

From Letters to Logistics - The enabling role of a lean transformation programme in a national postal service: The case of An Post, Ireland

Seamus O'Reilly, Cork University Business School,^a(s.oreilly@ucc.ie), David Murray, An Post^b (david.murray@anpost.ie) and Joe Aherne, Leading Edge Group^c, (jaherne@leadingedgegroup.com)

^aCork University Business School, Ireland, ^bAn Post, Ireland, ^cLeading Edge Group, Ireland

Abstract

Purpose

This paper investigates the role of a lean transformation programme in supporting the transition of a national postal (mail) service from a traditional letter delivery service to a competitive parcel delivery service.

Methodology

Given the objective an intrinsic case study (Stake, 2005) approach was adopted, as this specific case was of interest. To support this approach the researchers had access to a range of data sources including, archives (e.g. strategy documents), reports (e.g. project reports and outputs), and access to management involved in the transformation programme.

Findings

The findings highlight the fundamental role of leadership, at all levels, and organisational culture in supporting a LSS transformation programme. The balance between dedicated experts and larger projects on one hand and wider engagement throughout the organisation on the other hand was instrumental to embedding an LSS culture. In this regard frontline managers had a key role to play.

Limitations

As with any case study research we must be careful when generalising the findings. Furthermore, given the relatively recent strategy deployment within the case organisation, further follow-up studies are required to establish the sustainability of the culture change and benefits achieved.

Practical Implications

The study links research and practice through assessment of the organisational journey and consideration of the findings in the context of success factors identified in the literature. Management behaviour and practices at all levels were fundamental to achieving a LSS transformation culture, including 'go and see' for senior management and active daily huddles facilitated by frontline management.

Originality

On the basis of a systematic literature review, Danese *et al.*, (2018) call for exploratory case studies/action research to better understand how lean could be implemented in public sector. This intrinsic case approach adopted responds to this.

Keywords: Public Sector, Lean Six Sigma, Mail Service, Post Service, Lean Transformation.

Article Classification: Case Study

1. Introduction and brief Literature Review

This study addresses a neglected area in the context of Lean Six Sigma (LSS) research, transformation projects in state-owned companies. As highlighted by Danese et al (2018) there has been limited attention to LSS transformation programmes in the public sector, with some notable exceptions such as healthcare and education. Furthermore, the focus of this study is a national mail service, a sector which has experienced considerable disruption both prior to and during the COVID-19 pandemic. While national mail services, both state-owned and privatised, worldwide are grappling with fundamental change to their business models, few seem to have looked to LSS transformation programmes to support this change. An Post, the Irish postal/mail service, has adopted a LSS transformational approach. Thus, the aim of this study is to explore this organisational experience and consider this within the context of the LSS literature on transformation programmes.

Numerous studies and reviews have pointed to various factors influencing the success of LSS transformation programmes, however across these the importance of leadership and organisational culture are particularly evident (Netland, et al 2020). Emiliani and Stec (2005) emphasis the need to follow leadership practices appropriate to the organisational level Manager work behaviour and interaction with employees influence the level of organisational engagement with lean transformations (Antony and Gupta, 2019). In this regard, the role of frontline managers has attracted increasing attention, since frontline managers are in daily interaction with their teams, they are a good position to influence employee engagement (Sission, 2019). The importance of senior leadership commitment is also clearly recognised (Mann, 2010), for example C-suite commitment to LSS philosophy with clear alignment to strategy deployment is a well-established LSS transformation success factor. This needs to be manifest in their behaviour, including 'go and see' through Gemba walks and action based on these.

In addition to the role of leadership, the need to balance the role of dedicated (e.g. LSS Black Belt) experts and wider involvement of staff in continuous improvement has been highlighted (Liker and Hoseus, 2010). As too much emphasis on the use of advanced tools & techniques and big project wins focused on cost savings may limit wider engagement and employee driven improvement of the working environment. Similarly, while training is also a key enabler, the balance between advanced (e.g. Black and Green Belt) and more introductory (e.g. Yellow and White Belt) training is important, as is the clear linkage of training with strategy and active use of skills gained (Sission, 2019).

