Hoshin Kanri

Although ***Hoshin Kanri*** is one of the key pillars of the Lean Enterprise, in its original Japanese form, it cannot easily be translated to a European setting. Discuss this statement and describe what modifications would be required to make it effective for an SME (small-to-medium enterprise) in the UK.

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Abstract

The concept of ***Hoshin Kanri*** (also know as Policy Deployment, Hoshin Planning and Policy Management) is difficult to translate in both the literal and cultural sense. This essay will argue that there has been a lack of success in applying the concept in Western organisations because of an inability on the part of managers to understand it in a holistic way. I will describe its components, and the other tools and the other Japanese management tools that are essential for the successful deployment of ***Hoshin Kanri***. The Japanese management toolset is based on certain behaviours. I will describe and discuss the behavioural changes necessary in a small or medium UK Company if ***Hoshin Kanri*** is going to be of value and not just another bureaucratic overhead.

Introduction

Imagine a three-dimensional jigsaw puzzle, a sphere made of many different pieces of wood fitting together perfectly to make the whole. That whole is slowly emerging as Lean Management (Lean). Unfortunately, although the West has been aware of the significant advances Japanese companies have made, attempts to explain them have been akin to disassembling the puzzle, examining a few of the pieces, and using these to explain the "miracle" while discarding the rest. Most of these pieces have been put to the test, in isolation, usually with limited and temporary success. Some of the pieces were either discarded as inexplicable, irrelevant or unworkable in a Western culture. One such piece has been largely invisible to Western eyes, even though it is a key component of Lean. That piece is ***Hoshin Kanri***.

Two recent news stories illustrate the fundamental importance policy deployment. First, there was the recent rail disaster at Hatfield (October 2000). *"Railtrack's bureaucratic inflexibility is even more alarming considering the pressure it was under to reduce the number of broken rails, now said by the Health and Safety Executive to be the cause of the Hatfield crash*" writes Jonathon Carr-Brown in the Sunday Times (The Shocking Truth About Our Railways; October 22, 2000). It is reasonable to assume that Railtrack did not set out to jeopardise the lives of its customers, but following the accidents at Southall and Ladbrook Grove, and with Clapham reasonably fresh in the public's memory, one would have expected Railtrack to have had developed a robust process for converting its visions and targets on safety into reality.

Second, there were the publicised conclusions of the McPherson report into the Stephen Lawrence murder inquiry by the London Metropolitan Police. When addressing a group of Ford

Motor Company (Ford) Managers (October 2000), Barbara Cohen, Commission for Racial Equality, cited the London Metropolitan Police as an example of an organisation with a clear vision and guiding principles, but without a strategy or effective implementation process, the lack of which was partly responsible for the charge of "institutionalised racism" by the McPherson report. The Met may not be an organisation considering Lean, but the example does stress the need for a way to translate visions, policies and strategies into ways of working which benefit the organisation.

What is *Hoshin Kanri*?

Womack, Jones & Roos (1990)[1] introduced the concept of Lean to a Western audience, using the Toyota Production System as the benchmark. Introducing the term "Lean" raises the question of whether the authors were describing something new and different to the more established Total Quality Management (TQM) or whether they were re-emphasising the holistic nature of TQM as developed by Toyota. From a comparison of the literature, both Lean and TQM are focused on the customer; they seem to include the same components; and Liker (1998)[2] uses the terms synonymously. This essay will also treat TQM and Lean as synonymous terms: minor differences, if they exist, may be a source of further research, but will only confuse a target audience of British managers. ***Hoshin Kanri*** is a component of Lean and is well known to Japanese management, having evolved since the 1960's, when promotion of TQM, as company policy, was introduced as an audit item for the Deming Prize (Akao, 1991)[3].

Womack & Jones (1996) codified the five steps to achieving a lean enterprise based on the elimination of waste (or ***muda***), the fundamental enemy of both customer value and business efficiency. **Lean Thinking** also stressed the need for a guiding vision in implementing Lean. Many firms either never began because of the lack of a vision or failed because, armed with a vision, "*they went tearing off after perfection in a thousand directions*"(Womack & Jones)[4]. ***Hoshin Kanri*** was identified as the tool that would help focus a company's change efforts.

