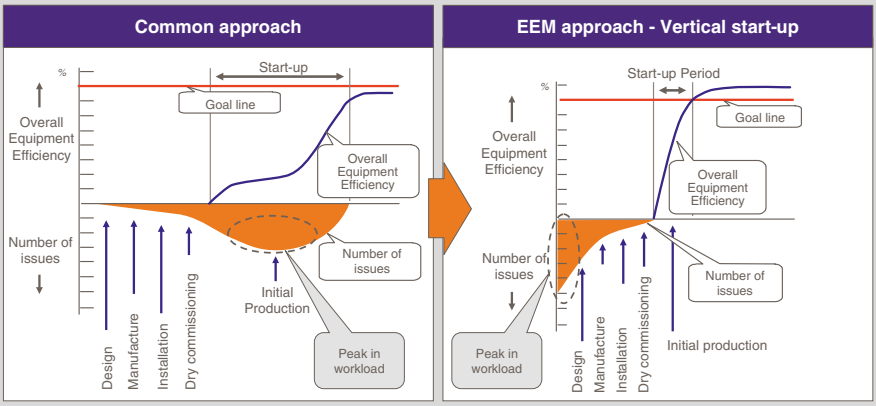


Fig. 10.4 Vertical Startup (*Courtesy* EFESO Consulting ©)

Success rate in vertical startup makes people think in a different way and creates a virtuous circle of ambitious thinking and time saving, plus pride for brilliant results. The progression I observed is a process taking at least three years, from less than 20 % of VSU in year 1, to 50-60 % in year 2 and more than 90 % in year 3.

Target profit, Project Budget and life cycle cost

Is it there really a trade-off between developing solutions that imply low-cost operations, providing a "competitive advantage" to manufacturing and project budget? No, in my opinion we pay such exaggerated attention to saving project budget hours than we lose focus on the reasons for not achieving target cost and performances in the minimum number of iterations (with a smart set-based design approach). It is often a case of perspective on budget and accounting.

I remember one case in which a company accepted low cost yields for new products because one extra loop of experimentation would have costed 15,000 Euro more. Another company had abandoned simulation (FEM) on its products due to lack of accuracy of the first models developed, instead of completing the learning path and gaining competitiveness. The result was a systematic late loop on industrialization to improve the poor performances, thus disrupting the project budget anyway.

The point is that project budget is easy to measure, yet no one can be 100 % sure of the results of an extra loop.

One major typical flaw is a lack of planning of test and feasibility loops; in that case, they will never be done as much as needed.

The lack of perspective on life cycle cost

This is another flaw generating a conflict between purchasing and manufacturing on the cost of machines and products and leading to poor decisions.

In a major 1st tier supplier for automotive OEMs, some manufacturing lines had been designed some years ago to minimize capex, but they are now being modified to take into account two factors that are very relevant for LCC: energy and manpower costs. Those two factors account for 55 % of LCC, while capex is "only" 35 %.

Complexity reduction

By extending the perspective from product life cycle cost to total cost of a product range, other ambitious targets can be achieved. Complexity can be effectively addressed if we consider the cost of set-up, specific tools, stocks, material management… on top of the product life cycle cost. We could discover that having less complexity might cost more in terms of BOM but much less to the company as total cost.

In an American electro-mechanical factory, the market might have doubled if the delivery time had been reduced from 8 to 2 weeks. This implied the avoidance of product-customized engineering and the systematic use of the same material range. The company redesigned part of its product range with a modular approach, making it possible to deliver standard modules in assembly-to-order mode, instead of engineering-to-order. In some cases, the cost of the BOM was higher than before, but benefits smashed these "virtual" extra costs.

10.3 Early Management and Knowledge Capitalisation

Elephants in engineering? Many of you have certainly read *Le Petit prince* (Antoine de Saint-Exupéry, 1943, Reynald and Hitchcock). In this book, the prince made a drawing and went around asking "What do you see?" (Fig. 10.5).

And everybody answered "A hat", while the Prince was seeing an Elephant eaten by a snake.

A similar metaphor can be made for R&D if we ask you "what do you see?" (Fig. 10.6).

You will likely answer "a technical approach for project management".

In reality, there is another elephant! In this case the elephant has four legs (as many as the four elements of the technical system) and a trunk that is spraying the

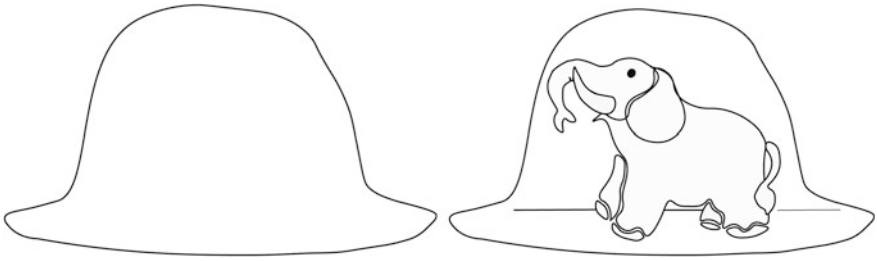


Fig. 10.5 A hat or an elephant? (*Courtesy* Noela Ballerio ©)

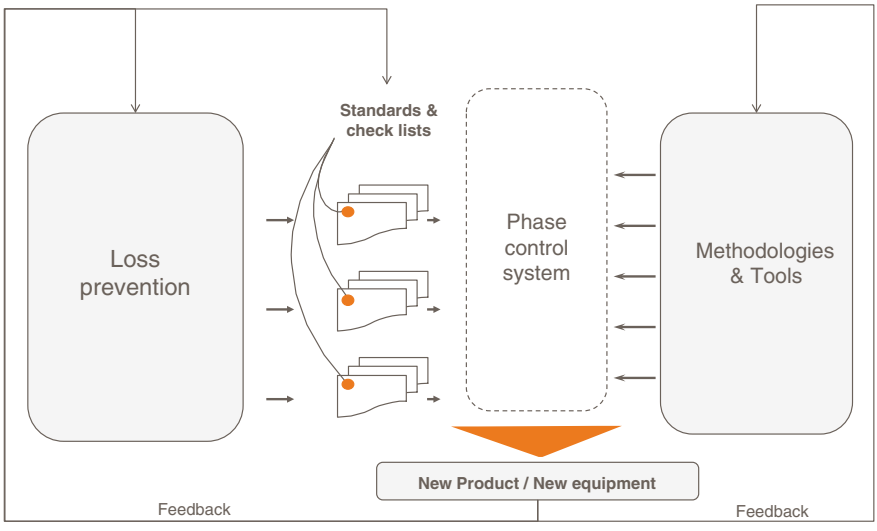


Fig. 10.6 What do you see? (*Courtesy* EFESO Consulting ©)

Fig. 10.7 The elephant (*Courtesy* Noela Ballerio ©)

water for better living (the equivalent of this in engineering is the feedback from the field used to improve the engineering approach) (Fig. 10.7).

The feedback is in reality the source of capitalization of WCOM™ knowledge. This is why the innovation pillars in a typical WCOM™ roadmap are usually activated later.

Innovation teams can capitalize a lot of feedback from WCOM™ Pillars and can open the eyes of R&D and Engineering on the real issues affecting the end-to-end innovation approach.

In addition, knowledge capitalization helps in reducing costs (discovering the limit of product and process) and reducing time to market by eliminating useless activities.

10.4 Loss Deployments in R&D

A powerful way to capitalize, and the simplest, is the Learn from Past Experience tool. It is an analytical collection of issues that happened in the recent past, analyzed in terms of when and how issues could have been avoided if the right person would have used the right tool in the right moment.

This analysis materializes the losses in terms of gap between what was expected and what was achieved, using time lost and/or money lost as units of measure. Having this analysis made with proper balance gives a surprising result, because the

focus is pointed more on categories of losses rather than specific projects or people to blame. Project feedback reports are often made, but seldom put together to understand the commonalities of losses.

The surprise often arises when we observe the Pareto charts obtained with the analysis. In my experience, having two sets of data is great.

Firstly, losses on average account for 10–15 % of investments and from 30 to 50 % of NPI costs, giving shocking awareness of the problem dimension; this is more than usually thought of and admitted in project feedbacks.

Secondly, the ranking of losses shows that the focus on R&D and Engineering is overly emphasized on technical aspects, leaving too much space to managerial issues affecting project effectiveness (time, cost, quality) (Fig. 10.8).

This analysis achieves the effect of making R&D "understand the need to improve", which is a great step.

It also opens the R&D door of WCOM™ because it materializes not only problems but also **feasible solutions** consisting in a more professional war to losses. Nobody diminishes the complexity of R&D's mission, but when losses are avoidable, there is space for improvement and actions are strongly suggested.

For example, sometimes simply a better collaboration inside and outside can prevent issues such as "sourcing problems" and lack of communication.

Aspects like risk management and "low manufacturability" can induce a review of early involvement of manufacturing in the development process, which brings great results in life cycle cost reduction and reliability of launches. I was told some months ago that "R&D's customer is Marketing". My opinion is that, to satisfy the real customer (usually the end user), all the actors in the value chain should be in condition to avoid losses. And possibly improve over time.

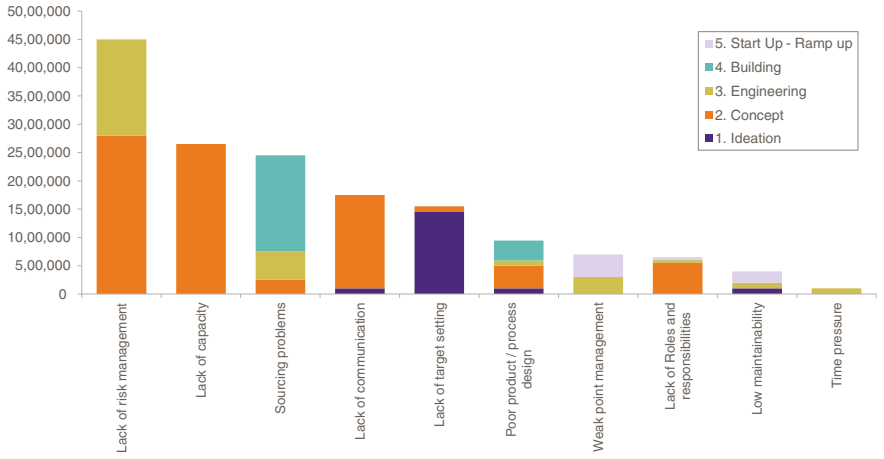


Fig. 10.8 Example of issues ranking in R&D (*Courtesy* EFESO Consulting ©)

Of course, other loss deployments (e.g. the value analysis of a product, customer claims, Value Adding vs Non Value Adding time of R&D technicians…) must be carried out to have a full perspective on priorities.

At the end, improvement targets must be achieved, and we have only two possibilities:

- Improve during each project (develop and improve)
- Improve before AND during projects (leveraging knowledge capitalization on all projects)

It is quite obvious just how much the second possibility is better than the first.

Last year I was involved in a project for the cost reduction of a plastic component. The team had chosen one strategy to reduce the weight and was ready to test the solution. We collaborated in a smart way; we decided to analyze past records of quality performances, competitor's designs, and so the team generated a set of five potential design alternatives inspired by the available knowledge and its projection for the future. Testing those five prototypes gave the team information to understand the limits of the solutions analyzed, so the final design was really optimized. Knowledge capitalization was used and leveraged.

10.5 Loss Prevention

The way to maximize knowledge capitalization is to use all the four legs of the "hidden elephant".

Feedback is dispersed geographically and over time; if we don't take care of shaping the feedback process, the "experts" will have less visibility on reality and will keep designing in the "old way", taking the same risks and repeating the same mistakes.

The first leg is Loss Prevention. The people working in this leg will create better knowledge for loss prevention by systematically collecting problems and ideas from the field and screening them until a state-of-the-art company knowledge is created.

Not structuring knowledge and/or not screening the best generates a frustrating time-consuming process of research in a fuzzy world of contradicting information.

This leg is extremely valuable: I have directly seen how exciting it can be (especially multinational companies) to get people involved in providing ideas to a central unit and creating **real experts, people who really have the best answer to problems and can provide guidance to design teams** (Fig. 10.9).

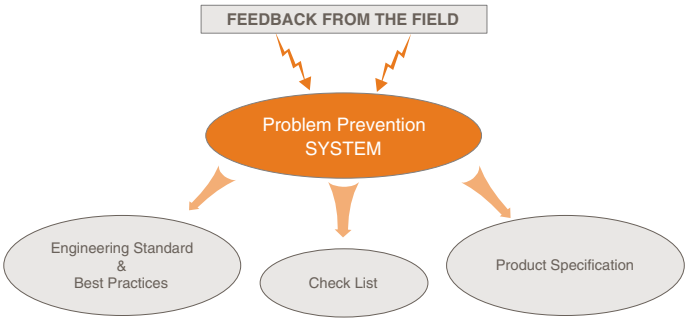


Fig. 10.9 Feedback from the field (*Courtesy* EFESO Consulting ©)

10.6 Standards and Checklists

The second leg is dedicated to standards and checklists. Even in a very structured knowledge database, we could easily lose the time we worked hard to save for research, only to understand which part of the knowledge is really applicable and useful. I personally spent half a day looking through a set of beautiful studies on brewing without finding an actionable piece of information for my specific need.

One of the greatest inventions for R&D is the **standards and checklists**: knowledge made accessible and available.

Standards contain a set of values and principles (e.g. specifications) that explain the best way to implement an R&D action (performing a test, a calculation, involving a supplier, buying material) and WCOM™ makes a wide use of them in general.

Checklists provide knowledge and support to the specific point of use. To use a metaphor, it is like passing from a stock into the warehouse to a stock shipped to the line in the right quantity for the shift. The stock of information can be massive and hard to use, there's a need to break down a big mass of information into small parts and summarize the essential parts in such a way that future losses can be prevented by verifying values and design characteristics.

I have seen many kind of checklists in my life, from the simple ones like task control to the ones that can interact with design activities such as automatic verification of calculation, to those that verify if design principles are respected those that are specific to a product or to a technology. Checklists can be applied proactively (e.g. for design reviews) and are extremely powerful for risk prevention, as we will see later. Checklists would have saved me hours in the research of a specific parameter for the brewing process.

Sometimes I hear people saying they spent a lot of time filling checklists without any added value; that's a symptom of poor style or no updates. Checklists must be managed in a system to avoid being out of date or redundant. They are also a great way to delegate development and/or testing/installation to younger people or

factory technicians. I always have in mind the famous scene from the movie "the dirty dozen", where twelve "wild" criminals participate in a sophisticated spy mission in which the synchronization of all actors is key for success. A checklist is created and taught by the Major leading the command and people are energized by mentally checking all the success factors in sequence.

Believe it or not, I experienced a similar effect in a project that resulted in the fastest startup of a new furnace and its five lines in a glass factory. People from the factory were so intensively involved in powerful checks that more than 1500 points in a complex installation and startup were kept under control with a perfect team spirit by 25 people. They could appreciate the great work of engineering thanks to the possibility of checking machines and equipment during their installation, learning how to see problems and ensuring consistency on a daily basis.

10.7 Work Process

The work process is the backbone of the R&D machine. It is often over-engineered and too rigid, the opposite of what pragmatic people want: flexibility.

Many companies struggle in finding a trade-off between a full process (oversized and creating administrative losses) and a lousy process (not detecting problems).

I saw situations from both sides of the spectrum.

> A multinational company investing huge money to have a standard work process, requiring more than 105 deliverables. Too heavy, said most of the process actors.
>
> In another case, a company selected only a few mandatory steps because of the fear of bureaucracy, but this simplification brought a series of losses to a Greenfield in East Europe that should have been a copy and paste from a Chinese plant.

First of all, the process has similar steps: some gates, some responsibilities and templates for deliverables. The process must be always be inspired by the same principles to have common metrics: easy prioritization, productivity of R&D actors. These are the basic principles of "Flow and standard work".

But the process cannot be fixed, there are not enough resources to do all the activities every time. The key point in finding a correct trade-off between effort and effectiveness is **Risk identification**. Risk is the shaper of the development process, and can be deployed by criteria and area (Fig. 10.10).

And what is **risky** if not a **gap of knowledge**?

As shown in the illustration, the strategy is to apply heavy efforts where knowledge is low (and must be capitalized), while simply using a checklist where knowledge is reasonably sufficient.

CRITERIA	Inlet station	Water jet	Grinding	Outlet	Washing
Quality	*	***	**	*	*
Reliability	*	*	**	*	*
Maintainability	*	*	*	*	*
Safety	**	*	*	**	*
Operability	*	*	*	*	*
Affordability	*	*	*	*	*
Delivery	ok	ok	ok	ok	ok
ok/risk/delay/ critical/non critical	ok	ok	ok	ok	ok

Legend

* Based on experience (checklist)

** Adapt experience (some new components)

*** Develop knowledge through prototypes, find the limit

**** Specific tests with scientific approach

Fig. 10.10 Risk identification (*Courtesy* EFESO Consulting ©)

10.8 Tools and Methods

There is an immense set of tools and methods supporting early management and knowledge capitalization. Some of them are the classic FMEA, QA matrix, Control charts, validation protocols, etc. I have also seen in other excellent smart tools like target setting, Duane analysis, Sequential sampling, sensitivity analysis, QX matrix. They are smart because can give answers to questions like "How much should I insist on a wishful thinking startup while hoping to get my product conversion cost targets by next month?" or "What is the impact of this small printer on my big line made of twelve machines?".

The choice of tools should be always linked to the highlighted risk. A part of them are fixed, but some of them are really dependent on the context; you should always ask yourself which conclusion you are looking for by using the tools in the available time. There is nothing like making an effort without bringing relevant conclusions to kill the popularity of a tool in the frenetic engineering environment.

Tools can also be focused on specific areas. For example, automotive suppliers (subject to APQP standards) have found it very productive to build a library of product and process functions, creating a configurable FMEA that acts as a base for every new product. So, each new product must be analyzed exceptionally in-depth only, giving us two advantages:

- known functions are reviewed and their RPN parameters updated
- new functions are analyzed in depth with more energy and become a future reference for new product/process generations

This kind of process is an example of the advantage of having a Pillar for Early Management.

10.9 The Greenfields

The Greenfields, of which I have seen a dozen so far, are a specific case. They are fantastic opportunities to regenerate a "loss-free" manufacturing environment and a lean supply chain.

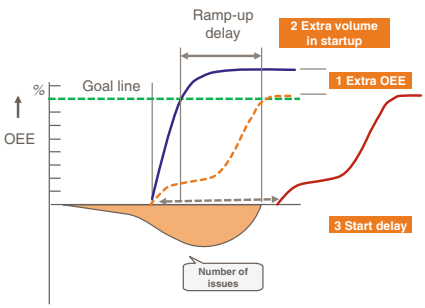
The Greenfield is different from a typical project because its complexity gives rise to a mass of decisions with an order of magnitude that a normal project manager can't afford. And when the engineering department is not aware of this phenomenon, projects are delayed or full of wishful thinking decisions, changing the fantastic opportunity of "loss-free" manufacturing in a painful race to loss reduction under the angry pressure of top management.

One important factor is to understand the "value" of a plant performance from the life cycle perspective.

In the following example, we see how much one week of start delay, one extra ton in vertical startup and one extra point of OEE are worth. Knowing those values, the management can understand how much setting up a proper team to anticipate losses is worth (Fig. 10.11).

Four modules are ideally used to support Greenfield projects, as shown in the picture where the main correlation is identified. (Fig. 10.12).

1. **Advanced Project Management** is a revolutionary approach of planning and following up, using smart tools like Design Structure Matrix and Critical Chain. An obligation for a preliminary plan challenge and work resource constraints to ensure a smooth progress of activities.
2. **Lean Design**
   Enhances the lean principles in concept, quantifies and minimizes losses in the earliest stages: 3P (Production Preparation Process)
   Provides methodologies and experiences for better design solutions



EXAMPLE

	Yearly volume	360,000	ton/year
	Ebitda per ton	EUR 177	euro/ton
	Target OEE	80%	%
	Achievable OEE	83%	%
1 Extra OEE	capacity	450,000	ton/year
	extra volume	13,500	ton/year
	extra EBITDA	EUR 2,388,462	EUR/year
	extra EBITDA 1%	**EUR 796,154**	EUR/year/OEE
2 Extra volume in startup	tons during start up		
	planned	433,000	tons
	actual	495,500	tons
	extra tons	62,500	tons
	extra EBITDA	EUR 11,057,692	euro
3 Start delay	weeks/year	51	
	EBITDA per week	EUR 1,248,869	EUR/week

Fig. 10.11 Value of opportunities in vertical startup (*Courtesy* EFESO Consulting ©)

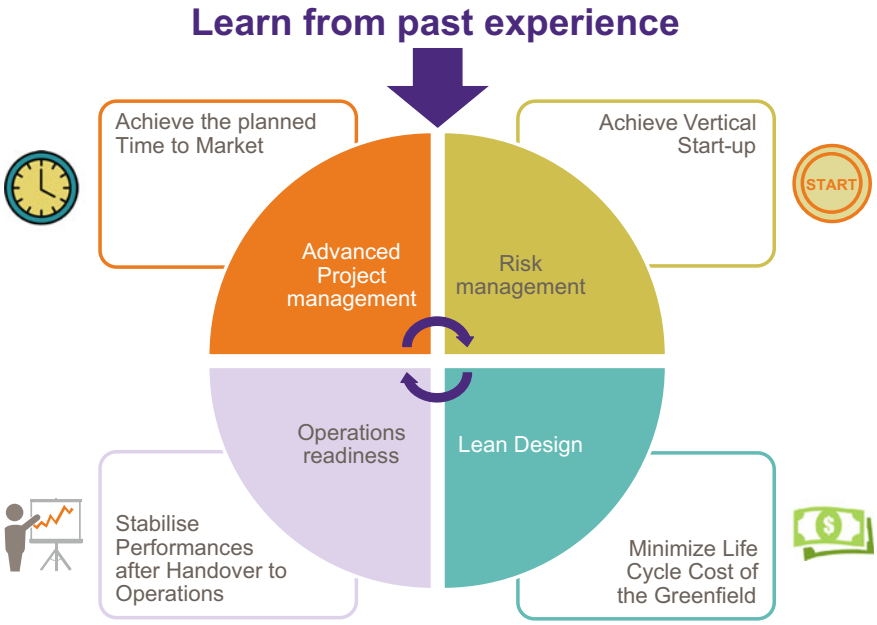


Fig. 10.12 The four modules to support Greenfield projects and their positive influence on Multiple KPIs (*Courtesy* EFESO Consulting ©)

Minimizes loops and anticipate delays by integrating key suppliers in the Early Equipment Management phase control with a transparent and collaborative mood

Simulates operating systems and sensitivity analysis

3. **Risk Management for Vertical Start-up** Applies the Phase Gate Control System to guarantee a high performance process and early detection of losses

   Sustains an effective start-up management through statistical projections of reliability, quality; avoids never-ending trial and error
4. **Operations readiness** Contributes to define the best practices and World Class Standards for problem prevention

   Engages your personnel with exciting Change Management Events to increase their passion for results

   Ensures the training process for all the operators is completed before start-up

10.10 Key Actors and Change Management in R&D

Engineers are more often more wired for hard work than for smart management.

Dealing with engineers means always finding a great resistance to change but also an enormous potential, often unexploited energy. I usually find no more than

35 % of value adding time to R&D organizations, despite people striving to produce more "value".

If we dig into the typical causes of waste in R&D activities, we find many of those reasons belonging to synchronization, communication, delegation, respect of "service level" between internal customer and its supplier. Those things generate lots of waiting time and frustration that is usually filled in with other non-critical activities which generate more queues and delays in a never-ending vicious circle. Take a look at your agenda and check how much you had to postpone important things because you have to do too many other things and your plan is not "agile" enough to adapt continuously. Changing habits like this is sometimes like climbing the Himalayas.

So, **management change is at least half of the reason for success or failure**.

Lean Agile development and Lean Design methods are the best methodologies to eradicate this kind of waste; starting with software, those methods can be used, once properly adapted, in almost any R&D or engineering process. They open the door for a new way of planning, sharing and executing activities, sustained by Kanban and Scrum tools.

The miracle of visual management

Collaboration is enormously enhanced with a proper **visual communication**. Every actor immediately understands the extreme importance of a timely cross-functional approach and feels engaged in a very practical challenge consisting of systematically delivering the small chunks that are planned. The greater good is visible and systematically updated, so people find the energy to comply with the optimal plan. This great change—a harmonization of priorities—is one of the key success factors for change.

Involvement of operational resources

The most obvious change is the involvement of operational resources. "Early management" means having them onboard when R&D people have not yet closed specifications or taken decisions in any direction. This early involvement respects one of the fundamental rules of WCOM™: everyone's involvement.

Supplier and customer involvement

Learning to interact with suppliers and customers means saving lots of time and money. It is another attitude change towards external sources of knowledge. Having a physical space where suppliers can work and collaborate, having a pilot line for customer trials is becoming a strong weapon to build knowledge through productive collaboration. Companies need to free up time for setting processes in this direction.

Program manager

Every orchestra has its director. R&D processes must too. If a process is cross-functional, it is almost impossible to speedily drive it through the functions.

If project leaders don't have someone arbitrating the allocation of resources for the greater good, the planning will reflect the power of project leaders (usually very low anyway).

The program manager plays the essential role of orchestra director. His/her mission is to let the organization pull projects according to the multi-project plan he/she is responsible for. Sometimes he/she can be a chief engineer, sometimes just a younger profile, depending on company culture, projects complexity and power balance within the company.

Top managers

There is always a matter of top management leadership and endorsement. Every presentation, every book will tell you the same. I would like to add an essential element. Top management is traditionally unable to challenge the R&D management due to the **lack of visibility of losses** and the **detachment of operational strategy in respect to innovation priorities**. WCOM™ innovation provides top management with a powerful driving system for monitoring results from one side and maturity growth on the other side. This is a great opportunity to harmonize marketing, supply chain and innovation. Top management must learn how to see and seize this opportunity (the **Obeya room** is the right place where to meet and make decisions).

In addition, top management sometimes involuntarily generates lots of waste.

- by delaying decisions too much, e.g. waiting too long before approving Capex and allotting no time at the start for completing the project on time
- by ignoring the capacity of R&D structure and setting an unfeasible cadence of products launch even if the yield of the pipeline is lower than the expected throughput
- by focusing on performance too much and not enough on good methods and waste and being an active part of the solution. R&D sometimes spends too much time in justifying the reasons for poor performances to the board, rather than analyzing waste

The bigger picture: master pillars for World Class innovation

EEM-EPM Pillars on the production site cover just the tail of a bigger innovation process; the real battlefield starts upstream. One of the reasons behind the poor progress of EEM-EPM practices in some multinational companies is the lack of understanding of a site team's limited resources and a central engineering team's power of capitalization.

Therefore the best approach is to **combine efforts by creating both pillars at site level and central level**.

Site pillars will be mainly responsible (totally or partially) for work process execution and feedback collection, while central pillars, the **"Master pillars"**, will take care of screening and standardizing feedback, as well as providing local Pillars expertise and guidelines (Fig. 10.13).

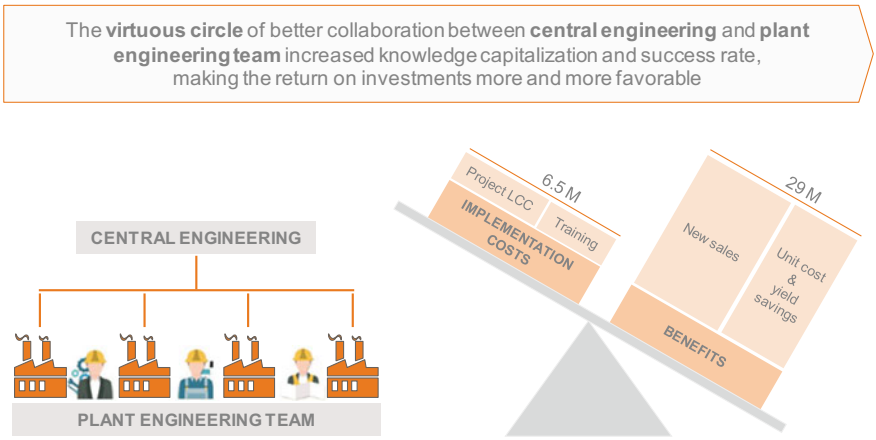


Fig. 10.13 The virtuous circle between central and local engineering functions (*Courtesy* EFESO Consulting ©)

Many multinational companies struggle with sizing central engineering functions. The answer to this dilemma is also in the answer to the following question: what is the value of knowledge generated and spread by those functions vs their cost?

Chapter 11
WCOM™ in Supply Chain

Clive Geldard

11.1 A Supply Chain Is Only as Strong as the Weakest Link

It is not just individual companies that compete with each other; it is the supply chains to which they belong (Fig. 11.1). Look at any industry sector and you find a variety of supply chains made up of individual companies and enterprises that jostle and compete with each other to deliver goods and services to customers. When customers receive value and satisfaction from those goods and services, they reward and remunerate the providers and participants in the supply chain share the gains. High performing supply chains are able to deliver better customer service at lower total cost and often with higher asset turns. In other words, a high performance supply chain delivers a superior value proposition to the customer.

Of course in a non-commercial environment, such as in NGO's (Non-Governmental Organisation), defense or even healthcare, the supply chain must perform for a greater purpose. In the healthcare or NGO scenario, the performance of supply chain can mean life or death for the end patient or recipient of humanitarian aid. For the Army in a fighting situation, logistics, materials provision and the performance of a supply chain may mean the difference between success or failure on the battlefield.

Companies increasingly recognize that supply chains are a force for competitive advantage in the market place. When companies truly have the ambition to build a "world class" supply chain, it is important they envision the optimization of the total end-to-end chain, and not just a functional or local optimization within one company or site. The "field to the fork", if you like, in considering the performance of a food supply chain.

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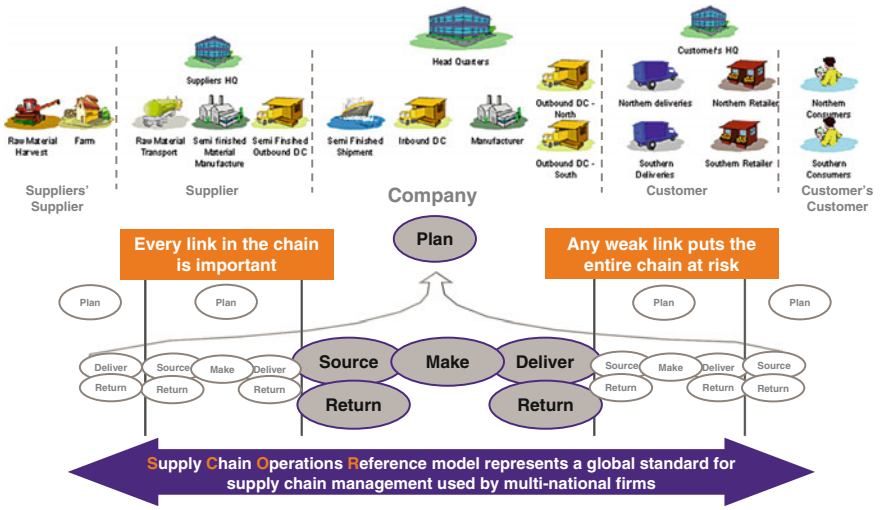

Fig. 11.1 End to end supply chain, every link is important (*Courtesy* APICS ©)

The end-to-end concept of the supply chain is best visualized as a value stream or value network. Rarely is the supply chain a single, continuous chain. A typical supply chain will have a multi supply, multi product, a multi channel element to it. They have become complex networks and extended with globalization and strategies such as those to outsource "non-core" activities or to seek low-cost manufacturing sources.

Companies are therefore highly interconnected and interdependent in a supply chain, not only through product flow, information flow and financial flow, but increasingly with considerable process and systems interaction and dependency between each. Failure or breakdown in one part of the chain can have dramatic consequences for others with the final customer proposition put at risk.

One concludes that the supply chain is only as strong as its weakest link and every component, or every node in the chain is important. The overall performance of the supply chain, and ultimately delivery of the customer proposition, relies on a strong and consistent execution by each of the individual elements in the chain. Here, the application of World Class Operations Management (WCOM™) techniques in the supply chain can be a differentiator.

11.2 Retail Fast Moving Consumer Goods (FMCG) Chain as the Early Adopters of WCOM™ in Supply Chain

The Japanese Motor Industry is widely credited with the origins of Total Productive Maintenance (TPM) and Lean thinking. When I started my career in the automotive industry back in the 80s, I didn't get exposed to the Toyota Way or TPM. The

industry I saw at that time seemed largely concerned with managing quality defects and industrial relations problems.

I first became aware of Lean and TPM in a supply chain context in the late 90s when I became involved in the ECR (Efficient Consumer Response) organization—within the fast moving consumer goods (FMCG) and retail sector. At that time I saw organizations like Procter & Gamble Co.—an American multinational consumer goods company and Tesco—a UK based grocery retailer, starting to use techniques from the automotive sector with the encouragement of people like Daniel T. Jones, Cardiff Business School and co-author of several Lean works including Lean Solutions (2007).

11.3 "Fresher, Simpler, Cheaper"—Three Words that Capture the Idea of Lean Thinking in the Food Chain

Organizations like Tesco and a number of others started to study how lean the grocery and retail supply chain was (Fig. 11.2). There was considerable focus on the level of waste that existed in the end to end food and retail supply chain with the realization that the whole chain operated with a time line where less than 5 % could

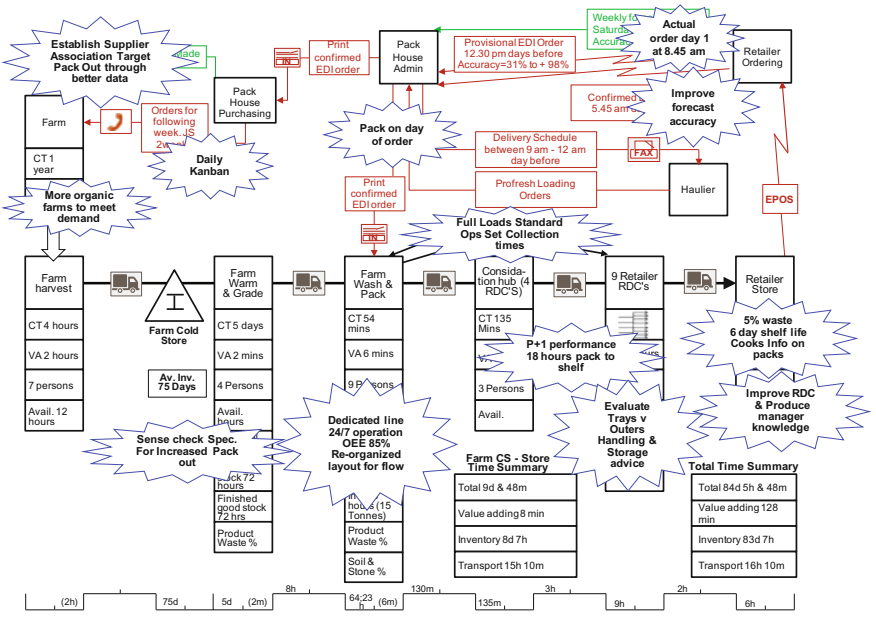

Fig. 11.2 Example of food chain value stream map (*Courtesy* IGD, Institute of Grocery Distribution ©)

be considered "value-added". This was my awakening to the opportunity of WCOM™ in supply chain. By 2004 Tesco had banked savings in excess of £270 million as a result of "lean" supply chain initiatives over a 3–4 year period.

Many people will be familiar with The Beer Game, developed at MIT's Sloan School of Management in the early 1960s as part of Jay Forrester's research on industrial dynamics. It is a role-playing simulation developed to demonstrate the advantages of taking an integrated approach to Supply Chain Management. It shows the effect of demand amplification; the classic bull whip effect where the demand signal from a customer is amplified back up the supply chain into the distributors, back to the manufacturers and ultimately the raw material providers. Demand amplification matters because it distorts flow, adds cost and puts risk into supply chains. The root cause of bull-whip often lies in people or organization behaviors, misaligned KPIs or reward mechanisms and a general lack of end to end supply chain visibility and communication to better understand customers and how orders are being placed and managed in the chain. Inventory reduction, continuous flow and lead-time compression have long been a focus in lean supply chains. Collaboration and performance behavior are additional essential ingredients for world class.

The origins of World Class Operations Management in supply chain share the same roots as manufacturing. The combination of Lean, TPM and Six Sigma thinking applied to a supply chain frame of reference has the potential to address a wider perimeter of losses and greater potential for improvement.

11.4 WCOM™ in Supply Chain—A Logical Progression from Manufacturing

In 2007, I was invited to work with a famous global brewer. At that stage, the Brewer was already 2–3 years advanced in its TPM journey of operational excellence in the manufacturing organization, covering the 100 brewery locations worldwide. They are proud brewers and maintained a strong manufacturing centric focus however a question was beginning to emerge: how could they apply World Class Operations Management principles to the wider supply chain going beyond the boundaries of the plant? For me it was very interesting to explore with them just what it would mean for their organization and how you could practically extend the scope of World Class Operations Management from factory into logistics and the end-to-end supply chain (Fig. 11.3).

Does it make sense to extend World Class Operations Management from manufacturing to supply chain? Absolutely! Should you start World Class Operations Management in the extended supply chain before establishing WCOM™ capability in manufacturing? Maybe not. Let me explain.

It is usually easier to integrate and synchronize the activities in the supply chain once individual functions are able to perform to a standard. Each area has to deliver a relatively stable, reliable and consistent level of performance before you can effectively join up the functions and optimize fully across the wider supply chain.

