

ABSTRACTS OF THE 20 CHAPTERS OF THE BOOK “LEAN IN ACTION”

Abstract of chapter 01 “Key Ideas of Lean Production”

One of the many definitions of Lean Production. The actual change in the picture of performance efficiency. The long back-story of today's production planning and organisation models and systems. On production efficiency in the conditions of mass and large-series production. How it came into existence and who were the forefathers of the Toyota Production System? Where, how and why were Lean Production ideas and principles born? Zoological interpretation of the Product Life Cycle Theory. Companies are divided into hawks, lions, and jackals. This division follows from the positions of the companies in relation to the different phases in the life cycle of their products. This chapter explains the different significance of Lean production for the three types of companies – hawks, lions, and jackals. Lean's role for increasing the overall efficiency of any production and business.

Key words: Production planning and organisation systems. Mass and large-series production and short series production. Lean production and management. Kaizen and Kaykaku. Product life cycle.

Abstract of chapter 02 “Description and Measurement of Production Parameters”

Lean is a typical representative of the factographic and factological approach to production's efficiency and to business efficiency in more general. This approach has three steps, more precisely: (1) collecting objective data for real facts, (2) rigorous quantitative and qualitative data analysis, and (3) decision-making based on the conclusions of these analyses. There are production parameters that we must describe or measure, in order to stand on solid ground in our Lean endeavours. We will look at capacities and throughputs, stocks and queues, tacts and cycles, main production times and other production times, as well as technological cost limits (also called Norms or Standards) for consumption of production resources. We will also see the hidden subjective reasons for concealing and distorting the data on real production capacities and real technological spending of resources.

Key words: Capacities and throughputs. Stocks and queues. Tacts and cycles. Main production times and auxiliary production times. Technological cost limits for consumption of production resources.

Abstract of chapter 03 “The Seven Muda”

Three Japanese words – Muda, Mura, and Muri. What do they mean? What's their connection? In any production there are some or other excess resources and activities (Muda) – excess in the sense that they do not add value to the customer. As a result of Muda, the production has no rhythm, it flows in thrusts. This is Mura (unevennesses) – working with peaks and dips, with moments of downtimes. In uneven production, we complicate the management system, supposedly in order for it to cope with the unevennesses. But complicated management is sluggish and makes mistakes. This leads to irrationalities. They are Muri. Muri lead to new Muda (excesses), Mura (unevennesses) grows even more, and the management system (new Mura) becomes even more breathless. It is a self-enforcing vicious circle. We will learn more about the Japanese classification of Muda into seven groups (overstocks; queues, waiting, and downtimes; transportation of things and moving of people; movements of different parts of the body; excess operations (overprocessing); bad quality; overproduction). How the Muda are manifested and what they are due to? This will tell us what we need to do to reduce and even eliminate them. We will distinguish the meaning of two different categories – surplus resources and reserve resources. We will see cases of reconciliation with certain “tolerable” kinds of Muda in order to avoid other “always intolerable” kinds of Muda. We will see cases in which we deliberately convert some types of Muda into other types of Muda.

Key words: Muda, Mura, and Muri. Overstock. Excess. Unevenness. Irrationality. Queue. Waiting. Downtime. Transportation. Moving. Movements. Overprocessing. Bad quality. Overproduction.

Abstract of chapter 04 “Value Stream Mapping”

Value Stream Mapping (VSM) is known as a main method on search for Muda. VSM consists in constructing a pictogram. A pictogram is a block diagramme of stylised images depicting the elements of the production flow: workplaces, capacities, resources, times, etc. The pictogram shows all the processes that the product goes through, starting from its initial state and reaching a final state. The pictogram illustrates which processes add customer value to the product and which processes do not add customer value and are excess for the customer. The method VSM is not widely used in Bulgaria. There are not many such companies. The explanation is that the subsidiaries of foreign companies in Bulgaria implement certain Lean tools, slightly off-the-cuff, like a kind of broad-spectrum antibiotic which kills every germ without diagnosis. There is not an objective need for one Lean tool or another but these tools have been imposed on the subsidiaries by parent companies without being selected by Muda diagnostics performed using VSM. In addition to VSM, there are some other and not less effective methods for searching Muda in the production flow. However, we are curious to learn more about VSM, at least because we are obliged to pay respect to this method.

