

A knowledge creation perspective on 'LEAN' approaches to policing in England and Wales

Harry Barton (Harry.barton@ntu.ac.uk)
Rupert L. Matthews (Rupert.matthews@ntu.ac.uk)
Nottingham Trent University

Abstract

The police service in England and Wales continue to face intense pressures to manage and reduce budgets while simultaneously maintaining and improving levels of service. In achieving reform, attention has been directed towards the implementation of proven operational improvement frameworks, such as 'lean thinking' taken from the automotive industry. However, the qualitatively different contexts have resulted in 'lean' interventions making only limited contribution to police reform. This research draws on contemporary views of 'lean' as a knowledge creation process to assess how such a reconceptualization may contribute to more successful police transformation.

Keywords: Knowledge creation, Absorptive Capacity, Lean Policing, Organisational Change

Purpose

An effective and legitimate police service represented a fundamental cornerstone of a developed nation. However, such services need to be located within a new age of public sector finances that calls for budgetary responsibility, moving towards greater levels of efficiency and a need to acknowledge the value for money of services. Such change has been further motivated, accelerated and required by global economic changes in public sector finance, resulting in the UK government's comprehensive spending review of 2010. This has applied increased external pressures on previously protected public services, requiring tangible changes in service structure in order to deliver significant savings in costs. In addition to reductions in central funding, service complexity has also been added by the continuing evolution of the communities being served by the police forces in England and Wales. Rather than the not inconsequential tasks of providing similar services while making significant cost savings, there is also a need to radically reimagine what police forces deliver, what they look like and how they operate.

Over the last 30 years, private sector manufacturing has seen large-scale transformations, similar to those potentially required in public and specifically the policing context. During the 1970s and before, British manufacturing was categorized as difficult to manage and difficult to reform, with changes actively resisted by a strong union presence and part public ownership. Products manufactured in Britain were viewed as having poor quality, poor reliability and high cost. It was only when competition was introduced from overseas, there was a realization that dramatic improvement was needed. While successive governments were able to slow the encroachment of competitors through quotas and local manufacturing requirements, the automotive industry, not only in the UK, but globally has been transformed. At the

heart of the transformation has been the implementation of not only world class manufacturing techniques, but more specifically 'lean' manufacturing techniques (Womack, Jones, and Roos 1990).

Facilities that operated in a 'lean' manner were able to produce products with performance characteristics that had been viewed as mutually exclusive, such as high reliability with low cost, customized products with short lead times or quick response with low levels of inventory. Consequently, public sector organisations have looked enviously upon the transformations of private sector manufacturing, with the intent of translating such improvements to their own operations. Through the effective implementation of 'lean' techniques to develop 'lean' operations, there was a view that similar improvements could be made to public sector organisations, and achieve significant cost savings. However, difficulties have been experienced within the implementation of 'lean' in the public sector (Radnor and Osborne 2013). Questions are then rightly raised in terms of whether lean is the right strategy for the public sector environment or question if it was the implementation of the framework that was flawed. This leads to the presentation of the research question that will begin to be addressed in the work:

RQ: How does the implementation of lean techniques need to be reconceptualised within English and Welsh policing to improve its relevance?

This research takes a critical perspective towards the implementation of 'lean' and, more generally, operational improvement within the context of police forces in England and Wales. Through a critical deconstruction of 'lean', the aim of a lean initiative is presented as a means of developing awareness of the need to change, the accumulation of understanding and motivation to make organizational change. This process will be interpreted through an absorptive capacity and knowledge creation perspective of lean, to theoretically underpin discussions. Absorptive capacity is employed to explore how particular firms identify the need to make improvement and accept new approaches to working. Knowledge creation is employed to conceptualize how new practices and processes are developed based on individual and organisational learning. The research methods applied within the work will then be presented before presenting findings, implications for management, opportunities for further research and conclusions.

Theory and Context

Browning and Eppinger (2002) stated that "process improvement requires process understanding" (p.428), where it is necessary for practitioners to explore operational processes in order to make appropriate changes that will deliver the desired improvements. From this perspective, rather than lean techniques representing particular ways of operating, lean techniques, or more broadly problem solving tools, could be viewed as means of developing understanding. Consequently, while there may be a need for those implementing lean to learn about particular tools and techniques, emphasis also needs to be given to how the tools can help develop new knowledge and understanding.