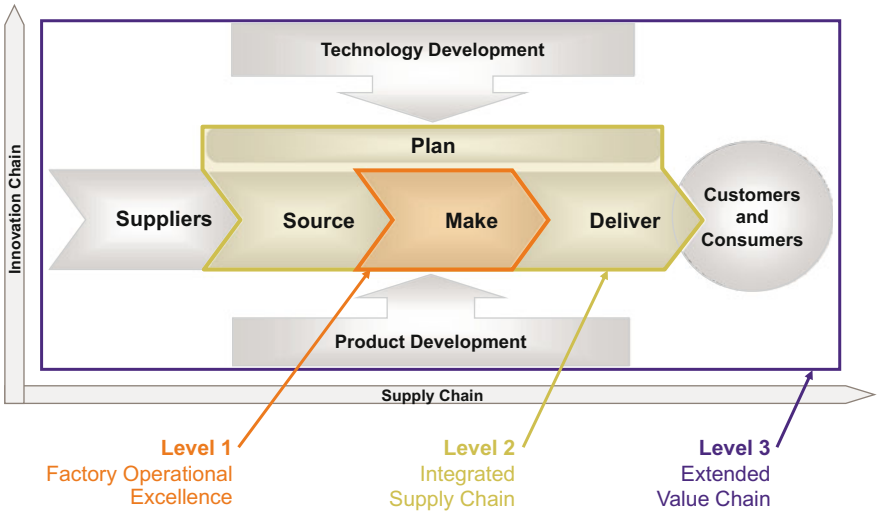

Fig. 11.3 WCOM™ in supply chain—a logical progression from manufacturing (*Courtesy* EFESO Consulting ©)

So, for example, having an unreliable or broken manufacturing conversion process which is unable to produce consistent quality products to the plan does not provide a stable platform on which to build a high performance supply chain. Consequently, if WCOM™ in manufacturing is achieving strong levels of manufacturing performance and reliability, this can be a trigger and motivator for launching WCOM™ in the wider supply chain. What I also observed is that the capabilities that are developed during WCOM™ manufacturing offer synergies that can be exploited when launching to the wider supply chain. Now that doesn't mean that you should necessarily have the supply chain programme managed or led by engineers, who are used to work in a factory environment. In fact far from it, I would advocate that it's better to develop a multidisciplinary team that includes people familiar with commercial, finance and other functions in the organization rather than just having a manufacturing centric group to champion the world class supply chain initiative. Going back to the brewer example, the business case for looking at world class operations management in the supply chain was based on the recognition that the company had more cost involved in the supply chain than it actually had in its manufacturing organization. It had reached a tipping point where there was a recognition that the value at stake in looking at world class performance in the end-to-end supply chain could deliver a more dramatic impact on business results than just by focusing on the manufacturing and conversion processes, and this was a key driver for the brewer to push forward with World Class Operations Management (WCOM™) or TPM in the wider supply chain.

Following a period of pilots, the Brewer programme for logistics and supply chain has been rolled out progressively to more than 35 operating companies worldwide over a 4–5 year period. By the end of 2014, the programme had engaged more than

3500 people and delivered 2000+ improvement projects. These had delivered significant service level improvements with savings and cash flow benefits of almost 80 million euro.

11.5 A Supply Chain Performs at Less Than 40–50 % of True Potential—WCOM™ Provides Methods to STOP the Losses

We can think about the losses that exist in supply chain and loss eradication in the similar way to Manufacturing. First however, it is important to understand the scope of the supply chain we are dealing with and time-frame within which losses can or cannot be addressed.

There are four categories of loss we can **S-T-O-P** in the supply chain:

- **S**trategic losses resulting from poor strategic supply chain design;
- **T**actical losses that exist due to sub optimization of the supply chain trade-offs and constraints
- **O**perational losses leading to inefficiencies in operations and processes;
- **P**eople losses, related to levels of engagement, empowerment and behaviours of our people.

Poor strategy locks in 60 % of the cost in a supply chain. When an organization is designing a supply chain network for example; deciding where they should put manufacturing facilities, what kind of technologies they should have, where they should be located, how they should service the channels to market, how many warehouses are needed and so on; these type of strategic decisions on the design and layout of the supply chain network result in a "long-term" lock in of significant levels of costs and assets into the supply chain. We can argue that something like 60 % of the cost and assets are being locked in at the strategic supply chain design phase and that's an important element to understand when thinking about supply chain optimization. So what about the other 40 % of cost?

The other 40 % presents opportunities when one is able to scrutinize and challenge the levels of value-added and execution performance standards across the supply chain. This is an important area for application of world class operations management techniques in supply chain; the core purpose is to "achieve excellence in execution" and align and connect functional roles across the supply chain to deliver a profitable balance.

WCOM™ can be applied at the functional level of supply chain to deliver benefit, but also for end to end processes (e.g. order to cash) and cross-functional business processes (e.g. sales and operations planning, new product introduction etc.). It is within these cross functional processes where many of the losses and disconnects can be found and must be attacked to drive improvement. Here the

challenge is to bring together the financial, operational, commercial, marketing and the product development elements in the supply chain to find solutions.

We can classify **the main loss types in supply chain operations** as follows:

- **Manpower/People**, losses in labour productivity or due to non value-added work
- **Machine**, losses in equipment and asset utilization
- **Material**, losses due to wastage, shrinkage and shortage
- **Method**, losses due to process breakdowns and losses, whether that's information, disconnects, poor communication
- **Time**, losses resulting from delay or excess lead time
- **Service** losses, shortfalls in service levels or gaps in expectation in service versus what customer ideally requires
- **Cash** losses, in the sense that we carry excess working capital and inventory or we have an excess cash conversion cycle. (often in excess of 100 days in many organizations)
- **Outsourcing** losses, where the responsibility for parts of the supply chain have been delegated to a third party organization and losses occur because the supplier management or contract requirements are not correctly articulated. There is some mismatch on expectations between outsource partners and principal company
- **Revenue** losses: for example; lost sales, returns, claims and discounts. This may result in a loss of margin or revenue on business that otherwise could have been earned had the supply chain performed correctly
- **Environmental** losses, these are losses due to excess energy usage or poor use of the assets and resources coming from an environmental and sustainability perspective.

The **"10" operational loss types** described above can be recalled as **"4MT SCORE"**.

11.6 What Has to Be Managed to "World Class" Level and What Is at Stake?

If we think about the main processes to deliver an excellent supply chain, actually we can group them into three areas.

First there are the **strategic processes**; the ways an organization translates the business strategy into requirements for the supply chain. How does the supply chain need to be organized to support the business strategy and fulfil the aims that the company is trying to achieve? Where exactly does the supply chain need to perform to an advanced or superior level of performance in order to deliver a specific customer proposition? These are some of the strategic processes and questions that need to be addressed when embarking on a WCOM™ supply chain initiative (Fig. 11.4).

		Attribute	Strategy
SERVE	Customer	Reliability (RL)	Be the best at getting orders delivered at the right time, in the right quantity, meeting all required quality and documentation requirements
		Responsiveness (RS)	Be the best at responding to customer demands and the fastest at providing products / services to customers
		Agility (AG)	Be the most agile in terms of ability to respond to (upscale and downscale) changes in demand
COST TO SERVE	Internal	Cost (CO)	Control the end-to-end Supply Chain with the most effective cost model, compared to the competition
		Assets (AM)	Be the most effective organisation in managing the supply chain's assets to support demand fulfillment

Fig. 11.4 Competitive attributes for a world class supply chain (*Courtesy* APICS ©)

Second there are the **tactical processes**; these are the processes an organization uses to ensure a profitable optimum balance in the supply chain by managing the various trade-offs and constraints. The key ones are the trade-offs between cost, service, working capital and capacity (typically constrained assets). These four elements need to be maintained in some kind of equilibrium in order to achieve a profitable outcome in the supply chain and deliver the required levels of service and value to the customer.

The third element to be managed are the **operational processes**. These are processes that have to be executed strongly, hour by hour, day by day, month by month, in order to ensure that the supply chain performs in a consistent and reliable way delivering the relevant KPI's and service levels to customers (Fig. 11.5).

The APICS-Supply Chain Council **SCOR model®** defines, at various levels of detail, the key processes that have to be managed in the supply chain. At the headline level these are described as **Plan, Source, Make, Deliver, Return** supported by the **Enable** processes for the supply chain. Now we could also add to that the design and innovation processes, the selling and commercial processes and of course the additional after sales service processes that also deliver value to the end customer.

So what kind of results can be achieved by a world class supply chain?

If one looks at the benchmark data shared by organizations such as Gartner—a research and advisory company providing information technology and supply chain related insight, they highlight that companies with high performing supply chains deliver 20 % more perfect orders to customers than others. At the same time, they do it while holding half the level of inventory days whilst also having a supply chain cost to sales revenue ratio that is 5 % lower than companies who do not have a supply chain focus. So there is tremendous value at stake by putting an emphasis on managing the supply chain in a world class way.

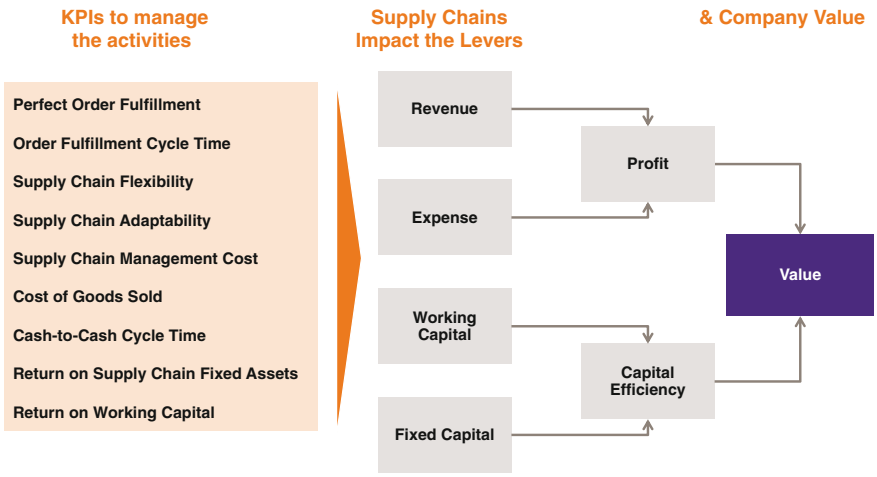

Fig. 11.5 KPIs and impact levers for a world class supply chain (*Courtesy* APICS ©)

An organization like Unilever for example, the Anglo-Dutch multinational consumer goods company, has worked hard on improving its supply chain performance over the years. It's had a consistent focus not only on supply chain cost, but also on the revenue, growth and sustainability impact coming from a stronger end-to-end supply chain performance. Whilst the business has banked multi million Euro savings in supply chain through cost efficiency measures, by also looking at the value contribution of supply chain it has been able to improve service levels to customers by working in partnerships with retailers and distributors to increase on shelf availability. This has had a positive impact on revenue. Converted into cash equivalent that is worth several billion Euros of extra revenue. The impact of Supply Chain focus can also be seen in Unilever results: Analysts estimate 2–3 % points of growth came from Supply Chain between 2008–2011 (Jeffries).

Let's take another example. A business like Saint-Gobain—the French multinational corporation that has a major focus on innovation, construction and habitat. It is recognized to be a high performance organization in terms of innovation that has also had a very concerted focus on world class manufacturing to drive cost competitiveness in its manufacturing processes. Now the leadership sees the importance of focusing on world class supply chain as a way of leveraging the capabilities in innovation and cost performance in manufacturing. In doing so, it is leveraging investments into a stronger service proposition and benefit to customers achieved through a strong execution and KPI driving system in the supply chain (Fig. 11.6).

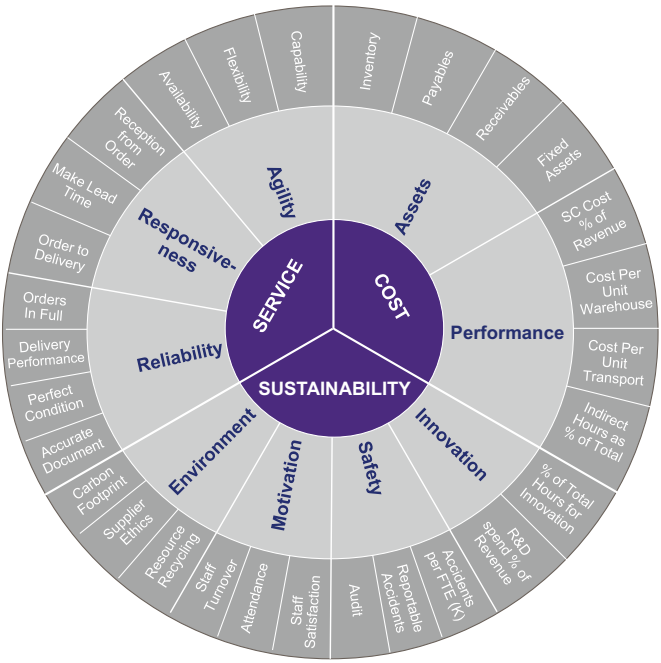

Fig. 11.6 Example KPI dashboard for the WCOM™ supply chain driving system (*Courtesy* EFESO Consulting ©)

11.7 Building a Business Case and Leadership for WCOM™ Supply Chain

In recent years supply chain management has moved up the corporate agenda. It is increasingly being cited as a reason for business success or failure. Several prominent CEO's have been removed from post following high profile supply chain failures.

Traditionally companies have seen supply chain as a consumer of cost and therefore the focus of supply chain management has been directed solely on cost containment or cost management. Then supply chain management evolved into a question of optimizing cost, so in other words, providing the required level of service and value to customers at optimum cost and thereby mastering the balance and trade-offs in the supply chain.

We are now in an era where foresighted companies think of supply chain as a competitive advantage and as a value and growth driver. For these companies, the supply chain is an enabler for new business operations, a platform for new operating models that allows the business to generate new streams of revenue or new service options that add value. These help increase the loyalty and increase the commercial revenues that can be earned from the customer base.

Of course **world class supply chain** is not something that can be solely the **agenda** of the supply chain leader. It really **has to be C-Level**—the highest level executives in senior management or Board level sponsored to gain traction. There needs to be a full understanding about where and how the supply chain can support the business both in terms of revenue, how the cash and balance sheet is impacted, and the positive P&L effect. Ultimately to feed through into a higher company or stakeholder value reflected in share price earning, for example.

Here are a few questions that the Board needs to think about in terms of developing a world class supply chain:

- How should the supply chain support the business strategy?
- How do we know that we are doing the right things in the supply chain?
- To what extent do we execute flawlessly against customer expectations?
- How do we build processes that are quick and agile enough to respond to market changes?
- Do we have the right people and right capabilities in our supply chain?
- Do we understand what to do in terms of optimizing supply chain performance?
- How do we deal with some of the complexities in managing extended supply chains? (Particularly as companies now rely on globally sourced or outsourced elements in their supply chain).

These important questions really go beyond the remit of just the supply chain leader; therefore sponsorship for WCOM™ supply chain must include the General Manager, Finance Director and Head of Sales/Commercial.

The Efeso/Cranfield School of Management study "Supply Chain in the Boardroom—Closing the Implementation Gap" (2012), looked at the way multi-national companies went about developing supply chain strategy and the processes that they used to implement this strategy within their operations. One of the quite incredible findings of that research was that many companies encountered problems during the implementation and execution phase of their supply chain strategies. The research showed that there was a 50/50 chance of significant disruption or failure during the implementation and execution of the supply chain strategy. So, 50 % chance of success, 50 % chance of failure, measured in terms of whether their strategy had achieved its objectives of delivering business goals and KPIs. Not surprising therefore, that many Chief Executives are cautious or indeed sceptical about supply chain transformation initiatives.

A 2012 study by The Conference Board covering the top five concerns among the board level executives worldwide, ranked "excellence in execution" as the number one concern and consistent execution of strategy second. Hence, it is possible to build a strong business case for world class operations management in supply chain based on progressive capability development and excellence in execution.

Indeed you can go back to Toyota's lean strategy to validate that principle. The Toyota Way (Jeffrey K. Liker) talked about "brilliant process management" as a Toyota strategy. "We get brilliant results from average people managing brilliant

processes and we observe that our competitors often get average or worse results from brilliant people managing broken processes". And that was very much the principle in trying to drive Toyota to be number one.

11.8 Capability Pillars that Anchor a World Class Supply Chain

The pillars that exist for world class manufacturing have been mentioned earlier in this book. What are the equivalent pillars for a WCOM™ supply chain programme (Fig. 11.7)?

There are **four main Pillars** on which to anchor a true end-to-end world class programme. These can be supplemented by pillars that have a synergy and commonality with those that exist in manufacturing such as Autonomous Management. Let me explain briefly about the four anchor pillars:

1. **Plan To Serve** The role and need of supply chain managers to balance and optimize the overall supply chain is absolutely key. We talked earlier about balancing the trade-off between service, cost, assets and working capital especially in the form of inventory. The Plan to Serve pillar exists to achieve and sustain that optimum balance. The pillar must support the capabilities, systems and processes that achieve the balance. Optimizing and hopefully reducing cost,

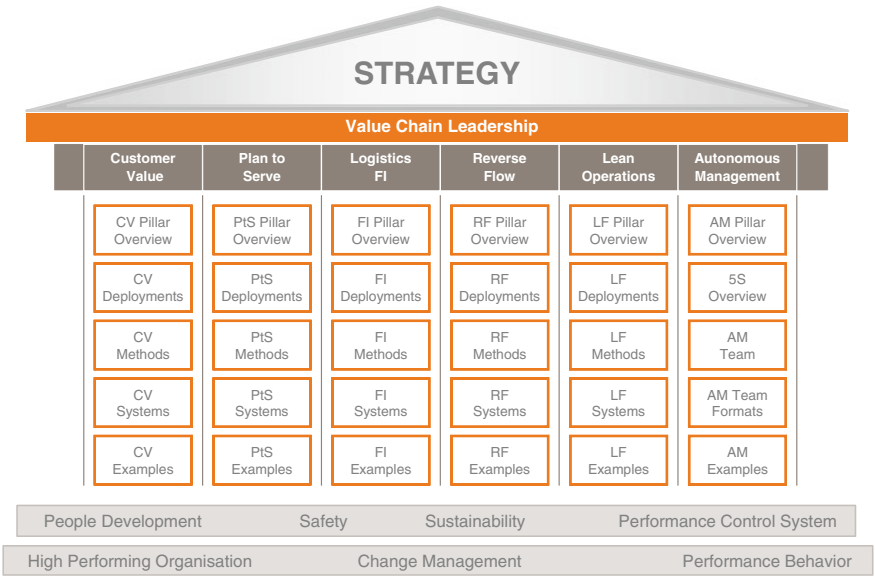

Fig. 11.7 Example pillar framework for world class Supply Chain Programme (*Courtesy* EFESO Consulting ©)

whilst maintaining the required service levels, and dealing with the constraints both in terms of working capital for cash and for holding inventory. In addition, respecting the constraints of capacity and production assets, or other assets in the supply chain that have to be used. Put simply, the vision and mission of the Plan to Serve pillar is to deliver customer value and service at the lowest total overall business cost.

2. **Logistics Focused Improvement** This is very much the "Logistics Control Tower" for the supply chain operations with a role to drive the efficiency and productivity in the physical supply chain (transportation, warehousing, shipping/materials handling etc.). There are similarities to "FI" in a manufacturing environment. The mission is to improve the execution of logistics operations, to ensure efficient asset utilization and productive labour management to deliver the required standards of service at the lowest possible cost.
3. **Lean Operations** Lean flow or lean operations in the supply chain can be applied at site level or it can be considered wider, as part of a broader value stream. This pillar really has its origins back with Toyota's lean thinking. It promotes the vision of a perfect value stream where all activities are perceived to add value to the customer and that there is zero waste in the end to end supply chain. The perfect value stream therefore can have a huge and transformational impact on the company performance and that of the end-to-end supply chain. The perfect value stream and therefore lean flow pillar aims to eliminate the waste in the supply chain and these are addressed by intelligent countermeasures that drive efficient flow and responsiveness. Value stream mapping is a very useful tool to look at the current flow and challenge the design of the current flow in order to eliminate waste and increase the value added to customer. Improvement can be achieved by combination of step change break through or continuous improvement (kaizen).
4. **Reverse Flow** Companies tend to focus on managing the outbound flow of goods to customers and that is where the majority of companies build capability. However there is recognition that the reverse supply chain deserves and indeed in many cases can justify a unique focus, managing for example the materials for recycling, reuse or indeed repair. The Pillar aims to support the management of the reverse flow in the same professional manner as the outbound supply chain, and by doing so deliver enhanced value to both customer and company.

11.9 Foundation Pillars for WCOM™ Supply Chain

We have talked about the four main operational pillars in the world class operations management system for supply chain. There are however a number of **foundation capabilities** that must be developed and supported.

First of all, in a supply chain environment, **people development**, training and education is absolutely critical, especially given the diversity of skills and techniques that have to be understood and developed in a supply chain environment.

Second is a **safety culture**; physical supply chain operations are inherently dangerous and potentially risky especially dealing with hazardous products or indeed working in environments where there's a high level of materials handling. So safety management and awareness is as critical a capability and pillar as it is in a manufacturing environment.

Third, is that of **sustainability and carbon footprint responsibility**, as supply chains have become intensive in terms of logistics activity, then so too they have become great consumers of carbon. They have also been great consumers of packaging materials, many of which if not handled and managed in a responsible way can result in major sustainability issues and negative impact on the environment.

11.10 Supply Chain Excellence—A Never Ending Search for Value

World class supply chain sets out a journey of a never ending search for value. Customer Value and Customer Focus/Centricity are critical capabilities within a World Class Supply Chain. The journey is a systematic progression through three levels of excellence (Fig. 11.8).

The first level of excellence is that of **functional excellence**; using the APICS-Supply Chain Council definition of the key functional processes, this is to achieve an advantaged or superior capability within the areas of Plan; the planning processes; Source; the procurement and sourcing processes, Make; the manufacturing and conversion processes, Deliver; the customer delivery and logistics functions, and

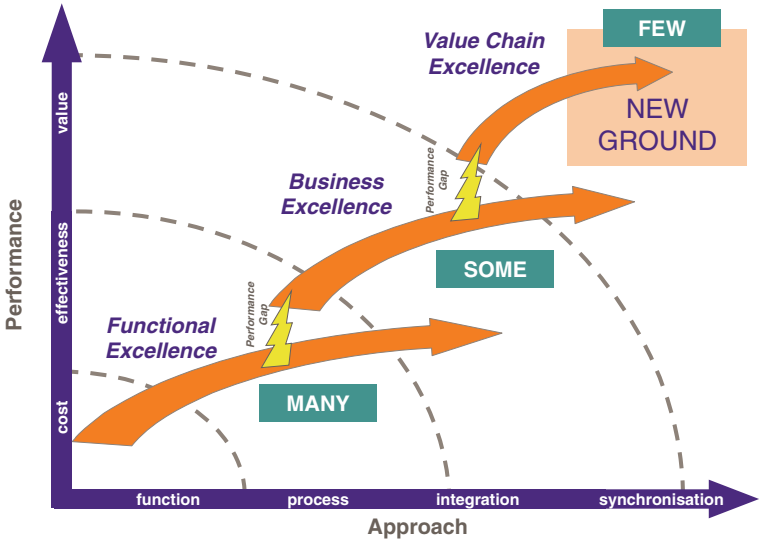

Fig. 11.8 Three levels of excellence (*Courtesy* EFESO Consulting ©)

others such as Returns management and Enable processes such as management control and reporting. For example ensuring master data setup is correct to allow the systems to operate accurately in the supply chain. That's the first level of capability towards realization of a world class supply chain. This provides certainty to know that the component functions perform to a reliable and stable standard.

The second level of excellence is that of what we call **business excellence**. This is when an organisation is able to join up or integrate their internal functions and processes in an effective way. One critical area is the link between the sales and operations organization where the commercial teams and the supply side teams work together efficiently and effectively albeit with constructive tension. All parties need to be fully aligned around the market and financial plans for the business. Demand and Supply Planning processes need to be synchronized and steered producing a realistic and coherent integrated business plan (IBP) related to the deployment and execution of the company's strategy year on year. Another critical process is the "Order-to-Cash" (OTC) process which requires seamless working between numerous functions in the company to be effective.

Gartner research indicates that companies generate far superior returns when they effectively integrate and align their end to end processes covering Demand Side, Supply Operations and Product Development/Innovation when compared to organizations that run in a more "silo" orientated fashion with disconnected processes. Business excellence can translate into 60 % better profit margins, two to three times the return on assets, with higher earnings per share for organizations that reach this level of capability.

A third level of excellence is emerging in world class supply chain. This can be envisioned as **end-to-end excellence or "value chain excellence"**. Here we are talking about an organization going beyond its own enterprise boundaries. When functions perform consistently and strongly, and when internal business processes are systematic and highly integrated, then the enterprise is well equipped to collaborate and integrate more effectively upstream with suppliers and also downstream with customers. This integration with suppliers and customers starts to create a whole new set of opportunities for optimizing and synchronizing the end-to-end supply chain. As a result of this collaboration, more "losses" can be made visible and prevented thereby delivering new sources of value-added.

Few companies today operate as masters at a value chain level of excellence, fully integrating their organizations with partner businesses and generating superior value for their eco-system.

Closing comment Supply Chain is now at the forefront of business, satisfying customer needs and delivering top line growth. Cost competitiveness and elimination of waste in the supply chain remain as important as ever. WCOM™ techniques applied to the end to end supply chain allow an organization with their trading partners, to maximize value-added and execute excellently. It also helps build new skills, competencies and leadership behaviors that supply chain managers need if they are to succeed in the future.

Chapter 12
WCOM™ in Procurement

Andrea Montermini

12.1 Six Key Procurement Trends in the Operational Excellence Perspective

Procurement has profoundly changed in the last two decades, and so did cost management, in the wider meaning of strategic and operational optimization of the overall spend (Fig. 12.1).

In particular, some of the most recent trends emphasize the increasing relevance attributed to procurement and cost management in the perspective of Operational Excellence.

Indeed, six main trends can be identified in this perspective.

1. **The organisational concepts in Procurement are evolving towards communities where local excellence is supported by central coordination**
   Procurement is actually more and more integrated within a system: typically, a community exploiting and balancing local excellence and central coordination. In addition, sustainability of local supply chains is an increasing issue. This provides a greater need for corporations to invest in the quality of execution of procurement operations. It is no longer important for procurement just to have a core team, composed of a central group of high quality people who interact with a group of passive performers in the plants or outsourced units that have been relocated.
2. **The increased competition has led Procurement to increased complexity, business focalisation and enhancement of external and internal integration**
   Operational Excellence in Procurement can ensure the necessary integration through the value chain, upstream with Product Development and downstream with supply chain and manufacturing. The necessity to share risks has led to an

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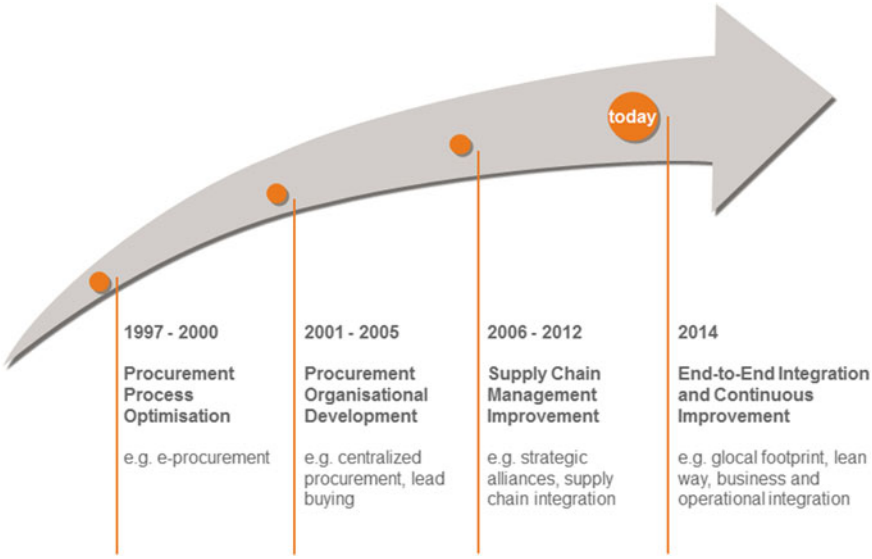

Fig. 12.1 Procurement Excellence trends in the last decades (*Courtesy* EFESO Consulting ©)

increased focus on supplier partnership and reliability, and both shall rely on a robust ground of shared operations. In addition, in leading-edge companies complexity management initiatives involve procurement under new perspectives for total cost optimization.

3. **Competition constraints and loss of knowledge of cost structures consequent to outsourcing have led to the necessity to focus on costs rather than on prices** Pressure on cost optimisation has led to the requirement to fundamentally understand the supply cost structure as a way to drive and enforce cost reduction initiatives, even in tough contexts. Market developments have determined the necessity to quickly and continuously identify bundles of opportunities. As a consequence, procurement shall embrace a cost focus approach rather than a price focus approach, and that perfectly fits with the WCOM™ approach. The point is actually to focus on advanced methods for industrial optimization and cost engineering, rather than on prices. Operational excellence, which typically works to continuously improve costs, competitiveness and performance factors, goes along with today's focus on procurement.
4. **The portfolio of skills required from Procurement executives is growing** In this context, product and process optimization knowledge have become more and more important, as well as contract, supply chain and risk management. This means to introduce methodologies and a wide range of instruments that focus on working with the suppliers and the product or service optimization, rather than only on commercial aspects. The spectrum of knowledge provided by Operational Excellence to all involved employees is therefore relevant in this respect.

5. **Capability Building shall align the people to the new challenges**
   Evolved buyers become value chain integrators, who require to infuse a combination of training, coaching and execution of improvement projects. The span of capability shall reflect how procurement is no longer "after development" and "before production" in a step-by-step value chain. Rather, procurement runs in parallel throughout the entire value chain, from conceptual design to delivery and support, as suppliers are involved in parallel at all stages. A WCOM™ set of knowledge is therefore helpful to buyers, as it provides capabilities to master the end to end value chain.
6. **In leading Corporations, Procurement has already embraced the Operational Excellence way of doing**
   Procurement over the years has increased in strategic weight and has vastly increased importance as a competitive factor. The economic and financial impact that the leverage of the external spend can have within a holistic Operational Excellence program is huge. People and projects, which are the centre of gravity in procurement, can now fully participate in the initiatives of Continuous Improvement and company discontinuous innovations. This means being part of the system contributing in terms of methodologies, KPIs, vocabulary and behaviours. Leading Corporations have already started to expand their Operational Excellence programs to the procurement domain.

12.2 WCOM™ in Procurement Ensures Integration Between Sourcing Strategy, Procurement Operations and Improvement Actions

Designed to match the challenges highlighted by the trends recalled in the previous paragraph, our Procurement and Cost Management Excellence conceptual model is summarized in the following picture: (Fig. 12.2)

As pictorially highlighted, the model ensures consistency and integration between four excellence building blocks: Strategy, Performance, Process and Actions, Empowerment. Further, the model allows for key principles of Operational Excellence in Procurement to be properly addressed, i.e.:

- Evolve the Procurement daily operations towards Value generation and Value Chain integration (rather than just price negotiation)
- Address all performance related to external spend and supplier performances: total cost, quality, delivery, innovation, flexibility, etc. (again, not only availability and price)
- Ensure cross-functional collaboration, consistency and quality of execution in all activities, of both single resources and teams
- Tightly connect center and units in the networked organization, to fully benefit from critical mass and knowledge scale

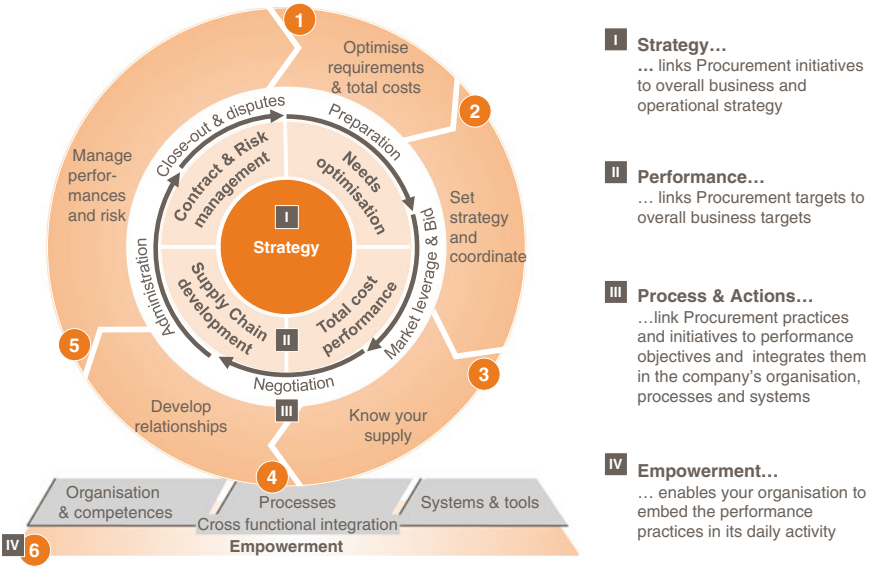

Fig. 12.2 EFESO model for Procurement and Cost Management Excellence (*Courtesy* EFESO Consulting ©)

12.3 WCOM™ in Procurement Is About Generating Year-On-Year Value by Continuously Fighting Visible and Hidden Losses

WCOM™ in Procurement is about identifying and attacking losses related to supplier spend. Our approach is comprehensive, as it considers all relevant instances, clustered in:

- Commercial losses
- Technical losses
- Supplier Performance losses

As shown in Fig. 12.3, based on our experience, any average industry player has a total cost base of procurement spend that includes losses for about 25–40 %. Rolling-out a WCOM™ program in Procurement is about progressively eroding such huge potential for improvement, delivering year-on-year sustainable Ebitda impacts through improvement projects (both in a continuous improvement and step change mode), additional gains in supplier performances, improvement in the product or service delivered, tangible improvements in internal collaboration and process robustness. Of course, the level of improvement delivered on the total cost base each year can vary based on scope tackled and effort actually applied; based on our experience, for most cases the range falls between 2 and 5 % on the overall cost base.

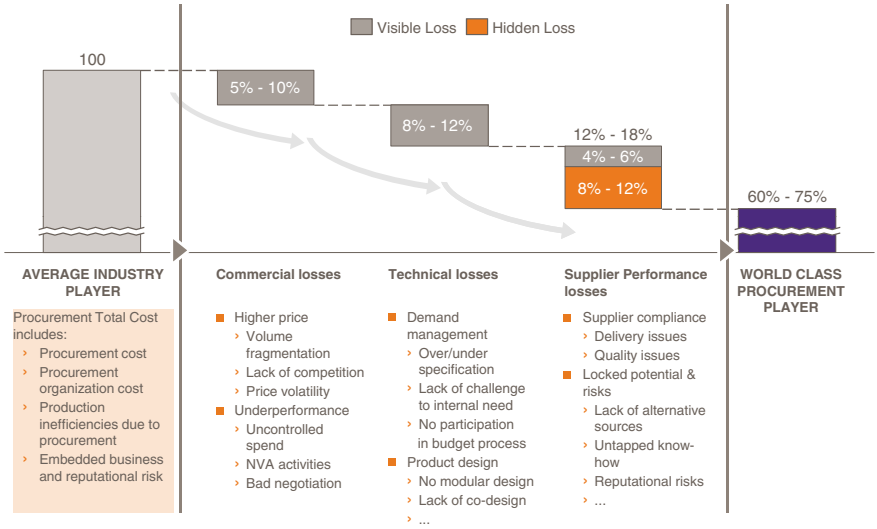

Fig. 12.3 Losses burn-out to world-class (*Courtesy* EFESO Consulting ©)

A brief description of the clusters of losses is as follows.

Commercial losses
Visible losses that typically have a value from 5 to 10 %. On the one hand related to prices and competition leverage—for example higher prices related to fragmented volumes on market, or due to the absence of an efficient and effective competition, to price volatility or poorly optimised control performance processes. On the other hand related to poor management processes—for example the imperfect control of expenditure (e.g. maverick buys, not optimized) or the presence of activities with no added value, or negotiations conducted badly.

Technical losses
Visible losses, on the one hand related to demand management rather than the product or service design on the other hand. They are not linked to price, but to the product or service's cost, to the product or service from its conception. They impact cost competitiveness and introduce the upstream vision of procurement for which the product or service specification and design is analysed through the integration of procurement with customers, users and engineers. Typical examples of contexts driving technical losses are over-specification, overdesign, poor design, etc.

Supplier Performance losses
These losses have to do with the supplier performance. The visible part is mainly about losses related to quality and schedule compliance. The hidden part stretches out to locked potential and risks, for instance connected to lack of alternatives, unleveraged know-how and innovation from suppliers, and even reputational risks

related to supply chains. The aspect of sustainability along the supply chain is an increasingly important issue in many industries, and conversely leads to huge losses when not addressed properly.

12.4 The Procurement WCOM™ Transformation Roadmap

The transformation roadmap provides the reference masterplan for implementing the WCOM™ Operational Excellence program in Procurement (Fig. 12.4). It embraces the same architecture and logic of WCOM™ in other areas such as manufacturing and supply chain, and leverages similar assets such as pillars and routes for improvement and capability building.

As illustrated in Fig. 12.4, to ensure sustainability and comprehensiveness of impact all steps are progressed in parallel by three dimensions of actions:

- Improvement projects (to leverage value and create learning, for instance through quick wins, category cost reduction projects and pillar introduction in general)
- Performance Management Systems and High Performing Organisation (to secure conditions for repeatability and progression, for instance through organizations, KPI's, Audit Systems, etc.)
- Capabilities, Leadership and Engagement (to ensure empowerment and human dynamics in support of the improvement actions, for instance through training, change management initiatives, Performance Behaviour, etc.)