Hines (1995)[5] defines ***Hoshin Kanri*** as "*Focusing the operations of the whole company according to a set of expected results by the use of a rigorous set of guidelines for achieving these targets*". Quest Worldwide Consulting (www.quest-worldwide.com) describe ***Hoshin Kanri*** as the means by which an enterprise:

- Clarifies the strategic direction of the business;
- Focuses on the vital few factors which will make a significant difference to success;

- Involves people in how these can be achieved
- Converts into improvement actions; and
- Monitors and reviews progress.

The problem with ***Hoshin Kanri*** is that it has remained largely invisible to Western management. Witcher (2000)[6] argues, "***Hoshin Kanri*** *has not been given prominence in debates about TQM, Japanization, and strategic management, which it deserves, given its apparent importance in modern Japanese companies*." During the 1980's the West became aware of the Japanese competitive advantage. The re-discovery of Dr Deming, that Japanese management philosophy was originally based on American statistical-quality-control tools, resulted in a need to understand and replicate what they were doing. Statistical Process Control, Just-In-Time, Employee Involvement, Quality Circles, Total Quality Control, Participative Management, ***Kaizen***, Continuous Improvement, Total Productive Maintenance, and Quality-Function-Deployment were all examples of miracle cures that were tried in isolation with mixed results, usually short term. What seemed to have been overlooked was the tool, ***Hoshin Kanri*** that focused all these techniques and aligned them in support of a Company's strategic vision.

Hoshin Kanri builds on a clearly defined vision, which, if achieved, will enable a company to survive, grow and prosper, providing there are no cataclysmic "acts of God", economic or political events. The vision should be accompanied by the key goals or targets, which achieve the future vision. A successful ***Hoshin Kanri*** process will include:

1. A process of assessing the current state of the company in terms of the performance of its process and systems, the capability of its people, and the appropriateness of its technology, all focused on assessing the gap between current reality and the ideals represented by the vision of future success
2. Annual and medium to long-term targets, set by senior management that take into account the current assessment. Consensus in the literature I have read is that the number of these targets should be limited to those "vital few" that will achieve the vision. "*Tearing off after perfection in a thousand directions*" is just a waste of a finite resource. A maximum of 5-6 targets is recommended. Targets, unlike the vision on which they are based, are measurable.
3. A process based on the matrix management abilities of Quality Function Deployment (QFD), which starts with the strategic targets and cascades those targets down into the organisation. At senior-management level, the targets are strategic, developing into

tactical targets for middle managers, and finally becoming activities or project plans for individual teams (Nirdosh Reddy, 1988)[7]. At each step in the descent, the targets are accompanied by the means or guidelines by which they should be achieved: converting "whys" and "whats" developed by the leadership into "how" and "how much". The "how" and "how much" at one level become the "what" for the next level down.

4. A form of dialogue, known as "catchball", between the management levels for clarifying these targets and means, and identifying any gaps, conflicts, duplications or synergies between them. Catchball also helps the process of converting targets at a higher level into meaningful targets at a lower level. For example, the chairman's need to achieve an inventory turn rate of 20, could be meaningless to the people who keep the assembly line supplied; developing a robust process which kept stock levels between 1-3 hours might tickle their interest. A further very important function of catchball is to get the buy in of everyone involved (Witcher, 2001)[8]. This is usually done by ***nemawashi*** (which literally means digging around the roots before transplanting), the Japanese way of seeking consensus in situations, which could lead to fruitless conflict in public. Using a "straw man" is the nearest Western equivalent to ***nemawashi***.
5. Regular progress reviews of implementation conducted in an atmosphere free of fear and seen as important to all involved
6. Annual or biannual current state assessments which are fed back into the planning process for the following year's planning process

Regarding ***Hoshin Kanri*** as just the Japanese equivalent of Management by Objectives (MBO) is a risk. Austin (1996)[9] summarising Drucker states "*MBO prescribes setting objectives, establishing quantitative criteria for measuring progress, and linking rewards with achievements as indicated by the measurements*". Unsupported by the other Japanese tools, ***Hoshin Kanri*** could be as ineffective. Returning to the metaphor of the jigsaw puzzle, for ***Hoshin Kanri*** to succeed, the following must be present:

