On the road to continuous improvement

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Abstract
In 2014, Statistics Netherlands adopted Lean Six Sigma as the standard method for process improvement. In 2015, Lean Operational Management was added to the programme. The ultimate goal of adopting Lean Six Sigma and Lean Operational Management is to build a culture of continuous improvement in which process optimisation is obvious and routine. So far it has been a fascinating journey, with setbacks and surprises. In this paper we share with you the challenges we have met, the successes we have had, the lessons we have learned and our next step to stay on course.

Keywords: Lean Operational Management, Lean Six Sigma, Quality, Efficiency.

1. Define[2]: problem definition

In 2014, Director General of Statistics Netherlands Tjark Tjin-A-Tsoi introduced his 10-point agenda, which has formed the basis for the strategic agenda of Statistics Netherlands for the next few years (Statistics Netherlands, 2014). The Process Development team (part of the Department for Process Development and Methodology) viewed as their main contribution to this strategic agenda the following two of the ten points: *Improve and secure quality* and *Make processes more effective and efficient*. These two points represent an eternal and universal challenge and bring us to the problem definition for this paper: How to get better results with a leaner capacity. The programme goals are defined as:

- Lean Six Sigma and Lean Operational Management should lead to a culture of continuous improvement in which process optimisation is obvious and routine by the end of 2018;
- Lean Six Sigma and Lean Operational Management should lead to demonstrable and substantial improvements by the end of 2018.

2. Measure: the size and nature of the problem

Until 2014, the primary way to achieve more efficient and effective processes or to increase quality was to redesign processes through large and expensive IT and methodological projects. These redesigns were (and still are) often triggered by budget cuts, the desire to implement

[2] The chapters of this paper follow the DMAIC project phases of a Lean Six Sigma project. For more information about the DMAIC project phases, see for example Wikipedia on DMAIC (2016).

new methodological methods, the use of new input data sources, or the need to replace "old" IT systems. These redesign projects usually introduced a new IT system that would often dictate a new and more efficient way of working.

Statistics Netherlands faces the challenge of realising budget cuts to achieve efficiency targets while keeping up quality. In addition, many employees are reaching their retirement age, resulting in the risk of losing single points of knowledge as well as a decreased workforce. Departments want to be able to improve their work processes, secure the necessary knowledge and become more efficient and effective without the need to replace or change IT systems or depend on IT and methodology experts. The objective of the Lean Six Sigma programme is to satisfy those needs by installing alternative methods.

3. Analyse: root causes of the problem

Traditional (IT) redesigns have a number of disadvantages, causing their inability to completely satisfy the additional needs of the statistical departments. Even though these traditional redesigns themselves are being improved, for example by introducing SCRUM, they are still aimed at introducing a new or improved IT system, i.e. relying on expertise (IT, business analysts, methodologists) from other departments.

Moreover, these redesigns usually require large investments in order to realise the change. Especially when the main goal is to replace an old IT system, a return on investment is not always achieved within 5-10 years.

Aside from the redesigns, there have of course been some small-scale improvements, implemented by the departments themselves: teams changing the way they work among themselves to solve any minor problems they had encountered. These improvements would often be less visible or known beyond the team limits and were made based on the best judgement of the people working in these teams.

The Lean Six Sigma programme was intended to introduce a method for improving processes in terms of either efficiency and effectiveness or quality, that would help the departments and teams to realise such small improvements by themselves with less effort and more frequently, using a structured best-practice way in line with the strategic agenda of Statistics Netherlands.

4. Improve: Introducing Lean Six Sigma

At the beginning of 2014, Lean Six Sigma was introduced as a method for realising improvement. Before this introduction, a few departments had worked with Lean quite successfully, and an external specialised partner was selected who would support and guide the deployment of the method.