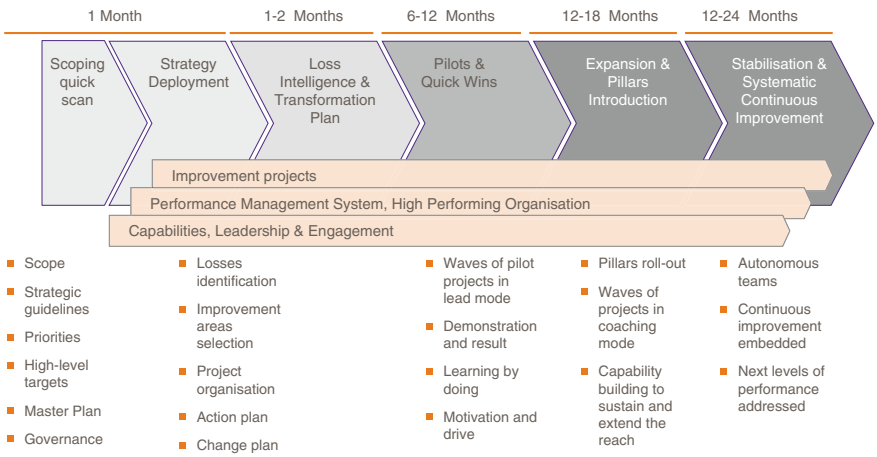

Fig. 12.4 The WCOM™ transformation roadmap (*Courtesy* EFESO Consulting ©)

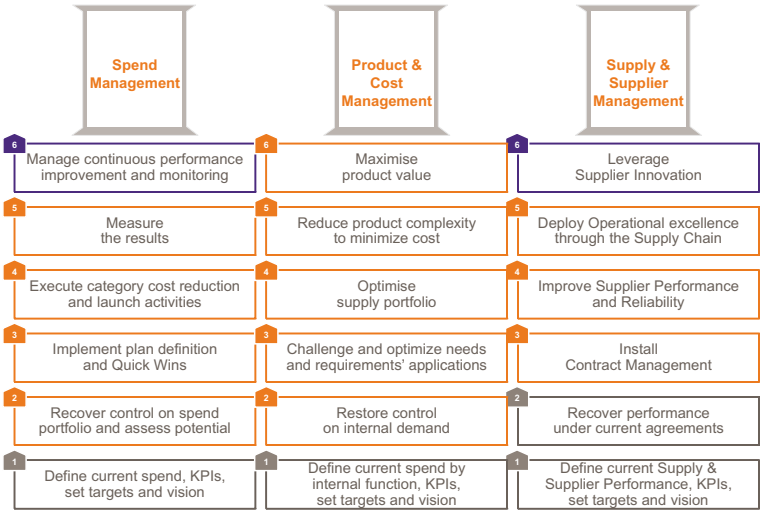

Fig. 12.5 The Procurement Excellence Pillars (*Courtesy* EFESO Consulting ©)

12.5 Procurement Excellence Pillars

In our approach to WCOM™ in Procurement and to support the transformation roadmap illustrated above, we have defined the following pillars (Fig. 12.5) that embed all fundamental and advanced knowledge for loss intelligence and loss eradication.

Each pillar is designed to attack a specific cluster of losses as defined in Fig. 12.3, and can be seen as installing a progressive level of maturity in the Procurement organization, starting from basic knowledge to more advanced methodologies.

Actual implementation is based on context and business priorities, and each company can decide its own pattern and recipe, also based on the level of maturity when starting the journey towards excellence.

12.6 About Change in Mentality

Our programmes focus on the concept of value creation. For example, as shown earlier, addressing a total set of performances, not only on price or total cost, but on all the performance aspects concerned with suppliers and purchasing categories. Innovation, risks, quality, delivery and so on.

We also focus on improvement and put emphasis on cross-disciplinary processes and quality of execution. The procurement processes, when they are interpreted in the way that we are describing, are inherently crosswise. They have a centre of gravity in procurement but, in this interpretation, the procurement is the engine and pilot of a process that involves everything. For instance, we run Design to Value projects that rely on Procurement as pivotal players for buying items.

Therefore in our procurement excellence projects, most of the time we have to manage a process that involves a difficult change in buyers mentality. In many cases this is challenging because we have to expand their passion for improvement and their scope of accountability. Traditionally, people who work in purchasing have a limited perception of their accountability. They are focused on obtaining the best market price for a product or service. Their task concludes with the signing of a contract under the best possible conditions. Their performance is mostly on paper because then the contract execution goes to operations. Our vision is much wider. It goes back upstream and integrates the product, research and development and goes further downstream to integrate with the operations. Accountability is much larger and the work is much more collective.

12.7 A Case in the Helicopter Industry

An interesting case taken from our experience in the helicopter industry shows how WCOM™ can be used to install advanced capabilities and simultaneously achieve quantum leap results.

Our Client needed to:

- Reduce the recurring cost of the helicopter platform by 20 %, to capture market opportunities otherwise impossible...
- … while developing a Cost Engineering and Should Cost capability within the Procurement function, in cooperation with Industrial Engineering, Engineering and Operations

In order to achieve the result in due time, more than 100 people had to be involved and a Should Cost team had to be installed and trained since day 1. Methodologies taken from advanced pillars have been shared at the same time as they were used to identify opportunities and execute actions for reducing the cost of the helicopter. After 15 months of work, the economic result was achieved and the capability was installed in the company, ready to be applied to other platforms.

Chapter 13
WCOM™ Business Process Excellence

Francesco Lecis

13.1 Introduction

In the Continuous Improvement arena for manufacturing companies a new challenge is becoming more and more important to gain sustainable advantages: achieve world class operational level in activities that occur in the offices rather than only in the factories.

In fact, why are strategists, methodologists, and the best thinkers and initiators of continuous improvement initiatives—after several generations of programs that ushered in a bona fide second industrial revolution—now concentrating on so-called "knowledge-based" processes?

There are different ways to respond to this question. From the point of view of pure belt-tightening, the areas relating to factories have for the most part been milked for all they're worth, and the gains in terms of improvement are marginal at best.

Taking a broader view, the dizzying technological progress in industrial technologies in the past twenty years has naturally been accompanied by an increase in the importance of office work, where people (and not machines) are still central and —with their abilities, areas of competence, creativity, and discretional capacities— still constitute the true critical success factor.

Lastly, adopting a truly holistic approach to the industrial realm, no one can deny the fact that in the globalised world where everything is "social", the DNA, style, and "trademark" of the company itself are increasingly based on relations with employees. Involving them at all levels to improve business and the company is a necessity, because the customers will perceive through all the points of contact a company that is looking to the future. The real company asset is definitely the

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human capital and it's a mandatory quest for the management to create the conditions and the environment to maximize this potential.

The awareness is beginning to grow that "to be World Class, you cannot just be World Class in certain parts of the company, you have to be World Class as a mindset". For example, you can't have a soccer team with first rate strikers and low level defenders, you need an all-star team.

Now the challenge: how is it possible to bring a product that worked wonderfully in one context-the production line-into one that is completely different? How do you avoid the risk of making a mistake? How do you prevent possible errors and how do you organize things so that you can communicate and manage change effectively?

Within a manufacturing company, the area where we want to focus are the Business Processes, which we usually call "knowledge based processes".

Let us begin with the etymology of *Knowledge-Based Processes*: "process" is literally a series of acts, events, and operations that bring one object from an initial to a final state.

Thus, knowledge-based processes are series where the combined knowledge of all the participating actors generates the output. So they are all activities based on people, or in which people have a role that is more important than that of a machine or an information system.

Analyzing this "value chain", we can identify processes and activities with different degrees of importance that are based on the skills and knowledge of people and even a mere generic diagram immediately makes it clear that the content of all processes, both primary and secondary, is in some measure transactional, i.e., it implies a transfer of information between two actors.

It is possible, as a starting point, to identify four main "end to end" processes where the weight of the knowledge based part is high:

1. Procure to Pay
2. Order to Cash
3. Hire to Retire
4. Design to Market

13.2 How to Set up WCOM™ for White-Collar Workers

While there are many similarities between white and blue collar areas, there are some differences that should be identified very clearly for a successful transformation of the knowledge based arena into a lean office. In the product transformation context waste is visible and can be quantified easily. For example, it is very easy to identify the amount of WIP available on the manufacturing floor. But when it comes to your office, it is hard to identify the amount of pending work every workstation carries.

On the other hand office work involves many people. For example, often a person has to complete a task that serves as input to a task to be performed by another person. This makes it difficult to assess the size of the problem and hence to propose the solution. Futhermore the office culture is different from the manufacturing culture. It is more informal in nature. This makes defining job roles and assigning responsibilities a little more difficult.

One should also consider that carrying out the changes in an office environment is easier than in a manufacturing environment. Typically there are minimal changes required to the office equipment and processes. Training might be easier. Changes can be implemented in steps. This makes it easier to manage the changes and monitor the results.

So, what is the fundamental difference between WCOM™ in knowledge-based processes as opposed to such transformation in the manufacturing environment?

The fundamental difference lies in the fact that, without machinery and equipment, people and their competencies play an important and central role.

Experience has shown that there are three principal aspects that must be taken into consideration in setting up lean transformation in knowledge-based processes:

1. **The "human factor"**: the proper and complete involvement of people is fundamental. The desired result cannot be solely the observance of new rules; a real empathy must be created in people with respect to the process so that they become the protagonists of change. In order to achieve the objective, the conditions must be created for people to experience, according to a definition by Daniel H. Pink definition (Daniel H. Pink, Drive: The Surprising Truth About What Motivates Us, Riverhead Books, 2011), the following three dimensions:
   (a) Clear and well defined **purpose**: people are happier working for something that is bigger than they are;
   (b) **Autonomy**: the more control people have over their lives, the happier they are. Self-determination is the only path to true engagement;
   (c) **Mastery**: everyone wants to be better at what they do. Mastery of something is a reward in itself;
2. **The strategic approach**: a simple assessment of losses does not make it possible to determine and exploit all opportunities for improvement; this needs to be complemented with complexity management (working in multitasking environments), a real stimulus for innovation (promoting creativity), and attention to people's different sensibilities;
3. **Choice of perimeter**: it is possible to change technology and reduce constraints much more rapidly in knowledge-based processes than it is in the manufacturing environment. The definition of the perimeter may thus be flexible and modular.

If these three aspects are correctly taken into consideration in the setup phase of lean transformation in an office environment, the intrinsic differences of this setting

with respect to its manufacturing counterpart reveal their true nature as opportunities and not obstacles for the success.

13.3 How Is a Typical Program Structured?

As in other areas of the WCOM™ system there are four implementation phases:

I. **Lean planning; create the gap**
II. **Quick wins and pilot**
III. **Expansion**
IV. **Stabilisation and renewal**

13.3.1 Lean Planning; Create the Gap

Searching for the losses in one office we suggest to start from the A3, a collection of data and information used during a project to keep track of what is being done. It is a snapshot of the current status of the project and it is consulted by the team and updated weekly by the Project Leader (Fig. 13.1).

Fig. 13.1 A3 example for project tracking (*Courtesy* EFESO Consulting ©)

This preliminary stage usually should be very quick in order not to have the feeling of "being lost in diagnosis" and also the level of required analysis is often more qualitative than quantitative because the in-depth measurement will be done on the selected processes/areas.

Starting from the A3 (i.e. clear scope in terms of activities, processes and people involved, target and expected benefits) it is now time to address a value loss intelligence.

The main tools used at this stage are:

- **Value Stream Mapping**[1] to know the process and to identify the *muda*[2];
- **Business Model** to describe how the future state should look to delight the customer in an efficient way;
- **Operations Maturity Assessment** to identify the technological needs and the business requirements;
- **Change Readiness Assessment**[3] to make an early diagnosis of people readiness to adopt the change initiative.

This stage has two main purposes:

1. Looking to the current processes, activities and organisation, identify the main losses and the room for improvement (gap finding)
2. Measuring the current performance against the internal/external customer requirements, identify, in the future, how the company will supply the service (gap creating).

For a given process/area, this step usually lasts about 2/3 weeks.

13.3.2 Quick Wins and Pilot

In order to feed every improvement initiative we need results and credibility. That's why the first actions should be really result oriented and should show exactly how the company wants to drive the lean journey.

This step is also the real and formal launch of the improvement activities of the project, and during this launch phase, it is advisable to address the first two areas in the order presented above so that the principal objective can be communicated, through actions, to all functions involved. In this way we maximize the value perceived by the client instead of simply optimising processes.

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[1]Performed at process level.

[2]Muda is a Japanese word meaning waste and is a key concept in the Toyota Production System (TPS) as one of the three types of deviation from optimal allocation of resources (muda, mura, muri).

[3]Performed at office/area level.

In the pilot project all the elements of team management, project management, and program management will be clear to everybody and performed in a very disciplined way.

A delivery technique that can be used is the ***Kaikaku.***[4] In the white collar area sometimes it is needed to have a "shock", an intensive action rather than a long-lasting project. The objectives of the *Kaikaku* are exactly to:

- Make Loss and waste deployment in a selected area;
- Immediate Step change in Performance (Service, Quality and Productivity);
- Increase of the number of people acting as true owners of his/her area of responsibility;
- Implement a robust and visual daily management system to secure the performance;
- Integrate daily and improvement processes;
- Ensure the key skills are in place.

With a sound and proven **agenda** and **organisation of the activities**[5] the Office *Kaikaku* will have a preparation, a workshop, a follow up and some "hold the gains" activities.

This kind of workshop must be used to accelerate the speed of process improvement to ensure achievement of results through the involvement of the people. In the broad range of instruments it is possible to identify three macro families of actions:

A. **Improvement events**: events lasting a very short time but having an enormous impact and consuming a great deal of resources. This family of actions includes instruments such as *Kaikaku*/*Kaizen* week/RIE (Rapid Improvement Events), Go fast/SYM (*Sugu Yatte Miru*),[6] and Accelerated Solutions Labs[7];
B. **Improvement teams**: inter-functional groups active for several months. The communicational impact is lower but fewer resources are involved. This family of actions includes tools such as Focus Improvement Teams, and Fast Track Teams;
C. **Improvement project**: clusters of inter-functional teams managing highly complex projects over the medium-to-long term: Lab and Land, 3P (Production Preparation Process), As Built Review, and Quick Lean Value Engineering.

[4] *Kaikaku* is a Japanese word that means: Radical change, Transformation, … Revolution.

[5] In a short period of time the organization of the activities and a reliable agenda are the key of the success.

[6] 'Do It quickly' is a possible translation.

[7] The ASL is a workspace where large groups come together for multi-day events to accelerate decision making, resolve complex business issues and create innovative solutions. The ASL accelerates the way organizations make decisions and solve complex problems through collaborative, innovative approaches, providing a critical differentiator for the firm through our ability to accelerate engagements.

It will be possible to choose the right tool to be used according to the business environment. As a rule the quick win and pilot stage must not last more than three months.

It's understood that every two months, in the selected area, the process Value Stream Maps will be updated in order to always have TRUE figures to look at.

13.3.3 Expansion, Stabilisation and Renewal

After the pilot stage and for the following 9 months there'll be an expansion of the activities.

The expansions will be done on similar processes (horizontal), or, if needed, in a much deeper level of analysis (vertical).

We always suggest having both views in order to address different kind of losses (Fig. 13.2).

The process view and the office view should be two contemporary paths for the improvement.

Thus, in order to sustain the expansion effort some inter-functional team owning a specific set of improvement activities can be launched.

These teams will act as "Pillars" of the lean transformation journey, providing methods, tools and follow up systems. On the basis of experience, in complex organizations five Pillars are generally necessary:

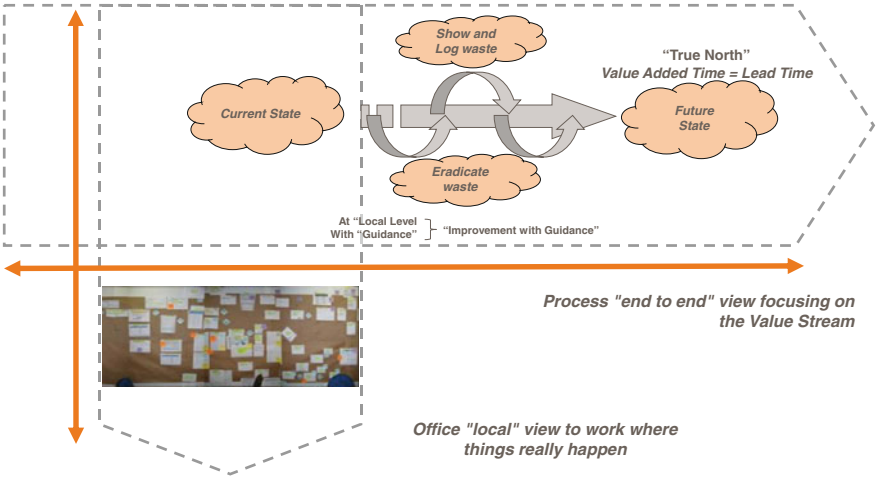

Fig. 13.2 The two dimensions of expansion (*Courtesy* EFESO Consulting ©)

1. **Effective organization**: ensures consistency between the organisational structure and the flow of value;
2. **Business process optimization**: ensures that the structure of the various processes maximises value;
3. **Office management**: ensures that the organisation of the various offices involved (in general and in detail) makes it possible to implement the processes in a manner that is consistent with what has been defined;
4. **Office focus improvement**: ensures the elimination of productivity losses in every activity of the various processes;
5. **Education and Training**: ensures both the needed diffusion of methodologies and constant alignment of content among the other pillars.

Every Pillar will implement a robust system of assessment (and self-assessment) in order to monitor progress and be ready to intervene promptly to correct significant deviations.

As foundation elements for every Pillar and office, the daily management, the office 5S and the Performance Control System allow to "keep the boat on track" and early detect all the deviations in the performances.

13.4 Conclusions

"In the end it was just a question of knocking down some walls…"

But which walls, and how many of them are there?

Physical walls are certainly the easiest ones to knock down during lean transformation processes, but it is not enough, especially for knowledge-based processes.

The most solid walls, the ones most difficult to knock down, are those that have been gradually built up based on earlier paradigms and mindsets of the actors in the process. This is the basic reason why solid setup and steely determination are necessary for implementing "such simple things", as we have seen in the previous pages.

As proof of this it is now opportune to take to heart what we may learn from the experience in the manufacturing sector.

Over the past five years, lean paradigms have found their way into the various industrial sectors, and in each there are players who immediately grasped the breakthrough in mentality implied by the "simple things" of a lean approach. These companies then structured themselves to set up programs that are not complicated but solid and broad-reaching.

Today we are able to see what that the value of that farsightedness has been in terms of bringing competitive advantage in the key success factors (costs, quality, service, and climate).

As last remark, the real Key success factor that has been highlighted by all the best in class implementers of lean programs in the extended value chain is to

always remember to "go to the *Gemba*[8]". Gemba is the physical place where things happen. *Gembutsu* are the tools and the devices useful and needed for the tasks, so we are speaking about desks, laptops, phones, IT applications, etc.

The large investments on IT systems lead us to think that it is possible to keep everything under control, but using Ohno's words "If you want to know something, ask it to the objects, don't look with the eyes, but go and see with your feet".

[8]The romanised term Gemba comes from the Japanese Genba, the real place, the place where things happen, in manufacturing it is the factory floor, in the knowledge based processes is often an office.

Chapter 14
Implementation

Carlo Baroncelli

In the previous sections of this chapter we discussed the "why" and "what" pertaining to the WCOM™ approach as it works its way into a company, shaking up the way in which the company functions by reallocating attention to the losses themselves. We also discussed how much different a company structure becomes, turning companies from a command and control leadership style into more of a culture of employees working together for a greater cause.

The system itself as well as company workflow and long-term management were discussed in detail earlier, but one part remains to be seen: how the system is implemented in an organisation. The point is how to introduce WCOM™ into the everyday's culture in order not to perceive it as an acquired way of thinking disconnected from daily life.

14.1 You Cannot Do It Alone. You Need Company-Wide Engagement

As mentioned in the earlier sections of this chapter, a traditional company has a few kinks to sort out that WCOM™ aims to address, as shown in Fig. 14.1.

The problem we often face when visiting a plant, is that there are few managers in charge of everything, down to the finest detail of their functional responsibilities.

Obviously they have no time for improvement, they can only keep on working on very urgent tasks (firefighting) because they don't solve the problems at their roots.

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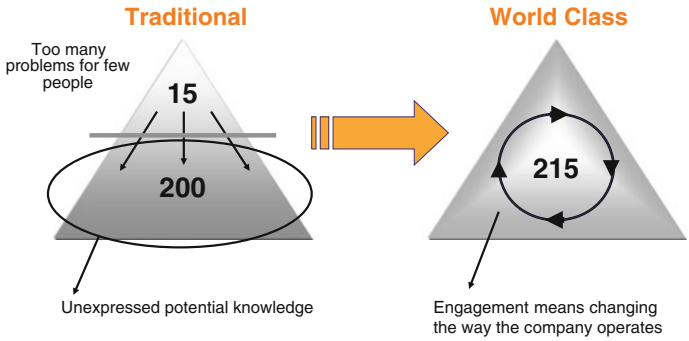

Fig. 14.1 Traditional versus world class people engagement. *Courtesy* EFESO Consulting ©

When you ask the reason of their behavior, the explanation is always that they don't trust the capability of the people reporting to them an so they can not delegate.

This is the situation depicted at the left side of the above picture: 15 Leaders hyper busy, no time for improvement, and 200 people just honestly doing their daily job, but not interested in taking care of the "extra mile" that is required by Continuous Improvement.

WCOM™ instead, needs the kind of engagement depicted at the right side of the picture, where all employees are equally committed and engaged, each at his/her level of competence, to Continuous Improvement.

Looking at companies that have progressed over the last few decades, there are patterns to follow and patterns to fail. What we know for sure is that, to make it through big transformations, leadership must shine through any obstacles. Change is in no way autonomous, nor does the maturation process occur simply through good training. Companies will not get from A to B simply by installing a system and expecting results to come in a matter of time.

The fact that people are not some sort of well-oiled machines that will always give the expected results is a very delicate piece of the puzzle during transformations, often neglected by management. We call this factor **the maturity time**, a period that occurs before employees have accepted change and have become completely involved in their company's new attitude or goal.

14.2 Personnel Must be Engaged at All Levels

To properly engage employees, there needs to be a sense of possession in the things that they do. Learning is a major aspect of employee engagement, as hands-on experience is one of the key indicators to really feel as though people are a part of

something. If management wants to seriously involve its employees every step of the way, training sessions and implementation need to have more than a classroom setup.

Management needs to **work side by side with employees** to transform 'just another activity' to a sense of ownership. This will coincide with a growing sense of involvement and pride coming from staff, leading to more emotion and motivation in everyday tasks.

14.3 There Will be Obstacles

While working alongside employees, getting deep down into the trenches and getting management's hands dirty, there will undoubtedly be obstacles arising left and right. We will deal more with the primary obstacles and address them in the Change Management chapter. For now, I will give a broader view of these obstacles, starting with the most important.

Perhaps the biggest problem plaguing the WCOM™ programme is attitude itself, as employees tend to think that it is simply a programme that can be dealt with by project managers as if it were just another collaboration with external suppliers.

On the contrary, it must be considered a process of continuous improvement. This, by its very definition, is a **permanent culture change** that is here to stay, and cannot be anything but constant in order to see and maintain results. The programme shall not be closed, as any normal project would be, but rather become a long-term effort within the company.

14.3.1 The Most Stifling Cultural Obstacle Is the Belief that WCOM™ Is a Project

As mentioned above, the difference between project and process is key. There will be initial beliefs that **WCOM™** is a temporary, third-party project that will not be around for too long. Companies assign project managers and set end dates, as if to close out everything after a given period of time.

There is no end date, and if you do indeed set one, it means that you have failed to reach the programme's true power. It is a process and therefore something that must be forever.

To give the situation a more real life appeal, think about a man whose health is in jeopardy. He visits the doctor, who in turn tells him to stay active and get

fit. After a few weeks of rigorous work out and healthy eating, the man has achieved his goal. He looks great, feels great, and everything in life is back to normal, if not better than ever. But the process certainly does not stop there. If he quits the gym and goes back to his old bad habits, he will soon wind up back in the very same position he started.

In this very same sense, a company cannot treat the WCOM™ programme as a temporary project that gets them back on track, only to abandon it and falter soon thereafter. It is a continuous, long-term approach that wins the prize, and only those companies who stick to the programme and accept that they must change as a whole are the ones who come out on top.

14.4 Kotter's Steps Lead the Change in Continuous Improvement

While culture is the biggest force stopping WCOM™ from fully settling into a company's framework, Kotter's Steps provide for a solid foundation in understanding how to let the company know that the programme is indeed set in stone. This will be further discussed in the third part of this book (Fig. 14.2).

Kotter's 8 Steps	Description
1. CREATE Sense of urgency	Creating that feeling that "we must do something" about the problems and the opportunities. Reducing the complacency and fear.
2. BUILD Guiding Coalition	Pulling together the right group of people with the right characteristics and sufficient power to drive the change effort. Helping them to behave with trust and emotional commitment to one another.
3. FORM Strategic Vision & Initiatives	Facilitating the movement beyond traditional analytical and financial plans and budgets. Creating the right compelling vision to direct the effort. Helping the guiding team develop the buy-in for making visions a reality.
4. ENLIST Volunteer Army	Sending clear, credible, and heartfelt messages about the direction of change. Establishing genuine gut-level buy-in that shows up in how people act. Using words, deeds, and new technologies to unclog communication channels and overcome confusion and distrust.
5. ENABLE Action by Removing Barriers	Removing barriers that block those who have genuinely embraced the vision and the strategies. Taking away sufficient obstacles in their organisation so that they can behave differently.
6. GENERATE Short Term Wins	Generating sufficient wins fast enough to diffuse cynicism, pessimism, and skepticism. Building momentum. Making sure successes are visible, unambiguous, and speak to what people really care about
7. SUSTAIN Acceleration	Helping people create wave after wave of change until the vision is a reality. Not allowing urgency to sag. Not ducking the more difficult parts of the transformation, especially the bigger emotional barriers. Eliminating needless work so you do not exhaust yourself along the way
8. INSTITUTE Change	Ensuring that people continue to act in the new ways, despite the pull of tradition, by rooting behaviour in reshaped organisational culture. Using the employee orientation process, the promotions process, and the power of emotion to enhance new group norms and shared values

Fig. 14.2 The Kotter's Steps. (Kotter's Steps *Courtesy* Kotter International ©, Steps Description *Courtesy* EFESO Consulting ©)

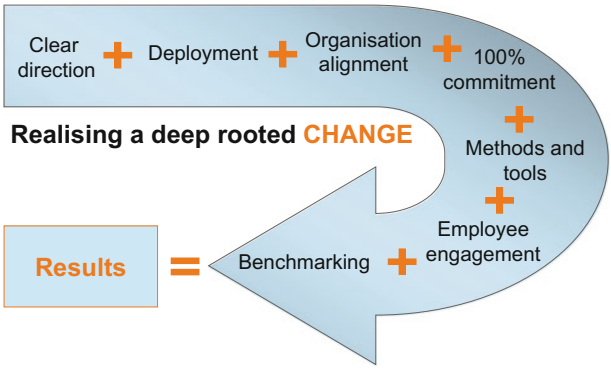

Fig. 14.3 The Seven Ingredients to Success. *Courtesy* EFESO Consulting ©

14.5 The Implementation Plan Must Ensure that the "Seven Ingredients to Success" Are in Place

There is a difference between "project" and "vision", and this needs to be clearly established within the initial stages of implementation. Helpful tools for getting this idea across to employees are the "Seven Ingredients to Success", as shown in the graphic (Fig. 14.3).

These ingredients serve as the outline for a roadmap to overcome the culture of treating WCOM™ like a project. The destination of said roadmap is widespread culture change throughout the company.

A roadmap would mean that there is one way to do things, with strict and clear-cut deadlines. This typical idea of rigorous project management is not nearly enough to make the proper impact.

At the same time, being too lax about change will likely prove useless. The opposite of the above project management example is a careless training programme, likely with little real-work application and follow through, as well as lacking urgency, deadlines and targets to be achieved.

The ideal change management will be something midway between the two above examples. The Seven Ingredients to Success apply at all levels of the company.

If we think of the company as a ship, obstacles become clearer. On board a vessel that is trekking onward, we don't just constantly battle the wind. There are many other factors that lead to the life-threatening difficulties of sailing. We battle the wind, we tuck, we battle it again, we tuck again. There are currents, storms, and internal problems with the crew.

There is never a predictable way to go about planning a sea excursion. The same goes for battling a company's problems. Within the first few months, the programme uses tools to perform gap analysis and understand priorities, as previously mentioned. This will allow for a customized way to implement the programme, with the foundation of the Seven Ingredients as the recipe for moving forward.

14.6 A Step-by-Step Journey

How does the WCOM™ plan fit into this journey to complete company change?

Based on thousands experiences of programmes launched in the last 25 years, we came to a model plan structure that embed the Kotter's Steps, even not in a such evident way (Fig. 14.4).

14.6.1 Start-up Meeting

At the beginning of the programme, we hold a start-up meeting that serves as the "eye-opener" for employees. This is held so that we can share the vision with the rest of the plant.

Over the next few months, tools are developed to understand the situation and current state of the company. These tools also are quite useful for deciphering expectations.

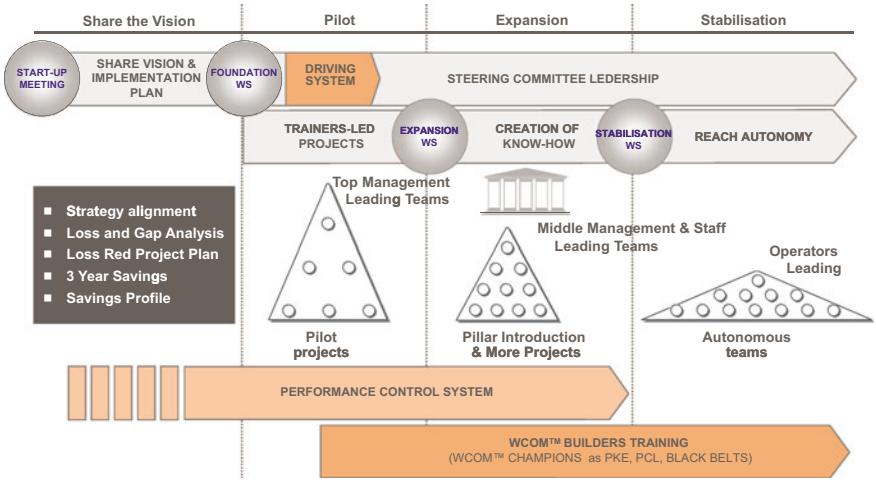

Fig. 14.4 The WCOM™ master plan, a step by step journey. *Courtesy* EFESO Consulting ©

The start-up meeting is a challenge because of how much cultural change is introduced. This is also where we first begin to conceptualize the Loss Intelligence System. Employees are encouraged to develop a list of potential opportunities around the company that could be improved, which they will later present at the Foundation Workshop. They leave the start-up meeting immediately thinking about what they can put down on this so-called list. There is a bit of excitement and pride over being offered such a unique opportunity.

14.6.2 Foundation Workshop

The Foundation Workshop is the next meeting opportunity along the journey, held after the vision is fully expressed and relayed to the company. This is a two-way communication where plant employees discuss the opportunities within the company that can be capitalized upon, where money can be saved as there is a possibility to reduce defects, accidents, or breakdowns. Management and floor representatives open up in a dialogue to better understand one another.

At this point, the programme makes its first big cultural step forward, erasing any sort of employee hesitation by involving everyone in the process. Employees will feel like they are a stronger, more integral part of the company.

During these meetings and vision sharing sessions, there are underlying themes being taught. Among these themes, we teach how to follow a critical thinking process (how not to jump to conclusions), learn how to communicate effectively, and many other related methods.

In the meantime, we also note some changes around the company, and the left side of the infinite loop process is already taking form. We hold daily and weekly meetings to discuss, reinforce and build upon change.

The first four Kotter's Steps have been initiated.

14.6.3 Pilot Phase

The pilot phase is then implemented, using 2–3 waves of teams. This may take six to twelve months as required by the individual company's situation. By this point, some small financial and excellence improvement should already occur. It is better to have a 90 % improvement in one small aspect of work rather than 1 % overall improvement spread over everything, therefore actions will be much more focused at this stage. (Kotter's Steps 5 and 6).

Once the pilot project finishes up, employees become eager in a new kind of way. They no longer wonder if the company can expand, but now focus on how it can expand. Where the start-up meeting was an "if" mentality, the Foundation Workshop has now turned to "how". The culture is gradually changing and the

sense of community is much stronger, so the only thing to do is take it a step further.

14.6.4 Expansion Workshop

At this point, a small board of leaders no longer suffices. You need a wider engagement on the leadership and management side. This is because the step of the journey calls for further involving and engaging more people in the programme.

Adding a bigger body to the programme means the ability to self-manage the programme. In order to expand upon the two or three waves of teams in the pilot, we need to deploy pillars as sub-committees. These serve as a management team that will follow after the expansion. The steering committee, made up of ten people, is simply not enough. Sub-committees will need to focus on more specific areas of losses in order to keep all aspects of a bigger company under control. Distributed responsibilities are key in keeping a growing programme from collapsing.

14.6.5 Expansion Phase

Moving from the expansion workshop to the expansion phase means that the overall mentality must take on a more ambitious tone. Short-term along with small improvements leave place to long-term, zero-defect goals.

Kotter's Steps 7 and 8 are now paramount.

14.6.6 Stabilization Workshop

To transition to the final stage of Stabilization is the objective of Stabilization Workshop. In this workshop, we need to discuss how to perpetuate the new management system. Though it will always be necessary to maintain committees and WCOM™ coordinators, there will be less managerial influence. The company as a whole will slowly ease into a more autonomous organization.

To summarize the real breakthrough in culture that the WCOM™ programme puts a company through, we should think back to history of the budgeting methodology in our companies.

In the middle of the twentieth century, the idea of creating a "budget led management system" was more of a fairytale than real. It was a rarity at best, and was slowly introduced by a few as a new **project** that was met with some hesitation. Slowly but surely, the idea of creating and following the budget became an absolute standard, and today we cannot even think about managing a company without a budgeting **process**.

To a certain extent, WCOM™ is much like this idea of budgeting process. Upon its introduction, it is a new and foreign idea that is slowly implemented into the system. By the end of its implementation, on the other hand, it is almost as if employees are unable to imagine how things would work without it. Everything moves along smoothly, and no one even realizes that there is any other way to work. But at the beginning, even the Budgeting Process was perceived just like an odd idea taught by some strange consultants.

14.6.7 Kotter's Steps Are Embedded in the Plan

Given that culture is the biggest obstacle to overcome, each phase of implementation works on embedding Kotter's Steps at different points. This will ensure that, over time, any cultural resistance will be phased out (Fig. 14.5).

14.6.8 A Global Programme Roll-Out Plan

If the programme is being implemented in multiple sites, the plan will contain varying speeds for each location. As mentioned earlier, this is because the plan itself is crafted to the company and its current situation.

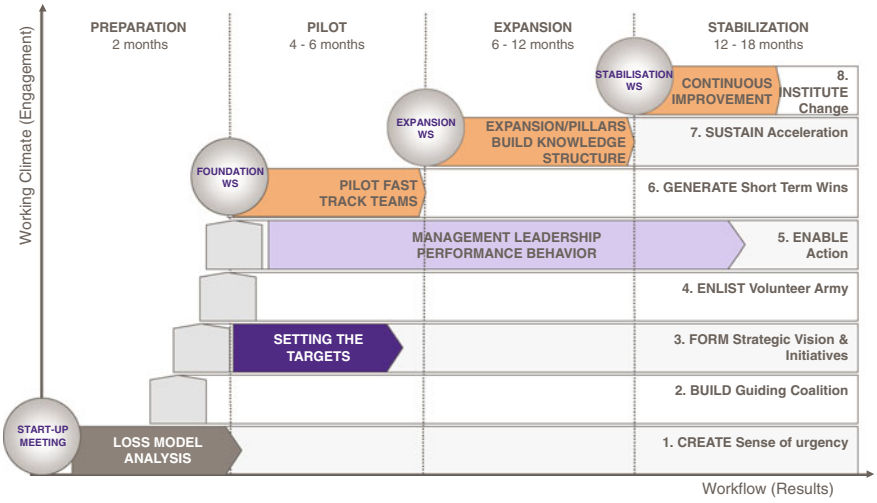

Fig. 14.5 Embedment of the Kotter's Steps in the WCOM™ master plan. *Courtesy* EFESO Consulting ©

14.6.9 A common standard to deploy worldwide

Multinational Groups are facing the issue of **how to share common factors over a larger scale**, namely the opportunities related to recent acquisitions. This forces them to define their "Own Production Method" that is able to:

- integrate company best practices and develop a common culture of Operational Excellence,
- go beyond the traditional concepts of "local" practice,
- and endow a lasting competitive advantage stemming from "group" self-awareness.

Being a "Multinational" enables groups to benefit from common experience in Research, Sales, Purchases and Operations.

Sharing best practices of continuous improvement, by virtue of new technologies such as internet and intranet, creates a synergy that allows a repositioning in the experience curve, gaining competitive advantage against the local players.

With the rise of technology, workers can share methodologies across multiple continents. The ability to learn from previous mistakes is exceptional, meaning that putting the proper systems in place and utilizing said technology to the fullest is more than necessary.

Such a change in the way we work has a huge influence at a corporate level. If one plant finds a new best practice and its partner at another site decides to implement another, the companies may grow further apart. Proper coordination from the top can lead to the successful synergy of larger companies.

With that being said, the WCOM™ programme is not just the summation of many programmes operating in a parallel manner. It is, however, the ability to instill a new way of working into a company's structure at a corporate level, allowing for a corporate learning example (Fig. 14.6).

As the programme works its way into year three, we reach the zero-loss-fight stage. Ambitions have been raised and everyone involved has high hopes. The entire organization must be involved, and a full-scale change has occurred when compared to the beginning of this process. After a few years go by from the initial implementation, the focus is on fully understanding the gaps and maintaining positive results, meaning autonomous control when leading the programme.

14.6.10 Corporate Management in Modern Companies

We've reached a point where everything is virtual. Everything is watched. Autonomy no longer exists like it once did, having at our disposal both Kaizen elements and the internet to create a high level of sharing and updating, as well as a strong visual cycle that allows for companies to easily overcome typical problems that distance would otherwise include.