The accumulation of knowledge has been identified as the key component of competitive advantage in a modern environment (Grant 1996). Previous research in

operations improvement initiatives has illustrated the critical role of knowledge creation in terms of the outcomes of improvement projects (Anand, Ward, and Tatikonda 2010). This perspective accounts for the changes in practices that realise immediately from process changes, but also how the knowledge created in projects can provide benefits to subsequent improvement activities. This may include the development of perspectives at an individual level that accept the use of revised procedures and change how individuals view operational practice. Hines et al. (2004) applied this perspective specifically within the context of lean, conceptualising lean as an organisational learning (OL) process, drawing from work by Fiol and Lyle (1985, p.803), presenting lean as “*a process of improving action through better knowledge and understanding*”.

However, while the resolution of operational issues is a key aspect of exploring the implementation of lean, attention also needs to be given to the “front end” of problem solving and lean implementation (Marzec and Tan 2011). Before operational improvement activities can be carried out, there are additional, critical OL activities that need to take place and have a potentially critical role in all later activities. With a degree of homogeneity between police forces, there are similar opportunities for each force to access information on performance, national data and the need for budget cuts. In addition to awareness of similar information about the need to improve, forces also have similar resources available to facilitate any improvements that are required. Withstanding their similarities, forces within the England and Wales have engaged in operational improvement to differing extents with significant variation in their degrees of success.

By also viewing operational improvement activities as a mechanism requiring OL to change operational systems and reflect organisational requirements following the acquisition of knowledge from external sources of information (Huber 1991) understanding can be developed of why external performance measurement data has not initiated improvement. While there may be an awareness of a need to change, Fiol and Lyle (1985) illustrated that it may require the onset of an organisational crisis to accept the new knowledge and discard accepted approaches to operating, as was experienced in the automotive industry. In addition to an organisation’s willingness to accept externally originating information, in order to realise change, the information needs to be interpreted by the organisation and disseminated in order to affect subsequent behaviour and realise organisational change (Huber 1991). March (1991) conceptualised this process in terms of organisations being able to adapt to account for the introduction of new organisational members (or new ways of operating). He stated that unless firms regularly introduced members (or new ways of operating) and adapted their processes, they became unable to learn from new sources of information, instead favouring to continue to refine existing operational processes.

Within the context of Policing, such phenomena can be interpreted as an organisation looking internally when making improvements, and developing operational practices, processes, institutions and doctrine over significant periods of time. By developing and institutionalising organisational codes of practice, through socialisation processes (Fiol and Lyles 1985), the Police are potentially less likely or able to accept new knowledge originating from external sources, instead favouring to adapt existing processes. Cohen and Levinthal (1990, p.133) presented this as rejecting

knowledge that was “*not-invented-here*” resulting from a lack of related knowledge or poor absorptive capacity. Poor absorptive capacity not only limits the ability to accept new information from external sources, but also limits the ability to accept more complex knowledge which can lead to the creation of new knowledge. Cohen and Levinthal (1990) proposed that this was due to firms with low absorptive capacity having insufficient related knowledge to see value in the new knowledge so rejecting it.

This leads to the identification of two key learning processes that determine how organisations, and specifically police forces, engage in learning, organisational improvement and ultimately innovation. Firstly, how police forces identify the need to change and which sources of information are they able to make use of more effectively. Secondly, how do they implement change to account for the information they acquired. This second process not only relies on the knowledge within the organisation to motivate and make changes, but also the ability to absorb externally originating knowledge if there is insufficient internal knowledge. Zahra and George (2002) conceptualised this as a two stage model of absorptive capacity, where there was both a need to access the knowledge and realise the value of that knowledge (potential absorptive capacity) and implement change that drew from that knowledge (realised absorptive capacity). A framework similar to this has been developed within a service context by Caemmerer and Wilson (2010), where the source of information had a significant impact on subsequent OL behaviours.