- **Lean or Total Quality Management (TQM)**: a clear understanding of the definition of quality based on customer perceptions, which is understood by all areas of the enterprise. Imai (1986)[10] describes it as a "*totally integrated effort toward improving performance at all levels*"
- ***Kaizen*** **or a continuous-improvement culture:** Imai[11] regards ***Kaizen*** as the philosophical umbrella under which are grouped all the other elements of Japanese management practice. His definition of ***Kaizen*** is much wider reaching than the interpretation (continuous

improvement) usually understood in the West and dismissed as only incremental improvement. Imai sees the output from Quality Circles, from process-improvement projects and the radical or innovative process-reengineering projects only succeeding if there is a ***Kaizen*** culture: an obsession with improvement at all levels in the enterprise.

- **Cross Functional Management (CFM)**: From my reading, I was unclear whether CFM and ***Hoshin Kanri*** were separate tools. CFM was developed later, in the 1980's (Witcher)[12] but most authors (Akao, Imai, Kurogane, Witcher and Dimamcescu, Hines and Rich) agree both function best when joined at the hip. Whereas ***Hoshin Kanri*** is primarily top-down in deploying goals, it relies on some form of cross-functional management to make sure that the goals are consistently applied across the enterprise without conflict between departments. Imai[13] sees these as managing the three customer-focused targets of **q**uality, **c**ost and **s**cheduling (QCS). Witcher[14] adds the fourth target of employee **e**ducation in what is expressed as QCDE, the "D" representing delivery schedule. A more contemporary view would regard these as the metrics of the core, customer-focused processes running through the enterprise. Without these cross-functional or process-focused targets, cascading objectives through an organisation can lead to an increase in functional optimisation and "chimney thinking", a weakness of MBO (Nirdosh Reddy)[15]. For example, if the target was to reduce costs across all departments, Accounting might favour evaluated receipt settlement (ERS), as an improved invoice-payables process, because this eliminates the invoice. This reduces their paper chase, and consequently the number of clerks employed. Purchasing, on the other hand, might view ERS with deep suspicion as all prices would have to be keyed into the corporate systems for the process to work, and this could lead to hiring more buyers. The enterprise could lose out if buyers cost more than account clerks.
- **Regular, clear and open communication, done in an atmosphere free from fear:** The basis of ***Hoshin Kanri*** is the PDCA cycle, with routine tracking of implementation progress so that unpleasant surprises, crawling out of the woodwork, a few minutes before the annual review are avoided. Unless open and honest feedback is encouraged, the effectiveness of the process will be diminished. There must be a clear understanding how the measurements associated with ***Hoshin Kanri*** will be used. Austin (1996)[16] makes the distinction between informational and motivational measurements. Measurements designed for the former, which are used intentionally or unintentionally to motivate people, will lead to dysfunctional behaviour. If the review meetings are conducted along the lines of Judge Jeffries' court (recognised within Ford as the "5 Whos" replacing the Japanese "5 Whys"), management may be told what they want to hear rather than what represents reality.

- ***Gemci genbutsu* or "Go See" Management:** ***Kaizen***, ***Hoshin Kanri***, TQM and Lean encourage people to take responsibility and exercise more control over their environment, the processes, and the quality of the product. The people in the processes are involved in developing the process controls (e.g. Poka Yoke, Visual Management, Process Sheets). If management are seen to appreciate the importance of these controls, it helps reinforce their value with the people who helped develop them. This form of "management by wandering around" can also help improve the quality of the dialogue during catchball and progress reviews.

I have described what ***Hoshin Kanri*** is and the other Japanese management tools that need to be present for it to succeed. I will now look at some of the conditions that, if they exist, may make the adoption of ***Hoshin Kanri*** either difficult or impossible.