Lean Six Sigma is a project-based problem-solving method featuring the DMAIC project phases: Define, Measure, Analyse, Improve and Control. Lean Six Sigma is organised around a Belt structure. Orange Belts are trained to create awareness of the method and to be able to make small improvements in a structured way. Green Belts are trained as project leaders of Lean Six Sigma projects (12-16 weeks). (Master) Black Belts are trained to be experts, project leaders of more complicated projects (up to 26 weeks), trainers and coaches of other Lean Six Sigma Belts. This method offers a structure to implement improvement based on best practices

and statistical analyses. For more information about DMAIC, see Wikipedia DMAIC (2016). For more information about Lean Six Sigma, see Wikipedia Lean Six Sigma (2016).

As a first step, Statistics Netherlands started training employees to become Green Belts and Black Belts and begin realising the first improvements by carrying out lean Six Sigma projects within the organisation. The basic setup within the organisation is a centralised pool of Black Belts that takes care of deployment, awareness, training, projects and coaching and a decentralised pool of Green Belts to run projects.

The first Green Belts that were trained, among them the Black Belts-to-be (Business analysts from the Team for Process Development), faced the challenge of generating the first success stories that were necessary to generate broader support for the method within the organisation. After being trained as Black Belts, the centralised team of eight Black Belts started organising the training of Green Belts, coaching the decentralised Green Belts in training and developing, and providing two-day Orange Belt training courses to spread awareness and knowledge of the Lean Six Sigma method within the organisation. The Black Belts team also organised in-house workshops and one-day conferences to present the results to a broader public, all aimed at generating awareness and support for the method.

4.1. The results after three years of Lean Six Sigma

After the first three years, the Lean Six Sigma programme has achieved some impressive results. Everyone at Statistics Netherlands has become familiar with Lean Six Sigma to some extent, either through training, participating in a project, or hearing about it in meetings or from colleagues. In terms of numbers we can state that over 600 people have been trained in Lean Six Sigma, including 9 Black Belts and over 80 Green Belts, the rest being Champion Belts (management training) and Orange Belts. One hundred and fifty projects have been completed or are still in progress. They have generated almost 23,000 hours of efficiency (12,000 more hours are expected to be generated by the time all the solutions of the now-completed projects have been implemented), next to improvements in quality and timeliness these projects have realised. The Lean Six Sigma projects offer a return on their investment within one year on average.

5. Improve: Introducing Lean Operational Management

One year into the Lean Six Sigma programme, the experiences suggested that in order to turn Lean Six Sigma into a greater success, a better understanding was needed of the performance and awareness of the processes within the teams and departments at Statistics Netherlands. In order to achieve this, Lean Operational Management was introduced as a means of increasing control over processes and performance and over the process of continuous improvement.

The introduction consisted of running pilots within two different departments. These teams started by developing their own performance visual management board and conducting daily start-up meetings as well as weekly improvement meetings. Next to the structure being provided by Lean Operational Management, attention was given to cultural aspects, such as being transparent about one’s performance, being able to accept and learn from mistakes and giving feedback to each other on performance and team spirit.

The two pilots were a success as they resulted in more insights into the performance of the teams and the processes involved and in the general spirit and mood within the teams. The pilots were followed by the decision to introduce Lean Operational Management throughout the whole organisation.

5.1. The results after one year of Lean Operational Management

As experience was gathered with the pilots, this served as a basis for the development of a standard training and coaching approach for teams looking to adopt Lean Operational Management. After an intake, a group of managers is trained. The managers are individually coached by one of the Black Belts until the team has reached a sufficient level of maturity (based on our own Lean Operational Management development checklist) in terms of Lean Operational Management. The coaching is supported by a variety of trainings (such as feedback training and pitch training) and workshops. Until now, around 900 employees in about 50 teams have been introduced to Lean Operational Management and are gaining experience by applying it in practice. Lean Operational Management is now clearly visible inside the organisation. Visual management performance boards can be seen everywhere in the office and teams are having daily/weekly stand-up meetings in front of their boards. Teams are advancing as they learn how Lean Operational Management helps them get a grip on and improve their performance, removing obstacles in a structured way.

6. Control: Lean Six Sigma and Lean Operational Management working together

In practice, Lean Six Sigma and Lean Operational Management complement each other almost perfectly and together they are a perfect match to achieve sustained and improved results.