Key words: Added Value. Customer Value. Value Stream. VSM pictos. Types of Value Stream. Current-State Map. Future-State Map. Chronograms. When Can VSM Help Us? VSM objectives. VSM as a part of Lean Toolkit. First Tips to Creating a VSM. Information for VSM. Contents of a VSM. Analytical Part of VSM. VSM Results.

Abstract of chapter 05 “5S System at Workplace”

The idea is to perform cyclically five steps that will lead to the rationalisation of the organisation of workplaces (or work sections). The five steps of the 5S System are: Sorting! – 1S, Straightening! – 2S, Shining! – 3S, Standardise! – 4S, Sustain! – 5S. Step one – Sorting! Select everything you need and eliminate everything unnecessary or superfluous, so that there is everything you need in the workplace and there is nothing unnecessary or superfluous (unnecessary or superfluous for the current work done there). Step two – Straightening! Arrange the workplace in such a way as to guarantee, on the one hand, harmless and safe work and, on the other hand, to simplify and facilitate the work of the worker as much as possible and mainly with a focus on the times-shortening of the main and auxiliary operations. Step three – Shining! Cleanliness in many industries is an element of the technology itself. Withal, cleanliness has another side. When the workplace is clean, it affects you motivating. If you work in a pigsty, you feel like a pig. The rules for the first three steps (Sorting, Straightening, and Shining) should be defined and shown to the people who will perform them in an understandable and unambiguous way. This is step four – Standardise! It is about creating and explaining to people the right sorting standards, the right straightening standards, and the right shining standards. The achievement of these four steps must be strictly sustained and continuously improved. This is step five – Sustain! It is not enough to have rules for sorting (selection), straightening (arrangement), and shining (cleaning) and to have them announced and explained in an appropriate way. In this Chapter of the book, there are some verified and useful instructive notes for implementing the 5S System – do one, do two, do three... There are guidelines as well – do this and do that. There are recommendations – it's better to do this, not that. There are prohibitions – don't do this or that. There are examples that make it easier to choose a best solution.

Key words: 5S System at Workplace. Workplace types. Workplace configuration. Work zone. Adjacent zone. Buffer zone. Depot zone. Red tag. 5S planning. 5S implementing. 5S team. 5S audit. 5S leader.

Abstract of chapter 06 “Short Series Production”

There is a tendency for the production series to become shorter and shorter. But even with the long series, there are a number of advantages to deliberately dividing them into shorter sub-series. A central idea of Lean Production and of TQM is the idea that artificially and deliberately dividing the

long series into shorter series leads to benefits. The biggest benefit of the short series is that attention is more focused and there is a pronounced desire to produce quality products from first time. We will discover the benefits of short series – production, technical, economic, commercial – of having production organised in a mode of shorter series. Organising production in shorter series has its problems. We will look at them and point out some practices we can use to overcome them.

Key words: Short Series. Flow acceleration. Loading levelling. Stocks and Work-in-Progress reduction.

Abstract of chapter 07 “Single-Minute Exchange of Die”

Why is it necessary a quick change, adjustment, and readjustment of equipment? Sometimes the execution time of a short series may be commensurate and even shorter than the time to readjust or change the equipment. The short series does not coexist well with slow readjustment and change of equipment. It is interesting to know how it is achieved in Formula 1 bolids that when they enter the pits, their four wheels are changed for new ones in two seconds. The same result of chortening times can be achieved in production if we master the SMED method – an acronym for Single-Minute Exchange of Die. The abbreviation SMED should be understood as Replacement of a tool for zero time. We will find out more about the original and non-trivial organisational ideas and about the numerous and elegant technical solutions of the SMED method. We will see take a look indicative illustrations of how to apply SMED in practice. The SMED method is not limited to quick adjustment and change of equipment. SMED method is successfully applicable in many and different areas – wherever there is a need to shorten the Lead Time of a process, operation, or other activity.

Key words: SMED, short series, Lead time, waiting, adjustment and readjustment of equipment, change of equipment, materials uploading and downloading, repair and maintenance of equipment.