Problems of deploying *Hoshin Kanri* in a UK Enterprise

Hoshin Kanri is not without competition. Scan the bookshelves in any airport departure lounge, and you will find a large section on business and management, often disparagingly known as the "Heathrow Business School". The West is not without its numerous advisors on how to "improve", "reengineer", "downsize", "empower", "innovate", "outsource", "breakthrough", "achieve competitive advantage" and "manage in minutes". With this cacophony of competitive background noise, it is reasonable to assume that ***Hoshin Kanri*** could be seen as another voice trying to make a quick buck, but not offering much more than helping one get some sleep on the coming flight.

The Japanese have had approximately 40 years in developing, improving and using ***Hoshin Kanri***. In the bid to catch up with them, Western companies would naturally like to see results in just a few years. Short-term thinking or a lack of patience and persistence are some of the difficulties with deploying ***Hoshin Kanri*** in the West. Akao[17] believes "*it takes one to one and a half years of preparation to introduce policy deployment*". He was referring to a Japanese company. It would be reasonable to assume preparation taking longer, around 3 years in a medium-sized UK company. Would the company be prepared to make the considerable effort required over such a time span, without seeing results? In 1997, Ford launched its version of Policy Deployment after piloting it in several areas. Today, that version is no longer used, although several plants have adopted another version (Blue Sky – Master Schedule) as part of the Ford Production System (FPS).

The USA and the UK have seen major sectors of their industries disappear or diminish because of Japanese competition. There is the potential of resistance to "Japanese" practice and terminology. Although the United Auto Workers supported the introduction of FPS within Ford, their antipathy to Japanese terminology resulted in all Japanese terms being substituted: Error Proofing for ***Poka Yoke***; SMART for ***Kanban***; Process Control Boards for ***Andon***; and Work Balancing for ***Yamazumi***. With the exception of the Bridgend Engine Plant, the launch of FPS in the UK was delayed by over a year through union resistance.

A potential problem, unlikely in small and medium organisations, is deep organisational structures. According to Peters and Waterman (1982)[18], both Toyota and Roman Catholic Church have only five layers of management in comparison to Ford's seventeen. From my readings, three months seems to be the normal development time for the annual plans. Deploying policy even with ***Hoshin Kanri*** could become tedious and long winded when faced with a journey through seventeen layers.

Language can be another barrier to the deployment of ***Hoshin Kanri***. Warfield (1995)[19] has recognised that, "*As an organization grows, linguistic separation grows both laterally and vertically in the organization*". He goes on to say that although this may be "*most troublesome for big organizations, it also be very troublesome for small organizations" and suggests the need for a "shared linguistic domain*". However, this is not the only problem associated with the lack of a common language. It is common practice to illustrate ideas with a diagram of some description. The diagram serves the purpose of clarifying ideas in the minds of the target audience, keeping the prose to the necessary minimum. Warfield (1990)[20] suggests that the objective of any system of signs and icons should enable consistent translation to prose, and into any language. Sheet music is given as an example consistent with this requirement; a Japanese musician would not need to understand German or English to reproduce Bach or Hendrix. The pictorial language of ***Hoshin Kanri*** does not meet this rigorous requirement.

The introduction of ***Hoshin Kanri*** may be attempted by grafting it onto existing measurement systems. This can result in conflicts between the existing ways of doing things and the new. Take the example of Labour & Overhead efficiency, a key measurement of manufacturing efficiency at Ford. This measurement, a relic from the "mass production" mindset, encourages plant management to optimise output regardless of whether there is a

customer for the product. Not only does this measurement produce inventories of unwanted product, but can also cause major disruptions in the supply chain.

Modifications to make *Hoshin Kanri* work in a UK Enterprise

Witcher's[21] research into the deployment of ***Hoshin Kanri*** in UK-based companies suggests that ***Hoshin Kanri*** can be deployed without much modification. However, preparing the company to accept this new practice will need careful consideration. Management should have a clear understanding of ***Hoshin Kanri*** and the behaviours required of them to make the process work. Some of the unacceptable behaviours are described in the previous section. Management must be committed to change, to understanding why "soft" activities, such as catchball, and "go and see" are important. Functional "chimneys" and the related "turf wars" may not be a big issue in a small-to-medium company, but this must not be assumed.

