

Rethinking Lean Service

John Seddon & Brendan O'Donovan

www.systemsthinking.co.uk
www.newsystemsthinking.com (USA)

Introduction

Over the last four decades it has been common for services to be treated like production lines in both the academic literature and more widely in management practice. The belief that achieving economies of scale will reduce unit costs is a core feature of management decision-making. As technological advance has produced ever more sophisticated IT and telephony, it has become increasingly easier for firms to standardize and off-shore services. The development of the 'lean' literature has only helped to emphasise the same underlying management assumptions: by managing cost and workers' activity, organizational performance is expected to improve. This paper argues that 'lean' has become subsumed into the 'business as usual' of conventional service management. As a result, 'lean' has become synonymous with 'process efficiency' and the opportunity for significant performance improvement – as exemplified by Toyota – has been missed.

By revisiting the development of service management, in particular the moves to industrialize service, we articulate a 'core paradigm' to account for what might be described as conventional service management. We then explain how 'lean' emerged and became codified, and as 'lean' extended its reach to service organizations, how the two – 'lean' and conventional service management operationalized the same (false) assumptions. Building on the literature about the differences between manufacturing and service management, it is argued that service organizations should be treated differently to manufacturing organizations. Going back to the origins of the 'Japanese miracle', it is argued that service organizations must be understood and managed as systems. The inspiration for 'lean production', Taiichi Ohno's Toyota Production System (TPS), was developed through an understanding of counter-intuitive truths, a series of challenges to convention. It is then argued that similar counter-intuitive truths are to be found in services when they are studied as systems, resulting in dramatic performance improvements. A 'systems' service management archetype is developed as an alternative to conventional service management. Finally, the means for change are argued to be empirical, as change was for Ohno, where change is treated as emergent rather than pre-determined or planned.

From manufacturing to operations management

In the 20th century there were many substantial leaps forward in the field of operations management. The 'scientific management' of FW Taylor (1911) and its subsequent application in Henry Ford's mass-producing car factories had led to work being broken down into simple, standardized tasks set to the pace of the production line. Workers had narrowly defined, compartmentalised tasks, sometimes of only thirty seconds' duration but performed nearly a thousand times per day. Factory

management ideas in manufacturing developed into operations management, on the assumption that manufacturing ideas were easily translatable and applicable in service organizations. Johnstone (1994) traces the development of operations management.

Industrialized, standardized service

In 1972, Levitt wrote a seminal Harvard Business Review (HBR) article entitled 'Production-line approach to service'. In it, he argued that the rigor of the production line should be applied to the design and management of services. He used the example of McDonald's, the fast-food chain, to show how factory methods could profitably be employed to deliver a service. McDonald's achieved market domination through mastery of a 'system' which is 'engineered and executed according to a tight technological discipline that ensures fast, clean, reliable service in an atmosphere that gives the modestly paid employees a sense of pride and dignity'. Service organizations were thus encouraged to employ the manufacturing approaches of industrialization through standardization.

Industrialization was aided by, for example, advances in telephony, which led companies to centralise telephone work in call centers, taking advantage of lower labour costs; first building call centers in low-wage areas of the UK and latterly outsourcing them to lower-cost economies. Similarly, the allure of 'back-office' economies – optimizing use of resources by de-coupling the customer from the service itself – first promoted by Chase (1978) led organizations to adopt IT-dominated designs which sorted and routed work through processes dominated by service-levels and standard times.

These ideas continue to form the conceptual foundations for the way that services are designed and managed today.

The 'core paradigm' of current service management

The 'Core Paradigm' for conventional service management (Seddon 2008) is derived from the philosophy underpinning 'factory thinking'. The three questions that make up the core paradigm are the questions that preoccupy managerial decision-making in transactional¹ service organizations:

- How much work is coming in?
- How many people have I got?
- How long do they take to do things?