Abstract of chapter 08 “Total Productive Maintenance”

Total Productive Maintenance (TPM) is based on two ideas. The first idea is for the maintenance to cover all monitoring, servicing, preventative, and adjustment activities in a rational balanced ratio. The second idea is for the maintenance to become a task for all company units, for all categories of personnel and for all to have a committed attitude to the technical suitability and technological accuracy of the equipment. Maintenance. Productive maintenance. Total maintenance. Overall Equipment Effectiveness. Loss-generating equipment. Invisible losses in equipment. No-productive times of equipment. Increase the productive time of equipment. First level maintenance. Training of workers. New role of maintenance professionals. Autonomous maintenance. Centred maintenance. Planned maintenance. Preventive maintenance. Predictive maintenance. Complex maintenance. Quality of maintenance. Jidoka. Jidoka Yokoten. Evolution from Jidoka to Autonomation. Suppliers of maintenance tools, parts, and consumables. Assisted maintenance. Managed improvements. The 5S System at Workplace and SMED as a basis of TPM. First steps and risks in the implementation of TPM.

Key words: TPM. Overall Equipment Effectiveness. Autonomous maintenance. Centred maintenance. Planned maintenance. Preventive maintenance. Predictive maintenance. Jidoka. Jidoka Yokoten.

Abstract of chapter 09 “One-Piece Flow and Continuous Flow”

One of the ways to achieve continuous and levelled flow is to abandon the batch model of production and reorganise it into a system of related One-Piece Flows – the products be made one by one and the operations be carried out one by one. In Just-in-Time System we create a continuous and levelled flow based on one-piece or similar flows that we manage by pulling and refilling. We will look at the characteristics of the different types of production flows – sequential flow, tree flow (straight tree and inverse tree), and network flow. We will analyse in the aspect of continuous flow, what are the pros and cons of the most widespread and still applied production organisation

models – machine-shop organisation, technological organisation, and product organisation. The many and different varieties of island organisation will be shown. We will see the organisational models for achieving a levelled production flow. The production flow, even if it is continuous flow, will suffer internal losses if it does not flow smoothly, if it flows in thrusts of varying intensity over time. We will find out what internal factors in the flow prevent its levelling. These are the unequal or non-multiple each other capacities of operations and processes. Also, these are the unequal or non-multiple each other times of operations and processes. Flow disruption may come from inadequate capacities and/or very long auxiliary operation times relative to their respective main operations. The flow is also disrupted also if the repeated and corrective operations are done in places where their respective main operations are also done. Disruption may also be due to the capacities of some group processing tools do not correspond to the length of the series – I am talking about a uneven or not multiple number of units in these resources, if there is more than one group processing along the flow. Levelling is influenced by the return of the product back against the flow. Poorly managed bottlenecks not only disrupt the flow but also limit the total throughput of the entire production.

Key words: One-piece flow. Continuous flow. Levelling. Island organisation. Heijunka. Heijunka box. Standardised work. Chaku Chaku. Variable topology of equipment. Fast and slow flow. Layout revision.

Abstract of chapter 10 “Inverse Planning and Pull Flow”

Inverse Planning is planning “backwards” – planning which starting from the moment of delivery of the product to the customer, going through all the previous stages of the production cycle of the product until we reach the technological preparation of production, including orders for materials to suppliers and requests for products and services to cooperating subcontractors. One of the non-trivial ideas of Inverse Planning although it may seem meaningless and even absurd at first glance, is to start producing as late as possible relative to the moment of delivery of the product to customer. Why we make this – because if we start producing earlier, we accumulate an unnecessary unfinished product. The main idea of Pull Flow is that each operation or process commands upstream operations and processes – what products and in how quantities to produce, when and where to move them, when to start them and when to finish them. Unlike Push Flow, where one operation has to produce a certain amount of product to feed the next operation, and only then can the next operation begin. The means of pulling assignment (Supermarkets and Kanbans) are described. The three types of pulling systems (A, B, and C systems) are explained. What reserves of time and reserves of resources should be provided in Inverse Planning is clarified. When summing up One-Piece Flow and Continuous Flow with Inverse Planning and Pull Flow (and a number of other Lean tools), we come to the emanation of Lean – the ingeniously simple Just-in-Time Production and Delivery System.

Key words: Production planning. Levelling. Push flow. Pull flow. Upstream operations. Work-in-Progress. System type A (Supermarket system, Fill-up system). P-R control system. System type B (Orders/FIFO System). System type C (Mixed system Filling/Orders). Withdrawal from the site for group processing. Mixed pull-push flow. Mixed push-pull flow. Just-in-Time Production and Delivery.