Experience at Ford, confirmed by Witcher[22], suggests that ***Hoshin Kanri*** should not be introduced before the company's main processes are under control based on the introduction of Lean. If Lean is successfully implemented, even in a small but significant part of the business, the impact can be dramatic, not just on the measurements (for example, inventory), but also visually on the shop floor. This visual impact seems to be a powerful convincer for people at all levels in the organisation.

From my readings of the literature on Japanese management practice, the focus appears to be on the "hows" and "whats" rather than why something should be done. Although there is some mention of "why", this appears to be almost incidental. This may be a result of the cohesive nature of Japanese society (Hannam, 1993)[23]; the lack of industrial conflict that was endemic in the UK and many other Western countries, or a product of Japanese management thinking. The deployment of ***Hoshin Kanri*** will be regarded as a significant change in a typical small-to-medium enterprise in the UK, akin to a business-process-reengineering (BPR) project. Hammer & Champy (1993)[24] suggest that the companies that have the greatest success in the field of process reengineering are those that develop a compelling "need for change" message. Based on the Piper Alpha disaster, the expression "The Burning Platform" has been used within Ford to describe the compelling nature of this message. Without such a message, the people in the enterprise are likely to regard the introduction of ***Hoshin Kanri*** as just another management fad.

Hoshin Kanri should also be the subject of a change-management process, which seems ironic when ***Hoshin Kanri*** is a process for managing change. LaMarsh[25] proposes a model for Managed Change that helps management recognise that change affects everyone. The LaMarsh model is based on three roles:

- **Target**: the person who needs to change for the project to be a success,
- **Change Agent**: the person who is tasked with influencing the Target to change, and
- **Sponsor**: the person who wants the change to happen

The roles in this model are not fixed: a senior manager, even the chief executive, must first recognise him or herself as a target, before becoming a change sponsor. Models like these help the organisation plan of the change. The culture and history of the Company are examined; the number of change efforts the Company has attempted and their success rate; the strength of resistance to the change and the reasons behind the resistance. Without this key preparatory information, the adoption of ***Hoshin Kanri*** could suffer.

There is a temptation on the part of management, to delegate the responsibility of introducing ***Hoshin*** Kanri to the "experts". A more successful alternative is for management to take on the responsibility, as they will do once ***Hoshin Kanri*** is implemented. The Business Leadership Initiatives (BLI), at Ford is one such example where management are responsible for cascading not just the new policies and strategies, but also the knowledge and required behaviours. Each layer in turn is responsible for developing their "teachable point of view". Jac Nasser, CEO of Ford, has reinforced this responsibility by defining the Company's 12 leadership behaviours, including coaching, and incorporating them into the personal review process.

Dialogue sessions such as "catchball" and progress reviews are not unknown, but the way they are carried out tend to make them less effective than the equivalent sessions in a Japanese company. In the initial stages of ***Hoshin Kanri*** implementation, it would be advisable to have meetings facilitated by a trained facilitator, one who is prepared to make sure that there is true dialogue up and down the hierarchy. The change management process should also assess whether the company culture allows this form of dialogue. Sadly, consultants and academics are still having to developing methods by which opinions are surfaced anonymously, because the fear of expressing an opinion to one's superiors is still common.

Another factor to assess is the stamina of the management to conduct repetitive reviews. Modern e-mail systems allow people to schedule regular meetings, daily, weekly, and monthly. Each New Year sees series of these being added to individual calendars, like good intentions, only for them to be ignored or disbanded before spring. Another form of degradation of these reviews is for them to be delegated to the junior ranks as either boredom or other pressing issues distract senior management. The importance of these reviews and how they are conducted must be stressed as a key factor for the success of ***Hoshin Kanri***. Rather than the teams trooping up to the boardroom like chain gangs of condemned people, the reviews should be carried out in the team rooms around the only copy of the plan displayed on the wall. Conducting the meetings standing up (as does the Privy Council,) could make them short and to the point. Reports should be kept to a minimum, but should be backed by periodic visits, for example, to the line to see the real thing.