Conventional managers think of their job as a resource-management problem. The core paradigm leads managers to do the following types of things in pursuit of improving service operations:

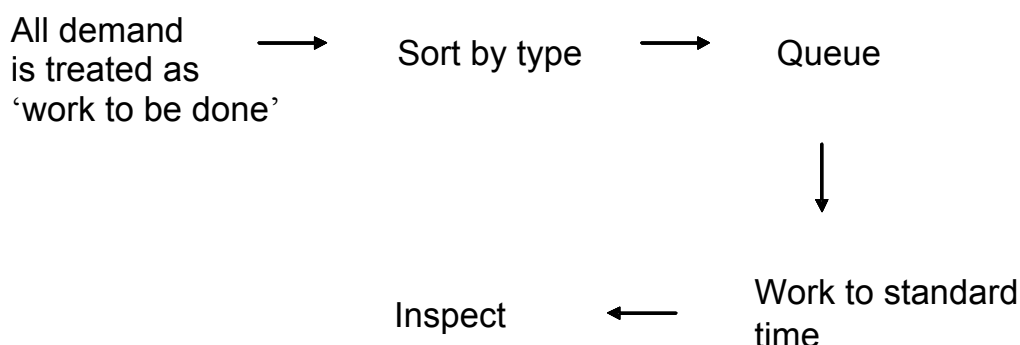
- Reduce average activity time (through procedures, job aids, call coaching and targets)
- Use I.T. to replace, support or control the service agent

¹ For example: financial services, telecommunications, IT services, police, local authority, government agencies and housing services.

- Outsource activity to lower-cost organizations/economies
- Increase functional specialization (to reduce training costs)
- Standardize work processes
- Put similar work into back-office factories

These activities are all undertaken in a vain attempt to manage costs. Workers' activity is managed in line with anticipated 'standard' times and their work is inspected to achieve quality control. Scripts, procedures, targets, standards, inspection and compliance govern the way these organizations work. These features are now common-place, representing a factory view of service work.

We represent this factory view of service work as an archetype:



Key measures: Activity and cost

Fig 1: The industrial archetype for factory service management

The archetype is a high-level representation. In practice, service organizations are much more complex but the complexities, nevertheless, follow this quintessential logic. Managers schedule resources according to the volumes of work coming into the system. Usually, the first step in the flow is to 'sort' the work by, for example, using Interactive Voice Response (IVR) technology in telephony ('press 1 for x, 2 for y') and with incoming mail the work is typically scanned and sorted into pre-determined electronic work queues, often breaking one customer demand into a variety of sub-tasks, allocating each to its own queue. When work is done it is managed by 'standard times', the assumed time it takes to complete each task and resources are devoted to inspection to control the output to the customer. Often a customer demand into such a system is fragmented into many sub-tasks and consequently the flow of work crosses functional, organizational and geographic boundaries. It is into this environment that 'lean' and then 'lean service' arrived.

The emergence and codification of 'lean'

As service operations began to develop as a field of study in the 1970s, increasing attention had been shown to the remarkable successes of Japanese firms. Initially these ideas manifested themselves in Total Quality Management (TQM) initiatives. It was only in 1990 that a deeper explanation of the reasons for superior performance was brought to widespread Western attention. In 'The Machine that Changed the World' (Womack, Jones and Roos 1990), the authors – inter alia – told the story of the Toyota Production System (TPS) and the 'genius' behind it, Taiichi Ohno. Through necessity, Ohno had developed a contrasting approach to the mass production methods of US car firms. Published in 1990, Womack, Jones and Roos' book used the label 'lean' to what had occurred at Toyota; giving it a label had begun the codification of method².

In their subsequent book 'Lean Thinking' (Womack and Jones 1996), they set out to answer the question posed by many who had read the first book: 'How do we do it?', and offered five 'lean principles' as the secret to Toyota's success. This was the second step in the codification of method. The third step quickly followed: the articulation of lean tools. The TPS had developed new methods to manage unconventional ideas: balancing demand, managing flow, materials being 'pulled' through the system. The associated 'tools': standard work, takt time, 5S, value stream mapping, kanban, poke yoke, etc., were documented and promulgated by many, promising that managers could replicate Toyota's remarkable success by applying these tools to their workplaces. The applicability of tools was assumed to be universal, applying to all types of manufacturing and service organizations.

One common feature of these tools was a predisposition towards standardization of work processes. The conventional desire to standardize and industrialize service organizations was only reinforced by the promulgation of 'lean'; it was therefore an easy (conventional) argument for managers to accept.

But is service the same as manufacturing?