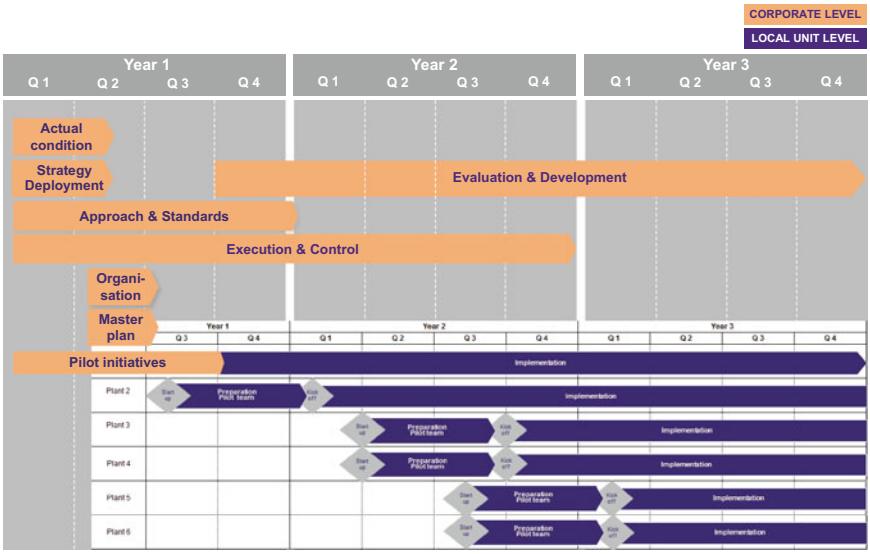

Fig. 14.6 The WCOM™ Programme Master Plan at corporate level. *Courtesy* EFESO Consulting ©

Previously, sharing experience was much more difficult, making it impossible to maintain continuity among different plants. Today, plants are managed as a global village. This means that products all follow the same specifications and processes are uniform. Control over process variables are infinitely higher than ever. **The WCOM™ system puts an integrative web platform in place**, drawing up **virtual teams** composed of operators from all over the world who **share** their **findings** in order to avoid any mistakes and **accelerate the improvement process**.

These sharing capabilities make up WCOM™'s programme management, which is not a complex project management system but rather a way of integrating common capabilities into a single programme. This can be seen in the adoption of the Master Pillars, corporate long-term entities that guide the plant by staying focused and constantly moving towards corporate targets. They achieve this by allocating different missions to different plants so that each one represents a small piece of the puzzle, combining together to address the entire process.

14.7 A History of Autonomy

Looking back on historical events, there have been large empires that have risen to such dominance over the past centuries that it seems almost implausible. The Romans held a vast reign that spread beyond oceans and continents, and yet they did it without any of the technology that you will find in a global company today. So, how did they manage to keep things under control for so many years?

When there was a problem in, for example, the Moroccan part of the Roman Empire, things could become a little confusing. There were few Romans walking around in the furthest parts of their reign, so it was not quite as easy back then to ask one of your superiors for guidance. Even less easy was communicating with other parts of the empire. To combat such restrictions, the Romans, managed to implement a culture of autonomy, where those in charge acted using their best knowledge and skills to solve any issue that arose.

The culture of autonomy today is key to be able to fight the common new enemy: time.

The needed speed of decision requires autonomy.

But, on the other side, the availability of technology and a global WCOM™ system set up will allow to take local decisions with speed and knowledge, taking advantage of virtual team support.

Given how much has changed over time, and how much will continue to change, WCOM™ prepares companies for a systematic way of working. It addresses the strengths and weaknesses of companies, turning functionality into strategy, results and capability on a cultural and corporate level that lasts.

Chapter 15
History of TPM and JIPM: The TPM Awards From the Japan Institute of Plant Maintenance (JIPM)

Tsutomu Nakamura

Nakajima and others, who laid the groundwork for the development of JIPM, studied the preventive maintenance (PM) movement in the US in the post-WWII era and worked to arrange the practice to suit the Japanese manufacturing industry. They propagated the system and concept of maintenance structure and PM through consultation with a wide variety of companies, and further developed and spread the concept as PM for the manufacturing industry.

Against the above background, Nippondenso Co., Ltd. (currently DENSO Corporation), which was increasingly using automated equipment, promoted the concept of "productive maintenance by full participation" targeting such equipment as an initiative to improve productivity and quality. JIPM helped realize the initiative. After several years of consulting, Nippondenso was given a PM Award in 1971, which became the first year of TPM's[1] promotion in industry.

The **PM Award** (currently **TPM Award**) was established in 1964, and has been given to such well-known companies as Toyota Motor Corporation, Nissan Motor Co., Ltd. and Mitsubishi Heavy Industries, Ltd. After Nippondenso was given the award in 1971 for its TPM activities and many other businesses were also awarded for their TPM activities subsequently, the name of the award was changed to the TPM award. Examinations for the TPM award are conducted by a team of JIPM experts and university professors who visit the factories in question. The examination process consists of primary and secondary screenings as well as multiple visits at intervals of from two to six months to the factory. The aim is to determine whether the company is really practicing what it says it does and whether TPM activities have really taken root as a management system by way of an on-site examination. The team draws on their experience in examining manufacturing

[1]TPM® is a Registered Trademark of the Japan Institute of Plant Maintenance.

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businesses worldwide to check if the subject lives up to the standards of the TPM Awards. The team also gives suggestions to company executives so they can aim for a higher level of operation and maintenance excellence.

There are several TPM awards (see below) that target companies and factories of varying sizes and differing levels of TPM activity.

Award for World-class TPM Achievement	For winners of the Special Award for TPM Achievement who have worked on unique, creative TPM activities that have produced results
Advanced Special Award for TPM Achievement	For winners of the Special Award for TPM Achievement who have set and worked with focus points for TPM activities that have produced results
Special Award for TPM Achievement	For winners of the Award for Excellence in Consistent TPM Commitment who have maintained and improved their TPM activities and are working on unique, groundbreaking TPM activities
Award for Excellence in Consistent TPM Commitment	For winners of the Award for TPM Excellence (Category A or B), who maintained and improved their TPM activities, and have measures to maintain and continue with the movement
Award for TPM Excellence, Category A	For companies who have worked on TPM with the eight pillars of TPM, produced results either tangible or intangible, established the foundations for TPM activities, and completed the fourth step for autonomous maintenance activity
Award for TPM Excellence, Category B	For companies who have worked on TPM with the five pillars of TPM centering on production sites, produced results either tangible or intangible, established the foundations for TPM activities, and completed the fourth step for autonomous maintenance activity

In 1971, JIPM proposed steps in and pillars of TPM activities in order to facilitate the introduction of such activities. As time passed, JIPM has developed and introduced new methods and concepts for the promotion of TPM activities. For example, in the book published in 1981, *the TPM Deployment Program*, JIPM proposed the concept of seven losses and five pillars (individual improvement, autonomous maintenance, scheduled maintenance, preliminary equipment management, education and training, safety and sanitation), but in the book published in 1991, *the New TPM Deployment Program*, JIPM expanded on the concept by proposing 16 losses and eight pillars (individual improvement, autonomous maintenance, scheduled maintenance, quality maintenance, development management, indirect department, education and training, safety and sanitation). Further, in *the TPM Trends in the 1st Age of the 21st Century* published in 2002, JIPM laid out the concept of Advance TPM activities, while redefining TPM as Total Productive Maintenance and Management.

As TPM has evolved and developed, JIPM has long acted as a specialist organization in the area of maintenance and a non-profit-making public interest corporation under Japan's Ministry of International Trade and Industry (now the Ministry of Economy, Trade and Industry). In 2012, it was recognized as a public interest corporation by the Japan's Prime Minister, and was reorganized as a public interest incorporated association with an even higher level of public utility.

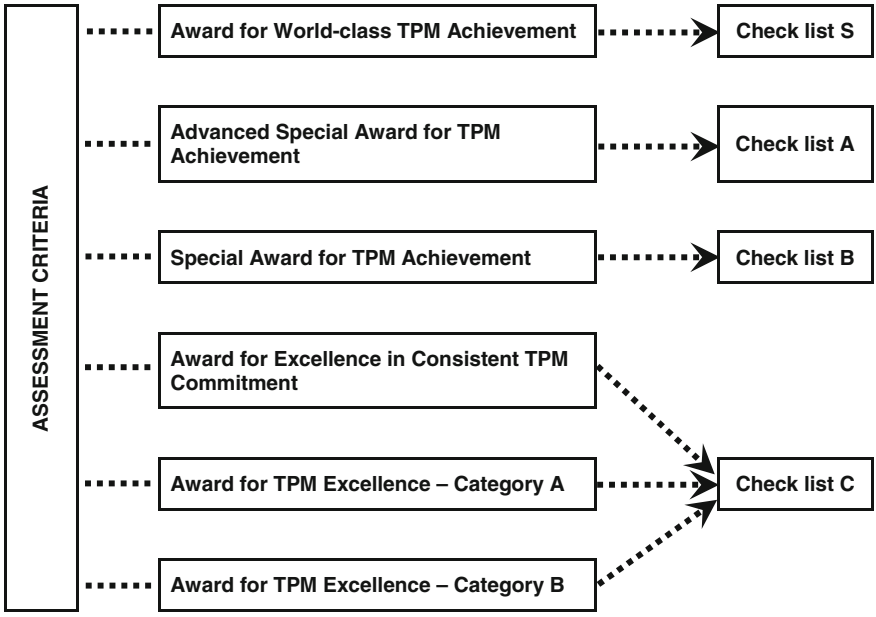
As a non-profit-making, public interest organization, JIPM has for many years conducted examinations for and presentations of TPM Awards. TPM Awards are given to companies and factories that have produced commendable results and created superior structures as a result of TPM activities. The awards recipients are not limited to Japanese businesses, but have encompassed businesses from all over the world, including companies and factories in Europe, North America, Central and South America, Asia, Oceania and Africa. So far, over 3160 companies and factories around the world have adopted the TPM Awards as an incentive to boost their activities and aim for enhanced productivity and quality.

For details for the TPM qualifications and checklist, please refer to JIPM's website (http://www.jipm.or.jp/).

For the skilled top management of companies and factories in the 21st century, it will likely become increasingly important to introduce a TPM movement and work on operational excellence and maintenance excellence, thereby actively enhancing manufacturing excellence as represented by WCOM^{TM} and making it known to the employees of winners as well as the market that the business is being managed excellently.

WCOM^{TM}: Registered brand name by EFESO Consulting

Reference Documents



Assessment Criteria
For all Categories of TPM Award

Assessment Criteria		Explanations
Basic conditions as business manager		The basic conditions are to fulfil the social responsibility to be exercised by an enterprise, and achieve labour and equipment safety.
Prerequisites for implementation	Formulation of policy and target	A target contributing to management is established in line with the concepts that TPM policy is consistent with the basic corporate policy, TPM is clearly positioned in the strategy as an enterprise or working site, and "TPM is a job."
	Formulation of master plan	The master plan showing the basic promotion plan of TPM in chronological order is created in order to fulfil the initial purpose, and is used as a criterion for all activities and as a fundamental when making a plan to promote each pillar at the working site.
	Establishment of promotion system by top management	The chief executive for TPM promotion is the business manager who exercises leadership based on his/her own intentions. The organization for TPM promotion based on the premise above is established and functions.
	Manager and technical staff-led type formation of overlapping small groups	A manager and technical staff-led type of working organization consisting of overlapping small groups is formed in establishing the promotion system. The role and responsibility of each level of overlapping small-group organizations are clarified.
	Creation of opportunity for all members to participate	All members participate in TPM activities across all departments and levels, in order to clarify the presence and accomplishment of each member through participation by each member in the activities based on the idea that "TPM is a job."
	Introduction of step-by-step implementation system	The steady progress management of activities is carried out through step-by-step implementation which clearly shows what to do at the present stage, what to do at the next stage and the final picture, in order to definitely implement what to do and clarify the guidance points in the process of activities.
	Implementation of step-by-step examination	Appropriate consultation is carried out in the system where a group in a position of leadership evaluates the appropriateness of going on to the next step when implementing activities through step-by-step implementation, and where top management at the working site also evaluates it.
	Ensuring of top management diagnosis function	The business manager confirms at a certain time the status of accomplishment as stated in the TPM policy and implemented as planned by the manager to produce results, and also confirms the need to change the future policy, plan, system, etc.
	Establishment of pillars of TPM implementation	Basic pillars toward activities are established from the viewpoints of a double-wheel system concerning equipment management by a field operator and specialized maintenance so as to avoid problems in production equipment, prevent the occurrence of problems by upstream control, and develop human resources. Based on the above, pillars for activities according to the needs as a working site are clarified.
	Clarification of loss	TPM aims to contribute to business by thoroughly eliminating "losses" including chronic loss. Therefore, the existence and definitions of loss and structure are clarified, and the level of contribution to business by eliminating such losses is clarified.
	Utilization of methods and techniques to solve problems/issues	In order to produce results toward solving problems including chronic loss, such approaches as applicable analyses and improvement, and their methodologies are clarified and activities logically implemented.
	Utilization of tools for circle activation	"TPM activities board," "one-point lessons" and "circle meetings" are utilized as effective tools for circle activation.
	Establishment of system for developing human resources	A system for training is established in order to secure personnel having capabilities corresponding to the work, and education and training based on that system are carried out. Special programs are systematized and implemented for workers directly engaged in equipment management, in order to secure professional engineer capabilities and develop human resources having new capabilities.

Checklist C – Page 1 of 2

Award for TPM Excellence - Category B
Award for TPM Excellence - Category A
Award for Excellence in Consistent TPM Commitment

Categories		Check Points
1	TPM Policies and Objectives	TPM policies are planned in relation between company policies and plant/factory policy.
		The relation between TPM target values and management target results are clear.
		The master plan is in an appropriate order as an action plan to achieve TPM.
		TPM policies and objectives are checked using methods such as benchmarking that all sections of PQCDSME are displayed corresponding to 8 pillars.
		TPM policies and objectives have been set forth and observed by all the departments and sections.
		The achievement status of TPM policies and objectives is available in a time line using objective data.
		Overlapping small groups, the TPM promotion committee, and other special committees are organized in a way that leads to TPM activities.
		TPM promotion units help facilitate TPM activities within departments/sections.
		Small groups on the front line have been vitalized.
		The achievement status of TPM objectives is confirmed and necessary actions are taken for unachieved indexes.
2	Individual Improvement	Individual improvement issues and themes are set up in relation to TPM policies and objectives.
		Objectives are set forth for each subject of individual improvement, and contributions are being made clear by performance indexes.
		Terms and definitions are being made clear on production department losses and their elimination is being dealt with.
		A system is set up to analyze and understand the relationship between loss and cost using the loss map and loss tree methods.
		Improvement activities are being actively carried out, and contribution to the achievement index is clearly understood.
		A system to prevent recurrence of problems such as defects, breakdown, and short mechanical stalling is standardized.
		A system to apply cases of individual improvement horizontally is established.
		There are many cases of zero occurrences of defects, breakdown, and short mechanical stalling.
		Many necessary improvement measures, such as the QC method, Nazenaze analysis, and PM analysis, are used effectively and the custom of thinking with rationales and principles is being established.
		The results of improvement are being announced qualitatively and in terms of PQCDSME, and future issues and goals are clearly set.
3	Autonomous Maintenance	Autonomous maintenance achievement goals are set up using a step-by-step method.
		Achievement goals are appropriately assessed at each step by managers for progress and completion.
		Workplace/on-site visual boards, which show the status of activities, goals, accomplishments, and issues to be resolved, are in place.
		Actions are being taken to remove dirt, stains, scattered raw materials, oil leakage, etc. and to eliminate their cause.
		Cleaning, lubrication, bolt tightening, and inspections are performed perfectly and without fail, and thorough measures are taken for difficult-to-handle areas.
		Excellent storage procedures are in effect for tools and jigs, and cleaning is carried out routinely.
		Improvement proposals are made and implemented.
		A system to upgrade the skills of all employees is established with a skill evaluation chart, one-point lessons, and maintenance skill training, and is showing results.
		One-point lessons are available as training texts and are being used.
		Employee morale surveys and skill maps are used to confirm that all employees are working on workplace improvement with a sense of accomplishment.
4	Planned Maintenance	Goals for autonomous maintenance are set up in line with TPM policies.
		Duties for autonomous maintenance and planned maintenance are clearly defined and a mutual cooperative structure is established.
		Appropriate equipment diagnosis technologies are being put to use for predictive maintenance and deterioration checks, and TBM (time-based maintenance) and CBM (condition-based maintenance) are selectively used.
		Maintenance standards are in order and an appropriate maintenance calendar is created.
		Sudden breakdown has significantly decreased with thorough failure analysis and enhanced improvement maintenance; a system is set up for MP design information to accumulate and utilize the data.
		A system is set up and is being upgraded for professional maintenance skills such as repair skills, inspection skills, lubrication control skills, and failure analysis skills, for which a sufficient technical level has been reached.
		Spare parts, molds jigs, fixtures, measuring equipment, drawings, etc. are all stored as data.
		Maintenance information on the status of equipment deterioration, failure, equipment shutdown, maintenance man-hours, etc. is stored and utilized.
		Maintenance technology training is provided, and maintenance men are obtaining certification as equipment maintenance engineers.
		Maintenance costs are being adequately budgeted and controlled, and the maintenance cost ratio is monitored.
5	Quality Maintenance	Goals for quality maintenance are set up in line with TPM policies.
		Data are being accumulated for defect outflow and defect process, causes are being analyzed, and improvement goals are being set up.
		A system is structured to set up requirements for equipment that will not turn out defects, and maintenance control is performed appropriately.
		For quality defects, measures are taken to prevent recurrence from the aspect of 4M.
		Various analytical methods such as Pareto analysis, QM matrix, and PM analysis are effectively used at the appropriate stages.
		Based on fundamentals and principles, quality defects are being analyzed for cause.
		Measures aiming for zero occurrences of quality defects are showing results.
		A measure is set up to effectively and thoroughly applies the brakes on defect recurrence.
		A system is established to set up a quality maintenance system with figure 8 deployment.
		In order to reduce the defect rate caused by equipment, necessary training and research are moving forward.

Checklist C – Page 2 of 2

Award for TPM Excellence - Category B
Award for TPM Excellence - Category A
Award for Excellence in Consistent TPM Commitment

Categories		Check Points
6	Product and Equipment Development and Control	Goals for development and control of plants and products are set up in line with TPM policies.
		Items of development and control of plants and products and their standards are clear and the progress is monitored.
		In product and plant development management, a system that extracts the origin of problems in design review and debugging is fully functioning.
		The structure generating loss for product development management is clear and improvement measures are put in place.
		The MP design approach and the implementation of equipment, molds, jigs, and fixtures are both systemized.
		An information feedback system for MP design is in place.
		Economic comparison and risk analysis of plant investment plans are carried out appropriately for the cash flow base.
		A design method based on assessment standards for ease of production is introduced.
		Initial phase control is being exercised on new products and equipment, and there is a positive case.
		There is a case in which development of new technology and processing has led to the development of new products and equipments.
7	Training and Development	Goals for training programs are qualitatively set up.
		Important themes for the training programs are interlinked with the future plans of the company.
		A systematic training program for each job and rank is established with employees having a full understanding of the required knowledge and skills for each job and rank.
		A training curriculum and lecturers are available based on the training system, and appropriate training is provided.
		Effective training programs are set up for managers, staff members, operators, and maintenance workers.
		A place for maintenance skill training is provided and utilized for professional maintenance training and operator training, making it possible to carry on the skills.
		OJT training programs are fully functioning leading to the upgrading of skills for all staff members and progress in multi-skilled worker training.
		Staff members are actively working to obtain certification as autonomous maintenance engineers and equipment maintenance engineers.
		Employee satisfaction and the status of motivation are quantitatively analyzed and measures are in place for their enhancement.
		Results from the human resources program are being fed back to TPM activity, and achievement is understood.
8	Administrative and Supervisory Departments	Goals for administrative and supervisory departments are set up in line with TPM policies.
		By supporting the efficacy of production activity and improvement of supplier activity, the product inventory and goods in process have been reduced.
		Losses by the administrative and supervisory departments are accurately measured.
		Significant reduction in man-hours has led to a reduction in overtime and work on holidays, which has reduced fixed administrative costs.
		A multi-disciplinary and multi-skill approach has moved forward, and man-hours for different departments are becoming equal.
		Morale is being enhanced in the administrative and supervisory departments.
		The office supply inventory is kept at a minimum and the office environment is improved.
		An information system is being structured and a system is set up for quick and accurate information transmission.
		Each department is dealing with reducing costs incurred from operations and overall cost reduction is improving.
		A system to carry over the skills required for sustainable operation maintenance is in place.
9	Safety, Sanitation and Environmental Control	Safety, sanitation, and environment control policies are well defined, improvement targets are set for reduction in waste and emissions, etc.
		Past cases of labour accidents and plant disasters have been scientifically analyzed, and action has been taken to prevent recurrence.
		The Industrial Safety and Health Law is being complied with and the work environment (noise, vibration, dust, light, etc.) meets the legal standards.
		A risk analysis hazard map of the entire plant has been created, and the safety inspection manual is in order and is being audited.
		Safety awareness improvement activities take place regularly with near accident, KY and other measures.
		An emergency manual is in place, protective equipment and lifesaving equipment are ready to use, and emergency drills are being executed.
		Safety devices such as safety covers, safety nets, safety signage, and foolproof disaster prevention measures are appropriately prepared.
		Safety assessment is enforced before introducing new equipment and/or process.
		Results from improvement activities have led to energy and resource conservation.
		Environmental measures such as risk management and waste management are being considered, moving forward targeting zero emissions and reduced environmental load.
10	Effects and Evaluation of TPM	The level of achievement for the TPM goal is being assessed, and cause analysis is being carried out for its achievement or non-achievement.
		Objectives are being met in terms of overall equipment effectiveness, sporadic breakdowns, minor stoppages, and defective product indexes.
		Prominent results have been obtained in reducing process defects and customer complaints.
		The product inventory and works in process have been drastically reduced in comparison to before TPM introduction.
		A record of zero accidents and zero pollution is continuing.
		Product cost is reduced, and cash flow is improved.
		Achievement is seen that contributes to the operation profit improvement.
		TPM cost/benefit analysis is in order.
		High worker morale and a stimulating working environment are in place as an intangible benefit of TPM activities.
		Problems that remain unsolved in connection with TPM activities are being clearly recognized and concrete action plans are being envisioned.

Checklist B – Page 1 of 2

Special Award for TPM Achievement

Categories		Check Points
1	TPM Policies and Objectives	As premises for the fulfillment of corporate social responsibility (CSR), the corporate vision is clearly defined for business growth in the 21st century.
		TPM policies are planned in relation between company policies and plant/factory policy.
		TPM policies and objectives are checked using methods such as benchmarking that all sections of PQCDSME are displayed corresponding to 8 pillars.
		A TPM target value is established in line with management results, and a system is set up to quantitatively evaluate the progress of activities.
		The achievement status of TPM policies and objectives is available in a time line using objective data.
		The achievement status of TPM objectives is confirmed and necessary actions are taken for unachieved indexes.
		Distinctive and innovative TPM activities are exercised fusing the market needs and seeds of the company.
2	Individual Improvement	Each loss from equipment, procedure, operation, unit requirement, and management are being exposed along with the flow of materials and information, and improvement issues are prioritized according to the level of importance.
		Thinking and procedures for zero-loss are thoroughly implemented.
		Human-machine systems are completed in line with management objectives.
		Efforts are made to set up easy-to-operate equipment.
		There are many improvement cases that directly connect to management.
		Individual improvement issues and themes are set up in relation to TPM policies and objectives.
		A system is set up to analyze and understand the relationship between loss and cost using the loss map and loss tree methods, and achievement is seen.
		A system to prevent recurrence of problems such as defects, breakdown, and short mechanical stalling is standardized aiming for zero occurrences.
		A system to apply cases of individual improvement horizontally is established and results are being achieved.
		The results of improvement are announced qualitatively and in terms of PQCDSME, and future issues and goals are clearly set.
3	Autonomous Maintenance	Autonomous maintenance is established and the improvement structure is moving forward.
		Small-group activities have been revitalized and specified achievements are gained.
		Kaizen proposals are made actively and the contents are at a high level.
		Continued level improvement training is provided for maintenance skills.
		The achievement target for autonomous maintenance is shown in steps, and there is a system established to diagnose the progress and completion showing results.
		Actions are being taken to remove dirt, stains, scattered raw materials, and oil leakage, etc. and to eliminate their cause.
		Cleaning, lubrication, bolt tightening, and inspections are performed perfectly and without fail, and thorough measures are taken for difficult-to-handle areas.
		A system to upgrade the skills of all employees is established with a skill evaluation chart, one-point lessons, and maintenance skill training, showing results.
4	Planned Maintenance	Computerized systems are being successfully used for the purpose of spare parts control, maintenance cost control, maintenance information, etc., showing results.
		The concept of optimal maintenance cost is being effectively applied.
		Equipment diagnostic techniques are steadily being applied and are showing results.
		Equipment is set up for easy autonomous maintenance.
		A number of cases are available that demonstrate excellent results of corrective maintenance.
		Goals for planned maintenance are set up in line with TPM policies and their progress is being monitored.
		Duties for autonomous maintenance and planned maintenance are clearly defined and a cooperative structure among operators and professional maintenance men is established, showing results.
		Sudden breakdown is significantly decreased with thorough failure analysis and enhanced maintenance; a system is set up for MP design information to accumulate and utilize the data showing results.
		A system is set up and is being upgraded for professional maintenance skills such as repair skills, inspection skills, lubrication control skills, and failure analysis skills.
		A system is set up and is being upgraded ensuring the accumulation of maintenance information such as the status of equipment deterioration, failure, equipment shutdown, maintenance man-hours, etc.
5	Quality Maintenance	The 4M requirement for quality assurance is clearly defined and duty segregation for each pillar and collaborative issues are noted.
		Details of manufacturing procedures are traceable.
		A system is structured to realize a facility that will not send out defects.
		A system is structured to set up and manage operations and work requirements that will not send out defects.
		A production line with zero defects is available.
		Quality maintenance goals are established in line with TPM policies and progress is monitored.
		Based on fundamentals and principles, quality defects are being analyzed for their cause.
		A measure is set up to effectively and thoroughly applies the brakes on defect recurrence.
		A system is established to set up a quality maintenance system with figure 8 deployment.
		In order to reduce the defect rate caused by equipment, necessary training and research are moving forward.

Checklist B – Page 2 of 2

Special Award for TPM Achievement

Categories		Check Points
6	Product and Equipment Development and Control	Systems are in effect for the development and control of plants and products; results have been achieved.
		Systems are in effect for economic comparison and risk analysis of plant investment alternatives.
		Systems are in effect for MP design and MP information feedback.
		A number of cases are available for easy-to-make products and easy-to-use equipment.
		Plants and products have been developed that achieve high-level customer satisfaction.
		Management items and standards are clearly defined for product and plant development management, goals are set in line with TPM policies, and progress is being monitored.
		In product and plant development management, a system that extracts the origin of problems with design review and debugging is fully functioning.
		The MP design approach and implementation in equipment, molds, jigs, and fixtures are all systemized and an information feedback system for MP design is in place.
		Initial phase control is being exercised on new products and equipment, and it is producing a positive result.
		A system that connects the development of new technology and processing to the development of new products and equipments is in place and specific cases are available.
7	Training and Development	The training environment, curriculum, and tools are in order for the improvement of knowledge, skills, and techniques.
		Internal TPM instructors have been trained and appointed.
		All company staff members eligible for certified maintenance specialist have taken the examination, with a high passing rate.
		The criteria for training assessment are in good order and are proving conducive to operator vitalization.
		A challenging training program is in good order providing a comfortable workplace.
		Goals for training programs are qualitatively set up and important themes for the training programs are interlinked with the future plans of the company.
		A systematic training program for each job and rank is established with employees having a full understanding of the required knowledge and skills for each job and rank, showing results.
		A place for maintenance skill training is provided and utilized for professional maintenance training and operator training, increasing the ability to carry on skills.
		OJT training programs are fully functioning and lead to the upgrading of skills for all staff members, improving multi-skilled worker training.
		Results from the human resources program are being feed back to the TPM activities and system to verify that achievement is moving forward.
8	Administrative and Supervisory Departments	People-friendly, pleasant offices are in place.
		Actions are being taken to provide shorter work hours and care of senior workers.
		Effective support is being rendered to production departments to improve operation efficiency.
		Cost control is in effect for each product.
		Work improvement is being aggressively pursued, and concrete results are being obtained.
		Improvement goals for administrative and supervisory departments are in place in line with TPM policies and progress is being monitored.
		By supporting the efficacy of production activity and improvement of supplier activity, the product inventory and goods in process have been reduced.
		Losses by the administrative and supervisory departments are accurately measured, significant reduction in operation man-hours is achieved, and indirect fixed costs are reduced.
		Information is being transmitted quickly and accurately, and information needed is available on demand.
		A system to carry over the skills required for sustainable operation maintenance is in place.
9	Safety, Sanitation, and Environmental Control	Company policies regarding safety and the environment are being observed in every area of company operation.
		Human contact is being aggressively pursued on production floors.
		Work environment protection (noise, odor, light, etc.) is in effect.
		Zero accidents and zero pollution are being pursued in an effort to create a globally friendly plant.
		Safety, sanitation, and accident prevention are all being handled adequately.
		Safety, sanitation, and environment control policies are well defined, improvement targets are set for reduction of waste and emissions, etc., and progress is being monitored.
		Past cases of labor accidents and plant disasters have been scientifically analyzed, and action has been taken to prevent recurrence.
		A risk analysis hazard map of the plant has been created, the safety inspection manual is in order, and safety patrols are being made.
		Safety assessment is enforced before introducing new equipment and/or process.
		Environmental measures such as risk management and waste management are being considered, moving forward targeting zero emissions and reduced environmental load.
10	Effects and Evaluation of TPM	TPM activities are in place with a goal-oriented emphasis.
		The level of achievement for TPM goals is being assessed, and cause analysis is being carried out for its achievement or non-achievement.
		Objectives are being met in terms of overall equipment effectiveness, sporadic breakdowns, minor stoppages, and defect product indexes.
		Prominent results have been obtained in reducing process defects and customer complaints.
		The product inventory and works in process have been drastically reduced in comparison to before TPM introduction.
		A record of zero accidents and zero pollution is continuing.
		Product cost reduction, cash flow improvement, and achievements leading to operating profits are showing.
		High worker morals and a stimulating working environment are in place as an intangible benefit of TPM activities.
		Problems that remain unsolved in connection with TPM activities are being clearly recognized and concrete action plans are being envisioned.

Checklist A

Advanced Special Award for TPM Achievement

	Categories	Check Points
1	TPM Policies and Objectives	As premises for the fulfillment of corporate social responsibility (CSR), the corporate vision for business growth is defined and open management takes place based on the roadmap.
		With distinctive and innovative TPM activities fusing market needs and corporate seeds, restrictions hindering product cost reduction and loss are being thoroughly eliminated.
	Important Themes	
2	Individual Improvement	Loss hindering product cost reduction is accurately extracted, with the participation of all departments, including sales, development, production, distribution, and management.
		Loss from product cost is being categorized in line with the flow of materials and information, and activities in each department and section and activities surpassing departments and sections are clarified to achieve zero-loss.
		Cost effectiveness is being considered for improvement, and methods appropriate for loss items are being effectively used.
		Many zero-defect and zero-breakdown lines are created with improvement measures, and there are many cases of reduction in non-value-added processes.
		New technologies and processes are being developed that can be boosted in the industry.
3	Autonomous Maintenance	Steps for autonomous maintenance are evolving to the point that autonomous management is being implemented.
		Training to upgrade maintenance skills continues to be provided, with skill level goals being upgraded and reaching a high level.
		The autonomous maintenance percentage has been heightened to reach goals by involving a part of the professional maintenance operation.
		All staff members are flexibility dealing with new equipment, products, and processes, and are working for workplace improvement.
		Improvement proposals are actively made, leading to a cheerful, safe, and pleasant workplace.
4	Planned Maintenance	Computers are effectively utilized to provide good results for spare supply management, maintenance fee management, and maintenance information management.
		Methods, tools (measuring instruments, sensors), and evaluation methods for facility analysis are being systemized.
		Ex post facto, regular, prognostic, and improvement maintenance are differentiated in consideration of appropriate maintenance fees, and are effectively implemented.
		The facility makes autonomous maintenance easy to handle.
		With improved maintenance, measures for zero breakdown and defects, and conservation of resources and energy, are implemented and there are many cases that produce effects for product cost reduction.
5	Quality Maintenance	The 4M requirement to ensure quality is clearly defined, role sharing by each pillar is accomplished, and collaboration issues are specified to prevent defect occurrence and outflow.
		A structure and facility that prevent material defects, and establish and manage operation and work requirements, are set up and are showing results.
		It is possible to track down material procurement, manufacturing, and distribution records for each product, enabling easy pinpointing of causes of defect generation and outflow, making it possible for improvement measures to be taken immediately.
		Quality maintenance at the mass production stage is in effect.
		Systems are in effect for zero-defect production.
6	Product and Equipment Development and Control	A cross-functional system and information network is organized for development management by sales, development, designing, trial production, manufacturing, and distribution departments.
		Evaluation is performed in new facility development for product cost-saving benefit, operability, maintenance, safety, environmental load, and LCC.
		LCA is introduced in the development of new products.
		CAE and 3D-CAD simulation technology is used at the development stage progressing in non-test production.
		In view of the market lifespan of a product, a percentage-of-sale goal value is set up for new products, and the goal is being met.
		Product development with high customer satisfaction is taking place with intellectual property rights, such as patent applications, being obtained.
7	Training and Development	Necessary technology and skills, core and detailed, are being systemized, and training programs are installed and provided in steps according to job and position.
		Training programs are established in line with corporate renovation, and employees are improving in the technological and skill aspects of their positions.
		Training is provided to foster human resources that can comprehensively manage cross-functional organization for development.
		The criteria for training assessment are in good order and are proving conducive to operator revitalization.
		The number of certified equipment maintenance engineers is increasing.
		The training provided, which is firmly established, inspires motivation, purpose, and ease.
8	Administrative and Supervisory Departments	A management control system is established that connects related departments such as the sales and distribution departments.
		A system is established for product cost control for each product in line with the flow of materials and information.
		A support system is established that leads to the optimization of the overall production process.
		Improvement measures are actively installed for operation contents and are showing results.
		A project is actively deployed for time reduction with significant efficacy of operation.
		The workplace is made kind and pleasant by taking time reduction measures and giving consideration to senior staff members.
9	Safety, Sanitation, and Environmental Control	Company policies regarding safety and the environment are being observed in every area of company operation.
		Considerations are made for sound human relationships in the workplace and employee satisfaction surveys are carried out regularly.
		Training is systematically provided for safety assurance, environmental conservation, and disaster measures.
		Workplace safety, environmental conservation, and disaster measures are evaluated when new technology, equipment, or products are being introduced.
		Waste and emissions are being controlled with yield enhancement and energy source improvement.
		The work environment is becoming pleasant to its workers with workplace environmental protection (measures for noise, odor, and light), sanitary measures, and health checkups.
10	Effects and	TPM activities are in place with a goal-oriented emphasis.
	Evaluation of TPM	Through continuation of TPM activities, applied goals are being met.

Checklist S

Award for World-class TPM Achievement

Categories		Check Points
1	TPM Policies and Objectives	As premises for the fulfillment of corporate social responsibility (CSR), the corporate vision for business growth is defined and open management takes place based on the roadmap.
		Fusing market needs and corporate seeds, creative world-class TPM activities take place giving birth to innovative products and manufacturing methods.
2	Individual Improvement	Company-wide backbone technologies such as product quality improvement, reliable equipment, process streamlining, ease of operation, production efficiency, speeding up of information processing, and efficient distribution are being theoretically systemized and utilized in relation to the flow of funds, materials, and information.
		Processing and reaction phenomena, the core of production, are being visualized and monitored by visual images, sensors, and simulations, aiming to enhance product quality.
		An innovative plant and production system that can flexibly respond to new product manufacturing and small-volume production of multiple items are established.
		Profit planning is established with product value enhancement and reduction of prime cost.
		Review of loss is being performed regularly and zero-loss activity has been established.
3	Autonomous Maintenance	Autonomous plant maintenance is evolving into autonomous production maintenance, and into autonomous production management, thereafter developing into company-wide autonomous management.
		Systemized maintenance training has been established to gain skills, and achievements have been made.
		Innovative activities and suggested activities directly related to company management are producing achievements.
		A friendly and comfortable workplace exists.
		Autonomous maintenance is taking place with commitment and a sense of ownership.
4	Planned Maintenance	The relationship between facility function and component parts is systematically understood, leading to effective weakness improvement, the specification of sections prone to produce defects, and the establishment of a maintenance time cycle.
		Deterioration of the facility is categorized as regular and irregular deterioration based on facility structure and load history, for which measures are taken to prevent breakdown and accidents.
		Measurement and sensor technology for facility analysis is being upgraded, and the maintenance period, cycle, and area are determined with a high degree of accuracy.
		With the improvement in the planned maintenance technology, measures to prevent recurring breakdown are established and the facility is improved for ease of autonomous maintenance.
		The system and concept of optimal maintenance is completed in comprehensive consideration of the 4M requirements.
		Facility maintenance is systemized and implemented from the perspective of the production system.
5	Quality Maintenance	Unified control of materials, purchasing, specifications, design, manufacturing, and distribution data has been developed, with which quality can be guaranteed, and has become a source of pride for the company in its industry.
		A system is established to swiftly obtain information on defective products and immediately utilize the information in the production process and company-wide operations.
		Quality maintenance is implemented for new product development.
		Zero customer complaints and zero defects are standardized and are being achieved.
		The structure is systemized to avoid defects and, at the same time, continuous feedback concerning quality improvement is leading to learning opportunities.
6	Product and Equipment Development and Control	New product development and technological development are taking place through strategic alliances.
		Internal and external technologies and market information are being managed in unification and utilized in the establishment of development themes for products and equipment.
		Development in consideration of the product lifecycle management (PLM) of products and equipment is taking place and a management system for the development is established.
		A cross-functional system is organized for product and equipment development by planning, designing, manufacturing, distribution, and marketing departments.
		A mutual relationship between product development and equipment development is fully considered.
		There are many cases that show examples of user-friendly and environmentally gentle product design and development.
		Innovative products that can be boosted in the industry are being developed.
7	Training and Development	The thinking that a company stands on its people is being established and implemented.
		An ideal of training has been developed individually among employees with different jobs and positions, and training is provided systematically.
		Training is provided to foster human resources that can comprehensively manage cross-functional organization for development.
		A training program is available for young and mid-level employees aiming to foster managers with an understanding of management, sales, finance, development, technology, and skills.
		Systemization and technological improvement of skilled workers is being done through cooperation from individuals exceeding the pillars of TPM activities.
		TPM training is provided at cooperative companies and other plants/factories, leading them to the level for assessment.
		The number of certified maintenance specialists (highest level) is increasing.
		The results of TPM implementation are periodically presented and experiences are exchanged with other plants for the purpose of mutual development.
8	Administrative and Supervisory Departments	A consolidated system is established ahead of the industry that organizes management resources (people, things, funds, information).
		Major operation processes are defined and continued process improvement is taking place with the operation inventory.
		An SCM system is established that is consistent in terms of procurement, manufacturing, sales, and distribution.
		Reform of the operation content is performed appropriately.
		Use of a comprehensive system is leading to a stronger relationship with related and cooperating companies.
		Expansion in ROA is further progressing with downsizing.
		The workplace has become kind and pleasant to its employees.
		Considerations are made for part-time and senior workers, increasing the pleasantness of the workplace.
		Evaluation is performed on 4 levels of satisfaction (4S: CS, ES, SS, GS) and specific activities are deployed.
9	Safety, Sanitation, and Environmental Control	Sufficient consideration is given to health and safety issues.
		Physically demanding labor has been automated and a user-friendly assembly line is being structured.
		Basic thinking on environmental conservation is clarified and regional environment assessment is being performed for new business development.
		In addition to the realization of a safe and sound workplace, contributions are made for the realization of a safe and sound community.
		Steady reform is taking place for the realization of a resource-recycling production factory.
		Exchange activities take place with the local community.
10	Effects and Evaluation of TPM	TPM activities are in place with a goal-oriented emphasis.