A further, important benefit from "go and see" visits is a better understanding and reinforcement of the measures developed on the floor. Support for this understanding and involvement by senior management comes from Witcher[26] who says, "*If policy is to drive operations in a manageable way, it is important that top-level managers understand the whole picture. We think this is Japan's great contribution to international modern management*".

Conclusions

I have argued that existing paradigms have made ***Hoshin Kanri*** almost invisible to most managers in the West, and organisations as diverse as Railtrack and the Met are suffering the consequences. Policy deployment is known here in the UK, and there are tools, such as MBO that serve the same purpose as ***Hoshin Kanri***, but ***Hoshin Kanri*** has the advantage of being part of a supporting network of management tools, and not an isolated initiative.

I believe I have argued a strong case for the implementation of ***Hoshin Kanri***, but only after the enterprise had made some visible progress with their implementation of Lean. None of the components of ***Hoshin Kanri*** are inappropriate in a small or medium UK enterprise, though careful though should be given to the existing behaviours and cultures within the company, and the need to change these, before considering either Lean or ***Hoshin Kanri***.

Let two businessmen, one Japanese, and the other American have the last word on the need for ***Hoshin Kanri***. In 1979, Konosuke Matsushita challenged a visiting group of Western

managers with the fact that they had not moved beyond the Taylor Model: "*For you, the essence of management is getting the ideas out of the heads of the bosses into the hands of labour"*. For the Japanese*, "the core of management is precisely this art of mobilizing and pulling together the intellectual resources of all employees in the service of the firm"*. Fifteen years later, (Tichy & Sherman; 1994)[27] Jack Welch, the CEO of, perhaps, America's most successful company in recent years, General Electric, is asked for his response to those who dismiss his talk of values and empowerment as bunk. He replies, *"I think that any company that's trying to play in the 1990s has got to find a way to engage the mind of every single employee. Whether we make our way successfully down this road is something only time will tell – but I'm as sure as I have ever been about anything that this is the right road. If you are not thinking all the time about making every person more valuable, you don't have a chance. What's the alternative? Wasted minds? Uninvolved people? A labour force that is angry or bored? That doesn't make sense! If you've got a better way, show me. I'd love to know what it is"*.

References

[1] J Womack, D Jones & D Roos; 1990; The Machine That Changed The World; Rawson Associates; 47
[2] J Liker (Editor); 1998; Becoming Lean; Productivity Press; 533
[3] Y Akao (Editor); 1991; Hoshin Kanri: Policy Deployment for Successful TQM; Productivity Press; 3
[4] J Womack & D Jones; 1996; Lean Thinking; Simon & Schuster; 95-97
[5] P Hines; Hoshin Kanri 1995; Lecture; Lean Operations MSc;
[6] B Witcher; 2000; Hoshin Kanri: Policy Management in Japanese-owned UK Subsidiaries; Page 35
[7] J Nirdosh Reddy; 1988; Some Observations on Policy Management: Keynote address delivered at ASI 1998 Conference; ©Ford Motor Co; 8-11
[8] B Witcher; 2000; Hoshin Kanri: Policy Management in Japanese-owned UK Subsidiaries; 29-31
[9] R Austin; 1996; Measuring and Managing Performance in Organizations; Dorset House Publishing; Page 109
[10] M Imai; 1986; Kaizen: The Key to Japan's Competitive Success; McGraw-Hill; xxv
[11] M Imai; 1986; Kaizen: The Key to Japan's Competitive Success; McGraw-Hill; 4
[12] B Witcher; 2000; Hoshin Kanri: Policy Management in Japanese-owned UK Subsidiaries; 26
[13] M Imai; 1986; Kaizen: The Key to Japan's Competitive Success; McGraw-Hill; 125-145
[14] B Witcher; 2000; Hoshin Kanri: Policy Management in Japanese-owned UK Subsidiaries; 8, 21, 25-27
[15] J Nirdosh Reddy; 1988; Some Observations on Policy Management: Keynote address delivered at ASI 1998 Conference; ©Ford Motor Co; 6
[16] R Austin; 1996; Measuring and Managing Performance in Organizations; Dorset House Publishing; Page 21-22
[17] Y Akao (Editor); 1991; Hoshin Kanri: Policy Deployment for Successful TQM; Productivity Press; 134
[18] T Peters & R Waterman Jr.; In Search of Excellence: Lessons from America's Best-Run Companies; Harper & Row; 65
[19] J Warfield; 1995; Complexity and Drummers; Published in review form by George Mason University; 58
[20] J Warfield; 1990; The Science of Generic Design Vol I; Intersystems Publications; 201
[21] B Witcher; 2000; Hoshin Kanri: Policy Management in Japanese-owned UK Subsidiaries; 35-37
[22] B Witcher; 2000; Hoshin Kanri: Policy Management in Japanese-owned UK Subsidiaries; 36
[23] R Hannam; 1993; Kaizen For Europe: Customising Japanese Strategies for Success; IFS Ltd; 26-29
[24] M Hammer & J Champy; Reengineering the Corporation; 1993; Harper Business; 148-158
[25] J LaMarsh; Managed Change: The LaMarsh Approach (Manual); LaMarsh & Associates Inc.
[26] B Witcher; 2000; Hoshin Kanri: Policy Management in Japanese-owned UK Subsidiaries; 36
[27] N Tichy & S Sherman; 1993; Control Your Destiny or Someone Else Will; Harper Business; 305