2. Methodology

Operations management differs from most other areas of management research, in that it addresses both the physical and human elements of the organisation (Drejer *et al.*, 1998), given this and the focus of this research, a case study methodology was adopted as this addresses both behavioural and structural elements associated with LSS transformation programmes. Furthermore, Danese et al (2018) call for exploratory cases studies/action research to investigate the implementation of lean in the public sector. This research follows Stake (2005) as we adopt an intrinsic case study approach and purposefully select a single case that displays particular characteristics of interest, i.e. a LSS transformation programme in a public sector area that has received little research attention to date. In conducting this case study, the authors had full access to all relevant documentation and access to both management and the lead consultant involved in the transformation programme. Therefore, data available allowed for a holistic a case study approach.

3. An Post Case Study

The Context – a competitive environment

The mail business provides an interesting transformation challenge as over recent years, world-wide, there has been a steady decline in letter delivery largely due replacement by e-mail and a steady increase in parcel delivery mainly due to an increase in online shopping by consumers. For example, the United States Postal Service (USPA) reported peak mail delivery in 2006 of 213.4 billion items, since this peak mail has declined on a yearly basis with 129.2 billion items delivered in 2020 (Statista, 2020a). USPA reporting includes parcel delivery in ‘mail’, which has grown steadily over this period. Overall, in the US retail e-commerce sales increased by 13.2% year-over-year from 2000 to 2018, representing market share growth from 0.9% to 9.9% (Statista, 2020b). This further emphasises the unit decline in letters. A similar pattern is evident world-wide, for example their 2018-19 Annual Report, Royal Mail in the UK predicted that UK domestic letter volumes would fall by about 26% over the following five years. In response to the changing business environment Royal Mail launched a step-change transformation plan. The COVID-19 pandemic has accelerated these trends, with greatly increased e-commerce activity and familiarity with digital enabled communication. The latter may accelerate ‘e-substitution’ in the letters market and the former has greatly increased parcel deliveries. Indeed, in their interim 2019-20 report Royal Mail reported that for the first-time parcel revenue was greater than revenue generated from letters, representing 60% of total revenue compared to 47% in the previous period. Similar, impact is seen in the US, for example the USPA reported a 60% growth in parcel volume across the US in April 2020 as this pandemic spread across the globe.

Thus, national mail services find themselves in a fast-changing business environment competing and partnering with a range of established logistics providers and e-commerce businesses (such as Amazon and Alibaba). The growth in the parcel delivery market is illustrated by the long-standing Pitney Bowes Parcel Shipping Index¹. Their most recent annual report (November, 2020) reports that global parcel volume surpassed 100 billion units for the first time in 2019. This represented a 17.7% volume growth. The competitiveness in this market is evident in revenue growth of 9% in 2019 compared to 2018. Competition is further fuelled by the entry of e-commerce businesses into to the delivery market, notably Amazon. In 2019 Amazon Logistics delivered 1.9 billion packages in the US through its in-house delivery network, with a CAGR forecasted at 22% to 2023. Given that global growth has been greatly influenced by China (63.5 billion parcels shipped in 2019 and an increase of 26 percent in parcel volume year-over-year), excluding China presents a more accurate picture for the remaining 12 countries monitored by Pitney Bowes. Across these 12 countries parcel volume increased by 6.7%, from 37 billion in 2018 to 39 billion in 2019, which nonetheless represents considerable growth. Growth is forecasted at 14.8% CAGR for 2020-2024 (i.e. 220-262 billion parcels). However, given increased uncertainty created by the global pandemic, the forecast provides a range that shows volumes could be as low as 200 billion or as high as 316 billion parcels by 2026.

¹ The Pitney Bowes Parcel Shipping Index measures parcel volume and spend for business-to-business, business-to-consumer, consumer-to-business and consumer consigned shipments with weight up to 31.5kg (70 pounds) across Australia, Brazil, Canada, China, France, Germany, India, Italy, Japan, Norway, Sweden, the United Kingdom and the United States and represents the parcel shipping activity of 3.7 billion people.

Therefore, the transformation of legacy national mail services required to respond to market changes and compete in this fast-changing competitive environment presents a considerable challenge. While all these legacy businesses need to respond to this challenge, the paths chosen differs. The case organisation, which is the focus of this paper, An Post, choose to look to Lean Six Sigma to support their transformation project.

An Post – background to the case study organisation

An Post is the state-owned provider of postal services in the Republic of Ireland. An Post provides a "universal postal service" to all parts of the country as a member of the Universal Postal Union. The current entity was established in 1994, however the organisation in various forms has offered a postal service for over 400 years. The business employs over 9,000 people and offers letters (including postal stamp and mail marketing) and parcel delivery.