Part III
The Human Side

Chapter 16
The Human Dynamics in WCOM™

Rajinder Singh

As we have seen in the previous section of this book, WCOM™ is a complete transformation program that aims at optimising the organisation, creating excellent processes and work flow. The processes optimisation can be achieved through a loss eradication approach, where a process control system is in charge of guarding results. To make results become permanent, a prosperous working climate is essential. The organisation must have become a place where people are aware of the reasons why they do things and are motivated while doing them.

This section of the book focuses on the very critical element of the WCOM™ implementation: people, the core of the programme. We will explore all those practices that can make the best use of hearts and minds, as this is the main ingredient for creating an excellence culture every day, in factories as well as in services: a permanent treasure to protect to prosper, **the Human Capital**.

Leadership has a key role in creating the climate that drives change, as we will see in Chap. 17. We consider obstacles that an organisation can encounter as well as the opportunity they represent if explored in depth and eradicated.

We will see how a leadership team can become able to master engagement and inspiration towards a shared vision, creating a sense of urgency for others to jump out of their comfort zones. The acceptance of new and improved ways of relating bring benefits throughout life. The insights provided by Change Management in the WCOM™ program come from the studies of innumerable scholars and researchers as well as from thirty years' experience in the field by the author.

In Chap. 18 we will analyse the importance of **behaviour in connection to performance**, and the models applied to analyse it. In order to achieve results, somebody needs to do something, take some actions. These actions are what we call

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behaviours. This domain deals with defining, performing, steering and monitoring only those behaviors that deliver the desired results and performance. The chapter explains how to identify, measure and reinforce the desired behaviours and develop a clear and measurable link to the business objectives. When organisations are able to define the expected performance clearly and link the behaviours explicitly to the achievement of this performance, every person can see the reason and impact of actions on the organizational performance, and if the right working climate has been created using the change management process, they can fine tune their behaviours to drive exceptional results.

Performance Behaviour can help any organisation to drive behaviours that deliver the desired business results.

How can we be sure that the behaviours that we are driving are ideal? By ideal we mean behaviours that not only deliver great results but also make them sustainable. We know that even bad behaviour can deliver good results in a short term, but neither the behaviour nor the results are sustainable. So the challenge is to identify those ideal behaviours that can deliver ideal results—both excellent and sustainable. This is the subject of Chap. 19 of this section. The Shingo Institute, in over twenty-eight years of research and learnings, has identified the essential ingredient which creates a sustainable culture of excellence. We can summarise it in the assumption that **ideal results come from ideal behaviours**. Behaviours are a direct emanation of principles. If we want to sustain ideal behaviours they need to be based on the principles of excellence. When the culture of the organization is in alignment with the principles of operational excellence, a rapid and sustained implementation of WCOM™ is assured.

Chapter 20 deals with the need and methods required for developing essential skills in people at all levels in the organization. WCOM™ implementation requires a network of collaborative people that support and help each other succeed and grow. A large number of people at each level in the organization have to lead the transformation, develop leadership skills and become trainers and coaches while helping other in improving processes. Learning from the work done by the **"Training Within Industry"** War Commission in USA in 1940s, the chapter explores the methodology to develop the skills of leading, teaching and improving methods in employees. Once these skills are developed in a sufficient number of people in the organization, ideal behaviours will be developed and practiced, the improvements of WCOM™ implementation will be properly taught and rigorously practiced by the people who "want to" practice them not just "have to" practice them.

This section on people gives a glance into best-in-class practices in developing a culture of excellence in an organization that delivers a sustained, ever improving business results by the collective effort of all employees who are engaged and inspired and take ownership and pride in their work.

Creating this wonderful workplace is the vision of each WCOM™ implementation and the ideas and concepts in this section are the key to achieving this vision.

Chapter 17
Change Management and Leadership

Mark Goodwin

17.1 What Triggered EFESO to Start a Change Management Practice?

During the period 2000–2004, we had a unique fast moving consumer goods customer (FMCG) with over forty factories globally. They had become very good in applying our methods, empowering their employees and deriving dramatic improvements in reliability and quality. As they became ever more effective (and started to win awards in some cases) they noticed a significant variance in the performance of the different factories.

They asked us to help them understand the reasons, since the products from their factories were essentially the same, using the same equipment and the same raw materials. I therefore started to undertake some research to identify the possible root causes. With hindsight this research turned out to be priceless as there was no "noise in their data" due to equipment, process, raw material or product variety.

17.2 Why Was There Such a Big Difference in Performance?

At the beginning I had not consulted for this FMCG client, but was chosen for the research because of my background in Change Management and Leadership. As I visited a number of their factories in the USA, Mexico, Ukraine, France and Brazil, I started to see differences. Quite quickly it became noticeable that most of the root causes of performance variation were due to differences concerning Leadership.

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Sometimes we found a difference in understanding, but you could also relate the difference in understanding back to leadership. If the leader of the factory had understood the true concepts behind the approach to continuous improvements, he/she would have made sure that the idea was understood by everybody else.

Most of the continuous improvement techniques are fairly straightforward. The EFESO approach is far more structured, more thorough, and gives many more examples than generic problem solving methods, but nonetheless the real secret to implementing continuous improvement and change initiatives turns out to be leadership. It was an "epiphany" moment and it surprised us that we had not concentrated on it before.

That was the real paradigm shift for me: to realize that most of the variance in performance were due to leadership differences. We worked through the data factory by factory and made a practical and detailed list of what needed to be addressed to be a successful leader of World Class Manufacturing. We introduced the idea of two axes; a horizontal axis which related to the improvement process, the technical things to Manage, and a vertical axis which relates to climate and Leadership.

Before going further I must say that I am deeply indebted to the support and ideas from Ernie Watson. Initially Ernie was the client. He was in charge of organizational development, with a very rich experience in organizational development methods, authors, and techniques. Ernie has vast knowledge of organizations and is an active reader of notable authors on the subject. Combining his knowledge, as the client, with my experience in leadership and empowerment, we were enabled to develop exercises and techniques for a course to teach effective leadership.

17.3 Those Were the Years of 'Teaching the Tools', Lean, TPM, Six Sigma, Black Belts: Did You Find that These Leadership Issues Were Similar at Other Clients?

For the first two years our FMCG client became so interested in the subject that we focused our change leadership mostly on this client. They sucked up nearly all our creative resources and gained excellent results with this new leadership course which we continually refined. We ran the same course over thirty times around the world including China, Russia, Ukraine, Singapore, Kenya, South Africa, USA, Brazil, UK, France, Italy, Spain, Germany, Netherlands, Sweden, and Saudi Arabia. This also had the advantage of enabling us to understand the effect of the local cultural differences and to make appropriate adjustments. The results were dramatic. Even for factories at the "bottom of the Pareto", once their leaders understood what they had to do to be effective, they jumped rapidly up the scale.

We had so many dramatic results that it became a requirement for any new factory manager or senior company director of this client to attend our course.

17.4 How Was the Leadership Course Structured?

Each part of the course was designed like a medicine for a particular disease which we had found in the initial research, or found subsequently. Once the participants understood the way the course was structured they got the sense of it. Initially we started this course only for factory managers, because we had realized that the factory manager was the most important person in the factory in terms of leadership. The course lasted a week. The first four days of the course were made essentially of exercises to coach different aspects of leadership. The Friday was a day for all participants to tell us what they were going to do different as leaders as the result of the course. We used to have the image of an ice cube and suggest an ice cube is useful if you want a Gin and Tonic, but if you hang on to it, the ice cube it is pretty useless after about 15 min. In other words, we wanted them to tell us what they we going to do in the next ninety days after the coaching when they went back to their factory.

Right in the beginning of the course we did a number of exercises to help them realise that they underestimated their own role and their own importance in making continuous improvement effective. This concerned the way they used their own time, the way they did things, the way they approached things. They had not appreciated the extent to which they were giving off unconscious messages.

As an example we would ask the factory leaders how many reviews or audits they made of shop-floor improvements. From the way they answered we could feel immediately how committed they were to the ideas. We were able to help them see how their organization picked up everything from their "demeanor". The level of respect and interest in others was palpable. Much of what we discovered and taught was based on principled leadership but with the advantage of specific factory data we made it so much more real and concrete for them.

This also connects with the Shingo Principles, which are explained in a dedicated chapter.

17.5 The Difference Between Management and Leadership?

One of the subjects we stressed was the difference between management and leadership. This is often poorly understood. Management comes from Manus, the Latin for hands, and implies something hands on. Leadership derives from a Viking word with an original meaning "causing another to want to travel with you". The leadership role is more about destination, vision, engagement, emotion. One of the most important parts of leadership is that people want to go with you. A leader creates desire to go somewhere, the vision of where to go, and because you are creating desire, you have to have, in the way you behave, a manner of relating to

people that makes them interested, that talks to them. Without that you are more of a manager. The management role is more about process, logic, time consciousness.

As a leader it is not essential to know exactly how to do something, but one must be 100 % sure of the desire. Winston Churchill is a good example of this. He was a man with many self-doubts but he had no doubt when it came to rallying the British people at their darkest hour.

In the week long course we did exercises with the participants to see which were management tasks and which were leadership tasks. They realized that they were over-managing and under-leading. Most of them were quite good at managing, they looked at meeting structures, data collection, reporting: they were better in managing their tasks than in engaging people. Much was focused on leadership and what they could do differently. We used to present the course like a sandwich: the bread, the meat, and then more bread. We started with the soft stuff, which is the bread, and we put the technical stuff in the middle. But we taught the technical stuff with a different paradigm.

When we started this course we realized that most of the Continuous Improvement material on the subject had been written for engineers. It was written in a way that an engineer would enjoy writing or receiving. For a leader, it was too detailed, or it was good for management but not for leadership, and we started rewriting it completely.

We took all the core elements important for success in the factory, and wrote them from a leadership standpoint: what you need to know to lead Continuous Improvement, to improve Quality, rather than to explain the detail of what's inside the engine room.

If you look at Lean, Six Sigma, TPM and other methods they are often described from a practical engineer's standpoint, and less from a leadership standpoint. There is less written on how to lead them, and what a good factory leader does to facilitate the success. Although the core ideas originated mostly in America, it was the Japanese who perfected the process part. In Japan leadership is very different from the West.

Looking back on our most successful clients we noticed that the ones with the best leadership had derived most from our methodologies. Therefore we needed to open a new chapter to educate leaders. We used to say Japanese techniques, European culture, with American desire for quick results. But we did not think enough about leadership, about the need for leadership education.

If you look to most of our clients over the years, whether they have been strong or not, it was nearly always a leadership question.

We have to consider that in the early days of EFESO, between 1980 and 1995, very few Western companies had even a basic knowledge of Japanese Continuous Improvement systems. So teaching them was already an industrial revolution, a very big step forward. Before that, the management was mostly dealing with strategy, marketing, financials, and the shift leaders were dealing more with making the machines run.

I was one of the early global clients of EFESO. I joined Carnaud Metalbox (which was Europe's largest metal packaging company with over 160 factories) as a

leader to change the factory culture. I was looking for some tools which could support me change the factory culture to make the style of leadership more empowering. So I brought EFESO into help me with the technical part. I already knew much more about the engagement axis which was my nature and the foundation for most of my career.

When EFESO started in the eighties to explain these techniques there was a lot enthusiasm in the first clients because everything was new and it was a powerful tool, pioneering. Also, the advantage to the early adopters was that almost nobody else was doing it. In 1990 there were only a handful of successful adopters. Therefore it is logical that our first clients had more leadership than the average from the fact that they were the first to start a new approach.

Procter and Gamble, for example, was already very successful in the late eighties and early nineties. One of their characteristics was their strength in integrated work systems, the engagement of people side. When they worked with EFESO it made a winning combination. In this way we were able to combine the natural leadership of the first EFESO clients and the strength of the detailed tools.

We then moved into the "middle period" where, all of a sudden, everybody was doing Continuous Improvement because it was fashionable. We had clients with less strong leadership, who were following the trend rather than pioneering it. EFESO was still so successful at the end of the 20th century that it had not forced us to notice the evolving leadership differences.

It was like a forest which had become overgrown. In the beginning it was just a beautiful field, wherever you planted a tree, it grew up, as there was no competition for the light. When the forest became thick, the trees had to be quite determined to force their way through and get enough light.

It was a paradigm shift to realize that actually we needed to adjust with much more attention on leadership aspects rather than the technical aspects. That is why leadership in this area became so much more important at the turn of the millennium.

Before we go further, we should make it clearer that we were lucky because both Ernie Watson and I have a psychological and therapeutic background. We could have some richer discussions together as we developed the course. Since I am also a member of the Institute of Group Analysis, having practiced as a group analyst and therapist in three London hospitals, I could see quite quickly the different "group dynamics" in factories. This enabled us to fine tune the course to local differences and characteristics. Sometimes we could see how a leader was contributing to a vicious circle with his, or her, factory climate. Without mentioning this directly we could modify an exercise so that they discovered something about themselves.

Looking back, our FMCG client thought initially that EFESO would run one course and then they would repeat it by themselves. Once they saw the "magic" which they could not completely understand they wanted Ernie and me to repeat the course everywhere. Without an understanding of group psyche effects, and our willingness to "go into them" we would not have been as effective.

17.6 The Sailing Metaphor: A Leader Must Know How to Steer

We used to teach leaders to steer. We would ask them to imagine they had a ship, and then asked what do you have to know to be able to steer your ship? We asked for three answers.

What we found is that the answer varied depending on the culture. If someone came from a hunting culture, as the European and North American cultures, they would quickly say: "You need to know where you are going and who you are going with". This could be the WHERE and WHY. Then they would say things related to the technical aspects in terms of how to sail, how to navigate, how to use the wind and so on, which is the second family of things you need to know, the HOW. But then they would get stuck and struggled to think of the third category. Sometimes we left them to struggle with it for a long time. We suggested that if we asked in Japan they would reply in seconds to the third category but they were often extremely stuck. Often we had to tell them. It is what to avoid. As soon as we said it they realized how they should have thought of it. Like the Titanic avoiding an iceberg.

If you are sailing a ship like the Titanic, you need to know how to avoid icebergs. But the Western culture is weak on the avoidance of obstacles, like hunters they "press on".

In a farming culture like Japan, the first thing they think of is obstacles, in terms of what rocks to remove so the irrigation flows and the land can be worked. We found in the farming cultures that the clients were better at not doing the things they shouldn't do. In the Western cultures they are better in accepting targets and KPIs and aiming at things than they are at stopping doing the things that they shouldn't be doing. Western companies are less good at finding what it is not working in their organization. Even when they find out they sometimes ignore it. This is something that Western leaders often have a blind spot over.

In our course we made an exercise to help them realize what obstacles there were. We illustrated both the conditions for success and the obstacles. We found a way to measure them and then teach how to interpret the results so as to rethink the approach to leading the factory. We spent a lot of time on understanding the root causes of their obstacles to make sure that they eradicated them.

I would say that our most successful customers did eradicate obstacles. In this way the course was both theoretical but also very practical and enabled them to benchmark with their factory leadership peers.

We gave enough understanding of Continuous Improvement principles for a leader to know how to talk about it in a way to create desire. Winston Churchill didn't need to be able to fly a plane or go down into an engine room. One has to know enough of what happens down there, so that when you talk to people you can share the right enthusiasm, but you don't need the details. What is more important is the way you relate to others, the people skills. We were able to make our audience more aware of the effect of their style so that they could "fine tune it".

17.7 Models and Techniques to Reframe the Mindset

In the courses we also gave people a number of models to reframe their paradigms about what being an effective factory leader/manager means. We were able to take the work of some brilliant authors and re-package it in a way that it was easy to understand and use practically. We showed them how to use Kotter Steps for Change Management. We educated them on the work of Meredith Belbin, in terms of understanding teams. We went through the work of a number of great authors, bringing their philosophy into the daily life of a factory manager. Many of the managers on the course had done an MBA and had already heard about Belbin and Kotter. But none of them seemed to know actually how to use this knowledge so we were able to bring it to life for them.

A very important part of the course was therefore to teach how to make known techniques alive.

Another crucial factor for Western organizations is to look at the role of the Middle Managers and the Shift Supervisors. We have a culture in much of the Western World which comes from the last war, where the sergeant was not an officer: he was part of the troops. Coming out of the war most of our factories in the 1950's had the front line supervisor as an hourly paid charge hand and not as an officer. Factories were divided between blue collar and white collar, some people paid hourly, which included the shift supervisors and the operators, and then some people paid monthly who were the officers. We had actually replicated the war structure in the factories.

We had to work on changing this paradigm. Since the factory transformation is experienced differently at each level in the organization, we taught through exercises how to address this point.

A typical factory of three hundred people might have less than twenty supervisors and shift leaders, department heads and so on. But those twenty people are critical. Each one is different with different backgrounds and different futures which all need to be taken into account if the factory is to be successful. One of the tragedies of many factories was that they ignored middle management in trying to make the transformation with the result that the middle management (or supervision) sometimes became the problem, as anybody would once ignored. So we made exercises to educate around these concepts also.

We spent a lot of time to understand with them how to engage others. We made exercises to understand what was engaging and what was not. Again, there is no doubt that we were helped by the research showing the differences despite the similarity of all other variables.

17.8 Expansion

After eighteen months or so of development with our first client we started working for other global clients on the subject of leadership. Again I have to mention Ernie Watson, who was like a brother to me when we started working on this, and then he joined EFESO Consulting.

Together we expanded into a much broader field of leadership improvement and education. We also expanded downwards into the middle management ranks with their needs. So from the original pure course for factory leadership, it extended to the people that reported to factory leaders and also upwards to the regional and corporate leadership. In this way an entire organization could become aligned.

This was necessary because we had some clients where there were good leaders in the factories, but they received damaging visits from their head office for an audit. Sometimes this destroyed the motivation of the factory, because the more senior managers hadn't learned the way you should audit a factory. They came and said: "This is no good, this should be done differently, this is wrong, why didn't you do like this…" which is not constructive leadership.

How MBK learned from Yamaha

In the early 1990's, as a leader at CarnaudMetalbox, I represented one of the first few companies in Europe to develop TPM. The others included two steel companies (Sollac in Marseille and Usinor in the North), Volvo in Gent, and MBK in Saint Quentin, France (which became owned by Yamaha). I'd like to tell you something about MBK, because it is a fascinating story. You have to remember that in 1987 there were no books on TPM in English. Nobody else in Europe was doing it.

What MBK did was to make an arrangement with Yamaha (who eventually bought them) to learn TPM. Yamaha allowed shop floor employees of MBK to stay in the house of a Japanese employee and work in the Yamaha factory, so they could start learning next to a Yamaha employee how they did TPM. They offered shop-floor employee a chance to spend up to six months in Japan, and watch what a worker did every day in the factory. If I remember correctly about 200 of the MBK shop-floor employees went to Japan to watch what TPM was like and how it worked. From this, MBK had such a good start. I used to visit them regularly in the early days because there were only about five of us really doing TPM properly, and it was fascinating for me to compare with the others.

What was really different was when they had a visit from the Chairman of Yamaha. He used to come to Europe two/three times a year for a Board Meeting once MBK became a subsidiary of Yamaha. I used to talk to the factory manager about this often. He said that the Chairman only came one day for the board and he wouldn't allow them to keep him in the office for more than 4h. The other 4h he insisted that he wanted to see shop floor teams to understand what they were doing. And this gave a signal to the shop-floor employees which was different than any other Chairman I knew about. He

wanted to learn directly from operators in the greatest detail what they discovered about making improvements to their motorcycles.

What was really powerful was not just the Socratic way the Japanese would teach through asking, but also showing that he was really interested in the shop-floor creativity. With detailed and interesting questions, by being fascinated by what they had done, he inspired them. Sometimes I talked to operators several months after the Chairman's visit and it had made an incredible impression on them. They might say "The Chairman of Yamaha spent 14 min with me to understand what I was doing". Imagine the difference with a visit from a typical head office that criticized or was patronizing.

Unless you educate them, managers might not understand how important this is. This is also what made the success of the first American companies. If you look at the first two centuries of American manufacturing from the Massachusetts Bay colony in the early seventieth century until the great fair of London in the middle of Victorian era, the American companies had the same philosophy of the leaders being interested in the craftsmen, it was their hallmark. So it is very important for leaders to understand the effect they have on those they are seeking to lead, to understand the effect of how they conduct themselves.

17.9 The Leadership Team, the Vertical Spine of Leadership in an Organization

In the beginning of our work the focus was on factory managers, below and above, but as we got deeper into the subject of leadership, we discovered there was something even more effective: After many iterations in discovering how to be more effective, faster and richer, we discovered the effectiveness of one of the change management principles of John Kotter. This was the principle of what Kotter called the Guiding Team. We created a group of a dozen or so employees as a vertical slice of the organisation. This group would include the factory manager, a couple of his direct reports, two or three middle managers, two or three shift supervisors and four or five operators/technicians or mechanics.

With this group of people, representing every layer of the organization, we taught all the principles of Kotter's change management. In this way we brought into the factory or organization improvements to leadership principles at all levels. We took them on a journey which lasted about nine months. As a group, they looked at the culture and the way their company was led, and how they related to each other. How they supported each other and how they could all help each other grow. This approach transformed our change leadership methodology and was very helpful to accelerate improvements. Of course it required an organizational leader or manager who was willing to learn about his organization, and most importantly about self-knowledge.

In this development we found that we were not just improving the climate in the factory but some participants found it improved their family life as well. Once they could communicate better, give and receive honest feedback, it transformed other parts of their lives.

I like the expression Servant Leadership, meaning not just the one who leads, but one who is willing to serve and willing to learn. If you are not willing to make yourself vulnerable, then you cannot lead. If you are scared to open yourself up to what other people may think about you, then you can only create distance between yourselves and others, to protect yourself, and you cannot touch their needs.

Once we had made a success of the first "vertical slice" in a factory we then worked to expand it laterally. The first team became the ambassadors for a horizontal expansion at all levels. Peers are often the best teachers, or the ones that many listen to. The research shows that children are more influenced by their peers than by parents or the media, so these initial groups became most effective in diffusing a culture change.

17.10 Successful Leadership Cannot Be Measured, Results Can, but They Are not Everything

Emotions cannot be measured, because the very fact of measuring them changes them. The fact that you tell me how you feel changes how you feel. Feelings are not static. Heisenberg put it very well in the uncertainty principle. He stated that we could not find out both the position and direction of an atomic particle because even sending just one photon of light to see would disturb it and so we would not know where it moved to. Feelings can be similar. As soon as they are shared they change. You can feel and sense emotions, but not measure them. As a manager results can be measured by using indicators. What is harder to measure is the climate of the organization.

If you go to a dinner party, you might sense the minute you walk in whether it's a party you want to be at or not. You can't measure it by the chairs there, by the chandeliers, but you can tell it from the atmosphere if it is a place where you want to be. Of course your feelings might change as the evening goes on. What we were trying to explain to our customers was that obviously they can measure the machine performance, but they can't measure the lubricant, and the lubricant itself contributes to the machine performance. This is why it is a struggle to measure successful leadership apart from the results.

England might not have survived the Second World War without the leadership of Churchill and The King. If Prime Minister Chamberlain and King Edward VII had remained it might have been a very different story. Once Chamberlain stepped down and King Edward VII abdicated we had a new leadership in both King George VI and Winston Churchill. They had qualities which were just what was needed at the time.

There are some things that cannot be measured: relationships cannot be measured.

17.11 The Biggest Hurdles in Implementing Change Leadership

There are some organizations that find it very hard to be successful with change leadership. One of the biggest obstacles is a leader or leadership team unwilling to learn about themselves. Meredith Belbin's research came to exactly the same conclusion. For us to be successful with Change Leadership, we need to work with clients who are willing to grow as leaders. The same applies to the Shingo Leadership principles. You have to make a decision in this world as a leader whether your role is just to get results, or whether your role is to create a culture for the future, which is going to able to continue to develop and constantly improve.

Are you doing a one off job to get your results or are you building a climate for the next generation? Because with your children your job primarily is to create the climate, so that they can be good at what they are good at, rather than just achieve something. It is a different mindset. If a leader does not have a sense of leading for the good of something beyond themselves then the risk is that the work will be superficial.

In the EFESO history we were lucky in the beginning to be one of the first to teach Japanese improvement techniques. We had leading clients who were entrepreneurial, the early adopters. In the middle stage it has been more about coaching leaders to change their organizational climate. I think the next stage will be more about clients that are willing to "step above" and do something extra. This is why change leadership on the one hand and Shingo principles on the other hand, are complimentary approaches for the leaders for the future. This will be the third evolution of leaders who are willing to go beyond in climate, of what their predecessors did in terms of just technical implementations.

Engagement is one of the most important aspects of successful transformation.

A leader does not look for engagement: looking for engagement is perhaps a sign of insecurity. A leader has enough confidence and self-belief that people want to go with them. The best is collective leadership, where the engagement is natural: when you start looking for it then you are back to a Buddha principle that suggests "Looking is not finding".

17.12 Recommendation to a Client Who Has Invested a Lot in Change and the Change Is not Working

I would say, if a client has not been successful with continuous improvement, the first step is to really understand why. Let's understand first what the issues are: There are only a finite number of reasons, or a cocktail of reasons, and once we know what they are we can design the right medicine.

We use a specific assessment: We look for both the success factors and obstacles. Even though they are opposite sides of the coin they tell a much clearer story when read together.

I can't give a recipe, just as I would not give a recipe as a psychotherapist. Every organization is different, every person is different. The combinations of people make the same environment even more different. We look at which success factors are present in the organization, to what degree, and do the same with the obstacles. By looking at the understanding of the combination of what works well and what is an obstacle, you can get a very good and very quick abstract of what is going on in the organisation. Based on that we can come up surprisingly quickly with the likely issues in the climate of the organization, and why the soil is not as fertile as it should be for the seeds of continuous improvement.

After the initial assessment we tailor our approach to what we found in a pilot area. This enables us to fine tune it and make adjustments before spreading it throughout the organisation.

But one of the most important qualities we look for is whether the leader of the organization is willing to go one step forward, and be vulnerable themselves to learn from their organisation how they really are as leaders.

Chapter 18
Performance Behavior

Neil Webers

18.1 What Is Performance Behavior

Initially I would define Behavior and Performance separately, to then explain the winning combination of the two.

What is missing in most of the Improvement approaches of the last sixty years is the focus on behaviour: specifically the assumption that behaviour can be measured and changed, in alignment with the organisation's targets.

Behavior is the strategic asset to work on if we really want to improve the performance according to the company targets.

This chapter main subject is the behavior of an employee, a group of employees, or an entire organization.

We define **Behavior** as the **sum of visible and invisible actions of a person, a group of people or an entire company**. We talk about **individual behavior** when we discuss an employee and we talk about **organisational behavior** when we discuss an organisation or group. The behaviour of an employee might deviate from the behaviour of a department and the behaviour of a department is not necessarily equal to the behaviour of the organisation.

When we know what behaviour we display ourselves and if we understand the origin of certain behaviours, we are better able to recognise and effectively deal with these behaviours. We can also handle the behaviour of others better when we know what behaviour we can expect from them and which "ingredients" this behaviour contains.

Performance is the **result of all efforts**. That result is the sum of all desired but also of undesired behaviors. Performance Behavior makes a distinction between ***personal performance***, which concerns the performance of an individual, and ***or-***

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ganisational performance, which concerns the performance of a group of employees within an organisation.

When we know which actions we need to perform to achieve a performance, we are better able to effectively steer these actions, so that the result is actually achieved. This is both true for steering our own performance as well as steering the performance of others.

Performance Behavior means that a measurable connection is made between result and the behaviour that is required to achieve that result. It specifies and measures the behaviour that is needed to achieve the desired result. When this connection meets a result or quality standard that was defined in advance, then the Performance Behavior is *secured*. Because the Performance Behavior is secured, the result is guaranteed. There is a difference between *Performance Behavior* and *performance-oriented behaviour*. For performance-oriented behaviour, the direction is clear, but the result is not secured.

In our WCOM™ methodology, we improve in a structured and focused way, by root cause analysis, taking the right actions to bridge the gaps detected. **Performance follows exactly the same route we take to improve performance gaps: making a deep behavioural pattern analysis and taking the right actions to bridge the detected behavioral gaps we will improve the behaviour**. This will improve the performance step by step.

18.2 The Role of the "Performance" Component in the "Performance Behavior Programme": How to Measure the Performance

The performance line—or the objectives and desired results you wish to achieve—is established by the organisation by means of (measurable) criteria. The most important goal values for the organisation are determined and subsequently translated into **the three performance influencing levels** (**monitoring**, **steering** and **acting**). It is important to begin by translating the general organisational objectives into objectives at an increasingly lower level within the organisation: the organisational objectives are translated into the objectives per employee via the department objectives. In this way, the strategy for employees isn't a vague and general plan that is established—and usually implemented—by the board, but comes alive by its direct translation into all underlying levels down to the individual employee.

When you wish to test if this translation has been carried out correctly, you can go through the reverse process: the sum of all individual results has to lead to the realisation of the departmental objectives that were determined in advance. This sum of the department objectives logically leads to the achievement of the strategy of the organisation.

Most organisations distinguish between the following **three layers of management**:

1. **strategic level** (this is the **monitoring level** in terms of Performance Behavior);
2. **tactical level** (this is the **steering level** in terms of Performance Behavior);
3. **operational level** (this is the **action level** in terms of Performance Behavior).

The way in which this is approached in practice depends on the size of the organisation. At multinationals, the middle management or tactical level consists of multiple layers that start with the level that could be a strategic level in a smaller organisation. This could include the managers who work at various offices in various countries, the heads of department and the sub-layers of supervisors. The middle management of, for instance, a small hospital consists of the supervising layers immediately below the director, who is at the strategic level. The specific role (strategic, tactical or operational) a manager has in influencing the result strongly depends upon the level at which he/she operates. This differs greatly between large and smaller organisations, which might make comparing roles at different organisations difficult.

The strategic steering level—the highest hierarchic level of the organisation—deals with "Which results do we want to achieve over the next three to five years, with which customers, in which markets?" It is expected of this organisational layer that an internal and external analysis is made and the direction the organisation should take is proactively determined. The strengths and weaknesses, together with opportunities and threats feed the multi-annual plan and the annual plans of the departments, the tactical level. The performance indicators are an essential tool to determine if and when the organisation moves in the right direction. By measuring the various goal values of the performance indicators at the strategic level it is possible to monitor any progress.

The tactical level translates the strategic policy into the organisation. It is their job to determine which factors are needed to perform the plans and to assign people and resources to organisational units that have certain result expectations. This is measured in one or two years. Middle management shapes the tactical level. Middle management is expected to further translate the management's policy (determined at the strategic level) into SIs (steer indicators) and that they structurally solve operational problems. The core competence of the tactical level lies in creating or arranging structures and steering people so the organisation functions smoothly.

The operational layer of the organisation is responsible for the daily state of affairs. This layer has to actually perform the activities within the framework established by the tactical level. This layer often has positions such as *team leader*, *chef*, *coordinator* or *team coach*, but also *production leader* or *foreman*. This is to ensure that the group size remains easy to handle. At this level, plans are shorter than a year. The performance indicators are an essential tool for the operational layer in order to determine whether and when it moves in the right direction. They measure the various goal values at the action (operational) level.

This level also observes the activities performed by each employee to execute the department plan as spelled out in the chosen policy. This is expressed in

personal goal values. There are organisations that don't work with personal goal values, but with team goal values.

Because different goal values of different indicators have to be realised at each organisational level, the activities at each of the three levels differ greatly. This is the reason why the specific goal values of the indicators also differ on each level.

18.3 The Performance Behavior Impact and Role in the Organisation's Structure

In order to organise the process of steering towards specific goal values at each level, **a performance management structure is needed**. Performance management is part of Performance Behavior. It is a process that focuses on deviations from the goal values at the performance influencing levels: from action indicators (at the 'real time' action level) to steer indicators (at the steering level) to performance indicators (at the monitoring level) as were worked out from the strategic objectives of the organization.

The performance management method is part of the PDCA-cycle of an organisation. However, something important should precede the PDCA-cycle: determining an objective or specific goal value. Making a plan without an objective is like buying a travel guide without choosing a destination.

Determining the goal values for each performance influencing level is the starting point for Performance Behavior, because without a specific goal value you can't steer on the deviations that occur between the actual performance value and the goal value. This all begins with formulating the objectives over the long term. These long-term objectives have been drastically shortened in the past ten years because the life cycles of organisations now follow each other more rapidly. In the previous century, a long-term policy covered ten years; now most organisations are lucky when they can plan ahead for three years. Even though the terms have grown shorter, each organisation still needs a long term policy as the basis for choices regarding objectives and resources.

18.4 Why Translate Performance Indicators into Steer and Action Indicators?

Translating performance indicators into steer indicators and action indicators is not merely translating strategy into various performance influencing levels, but also aligning the various objectives with each other. The organisation has to be able to understand the meaning of the strategy, to steer and to contribute to the objectives by means of performance management. The aim is to be able to indicate, at each level within the organisation, what the specific contribution of each objective is to

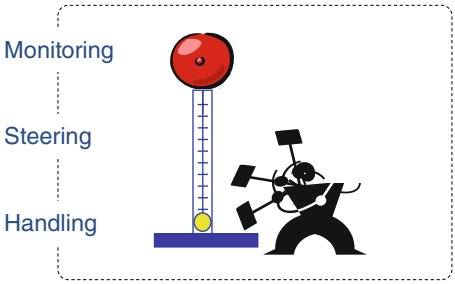

Fig. 18.1 The high striker. *Courtesy* EFESO Consulting ©

the strategic objectives of the organisation. This is called a *breakdown*: breaking down objectives at the strategic level so that they work even at the deepest objective level.

It is now the moment to introduce the metaphor of the high striker to better investigate the concept of *breakdown* (Fig. 18.1).

The high striker is a carnival attraction composed of three main components:

1. the pin you have to hit with the hammer (action level);
2. the pole with the vertical scale (steering level);
3. the bell (monitoring level).

The person performing the behaviour uses the hammer to hit the pin. Because of this, the cube flies up the pole. The scale starts at the bottom with "wimp" and ends at the top with "bruiser", and the maximum performance can be achieved when the cube hits the bell at the top of the pole. When the person with the hammer slams the pin, the effort is complete and it becomes a wait and see situation. How high will the cube go and will it or will it not eventually hit the bell?

When we make the comparison to an organisation, the effort of the person with the hammer is the primary process, the positions of the scale are the steer indicators and the bell is the monitoring indicator for the action. However, an organisation would like to know for sure if they are going to hit the bell—every time, every day, independent of the person who holds the hammer. However, in most organisations it is not guaranteed. They might think so, but they have not really secured it. The objective of **Performance Behavior is to answer the question: "How do I ensure the behaviour that leads to the desired performance?"**

To answer, we will continue to use the metaphor of the high striker. What behaviour is needed for the desired performance? We name a few elements:

- Lifting the hammer high enough;
- Standing right in front of the pin;
- Holding the hammer in the right way;
- Hitting the pin hard enough with the hammer;
- Checking if all parts are greased so the cube can move smoothly;
- Making the blow with the hammer correctly;
- The right position of the back and the head;

- Concentrating thoughts on reaching the objective;
- Checking if there is damage to the hammerhead;
- And probably many more behavioural aspects that can influence the result.

Performance Behavior translates the specific objectives from the monitoring level into specific objectives at the steering and action level. This translation takes place within a secured performance management structure in which the behavior of employees—the behavior with which they achieve performance—is facilitated.

The way we make the results measurable is the most important aspect of performance management. Making the results measurable means that we can measure the actual values of a performance. If we can measure these, we can also compare and improve them.

Additionally, we can set objectives and compare the actual values to the goal values. We can steer on a possible difference between the goal value and the actual value.

