Local Enterprise Office
Making It Happen

LEAN IMPLEMENTATION IN MICRO & SMALL ENTERPRISES BOOK OF CASES 2020

ENTERPRISE IRELAND

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FOREWORD

DR ORLAIGH QUINN

All businesses must continually evolve and look for ways to improve. This is particularly relevant for small businesses which are looking to create a competitive advantage. Lean thinking and practice should be paramount for any small business to ensure they are using their resources to help maximise their outputs. This creates benefits for the whole business, from the owners to employees and customers.

Ireland has been to the forefront in equipping its businesses with Lean training and we have created a world leading Lean eco-system that is making significant impacts on businesses across the country every day. This is a credit to all of those involved and the experience they are able to impart to new and existing businesses to help them start and to grow in a way that is sustainable and efficient.

Since the Lean for Micro programme was introduced in 2015 through the Local Enterprise Offices, it has been run by each of the 31 LEOs with over 750 companies benefitting from its expertise and principles. The programme looks at how to create the best value for the customer by driving continuous improvements to utilise time, effort and resources giving greater returns to the business, improving productivity and competitiveness.

In facing the challenges of Brexit, companies will need to become more competitive by increasing their productivity and efficiency. Under Pillar 2 of the Department of Business, Enterprise and Innovation's Future Jobs Ireland 2020 Strategy and in response to the OECD Review of SME and Entrepreneurship policy in Ireland, Lean practices have been identified as a key component of improving efficiencies and embracing innovation and technological change for small enterprises. We are now truly in a global market where companies have more opportunities than ever to expand into new markets and where having an edge over their competitors is now more important than ever. This compilation of Lean case studies is an example of how success can be achieved and will hopefully encourage more businesses to avail of the benefits to this programme. A successful company is a Lean company.

Dr Orlaigh Quinn

Secretary General, Department of Business, Enterprise and Innovation

MARK CHRISTAL,

At the heart of Enterprise Ireland's *Powering the Regions* Strategy is building scale and expanding reach. It is critical from a national perspective to achieve this in the form of balanced regional development. This is in direct response to Government Regional Initiatives such as Future Jobs Ireland and Project Ireland 2040.

For over five years the Local Enterprise Offices have been working to assist small and micro enterprises who are critical to achieving this goal. Local Enterprise Offices, through their national network of 31 offices, support companies providing over 36,000 jobs. Lean For Micro is designed to encourage micro enterprises to adopt Lean business principles, to build resilience, and to be better positioned to cope with the challenges and opportunities of the marketplace. The case studies featured demonstrate the real results achieved which has translated into savings of €28m to date.

The OECD has recently highlighted some key areas which are critical to improve competitivity and efficiency: Managerial and Digital Skills, Capital Investment, and Enterprise Resource Planning. Embracing Lean methods, as has been demonstrated by the case studies featured in this publication, assists companies to:

1. Identify issues and potential improvement areas
2. Implement change
3. Achieve savings and improvements in capability and capacity

The Lean Business Offer from Enterprise Ireland and the Local Enterprise Office Lean For Micro Programme encourage companies to focus strategically on their internal processes and address the economic challenges ahead.

As development agencies, Enterprise Ireland and the Local Enterprise Offices are fully committed to strengthening small and micro businesses across Ireland. Participation on Lean initiatives will provide real advances for companies in generating internal efficiencies which will in turn empower them to build and scale for the future.

Mark Christal

Divisional Manager, Enterprise Ireland

EDITOR

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Darrin is a Lecturer in Management at Waterford Institute of Technology (WIT) School of Business. He is Joint Programme Director of the WIT Lean & Operational Excellence portfolio of executive/practitioner programmes; a Faculty Member of the WIT RIKON Centre; and Principal Lead of the WIT *Academy of Lean Enterprise Excellence*.

Prior to his academic career, Darrin worked for over a decade in the private sector as an operations manager as well as in consultancy. He joined WIT in 2004, and lectures Lean and Operational Excellence modules on various programmes, including the *Master of Business in Lean Enterprise Excellence*, the *Diploma in Lean Fundamentals* (Online), the *Executive MBA*, and the *MSc in Construction Project Management*. He supervises postgraduate research on Lean management, Lean construction, operational excellence, and supply chain management. Additionally, Darrin coordinates the Annual WIT Lean Enterprise Excellence Forum and the Annual WIT Lean Practitioner Seminar Series – popular regional and national knowledge-exchange events built on Industry-Academia-State engagement and collaboration.

Darrin continues to work extensively with industry, encompassing public and private organisations across all services and manufacturing sectors. He is a founding member of *Lean Business Ireland*, he is Co-Chair of the *South East Lean Network*, and he assisted in the establishment of the other Regional Lean Networks throughout Ireland. Darrin has worked with *Lean Construction Ireland (LCi)* since 2015 and is Special Advisor to the LCi Board of Directors. He researches and publishes in the Lean space, and speaks at Lean and Operational Excellence conferences and events.

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CHAPTER 1

Introduction

IRISH STATE SUPPORT FOR LEAN

The Enterprise Ireland Lean Business Offer

After a successful pilot in 2009, Enterprise Ireland launched its *Lean Business Offer* (LBO) in 2010. The LBO was designed to encourage companies to adopt Lean thinking and practices to help them increase productivity and improve overall competitiveness. Additionally, it would enable the establishment of a culture of continuous improvement, and lead to increases in profitable sales, exports, and employment.

The LBO is based on three levels of engagement of increasing scale and complexity – incremental improvements – depending on the capability and capacity of the company:

1. **LeanStart** – learn the basics.
2. **LeanPlus** – performance improvement.
3. **LeanTransform** – enterprise-wide transformation in culture and performance.

The company engages with Enterprise Ireland to identify issues and potential improvement areas in the business, and then selects a Lean consultant from the Enterprise Ireland *Directory of Lean Service Providers* to support the introduction and implementation of Lean.

In 2015, the Department of Jobs, Enterprise and Innovation published an independent review of the LBO entitled *Evaluation of Enterprise Ireland Lean Business* which found that companies engaged in the programme recorded significant gains, including:

- Productivity increases averaging 20%.
- Sales increases averaging 40%.
- Delivery Adherence improvements averaging 43%.
- Product & Service Quality improvements averaging 30%.
- Employment increases averaging 11%.

By the end of 2019, more than 1,200 Lean projects were carried out as part of the Enterprise Ireland LBO, and the basic programme model has since been adopted by other State agencies, namely, IDA Ireland, Údarás na Gaeltachta, and the Local Enterprise Offices (LEOs).

Building on the success of the LBO, and so as to help Irish companies stay ahead of the competition in a rapidly evolving business landscape, Enterprise Ireland introduced the *Operational Excellence Offer in 2018*. This new offer was designed to incentivise established export-oriented companies to invest in upgraded production equipment, Lean/Operational Excellence training, and the implementation of innovative production, delivery, or organisational methods within the business. The goal was to bring the value of Lean principles into larger Digital Transformation projects.

Ruairí Ó hAilín, Department Manager Operational Excellence, Enterprise Ireland, states that:

"Enterprise Ireland is deeply committed to supporting Irish industry to develop to its full potential. We find that our Lean and Operational Excellence programmes allow us to support companies to invest in the potential of their people in a way that can have a truly transformative effect. The impact of the Lean programmes is to unleash a wave of energy and enthusiasm in enterprises of all sizes and in all regions of the country, leading to increased levels of Innovation and Competitiveness."

The Local Enterprise Office Lean for Micro Programme

The LEO Lean for Micro Programme is based on the Enterprise Ireland *LeanStart* model. It was piloted in 2015, and is now run across all 31 LEO regions. The funding is a Measure 2 Fund, and all LEO companies are eligible for the programme. As with the *LeanStart*, the programme is delivered by a Lean consultant from the Enterprise Ireland *Directory of Lean Service Providers*.

There are two delivery methods:

1. **One-to-Many** – In this delivery method, one Lean Service Provider is selected by the LEO after tender and works with all of the companies on the programme. There is an initial 1-to-2-day "Introduction to Lean" workshop followed by up to 5 half-day visits to the company.
2. **One-to-One** – In this delivery method, the company itself selects the Lean Service Provider it wishes to work with on its project.

With both methods, the Lean Service Provider will visit the company, evaluate its processes, and speak with the company's managers about challenges faced by the business and the improvement project opportunities to be carried out over several weeks. A number of Lean tools and techniques will be applied as appropriate to the needs of the business and improvement project at-hand. Additionally, management and staff will be trained and mentored on Lean.

There is no limit on the number of times a company can participate on the programme. At the end of the engagement with the Lean Service Provider, a final report, case study, and metrics, are sent to the LEO.