From the 1970s onwards, a debate arose as to whether goods and services could be treated as the same. Works dedicated to service management started to appear in the early 1980s. Grönroos (1990) was one of the authors who criticized the treatment of services as manufacturing, saying that managers who did this 'may be making a mistake'. He went on to identify four 'basic characteristics' of services that distinguish them from manufacturing:

1. Services are more or less *intangible*.
2. Services are *activities* or a *series of activities* rather than things.
3. Services are at least to some extent *produced and consumed simultaneously*.
4. The customer *participates in the production process* at least to some extent (Grönroos, 1990 p29)

² The first published use of the term 'lean production' was by John Krafcik (1988) a researcher with Womack, Jones and Roos on the International Motor Vehicle Program (IMVP) at Massachusetts Institute of Technology (MIT). However, it was Womack, Jones and Roos' book which brought the term 'lean' into widespread use.

During the 1990s, as lean manufacturing gained in popularity, attempts were made to show examples of lean methods in service organizations. One paper, by Bowen and Youngdahl (1998) held up Taco Bell (the US fast-food restaurant chain) as an exemplar of lean service, in same way that Levitt's paper had used McDonald's to exemplify production-line approaches to providing services 25 years earlier. Bowen and Youngdahl argued that services and manufacturing were now converging towards 'mass customization'.

'Lean' arrives in service organizations

A decade later, we find lean manufacturing tools being used in the UK's public sector services. Radnor et al (2006), in a report for the Scottish Executive, proclaimed as successful the adoption of 'lean tools' in the Scottish public sector:

'Analysis from the research with organizations in the Scottish public sector, together with evidence from the literature, indicates that Lean is transferable to the public sector' (Radnor et al 2006, p5)

Consistent with the commercial protagonists, Radnor et al conceptualize 'lean' as a set of tools:

'A toolkit of methods for practical use at the operational level has been developed to support lean thinking. Tools include, for example, value stream mapping which is used to analyze the flow of resources, highlight areas where activities consume resources but do not add value from the customer's perspective.' (Radnor et al 2006, p1)

Radnor et al argue for tools to be applied with adaptation in these public sector services. Similarly, Ahlstrom (2004), despite acknowledging an important methodological weakness (participants were presented with descriptions of 'lean' concepts and asked to translate them for service organizations; the participants were all from 'communications' positions, thus unlikely to be familiar with service operations), claimed that the principles of 'lean' manufacturing were applicable, with 'contingencies', in service operations.

Neither of these studies describes what adaptations might be necessary for adapting 'lean' to services, nor why they may be needed. Radnor places academic validation for the application of lean production principles to services on Bowen and Youngdahl's work (Radnor et al 2006 p9). However, Bowen and Youngdahl had described successful service organizations which could be described as possessing lean attributes. None was presented as having employed lean tools.

In recognition of the doubts that had started to be expressed about the lean tools movement, Womack rationalised what had occurred:

'The focus turned to how organizations everywhere could transform themselves from mass producers into lean exemplars. Given the magnitude of the task and its many dimensions, it's understandable that lean tools came to the foreground – 5S, setup reduction, the five whys, target costing, simultaneous and concurrent engineering, value-stream maps, kanban, and

kaizen. Indeed, I think of the period from the early 1990s up to the present as the Tool Age of the lean movement.’ (Womack 2006)

Womack went on to argue that what was missing was ‘lean management’ and acknowledged that he was unable to articulate its elements.

What Womack et al had missed was the systemic nature of the Toyota Production System: it was a system whose purpose was to make cars at the rate and variety of customer demand. The ‘tools’ associated with the TPS were developed to solve problems in achieving this purpose. In other organizations, management’s first task should be to know whether or not they are solving the same problems before applying ‘lean tools’ derived from Toyota.

Womack’s explicit acknowledgement that lean had become enwrapped in the use of tools came at what many see as a low point for the ‘lean’ movement. In January 2007, the movement hit a nadir with press headlines of “Is this banana active?” relating to the implementation of a ‘lean’ efficiency drive in the UK’s Her Majesty’s Revenue and Customs (HMRC) department (The Times, 5/1/07)³. Workers had been reorganized into more detailed specialist functions (and hence had to do more repetitive work); the work processes had been standardized and were controlled through activity measurement.

Radnor and Bucci (2007) gave their support to the HMRC lean tools initiative. Given the furore surrounding HMRC at the time – a House of Commons Select Committee’s concern at the lack of improvement, regular bad press and a dispute between union and management – it is surprising that the authors did not explore the impact of the intervention on performance and morale on order to understand more about the relationships.