Financial prefixes have often been used as the basis for steering. Yet, from a contemporary perspective, this form of performance management does not provide the means to be able to steer on performance to make sure the organisation is competitive within the market. The life cycles of products, services and also of organisations are becoming shorter. Buyers demand more and information technology is increasing its importance in all sectors. Under such circumstances, the results from the past offer no guarantee for the future. Moreover, if the Credit Crisis of 2008 that hit both the United States and the European Union has taught us anything, it is that we need more than merely financial data.

In addition, we also observe a change in the way many organisations steer: previously, we looked at historic data, whereas nowadays we look at budgets and plans that are substantiated with a future view. With this, performance management became more than "measuring is knowing"; measuring with performance indicators is immediately placed within a broader perspective than purely financial. In recent years *values*, *behaviour*, *responsibility* and *leadership* have become key in response to the decline of both highly successful organisations and seemingly untouchable banks. Driven by stakeholders and focusing only on financial indicators, banks have gone bankrupt one by one.

Within performance management, the following rules apply to the translation of objectives:

1. **Connections between the discussed strategic objectives and the action objectives have to be visible**. Every objective needs to contribute to the strategy of the organisation at every performance influencing level (monitoring, steering and action) and the connections between the objectives at different influencing levels can be derived from the strategic choices of the organisation.

2. **A correct and complete *breakdown* of each (key) performance indicator has to have been made**: of (*key*) performance indicators at the monitoring level to steer indicators at the steering level to action indicators at the action level.
3. **There has to be a connection between the (financial) performance and the behaviour that brings about this performance**.

The second principle is crucial to be able to influence the (key) performance indicators and to eventually achieve the objectives that are set at the strategic level. In organisations there are multiple (K)PI's that are monitored at the strategic level. To be able to influence these (K)PI's it is necessary to make a complete breakdown for every (K)PI. With this breakdown the organisation determines which actions at the action level influence the (key) performance indicators and how these actions can be followed at the steering level with the help of steer indicators.

A high quality breakdown specifies the (K)PI, the underlying steer indicators and subsequently the action indicators that are followed by the steer indicators. Usually the breakdown is narrow at the top and widens towards the bottom as every indicator is influenced by multiple other indicators at the lower levels.

Besides an overview of the influencers of the (K)PI's, the breakdowns also provide a good structure that indicates how many and which action indicators should be discussed at each level in the organization (at the monitoring level, steering level and action level). The action level has the most indicators that need to be discussed, followed by the steering level that discusses the indicators to be able to steer the action level. Finally at the monitoring level the few critical key performance indicators are discussed.

The third principle opts for further elaboration of the Performance Behavior model: the behavioural component.

18.5 The Role of the "Behavioural" Component in the "Performance Behavior Programme": How to Analyse, Develop and Measure Behaviour

The ABC model is the central behavior analysis model of Performance Behavior[1]. It is used to understand why certain kind of behavior is performed and executed (or not performed), and it is used to understand what needs to be changed for employees to show certain kind of behavior. It investigates what prompts behavior and what follows on behavior, as both have in their own way a specific kind of impact on behavior.

[1]Contribution of Lucas van Engelen, International Behavioral Expert at EFESO Consulting.

ABC stands for ***A***ntecedents (anything that prompts people to act, so before behavior), ***B***ehavior (what we do and say, actions), and ***C***onsequences (what happens to the person as a results of the behavior, the effects of behavior). Antecedents and consequences are not equal in their effect on behavior.

Antecedents

An antecedent is everything that prepares employees for a certain kind of behavior and that can trigger behavior. So antecedents set the stage for behavior to take place, and set the conditions that make behavior more likely to occur. Antecedents can be effective in starting a behavior, but it may not last, as they will produce a small, often temporary change in behavior.

We should however not neglect the attention that antecedents deserve, as they still can be powerful triggering events. The real power of antecedents is draw from their link to consequences. The more the link between the two is perceived, the more powerful the antecedent will be.

Consequences

Antecedents can start behavior, but it is the consequences that can maintain the behavior. The closest thing we have to a behavioral law (as gravity is a law) is that behavior is a function of its consequences. There are two basic types of consequences: those that reinforce behavior and those that decrease it.

Reinforcers increase behavior in two ways: (1) we will do something more often if the behavior is followed by something we want, a valuable consequence (positive reinforce); or (2) we will do something more often if doing the behavior is followed by the removal of something we don't want, an aversive consequence (negative reinforce). There are also 2 ways to decrease behavior: (1) we will do something less often if that behavior is followed by something we don't want (punisher); or (2) we will do something less often if that behavior is followed by the loss of something we have (penalty).

Consequences are neither good nor bad from a value perspective; they just have a predictable effect on the direction and rate of behavior. Positive reinforcement can lead to doing things that are not good for society but are likely to occur again because of the reinforcement that the individual experiences.

Relative effect of consequences

The consequences you are examining links back only to the targeted behavior. Remember whose behavior you examining and whose consequences you are evaluating. When examining the behavior, analyse things from the perspective of the performer.

When making an ABC analysis there are three dimensions that are important to take into account with the assessment of the consequences part:

1. The consequences can either be valued positive or negative by the person

2. The consequences can happen immediately or in the future. Immediate means while the behavior is occurring. Future refers to consequences that occur when the person is not engaged in the behavior in question
3. The probability of the consequence can be certain or uncertain

The specific combination of these dimensions of the consequences will determine the relative effect of them. For example a small but immediate consequence that is certain to occur, is much more powerful in than very large positive or negative consequences that are either future or uncertain, or both.

18.6 Behavioural component translated into specific objectives

When the objectives of the performance component have been determined, the next step is to **determine the objectives of the behavioural component**. The performance component of the Performance Behavior model is aimed at content; the behavioural component is aimed at development. Again, it is true that the way in which the translation takes place differs at every level. Therefore, we should take a close look at both the desired behaviour at the lower levels of the organisation, but also at the level of the collective values of the organisation. All these levels should be aligned.

An illustration of the importance of this alignment is shown by the example of a big logistics organisation. This specific organisation had defined their core value as flexibility, while in fact their clients preferred reliability over flexibility. The core value has been communicated within the company for years, which led to the fact that only very few employees were actually safeguarding the standard because of the perceived need for flexibility. In this case there is a clear misalignment between the behaviour that is desired in the process and the behaviour that is desirable from the perspective of the values of the organisation. The organisation had no emphasis on safeguarding the standards and was focused on flexibility; the clients were demanding a reliable process in which the standards are safeguarded, the work planning has as little deviations as possible and the output is as reliable as possible.

After the misalignment was identified by the organisation a change initiative was started in which the desired behaviour at the lower levels in the organisation was redefined. Action indicators such as deviations in work planning, and variation in output were embedded in the daily work to increase reliability. Eight months into the change initiative a real contrast was visible compared to the starting situation. There was less deviation in planning, less variation in output, and almost all employees within the organisation were now safeguarding the standard. These changes significantly increased the

reliability of the process. Moreover, this focus on reliability also had other positive side effects.

Because of the increased reliability there were fewer interruptions in the process. This resulted in the fact that there was more room to be flexible towards clients. So in the end, the identification of the misalignment between desired behaviour at the lower levels of the organisation and the values of the organisation led to a change initiative that made the supply chain more reliable, which led to a more commercially flexible organisation.

To make sure that there will be a fit between the desired behaviour at the lower levels of the organisation and the values of the organisation it is necessary to develop the behavioural component of the Performance behavioral model of an organisation. This starts with defining the values of the organisation at a strategic level. If an organisation has no shared values, every individual brings his own values to the organisation. The values which people recognise in themselves then become the values of the organisation.

Naturally, individuals always bring their own values to work, but when the organisation clearly and transparently presents its values, individuals can determine beforehand to what extent they recognise them and can choose whether or not they wish to conform to those values and whether or not they would like to work for the organisation. Should they decide to work for the organisation, an organisation can also expect from them that they will perform their work in conformity with these shared values. When there are no shared values within an organisation, **the bystander effect** can occur: the larger the group of people, the less action the individual will display. Responsibility is then "divided" by the number of people present within a group. In various experiments, it has been shown that the presence of other people inhibits the willingness to act. The reverse is also true: when less people are present, the willingness to act increases.

In most cases, the experiments involve everyday situations: helping others in an emergency situation in which immediate action is sometimes necessary. The more bystanders, the longer it takes for anyone to help, since everyone thinks: "someone else will act". However, if you are alone and if you encounter an emergency situation, you will likely act sooner since there is no one else who can respond to the situation.

Another reason that people are passive in the presence of others lies in the fact that the actions of others serve as an example for us: since no one acts, action is apparently not necessary. In this case, it is also true that when the mass of the group increases, the measured effect is stronger.

As a final reason, it can be stated that people often think that another person will be able to do it better than them, and use this to justify to themselves that action is not necessary. The bystander effect is often phrased as follows: **when everyone is responsible, no one is**.

When the shared values within an organisation are made explicit at the action level, there is more accordance with the action within the defined values.

The bystander effect explains why it is necessary to have clearly defined and explicit common values within an organisation. But when common values are defined within an organisation, employees often do not act upon them or do not act upon them in the right way. This occurs due to the fact that many organisations fail to translate the values of the organisation into the desired behaviour belonging to these values. If this translation does not occur, people logically provide their own interpretation of the behaviour that, according to them, belongs to the values, based on their own mental representations.

Let's return to the behavioural component of the Performance Behavior model. At the monitoring level, the top-management has to determine what the values are that it would like to use to achieve the objectives. Values indicate what an organisation would like to disseminate in the social and societal field: the ideals and motives that an organisation pursues. The behavioural standards that result from the values are the guidelines for actions that influence daily social communication within the organisation. This adds substance to the values.

At the steering level, behavioural standards are translated into competencies: what should the employees know, be able to do and what attitude is desired to achieve the specific goal values that are established in the performance component of the Performance Behavior model? Subsequently, the behaviour that individual employees show has to be measurable, so it can be determined whether or not they meet the desired behaviour. To be able to measure this, it is necessary to create behavioural criteria that describe, at action level, which specific behaviour is needed to achieve a specific performance.

The next step is to evaluate, on a person-to-person basis, to what extent current knowledge, attitudes and competencies are sufficient to perform the work. The gap between the current and required knowledge, competencies and attitudes is equal to the personal development that the employee will have to go through to be able to contribute to the result of the organisation.

A link between the performance objectives and the behavioural objectives exists in every performance influencing level of the organisation. For the monitoring level, the (*key*) performance indicators for the yearly plans have to be brought into agreement with the values and the behavioural standards that have been established. For the steering level, the competencies have to be linked to the steer indicators. For the action level, the behavioural criteria are linked to the action indicators.

Back to the High Striker. We hit the pin with the hammer at random and hope for the desired performance. By measuring the various behavioural aspects of this effort, we should be able to discover why this behaviour does not result in achieving the desired performance. For example: when the cause lies in the physical inability of the person to correctly swing the hammer, we can focus on the development of his muscle strength. However, before we can discover the causes, we first have to determine which behavioural aspects we can measure. We map the behaviour via observation and then name the most important influencers. The three main influences are:

1. position in front of the pin;
2. swinging in combination with physical strength;
3. holding the hammer.

However, we would like to be able to influence behavior before performance is achieved. Therefore, in this case, we will place a camera near the person and a screen next to the pin so the individual can see both the pin to hit and the screen. Moreover, we store all the footage, so we can analyse a behavioural pattern for how the person swings the hammer. On the screen, this person can see his/her own position and through the screen can receive a direct warning if he/she does not hit correctly. Also, when the swing is not in conformity with the specification, he/she receives a direct signal through the screen and when the hammer is not hold correctly, the person will hear a whistling signal. In this imaginary example, we now have:

- Named action indicators;
- A feedback system through which the individual receives feedback about his behaviour;
- Collected information about the number of strikes, the different people and their specific development points regarding behaviour.

This leads to hitting the pin better and more often, meaning the bell rings more often. In short: it leads to better performance.

We can go even further and evaluate the standards that are in place (how frequently and in which way does the hammerhead have to be checked?) or observe the training schedule at the gym in order to increase physical strength. These are all interventions that we can only employ when we have set an objective, when we have measured that the current value deviates from the goal value and when we have identified what the root cause for this deviation is.

In short, it is very important that strategy is translated into objectives and results, both on a departmental level and on an individual level. Moreover, a plan has to be made to achieve those results. In this way, it becomes possible to make employees personally responsible for achieving their own objectives and the objectives of the organisation.

18.7 Are Performance and Failure Always Attributed to the Right Person or Cause?

Behaviour occurs within context. Someone who performs his/her actions exactly in conformity with the behavioural standard, but is distracted at the exact moment he/she has to hit, will probably not achieve the desired result. The cause of not achieving the desired result can be found within the person itself, but also within the context. This raises the question: is performance and failure always attributed to the right person or cause?

We can explain our own behaviour by looking at ourselves ("I have tidied up my work space because I thought it was the right decision") or at the world around us ("I display this behaviour because I was encouraged by my colleague"). The first is called internal attribution, the second is called external attribution. However, this division does not always work; we often make attribution errors. We attribute "good" behaviour to ourselves, whereas we attribute faulty behaviour to others. Conversely, we have a tendency to attribute faulty behaviour of others to their "character", whereas we attribute good behaviour of others to situational factors.

The attribution error is less common in Performance Behavior. When performance is measurable and concrete and the link with behaviour is made explicit, as happens with Performance Behavior, the achieved performance can clearly be attributed to one's own actions.

The incubators' room story: when KPIs and behaviours are not aligned, by Neil Webers

My baby was born premature and I spent a lot of time close to the incubators' room. I soon discovered there were three crucial parameters measured on every incubator, which we can use as a metaphor of what we call KPIs: baby breathing, baby temperature and baby heartbeat.

The nurse should take some action according to the parameters trends. What I observed, as I constantly had my nose on it, was that there were no standards at all in that crucial process concerning human life. There was no process to check standards and no steering process to adjust possible deviations. In that specific case there was an interface to connect the baby to the monitor by three connectors. The interface plugs had three colours: red, black and white. The connectors that linked the baby to the monitor were blue, red and yellow. So you had to connect those three connectors from the baby to the monitor entries and the colours were different! The first time I had to put my baby inside the incubator, after we had spent some time together, I asked the nurse about the action I had to do: "How do you want me to reconnect these connectors to the monitor?"

She said: "That's very easy: you have to use the most near-by colour". This is a real example but also a metaphor of what happens in the organisation in real life: if there are no standards people are going to make their own standards. In this case everybody is doing their best for the final result but, although they have the result in their mind, in the behaviour they are taking the wrong decision, which will deviate from the expected result, increase the safety of babies lives by monitoring their vital parameters and intervene if they are not correct.

At the beginning of a project we connect the crucial actions (behaviours) to the KPIs. We look only at the behaviours that are crucial to achieve the performance. In the example it is clear that plugging and unplugging the connectors, it is crucial to achieve the 'enter' KPI, so I need a standard.

There is a colour system but there is the risk to use the wrong colour. This is increasing the risk. I want to seal the behaviour: I did five connection changes in my shift in the following way, so there must be a check on it, this is the steering.

If someone improperly changes the interface the deviation must be recorded and that deviation has to lead to an improvement action. From daily management to improvement: you take an improvement team to re-secure the standard which is leading to a wrong performance.

In addition we have to consider that behaviour is the action we see. We measure what we see but we need to take into account that there is a grey area made up of assumptions, convictions, credos that lead people to choose to behave in a way. We can ask people about it but we don't go deeper than that in Performance Behavior.

In this example, if it was work, I would have asked the nurse what had built her assumption of giving the instruction to a parent to use the colour most near-by. Was she convinced it was safe enough? Did she feel under pressure? Did she have enough time? In this case it would be very relevant to ask for assumptions and mindset.

The key with behavioural development is made up of two parts: the first is to do the intervention as quickly as the behaviour takes place. The second part is to detect the patterns. Maybe we can see that the nurse shows this behaviour pattern in different places: when she had to give an injection she had to make a double check normally, and she didn't, she said "I know this baby", or she said to her colleagues: "I trust you". And we know the double check procedure has nothing to do with trust: it is there to secure the outcome.

So, in our example, the connectors mismatch was not an incident, it was a pattern in the behaviour of the person. It means not only I have to make an intervention in real time, to steer, to make a corrective action; I also have to do a preventive intervention to understand where those patterns are coming from, what the feelings are, why the nurse is convinced of the correctness, how to coach her.

Correct and specific feedback on behaviour in relation to the achieved performance of employees is one of the anchors within the system of Performance Behavior. First, the manager attributes the right behaviour to someone. This means that he/she establishes the specific behaviour this person has displayed that has actually led to the achieved performance. Subsequently, he/she validates the attributed behaviour by indicating that the displayed behaviour is the desired behaviour (stimulating). Attributing behaviour in combination with stimulating desired behaviour, as close to the moment the behaviour occurs as possible, is the most effective way to validate desired behaviour and to secure it in your organisation.

18.8 How to Create Steering and Accountability of Behaviour and Performance

Achieving a performance is related to the behaviour that brings about the performance. When we wish to influence the performance (read: increase), we will have to specify both the performance and the behaviour that brings about the performance at the right level. The next step is to account for the delivered performance and for possible deviations from the goal value. In the final step, the desired behaviour is rewarded so the behaviour that brought about the performance is stimulated. This results in the following steps within Performance Behavior:

Step 1 Specify the performance and the behaviour that is needed to achieve the performance.
Step 2 Set up a system for the accountability of the performance results, so that it is possible to steer on the deviations from the goal value of the performance. Here, the frequency of the performance measurement (the number of times the performance measurement should be executed within a certain time) has to be aligned with the behaviour frequency (how often the behaviour is displayed to arrive at the performance).
Step 3 Confirm desired performances and behaviour and steer undesired performances and behaviour: correctively and preventively.

When this happens at every performance influencing level within the organisation, this is called a *secured steering and accountability structure*.

The performance frequency at the action level is higher than at the monitoring level. However, the impact of the result at the monitoring level is larger than at the action level.

Goal values and the actual performance values are looped back in the appropriate frequency: the closer to the primary process, the more often the goal and performance values will be looped back. The further away from the primary process, the less frequent the loopback.

In order to steer performance in combination with behaviour, a system within the organisation is needed that steers behaviours in such a way that the results are actually achieved. The foundation of this system is safeguarding the established standard(s), where the result is accounted for and deviations from the goal values are addressed.

18.9 How Does Performance Behavior Fit with Improvement Activities?

If you look at the infinite loop of EFESO, then Performance Behavior fits most with the Performance Control System. That has a reason: if you want to develop behaviour, you have to do it in the same frequency the behaviour takes place (So it

has nothing to do with impact, but with frequency). The higher the frequency the behaviour takes place, the higher the frequency of measuring and closing the loop. That's why the biggest impact of a Performance Behavior programme is on the shop floor, at the coalface. The more we go 'up' in the organization, the more we go away from reality and consequently a lower frequency is required to adjust/optimize the behaviour. At top level you can do high impact with infrequent interventions. In reality, you have to do low impact, high frequent interventions to improve the behaviour. If you do it like that, you embed behavior improvement into daily reality and daily work (instead of the old HR models in which people are appraised twice a year).

If you manage and improve in the reality, you connect on process level with the actions of the people. If you connect on this 'action level', you are already on behavioural level. Optimizing this 'action level' will improve the result immediately. Performance Behavior is working on two axes: Improving the way the performance is 'made' and the way the performance (deviations) is (are) steered; the work that is done and the steering process.

See the connection on different levels:

Organization/Branch	(Key) performance indicator	Steer indicator	Action indicator
Hospital	Goal is to efficiently make use of the number of available beds	Duration of stay per patient or visitation hours per doctor per day	Number of checked standards during the visitation
Packing company	Goal is to make as many packages in the time available as compared to the established quality standard	Number of correct packages	Number of correctly performed quality checks per line per hour
Local authority	Goal is to operate in the best possible citizen-oriented manner	Run time licenses	Average application time per building permit
Production company	Goal is to make optimal use of the machine park	Product efficiency	Number of minutes of technical failures per hour
Gas station	Goal is to maximise the amount paid per customer	Extra turnover	Amount of additional sale in addition to fuel per customer
Nursing home	Goal is to make the residents as satisfied as possible	Residents Satisfaction	Food served at agreed temperature at the appointed time
Contractor	Goal is delivery time and quality according to agreements	Run time of projects	Timely supply of building materials

(continued)

(continued)

Organization/Branch	(Key) performance indicator	Steer indicator	Action indicator
Manufacturing	Reliability	Being prepared in a meeting	Showing the quality of the preparation before the meeting
Healthcare	Involvement	Asking a client how he/she is doing	Giving feedback twice a week about the reactions that are given as answers
Oil and Chemicals	Safety	Proactively checking the agreed standards	Giving feedback about the deviations that are measured in the standards; check and set out action to find root cause

18.10 The Progression Management Component in Performance Behavior

The Performance Behavior programme will drive to implement other behaviours and specially on the shop floor but also at management level. People resist and will show all the behaviour shown during changes. To guide this process, seen as an implementation process, we have to guide the management team on how to handle the change. For this we use our progression management methodology, we ask for resources needed to drive the change, we will make a change plan and a communication plan to inform the people about the change going on, we will need people who can be the ambassadors of the change. We will have to detect the cultural ambassadors. Therefore we use the change management techniques not in separate workshops but more a ruling and living elements in the steering committees, the management guiding and facilitating, as at the same level we use leadership contents. If you want to create responsibility for instance you need to steer management to raise questions instead of giving the right answers. This is a very specific tiny aspect of management but in many organisation managers grow up in the shop floor and they are the ones who best know the answers and keep on giving the answers instead of asking the questions. Both the wished Change Process and the wished Behaviour must be written down with the managers.

We can conclude that **we change the current behaviour to achieve a desired behaviour**: we need a target to achieve to change our behaviour, and we modify the current behaviour because we see that with actual one we are not able to achieve that target.

18.11 Required Engagement and Implementation Constraints

Highly involved top management and 70 % front line management.

The biggest hurdle is changing the management, as the top management has to believe a hundred percent in the programme. Changing behaviour is a long term effort, also if you achieve short term results quite soon: it takes one year minimum to achieve sustainability, as we can see in the following story.

Behavioural development as root for performance growth in a packaging factory

The client is market leader offering value added packaging solutions for the food industry. Due to the competitive price market, continuous improvement is the only way forward. During the last years an improvement programme has been implemented with a good rate of success, but still there were some issues on some key performance indicators. For example, the operational waste improvement rate was flattening.

From our analysis it was clear that the root cause was in the lack of ownership at the shop floor level, which was an effect of the lack of guidance and behaviour orientation of the front line leaders.

A manager commented: "*We have many boards, processes, structures, but we are not able to make them work*".

We decided in agreement with the client to intervene on the behavioural side introducing Performance Behavior.

When the roll out started everybody was really eager to learn. The proven techniques were translated into new tools and standards and we clearly depicted what the desired behaviour at the shop floor should be to get results.

The Performance Behaviour development was supported by internal facilitators and, step by step, a completely new way to look to the operations arose in the factory.

A comment of an Internal Facilitator: "*We were not used to discuss and question behaviours and give compliments to each other when we deserved them, but actually, it is really good. People start to replicate the desired behaviour and the atmosphere is much more encouraging and positive*".

Hand in hand with the implementation of the programme, the results of the waste indicators started to improve. After years a sustainable improvement of 15 % was reached.

Production manager: "*Operators take much more ownership for their results. People know what we expect from them. Targets are clear and people strive for results*."

The daily management approach has completely changed the day to day activities of the line management. There is much more focus on the elimination of small deviations before they grow into real issues. Daily management is top priority and clearly linked to the continuous improvement activities. Also the Development of Behaviour is discussed weekly as KPI in the management meeting.

Plant manager: "*Clearly, we have less 'surprises' in our business as usual and 'surprises' do not escalate anymore. In our weekly management meeting we decide which deviations have the highest priority and should be analysed further by a continuous improvement team*".

18.11.1 Recommendations for a Company that Wants to Start

Performance Behavior is the securing pin in improving. If you do not have a proper behavioral driven operational steering system, then the organization cannot secure standards, steer on deviations or take the proper preventive actions. Then the performance is not stable, not secured. With Performance Behavior you create less variation, more engagement, ownership and discipline which will drive your performance and sustain a powerful fundament to improve.

18.12 Can We Finally Say that Behavior Can Be Changed?

Not all behaviours can be changed and not all behaviour can be changed to the desirable extent. If you have several behavioural patterns that match the role you are fulfilling at work for sure it will be much easier to develop a specific behaviour. For example, some people are not dominant and if you don't have dominance in your profile you can act as if dominant but in a spontaneous way you won't be dominant. And if in your day-today role dominancy is required a lot it will be a huge effort for you. That's also the difference between humans and animals: we have a conscience and we can make choices accordingly. There is the difference between intentional behaviour and actual behaviour. I do not want to smoke, that is the intention, but if I drink I will smoke. This is an extremely difficult area of steering, because humans are conscious and can choose, but with several behavioral profiles will act according to some patterns typical of your behaviour. For instance I have a *fast* profile, so in the conversation I can easily improvise to act on a changing situation,

and someone who has a very *thorough* profile will not be able to be so flexible and to react to a changing environment. On the other side this person will be prepared much more deeply than I would be. It is not good or bad: it depends on what you need in the situation. If we talk about team you will never win only with attackers or only defenders: you need both.[2]

[2]Most of the concepts of this chapter taken from the book Performance Behavior, US version (2012), Webers, Neil CW, Behave Publishing BV with special thanks for the contribution of Lucas van Engelen, International Behavioral Expert EFESO Consulting.

Chapter 19
Shingo Model

Mark Baker

19.1 Lesson of an 8-Year-Old Violinist

As a young father I was to perform a violin/cello duet with my youngest daughter, Elizabeth, who was eight-years-old at that time. I came home one evening and was rushing to go to my next commitment when my wife reminded me that I needed to rehearse with my daughter. As a busy executive, I did not feel that I had time to rehearse but I quickly got my cello out with my bow, music stand and music. As we were beginning the rehearsal I looked at my daughter and I joked that I would "race her to the finish." She looked back at me with a smile and said, "Dad. Hopefully we will finish together." I was touched by her response. I was reminded that what we were doing was only going to work and be beautiful if we worked together, in careful synchronization and harmony. I love making beautiful music with my family and I love finding love and harmony in our family relationships.

Like my experience with my daughter, organizations often function as separate silos, isolated greatly from other functions, each working to get their specialized tasks done as efficiently as possible. This occurs not only between departments but often within departments, too. Specialization is not evil but when we forget that there is great value to be found in working harmoniously together we lose many chances for even better success and open the door for a competitor to do it better than you and take your business. The Shingo Model gives us a view for how to build greater synchronization and coordination in order to truly be agile and create optimal value for the customer, to be a symphony of value. Here is a very brief introduction to the Shingo Model and its primary elements.

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19.2 Shingo Model: A Short History

Few individuals have contributed as much to the development of the ideas we call TQM, JIT and Lean as did Shigeo Shingo. Over the course of his life, Dr. Shingo wrote and published 18 books, eight of which were translated from Japanese into English. Many years before they became popular in the Western world, Dr. Shingo wrote about the ideas of ensuring quality at the source, flowing value to customers, working with zero inventories, rapidly setting up machines through the system of "single-minute exchange of dies" (SMED) and going to the actual workplace to grasp the true situation there ("going to gemba"). He worked extensively with Toyota executives, especially Mr. Taiichi Ohno, to apply these concepts in the real world.

Always on the leading edge of new ideas, Dr. Shingo envisioned a collaboration with an organization that would further his life's work through research, practical education and a program for recognizing the best in enterprise excellence throughout the world. In 1988, Dr. Shingo received his honorary Doctorate of Management from Utah State University and, later that year, his ambitions were realized when the Shingo Prize was organized and incorporated as part of the university, recently being renamed the Shingo Institute, as its scope has increased to include educational offerings, an increased focus on research, and an international network of licensed affiliates.

19.3 Basic Overview of the Shingo Model

As most organizations grow from being a small group of just a few people to a large organization there is naturally a need to divide into functions and specialize, creating greater expertise and know-how around each function, whether that be accounting, R&D, purchasing, human resources, production or many others. Each of these functions will establish, formally or informally, systematic ways in which the work is done along with a variety of tools to complete the work. For instance, Human Resources may create a new employee on-boarding system or a performance evaluation system. Purchasing may create an approved vendor management system, a vendor performance measurement system or a standardized bidding system. Systems crop up in all departments and functions of organizations. It is very likely that the total number of systems and sub-systems throughout your entire organization is in the hundreds or even thousands.

Each of these systems use tools to help create the desired outcome. These tools could be charts, reports, software programs, monitors, and the list goes endlessly on. Organizations rely on the function of these sets of systems and tools to create the combined effect of the planned goals and objectives of the organization. When

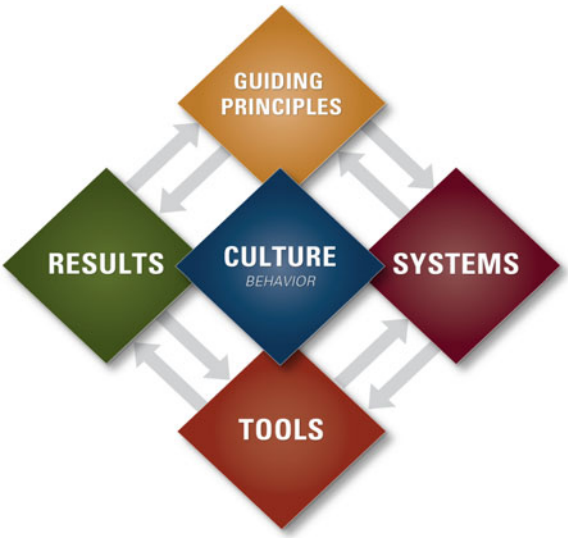

Fig. 19.1 The Shingo model (*Courtesy* Shingo Institute ©, Utah State University)

leaders want to make improvements to results or achieve different goals and objectives they will often spend their time working on or within the systems and tools to get the new and improved results. This is what we would consider the typical status-quo situation.

In the 28 years that the Shingo Institute has been around, a clear theme among the most successful organizations has been observed: sustainably excellent results depend upon the degree to which an organization's culture is aligned to specific, guiding principles rather than depending solely on tools, systems, programs or initiatives (Fig. 19.1).

What has been discovered over the years is that, beyond systems and tools to drive results, the culture of an organization has a huge influence on an organization's ability to sustainably deliver the desired results. Culture is not the same thing as a corporate mission statement on the wall that no one looks at or identifies with. At the Shingo Institute, as they assess organizations around the world for the Shingo Prize, they see that **culture is the combined set of behaviors of everyone in the organization**. Therefore, in order to achieve ideal results an organization must create a culture in which each individual behaves ideally in each situation.

Behaviors in an organization are influenced by the way we each believe and how we see the world. Of course, organizations will create systems to drive or guide people to behaving in a certain way, but ultimately it is a combination of the organization's systems, whether standardized or informal, and the beliefs of its people that drive behavior.

19.4 Shingo's Guiding Principles

Then how does an organization know the ideal direction to take in a given situation? How should an employee behave under an unpredicted or abnormal circumstance? Is there a reference or true north guide that can help an organization to reach for ideal or perfection over time?

Through careful research and analysis over the years, the folks at the Shingo Institute began to see key common elements to those organizations that were able to achieve truly sustainable results versus those that experienced success only to have it slip away over time. Through that research, they were able to define ten fundamental principles that are essential to any organization, regardless of industry, country of operation, whether for-profit or not-for-profit.

I will not go into any depth regarding these ten principles at this time, but they represent the foundation for any organization's sustainable success. These ten principles are:

1. **Create Value for the Customer**: Assuring that everything that everyone does is aligned with the overall objective of creating real value for a customer
2. **Create Constancy of Purpose**: Assuring that everyone in the organization is focused and motivated by a constant, unchanging vision. For example, in the Shingo Prize-winning automotive airbag manufacturer, Autoliv, their clear and powerful statement of "We Save Lives" motivates and guides everyone everyday. They constantly ask themselves "what can I do today to save more lives?".
3. **Think Systemically**: Assuring that all actions, changes, improvements are veiwed from a higher level, seeking to understand how all the parts of a system, or how different systems, connect and interact and influence one another.
4. **Flow and Pull Value**: Taiichi Ohno, of Toyota Motor Company, said many years ago that the basic objective of an organization was to "look at the time line, from the moment the customer gives us an order to the point when we collect the cash. And then work to reduce the time line by reducing the non-value adding wastes." This fundamental idea of striving to eliminate every waste of every kind throughout the entire organization so that maximum value can be delivered to the customer is key and should be understood and embraced by all.
5. **Assure Quality at the Source**: The concept of "do the right things right the first time" is so fundamental to the Lean movement, but it is something that is quite broad, including product and process development, supply chain and every office function. It is probably an easy concept to basically understand but one that requires great and continual effort to achieve.
6. **Focus on Process**: It is often the case that when something goes wrong people look for the person at fault. However, rather than looking for the person to blame and perhaps punish, it always better to seek to understand what happened

in the process to cause the failure. Even if there is human error involved, rather than punish it is better to understand how robust the process was designed, for instance. Was there sufficient error-proofing in the system? Was the process typically unstable and only an expert on a good day could make a good result, or was the process very stable and anyone with the basic training could create a good result every time? Perhaps the process of selecting, training and development the person involved was not adequate. We rarely find that the person involved wanted to create a bad result, but rather we see that the problem lies somewhere within the process.

7. **Embrace Scientific Thinking**: Assuring that everyone in the organization seeks to more deeply understand what is happening by collecting and analyzing data, basing improvement activities upon testing hypotheses using a scientific approach, no matter how simple. People at all levels can apply a simple A3, PDCA or DMAIC approach to a problem. This helps to eliminate "improvement by hunches" making for better more sustainable improvements.
8. **Seek Perfection**: Deming always said "constantly and forever improve systems of production and service". Never being satisfied with the status quo is an essential part of WCOM™ and Lean. Creating a culture of always striving to make things better is empowering and takes an organization way beyond a competitor where "when it is good enough stop."
9. **Respect Every Individual**: When I was a young mechanical engineer at Honda Motor Company, I would hear Mr. Soichiro Honda often say, "Without the engagement, participation and ideas of all the people in an organization, it will never achieve its full potential." People become more involved and engaged, using not only their hands but their heads and hearts, when they feel respected. Only about 10 % of the workforce worldwide say that they feel highly engaged in their work and not feeling respected or valued is one of the main reasons for this. We show respect by asking people's opinions and doing something about them; by recognizing people for their contributions; by visiting them at their work areas to understand their situation and how to make it better.
10. **Lead with Humility**: In the corporate world, the words leadership and humility are rarely spoken in the same sentence, but we have learned over the years that one of the most powerful ways to lead an organization is with humility. Humility is recognizing that you don't have all the answers, that other people in the organization may have some valuable insights that can improve the organization. Even personally for a leader, accepting the fact that we are not perfect leaders and being willing to accept the critical feedback of others so that we can learn and grow is a tremendous thing. Otherwise, we will block any chance to grow and develop into a better leader. People respond in a powerful way when they see their leader as real and open and growing. On the contrary, when they feel that they leader is arrogant and doesn't care about anyone or their opinions people will often give only the bare minimum (Fig. 19.2).

Fig. 19.2 The Shingo principles (*Courtesy* Shingo Institute ©, Utah State University)

19.5 Three Insights: A Way to Understand How It All Fits Together

19.5.1 Insight 1: Beliefs and Systems Drive Behavior

How people believe and how the systems are set up both influence the behavior of people, which in turns impacts the results (Fig. 19.3).

19.5.2 Insight 2: Ideal Results Require Ideal Behavior

If an organization is to achieve ideal results then people must behave in an ideal way each time. You cannot have ideal results without ideal behaviors (Fig. 19.4).

19.5.3 Insight 3: Shingo Principles Inform Ideal Behavior

Only with a clear reference, in this case the Shingo Principles, can we know that we are moving more closely to creating a culture in which everyone knows and wants to have ideal behaviors and systems that are aligned and support those ideal behaviors, thus leading to ideal, sustainable results (Fig. 19.5).