The value and importance of the *LEO Lean for Micro Programme* is noted by Oisín Geoghegan, Chair of the Local Enterprise Office Network:

"The Lean programme fits very well with the suite of offerings provided to small businesses by the Network of Local Enterprise Offices. Until recently, small businesses and those at an early stage of their development were placed at a disadvantage because they may not have been able to access the kind of expertise offered through the Lean initiative. As small businesses grow, it is vital that they remain focused on optimising their performance. An important part of this means they must be continually seeking ways of enhancing their productivity and competitiveness. By engaging with the Lean programme, small businesses are prioritising valuable strategic objectives of achieving success through the optimisation of business processes."

Background to the Lean for Micro Programme 2015-2019

The Action Plan for Jobs 2014 identified the need to roll-out a *LeanStart* initiative to micro companies, with Enterprise Ireland providing strategic guidance to those companies regarding Lean principles (The Department of Jobs, Enterprise and Innovation's *Action Plan for Jobs 2014 Second Progress Report*).

The LEOs, Enterprise Ireland's Centre for Excellence (led by Richard Murphy), and Enterprise Ireland's Competitiveness Department (then led by Richard Keegan) collaborated to roll-out a Lean for Micros pilot initiative in 2015.

An Introduction to Lean workshop for the participating LEOs was facilitated by Richard Keegan in March 2015 in Galway. The pilot was based on the Enterprise Ireland *LeanStart* model, with similar application and reporting templates enabling quick roll-out, and with the involvement of consultants from the *Directory of Lean Service Providers*. Seven LEOs – Galway, Limerick, Kerry, Cork South, Cork West, Tipperary, Westmeath – plus 12 micro-enterprises from across six different sectors participated. Supporting resources were developed, including, for example, information leaflets and FAQs. Donegal LEO rolled-out a concurrent programme to 11 of its micro-enterprises, with one consultant appointed to support those projects.

Both pilot projects were successful, with average savings of greater than €40,000; capacity increases on average of 45%; enhanced work environments; and positive feedback from both the LEOs and the micro-enterprises themselves. In 2017, the Department ring-fenced funding for the LEO *Lean for Micro Programme*, and by 2019 all 31 LEOs had participated with more than 750 projects carried out. Total savings accrued so far exceed €6,350,000 from a total spend of just over €2,000,000. The *Lean for Micro Programme* has proven both popular and successful, enhancing the stability, efficiency, and productivity of LEO companies.

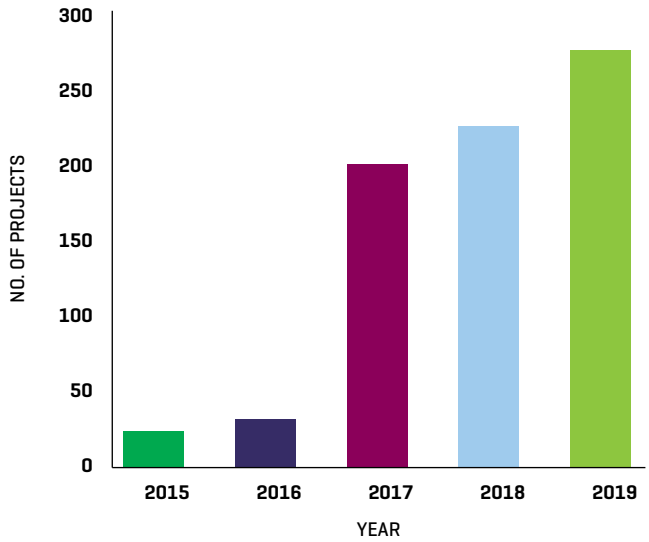

Figure 1. Lean for Micro Programme Projects 2015-2019

Richard Murphy, Department Manager LEO Support, Policy and Coordination, Enterprise Ireland, notes that:

"The collaboration between Enterprise Ireland and the LEOs on driving the Lean agenda has been hugely successful. It has provided a significant platform for the companies to improve profitability and competitiveness, and ultimately to help them fulfil their ambition and potential. It can be truly transformative. We encourage all companies to engage in the process, and for those who have to continue the focus. It is a fundamental building block in a company's growth."

The Irish National Lean Ecosystem

Ireland is a recognised world-leader in Lean and Operational Excellence. Integral to this has been the development of a national Lean ecosystem embodying the generosity of spirit typical of those involved in Lean in Ireland, as well as the "respect for people" principle underpinning Lean thinking and practice itself. This ecosystem encompasses a national community of learning and practice committed to open knowledge exchange, and sharing experiences and learnings – all with a view to increasing productivity and improving competitiveness within individual organisations, throughout the regions, as well as for the country overall. The industry stakeholders range from Large Multinational Enterprises, both foreign and indigenous, to Small and Medium Enterprises, and Micro Enterprises.

Building on this national community of learning and practice, Enterprise Ireland and IDA Ireland came together with other key stakeholders from industry, academia, and consultancy to create *Lean Business Ireland* as a central and core repository for all things Lean in Ireland. Aligned to this national platform, each region has established its own Regional Lean Network to run knowledge exchange and networking events and activities at a regional level.

CHAPTER 2

Case Studies

ROWAN

AUTHORS:

L-R: *Tom Rowan, John O'Shanahan*

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

The Lean project was delivered at the Rowan office in Trim Co. Meath. Rowan operate in a very dynamic and competitive environment. The initial focus of the Lean deployment was to apply Lean thinking to a number of the administrative processes within Rowan. The objective of Lean in the Admin Office was to "streamline and eliminate waste from administrative processes and add value". The admin team take information, process it, and convert it into another form of information. Strategic goals had been agreed by the senior team and Lean thinking was applied to ensure the measurement processes linked to those high-level goals were delivered in the most effective and efficient manner. The aim was to deliver more value to the customer with reduced effort and resources. Rowan operated a document management system but the metrics around the business were administered outside the system and thus presented some opportunities for improvement. The initial introductory work was done with the Managing Director based on the fact that Lean begins with a committed leadership team with the leaders providing the foundation upon which all Lean initiatives are built.

LEAN INITIATIVE UNDERTAKEN - LEAN THINKING, TOOLS, TECHNIQUES

Two Lean projects were undertaken: the first project was to develop a new scheduling process for engineer site visits; and the second project was to develop a Lean metrics reporting system.

Appointment Scheduling

A key part of Rowan's work is site visits to carry out surveys to support engineering reports. Visits are scheduled on a pull basis and there needs to be a certain level of demand in a geographical location to generate a scheduled visit.

Lean Metrics

Lean Metrics are a standard set of measures that monitor the performance of processes through visual management techniques and which engages employees in the process. A standard set of measures helps the team

COMPANY OVERVIEW

Rowan was founded in 1998 by Tom Rowan and now employs 14 people. It is a respected multi-disciplinary company that specialises in forensic and environmental engineering, and provides a wide range of expertise to clients throughout Ireland, UK, Europe, and Africa.

Forensic engineering involves investigating an accident, furnishing a professional opinion on liability and providing expert reports and evidence in court. Rowan works with a range of leading insurance companies, solicitors, and industrial clients.

The environmental team offer a comprehensive range of environmental consultancy services to enable clients meet their statutory environmental obligations and remain competitive, including, for example, Environmental Impact Assessment Reports. Rowan clients include local authorities and leading industrial companies.

The successful growth of the business allows Rowan to provide solutions to its clients whilst also providing employment and contributing to the local economy.

www.rec.ie

to reach the targets and goals, boosts output and service quality, and allows the management team to easily manage processes at a glance. The first Lean initiative focused on the monthly management reports generated by the admin team. Performance metrics are critical to Rowan's business as they help to identify issues as well as direct and drive performance improvements. It is critical that all metrics are clear to the intended audience and can be generated as efficiently as possible. The two most critical management reports were the monthly WIP (work in progress) reports and the monthly work completed reports (work analysis report).

Process Mapping

The initial approach involved developing a map of the current state processes. The purpose of process mapping is to identify areas of opportunity for efficiency improvement. Process mapping provides insight into the process and helps generate ideas for process improvement.

All steps, decision points, and processes were looked at and documented. The current state map outlined the process as it currently worked, who was responsible for each step, and how long it took to complete each task. The future state map was then developed to represent the ideal process.

Meetings were held with the supplier of the document management system, and a number of reporting modifications were specified and implemented which formed part of the automation solution for the scheduling and metrics.

8 Wastes

The current state was evaluated versus the 8 Wastes of Lean. Motion, Over-Processing, and Skills were the wastes with the greatest improvement potential for metrics reporting and for scheduling:

- **Motion:** To collect the required data, the admin team had to interrogate the document management system case-by-case, which involved a lot of movement into and out of the document management system each time.
- **Over-Processing:** The data for reports existed in multiple parallel systems and resulted in duplication of cross-checking activities.
- **Skills:** The admin team was spending a lot of the process time on manual data transposing, and not a lot of time on actual data analysis which is its value-add

Visual Management

Current state reports were presented in table format and reports were not dynamic and report views were fixed. It was decided to create dynamic dashboards which have a number of benefits, including providing real-time information, creating one version of the truth, being easier to change, allowing drill-downs, and providing a consistent view. With regard to scheduling, visibility on unscheduled cases was not available to the team.