The organisation gained experience of Six Sigma and Lean over the last ten years. This culminated in the current Lean Six Sigma (LSS) initiative. In 2009 the business launched a Six Sigma programme to improve its quality of service, setting the standard at 94% of all items delivered next day While this initiative supported improvement in this area and training was conducted throughout the organisation, a culture of continuous improvement was not embedded in the organisation. In 2016 a new CEO was appointed who embraced the need for continuous improvement and organisational culture change. He launched an employee survey to shed light on staff views of the organisation. This highlighted concerns around organisational culture and also about the existential threat posed by declining letter volumes. In response the business launched a lean programme, however this did not generate widespread engagement. Hence an Operational Excellence Management team and Senior Management engaged in a series of workshops and concluded that a fresh approach was required to address the challenges faced. They aimed to achieve this through development of an approach the was innate to the business and labelled this the ‘An Post Way’ Operational Excellence Model. The business engaged with a consultancy firm specialised in transformation programmes, the Leading Edge Group, in early 2018 to roll-out and establish this operational excellence model within the business.

Meeting Peak Demand – the burning platform

In early 2019 projected peak demand for parcel deliveries over the Christmas season emerged as the burning platform for the business. The management team conducted a thorough After Action Review (AAR) following Christmas 2018 and engaged with a range of stakeholders to establish future demand trends and develop a Peak Demand plan for 2019. A series of Gemba walks informed a Value Stream Mapping (VSM) exercise that established the ‘As Is’ process from when a forecast is received to when the parcel is delivered. This included detailed examination of activity and demand trends of major customers over the year, including the type of forecast they provided and how this impacted on the An Post infrastructure. This identified ‘volume metric’ (i.e. the size of the package) as a key metric in addition to the number of units/parcels, as size of package increased greatly over the Christmas period. This impacted on the infrastructure as an increase in package size stretched the capacity of vans, people, buildings, equipment, etc. This exercise provided a

national VSM that established cycle times and takt times and provided a complete understanding of operating capacity.

This understanding of the current state informed what was required to meet forecasted demand. On this basis it was evident that a step change was required to put in place the capacity to deliver the demand predicted for 2019. Rather than looking immediately towards a capital expenditure plan, the team engaged with Leading Edge Group to develop and roll-out a LSS transformation programme that focused on a process-based approach, engagement of staff at all levels and delivery of specific projects that would build on existing resources.

Proactive communication about this burning platform and roll-out of the LSS transformation project brought to life the key elements of the ‘An Post Way’ Operational Excellence Model, as illustrated in figure 1. Involving trade union (labor union) representation in all changes to culture and processes from the outset was fundamental to the approach adopted.



Figure 1: The ‘An Post Way’ Operational Excellence Model.

Widespread training and dedicated resources were fundamental to building the capacity to deploy projects and employ appropriate tools. To achieve engagement throughout the organisation 915 and 180 staff were trained to Yellow and Green Belt levels, respectively. In addition, four staff were trained to Black Belt level and resources were dedicated to operational excellence, including a full-time Head of Operations Excellence, two full-time Business Process Managers to manage and support all lean projects and provide training, and four Lean Coordinators based in parcel and mail centres who were responsible for all aspects of ongoing development and implementation of Continuous Improvement in their centre. Therefore, taking the decision to invest in people that in turn would inform capital investment plans established the fundamental ethos of the LSS programme, i.e. the primacy of the people and their input into better understanding and improving the processes employed.

Two related and well-established continuous improvement practices, Visual Management and 5S, were key to the engagement of people. These were used to develop and implement a system to support supervisors/managers and involve all staff. 5S and Visual Management

Board designs were created through an iterative approach that addressed specific needs of staff, supported frontline management, engaged all staff in the performance and management of their work area, emphasised safety and achieved business goals through process improvement. The involvement of staff is evident in the appointment of 131 5S officers throughout the organisation. Daily huddles were introduced to use the Visual Management Board. These were open interactive fora that provided staff with opportunities to highlight and solve issues.

Project Deployment -building capability

The capability to deploy projects was built through Green Belt and Black Belt training which employed the DMAIC methodology. In addition, A3 training based on PDCA was offered for smaller projects, with 34 staff completing such projects. As part of the successful completion of these projects, a certificate was awarded to all lead practitioners.