Sun and Anderson (2010) illustrated how this revised conceptualisation of absorptive capacity was structurally consistent with OL, from the absorption of knowledge at an individual level to realisation of change at an organisational level (Crossan, Lane, and White 1999). Lawrence et al. (2005) also acknowledged the key role of power and politics within OL, for influencing individual acceptance of new ideas and where necessary forcing changes in behaviour at group and organisational levels. With the impact of established practices within the police force, appreciation of the role of power and politics in realising organisational change appears critical. In summary, these discussions provide an overarching framework through which to view processes of organisational improvement, change and learning within the context of policing. The following section provides an overview of the implementation of new approaches to operating within the public sector as well as specific improvement frameworks.

Improvement frameworks and their impact of public sector operations

The global success and influence of lean techniques (Womack, Jones, and Roos 1990) has meant lean has been a primary focus for realising change within the public sector. Lean has been able to realise change through focusing on waste reduction, listening to the customer and continually improving operational processes through reducing unwanted variation, concepts that can be relatively easily applied to different organisational sectors. To realise such change, lean has been defined as a range of operational tools and techniques that support changes in organisational processes to realised organisational goals. However, work in the public sector has highlighted limitations of applying tools developed within a manufacturing context to a public sector service environment (Radnor, Holweg, and Waring 2012). This has led lean to be considered a “*failed theory for public services*” (Radnor and Osborne 2013), unable to deliver the same results as were possible within the manufacturing context.

However, while lean is often conceptualised as the removal of waste, reducing unwanted variation and systematic improvement (Hines, Holweg, and Rich 2004), less attention is given to more suitable elements that truly differentiate lean from non-lean practices. Hines et al. (2004) stated that easily learnt, tool based elements of lean, while able to provide some significant short-term improvements were unable to provide firms with a sustainable competitive advantage. Consequently, it was not the refining and improvement of existing practices, but the ability to make more dramatic changes to organisational systems that provided firm with a competitive advantage. This limitation has been identified within the literature on the implementation of lean in police forces where it is not the refinement of existing processes but “*a requirement to fundamentally review how police services are delivered*” (Barton 2013, p.222).

While the work within the policing sector on operational improvement is limited, Greasley (2004) provides a useful counter point to discussions in terms of attempting to re-engineer, rather the refine existing processes within the police sector. Hammer and Champy (1993), in “*re-engineering the corporation*”, spoke of the need to fundamentally reimagine organisations in order to deliver services that meet the needs of vastly different organisational environments. More contemporary work into lean manufacturing identifies similar limitations, where too great a focus on cost reduction can limited more extensive change and ultimately limited the scale of change (de Treville and Antonakis 2006). Within the american police context, similar issues were identified between one focused on bottom-line savings and the other with a greater emphasis on organisational renewal and sustainable success (Sugarman 2010). Consequently, in addition to the OL framework, the current research will focus on the extent to which OL took place, not only at an operational level but also within organisational level systems.

This critical perspective of public sector lean highlights a number of alternate perspectives on how lean can be reconceptualised within the police context. Firstly, attention needs to be directed towards what information initially motivated the implementation of lean and how this is absorbed by the organisation. Secondly, attention is also needed on the knowledge present in the system to making changes to organisational systems in order to make improvements to account to the acquired information. Finally, the nature of the changes that are realised need to be considered, in terms of how similar the revised operational systems are to the ones they replace. The nature of such changes are likely to be reflected in the scale of organisational changes, the degree to which performance was improved and potentially the extent to which changes were resisted.

The developed framework, informed by absorptive capacity and OL provides a potential means to reconceptualise lean implementation activities. The following section present an outline of the data collection and analysis process.

Design/Methodology/approach

To investigate how business improvement activities have been pursued and affected the operational improvement individual police forces, in July 2011 funding was secured to finance a pilot study of 5 forces within England and Wales. The intention was to collect data on how police forces were actually engaging in operational change activities, away from the reported rhetoric surrounding the nature, variety and scope

of Lean initiatives. Initially 14 Chief Officers and Borough Commanders (London) were contacted and 5 agreed to participate in an initial pilot study.