Standard Work

Standard work documents are the best practice for performing a task or process. There are many benefits to standard work in the office, and making sure work is done according to current best practice is a pre-requisite for improvement. Implementing standard work with the admin team had many benefits, including:

- Simplifying training and upskilling.
- Improving quality and reducing defects and waste.
- Helping make results predictable and measurable.
- Shifting the focus to the process – not the person.
- Enabling faster and easier improvement.
- Encouraging engagement and ownership by team members.
- Reducing workplace stress.
- Encouraging flexibility and creativity.

Lean Office

The planned automation of the metrics and scheduling helped the admin team gain an understanding of demand patterns in the office. Understanding all of the various tasks is important to running a Lean office. The intention was to create a Lean office with automation, standard work, and visual management to support the team. A Lean office is visual and management, teamwork, and communication are all easier when anyone can walk into the work area and immediately see what is going on. Because so much admin work was hidden on computer systems, it almost became impossible to see what was happening and whether changes were necessary. The visual office made abnormal situations obvious. A Lean office runs on communication and teamwork. Because of the dynamic nature of a Lean office, team members need to be responsive and flexible when changes in demand occur. The aim was to develop a continuous improvement culture where reducing waste and making improvements becomes a part of day to day activities.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

Scheduling Solution

Following the process map on the scheduling project, it was decided to change the workflow and introduce standard work to the scheduling process. A new scheduling system was developed and implemented to track what cases were scheduled and which engineer they were assigned to, and the system also provided visibility on scheduled and unscheduled work by geographical location. All new cases were assigned a case number on the main document control system. New cases were exported to the new scheduling system daily, and the default position for new cases was unscheduled. A location field for each case was exported with the cases numbers which provided the data required for the admin team to schedule on a geographical basis. The new scheduling system reduced the time required for scheduling by 25% per week. The main saving was in the optimisation of existing data and building a scheduling system around the existing system data.

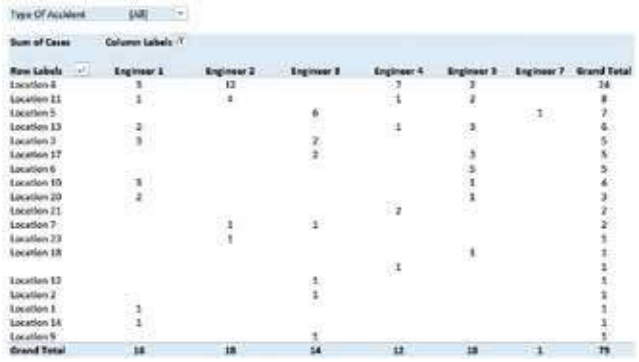

Figure 1.

Metrics Work in Progress

The standard report from the document management system was modified and a macro was written to convert data from the standard documentation system into a format ready for data analysis. A data analysis system was developed to produce WIP reports directly from the documentation management system data. All admin team members were trained on running the macro and updating the reporting system. All reports were converted to graphical format as well as the existing data table format. There was an ensuing 30% saving per month in time required to generate the monthly work in progress report.

Figure 2.

Visual Management

The data from the metrics invoicing reporting system is now used to populate monthly management reports and a team dashboard which is displayed on monitors in the office area. These show performance month-to-date and year-to-date versus target for each of the key metrics. The information from both systems is also being used to support a new performance appraisal system. It is expected that the information provided by the metrics invoicing report will support job efficiency improvement. On scheduling, a visual management system was developed in Google Maps to show unscheduled cases by geographical location.

Metrics Invoicing Report

The existing system provided data on hours-per-invoiced-job. A new system was built to automate the analysis and provided automatic trend analysis with the ability to drill into performance by engineer, by customer, and so on. There was a 25% saving per month as a result of implementing the new Lean invoicing report. Custom reports that would have taken a day to prepare are now available as standard reports from the system. Added functionality from the new system included percentage attainment performance versus target across a range of business KPIs. The new invoicing report system provides operational efficiency, reporting down to customer, category and case level. This level of data analysis will support business strategy development over the coming years.

Figure 3

Standard Work

Through the use of new system reports, new macros, and a bespoke reporting solution, the admin work around scheduling and management report generation has been standardised and multiple team members are trained on this work. Since the system has been installed, there have been some further improvements as expected in an iterative Lean approach. The new systems are an excellent baseline for the next round of improvement activities. As the MD states:

"We're delighted with the efficiencies and improvements introduced as a result of the Lean programme. We strongly recommend the programme to any SMEs looking to improve their operations. We look forward to working on further Lean initiatives."

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AIRTEL ATN

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OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

Airtel ATN develops complex software in a highly-regulated industry. The software must be delivered physically and in a controlled process. This means the software development process does not lend itself naturally to iterative development.

Regulations also require a high level of transparency around testing and documentation. The existing Standard Operating Procedure (SOP) was to treat each software delivery as an independent project and move through phases of development, verification and validation testing, and deployment.

For these reasons, a LeanStart was undertaken to adopt the Kanban method at team level as the main tool to support an effective change management approach in order to achieve a more Lean value stream. By visualising work and adopting practices to increase efficiency as well as creating feedback loops for continuous improvements, the team was armed with tools and practices underpinned by Lean principles to increase their efficiency.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Under this LeanStart initiative, varied approaches were undertaken in order to successfully bring relevant outcomes.

Visual Management

The purpose of us using visual management was to improve the effectiveness of communication and reaction. Visual aids enabled us to convey messages quicker and invite more interest than written information. This also means exposing opportunities of improvement to allow them to be addressed sooner. Effective visual management entailed us putting careful thought into all the types with a view to attaining the greatest impact. There was a big focus on improving transparency by visualising work. This also entailed us collaboratively conceiving and evolving a Kanban Board that reflected all the work the team was performing.

COMPANY OVERVIEW

Airtel ATN is an independent supplier of data communication solutions for the aerospace industry. Airtel ATN has been active in the Aeronautical Telecommunication Network (ATN) since 1993 and is an international leader in the development of Data Link communications solutions, including ACARS and FANS. The company develops and implements Data Link equipment and test services. With more than 20 years in the aviation industry, Airtel ATN has consistently been an international leader in the development of ATN communications software.

www.airtel-atn.com

AIRTEL ATN

Figure 1.

Kanban

Kanban is a method for defining, managing, and improving services that deliver knowledge work, such as professional services, creative endeavours, and the design of both physical and software products. It may be characterised as a "start from what you do now" method – a catalyst for rapid and focused change within organisations – that reduces resistance to beneficial change in line with the organisation's goals.

The use of the Kanban Method made visible what is otherwise intangible knowledge work so as to ensure that our service works on the right amount of work – work that is requested and needed by the customer and that our service has the capability to deliver. To do this, we use a Kanban system – a delivery flow system that limits the amount of work in progress (WIP) by using visual signals (see the Kanban Board example in Figure 1).

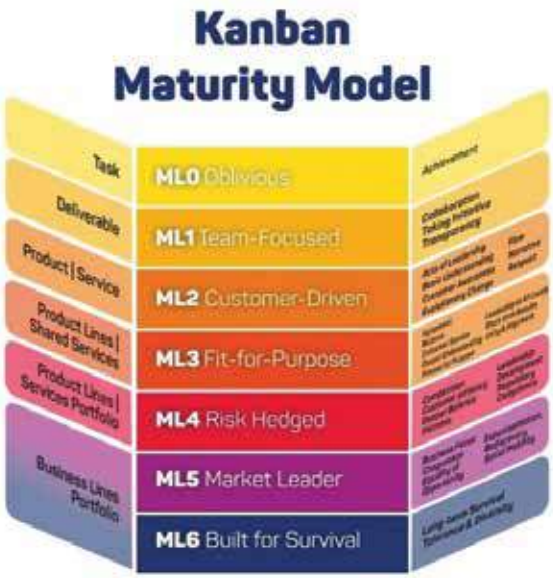

Figure 2.

The Kanban Maturity Model (KMM) was used as a guideline to evolve Kanban adoption. KMM provided a proven road-map of guidance on recommended practices to meet our improvement goals. This road-map helped us to eliminate two common failure modes in Kanban and Agile implementations: overreaching causing an aborted start, and, false summit plateaus that fail to realise the full benefits.

Visualising work and evolving Kanban highlighted opportunities to improve like reducing and limiting our WIP to avoid constant task switching. Additionally, they served as the main input to the new feedback loop meetings for continuously improving our way of working.

Feedback Loop Meetings – Kaizen

Kaizen is core to Lean and is an approach to creating continuous improvement based on the idea that small and ongoing positive changes can reap major improvements. Typically, it is based on cooperation and commitment, and stands in contrast to approaches that use radical changes or top-down edicts to achieve transformation. It was developed in the manufacturing sector to lower defects, eliminate waste, boost productivity, encourage worker purpose and accountability, and promote innovation.