Back to the beginning

To unpick the development of lean service we need to go back to the ‘Japanese miracle’ and travel forward again through this history. The person most associated⁴ with the ‘miracle’ and one of the most important critics of conventional modern management was W. Edwards Deming. His influence on Japanese manufacturing led to recognition by the Japanese Emperor in 1960, with the award of the Second Order Medal of the Sacred Treasure.

Deming’s message to managers in his home country was uncompromising. He stated that the ‘present style of management’ was ‘a modern invention – a prison created by the way in which people interact’ (W. Edwards Deming 1994)

His point was simple: we (mankind) invented management and therefore we should re-invent it. The better alternative, he argued, was that we should understand and manage our organizations as systems. His famous ‘figure 1’ from the book “Out of

³ (See <http://www.timesonline.co.uk/tol/news/uk/article1289640.ece> for the coverage in the Times on January 5th 2007)

⁴ While Deming was not the first or only ‘guru’ associated with the Japanese miracle, he became the most well-known, following his appearance in the (US) nation-wide airing of a television programme entitled “If Japan Can Why Can’t We?” in 1980.

the Crisis” (1982) was a picture capturing the flow of work through a manufacturing organization. He viewed constancy of purpose to improve the system as the cornerstone of management’s efforts; his figure served also for discussions of method and measures: Management’s focus, argued Deming, ought to be with the flow of work through the system as opposed to measuring and managing work in functional activities. Operating at this ‘system’ level achieves far more than focusing on the refinement of individual functions and/or processes.

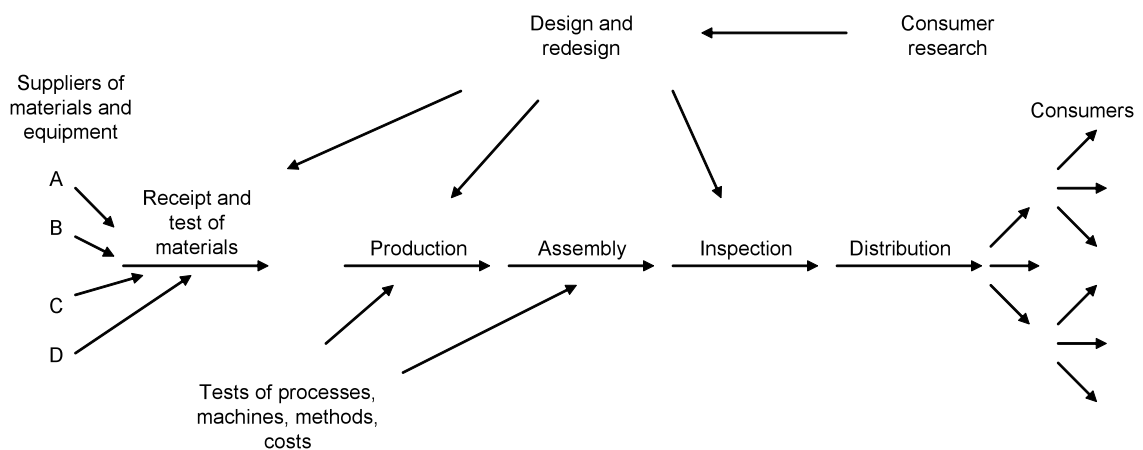


Figure 2: Deming’s famous Fig 1 diagram: Production viewed as a system (Deming 1982)

Deming illustrated how targets and all other arbitrary measures sub-optimized systems. He pointed to the absurdity of failing to understand that workers’ performance was, in fact, governed by the system; as a result appraisal practices were at best irrelevant and at worst drove sub-optimization. These and other ideas were direct affronts to prevailing beliefs: to accept them would be to accept that much that was considered normal was flawed and would have to go.

Deming’s figure depicts manufacturing. We can look at it and imagine the Toyota system: cars being produced for consumers at the rate and variety of demand, the flow of work through the system – all the way back to suppliers – operating at the heart-beat created by the customers ‘pulling’ cars. But what would an equivalent look like for services?