Bibliography (Not included in the References)

Books

1. Bicheno, J. (2000) ***The Lean Toolbox***; Picsie Books
2. Dimancescu, D.; Hines, P. & Rich, N. (1997) ***The Lean Enterprise: Designing and Managing Strategic Processes for Customer-Wining Performance***; AMACOM
3. Hines, P. & Taylor, D. ***Going Lean: A guide to implementation***; Lean Enterprise Research Centre
4. Ingrassia, P. & White, J. (1994) ***Comeback***; Simon & Schuster
5. Kuhn, T. (1962) ***The Structure of Scientific Revolutions***; The University of Chicago Press
6. Kurogane, K. ed. (1992) ***Cross-Functional Management: Principals and Practical Applications***; Asian Productivity Organization
7. Nicholas, J. (1998) ***Competitive Manufacturing Management***; McGraw-Hill
8. Walton, M. 1989) ***The Deming Management Method***; Mercury Business Books
9. Senge, P. (1990) ***The Fifth Discipline: the Art & Practice of the Learning Organization***; Century Business

Articles

1. Anon (2000?) ***Policy Deployment – the missing piece***; Quest Worldwide Consulting Ltd. (http://www.quest-worldwide.com/pub_policy_deployment.html)
2. Anon (1999) ***Unit 5B – Japanese Manufacturing***; Engineering Management Database of Analytical Techniques & Approaches
3. Gregson, D. & Zwirn, H. (1999) ***Leadership Responsibilities During Reengineering***; Presented at the APICS International Convention – October 1999
4. LaMarsh, J. (1999) ***Roles and Responsibilities in a Well Managed***; © LaMarsh & Associates
5. Samuel, D. & Hine, P (1999) ***Designing a supply chain change process: a food distribution case***; International Journal of Retail & Distribution Management Vol. 27, No. 10, 409-419; ©MCB University Press
6. Witcher, B. & Butterworth, R. (2000) ***Hoshin Kanri at Hewlett-Packard***; Journal of General Management, Vol. 25 No. 4, 70-85
7. Witcher, B. (1999) ***Hoshin Kanri: How Xerox Manages***; Long Range Planning. 1999, June, 323-332

Presentations, Manuals

1. ***Ford Production System: FPS Launch Workshop*** (1997) ©Ford Motor Company
2. ***Policy Deployment: Facilitator Training Guide*** (1996) ©Ford Motor Company
3. ***Working in a Matrix Organization: Participant Guide*** (1995) ©Ford Motor Company
4. ***Master Schedule & Review Simulation*** (1999) © RWD Technologies Inc
5. ***Master Schedules: Common Mistakes & How to avoid them***; (1999) Palmela FPS Team Meeting; © RWD Technologies Inc