Interviews focused upon discussing recent improvement activities to identify key activities that forces engaged in, parties involved and outcomes of the activities. While drawing from literature to structure the analysis of collected data, the research pursued a theory building approach (Eisenhardt 1989), to build new theory related to the implementation of operational and organisational improvement activities within the police context. The broad selection criteria, while limiting the ability to confirm insight across case contexts allowed the conceptual framework to be explore across a broad selection of operational contexts. The result was the development of potentially more robust theories, with greater external validity (Yin 2009). Table 1 provides an outline of the forces involved in the research.

Police Force	Type	Location
Welsh	Constabulary	Wales
Metro	Metropolitan Police Borough	London
South	Small constabulary	South England
Central	Mid-sized constabulary	Central England
Swest	Small constabulary	South-West England

Table 1: Case Database

Data from the case studies was analysed in terms of what information initiated the improvement activities, the willingness to accept information, the nature of external support, the willingness to make use of external support and the impact on operational activities. This analytical framework gives emphasis to both absorptive capacity and OL processes. The following section presents findings from the case in relations to the framework

Findings

Table 1: Case Database summary

Police Force	Driver	Nature	Aims	Tools	Direct Outcomes	Indirect outcomes
Welsh	Following critical external audit by CPS, sponsored by Local Criminal Justice Board	Lean review of criminal justice services	Develop understanding of the process from arrest to summary trials	brainstorming, 5 why, Value stream mapping, cause effect, cross functional workshops, visual management	process changes, cost savings, daily team briefings	good evidence of cultural change leading to a multi agency approach
Metro	Imposed cost cutting, Borough commander not wedded to idea that lean was the answer	Strategic objectives measured against performance indicators	Maintain staff morale during cuts	Visual management	No evidence of any adoption of lean methodologies	-

South	Chief constable	Externally supported performance improvement programme (QUEST)	Deliver benefits, support senior officers with investment decisions and build continuous improvement capabilities	Training for senior management, visual management, process mapping	reduce process times of arrests,	doubts about sustainability of initiative, following removal of low hanging fruit
Central	Annual Policing Plan	Adopted Home Office QUEST (lean) programme for productivity and performance improvement	Ensure people see staff, budgets and all other resources being used wisely to deliver value for money	(Cross functional workshops, value stream mapping, cause effect, 5 why) from QUEST	Chief constable viewed initiative as a success	Chief constable to review way services are structured, planned savings to be redirected
Swest	Funding secured to pursue productivity and performance improvements	Champions trained in lean implementation with previously secured funding	initiate improvement activities to improve productivity and performance	small teams, value stream mapping? Job rotation (team disbanded)	small savings	lean initiative disbanded

Across the case forces, there was considerable diversity in the motivators and drivers of lean initiatives. While all forces were operating within the same broader context of budgetary restraint and the need for cost savings, imposed cost cutting was the motivation for only one of the reported lean initiatives. Interestingly, the aims of the activities were also varied, from developing understanding of operational processes to maintaining staff morale during cuts. What was also interesting was that cost cutting was not a primary aim of any of the initiatives, instead greater emphasis was given to making changes to processes in preparation for cost savings that would be imposed in the future.

To account for the lack of knowledge of operational improvement activities, one force engaged in training of the initiative champions and two forces worked with an external change programme. This provided additional resources and knowledge for implementing organisational change. However, within the activities involving the external consultancies, while changes were made, sufficient attention was not given to embedding new practices. Without knowledge of improvement activities becoming embedded into each organisation, once support was removed, there were insufficient capabilities in the organisation to continue change activities. In comparison, the force that had trained individual champions in lean appeared to have insufficient power to coordinate internal resources necessary to support the dissemination of change practices more widely, so also had difficulty in maintaining improvement activities. In comparison, Central did provide a counterpoint, where the chief constable had begun to accept the potential of new operational techniques and had begun to plan further improvement activities. This formalised approach to initiating further improvements reflected the initial improvements being part of the policing plan.