To echo Ohno, our first step has to be concerned with understanding. It was Ohno’s favorite word:

‘I believe it [understanding] has a specific meaning - to approach an objective positively and comprehend its nature. Careful inspection of any production area reveals waste and room for improvement. No one can understand manufacturing by just walking through the work area and looking at it. We

have to see each area's role and function in the overall picture.' (Ohno 1988 p57)

Understanding service organizations

To return to transactional service organizations, when we set out to comprehend them as systems, we learn, as Deming argued, that what he called the present style of management (described here as based on the 'Core Paradigm') has fundamental flaws.

One flaw is the assumption that all demand is 'production' – work that has to be done. By studying demands customers place on transactional service systems, from the customer's point of view, you learn that much of the demand is waste and, worse, it creates further wasteful activity.

Value and failure demand

In services, there are two high level types of demand entering the system: 'value' and 'failure' demand. Value demands are the ones companies want customers to place on the system, the reason that the company is in business is to serve these demands. Failure demands are: 'demands caused by a failure to do something or do something right for the customer' (Seddon 2003 p26). When service organizations do not do something that the customer has been expecting, customers call back, turn up again, or otherwise create more demand and hence more work. These, and failures to do something right from the customers' point of view – not solving a problem, sending out a form that a customer has difficulties with and so on, represent a significant means to improve service delivery and reduce costs. Treating failure demand as though it is just more work to be done is to fail to see a powerful economic lever. If we were to use Deming's language, failure demand is a form of sub-optimization. In Ohno's language it is a type of waste.

It is noteworthy that failure demand is not among the 'seven types of waste' promoted by the lean tools literature. Failure demand is a systemic phenomenon that is peculiar to service organizations; it is, also, the largest form of waste in transactional service systems when managed according to the present style of management. Given the economic leverage its removal provides, it is a poignant illustration of the general argument against 'lean' as tools. Starting an intervention with tools is to ignore the priority to know first your problem(s).

Ohno saw the purpose of the TPS as the eradication of waste:

'The most important objective of the Toyota system has been to increase production efficiency by consistently and thoroughly eliminating waste' (Ohno 1988 pxiii)

And:

'The preliminary step toward application of the Toyota production system is to identify wastes completely.' (Ohno 1988 p19)

Failure demand is waste. Predictable failure demand is preventable, a ‘common cause’ in a system, to use Deming’s language.

In the authors’ experience all transactional service organizations have largely predictable demand. Predictable failure demand points management’s attention to services that need to be re-designed. By understanding value demands from the customers’ point of view management’s attention is drawn to the advantage of designing the organization to absorb variety. While Ohno’s (TPS) purpose was to build cars at the rate and variety of demand, a transactional service system’s purpose is, we argue, to absorb the variety of customer demand. Understanding the problem leads to tools (or methods) with which to solve it⁵.

Waste cannot be removed without understanding its causes. It is axiomatic that the primary cause of failure demand is the failure of the system to absorb the variety of customer demands. The single greatest reason for transactional service systems to fail to absorb variety is standardization. To the prevailing style of management this realisation comes as a significant shock. To give just one example of the impact of standardization on performance, we return to HMRC, where the standardization of taxation services has created failure demand not only back in to HMRC⁶ but also to many organizations ‘down-stream’ that are consuming resources dealing with the failure of the primary service(s) to work: local authorities, housing associations, advice centers, voluntary agencies, legal services and the courts are filled with demand created by the failure of HMRC (and the Department for Work and Pensions) to provide the primary service effectively (Advice UK, 2008).

In transactional service organizations, standardization, central to the present style of management and valued by managers as a way of managing costs, can often drive costs up. Customers can ‘see’ the waste: they know how many times they need to call to get a service from their point of view, they are irritated by interactive-voice-response systems that fail to get them to someone who can help them and hence mean they have to repeat themselves, they are infuriated by service workers who follow their scripts or procedures and thus fail to listen to or solve their problem.

While we have explored the genesis of standardization in service management literature and practice and the fit with the lean tools movement, it is worth pausing to reflect on the lean-tools promoters’ arguments for starting any intervention with standardizing the work. They often argue that Ohno said ‘first you must standardize before you can improve’. While this is essential in manufacturing, in a service organization to standardize would diminish the system’s ability to absorb variety. Moreover, in keeping with the current top-down conventions, the standardization of work in service organizations is typically determined by the hierarchy and/or experts and imposed upon workers; a common feature of tools-based interventions. By contrast, Ohno placed importance on workers writing their standards themselves:

‘Standards should not be forced down from above but rather set by production workers themselves.’ (Ohno 1988 p98).