Figure 3.

Cost of Delay for Prioritisation

Cost of Delay is a way of communicating the impact of time on the outcomes we hope to achieve. More formally, it is the partial derivative of the total expected value with respect to time. The model supports some principles of product development flow, including:

- Taking an economic view.
- Ignoring sunk costs.
- Making financial choices continuously.
- Using decision rules to decentralise decision-making and control.

Cost of Delay combines urgency and value – two things that research shows humans are not very good at distinguishing between. We took this approach to help us make better and more informed decisions, that is, decisions based on us understanding not just how valuable something is, but also how urgent it is.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

As mentioned earlier, we used the KMM as a guideline to evolve Kanban adoption. Our Router Team consolidated at the organisational maturity level 1 (Kanban Maturity Level) transitioning to level 2 presenting the following outcomes:

- Clearer priorities and more focus on customer value (outcomes) over outputs.
- Improved transparency.
- More collaboration with positive impact on team's morale.
- An emergent Leaner process supported by a frequent inspection and adaptation.

Additionally, by reducing the limit of parallel tasks that each team member could work on to max 2, there was an average improvement from 40%+ loss time on context switching to roughly 20%.

The Router Team consisted of 8 team members, which thus represents an average of 20%+ gained time to spend on value-adding activities, and less WIP led to higher quality and shortened lead times. As a team member noted:

"Kanban boards are a great mechanism to help visualise prioritised work. Enable teams to engage together – radiate information."

At program level, Cost of Delay and WSJF (Cost of Delay divided by Effort) were introduced to help us to understand and quantify the impact of time (urgency) and outcomes (value). Comparing the WSJF amongst current and new demands helped our leadership to make more accurate decisions regarding the prioritisation of new demands.

Furthermore, a program board was conceived in order to visualise the current state of demands as well as what is coming up in the pipeline. The benefit to this is transparency to all staff and increased communication between the leadership team and our software engineers. The team now understand why work is prioritised a certain way and what the long-term strategy is behind the decisions taken. They also have a better understanding of what work is coming next.

"Small changes such as using a visual board and having a board containing sales pipeline information have had a very significant impact on how we work. There is a lot more transparency in the company and we have reduced the number of tasks each person can work on at any one time. Everyone has a clearer picture of what we are doing and why we are doing it, and also what is coming next. This has improved focus and overall efficiency in our development teams."

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WOW WEE

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OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

After initial introductions were made, followed by a site tour, a basic presentation on the principles and tools of Lean was given to all the staff by Leading Edge Group consultant, Barry O'Brien. This helped to identify several potential areas for improvement, including a review of inventory holding, and a review of shop and retail spaces. We quickly realised that a new business management structure needed to be put in place to aid in the daily/weekly operational needs of the company. Also, chaos at Christmas time, due to the large amount of temporary staff recruited, needed to be managed in a much leaner way. Workplace organisation was identified as a priority, and Aine quickly realised the real potential of Lean and quickly became a disciple – this is what was needed to really make a step change in the business and Aine was on the case.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Core Lean concepts like 5S, Kanban replenishment, and standard work all formed a key part of this project and each helped to inculcate a positive culture change within the organisation. We all realised that we needed to manage the business better by using and analysing real data. In addition, we could all see the potential benefits of being better organised, having faster response times to stock queries, and reductions in customer complaints. It was identified that we needed to revise the layout of the stores to hold "more with less" by creating a functional "supermarket" in the storeroom. There was a reduction in work-in-progress and improvements in overall general tidiness. Standardised processes were created for the key activities in the workplace. A new process for controlling "multipart" orders was put in place. There were 8 hours per week of lower level tasks delegated out to other staff, allowing Aine time to concentrate on more strategic and value-adding work. It was also decided to create an office space for supervisors and admin staff.

Kaizen

A "Kaizen Blitz" was carried out on the storeroom. Procedures were drafted for embroidery and packing, and a procedure tested for product shipping. Benefits were immediately seen at the individual workstations as there was less clutter.

COMPANY OVERVIEW

The Wow Wee journey began in 2002 in Ennis when Aine Gleeson had a small business idea and set about designing elegant Christmas stockings and hand-embroidering each one. In 2004, Aine launched the first e-commerce website in County Clare - WowWee.ie – and she now employs eight wonderfully creative and inspirational ladies. The dedicated team help people to source beautiful and luxury personalised gifts, and have them shipped locally or anywhere in the world. Wow Wee is proud of its great reputation in gifting and supplying gifts to some of the top companies and celebrities around Ireland, the UK, and the US.

www.wowwee.ie

WOW WEE

Figure 1.

Figure 2.

Figure 3.

5S

Implementing 5S in the storeroom is well in progress and we have completed the set-in-order phase.

Kanban

A Kanban supermarket was trialed on high runner products. Label stores have been completed using mail merge and Word, and a dymo printer purchased. Certain procedures were modified to reflect more subjective terms – that is neat, tidy, high quality – with a view to more data-driven procedures.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

Since Lean has been implemented within the company, the operation is running much smoother. It is now easier to perform stock counting and there is an increased tidiness across the organisation which has led to more effective use of floor space. There are also standardised procedures developed for the production area, which greatly supports control of our operational costs. The operation is running much smoother since Lean was implemented, and inventory control has improved considerably using Kanban replenishment systems and 5S organisational improvements. The team is very happy with their newly designed work areas which has also led to increased productivity. We have taken all the feedback on board and customised the wall on the inside of the building with positive affirmations and relatable phrases. This was a very enjoyable team effort, and you would now know it is Wow Wee.

The written processes have been fully tested with new season workers that recently joined our team to accommodate the Christmas orders. There is a huge reduction in errors, meaning our customers have a great experience and our repeat orders have increased. Our manual multi-batch orders are working and were fully tested with the increase in orders for Christmas 2019.

We have continued, and will continue, to roll-out Kanban and 5S across the store. Our staff have gone through a mindset change and we are now using real data to aid decision making and identify and achieve improvements in the business. It is important for us as a team to continue to

Table 1. Annualised Cost Savings Achieved

TASKS	Cost Savings Achieved
Workplace Organisation: • 5S, Kanban, storeroom reorganisation, building of small two-person office, reorganising specific production areas (embroidery, vinyl, ornaments, books, packing, shipping). • New multi-batch procedure was implemented for complicated orders.	**€2,250**
Data Integrity: • Better use was made of computer systems, more accurate input and use of vendor pricing, regular stocktaking and weekly data analysis of performance metrics.	**€900**
Standardised Procedures: • Standard work procedures were developed for all key processes facilitating process repeatability. This was particularly useful for training temporary operators for production spikes (i.e. Christmas rush). This also helped to minimise customer complaints caused by errors in picking for example.	**€2,000**
Effective Delegation: • By empowering staff, supervisor and management non-value-add time was reduced with more time spent on strategy and improvements.	**€6,000**
Cost Savings (annually recurring)	**€11,150**
Additional Spend Year 1	**(€2,500)**
Adjusted Net Cost Savings	**€8,650**

implement standard work and refine 5S through standardising and sustaining our processes. We aim to finish the physical layout in the embroidery, and get frames organised and mounted on the wall. We are continuing to work on rolling-out and sustaining 5S in the warehouse. We are also aiming to locate a new packaging area using Lean principles and optimised flows. A business management structure is now in place to keep the operational needs of the company up to date.

"I quickly realised the real potential of Lean for growth and efficiency and promptly became a disciple – this is what I needed to really make a step change in the business. I was on the case!! We are now fit for purpose for the next development phrase of the business."

Figure 4.

Lean Service Provider
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Joe Aherne
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ACADEMY CRESTS

AUTHORS:

L-R: *Phil Cone, Allyson English*

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

Over the past few years we have been keen advocates of the Lean initiative, and, with the help of our Local Enterprise Office in Cork, we have been able to engage in the Lean for Micro Programme.

We understood early on the benefits that the Lean methodology and teaching could bring to our company, and we were very interested in embracing this new way of thinking and putting into practice new techniques to help our business. It was clear to us from the outset that to make this a success we would require the involvement of the team and that we would need to bring them with us on this journey and learn how to "see" the wastes together, as well as to find ways to improve the way we work and to ultimately balance the workload to streamline our processes.

Through our various Lean projects we have not only upskilled our team, but we have also encouraged staff engagement which has in turn resulted in considerable time savings, cost savings, and increased profitability.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Workplace Organisation and Review of Workflow Processes

Supported by our Local Enterprise Office in Cork, we undertook this Lean project in 2018 and 2019 with the help of our Lean Service Provider, Allyson English. The opportunities we identified through the selection of this project included how to improve the use of space, improve our workflow, and standardise our processes. We did this using the following Lean tools and techniques:

- 5S Workplace Organisation.
- 8 Wastes.
- Understanding Value-Adding and Non-Value-Adding steps in the process.
- 5 Lean Principles: Value, Value Stream, Flow, Pull, Perfection.
- Visual Management.
- Standardisation.