The two forces that did not appear to draw as extensively from external sources took quite different approaches. Metro attempted to pursue broad aims of cost cutting based on strategic measures while also attempting to maintain staff morale. This broad project definition made it difficult not only to define what the project was aiming to achieve, but also validate whether the improvement activities had been a success. By attempting to achieve a lot, but not carefully defining the process or drawing from external support, very limited benefits were realised. In comparison, the Welsh force

focused their improvements on a particular operational process, following the receipt of a critical external audit. Due to the report directing attention to the force as a whole, there was greater managerial commitment to resolving issues, directing support across different operational functions in multi agency workshops, which focused upon the identified process. With a project of limited scope, the force was able to explore the problem in depth, involve a range of operational staff, and realise tangible (process changes and cost savings) and intangible (cultural change) benefits.

While the acquisition of information from external sources could directed improvement activities, and external support (to a degree) supported organisational change, the processes to implementing change can also be given further attention. While the initiatives as a whole were defined as focusing upon 'lean', each aimed to change and improve operational processes. The activities can be conceptualised as the process of translating information and the need for organisational change into realised change at an organisational or force level. From this perspective the roles of the different lean tools applied within each initiative can be reinterpreted, in terms of how they translate aims for improvement into changes in practice. This provides an alternative perspective from lean tools being the form of knowledge being acquired in lean initiatives, to the acquisition of the means to then create new knowledge and enable change.

The 'lean', problem solving tools, such as cause effect diagrams or 5 why analysis provided a means of undereathing embedded assumptions of operations issues, providing a foundation for developing new approaches to operating. Through group-level problem solving activities, individuals can begin developing shared understanding and accepting new approaches to operating. Tools such as value stream mapping then provided a means of changing how operational staff perceived other functions within the context of individually oriented work. Finally, the use of visual management, the most widely applied practice across the case forces provides a means of embedding new operational practices overtime, maintaining new types of operational practices and communicating change to external parties. Unfortunately, within many of the cases, insufficient attention was given to the 'front end', knowledge creating, problem solving elements before implementing visual management practices. Consequently, lean effectively further institutionalised existing practices, adding new non-value adding activities (process measurement).

In summary, each of the initiatives involved in the research appeared to take the form of pilot activities, oriented around developing understanding of 'lean' tools and techniques. Such an approach allowed each force to explore the relevance of lean to their operations, helping force senior management decide how further improvement activities could be pursued in order to realise costs saving associated with further cuts. Unfortunately, due to this pilot nature not being explicit, attention was not given to carefully defining what the aims of a particular initiative would be, to allow the outputs, in terms of effectiveness and learning to be reflected upon appropriately. This meant that specific roles and deliverables were not always defined within activities, resulting in the success of particular initiatives being difficult to define, creating difficulties in determining whether further lean activities should be undertaken. The initiatives were then judged in isolation, in only one case did the completion of the initiative lead to the development of further improvement plans (Central).

Relevance/Contribution

The findings provide a broad picture of the practices and parties engaged in improvement initiatives and the potentially critical impact of how improvements are initiated or what initiates improvement activities. However, the identified 'pilot' nature of the activities included within this work both reflect when the research was conducted and the need for further research as the comprehensive spending review moves into its second stage. Consequently, it was difficult for any of the case forces to be viewed as having undertaken OL, rather some learning related to operational processes and 'lean' techniques. Within the second phase, there will be a requirement for more significant, tangible cost savings, reflecting Barton's (2013) call to "fundamentally review" policing practices (p.222). This highlights the potential need for greater emphasis on the transformational improvement frameworks that result in more dramatic change, that are facilitated by the more extensive creation of new knowledge. The evidence begins to suggest that lean techniques may provide a useful first step, on a longer road to transformation, helping increase the awareness of forces for the need to change, the knowledge of the processes through which they can undergo and implement change (e.g. increase their absorptive capacity).

The identified frameworks of absorptive capacity and OL provide a broad framework for further research within this domain. With 4 more years of experience of organizational change, police forces may be better positioned to critically reflect on the services they provide and the effectiveness or role of particular operational improvement techniques. Further research will be able to explore how improvement interventions have been embedded into organisations following on from the current research. Rather than looking at isolated improvement activities, the evolution of improvement projects, portfolios and techniques could also be given attention. This will help provide rich data through which to explore the relevance of absorptive capacity and OL within the implementation of Lean policing and policing reform. Further direction can then be provided to practice in terms of what forms of learning, knowledge creation and support are required to realize wholesale transformation of policing services.