⁵ Methodological principles for studying and acting on failure demand are summarised in: “Failure demand – from the horse’s mouth” (Seddon, 2009)

⁶ Yet the extent remains unknown in HMRC. In presentations of their lean tools initiative, HMRC personnel demonstrate no knowledge of failure demand on their system.

It is a central feature of the TPS that improvements are made by workers adhering to a scientific method, an essential component in organizational learning (Spear and Bowen, 1999). Missing this essential emphasis, Womack, Jones and Roos (2007) placed the responsibility for standardization with management:

‘The work process itself, along with the management process, must be absolutely standardized by managers, and by manufacturing and industrial engineers as well, before a work team can have any hope of improving it. Standardization in this context means creating a precise and commonly understood way to conduct every essential step in every process.’(Womack, Jones and Roos, 2007 p290)

In service organizations employing lean tools the work typically has been standardized and industrialized from an internal, cost-focused point of view. Managers dumb-down the first point of contact (or out-source it) to employ cheaper labor and fragment the flow of work (again, to reduce training time and lower labour costs). The consequences are more handovers; meaning more waste, and an increasing likelihood of failure demand (further waste). The more work is fragmented – sorted, batched, handed over and queued, the more errors creep in. Every time a file is opened, it has to be re-read (duplication). These problems are exacerbated as workers are working to activity targets.

This is a further flaw in the ‘Core Paradigm’: holding workers accountable for their work activity. Managers pay attention to activity statistics, monitoring workers and doing ‘one-to-ones’ with those who fail to meet their activity targets. As Deming pointed out, this is to focus on the wrong things:

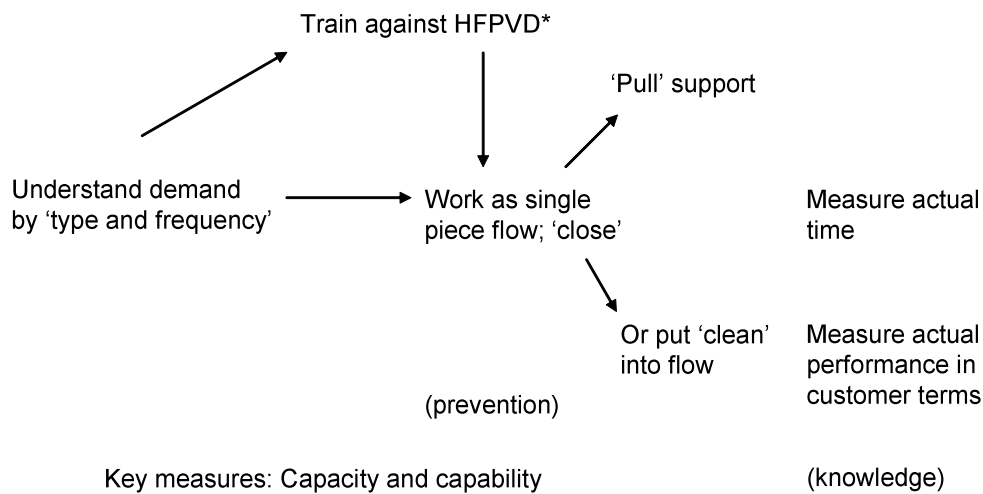
‘I should estimate that in my experience most troubles and most possibilities for improvement add up to proportions something like this: 94% belong to the system (responsibility of management) 6% special.’ (Deming 1982 p 315)

Deming knew that holding workers to account for these variations in the system was a nonsensical proposition that would only lead to the demoralization of the workers. Deming instead encouraged managers to study variation and its causes – for example, things that would make the calls in a call center longer or shorter. Imagine the potential causes of variation in a call-center worker’s performance: the nature of the call, the type of customer, whether processes have been designed from a customers’ point of view (and as managers rarely study demand, that is unlikely), whether the IT system works today, whether people in other departments have told customers things they did not tell people in the call center, the knowledge of the worker and so on. These are the things that affect performance and are the things managers should be focused on (the ‘94%’ in Deming’s terms). When management’s attention is on the system (the 94%), significant performance improvement follows (see, for example, Pyke 2008)

The better alternative

Following Deming and Ohno, the better way to design and manage service organizations is to understand and manage the organization as a system. The systems

archetype below describes a design for managing transactional services in such a way as to see and remove waste continuously (a feature that it shares with the TPS).