COMPANY OVERVIEW

Academy Crests is a family-owned embroidery and printing business based in Cork. It has built a solid reputation for quality workmanship and friendly on-time service throughout Munster and Ireland since it began in 1986. The company has now grown to be one of the largest embroidery manufacturers in the Munster region. We treat every order with professionalism and pay close attention to detail and quality. We aim to help both the private and public sectors by developing their brand and ensuring their work wear, sportswear, school wear, or corporate wear makes them stand out ahead of their competition.

www.academycrests.ie

ACADEMY CRESTS

Firstly, we looked at the overall workshop, offices, and shop layout to ascertain where the wastes were and how we could better utilise the space available. We did this with the help of 5S workplace organisation by sorting out what was needed and what wasn't, and clearly identifying a place for everything and putting everything in its place. By conducting this exercise, we were able to see where the numerous wastes were in the form of Transport, Motion, Inventory, Defects, Over-Production, and Over-Processing.

By understanding what the wastes were and identifying them with the help of the 8 Wastes training, we were able to look at areas where these were evident and introduce measures to reduce them, or remove them where possible. We involved everyone in the company in this exercise, and in doing so we were able to gain staff buy-in and encouraged the individual departments to solve the problems and look for opportunities to improve existing practices.

We also improved workflow with the introduction of a U-Cell layout in the workshop area. We achieved this by moving machinery, workstations, and storage areas, and by clearly identifying walkways and setting specific zones for set work. As well as this, we improved the process of how work flowed from department to department, resulting in less duplication, less confusion, greater clarity, and quicker throughput.

Figure 1.

We identified that our software package had a greater potential to deliver more efficient data, and so we installed extra workstations at each of the work benches to allow for the data to be collected for each job more efficiently, thus providing staff and management a clearer vision of the overall results. We also installed a number of extra printers at different workstations which enabled us to reduce one of our Motion wastes, and we reviewed our Goods-In and Goods-Out storage areas and traded out our old racking for a more suitable type, and again this enabled us to significantly reduce one of our Motion wastes.

Finally, we introduced a standardised job ticket. This improved job ticket took into consideration the new workflow, the different departments' requirements for information, and the overall look in order to keep it simple. The results from this were very encouraging as previous to this it was noted that there was missing information or not enough information, which led to queries, confusion, and ultimately to delays in having the work progress through to production or in some instances stopping production altogether. The new improved job ticket has negated all of these past problems and is in operation now with further ways to improve being considered going forward. We also introduced a Date Stamp at every workstation, thus enabling us to track the flow of the job ticket, and, where necessary, identify any potential bottlenecks. These small but subtle changes have made a significant impact on our work flow process.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

The primary improvement that resulted from the workplace organisation was the reduction in floor space required. We downsized from a three-unit workshop to a one-unit workshop with no loss of business or capacity to deliver. The impact also resulted in reduction of rent costs and associated overheads, and the bonus was the extra revenue stream generated by being able to sub-rent the remaining two units.

We also rearranged the stock, the machines, and the workbenches to create a smoother workflow, and the impact of this was completion of five days of production in four days, thereby increasing capacity by 20%.

With clearer identification, labelling, floor markings, and a place for everything and everything in its place approach, we

Figure 2.

reduced Motion, Transport, Inventory and Over-Production. The introduction of visual management meant that the team could monitor the situation clearly and, more importantly, action any defects quicker.

The clarity of roles and responsibilities within the team and the introduction of a new format job ticket have meant that the workflow has become more streamlined and more efficient with less queries between departments, which in turn has led to quicker turnaround times.

"The difference between success or failure is your attitude, your action, and your willingness to learn. Lean is not a trend – it is a way of Life."

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SKYLARK ELECTRIC ATTIC STAIRS

AUTHORS:

L-R: *Carole Morrow, Paula McNicholas*

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

The company undertook the Galway LEO Lean for Micro Programme delivered by Paula McNicholas of Lean Team Strategies. We commenced our Lean journey in 2016 after being hit hard by the Brexit vote where sales dropped by 80%. The company was forced to explore new markets and secured a large order with a distributor in the USA. To create a production process that could scale up to meet this demand in the quantity and timeline required, the company implemented a Lean production process with the help of Lean Team Strategies.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

The owner directors, Peter and Carole, attended the Lean workshop on Lean principles, waste, 5S, and numerous other Lean tools and techniques. During the subsequent onsite mentoring sessions, Paula took Peter through a spaghetti diagram to identify the waste in the production process (see Figure 1). This was a real eye-opener that identified huge amounts of Motion and Transportation waste. From this, a flow process was implemented, and 5S workplace organisation was introduced. Immediately, the workplace became much cleaner and was much healthier with the dust removed.

Figure 1.

Simple but effective solutions were developed such as a trolley for timber instead of having to go back and forth for different parts. As a lot of the process steps were batched, this was changed to one-piece flow, saving lots of time. For example, one component that previously took 32 minutes was reduced to 13 minutes. The final inspection and packaging process was also organised and optimised. The

SKYLARK
ELECTRIC FOLDAWAY ATTIC STAIRS

COMPANY OVERVIEW

Skylark Electric Attic Stairs is the leading manufacturer for foldaway attic stairs. We manufacture the only fully foldaway electric attic stairs in the world, designed and developed by the business owner Peter Morrow, and we offer a range of attic stairs and accessories. Our markets include Ireland, the UK, Europe, the US, and Australia.

www.skylarkstairs.com

packaging materials had been housed in different areas around the workshop. These were brought together at the end of the line and the process was reviewed for waste. This resulted in reducing the process time from 90 minutes for two men down to 10 minutes for 1 man.

The supply chain and stock control were also reviewed, along with supplier costs, frequency of deliveries and collections, and storage space so as to ensure optimal use of time and space, and to improve cash flow.

The company was contacted by a distributor in the USA who placed a large order. We would not have been able to meet this demand had it not been for the Lean systems and processes we had implemented. We also started getting enquiries from several European markets.

Due to the continued growth, in 2018 we invested in new machining capability. We re-looked at the whole process as the machines were going to bring many changes. The machines are for prepping all the timber components, such as the ladders, before assembly. At first attempt we could make 10 sets in a day, but after rigorous implementation of the Lean concepts of one-piece flow and waste reduction, we got this down to 10 sets in an hour.

The process for preparing the timber stairs components is akin to a press shop process in automotive – that is, short cycle time per piece – and this led us to create a Kanban for the various sets of stair components. This enabled us to then create a pull system in assembly. So when an order comes in we can pull the components from the Kanban to assemble into an attic stairs unit, and this has reduced the customer lead time further to an eighth of what it used to be before implementing Lean. We've also implemented more visual management in the office and in the workshop, along with daily production KPIs for the team.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

Implementing Lean at Skylark Electric Attic Stairs has enabled us to grow into many new markets – not just several countries in Europe, but also the USA and Australia. We now have robust and predictable processes that ensure our customers get a quality product delivered on time every time.

For improvements in quality, we have eliminated errors in the build process through job sheets and standard work. We have improved lead-times through 5S, one-piece-flow, Kanban, and pull. Productivity is up 300%.

We had initial savings of €138,000 in the first year, and, as we continuously improve, we are expecting a further financial impact of €250,000 in 2020. Employees are more engaged through daily communications around schedule and metrics. Visual Management in the office has improved communication on the status of customer and supplier orders. Implementing a management system in production has freed-up Peter's time for sales and product development. This focus has trebled our sales conversion and there are new products in the pipeline.

We wouldn't be without Lean at this stage – it's now the way we run our business.

Figure 2.

"The Lean Programme has transformed our company... we have reduced time in every aspect of our business and it's the only way if you want to expand... we can't thank Paula McNicholas enough for her determination, her brilliance in her field, and her dedication to what she does."

LEAN TEAM STRATEGIES

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VACUUM PRESSURE SERVICES

CASE **6**

AUTHORS:

L-R: *Kathleen Scully, Stuart Nelson*

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

We have endeavoured to learn as we progress in our business, and we have completed various Local Enterprise Office programmes and training that have enabled us to grow and develop both as a business and as individuals running the business.

It was through our LEO that we found the Lean for Micro Programme in 2018. At that stage we were looking for a mentor in stock management, and we secured Stuart Nelson as our Lean Service Provider.

Things moved very quickly from there, with Stuart identifying our needs and explaining what Lean was and how we could make improvements as part of this Lean initiative. We identified areas where we wanted to make improvements in stock control and our workshop layout. Everyone in the company got involved and worked towards the objectives laid out with Stuart's input.

Figure 1.

VACUUM & PRESSURE SERVICES

COMPANY OVERVIEW

Founded in 2000, Vacuum Pressure Services is a respected provider of Air Management Solutions to customers in, amongst others, the Printing, Food & Meat Processing, Drinks Manufacturing, Animal Feed Processing, Packaging, and Food Packaging industries. We recognise that sustaining production is vital to our customers' requirements, and, when asked about our on-the-job service attributes, 93% of our customers scored us 9/10.