Abstract of chapter 11 “Just-in-Time Production and Delivery”

The emanation of Lean is the Just-in-Time Production and Delivery System. We will find out how the system works, whether it is easy to implement, whether we can implement it at all, and what conditions we will have to create in advance. Just-in-Time Is not Implemented by Itself. Principles of Just-in-Time. Misconception of Just-in-Time. Effects of Just-in-Time. Transparency as element of Just-in-Time. Visualisation of the assignments through Kanbans. Rules for efficiently using the Kanbans. Types of inter-operation stocks in Just-in-Time. Interruptions along the production and delivery chain. Prerequisites for imposing Just-in-Time. Organisation for implementation of Just-in-Time.

Key words: Just-in-Time. Pull flow. Short series. Levelled flow. Production Kanban. Relocation Kanban. Andon. Transparency. Cellular organisation. Proportioned production and logistics series.

Abstract of chapter 12 “Lean Production and Bottleneck Management”

A bottleneck in a production system is an insufficiency of some resource – insufficient productivity or capacity of a given workplace, machine, or other work centre, or insufficient throughput of a given production or logistic unit – a section, workshop, warehouse or laboratory. A bottleneck, in the broad sense of the word, is a company resource with insufficient potential which limits the company from unleashing its full potential. A bottleneck may be at the technological level or at the capacity of the power supply. A bottleneck may, unsurprisingly, be the personnel or the management. Physical model of the bottleneck. Attention to the capacity of bottlenecks. Types of bottlenecks. Causes of blocking. Control before or after the bottleneck. The bottleneck should be managed as a “Special Process”. Extensive unblocking of bottlenecks. Intensive unblocking of bottlenecks. Bad ways to force unblock. Important rules of unblocking. The bottleneck may originate with the technology. The bottleneck may originate with the product design. Lean product & process development. Bottleneck recognition if it is at the beginning of the process. A bottleneck at the end of the process increases the time of the entire process. What do we do if bottleneck is an auxiliary operation? Flow levelling by balancing of bottlenecks. Expanding of bottlenecks in case of shift work. Let's expand external bottlenecks too. A task to change limiting conditions. Managerial curling. Tourist backpack task. Bottleneck management. A lesson from traffic jams. Movable bottlenecks. Efficiency and perspective of products. ABC analysis by product saleability. Product groups and bottlenecks. More risks of self-blockage in a bottleneck. Rush orders and bottlenecks. The greatest bottleneck in any company.

Key words: Bottleneck. Bottleneck management. Capacity. Throughput. Blocking. Unblocking. Self-blockage. Flow levelling. LPPD (Lean Product & Process Development). Special Process. Rush order.

Abstract of chapter 13 “Lean Production and Queues Management”

Queuing Theory was founded in 1908 by Agner Erlang, a Danish engineer and statistician, to resolve mathematical problems for managing traffic calls to and from a rural telephone exchange. Queuing Theory generated worldwide interest and gave strong impetus to the development of a number of applied aspects of Mathematical Statistics. Queuing Theory was completed in general terms in the late 1930s. This theory is a mathematical theory, but we are not interested in its mathematics. We are interested in its philosophy regarding the queues, waiting, and downtimes that are formed in every production process and unbalance and slow it down. Queuing Theory helps Industrial Logistics and Industrial Engineering. It also has an important place in Lean Production. The task of the Queuing Theory is to reduce queuing. A big Muda in any production are the queues, downtimes, and waiting. The three main ways of shortening queues are considered: 1) Regulation of production capacities. 2) Disciplining queues of customer and production orders. 3) Shortening of times of operations. Queuing Theory defines various ways of disciplining the queues of customer and production orders, aimed to increase the efficient use of production resources. Useful guidance is given on what to do to shorten the various types of auxiliary times that always delay the operations and processes. The main task of Queuing Theory. Capacities regulation. Why don't we regulate the demand... Priorities of orders. Priority according to acceptance moments of orders. Priority by order execution times. Priority according to the costs of fulfilling the orders. Priority according to the risks of late production. Prioritise orders that don't shake up the flow. Priority of technologically validated orders. Grouping of orders by technological similarities. Anti-Pareto priority. Priority with elimination of the critical delays. Priority of small orders. The “customer's submarine” priority. Increasing priority of the pending orders. Random selection priority. What determines the priorities? How to get rid of parasitic times? Ways to shorten the operation times. Squeezed production factors. The role of technological devices. Shortening the total time by process decomposition.