* HFPVD = High Frequency Predictable Value Demand

Fig 3: The systems archetype for transactional service systems

By understanding the demands from customers, it is possible to train workers against the high frequency, predictable value demands ('things we know we are going to get a lot of') that are hitting the system. The consequences are shortened training times and more productive employment of the worker. When the worker receives a customer demand for which he or she is not trained, the required expertise is 'pulled' as needed. In this way worker training is directly related to the requirements of the work. The worker aims to achieve single piece flow (to deal with each demand as it enters the system right through to resolution for the customer, before beginning with another demand) or, if the work has to be handed on to a flow, then the worker is focused on passing it 'clean': it must be in such a state that the next person has everything they need to take the next step. Workers have measures which relate to the customer's purpose in their hands (one-stop capability, measures of end-to-end flow) and hence, like Ohno's workers, have the latitude to experiment with and improve the work design.

Training workers against demand and ensuring they are responsible for what they do is preventative (the better alternative to inspection). All arbitrary measures (standard times, cost, targets and standards) are removed from the system and instead real measures are used to help managers and workers alike understand and improve the work. It is better, for example, to know the actual time it takes to complete transactions as 'one-stop'; this improves resource planning. Similarly it is better to know the true experience of the customer for any work that goes through a flow (end-to-end time or on-time-as-required) in order to improve the flow and, consequently, reduce costs. There are many examples of these principles in use, published examples include Pyke (2008), McQuade (2008), ODPM (2005), and Jackson, Johnstone and Seddon (2007), Seddon and Brand (2008).

At its heart, the systems archetype is concerned with designing against customer demand, managing value rather than cost. And this is the heart of the paradox: when managers manage costs, costs go up; when they learn to manage value, costs fall. It is a counter-intuitive truth.

Counter-intuitive truths

Ohno discovered a series of counter-intuitive revelations in creating the TPS. The most notable of these was to discover that costs were contained in the flow of work, not in creating economies of scale:

‘To think that mass-produced items are cheaper per unit is understandable, but wrong’ (Ohno 1988 p68)

This can be re-written for service organizations as follows:

In service organizations to think that service activity is equivalent to cost is understandable but wrong.

Ohno’s innovation might be termed ‘economy of flow’ (Seddon and Caulkin 2007) as compared to economy of scale. We have shown here how ‘economy of scale’ actually creates waste which is kept hidden by management’s practices. Commenting on this distinction H Thomas Johnson said that scale economy ‘is a concept that should be discarded’ (Caulkin 2008).

Taken as a whole, these truths represent a different ‘systems thinking’ philosophy of management, comparable to the philosophy behind Ohno’s TPS, and in opposition to the prevailing style of management.

Change as emergent, not planned

Ohno placed high value on the need for gaining an understanding of an organization as a prerequisite for making any changes. To make the fundamental change that moving from the present style of management to managing the organization as a system requires managers first to understand their problems. As they study their organization as a system, managers discover the problems they thought they had are not their real problems⁷.

Ohno said: do not codify method

The ‘lean tools’ movement is directly in conflict with the beliefs of the architect of the TPS. Taiichi Ohno asserted that method must not be codified:

‘While most companies focused on stimulating sales, Mr. Ohno believed just-in-time was a manufacturing advantage for Toyota. And for many years, he would not allow anything to be recorded about it. He claimed it was because

⁷ A method for studying transactional service organisations as systems is provided in Seddon 2003 and 2008.

improvement is never-ending – and by writing it down, the process would become crystallized (Ohno 1988 pxi [foreword]).’

To codify method is to impede understanding.

Writing about the differences between what Henry Ford intended (for Ohno saw Henry Ford as a fellow ‘flow’-thinker) and what subsequently occurred in the Ford Motor Company, Ohno said:

‘As in everything else, however, regardless of good intentions, an idea does not always evolve in the direction hoped for by its creator.’ (Ohno 1988 p100).

The same could be said for Ohno’s ideas. The TPS has been codified as a set of ‘lean’ tools; the tools have been promoted to managers occupied with managing costs and while some minor process improvements may have ensued, it is also probable that many tools interventions have raised costs. Not only does this represent a missed opportunity for significant performance improvement, the impact of these interventions on morale has been palpable. ‘Lean’ has become ‘mean’.