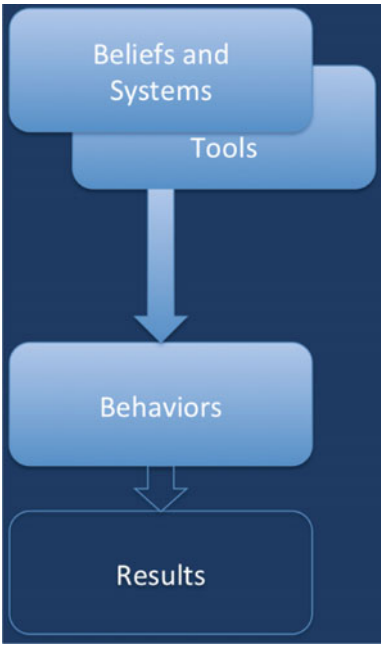

Fig. 19.3 Shingo Insight #1. Regarding link between beliefs and systems to behaviors (*Courtesy* EFESO Consulting ©)

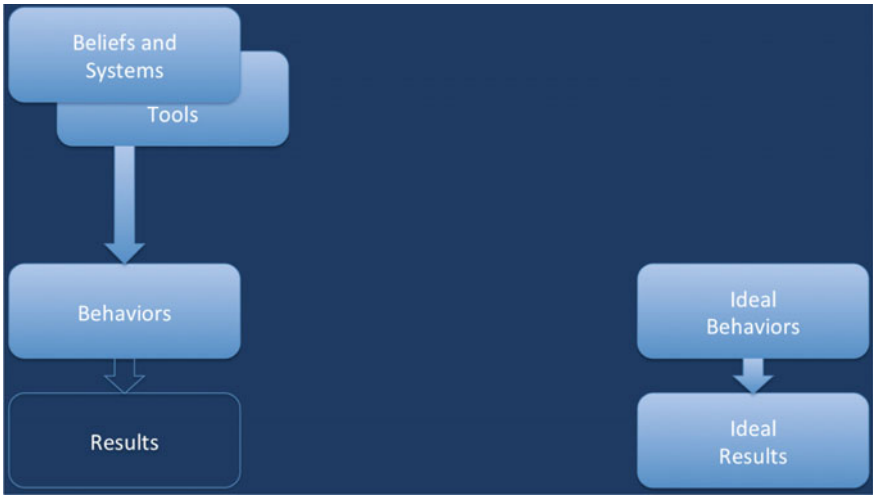

Fig. 19.4 Shingo Insight #2. Regarding link between results and behaviors (*Courtesy* EFESO Consulting ©)

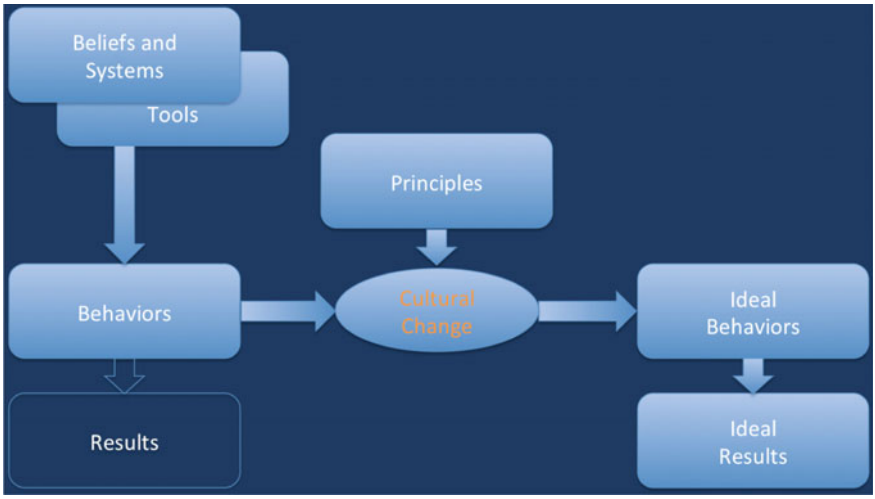

Fig. 19.5 Shingo Insight #3. Regarding link between Shingo principles and sustainable results (*Courtesy* EFESO Consulting ©)

19.6 Culture: The Elephant in the Room

The phrase, the elephant in the room, is defined as "An English metaphorical idiom for an obvious truth that is either being ignored or going unaddressed." Culture is the elephant in the room in most organizations because it has a huge influence on the organization and yet it is usually not discussed or considered when it comes to the organization's success.

Peter Drucker, once wrote that "Culture eats strategy for breakfast". Edgar Schein, Professor at MIT's Sloan School of Management, wrote that "The only thing of real importance that leaders do is to create and manage culture. If you do not manage culture, it manages you, and you may not even be aware of the extent to which this is happening."

Despite these strong statements about the influence culture plays on an organization and its ability to achieve results, we often observe leaders who do not see culture as having a great influence or who feel that all they have to do is tell their employees what to do and that will create the results they want.

We have found, however, that culture is the primary aspect of an organization that the leader should be focused on in order to assure sustainable success in delivering value to the customer. But how does a leader do that? What does he or she use as a reference to know they are moving the culture and the people in the right direction?

19.7 North Star: Constancy of Purpose

19.7.1 Do You Know Where You Are?

When I was about 15 years old back in the 1970s, I was a young, inexperienced long-distance runner. My scoutmaster got me started as part of an effort to get our troop in shape for our upcoming hiking trip in the Appalachian Mountains, but I liked it and continued it after the hike. Later, I asked my scoutmaster "How do you know which way to go in a race?" and he responded, "Just follow the people in front of you." I used this approach for a while and it worked fine. Then one summer day we went to run a 13-mile race. It was in August and the weather was not good for running, as it was 100 °F temperature and nearly 100 % humidity. The race began with a lot of people close together but due to the extreme weather conditions the people soon spread out over the 13-mile course. As I struggled through the race, at one point I looked up and noticed that I could only see one other racer in front of me. No, I wasn't in second place! The racers had gotten so spread out that now I could only see one other racer. I wondered how he knew where to he was and where he needed to go. I still followed him for a while. All of a sudden he stopped and started to look around. I eventually caught up to him and he looked at me and asked "Do you know where you are?" You can imagine my shock! I was unwittingly following someone who was actually lost himself.

Everyone in an organization should have a clear understanding of "Why" the organization exists, or in other words, where they are going and why? Creating a clear understanding of the "why" will serve as a guide and motivation to everyone. Every organization needs some kind of clear reason why they exist that can guide and motivate. A powerful statement of "why" the organization exists and "how" the individual's role connects to that "why" makes such a difference in an organization. People begin to work not only with their hands, but their heads and their hearts, too!

19.8 A Symphony of Excellence: Conclusion: Return to Story of My Daughter

We have learned the lesson over time that building a culture of excellence, based upon principles, is absolutely essential for sustainable results. It is essential that everyone understand "why" the organization exists and how their role connects with that higher objective, that we see tremendous results when everyone give not

only their hands, but their head and heart to creating value. We have learned that to create excellent behavior we need to assure that we have excellent, aligned systems and the correct tools, that set people up to succeed, creating in the end a symphony of value creation.

Chapter 20
TWI (Training Within Industry)

Rajinder Singh and Noela Ballerio

A Supervisor's Dilemma

As a front line supervisor, during the beginning of my career, I always felt stressed and trapped between the management that asked me to deliver better and better results and the front line workers who were responsible for work and delivering the results that I was accountable for. My frustration was resulting from my inability to get enough cooperation and support from the people that I supervised. At that time many of them had more working experience than me, they knew much more about the job than me and they were elder. I sometimes also had new workers who came to work for the first time. They had problems adapting to the new industrial discipline and the culture of the workplace. Under these circumstances I had real difficulties in meeting my managements' expectation of continuous improvement and building a harmonious working environment. It was a challenge for me. I had never been trained on how to get work done through people.

The only way that I could learn to survive was by observing my colleagues (supervisors) and try to copy their style of working with the workers. I experimented different styles (from shouting, scolding to requesting and begging to get the work done) and then developed my unique style. As I grew in the organisation, I saw many new supervisors trying to copy my style and many times fail and get frustrated: a very pitiable situation, considering the pivotal role supervisors play in the functioning of any organization and in continuous improvement of methods and processes.

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The **first line supervisors** are a **key link** between the **management** and the **front line workers**. Since these frontline workers are the people that add value to products and services, keeping them inspired, motivated, well trained and capable is very essential for both making improvements and transformation, and for day to day running of operations. **Any serious transformation programme**, like WCOM™, **requires deep involvement of the frontline workers** in identification of the opportunities and for making and sustaining improvements. To achieve this, skilled first line supervisors are a key requirement.

The question is: how do we train supervisors to resolve their dilemma?

20.1 TWI Came to Help!

TWI stands for "Training Within Industry" and it is a set of training programmes created during World War II by the United States Bureau of Training, within the War Manpower Commission.

The need, at the beginning, was to help industries speed up the traditional skill development process in the industrial world in order to create, in the shortest time possible, a capable autonomous workforce that was able to increase the US industry productivity and throughput.

At that time, most of the regular workforce had been conscripted into the US Army and the available workforce was mainly composed of housewives and farmers who were totally new to the industrial environment and its regimented work methods.

The TWI programme was able to boost the industrial production of war materials beyond any expectation as the popular story of lens grinding highlights.

The Lens Grinding Experience

During the war the lens grinding industry started to run short of lenses, as they were extensively used in weapons and binoculars. A way to rapidly increase production had to be found, considering that the workforce available at that moment was not skilled at all in any Lens grinding processes.

In addition to this, the optical lens grinding art is a complex process which an average person takes five years to master.

By the end of 1945 this learning process of lens grinding, was dramatically reduced to six weeks.

This was obtained by breaking the process down into small modules, and teaching them one by one, using special techniques that made the worker autonomous and effective in an incredibly short time.

This technique became the foundation of Job Instructions Training.

The potential of the lens grinding experience was understood by the War Manpower Commission, and its "Training Within Industry (TWI) Service" used this opportunity to develop the TWI programmes.

20.2 Four Supervisory Skill Development Modules

Four Supervisory Skill Development Modules were identified and written down in a very detailed way so as to make the trainer at ease with the delivery and to be sure to get results. The first three programmes were collectively called **TWI J Programmes** and each programme addressed one essential skill area for effective supervision.

Each of these J Programmes was trained in 5 Sessions of 2 h each. The programmes were highly scripted and required strict adherence to the script (documented as TWI Manuals) both in the content and in the suggested behavior.

The TWI J Programmes in Short

The first module developed was **Job Instruction Training (JIT)**.

In this module the job to be taught was broken down into small teachable steps and the trainee was guided to develop all the skills to carry out each step safely and correctly and at the desired pace. The main aim of JIT was to teach the supervisors on "how to teach a person to do a job correctly and safely" and become productive in a short time while creating the least amount of losses.

It was soon clear that skills development was not enough. **The will to do things** was another basic aspect impacting on production. This was the subject of the second module, **Job Relations Training (JRT)**, which was created to develop leadership in the supervisor to inspire and motivate employees to do good work. It also outlined a process of solving any inter-personal problem using a structured method.

The third module was **Job Methods Training (JMT)**, which was designed to train the supervisors and employees to analyze any activity and make and implement improvements in order to produce greater quantities of quality products using available resources.

A fourth module called **Programme Development** was developed to train employees solve problems that were unique to their organization.

TWI principles are so universal that they go beyond the initial perimeter defined when they were originally created, the industrial environment, and the specific relationship they focused on: the supervisor—worker relationship. In fact **TWI**

applies to all levels of any organization and **also** to organizations **beyond the industrial world**. For instance we have effectively used the TWI programme in Health Care and "Business Process Outsourcing" organization along with manufacturing organizations.

20.3 The Five Needs of a Supervisor

Understanding the complex and difficult role of any supervisor is a crucial aspect in order to develop the collaborative style of work required by high performance organisations who adopt a WCOM™ programme.

With this in mind, TWI Service developed a list of five essential needs that must be satisfied before any supervisor can fulfil his or her job responsibilities effectively (Fig. 20.1). The five needs of a supervisor are the five basic needs of any person whose job is to get results from people working with him/her. These apply uniformly to anyone from the front line to top management of the organization.

Every Supervisor Has Five Needs

1. **Knowledge of the Work**—This is the kind of knowledge that the supervisors need to have to do their day-to-day job. It includes knowledge about materials, tools, processes, equipment, operations, products and how they are made and used, as related to his job. For every new process or product introduced, the supervisors need to increase their knowledge about the change in their job.

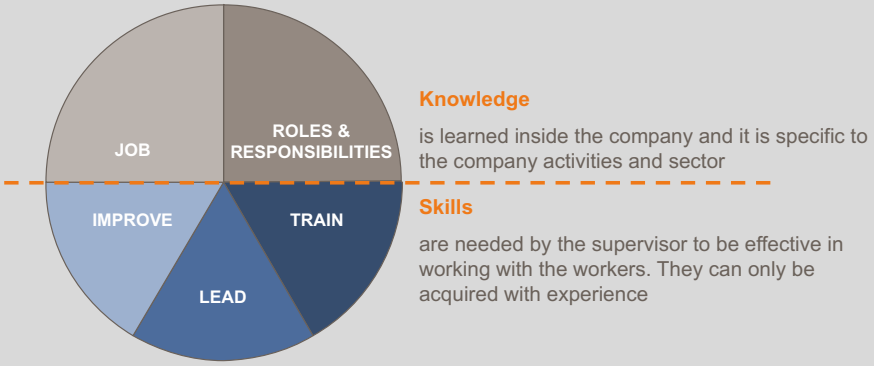

Fig. 20.1 The Five Needs of a Supervisor (*Courtesy* EFESO Consulting ©)

2. **Knowledge of Responsibilities**—The supervisors must have a clear understanding of their authority and responsibilities as a member of management and a promoter of WCOM™. Knowledge about policies, agreements, rules, regulations, schedules, interdepartmental relationships, etc. are a part of this knowledge. These two knowledge needs must be met by each plant or company by regularly training their supervisors.
3. **Skill in Instructing**—This skill helps increase production by helping supervisors to develop a well-trained workforce which will start production quicker, leave less scrap, rework, and rejects; have fewer accidents, and create less tool and equipment damage. The supervisors need to have instructor skills in order to pass down their knowledge and skills to others.
4. **Skill in Improving Methods**—This deals with utilizing materials, machines, and manpower more effectively by having supervisors study each operation in order to eliminate, combine, rearrange, and simplify details of the job. With this skill, supervisors can use the resources that are currently available more effectively to achieve greater production of good quality products and services.
5. **Skill in Leading**—This is about increasing production by helping supervisors to improve their understanding of individuals, their ability to size up situations, and their ways of working with people. The results of a supervisors' work depend on the output of other people and thus, to get the required results, supervisors need to have leadership skills.

These three skills must be acquired individually. Practice and experience in using them enable both new and experienced supervisors to recognize and solve daily problems promptly.

Training Within Industry programmes can assist companies in giving their supervisors a start in acquiring these skills through three 10 h programmes: Skill of instructing by **Job Instructions Training**, Skill of Improving Methods by **Job Methods Training**, and Skill in Leading by **Job Relations Training**.

These skills acquired through this training, must become a part of day-to-day operations. In no other way can production be so quickly influenced and human capital developed.

20.4 The Essence of the J Training Programmes

20.4.1 Job Instruction Training

For Job Instruction Training the essence is **How to Get a Person to Do a Job Correctly, Quickly and Safely**. Getting each person to do each job correctly, multiplied by all the persons in the plant, represents much of the answer to a flawless production that has least amount of losses and happens in a safe environment.

Another notable aspect of the JI is the dramatic reduction of the training time required, while the training effectiveness is increased. The learning (training) time reduction was one of the most visible results of the TWI, more evident and measurable than the paradigm shift which TWI brought in the roles and responsibilities inside the organization.

During training process two resources are involved: the trainee and the trainer.

The only value added use of time is when the trainee is learning the skills required for his/her job. Anything done which is not transferring knowledge or developing skills is a loss.

In a typical training session, a lot of time is dedicated to repetitions and to giving unnecessary knowledge and information. The complexity is usually high, generating misunderstandings and extra time is spent for further clarifications. Sometime the knowledge of propaedeutic topics is taken for granted while they are not known, so an extra session to explain the basics is introduced. This doubles the session's expected time and decreases the effectiveness. Sometimes the most critical points leading to productivity, quality and safety issues are missed in the training.

In the TWI programme a very structured and pre-defined pattern is followed, thus radically eliminating the above mentioned losses. The **Training Lead Time consists only of Value Added Time** where the trainer is focused on training and the learner on learning.

Every session lasts from 15 to 20 min, one subject at a time is explained and experienced and can be learned from scratch. The propaedeutic activities from the trainee side have been investigated and secured before the session. This allows a higher speed and a continuous focus on the learning level. The autonomy of the trainee in the job is the final target and the skills are gradually built and checked following specific pre-defined steps. This is why the total training time is drastically reduced, typically up to 50/60 % with respect to the traditional training session (Fig. 20.2).

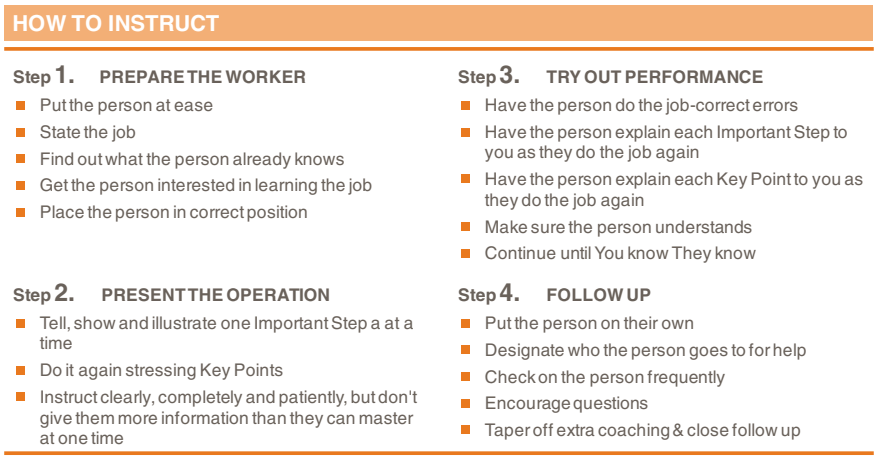

Fig. 20.2 JI: The four steps of giving instructions for an optimised training process (*Courtesy* EFESO Consulting ©)

20.4.1.1 A Revolution in Redefining the Responsibility Between Trainer and Trainee

Most of the people, before starting a TWI programme, think that to learn is the trainee's job and responsibility and, if this doesn't occur, something is wrong with the trainee. In other words **the failure to learn a job is totally put on the trainee's shoulders**.

In TWI the spirit is totally different and requires a deep change of mindset.

The motto is: "**If the trainee has not learned the trainer has not taught**".

This means that the responsibility for training rests completely with the trainer, who generally is a supervisor or a manager, and gets results through the work of the people he/she is training and coaching. Thus supervisors learn that it is their job to make a good worker of any person, removing all the obstacles that prevent the worker to learn and deliver a good performance.

20.4.1.2 Preparation Is Essential for Success

One of the most understated requirements of the JI training is the preparation that needs to be done before we actually train the employee. The following four items have a very serious message that, if understood and practiced, can have a great impact on any WCOM™ journey.

Here are some salient points:

A. **No training should be an accident**: it means that all trainings should be a planned activity that has been communicated to the employees in advance so that have the opportunity to physically and mentally prepare themselves to receive the training. This point might look trivial, but the fact is that much of the shop floor and on the job training is conducted in an ad hoc manner. In the implementation of WCOM™, team leaders and pillar members are routinely engaged in training, planning properly the WCOM™ programme improvements, not only the effectiveness of the training.

The tool that is used for this planning, although very simple, is one of the most powerful and elegant tool that makes any supervisor's life easy: the **Training Timetable**, a simple table that defines:

Who needs to be trained?
In Which Job?
By what date?

Using this tool helps the supervisor keep track of the availability of the skilled manpower in his/her department and helps him/her plan for the future training needs (Fig. 20.3).

B. **The Workplace Organization (the 5S)**: TWI stresses that the trainers should conduct the training in the exact condition where they expect the trainee to perform the job. The workplace organization has to be precisely like what is expected when the trainee does the job after learning it. This is a powerful way of communicating and demonstrating the need for proper workplace organization that is essential for the safety and efficiency. When the trainers are role models, observe the correct behaviours, follow the safety protocols, and use the proper tools and methods, the trainee not only learns the job but also the other aspects that make the job successful.

	Job Task 1	Job Task 2	Job Task 3	Job Task 4	Job Task 5	Job Task 6	Current # skills	Desired # skills at the year's end	Remarks
Employee 1 Name						✓	1		
Employee 2 Name							0		
Employee 3 Name			✓				1		
Employee 4 Name	✓				✓		2		
Employee 5 Name				✓	✓		2		
Employee 6 Name						✓	1		
Employee 7 Name							0		
Employee 8 Name		✓			✓		2		
Operators ideal number	3	3	3	3	3	3			
Current employees number	1	1	1	1	3	2			

Fig. 20.3 The Training Timetable of a supervisor (*Courtesy* EFESO Consulting ©)

Job description:	TYING THE FIRE UNDERWRITER'S KNOT	
Parts:	TWISTED LAMP CORD	
Tools & Materials:	NONE	
IMPORTANT STEPS	**KEY POINTS**	**REASONS**
What is done A logical segment of the operation when something happens to advance the work	**How it is done** Anything in a step that might: - Make or break the job - Injure the worker - Make the work easier i.e. "knack", "trick", special timing, bit of special information	Why it is done Reasons for the key points
1. UNTWIST AND STRAIGHTEN	Six inches	Leave enough lenght for the next operation
2. MAKE A RIGHT LOOP	In front of the main strand	The knot will not tie correctly
3. MAKE A LEFT LOOP	Pulling the nd towards you Under the stub Behind the main strand	It is easier to the next motion The knot will not tie correctly It won't work safely

Fig. 20.4 A Job Breakdown Sheet example (*Courtesy* EFESO Consulting ©)

C. **The Job Breakdown Sheet**: It is a standard work sheet to be used by the trainer to conduct the training. Preparing this sheet ensures that all critical elements of the job have been considered and noted down. This preparation should be accurate and the training should be conducted exactly as per this sheet. This ensures that the trainer is present one hundred percent with the trainees, really observing and listening to their needs and difficulties and assessing their potential while delivering just the necessary content in a simple way (Fig. 20.4).

20.4.1.3 Standardization of the Processes

During JI training each participant has to bring a real life task to the class and then train the other participants to do it. Invariably we find that most of the participants are not familiar with the best way of doing the task that they themselves selected. The steps are not clear or the key points for each step are not understood. This is a reflection of the real situation in the workplace, where every person performs the task as per his/her understanding, and not as per the standard.

JI training forces the participants to come up with **a method of doing the task** and then list down the **key points** in consultation with the other employees who know the task. This training standard, called **Job Breakdown Sheet**, can then be quickly converted into work standard by adding some pictures and other instructions.

A JI Story

A large motorcycle manufacturer wanted to create a new plant that would beat all records of productivity and quality from the very beginning. A very difficult task, considering the history of low productivity and coercive work environment in its current facilities.

We were invited to mentor the teams and help them achieve this objective.

The company management gave us the freedom to design the complete initiative.

Three months before the workforce arrived, we started working with the frontline supervisors: we asked them to list all the tasks that had been performed in their assigned areas and prepare instructions on how these tasks would have to been trained, by them, to the new employees. We defined the important steps and the key points in each task. To help them we conducted extensive JI trainings and some 10 h workshops.

The **supervisors** were sent to the existing plants to observe the work while it was being done. They would then **prepare the training instructions for themselves,** not the work instructions for the employees. Doing this had significant advantages. The new supervisors started to develop deep knowledge of each task under their supervision and knew exactly how to do it in best way. They understood the difficulties and issues related to each task. Secondly they understood that their role, in order to get results and become successful, was to teach and mentor the employees. **Every time an employee made an error the training method and instruction was questioned, not the employee**. This led to a very positive learning environment in the new facility.

The new facility created benchmarks in First Time Right Quality, Productivity and Safety.

The culture of this plant was entirely different from other plants and became the new inspiration for the whole organization.

20.4.2 Job Relations Training

The result of supervisor work depends on the other people work, because these people directly impact the performance in Production, Cost, Safety, Quality, Maintenance, Logistics,Distribution, Training, Climate.

To be a good supervisor the cooperation with others is the crucial focus, and the way to develop it is training Supervisors on how to develop and maintain good relations with eachand every person that they supervise, in other words on how to increase their leadership skills.

20.4.2.1 The Role of the Supervisor

In a brewery a consultant asks a supervisor: " *What is your role?*"
Supervisor: "*I make beer*".

The point is that the supervisor wasn't making beer at all. It was the shop-floor workers who operated the equipment to make beer, not their supervisors.

The first paradigm shift concerning TWI is the role of supervisor.

The core of the supervisor job is the people, because **the supervisor get results through these people**. Not all the supervisors have a full awareness of the fact that their role is mainly to **deal with people and motivate them** (Fig. 20.5).

20.4.2.2 How Does the Supervisor Manage to Get Results Through the Work of His/Her People?

The supervisor does this by creating a **connection** between himself/herself and all the persons supervised.

Fig. 20.5 The relationship of supervisor and people (*Courtesy* EFESO Consulting ©)

This connection is what we call **Job Relations**. If the connection is strong the results will be good, if it is weak the results will be poor.

We can not forget that **wherever there is supervision there is a relationship**: it can be either healthy or broken, but it is always present and requires the proper focus. The supervisor has the responsibility to work with every worker one-on-one to understand his/her strengths.

The daily practice of the four foundations for good relationship, that we will explain in the next pages, is the base to improve the job relation.

20.4.2.3 The Value of Individuality

One of the fundamental principles on which an Excellence Programme is based is **"Respect every individual"** in all the differences he/she can have, as we will explore further in the chapter dedicated to the Shingo Model.

If we take one worker out of the group, we can see there are specific factors that make him/her different from the other individuals Fig. (20.6).

When the worker comes to work he/she brings all these aspects, with all the differences in the personality and motivations. A supervisor has to know and deal with this because the respect and understanding of the differences is a basic condition impacting on the job getting well done.

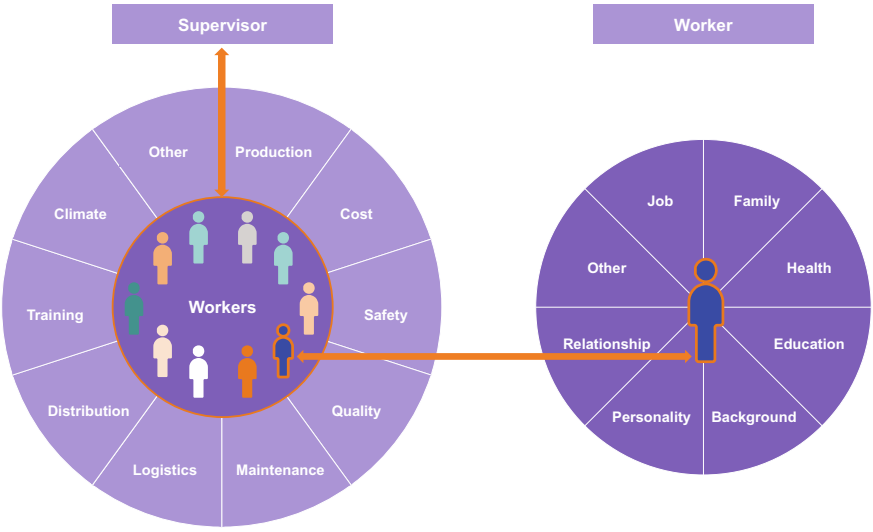

Fig. 20.6 What makes every individual unique (*Courtesy* EFESO Consulting ©)

20.4.3 The Four Foundations of Good Relations

We have stated that for any supervisor good results come from good relations with the employees supervised. In order to improve these relations the supervisor needs to strengthen the following foundations:

1. **Letting each worker know how he/she is performing**
   Everybody needs feedback about their work. Every supervisor has to continuously provide feedback about the way people are performing. This avoids surprises and strengthens relations. In order to do this effectively, the supervisor has to first clearly state the expectations and help the employee to meet them. This creates a constructive communication and consequently better relations.
2. **Giving credit when its due**
   People expect to be recognized for the good work they do. It is a supervisor's responsibility to find opportunities to appreciate employees for something that they did beyond the normal expectations.
3. **Tell people in advance about changes that will affect them**
   Nobody likes surprises. People like to be involved in the decision making about things that will affect them in any way. Letting people know in advance about the changes gives them some time to think and if required, provide some comments about the changes.
4. **Making best use of each person's ability**
   People have abilities that they would like to be seen.
   If these abilities are not seen and recognized they feel underutilized and ignored.
   A good supervisor has a talent to expose the hidden abilities of the people that they supervise and then make the best use of these abilities.

One of the benefits of the Loss Reduction Teams in our WCOM™ programme is the identification and exposure of hidden talent and abilities during the project execution and Pillar activities.

We occasionally hear about how much hidden talent has been revealed during loss elimination projects that the organization did not know about and was therefore unutilized. Hidden leaders, employees with technical, computer and analytical skills, problem solvers are brought forward and acknowledged. Once their talent is taken into consideration they are motivated and become more proactive employees Fig. 20.7.

A JR Story: Get The Help Desk Out …
One large Pressure Die Casting plant at the foot of the Himalayas, in North India, invited us to help them implement a structured Operational Excellence programme. During the initial visit to the plant the President explained how they had invested in creating a world-class facility with just-in-time supply of

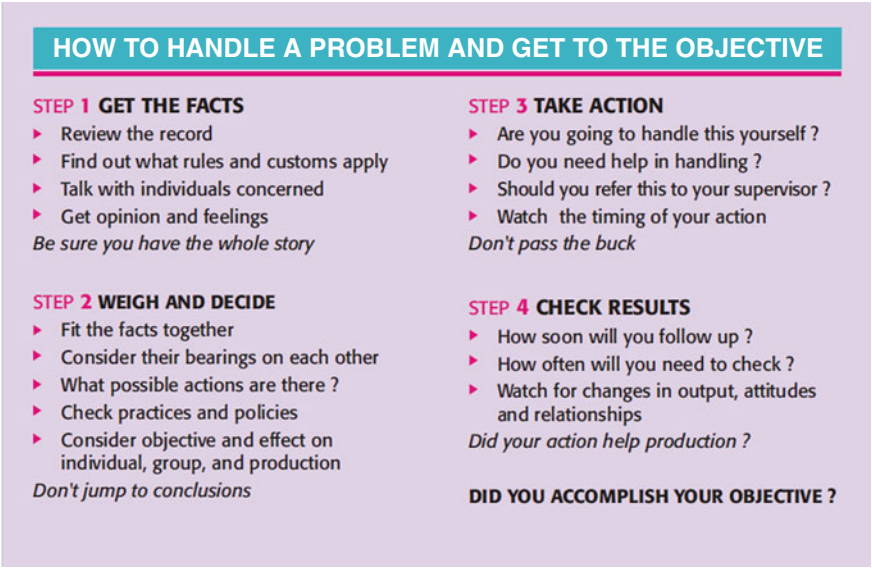

Fig. 20.7 JR: How to handle a problem (*Courtesy* EFESO Consulting ©)

liquid aluminium from a neighbouring facility and with the best casting machines. However, something was missing. The results were far from what was expected. The attrition rate was high and people were not happy.

The President introduced me to the Head of Human Resources who was proud to show me a table in the shop-floor labelled "Help Desk'. This was their answer to the employee dissatisfaction issues.

The team members were now stationed on this help desk and anyone could visit to register dissatisfaction. They were happy that this initiative of the HR department had become very popular and more and more employees were using it.

My recommendation in the meeting must have surprised the management of the plant. I recommended that, before we started any Operational Excellence initiative, we need to make this help desk redundant and get it out of the plant.

I explained that more utilization of the help desk meant more dissatisfied employees which in turn meant less supervisors taking care of their people. And this is not a good sign while the culture is not conducive to any excellence programme.

We launched a Job Relations initiative in this plant and trained many front line supervisors to become trainers and advocates of JR. They further trained many more supervisors and in the end around 100 supervisors and managers were trained in JR. These people then started to take care of their employees in a manner no HR person could do. Foundations of Good Relations were

strengthened and were used to resolve any issue that arose. In many cases, there was no need to go even beyond step one (get the facts). Trying to get the facts opened the communication so much that no further action was required. In three-four months no one was visiting the help desk. This occurred only after six months that we launched WCOM™ in the plant with very good success.

How to Get Opinions and Feelings Getting the real facts of the problem is not always easy. The **facts** are hidden behind a heap of **opinions** and feelings that will have to be surmounted in order to get to the real facts. There are **six things** that a supervisor has **to learn to do** to surmount this heap **to get to the facts**. This skill can be acquired with practice. But once acquired it becomes a useful tool for the supervisor.

1. **Don't argue**. While collecting facts, avoid arguing. Instead, step back and let the person talk, listen in turn, and continue to gather as much pertinent information as possible.
2. **Encourage the person to talk about what is important to him/her**. It is important to know about the problems of employees. While finding the facts about the problem, encourage the employees to talk about what is important to them before they can reveal the important facts about the problem.
3. **Don't interrupt**. Interruptions cause people to lose their train of thought, making them think that what they are saying is not important, or worse, causing the supervisor to miss important information that they were leading up to.
4. **Don't jump to conclusions**. Making a decision before having all the facts will reduce the choices of possible actions to solve the problem.
5. **Don't do all the talking yourself**. Don't "make a speech" or "preach" about the issues rather than finding ways to have the employee do most of the talking.
6. **Listen**. Actively listen by using appropriate responses that encourage the employee to continue talking, and ask for clarification only when required, without putting the employee on the defensive. The supervisor's body language should convey that he/she is actively listening. This includes maintaining eye contact, nodding affirmatively, leaning forward to show interest, and asking questions to verify your understanding of the discussions.

20.4.4 Job Method Improvement

The Power of Questioning
The first Job Method sessions were frankly designed to **develop a questioning attitude** among supervisors with the result of getting from them ideas which were already close to the surface. The detailed questioning of the breakdown meant that it was possible to go far below the surface and really evolve ideas which never could have appeared on the basis of suggestions.[1]

The JM Programme endeavors to train employees in the art and science of improving methods by dividing and questioning without incurring additional expenses. This results is a practical plan to help produce greater quantities of quality products in less time by making the best use of available Manpower, Machines and Materials.

Another notable aspect of the JM Programme is the awareness that *the devil is in the detail*. While making improvements, each job is broken down into very small steps detailing how the job is currently being done. This gives the employee an opportunity to deeply review all the details that are done to execute the job and start to question why all these details are required and to question their value. Many a time, since we do not go into minute details, we miss an opportunity to eliminate losses because we do not see them.

Once the details are listed they are questioned. Why? What? Where? When? Who? And How? Questions challenge each detail and force the investigator to either find a better way or eliminate the detail.

This skill of breaking down the job into details and then questioning every detail to arrive at better ways of doing the job is at the core of any Kaizen and WCOM™ loss reduction methodologies.

20.4.5 TWI and WCOM™: A Winning Synergy

WCOM™ concerns continuous improvement of processes and methods to eliminate losses in utilization of resources with involvement of all employees in this journey.

The TWI programmes aim to develop the employees capability to meet the WCOM™ objectives in a simple and concrete manner, ensuring the creation of a respect and results oriented culture, sustained by individuals who feel responsible for their jobs and are fully supported by their leaders.

[1]Source: Training Within Industry Service, Sep 1945, The Training Within Industry Report: 1940–1945, p-234.

All the three J Programmes are integrated into the WCOM™ methodologies and interpret them according to above mentioned values.

The WCOM™ programme integrates the TWI principles in all of its phases to guarantee success and sustainability.

If we consider the learning process along the evolution of a WCOM™ programme, the below path is applicable. In the TWI programs the major focus is specifically in the "I do & I understand" phase, using TWI as a practical training and coaching instrument (Fig. 20.8).

Fig. 20.8 The learning process along the WCOM™ programme (*Courtesy* EFESO Consulting ©)

In order to highlight the strong relevance of TWI application in WCOM™ Programme I would like to discuss three examples.

1. Among the basic tools used in the WCOM™ loss reduction methods are 5 Whys, 5W and 1H and ECRS. All of these tools have their roots in the Questioning Methodology of the Job Method Improvement programme.
2. At every step in WCOM™ it is essential to train all the persons involved in the new methods and standards that have been created. The "Learning by Doing" focus of TWI makes it practical and the TWI JI four step methodology allows to impart the training and to accelerate the learning process increasing the training effectiveness exponentially.
3. WCOM™ focuses on developing leadership at all levels in the organization. The TWI JR methodology provides a practical and simple way of developing leadership in all the employees in the organization. The four foundations of good relations, along with the Coaching and Questioning skills taught in the three J programmes, are a key to making the management Gemba rounds more effective and inspiring. Using TWI JR programmes learnings enhances the coaching process during team reviews and other meetings.

A successful implementation of WCOM™ implies a cultural change in the organization that involves the way the people think and behave. TWI programmes influence the thinking of the people towards how they interpret their work and the relation with their leaders. The programmes include training, coaching, learning and improving and not only just doing the job. This creates a culture in which WCOM™ can prosper.

The recognition and respect of the employees contribution creates a proactive climate of improvement and innovation of the working environment.

TWI J Programmes can be viewed as instruments that practically support the step by step Journey of Change of an Organization;

- **Job Relations** impacting on the Working Climate,
- **Job Method** impacting on the Work Flow and
- **Job Instruction** transversally impacting on both.

Part IV
Conclusion

Chapter 21
Key Patterns for a Common Approach

Noela Ballerio and Carlo Baroncelli

21.1 Analysis of the Cases and Best Practices

The sample of the organisations that accepted to be interviewed in the first chapter of this book can be considered meaningful in the world stage. These organisations go from B2B to B2C, with headquarters in Europe and in America, sites and markets across five continents, more than 1000 plants worldwide, more than 300,000 employees and about 100 Billion € Turnover.

All the organisations interviewed have adopted WCOM™ for 10–15 years.

We asked the same questions to five top managers of the above said organizations, and each one developed the questions into a unique story based on the organization's experience.

The questions cover the essential points to be considered when a large transformation programme has to be evaluated.

1. Which were the reasons to start the Operational Excellence Journey choosing the WCOM™ approach?
2. Which were the benefits of the programme?
3. What were the main obstacles and difficulties encountered during the implementation?
4. What are the recommendations to those who want to start such a programme?

On top of the above-mentioned questions, we need to consider the huge role played by ICT in the last decades.

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21.2 The Reasons to Start the Operational Excellence Journey Choosing the WCOM™ Approach

The first question has uncovered five different drivers which lead organisations to start the WCOM™ programme.

1. The **First driver** can be seen as the **need to unify** the stratification of **different improvement programmes** implemented over the years **into a Single Harmonised Management Model**. The underlying need to have such a kind of model was to optimise and integrate the main processes of the organisation, through permanent systems guarded by accountable members, in order to sustain the results in an autonomous way. To support this model it is seen as essential to build a **Common Language** as the vehicle for creating a common understanding around the new practices the programme implements. The idea is also to share experiences, best practices and knowledge in such a way that every member can benefit.
   From the consolidation of responses we can see that a Common Language is considered essential either by those organisations that have been growing through acquisitions, because language becomes the cement to put together the various bricks, or those organisations growing organically. We can infer that building a new common language at the inception of a new big initiative helps in converging towards the new targets and changes the peoples mind set, contributing, in the specific case of implementation of a WCOM™ programme, to open the silo-oriented mind set where every unit, department or plant has its own slang, its way to measure indicators, its way of 'doing things'.
   The second need underpinning the Single Harmonised Management Model is to develop a **leadership team** to be **continuously educated** to improvement, flexible in response to the organisation's changing needs and with sufficient standing required to lead the entire organisation towards the new objectives set with the transformation programme.
2. **The second is the recovery driver**. It is a defensive approach: the organisation must **recover from declining results** and starts the WCOM™ programme connected to the survival, which then is the burning platform. The operations turnaround is at stake, there is an urgent need to regain a competitive position in the market and the WCOM™ programme is seen as the solution to prevent the disaster. In some cases the cause can be the presence of new technological alternatives which threaten the traditional production.
3. **The third driver** is the need to **achieve cost competitiveness.** The markets where these organisations navigate are very competitive. However none of these companies wanted to just implement a mere cost cutting exercise, they found in WCOM™ an approach that is very deep in attacking all losses at their roots, but in a collaborative way. These companies have adopted WCOM™ as their main collaborative strategy to ensure a global approach to cost competitiveness.