We are committed to exceeding our customers' expectations of quality work carried out in a timely fashion. We endeavour to achieve this with Lean principles throughout our organisation and maintaining our Certification to ISO 9001:2015. We are establishing a culture that supports our team members so they can continue to provide exceptional customer service and which empowers each member to reach their fullest potential.

www.vps.ie

VACUUM PRESSURE SERVICES

The Lean project was challenging – much harder than we expected – and it took a lot of time and hard work. However, it was all worth it as we now have an inventory list and we have saved money by not ordering more stock as we know exactly what we have in stock at any one time. Our workshop layout has helped us to greatly improve our pump repair turnaround time, thus enhancing our customer relationships.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

The team attended a 2-day offsite training workshop prior to the mentoring sessions. This programme was specifically tailored to suit micro and small enterprises embarking on their Lean journey. We gained an understanding of Lean goals and objectives and how we could embed Lean thinking within our organisation. We learned about the history of Lean, its principles and key tools and techniques, and we gained insight to how these techniques related specifically to our business.

Figure 2.

Through the one-to-one mentoring sessions, we were able to thoroughly examine our process for the intake of vacuum pumps for repair, and things we didn't even notice – because we do them every day – were noticed by Stuart. It was through this process of working together that we identified the stages of Vacuum Pump Repairs and put a visual aid in the workshop for all engineers to use.

We also identified that the layout of our workshop was not working for us in a way that the work flowed. Thus we went through the process of what we do and how we do it, and then identified ways to make improvements to the flow of work, including new layout, new shelving, and new work benches.

Figure 3.

The stockroom was a huge undertaking to identify what products we wanted to keep stock of, what other items in this area were necessary for our business, and what, if any, items we needed to no longer carry. This exercise ensured we were focused on the principles of Waste – be they Defects, Over-Production, and so on. This project took more time than we anticipated and at times it was difficult to maintain the energy to get the job done, but with the team's commitment and Stuart's continued support and encouragement, we succeeded.

These projects are just the start for Vacuum Pressure Services, and we are committed to Lean thinking and keeping this way of thinking at the forefront of our minds every day so as to allow us to continuously improve and enhance customer satisfaction.

Figure 4.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

All the initiatives we completed have made a positive impact on the team and on customer satisfaction, and we expect to see a positive quantifiable financial impact within the first quarter of 2020.

Some confirmed achievements include:

- Time saving improvements have been made and the turnaround of pumps is now averaging 1 week from receipt of pump for repair instead of the 2.5 weeks it previously took.
- We have reduced stock as we now have full stock listings and quantities. (Financial savings have not been quantified yet, but we expect to see savings and increased cash flow within the first quarter of 2020.)
- Invoicing for workshop repair is now generated more quickly, which again will have a positive effect on cash flow.
- Our customer experience is enhanced as they get their units back more quickly.

The use of visual aids in the workshop that identify a pump's stage of repair has been one of the improvements that has had the greatest impact on time saving. As part of the Lean initiative we broke down what the stages of repair are and put it to use visually. Now at a glance, any member of staff can see at what stage the pump repair is at, for example: Arrived, Inspected, Awaiting Parts, Repaired, or Returned. We also have our schedule of work on a visual board, and all members of the service team know what customers they have to go to daily and weekly.

"Lean is more than just the sum of its parts – it enables those who want to make improvements in their business to delve deeply into every process, procedure, and system, and to find a way of doing it better, quicker, and more efficiently."

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PRO FIX

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L-R: *Stephen Hartnett, John O'Shanahan*

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

Pro Fix has been in business for more than 15 years, and has a structure of 4 full-time employees with a very good reputation for employing highly skilled staff. The company is particularly strong on the site aspect of its business. Pro Fix had previously engaged a number of times in business improvement initiatives, and it was interested in improving its competitiveness in challenging economic conditions. Management recognised there was opportunity to improve business performance and productivity, and Lean became a strategic priority. This case study examines the application of a Lean approach in this small building maintenance services business.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

The history of this Lean journey stemmed from a desire to provide a superior service to clients across all aspects of the business. Pro Fix has a small team and the admin team members have to cover a wide range of business activities ranging from purchasing, quoting and administration of work, through to invoicing and book keeping. Job productivity was selected as the main project for the Lean initiative.

Pro Fix operates in a very competitive sector. The focus was on consistent delivery of mostly small jobs, on time every time. Pro Fix was very strong on the technical aspect of the job delivery. To support business growth, Pro Fix needed to upgrade its business management systems to support the objective of delivering value to its clients with superior customer service and competitive pricing.

Process Mapping

Mapping the existing business processes identified areas in need of improvement. This process started at the quotation stage on site and carried through ordering materials, scheduling work, carrying out the job, and finally invoicing. A clear understanding of the core processes was very useful in establishing a vision for change.

COMPANY OVERVIEW

Pro Fix Maintenance Services Ltd. was founded by Stephen Hartnett in 2000. We are a building maintenance services company carrying out work for major corporate businesses with premises in Munster. We work for and with established insurance companies, and we also carry out works for internationally recognised educational facilities. Our trusted team has built up long-term and ongoing maintenance contracts with major international and domestic companies. We are experts in storm, flood, and fire repair. We are trained and certified technicians with IICRC (Institute of Inspection, Cleaning and Restoration Certification). Using the latest developments in technology, we can detect water leaks where the source of the leak may not be obvious.

www.profix.ie

PRO FIX

PDCA

Pro Fix, like many SMEs, is actively managed by the owner, with business management involving multi-tasking and being largely based on personal relationships and informality. It was decided to use the Plan Do Check Act (PDCA) cycle as a method for structuring continuous improvement efforts.

The PDCA cycle contained the following steps:

- **Plan:** Plan a change or test aimed at improvement.
- **Do:** Carry out the change or test (preferably on a small scale).
- **Study:** Examine the results: What did we learn? What went wrong?
- **Act:** Adopt the change, abandon it, or run through the cycle again.

Every job in Pro Fix is allocated a budgeted time to complete, and this is linked back to the job quotation. Pro Fix implemented PDCA on both a micro and a macro level. On a micro level, every single job was monitored for plan versus actual in terms of hours. On a macro level, all job results were collated into a weekly and monthly reporting format. For job quotes, the time taken to prepare quotes was also measured and recorded for analysis.

The initial work involved setting up a measurement system to track hours for preparation of quotes and actual job hours. This involved all employees reporting actual hours per quote/job on a daily basis. A management system was developed to track and report plan versus actual hours by job and per week/month, and this report was reviewed weekly and monthly. PDCA provided a data-based scorecard to support business improvement initiatives. Whilst PDCA is simple, its powerful format drives ongoing efforts to achieve measurable improvements in the efficiency, performance, accountability, and job outcomes that ultimately improve Pro Fix's overall performance.

The 8 Wastes

In evaluating the 8 Wastes, Motion and Waiting were identified as being the areas of waste with most opportunity for improvement. With regard to Motion, providing job information for quotes preparing materials for a job in the workshop, and time lost looking for tools in the van were identified as the main culprits. As regards Waiting, there was a lot of time lost in communications between the office and site personnel.

Pro Fix implemented Evernote as a tool to reduce waste in communications between the site and the office. Written communication on jobs for quote was eliminated between the site and office. The Lean initiative involved setting up Evernote to log site voice recording into an office inbox. This eliminated writing as an activity, and the use of voice recording eliminated Waiting and Motion on both site and office functions.

6S

A workplace organisation initiative was implemented in the workshop and site vans. Pro Fix operates an emergency call-out service, and it is important that the workshop is highly organised so that all materials required for a job can be easily selected. While on the job, workplace organisation of tools and materials in the van is critical for reducing waste time on a job.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

Based on data analysis from the quotes/job tracker, Pro Fix identified specific areas where job performance could be improved.

Quotes

Analysis of the job quote performance highlighted an opportunity to automate the preparation of job quotes. Many of the materials used were standard and repeated across jobs. A bespoke quoting system was developed which reduced the time required to prepare a quote by 25%.

Job Hours Plan Vs. Actual

Analysis of the plan versus actual hours per job provided a baseline performance measure. This data gave a measure against which improvement measures could be evaluated. Data analysis provided analysis of plan versus actual by job type and team member, and it also provided weekly and monthly trends on team member utilisation.

Weekly management meetings were set up to review plan versus actual hours. Over an extended period, job productivity (Actual versus Plan) improved by 20%. This was attained by implementing 6S in the workplace and vans, setting targets per job, and weekly team reviews of the planned versus actual hours.

Figure 1.

Figure 2.

6S Workplace Organisation

Pro Fix provides services across a wide range of building maintenance requirements. The materials and tools vary from job to job. Prior to the Lean programme, Pro Fix accumulated excess materials that might be useful for future work; however, accessing these materials involved added work in moving materials to access the required materials. As part of the 6S project, Pro Fix determined what level of inventory to carry. Any excess materials above this predetermined inventory level were no longer stored. This reduced the amount of space required for storage in the workshop, thus making it easier to pick materials required for a job.