Relieving the queue of orders. Slowing down the flow of orders. Who is waiting for whom in production ?!

Key words: Queues. Waiting. Downtimes. Capacities. Throughputs. Capacities regulation. Disciplining the queue of orders. Order's priorities. Operation times shortening. Parasitic times. Critical delays.

Abstract of chapter 14 "Lean Production and Stock Management"

Stock Theory was born in 1913 when a team of mathematicians led by Ford Harris set out to determine the sizes and terms of replenishment of wartime stockpiles at the request and assignment of the Pentagon's Rear Department. Stock Theory evolved almost in parallel with Queueing Theory and the two theories stimulate and complement each other. Stock Theory was finalized as a theory by Robert Wilson in the mid-1930s. Unlike today, prior to the 1960s, there was no strong practical interest in optimisation models for stock management. These models require a large computing power, and computers did not possess it at the time. The main task of Stock Theory is to optimise the average and boundary levels of different types of stocks and to reduce the associated costs and losses. There are four types of stock management strategies – management "by level", management "by time", "if possible" management, and "if needed" management. Pros and cons are explained, as well as which strategy is applied where and when. Different costs and losses associated to stocks are given. Against this background, the modern tendency of more frequent deliveries in smaller quantities is explained. Stock Theory provides solutions of two important practical tasks. The first is to determine the optimal average stock level, which balances the costs of delivery with the costs of storage. The second task is to determine the optimal ordering level, which balances the losses due to surpluses with the losses due to deficits. The important role of ABC analysis of stocks is shown. It is a simple method which simultaneously simplifies the management and increases the security of supplies. In industry, there are maintained three types of stocks: stocks of materials, stocks of unfinished products (stocks between operations and between production units), and stocks of unshipped finished products. In industrial production, these three types of stocks are large Muda. The numerous factors that lead to the increase or decrease of each of these three types of stocks are indicated. Stock Theory and Queueing Theory are pillars of Industrial Logistics and Industrial Engineering as well they are pillars a number of good practices of Lean Production.

Key words: Stock. Overstock. Material stocks. Inter-operation stocks. Expedition stocks. Stock level. Ordering level. Stock management strategies. ABC analyse of stocks. ABC management of stocks.

Abstract of chapter 15 "Daily Management"

If the process is standardised and therefore there are standards for its proper functioning, if this process is monitored to check that it remains within the norms, and if we have prescribed measures to react to possible anomalies (deviations from the norms), we simplify its management, and that mostly at banal deviations – deviations that have been repeated and we know them already. By applying prescribed measures to already known and well-studied anomalies, we accelerate correction actions and bring them almost to a state of automatism. The more widely applied means of visualising anomalies are shown with examples. The seven basic steps to implement Daily Management are presented in detail. The essence of the vertical and horizontal escalation of problems is explained. Many methods for rapid analysis and rapid response to anomalies are described. The pros, cons, and some misconceptions about Daily Management are analysed.

Key words: Daily management. Shop floor management. Visual management. Gemba. A3 Report. Quick response quality control. 3C Method. 8D Report. Escalation Management. Kata Philosophy.

Abstract of chapter 16 "Overall Participation in Continuous Improvements"

The Kaizen teams and their work. In the beginning, the idea was to spontaneously involve workers in the process of improvement. Over time, the idea evolved into Kaizen teams with wider and less spontaneous involvement. If we delve into their background, Kaizen teams are the offspring of

Quality Circles. We will see which methods of data analysis and problem solving are most often used by Kaizen teams and what types of tasks they are focused on. We will learn what environment is needed for Kaizen teams to operate effectively. We will find that, in addition to contributing to the improvements, Kaizen teams have a role to play in contributing to people's commitment to the company and work. We will touch on the mistakes and some bad practices in the Kaizen activities.

Key words: Continuous Improvement. Participation. Involvement. Quality circle. Kaizen. Kaizen team. Kaizen result. Kaizen cycle. Kaizen Event. Kaizen Blitz. Jishuken. Kaizen Workshop. 5G Methodology.