One such project, improving throughput of a Parcel Sorting machine (DPH) is presented here for illustrative purposes. At the outset a daily report on the machine throughputs on an hourly basis categorised by induction point provided a baseline. The project problem statement identified the machine was not achieving the projected throughputs per hour. The goal set was to increase the machine throughput by 33%. This was achieved by improving the processes which were in place relating to how mail was presented to the machine feeding points. The project team employed a range tools and techniques that had been introduced as part of the training programme, including (i) Gemba Walk to observe the processes on all shifts, (ii) TIM WOODS to identify the different types of waste occurring in the process, (iii) Line Graphs, Scatter Charts and Bar Charts to map the different components in the process and (iv) Fishbone Analysis to facilitate brainstorming and identify the root causes of the problem.

The run chart below illustrates the improvement achieved.

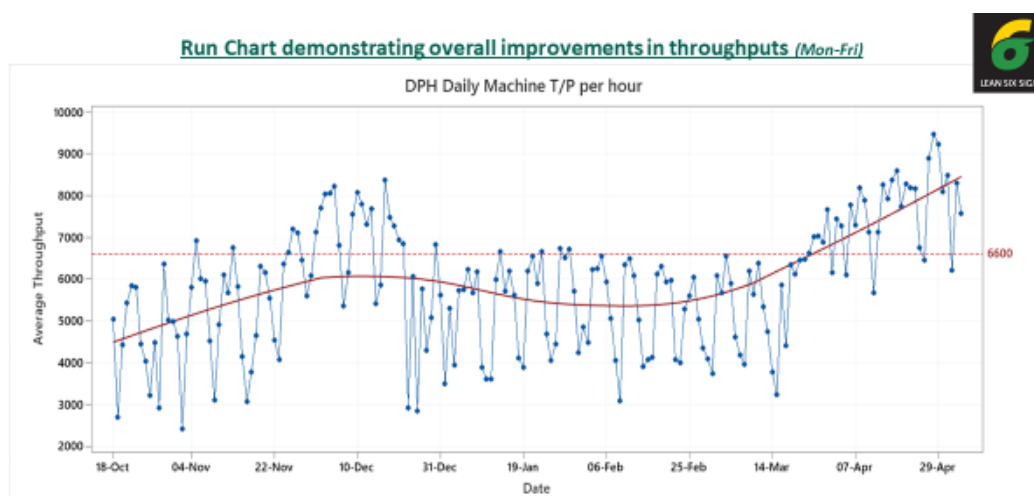


Figure 2: Run Chart illustrating DHP Parcel Sorting machine project improvements

A number of key elements of the LSS programme underly the success of this project, in particular the use of the Daily Huddle to involve staff and stimulate engagement with the project and create a sense of shared success and ongoing ownership. Frontline management facilitation of Daily Huddles was underpinned by management training on standard work. In addition, the use of data was key to success, including reconfiguring the reporting system to display hourly targets and performance.

The Growth Challenge – Defining the ‘new normal’.

The LSS Transformation programme supported the business in delivering Peak Demand 2019 and embedded the ‘An Post Way’ Operational Excellence Model within the organisation. This was evident in the organisation’s response to the rapid increase in demand for parcel delivery created by the COVID-19 pandemic. As the systems and mechanisms put in place to satisfy Peak Demand 2019 served well during the accelerated growth experienced in 2020. Indeed, Peak Demand 2019 levels were reached by week 17 of 2020 and demand continued to grow over the course of the year and culminated in unprecedented Peak Demand in Christmas period 2020.

4. Conclusions

The rapid growth and changing structure of the parcel delivery market presents a particular challenge to national mail delivery services, as these services must respond to a rapid decline in letter/mail delivery as well as the growth in parcel delivery. The latter places new demands on their established infrastructure which was initially established for letter delivery. In addition, many of these organisations are in public ownership or have evolved from public ownership into private or semi-private organisations and hence display innate organisational cultures quite different from their competitors in the parcel delivery business. Many have approached the reconfiguration of their organisations with an emphasis on automation and in some cases protracted industrial relations disputes as they introduced new work practices. In this regard the case study reported in this paper adopted an interesting approach, as they used LSS thinking to engage the workforce, involve trade union representatives, develop an understanding of current and required processes and build capability to implement projects that supported an overall transformational programme and step change.

The case company’s organisational journey provides insight into the how established key success factors play out in a LSS Transformation. In particular, the role of leadership at all levels and the importance of organisational culture is evident. The targeted success of the initial Six Sigma project and recognition of the lack of culture change despite widespread training is notable and reflects the need to balance projects backed by dedicated resources and wider engagement within the organisation (Sission, 2019). The impact of a CEO who embraces continuous improvement is evident, in particular recognition of the importance of embedding the culture in the organisation and use of an employee survey to better understand employee perspective and respond to it. The use of LSS in the *‘An Post Way’ Organisation Excellence Model* highlights the complementary nature of both Lean and Six Sigma, which has played out in the use of project improvement methodologies and tools & techniques.