4. **The fourth driver** is to **improve customer compliance and customer intimacy**, as these are becoming more and more key success factors. WCOM™ Lean Flow and Quality Pillars have been a strong lever to "introduce the client in the factory", making management and operators understand the urge of a closer attention to the client's needs.
5. **The fifth driver** is the need to **use the organisation's capacity to support growth**, as an efficient use of the capital employed releases resources to address strategic initiatives. We know that in many sectors the available production capacity is not fully exploited, but opportunities are often hidden. The WCOM™ approach, creating clear visibility of the losses, is key to exploit all the possible levers to fully utilize the company resources.

21.3 The Benefits of the Programme

21.3.1 Benefits for the Organisation Members: Culture and Leadership

The **cultural change** is the aspect considered by all the organisations interviewed as primary and determinant of the more tangible benefits impacting financials.

Awareness of the company culture is a paramount step to make targets and goals achievable. We use to say that every organization is designed to achieve the results it achieves.

Most of the obstacles preventing organizations to move towards the desired targets are hidden in the organization's culture and to create awareness for these obstacles is the first step on the road of change.

What could happen is that there can be a gap from the defined values/principles and their interpretation in the everyday life of the organization, and this gap has to be brought to light to be filled.

In addition to this, the set of principles and beliefs can be heterogeneous, in local culture and central culture, with different nuances and sometimes opposite views.

Once the level of awareness of the organization's culture becomes high, some analysis can be done to understand if the targets are compatible with the culture or some corrective actions must be taken to restore/change the values in the case they do not respond to the needs of the moment.

The WCOM™ programme is seen as the vehicle for a **paradigm change in the organisation mind-set** and **a positive reinforcement of the organisation's values** because it brings a new way of interpreting the collaboration between individuals, units, departments, plants and regions.

Concerning the different layers of the organisation a significant role in the culture change has to be given to the **guiding coalition**, to use Kotter's terminology, whose role is to promote and lead the programme. The creation of such an entity in the organisation is a *must have* in the initial phase of the programme.

We are speaking of a non-hierarchical group of people, initially including a 20 % vertical slice of the population, recruited at all layers, with different roles and responsibilities, from the shop floor to the board.

Usually the coalition gathers those people who seem to be spontaneous, natural believers of the programme. This coalition will push the program bringing the required energy to live it every day and sustain it all the time: the members will be the ones volunteering to make the first pilots: they will be quick winners showing the rest of the people that the program's targets can be achieved.

To complement to the leadership change another cultural aspect strongly impacting the climate is the **autonomy, accountability and interdependence** created amongst the **shop floor workers and the team leaders**: the reinforcement of this relationship brings **energy from the ground up to the top of the organisation**.

Another radical change impacting the organisation culture is **the role of middle management.** Their buy-in of the programme is not to be taken for granted: from all interviews we have seen that managers have been more difficult to on-board than workers. The change implicated by the WCOM™ Programme has quite dramatic impact on middle management, as it has to shift from the traditional role of problem solver to that of trainer, coach as well as results monitor. In many organisations historically the middle managers are promoted to this role for their technical competence on the shop floor. The technical skills are not anymore sufficient when their task changes to managing and developing the people: the manager has to learn to build solid professional relationships with the shop floor workers as well as flawless process. This implies for the manager to be available to be trained with the objective to become trainers and coaches for their people. It is a very big paradigm shift which can initially create a sense of emptiness in the new agenda of the middle manager, because certain tasks have to be dismissed and other capabilities developed.

Once the middle management is empowered enough to operate in this new way and the **top management** is able to set clear goals and objectives, the energy flow circulates top down in addition to the bottom up flow we mentioned before: everyone starts to feel they play an essential part of the game, reaching a high level of engagement. The **processes become interconnected and fluid**, transparency and sharing are perceived to be an essential need.

Another strategic role in the mind set change is played by **knowledge capitalisation and sharing**. In this fast moving age the "know-what" has become a commodity. The problem has shifted to the "know-why" and "know-how". Here the role of the **change agent** is not only to make the knowledge available but also to share solutions and know when to use them.

One of the organisations interviewed explains this knowledge thirst as the need to **"be able to learn to love something"**. The day-to-day **experiential approach** is the only one possible road to learn to love things, as it continuously gives people the possibility to express themselves satisfying the need of achievement which lies inside everyone.

The capitalisation of experience seals the achievements and makes them permanent and retrievable by every member of the organisation at light speed.

It allows anyone who needs knowledge, solutions and best practices to easily retrieve them, avoiding to succumb to the last minute 'discovery of the wheel' syndrome, giving a tremendous boost to the organisation's members learning.

If I can solve my issue in a short time, because someone else shared the solution before, I feel the value to contribute too, sharing my solutions.

In some organisations this behaviour is rewarded, and we can never underline enough the importance for individuals to be rewarded and recognized for the contributions they bring, and the positive domino effect this has on the environment.

Knowledge capitalisation and sharing is really helpful in situations where plants are spread all over the world and processes standardisation is made to be a key point.

21.3.2 The Tangible Benefits

If we look at the **tangible benefits** measurable in the balance sheet, the payback is very relevant according to all the organisations interviewed. One company declared to the Stock Exchange that the savings were **2.5 B € in less than 6 years since the beginning of the programme.**

Respondents also indicate a significant reduction of the material waste and a yield improvement (process and product quality). Also the environmental sustainability, an increasingly mandatory presence on the agenda of organisations has significantly improved through the development of the Safety and Environment Pillars included in the WCOM™ programme. The global improvement in safety and work environment conditions reduces the liabilities, and highlights the relevance of the ethical aspect of these transformations.

The dramatic improvement of OEE, with the reduction of defects and breakdowns, is said to have led to better productivity and to reduction of transformation cost.

To this we have to add better utilisation of capacity, achieved whilst avoiding increase of capital expenditure and sustaining growth.

Another benefit is the Process Speed Acceleration (Time-to-market, Lead Time), which is a key feature to be able to compete in a VUCA world where time is the parameter.

21.4 The Main Obstacles and Difficulties in the Implementation of the WCOM™ Programme?

We believe that **obstacles identification** is the most powerful resource for improvement: it is from plowing the ground from obstacles that seeds are free to grow. It is from certain obstacles that culture develops in one way or another

producing certain results and not others. Addressing the obstacles and removing them we release people's energy.

Here below we will list the main obstacles encountered, the ground where they were generated and their deep meaning as opportunity of improvement.

Leadership buy-in is essential. The role of the CEO and the top managers is strategic to make the entire organisation buy-into the programme. They have to be the example, the reference: if everybody sees them "Walk the talk" it will be easier to know what to do and to do it in the desired way.

Every misalignment or distraction of the leaders hugely impacts on the behavior of the rest of the organisation.

Leaders have to be involved in the crucial phases of the programme, in order to directly show appreciation and recognition of the work of the people. A way to do this is to involve the CEO and top managers in the audit process.

The **audit moment** must be a moment of deep listening and understanding and a moment of learning. If it is seen as a moment of judgement the big issue will be hidden and the root cause will take more time to be eradicated. If a positive climate of understanding and learning is built, people will open up to show the issues as well as the achievements and the possible improvement will be identified and followed in the timeframe to the next audit. The companies who understand this have managers who love making audits and employees who seek to be audited: the level of transparency and motivation is very high.

Another initial risk in connection with the programme implementation is the **"fashionable project of the year**" syndrome. Nowadays almost all organisations have already been subject to one or more improvement programmes. The WCOM™ Programme, if not clearly communicated, could be perceived as a project, which is definitely detrimental.

Aquite frequent pattern is the "**Not invented here syndrome**". The organisation members feel skilled and competent enough in their job and will hardly accept any external person to teach them what to do. This could also be the case, even though sometimes this resistance can hide a complacent environment where self-reference is very high and external sources of innovation are seen as threatening. Adhocracy oriented and market oriented cultures are not scared to confront with external sources of improvement as they know an external impartial eye will steer them on the way of setting higher and higher targets.

Another strong resistance could be the difficulty in **adopting the Delegation Model**, **embedded in the WCOM™ Programme** and aimed at developing autonomous leadership.

In the delegation frame the **leader** is accountable for providing **goals and clear criteria** required to achieve them. **HOW** to do it and how to provide the required output becomes the **worker's responsibility**. To say it with the TWI jargon, the

managers become leaders and their work is to **get results through the work of the people**.

Another big issue can be the **difficulty in gaining people's hearts and minds**.

To gain people's hearts, the programme sponsors have to be able to transfer what the program contains in relative to how it will positively change their working life.

If there is no intersection between the company goals and the individual's working expectations, resistance will always be behind the corner, feeding the naysayers population.

We do change if the change will bring something positive in our life. The leadership must be able to answer the question: "What do I gain from it?" for every member of the organisation, which means to be in contact with their reality. If this does not occur the strategy will not be executed and the people won't come on board the WCOM™ Programme boat.

The importance of **communication** is often underestimated and this creates serious problems in people engagement: sometimes very beautiful initiatives taken in the centre are simply not known in the periphery and vice versa. The individual and collective benefits of the initiative should always be included in the communication. It is important to communicate and repeat communication periodically, to celebrate quick wins, and to define the channels that are more suitable and strategic to this scope according to the specific organisation culture.

The why of the programme and of any initiative should be clearly defined and shared from the beginning, using a language that suits all the different needs of the organisation's population. If this is not done the initiatives are seen as a top down order which will never be executed with the same motivation a person has when the reason for doing something is clear and evaluated as convenient for that person in addition to the organisation.

Organisations are galaxies with premises spread all over the world, where the desire of centralisation can be combined with the strive to defend local cultures. In this dynamic sometimes ***"The reform did not occur in the Vatican".***

As most of the times improvement programmes start centrally and are well sponsored, they can also start in periphery, were there is less stability, the corporate culture is less influent and less cascaded top-down than in the central regions. In these realities the need to learn and change can be more urgent also with a view of showing results to the centre.

It is to be considered that, if a programme is implemented in periphery and then expanded to the centre, a certain resistance can be initially met due to the ***not invented here*** **syndrome**, because where the culture is strong and rooted there is less openness to change. Once the results achieved in periphery are verified then they buy-in from the centre will be consequential.

Another obstacle can be to **force the change** in the initial phase addressing issues that are too complex or areas that are very resistant.

The interviews reveal that the best sponsors of the change are the factories that volunteer and make themselves accountable for it. They are able to take the risk and

to demonstrate to the other factories that things can change and results can be achieved if equipped and motivated and following the proper methodologies.

Inside every factory it is necessary for the sponsors to identify a quote of people who will naturally sustain the change.

A further obstacle is that **it can't be assumed that the sites implementing the programme after the pilot sites will learn faster than them** because of the experience gained. Every site where the programme is implemented is unique and has its different learning period and learning speed. For every plant that is new to the program it is a "first" in the implementation, with unknown obstacles to overcome. It is a new way of doing things, a new culture to experience, to get to the result that they embrace it as their culture. Of course the learning process of the plants will be led the consolidated results in the pilot plant. There is however a physiological time for the change to get rooted in every plant and it must be respected.

Something that can negatively impact the change is the **difficulty to mine suitable data for loss analysis**: in fact company data traditionally is not "zero level loss oriented", but more on benchmarks and standards, so data must be investigated with a different perspective. The need to collect manual data and then to analyse this in order to find and implement countermeasures, drives to another obstacle: resourcing of the programme. We find a similar issue in the difficulty to sustain any continuous improvement programme. But we know that resourcing and sustaining is a matter of priorities, engagement and mobilization of people. Half of the book is focused on how the leadership must face these issues (Fig. 21.1).

Fig. 21.1 Common obstacles in a transformation programme (*Courtesy* EFESO Consulting ©)

21.5 ICT Role in the Transformation Programme

Reading between the lines of the five interviews we see the theme of ICT has radically changed the way improvement programmes have been led in the last twenty years. The role of knowledge transfer has changed given the vast availability of "**know what"**.

A significant consideration that has to be taken into account to have a complete overview of the changes that have occurred in the last fifteen years is the spreading of the **Internet**.

Twenty years ago delegation and independence in the periphery plants of multinationals groups was a matter of fact, as there was no possibility to widely control the management of these plants. Independence and autonomy were an indispensable requirement to survive the environment and conquer slices of the market. The central headquarters provided guidelines, targets, periodical support, made visits and audits to assess the performance consistency with the central targets, but the management style the Plant Manager used to lead his/her site couldn't be questioned, as he/she was alone in the daily life.

The WCOM™ philosophy strongly believed from the beginning in the top-down and bottom-up collaboration flow of the headquarters and the plants, in the necessity that all the sites of the organization bought-in the company vision and values to be steered by them to achieve common goals. The continuous monitoring of performance and behaviors is the way to get there. The Network worked as the natural way to contribute to ensure the communication of center and periphery, allowing virtual teams to continue what the physical teams had started with the physical distance as main obstacle.

21.6 What Are the Recommendations for Those Who Start?

The answers to the last question reflect the concern to overcome the obstacles.

Main recommendations are:

1. Align all your programmes to strategy as this is the only way to ensure top commitment
2. Involve the leadership and all the organization in the programme, ensure top-down commitment in the entire organization by identifying the group of people that will buy-into the program and always sustain it
3. Communicate the sense and the vision at all levels with a relevant language people can understand, involve HR and Unions
4. Consider the "the Reform did not occur in the Vatican". Best ideas and approaches often emerge in the periphery of the company, where there are less paradigms and constraints

5. Consider and accept cultural differences and adapt the programme accordingly in order to make targets and goals achievable
6. Lead with humility: listening to people all the time is the best thermometer of the organisation climate
7. Be passionate instilling in the organisation the need "to learn to love something"
8. Allocate the necessary resources and ask for assistance concerning know-how
9. Sustainability is a long term achievement: be patient but try to get first results asap!
10. Share recognition, especially from the leadership

21.7 Conclusion

The findings detailed above confirm that today, to master the transformation of a large organisation, a multidimensional model is needed.

1. **A sound leadership** based on Shingo Principles, with Performance Behavior approach to seal the ideal behaviors promoted in the Principles
2. **Cultural awareness** to be able to recognise and understand superficial and deep patterns and principles driving the organisation, in order to assess if there is a coherence with the organisation strategy
3. **A Loss based approach** aimed at eradicating losses, with methods and tools integrating Lean, TPM and 6 Sigma

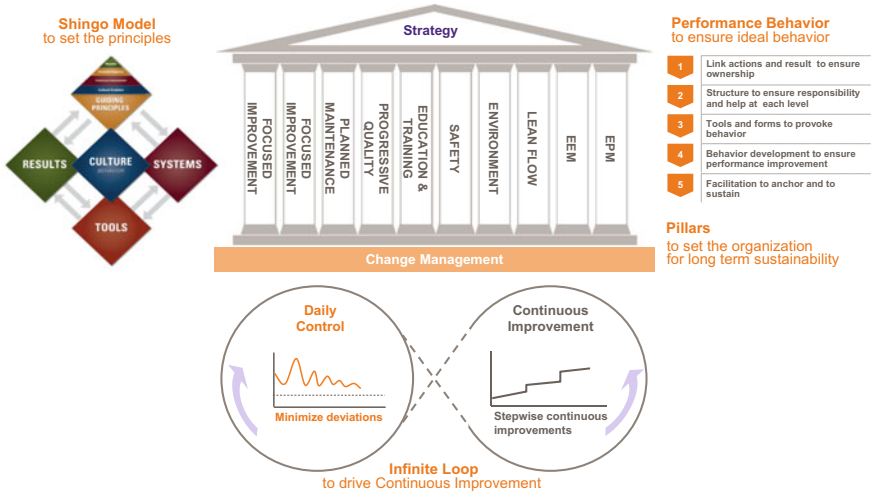

Fig. 21.2 The WCOM™ Multidimensional Model (*Courtesy* EFESO Consulting ©)

4. **A strong Programme Management** based on a sustainable systems like pillars
5. **Change management as enabler** for leadership development, obstacle removal and people engagement, integrating Kotter's steps as a roadmap for the transformation programme (Fig. 21.2)

Annex
The Value Chain Pillars in Brief

By Noela Ballerio and Carlo Baroncelli

The Pillar structure is one of the key distinctive elements which transforms a Lean project into a long term sustainable Operational Excellence programme.

The Pillar structure makes the difference between a generic improvement initiative and an organised and coordinated programme of work stream indicatives, each one addressed to Zero a specific loss.

What a Pillar Is

The Pillar is a coordinated initiative to improve the performance of the organisation and hence is a key component of any successful WCOM™ programme.

The Pillar Route is the Road Map Zero Loss in the set domain (Fig. 1).

The pillar team is a cross functional team created within the organisation with people belonging to the organisation, with the common target of zeroing a certain set of losses.

It applies a system made-up of a set of Improvement Methods and Management Systems oriented to eradicate a specific set of losses of which the Pillar is responsible, and which varies for every pillar. The pillar supports the organisation in reaching its targets, strictly connected with business and production.

The accomplishments of the target follows a given master plan, through deployments into detailed action plans that are carried out by the Improvement Teams.

Why a Pillar Is Necessarily Cross Functional

The assumption at the base of the cross functionality of the Pillar team is that issues in general, and losses in our specific case, are by their nature cross-functional: they overcome the silos of the Functions which compose the traditional line organisation, hiding between more than one function, making it difficult to be retrieved in their real amount.

C. Baroncelli and N. Ballerio (eds.), *WCOM (World Class Operations Management)*, DOI 10.1007/978-3-319-30105-1

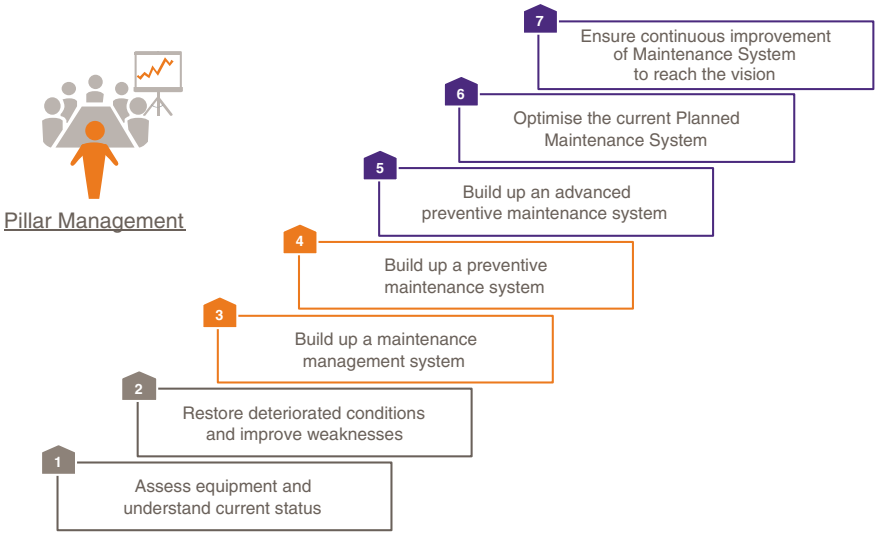

Fig. 1 Example: the Planned Maintenance Pillar Route (*Courtesy* EFESO Consulting ©)

The Pillar team is composed of motivated and empowered leaders and specialists coming from different functions, who are called to work together in synergy, bringing their expertise to the common aim: the War on Losses.

In practice they coordinate themselves and train, coach and audit all the Improvement Teams and projects which they put in place to achieve their target.

The Pillar becomes in this way the ***'trait d'union' of the different functions of the organisation*** and can so be considered as the organisation's break-through agent which breaks the function barriers to develop a clear and simple information and communication.

The implementation of a Pillar programme takes a minimum of two to three years, but some take much longer; then there comes a time when all the Pillar's activities have become a part of the normal working life of the organisation, which it the ultimate goal of the Pillar.

At that time the Pillar as interdependent structure is no longer needed as it has been absorbed by the organisation.

The Pillar composition is variable. For instance a manufacturing Pillar will be constituted by a Pillar Leader, a representative from Production, one from Quality, one from Maintenance, one from other functions relevant in the specific case.

Responsibilities and Priorities of a Pillar Team

There are **six main responsibilities** the team is accountable for:

1. Identify loss potential in the functional area of each Pillar (communicating with the Steering Committee) in such a way that data integrity is reasonably assured, the scope of losses is defined to a manageable task level, that priorities are established, and that future team planning is properly completed
2. Manage existing teams targeting loss reduction by assuring the proper use of tools and methodologies, providing needed training, removing the barriers to success, and recognizing the effort done
3. Audit on-going performance of processes previously improved by (closed) teams, using a pre-defined audit plan of Machine Boards. Assure corrective actions if performance has deteriorated (trigger points not appropriate or being ignored)
4. Standardise and consolidate the prevention systems
5. Develop and consolidate the knowledge management process related to the relevant losses
6. Continuously improve the "structure" of the Pillar. Develop "best-in-class" expertise and working tools in (Pillar) functional areas.

In the following pages you will find a set of individual sheets where for every Pillar its main elements have been identified.

The Manufacturing Excellence Pillars

The Focused Improvement Pillar	
Definition	The Pillar supports the steering committee to define cost and volumes improvement strategy, improves productivity and flexibility through reduction of set up time and labour-value-adding and non-value adding activities. It also maintains the factory cost deployment and plant-wide OEE and productivity analysis
Mission	Expand a culture of continuous improvement that is focused on the losses and driven by cost deployments by • Defining and deploying the focused Improvement strategy through the development of the OEE and volume model, the productivity model and the gap analysis • Developing the know-how, the methodologies and tools across the factory to assure efficient and sustainable capability to identify and eliminate losses • Developing the factory control system to ensure the continuous application of the world class standards achieved
Vision	Lead the factory to zero productivity losses in three years
Loss ownership	• Specific machine losses (e.g. set-up time) • Labour productivity

Courtesy EFESO Consulting ©

The Autonomous Management Pillar	
Definition	The pillar organises the direct participation of the production operators in the early detection of abnormalities and simple maintenance tasks, including daily checks and lubrication Deploys simple preventative maintenance tasks to allow maintenance technicians to work on process enhancements
Mission	Improve the plant conditions and change the function of the operators with autonomous qualification. As a result, operators are gradually assigned the responsibility of the equipment, the product and the production environment. A culture change embedded in the process
Vision	Creation of autonomous production teams who maintain and inspect the machines by themselves, providing an optimal, stable production process, aiming at reducing anomalies and improve standards to ensure a world class level production
Loss ownership	• Losses caused by equipment not being in the basic condition as contamination, wear, lack of maintenance • Losses due to lack of good housekeeping and organisation

Courtesy EFESO Consulting ©

The Planned Maintenance Pillar	
Definition	The pillar defines the system to increase plant reliability and to reduce maintenance cost through the development of the Preventive Maintenance system, Time-Based and Condition-Based. This Pillar supports Autonomous Management These achievements can be accomplished with a three phase programme, organised into seven steps and implemented in three years
Mission	Establish and maintain the optimal equipment and process conditions at the minimum total maintenance cost Develop a world class maintenance system to support operations
Vision	Lead the factory to zero reliability, availability and maintainability losses in three years
Loss ownership	• Breakdowns • Speed losses (if not in FI) • Technical short stops • Planned Maintenance losses • Labour/resource management (internal and external) • Spare parts management

Courtesy EFESO Consulting ©

The Progressive Quality Pillar	
Definition	The Pillar defines conditions and process variables to deliver product quality It also defines the system to eradicate the sources of quality losses and maximise customer satisfaction through product/process optimisation integrated into the existing quality systems (e.g. ISO 9000)

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The Progressive Quality Pillar	
Mission	Define, implement, maintain and continuously improve the conditions for a production free from defects
Vision	Lead the factory to zero defects in three years
Loss ownership	• Claims and complaints • Defects • Quality waste

Courtesy EFESO Consulting ©

The Education and Training Pillar is not limited to Manufacturing Excellence, it extends to the entire Value Chain Excellence	
Definition	Every change in technical or organisational matters creates the need to prepare employees for these changes Therefore all employees need to be educated to develop their leadership with a unified as well as individual programme and need to be trained to improve their technical skills The Education and Training Pillar is expected to be a solid base on which the other Pillars of the entire value chain can be built up • It develops training systems linked to the company targets • It makes the skill assessment (gap analysis) and development for all functional areas • It supports the change in roles (e.g. autonomous teams in manufacturing) • It provides to personnel development (skills and leadership) supporting all the Pillars in training
Mission	Ensure competence and organisation development in accordance with the company's continuous improvement journey
Vision	All employees roles fit with their skills, talent are discovered and followed to be developed at best for the maximum profit of the continuous improvement journey
Loss ownership	• Losses caused by lack of leadership • Losses caused by lack of know-how and skills, poor understanding of standards on quality, safety, reliability and new equipment

Courtesy EFESO Consulting ©

The Safety Pillar	
Definition	The Pillar develops the Accident Prevention System (people and workplace)
Mission	Ensure a safe workplace developing the "0" Accident System and promoting a correct behaviour on all levels Guarantee a workplace safety improvement is the first priority Accidents are similar to icebergs and the Pillar provides techniques for assessing risks and develops preventative or corrective contingency measures To achieve "0" accidents is a matter of corporate behaviour: the lessons learned from past experiences must be treasured

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The Safety Pillar	
	This mission is fulfilled through the Pillar route resulting in products, processes and systems designed in such a way that energy, raw materials and other resources are used efficiently
Vision	Lead the factory to zero accidents in three years
Loss ownership	• Accidents (lost time, minor, near misses) • Safety risks

Courtesy EFESO Consulting ©

The Environment Pillar	
Definition	The Pillar is in charge of the Environmental Compliance and Incident Prevention System
Mission	Address the eco-responsibility of a company, reducing both environmental impacts and costs. This means reducing **losses** by **changing practices**, **process**, **behaviors** and **management system** to fully integrate environment within the operational excellence After diagnosing the plant's environmental performance, the Pillar deploys clusters of actions related to process, buildings, utilities and behaviors, covering water, energy, waste, pollutants, noise, etc. and contributes to enriching the whole management system
Vision	The company has reached the Zero Impact, in other words the eco sustainability. The company has an upper level of performance by deploying an environmental excellence approach. Environmental excellence brought the company new levers of competitiveness for the value chain on the whole and also levers to anticipate and take opportunities from raising challenges: economic vulnerability to fossil energy, regulation constraints, raising cost of waste treatment
Loss ownership	• Effluent, rejects, emissions, solid waste disposal • Energy overconsumption • Environmental incidents • Environmental risks (disaster, flood, fire …) • Regulatory non-compliance

Courtesy EFESO Consulting ©

The Early Equipment Management Pillar	
Definition	The Pillar develops a system to introduce new equipment quickly, error free with planned process capability, easy to operate and maintain, with clear operating instructions
Mission	Implement practical methods and test methods for the planning and execution of projects for new equipment, including experience from WCOM™ for continuous improvements
Vision	The production processes have the highest efficiency and low life cycle costs with minimal start-up time

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The Early Equipment Management Pillar	
Loss ownership	• Budget overruns • Delays in the installation and/or commercialisation of new equipment • Gap between performance of new equipment and design standards • Inability to supply customers (internal/external)

Courtesy EFESO Consulting ©

The Early Product Management Pillar	
Definition	The Pillar develops a system to meet customer/market needs with reduced cycle times from R and D to commercial supply
Mission	Reduce the time to market and the product life cycle cost through the EPM innovation management system
Vision	The ideal life cycle cost has been put in place through the EPM Pillar route in about two years
Losses ownership	• Delays in the introduction of new products • Lack of fit between product and chosen platform (process capability, width, economy…) • Process problems and additional losses caused by new product commercialisation • Lack of performance of new products versus customer needs • Lost sales opportunity

Courtesy EFESO Consulting ©

The Supply Chain Excellence Pillars

The Lean Flow Pillar belongs either to the Manufacturing Pillars as to the Supply Chain Pillars

The Lean Flow Pillar	
Definition	The Pillar contributes to simplify the process flow aiming at making it lean, a state which is fundamental to integrate the plant with the global supply chain, passing from a department to a product flow factory. The tool used to make the flow lean is the Value Stream Mapping, which helps describe the current state of the system and apply the required improvements. The KPI (Key Performance Indicator) of Lead Time (LT) is introduced, intended as the indicator for measuring all sub-processes in offices, production, warehouses, transportation, with respect to customer needs
Mission	Reduce the Lead Time by removing production constraints from the plant and developing the factory planning system, thus reducing the costs
Vision	To ensure the Operating Site (Plant, Distribution Centre, Retail Store etc.) supports a perfect value stream, with zero waste

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The Lean Flow Pillar	
Loss ownership	• Lead time losses (Seven *Muda*): Waste of overproduction, waiting, transport, over-processing, inventory, movement, defect and rework • Not OTIF (On Time In Full)

Courtesy EFESO Consulting ©

The Plan to Serve Pillar	
Definition	The Plan to Serve Pillar aims to improve "end to end" supply chain planning performance resulting in improved customer service, improved supplier management, reduced inventory and complexity, a more synchronised planning process
Mission	Deliver customer value and service at the lowest total overall business cost
Vision	Develop business capability to anticipate, respond to and fulfil customer demand such that costs, service and assets are optimized over the extended supply chain
Loss ownership	• Excess finished goods inventory • Excess work in progress • Obsolete inventory • Unnecessary complexity • Inefficient planning processes • Customer orders not fulfilled • Supplier service • On shelf availability • Customer claims • Forecast accuracy • Lack of material/component shortages • Errors/rework in business processes • Non value adding service

Courtesy EFESO Consulting ©

Logistic Focused Improvement Pillar	
Definition	The Pillar improves delivery performance to the customer resulting in transport optimisation, warehouse optimisation and cost reduction, improved resource utilisation, improved Internal and external collaboration
Mission	Improve the execution of logistics operations through efficient asset utilisation and labour management, to deliver the required standards of service at optimal cost
Vision	The physical logistics capabilities that ensure goods are available to the customer in the right quantity, at the right place and time and at the appropriate levels of cost and quality
	Delivery loss examples:

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Logistic Focused Improvement Pillar	
Loss Ownership	• Damages • Truck utilisation • Warehouse capacity utilisation • Picking productivity • Truck waiting time • Double handling and rework • Excessive lead time • Customer delivery process efficiency • Transport and Warehouse fixed cost • Inefficient routing • Late deliveries • Overall service level performance (OTIF)

Courtesy EFESO Consulting ©

Reverse Flow Pillar	
Definition	The Pillar defines the future state vision, the ownership of KPIs relating to **Recycling and Reverse Logistics** It sets up the Loss Eradication Measurement System linked to business priorities for the "closed loop" and sustainable supply chain, including management of improvement teams (Audit System) against defined objectives
Mission	Improve visibility of materials required to be returned, reused or recycled and to develop effective processes to accelerate the flow, reduce shrinkage and optimise capital usage
Vision	Manage the reverse supply chain to a similar professional standard as the outbound flow of goods
Loss ownership	• Asset circulation time • Market losses • Sortation • Material shortage • Damage • Handling • Transports inefficiency

Courtesy EFESO Consulting ©

The Business Process Excellence Pillars

The world class Office Management Pillar	
Definition	The Pillar takes care about the eradication of all the losses related with the work environment designing a workplace where everything is in the right place and organised in order to boost the office performances
Mission	The Pillar highlights and eliminates all sources of waste, establishing optimal conditions and working to achieve them, making office work visible and fluid
Vision	Create a clean, tidy and efficient office, pursue productivity improvement
Loss ownership	**Productivity losses**: • Waiting for instructions • Waiting for machine • Scheduling loss • Unbalanced workload • Searching • Walking • Set up • Avoidable manual work • Ineffective meetings

Courtesy EFESO Consulting ©

The Lean Process Pillar	
Definition	The Pillar takes care about the eradication of all the losses linked with the business process flow in an end-to-end view designing a flawless execution free of waste and customer oriented
Mission	Identify the important processes that deliver value to the customer and find the wastes that prevent flow in the current structure Deploy the wastes into losses and define which improvements that is necessary to reduce variations in the process Create flow by using Lean principles (JIT, Jidoka, Heijunka, Flow, Pull)
Vision	A perfect value stream where the offer is flowing through the process steps at high speed without stops and unnecessary work
Loss ownership	**Delivery losses**: • Batching/frequency • Queuing • Speed loss (inefficiency) • Rework • Duplication • Quality **Quality losses**: • Over specification • Check/inspection • Errors

Courtesy EFESO Consulting ©

The Procurement and Cost Management Excellence Pillars

Spend Management Pillar	
Definition	The Pillar improves the procurement performance as far as the best price for the goods or service is concerned Procurement capabilities are developed in sourcing strategy, supplier scouting, bidding, negotiation and definition of saving control system that allows to continuously monitor spend categories and capture opportunities from supplier markets
Mission	Create a procurement spend management system that continuously eradicates commercial losses on spend categories by applying best practices, benchmarks and cross-functional levers
Vision	Develop capabilities to ensure that goods/services are acquired with the best sourcing strategy and the best purchasing price from the market
Loss ownership	Examples related to **commercial losses—higher price**: • Volume fragmentation, range complexity • Lack of competition, narrow specs limiting qualified suppliers • Lack of price/cost models applications, leading to price volatility Examples related to **commercial losses—underperformance**: • Uncontrolled spend, maverick buys • Non Value Added activities in the overall process • Poor negotiation practices, higher margins left to suppliers

Courtesy EFESO Consulting ©

Supply and Supplier Management Pillar	
Definition	The Pillar supports the Procurement office to ensure effective relationships with suppliers and to support procurement operations as far as supply chains with suppliers are concerned. The Pillar has solid grounds on contract management through the lifecycle and spans from measuring the supplier performance in order to set targets and continuous improvement, to integrating operational excellence in supply chain and eventually processes to integrate suppliers upstream, leveraging their innovation and co-design capabilities
Mission	Create a procurement supplier relationship management system that, based on sound contract management footprint, ensures loss eradication in supplier integration and collaboration through-out the value chain, from design to supply chain, operations and service, in a continuous improvement perspective
Vision	Develop capabilities to ensure that supplier relationships and supplies are managed in a zero loss perspective
Loss ownership	Examples of **losses on supply performance**: • Delivery issues (delays, outstanding, incomplete, etc.) • Quality issues (defects, deviations, costs to compliance, etc.) Examples of **losses on supplier performance**: • Lack of alternative sources • Untapped know-how • Reputational risks

Courtesy EFESO Consulting ©

Product Cost Management	
Definition	The Pillar supports advanced procurement strategies for product and service competitiveness by approaching optimization of demand, requirements, complexity, inherent cost and connection with design, performance and ultimately customer value
Mission	Create a procurement cost management system that, based on strong cost analytics and cross-functional collaboration, ensures that sourced products and services reach the higher value for money ratio, by reducing all technical losses related to technical levers such as demand, requirements, design
Vision	Develop cost management capabilities that ensure the specification and sourcing of products where technical losses due to demand management and product design are managed in a zero loss perspective
Loss ownership	Examples of **Technical losses related to demand management**: • Over/under specification • Lack of challenge to internal needs • No procurement participation in budgeting process Examples of **Technical losses related to product design**: • No modular design, no variety reduction efforts in design • Lack of co-design with suppliers

Courtesy EFESO Consulting ©

The Innovation Excellence Pillars

Innovation Management Pillar	
Definition	The Pillar aims at developing the capability of people of identifying valuable ideas and convert them into profitable initiatives. Competitiveness is strengthened by harmonizing the portfolio with the long term company strategy. It covers all the early phases of idea generation concerning brands, products and processes, by involving internal and external resources (e.g. in open innovation) on product and technological roadmaps
Mission	Increase the value generation flow through new profitable brands, new products, better positioning
Vision	The company is ahead of competitors in targeted markets thanks to superior innovative brand and products
Loss ownership	Missed opportunities due to • Delays in time to market • Unfeasible projects • Unmet market needs • Lost life cycle profit for lack of creativity

Courtesy EFESO Consulting ©

Lean Agile development pillar	
Definition	The Pillar achieves excellence in R&D by converting the projects selected from portfolio into actual products and services timely launched on the market. It smashes project lead time and/or increase productivity (projects/FTE) by shaping the organization and processes according to unique lean/agile paradigms
Mission	Increase responsiveness and reliability in project launches through a smooth flow of projects, respect of cadence for the market, leveraging the right capabilities and using knowledge capitalization
Vision	When the Lean Agile development system is fully implemented, the flow is levelled and pulled by bottleneck resources, projects are organized in lanes according to speed and Lead Time and the allocation of resources to projects is flexible Risks are managed upfront to avoid loop-backing Gate reviews are in place to detect clearly potential problems and stop when needed
Loss ownership	• Waste of productivity value and success rate in projects due to perturbation of scatter • Hand-offs and wishful thinking

Courtesy EFESO Consulting ©

Lean Design Pillar	
Definition	The Pillar aims at increasing competitiveness through a more cost efficient product and supply chain design. In the product design and supply chain process, the focus is usually on reducing just material cost. Very little attention is paid to the total cost of ownership. For example, leaner factories and reduced cost of complexity are the typical main effects of this pillar
Mission	Achieve the functions required by the customer with a very efficient and lean supply chain with the lowest cost of operations (value stream efficient design)
Vision	The overall total cost of new generations of products/services is optimized
Loss ownership	• Losses built-in product design (e.g. non value added materials cost vs. desired functions) • Losses built-in the design of supply chain

Courtesy EFESO Consulting ©