References

- Anand, G., P.T. Ward, and M.V. Tatikonda. 2010. "Role of explicit and tacit knowledge in Six Sigma projects: An empirical examination of differential project success." *Journal of Operations Management* 28 (4):303-315.
- Barton, H. 2013. "Lean'policing? New approaches to business process improvement across the UK police service." *Public Money & Management* 33 (3):221-224.
- Browning, T. R., and S. D. Eppinger. 2002. "Modeling impacts of process architecture on cost and schedule risk in product development." *Engineering Management, IEEE Transactions on* 49 (4):428-442. doi: 10.1109/tem.2002.806709.
- Caemmerer, B., and A. Wilson. 2010. "Customer feedback mechanisms and organisational learning in service operations." *International Journal of Operations & Production Management* 30 (3):288-311.
- Cohen, W.M., and D.A. Levinthal. 1990. "Absorptive Capacity: A New Perspective on Learning and Innovation." *Administrative Science Quarterly* 35:128-152.

- Crossan, M.M., H.W. Lane, and R.E. White. 1999. "An organizational learning framework: from intuition to institution." *Academy of Management Review* 24:522-537.
- de Treville, Suzanne, and John Antonakis. 2006. "Could lean production job design be intrinsically motivating? Contextual, configurational, and levels-of-analysis issues." *Journal of Operations Management* 24 (2):99-123.
- Eisenhardt, K.M. 1989. "Building Theory from Case Study Research." *Academy of Management Review* 14 (4):532-550.
- Fiol, C. Marlene, and Marjorie A. Lyles. 1985. "Organizational learning." *The Academy of Management Review* 10 (4):803-813. doi: 10.2307/258048.
- Grant, Robert M. 1996. "TOWARDS A KNOWLEDGE-BASED THEORY OF THE FIRM." *Strategic Management Journal* 17 (Winter Special Issue):109-122.
- Greasley, Andrew. 2004. "Process improvement within a HR division at a UK police force." *International Journal of Operations & Production Management* 24 (3):230-240.
- Hammer, M., and J. Champy. 1993. *Reengineering the corporation: A manifesto for business revolution*. London, UK: Nicholas Brealey Publishing Limited.
- Hines, P., M. Holweg, and N. Rich. 2004. "Learning to evolve: A review of contemporary lean thinking." *International Journal of Operations & Production Management* 24 (10):994-1011.
- Huber, G.P. 1991. "Organizational learning: The contributing processes and the literatures." *Organization Science* 2:88-115.
- Lawrence, Thomas B., Michael K. Mauws, Bruno Dyck, and Robert F. Kleysen. 2005. "The politics of organizational learning: integrating power into the 4I framework." *Academy of Management Review* 30 (1):180-191.
- March, J.G. 1991. "Exploration and exploitation in organizational learning." *Organization Science* 2 (1):71-87.
- Marzec, P., and K.H. Tan. 2011. "A knowledge-based view of process improvement: Examining the role of networks and knowledge acquisition." Euroma, Cambridge.
- Radnor, Z., and S.P. Osborne. 2013. "Lean: a failed theory for public services?" *Public Management Review* 15 (2):265-287.
- Radnor, Z.J., M. Holweg, and J. Waring. 2012. "Lean in healthcare: the unfilled promise?" *Social Science & Medicine* 74 (3):364-371.
- Sugarman, Barry. 2010. "Organizational Learning and Reform at the New York City Police Department." *The Journal of Applied Behavioral Science* 46 (2):157-185.
- Sun, P.Y.T., and M.H Anderson. 2010. "An examination of the relationship between absorptive capacity and organizational learning, and a proposed integration." *International Journal of Management Reviews* 12 (2):130-150.
- Womack, J.P., D.T. Jones, and D. Roos. 1990. *The Machine that Changed the World*: Rawson Associates, New York, NY.
- Yin, R.K. 2009. *Case Study Research: Design and Methodology (Applied Social Research Methods)*. 4th ed. Thousand Oaks, CA: Sage Publications Inc.
- Zahra, S.A., and G. George. 2002. "Absorptive capacity: a review, reconceptualization, and extension." *Academy of Management Review* 27:185-203.