The impact of leadership roles is of particular interest, for example the behaviour of senior management going to Gemba to inform their VSM exercise and clear communication of the strategy evoking the burning platform (Switch from Letters and Parcel Peak Demand). This supports long standing, but apparently often ignored, fundamental importance of direct observation by senior management (Spear, 2004). The behaviour and practices of frontline management is of particular interest. Indeed, it is not surprising to find that one of the greatest challenges was changing frontline management behaviour. In the regard the role of standard work around facilitating the Daily Huddle was an important measure to support this change. Once the Daily Huddle were established, they became a valued forum by both frontline managers and their teams. These findings support increasing evidence in the literature of the importance of behaviours appropriate to the management level (Anthony and Gupta, 2019; Netland, *et al.*, 2020; Emiliani and Stec, 2005). The continued effort to embed a continuous improvement culture in the organisation emerges as a key case study characteristic. When the ‘*An Post Way*’ *Organisation Excellence Model* was rolled-out, the balance reached between targeted projects and wider engagement is informative. This was achieved through a balance of key projects (following a DMAIC methodology) and smaller scale projects (using an A3 format following PDCA), with skills built through the successful delivery of projects recognised with appropriate certification. Similarly, the number (131) involved in 5S audits and the active engagement and improvement emanating from Daily Huddles is balanced (and supported by) dedicated resources (Head of Operations Excellence, two full-time Business Process Managers and four Lean Coordinators). These findings contribute to a growing literature the highlights this approach (Sission, 2019; Netland, *et al.*, 2020).

References

- Antony, J. and Gupta, S. (2019), “Top ten reasons for process improvement project failures”, *International Journal of Lean Six Sigma*, Vol. 10 No. 1, pp. 367-374.
- Danese, P., Manfe, V. and Pietro Romano, P. (2018), “A Systematic Literature Review on Recent Lean Research: State-of-the-art and Future Directions”, *International Journal of Management Reviews*, Vol. 20, 579–605.
- Drejer, A., Blackmon, K. and Voss, C. (1998), "Worlds apart? - a look at the operations management area in the US, UK and Scandinavia", *Scandinavian Journal of Management*, Vol. 16, pp. 45-66.
- Emiliani, M.L. and Stec, D.J. (2005), “Leaders lost in transformation”, *Leadership and Organization Development Journal*, Vol. 26 No. 5, pp. 370-387.
- Liker, J.K. and Hoseus, M. (2010), “Human resource development in Toyota culture”, *International Journal of Human Resources Development and Management*, Vol. 10 No. 1, pp. 34-50.
- Mann, D. (2010), *Creating a Lean Culture*, Productivity Press, New York, NY.
- Netland, T.H., Powell, D.J. and Hines, P. (2020), "Demystifying lean leadership", *International Journal of Lean Six Sigma*, Vol. 11 No. 3, pp. 543-554.
- Pitney Bowes (2020) *Pitney Bowes Parcel Shipping Index Reports Continued Growth as Global Parcel Volume Exceeds 100 billion for First Time Ever* (accessed October 12)
<https://www.businesswire.com/news/home/20201012005150/en/>

Sisson, J.A. (2019), "Maturing the lean capability of front-line operations supervisors", *International Journal of Lean Six Sigma*, Vol. 10 No. 1, pp. 2-22.

Spear, S. (2004), "Learning to lead at Toyota", *Harvard Business Review*, Vol. 82 No. 5, pp. 78-86.

Stake, R.E. 2005. "Qualitative case studies", In Denzin, N.K. and Lincoln, Y.S. (Ed), *The SAGE handbook of qualitative research*, 3rd ed, 443–466. London, Thousand Oaks: Sage Publications.

Statista (2020a) *United States Postal Service - mail volume 2004-2020*, March 17 (accessed 22/04/2021) <https://www.statista.com/statistics/320234/mail-volume-of-the-usps/>

Statista (2020b) *E-commerce as percentage of total retail sales in the United States from 2000 to 2018*, Nov. 27 (accessed on 22/04/21) <https://www.statista.com/statistics/185351/share-of-e-commerce-in-total-value-of-us-retail-wholesale-trade-sales/>

Acknowledgements: No external funding was received for this article.