On the tooling side, Pro Fix standardised its power tools to incorporate common battery packs. A Kanban system was set up to provide charged batteries at all time. Prior to this change, some tools had a specific battery pack, and, if the charge ran out, there were delays completing the job. Switching to a common battery pack and implementing a Kanban system reduced lost time on jobs due to depleted battery packs.

Figure 3.

Workplace Communications

Implementation of Evernote as an office communication tool reduced communication time between the site and office by 4 hours per week. There is opportunity for further leverage of the Evernote app through a roll-out to all team members for job instructions.

A bespoke mobile communications app was developed and rolled-out, and this eliminated phone calls, emails, and writing out actions. It also reduced review time as closed actions were visible on the app and did not require additional communication.

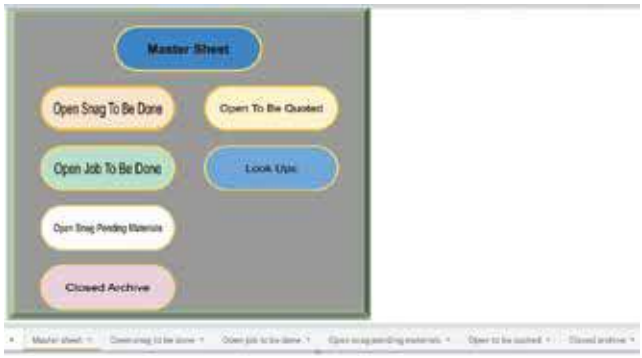

Figure 4.

Figure 5.

Accounting Package

Through the implementation of the Lean project, time required to review business performance was identified as an opportunity to reduce waste. Pro Fix was using an older non-cloud-based accounting package. A new cloud-based package, *Sort-My-Books*, was implemented. The new software provides a simple business dashboard for management analysis. The new accounting package reduced time required for book keeping by 2 hours per week.

Business Performance Tracker

Prior to embarking on its Lean journey, Pro Fix was similar to many SMEs in that its accounts were prepared annually. This feedback on business performance was lagging and did not provide timely feedback so that adjustments could be made. As part of the Lean programme a gross margin performance-per-job tracker was developed. This involves logging and tracking per job the total hours and materials utilised versus the quoted values. Gross margin on all jobs are evaluated with monthly trends. Pro Fix now has real time visibility on its business performance without waiting for the accounts. The application of Lean tools and techniques, combined with the ability to monitor business performance in real time, has supported a significant improvement in overall business performance.

Next Steps:

- Integration of communication tools across the wider team.
- Implement visual management in the planning process.
- Streamline gross margin tracker.
- Implement customer feedback processes.
- Continue to develop a culture of continuous improvements and maintain the gains.

"As an SME director, I was finding it difficult to navigate through organising the various aspects of managing the company. By engaging in a Lean programme it taught me that you can take small continuous steps to improvement without sometimes fully knowing the final destination. This approach has brought the company further than engaging in any previous thought processes or systems. Lean processes fundamentally get you organised. Being organised alleviates and reduces the stress of running the business. Adopting a Lean approach improves business performance with better margin and more robust systems. I would recommend any SME starting out or looking to improve organisation within their business to adapt the Lean programme to their company."

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CES ENVIRONMENTAL SERVICES

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L-R: *Flann Cahir, Joe Aherne*

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

At the time of starting the Lean programme we had two staff members working in the office, namely Claire and Padraig. They were over-stretched and under considerable pressure to manage and execute all office tasks. One area that was causing considerable stress was the invoicing process and delays in issuing invoices. The overall "job ticket to invoice" process needed to be fully mapped to uncover bottlenecks and to identify improvements to help reduce/remove the impact of those bottlenecks. In order to maximise cash flow effectiveness, the process of getting job reports submitted needed to be speeded up in order to "start the clock ticking" for some slow but consistent payers.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Prior to the Lean programme, our engineer was sent to the client site to complete the CCTV surveys. As we were under pressure and understaffed, Padraig would have the next site set up for them to complete. This process would continue until our customers started enquiring about their reports. As a result of customer pressure, the engineer would be pulled from site work for several days, and this would happen 2-3 times a month. They would return to the office and download the surveys, and Padraig would then review the survey results and pass on the information to Claire to generate the sales invoices. The reports and invoices would then be posted out to the client. Our credit terms are 30 days from date of invoice, and this whole process would typically result in delays of 2-3 weeks before invoicing. The above process resulted in delays of on-site work, delays in invoicing, and a negative impact on cash flows, not to mention the on-going stress levels in the office.

As a result of the Lean for Micro Programme, we have increased our office staff by two: Kieran oversees reports and client queries, and Sophie is the new administrator supporting Claire and Padraig. Electronic reporting systems with automated generating of time sheets were evaluated by the team and demonstration arranged. *Sage 50* was subsequently purchased, and the working week standardised to align with our work cycle.

COMPANY OVERVIEW

CES Environmental is a family-run business formed in 2009 by Flann Cahir. Since its formation, the company has built on its experience within the domestic sector to enable its expansion into commercial and large-scale environmental services nationwide. We currently employ 17 staff. The management team share a desire for innovation in anticipation of changing environmental waste management needs. This vision, coupled with our skills, experience, and availability of the necessary equipment and technology to provide full capacity and resources, ensures we can deliver environmental service projects both large and small as main contractor or sub-contractor.

www.cesenvironmental.ie

CES ENVIRONMENTAL SERVICES

Figure 1.

Figure 2.

Our engineer now goes on site to complete the CCTV survey, and, with our investment in the latest reporting technology, they can download a survey to Kieran in the office. Kieran is then able to review the report and compile a summary for the client. The report is then printed and an invoice produced. The process now only takes a maximum of two days in the office after completion of the survey on-site, which is a significant improvement. This has resulted in more accurate reporting, less pressure on staff, and we are now able to move to the next client faster, thus increasing our sales volumes.

We have also increased our camera crew from two to three. We are an accredited ISO for Environmental, Health and Safety, Quality and currently working for ISO 45001 Health and Safety accreditation to help us win new customers and validate our increased reputation in the work-place. This has been much easier to attain due to our new streamlined processes.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

Since Lean has been introduced to the business, we have seen many positive changes. Whilst we are a small business, Lean has given us the momentum to re-look at all of our processes and question how we do business. We use tools such as problem solving, 5S, continuous improvement events, and waste walks to interrogate what we do and identify what we can change to improve the business and quality of service to our customers. In addition, all our staff are actively involved in, and motivated to deliver, continuous improvement.

Some key benefits include:

- A reduction in the invoicing process by 4 weeks, with a new lead time of one week from job completion to invoicing.
- Using customer data and costing information to increase our sales prices.
- Many wasted management hours re-assigned to more strategic work.
- Lean learnings empowered all the team to actively participate in business decisions, thus fostering increased teamwork across the organisation.
- The generation of weekly time sheet templates makes for easier tracking of people and easier costing of jobs.
- Scheduled working week for operations staff was changed to start on Wednesday (including reporting) which enabled invoicing to take place on a Thursday.
- We have re-assigned necessary-non-value-added tasks – scheduling, invoicing, quote generation – to one of the new additions to the team.
- We are currently investigating new ways to reduce solid waste that needs to be disposed which will result in a positive environmental impact.
- We have piloted a 5S programme on our trucks, including for example, taping the tools a specific colour and developing visuals/photos on how the truck should look at all times.
- We will continue to focus on the future and on what we need to do in order to continue to be a functional and structured company supported by a newly developed 5-year strategy. We have created a future company value proposition for 2023. We are now looking at what initiatives are needed in order to achieve our strategic objectives.

Various cost savings achieved are outlined in Table 1. These are the minimum achievable and don't take into account the mindset shift across the organisation that will hopefully generate multiples of these savings ongoing.

Our overall experience of Lean has been ground-breaking, and we can't wait to continue the journey that is Lean with our empowered and dedicated workforce. The following are examples of strategic projects planned for 2020:

- IT strategy.
- Fleet replacement strategy.

- Fleet maintenance strategy.
- Feasibility for a new business venture.
- 5S on vans and in new offices.

Figure 3.