The TPS was and is a system. Operating at the system level provides the greatest lever for performance improvement and it hinges on management’s preparedness to do as Ohno did, to gain knowledge that challenges current assumptions. Johnston’s (2005) appeal for the development of frameworks and techniques to provide greater rigor to the field of service management remains both relevant and urgent.

Bibliography

Advice UK 2008 'It's the System, Stupid! Radically Rethinking Advice' AdviceUK: London (Downloadable from www.adviceuk.org.uk, accessed 7/4/2009)

Ahlstrom, P (2004) 'Lean service operations: translating lean production principles to service operations' *International Journal of Services Technology and Management*, Vol 5, nos 5-6 pp545-564

Bowen, D.E. and Youngdahl, W.E. 1998. 'Lean Service: In Defense of a Production-Line Approach' *International Journal of Service Industry Management* 9, 3

Caulkin, S 2008 'Be efficient, please customers, cut costs ... that's it' *The Observer*, Sunday 28/12/08

Chase, R.B. 1978, 'Where does the customer fit in a service operation?' *Harvard Business Review*, Vol. 56 No. 4, pp. 137-42

Deming W E 1982 'Out of the Crisis' MIT Press; Massachusetts

Grönroos, C 1990 'Service Management and Marketing' Lexington Books, Lexington, MA

Jackson, M, Johnstone, N and Seddon, J 2007 'Evaluating Systems Thinking in Housing' *Journal of the Operational Research Society* no 59, 186–197

Johnston, R 1994 'Operations: From factory to service management' *International Journal of Service Industry Management* Vol 5, No 1

Johnston R 2005 'Service Operations Management: Return to Roots' *International Journal of Operations and Production Management*, Vol 25 No 12 First published in 1999

Levitt, T. 1972 'Production-Line Approach to Service' *Harvard Business Review*, September-October

McQuade, D 2008 'Leading Lean Action to Transform Housing Services' in *Public Money and Management* Vol 28 no 1

Office of the Deputy Prime Minister (ODPM) 2005 'A Systematic Approach to Service Improvement Evaluating Systems Thinking in Housing' ODPM publications: London.

Ohno, T 1988 'Toyota Production System' Productivity Press: Portland, Oregon. Translated from Japanese original, first published 1978

Pyke, W 2008 'Is performance personal or in the system?' *Management Services*, Winter 2008, Vol. 52 Issue 4, p40-47

Radnor Z, Walley P, Stephens A and Bucci G 2006 'Evaluation of the lean approach to business management and its use in the public sector' Scottish Executive, Edinburgh

Radnor, Z and Bucci, G, Evaluation of PaceSetter (Lean, Senior Leadership and Operational Management) within HMRC processing, September 2007

Seddon J and Caulkin S 2007 'Systems thinking, lean production and action learning' in Action Learning Research and Practice Vol 4 No.1 April 2007, special issue: 'Lean Thinking and Action Learning.'

Seddon J 2005 'Freedom from Command and Control' Vanguard Press: Buckingham. First published 2003.

Seddon J 2008 'Systems Thinking and the Public Sector' Triarchy; Axminster

Seddon, J and Brand, C 2008 'Systems Thinking and Public Sector Performance' in Public Money and Management Vol 28 no 1

Seddon, J 2009 'Failure Demand – from the horse's mouth' Customer Strategy Issue 1, Vol 2 Winter 2009 pp 33-34

Spear and Bowen 1999 'Decoding the DNA of the Toyota Production System' Harvard Business Review Sept-Oct

Taylor: FW 1998 'The Principles of Scientific Management' Dover Publications: New York. First published in 1911

The Times 5/1/2007 'Is this banana active?' <http://www.timesonline.co.uk/tol/news/uk/article1289640.ece> accessed 08/01/09

Womack, J. P., D. T. Jones and Roos D, 2007 'The Machine that Changed the World' New York, Macmillan. First published 1990

Womack, J. P. and D. T. Jones 1996 'Lean Thinking' New York, Simon & Schuster.

Womack J 2006 November e-newsletter. See <http://www.lean.org/Community/Registered/ShowEmail.cfm?JimsEmailId=67> for the newsletter in full (accessed 15/11/07)