On the one hand, where there is a gap between the expected or desired performance and the realised performance of a process, Lean Six Sigma provides an efficient and effective project-based method to analyse the problem and find root causes, leading to solutions that should close the gap. Lean Operational Management provides the culture, the structure to accept and implement these solutions and make sure they are securely incorporated into the new and improved process.

On the other hand, Lean Operational Management increases the process and performance awareness of teams, making the gaps between expected and realised performance more transparent. Lean Operational Management feeds the list of potential Lean Six Sigma projects and helps in prioritising the improvements, making Lean Six Sigma more effective as a method of realising improvements.

The training of Green Belts and Orange Belts created an awareness of waste and possible process improvements. To sustain and empower this, ‘Belt communities’ are created. The belts, together with process owners and management, should be able to identify waste and possibilities for improvement.

Referring back to the first part of this paper, when the gap between expected and realised performance is too big to be closed by a Lean Six Sigma project and it is not possible to close it without introducing new technologies, methodologies or IT systems, then (IT) redesign will be needed.

7. Reflection and next step

We can conclude that within three years, Statistics Netherlands has achieved a great deal by introducing Lean Six Sigma and Lean Operational Management. Everyone within the organisation is aware of it and around 50% of the employees have had direct dealings with the method, either by participating in a Lean Six Sigma project or by adopting Lean Operational Management. The introduction of Lean Six Sigma has caused a ripple effect in the organisation. Lean Operational Management is the key to true changes in the organisation and it was introduced just in time to sustain the momentum created by successful projects. Last but not least, implementation of Lean Operational Management is a major step towards meeting ISO standards, which is another strategic goal for Statistics Netherlands. Of course introducing the methods is no goal in itself, but a means to achieve more efficient and effective processes and to improve and ensure the quality of our work. In doing so, the Lean Six Sigma programme has successfully introduced a method which can help improve processes in terms of their efficiency, effectiveness and/or quality. By adopting the method, the departments and teams are able to realise the improvements themselves, fulfilling the needs identified at the beginning of the report.

One critical factor in the successful launch of Lean Six Sigma at Statistics Netherlands has been the support and active participation of the Director General and the Board of Directors. This assured that Lean Six Sigma received a lot of attention and emphasis at the beginning. In the summer of 2017, the Board of Directors adopted Lean Operational Management, inspiring other management layers to follow suit.

Both Lean Six Sigma and Lean Operational Management quickly became adopted within the organisation. A great help was, that, in order to be trained as Green Belt and Black Belt, execution of a Lean Six Sigma project was mandatory. Thus quick improvements and results were achieved and demonstrable.

Another key to success has been a dedicated, centralised Black Belt team. The team has led successful projects, supported and coached Green and Orange Belts in their projects, coached managers of teams using Lean Operational Management, developed various trainings, such as an Orange Belt training, pitch training and feedback training, trained over 400 Orange Belts and kept up with the development of Lean Six Sigma. To sustain the successful deployment of Lean Six Sigma and Lean Operational Management such a centralised team will probably always be necessary.

The challenge we are facing now is to secure these achievements into the daily operations of Statistics Netherlands, further aligning the efforts of the entire organisation with the strategic agenda. To do this the so-called Hoshi Kanri X-matrix is used. The X-matrix helps to align team goals to department goals, and align those to company goals. We use it to define long-term goals (3-5 years), translate these to mid-term goals (1 year) that are translated into specific targets and actions to measure and overcome the gap and achieve our goals. Lean Operational Management is used to monitor the performance and guide us towards our goals on a daily and weekly basis and Lean Six Sigma is used to close the gaps.

In addition to the linked X-matrices, or perhaps in the run-up to the linked X-matrices, Lean Operational Management will be deployed in all management layers of Statistics Netherlands. This enables the organisation to implement the goals defined in the X-matrices and to support the dialogue between the management layers, including requests for assistance, peer support and coaching.

This way, we are convinced that we are still heading north towards continuous improvement.

8. References

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