Abstract of chapter 17 “Lean Thinking and Anti-Lean Thinking”

In recent decades a range of books appeared presenting in American and European style the Toyota Production System. One of these is the book LEAN THINKING by James Womack and Daniel Jones, which is available in every serious bookstore. This fascinating book explains the ideas of Toyota Production System, and Lean Production is nothing more than an adapted Americanised variety of it. There are differences between Japanese production efficiency systems and their various American and European cousins. The Toyota Production System contains two completely different packages. One package is technocratic – a set of organisational and technical means of exerting pressure on losses due to excess resources and activities for the customer. The second, which I will call a Cultural package, is related to the specially programmed chip of the East Asian nations. It is absent in the Americans and Europeans Lean models, or in them there are only faint traces of a mechanically replicated East Asian thought pattern. As a final result, in most of cases nothing good is achieved.

Key words: Lean Thinking. Elements of Lean Thinking. Lean Thinking Cycle. Anti-Lean Thinking.

Abstract of chapter 18 “Organisation for Lean Transformation”

This chapter aims to facilitate the choice of a suitable organisation to work on Lean Transformation. We will do this by posing a number of questions and discussing their possible answers. There are many questions. What is a Lean Transformation Programme? What are the stages? How are they managed? What preparation is needed? What tasks do the Lean Council and project teams have? What types of projects does the Lean programme contain? How do we identify and select a project? How is the implementation of a project planned and managed? What is Hoshin Kanri? What is Lean Diagnostics, what types of diagnostics are there, and how are they performed? What methods are used for diagnosis? How is Lean Transformation progress assessed? How are the results retained, developed, and disseminated? How is a Lean Audit done, and what are the benefits? Is it appropriate to create a Lean Unit or a Lean Team? How do you choose a Lean Manager? How do you work with external consultants? What do we need to know about trusted consultants and mother companies' pilot companies? What are the mistakes and risks we need to protect the Lean programme against?

Key words: Lean Transformation. Lean Programme. Lean Council. Lean Unit. Lean Team, Lean Project. Hoshin Kanri. Lean Diagnostics. Lean Programme Progress. Lean Audit. Lean Manager. Lean Consultant.

Abstract of chapter 19 “The Strange Human Aspects of Lean Transformation”

There are five topics about organisational changes and our attitude towards them. The first topic gives rules, recommendations, and advices on how to sell an idea from the top down, how to sell an idea from the bottom up, and how to sell an idea which is imported from the outside (for example, from another company). The second topic presents several simple methods that allow, even with a large initial disagreement in the opinions of different people (in our case – managers) about benefits and harms of an idea, to seek and find a compromise consensus. The third topic contains explanations and provides tested practical rules on how to protect ourselves from possible resistance to impending change and how to overcome resistance without hurting human sensitivity. It may seem strange, but any endeavour, even if it's designed to lead to a better one, meets adversaries (adversaries may be overt, but they may be hidden). We will delve into the roots of resistance and try

to define what behaviour is needed to deal with them easily. The fourth topic is how to involve company's people in the process of continuous improvements and what could motivate them to become active participants in it. The fifth topic is about personnel efficiency and the factors on which it depends. All these topics are important. The adepts of Lean need to be prepared for them.

Chapter 19.01. Rules for Persuasion and Selling Ideas

Rules for persuasion and selling ideas from the bottom-up (Approaches in the bottom-up position. What not to do when selling ideas from the bottom-up). Rules for persuasion and selling ideas from top to bottom (rules, prohibitions). Rules for buying ideas that come from outside (rules, prohibitions).

Key words: Ideas for improvements. Management levels. Responsibilities. Organisational freedoms.

Chapter 19.02. Methods of Achieving Group Consensus

A lack of group consensus can lead to negativity and destructiveness. It can also make it difficult to implement any decision against which even a sole member of the management or work team has objections or a different opinion. In some companies, managed solely by their owners, whether they are small or large, there is no problem with consensus. Everyone in such a company agrees with the opinion and decisions of the boss – always, unconditionally, and for everything, even if something else rages in their heads. As a meaning the term “consensus” is almost equal to “unanimity”, but we are not exactly talking about unanimity because in companies with authoritarian management, unanimity is a kind of unified thinking of people without their own opinion, and they are nothing more than inanimate objects. There are annoying problems with consensus in a company managed by a management team, especially if this team does not work according to the rules of teamwork. We are interested in how to achieve group consensus in an initial disagreement in opinions, views, assessments, and interests of individuals. There are methods to achieve group consensus, and we will become acquainted with them. Most methods of achieving group consensus are based on the probably true hypothesis that any divergence is due to a lack of information or misinterpretation of the available information. So, if we fight against such management diseases as lack of information and poor communication, we will more easily achieve consensus. However, real management functions precisely in conditions of lack of information and poor communication, and we need universal consensus despite the reasons for lack of consensus. Well, we have good methods for that.

Key words: Repetitive polls method. Small disputes method. Tangent points method. Inflation method. Reverse decision method. Counterargument method. Guided discussion method. Alexander the Great method. Ringi. Nemawashi.

Chapter 19.03. Prevention and Overcoming the Resistance to Change

Every organisational or technological change encounters resistance from people affected, although it is designed to make their lives easier. Resistance delay or stops change. We need to know the roots of resistance, the preventive measures to remove the roots, and the rules to overcome the resistance. Roots of resistance. Three types of resistance. Announced and real reasons for resistance. The fear of losing the feudal power. Collective irresponsibility. Poor communication. Syndrome of the ignorant. Boiling frog syndrome. Traditional attitudes. Organisational sclerosis. More possible reasons. Make sure that everyone affected by the change is involved. Allow enough time for the benefits to be appreciated. Avoid surprises. Do experiments. Choose the right moment. Put yourself in the shoes of others and offer something in return. Shift the attention. Involve the opponents. And the maxim of St. Ignatius of Loyola can come into play. What do we do when we fail. Gentle bulldog bite. The bitter is swallowed with sugar. The tired olive method. The effect of the expected surprise. A worker's fear of Lean. A technician's fears of Lean. A manager's fears of Lean. The fears of aunt Mara the sweeper. Four types of attitudes to change. Preparing for change. Personnel and organisational assurances for change. More about the people and the attitude towards them. How to sweep against the wind.

Key words: Change. Innovation. Improvement. Resistance to change. Rules for overcoming resistance.

Chapter 19.04. Inclusion and Motivation to Participate in Improvements

What is familiarisation and what is responsabilisation. Techniques for presenting and selling the idea of familiarisation. Techniques for the real inclusion of people. The duality of the responsabilisation. Motivation Bulgarian style. How not to motivate? Right motivational mechanism. Risks of motivation.

Key words: Familiarisation. Responsibilisation. Inclusion. Motivation. Motivational mechanisms.

Chapter 19.05. Overall Personnel Effectiveness

The personnel effectiveness indicator is an arithmetic product of three factors: (1) Suitability. People are suited to their work, competent to do it properly, ready to bear their responsibilities, motivated to work well and always better, and all this is stabilised, i.e., a low level of personnel turnover. (2) Manageability. People know and understand the standards and rules of their work, respect them and apply them strictly. They are also able to further develop them. (3) Sufficiency. Any activity inherent and necessary to achieve the goals of the company is staffed with as sufficient number and suitable people that it can be performed correctly and managed efficiently. Personnel effectiveness also depends on the extent to which his work is supported in terms of: suitable, maintained, and developed training; sufficient information to carry out the work; effective methods of work execution; suitable and well-maintained working tools; verified and enforceable standards rules.

Key words: Personnel effectiveness. Suitability. Manageability. Sufficiency. People categories A, B, and C. Qualitative structures of personnel. Personnel objectives. Personnel forecasting and planning.

Abstract of chapter 20 “Lean Production and Other Approaches to Efficiency”

Lean as an approach to densifying, accelerating, and leveling production flow. Other benefits for efficiency. Lean reduces all types of human errors. Details of the symptoms, causes, and countermeasures of human errors. Lean distinguishes between surpluses and reserves. Simplified and stabilised production system. Lightening the management system to make it viable, flexible, and secure. A comparison of Lean with other approaches to efficiency – Total Quality Management, Theory of Constraints, Industrial Logistics, Industrial Engineering, Six Sigma, and Applied System Analysis. Lean Production is not a panacea. Differences in the human aspects of the Toyota Production System and Lean. The potential of Lean in increasingly broad areas of human activities.

Key words: Total Quality Management, Theory of Constraints, Applied System Analysis. Operational Research, Industrial Engineering, Industrial Logistics, Six Sigma, ISO 9001, Toyota Production System