Table 1. Annualised Cost Savings Achieved

TASKS	Cost Savings Achieved
Invoicing System: • We mapped the invoicing system from completion of job to customer invoicing. • We identified two key bottlenecks and implemented improvements to minimise these.	**€2,070**
Job Costing: • By splitting the various value streams and costing separately, we identified one stream as not being profitable, namely camera, although this did on occasion transfer to more lucrative patching work. • This highlighted a strategy to focus on more specific value-added-work to support our growth strategy.	**€5,980**
Leader Standard Work: • Claire in Finance was performing all jobs as they occurred and ended up being highly stressed and bringing work home. By structuring the week for Claire, it minimised her stress levels and enabled her to be more effective and efficient. • Wellness and health are an important part of our business culture and Lean helped us and our staff to improve work-life balance. • Productivity levels have significantly increased, with quantifiable improvements to become clear over time.	**€2,000**
Minimum Cost Savings Achieved (annually recurring)	**€8,050**

"Since Lean has been introduced to the business, we have seen many positive changes. Whilst we are a small business, Lean has given us the momentum to re-look at all of our processes and question how we do our business. We use tools such as problem solving, 5S, continuous improvement events, and waste walks to interrogate what we do and identify what we can change to improve the business and quality of service to our customers."

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SAVVY KITCHENS

AUTHORS:

L-R: *Andy Spillane, Allyson English*

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

We became involved with the Lean for Micro Programme through our Local Enterprise Office in Tipperary a number of years ago, and we decided to enrol again in February 2019. We were at a stage in our business growth were we felt we needed to take a more detailed look at our processes and our wastes, plus examine the ways in which we could grow the business by improving our current practices. We felt this would help build our team and also provide a better service to our customers.

We found the Lean programme both informative and educational, and we were able to understand the importance of systems and processes, especially now with the business experiencing growth mode. With the introduction of Lean measures and understanding their place in everyday operations, we are now in a much better position to both analyse results and action them accordingly in a timely manner. By involving the team both in-house and externally with our fitters, we were able to build a complete buy-in culture.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Streamline the Order and Production Processes, and Improve Communications between Sales and Production

We did this with the help of the following Lean tools and techniques:

- 5S Workplace Organisation.
- 8 Wastes.
- Understanding Value-Adding and Non-Value-Adding steps in the process.
- 5 Lean Principles: Value, Value Stream, Flow, Pull, Perfection.
- Visual Management.
- Standardisation.

One of our biggest challenges was to improve our order process as we could see the amount of duplication involved in the current process and the difficulties this caused in completing and communicating with other departments in a timely and accurate manner. We began by analysing the

savvy™
kitchens by Andy Spillane

COMPANY OVERVIEW

Established by Andy Spillane in 2007, the Savvy Kitchens team excel in producing superior furniture. With over 10 years' experience designing and manufacturing bespoke kitchens, we are well placed to deliver an exceptional standard of product and service to our clients. From our custom built workshop in Tipperary, we create bespoke kitchens in both classic and contemporary styles. We use the finest quality natural woods and stone, whilst our craftsmen and onsite fitting teams ensure all projects are finished to exacting standard, befitting of a Savvy Kitchen.

www.savvykitchens.ie

SAVVY KITCHENS

Figure 1.

steps involved in the process and by clearly defining roles and responsibilities for individuals within the process. This led to improvement in clarity and increased confidence throughout the project. We then looked at the paperwork involved and the documentation that followed the customer order through the process, and it was here that we identified areas for improvement.

We also educated our team to understand what the wastes were in our business and how to see them and ultimately reduce them to create greater efficiencies. We also wanted to promote a better work life balance within the team – "to work smarter not harder".

We also chose to look at our workplace organisation in our workshop area and embarked on a 5S exercise with the team to clear out the workspace, label up areas and items, and create a more organised workflow. This proved invaluable both with staff engagement and visual management. Once the clutter was removed, it had a direct impact on staff morale, visual management, negating of downtime looking for items, and reduced costs in terms of over-ordering of stock and tools. We introduced our visual standards at each of the work stations to allow new and existing members of staff to see how the area should be kept.

Within the overall business we looked at our communication channels. Due to the fact that our showroom was geographically miles away from the actual workshop, we understood that this threw up its own challenges. This was an area that required improvement as it was a vital part of ensuring the process ran smoothly, and we introduced a number of measures to address things.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

Streamlining our order process has improved traceability and communication between departments. The standardisation of working documents has reduced time looking for customer details, customer orders, and installation dates.

The introduction of standardised terms and conditions has helped with the quoting stage along with a numbered quoting system to help measure and monitor lost leads and

Figure 2.

lead conversions. Sales stats are now available on conversion rates and number of quotes, for example, which all help to determine how to further improve the business.

Improved communication between Sales and Production has been evidenced, and the weekly meetings between each department has proven to be very beneficial not only in time saving, but also in the improvement of turnaround times and identification of problems/issues much quicker in the process. Visual management has played an important part here as we now have a system for looking at current jobs and their progress. We have negated double-jobbing and duplication by over 15%, thus freeing up sales staff time to concentrate more on the customer.

In the workshop area, we conducted the 5S exercise and involved the team in doing so. We not only encouraged the buy-in, but we also created a safe and secure working environment and reduced our downtime looking for tools and materials. Historically, costs looking for tools, and in most cases replacing them, was excessive. We were able to reduce this cost by 20% and reduce our stock holdings between 5 and 10%. We envisage that the aforementioned improvements will ultimately increase our output capacity by 15-20% over the coming year.

"For anyone considering on embarking on this journey, I would say do not delay. If you are serious about improving your business and your profits, and believe in involving your team, then this is the next step on the ladder for growing your business. The Lean way of thinking is a mindset, a new way of looking at things... open your eyes to a better way of doing things!"

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ARMOUR INTERACTIVE

CASE **10**

AUTHORS:

L-R: *Andrew Dewdney, Jamie Casey, Paula McNicholas*

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

Before the transition to becoming a Lean business, both Directors were heavily involved as the management team in the day-to-day operations of running the agency. A substantial amount of time was spent on client communications, disjointed project management, and overseeing the production process. Knowledge would typically be siloed with the specific designer or developer who worked on that project, and support issues were typically dealt with by that specific staff member.

Larger projects (typically 6+ months) would go through a more detailed approach, with the production of requirements documents and fixed deliverables. Smaller projects (typically 1-6 months) would be estimated and priced on preliminary meetings and the management team's experience based on approximate scope of work. Typically, the management team's primary focus was on sales and the bottom line.

However, running the business got in the way of this. The management team was heavily involved in overseeing the production process, and response times to initial sales enquiries were being stretched as a result. We found that we were experiencing peaks and troughs with our sales figures as projects that were estimated to take a short amount of time frequently took longer than estimated due to unknown and undefined reasons.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Our Introduction to Lean

The Directors attended the Lean in Micros course in November 2018, organised by Galway LEO and Enterprise Ireland, which involved a 1-day Lean workshop run by Paula McNicholas from Lean Team Strategies. In the subsequent months, there were four onsite consultation visits by Paula. The course involved hands-on workshops where we learned the core principles of Lean, and we got to experience production lines without Lean as well as working as a team to implement Lean in the production process. The workshops were a real eye-opener and we could relate the

COMPANY OVERVIEW

Armour Interactive Ltd. is a Digital Agency based in Ballybrit, Galway. Established in 2010 by Andrew Dewdney (MD & Design Lead) and Jamie Casey (CTO), the company has grown from the initial two directors to a team of 12 in 2019. Armour is involved in the production of websites, web applications, mobile applications, and digital strategies for our clients/ partners. We excel in creating high-end bespoke digital products that fulfil user and business objectives. We work with everyone from VC funded start-ups to multinational corporations such as Intel, Medtronic, McKesson, Blackbox, Supermacs, ComfortDelGro, and eMovis.

www.armour.ie

ARMOUR INTERACTIVE

experience to our own office environment. Whilst it is a very different industry, it highlighted the benefits of a clear and defined process and elimination of wastage. From our initial workshop with the Lean for Micro Programme, we started looking at our own processes and how we could improve them. To do this we needed to define exactly what our processes were, and Paula's visit to our office helped us identify our processes and highlight possible inefficiencies. She reviewed our office environment and made layout suggestions.

During the first onsite workshop, we did a process mapping session and outlined our production process. It was highlighted that the Discovery & Planning phase was a key item that we had after the quotation phase. We decided to adjust the sales process to move Discovery & Planning to the start and to make it a billable task.

It was also identified that having the management team involved in the micro-management of projects was an inefficient use of our time. It was pushing out our sales process which, in effect, lowered our conversion rate. This was identified during our first consultation. We immediately took steps to resolve this by beginning the recruitment process for a dedicated Project Manager (PM). As part of our second consultation with Paula we reviewed and vetted potential candidates. We spent the remaining consultations on objects, goals, visual management system, strategy deployment, team metrics, and PDCA. Understanding time usage by our staff was key to going forward. We needed to get more granularity in our team timesheets. We began the process of change in record-keeping, and processes and approaches to management styles.

Figure 1.

Addition of a New Project Management Approach

The company invested in hiring a dedicated PM. Once hired, the management team began handing projects over to the PM and the benefits of this quickly became evident. Once in the role of being the primary point of contact for the team and clients, the PM took a tremendous amount of pressure off of the Directors. It allowed for refocusing on development of a sales strategy and new processes, and it freed up time to focus on running the business. It also allowed the management team to focus on selling the Armour project approach and process. Once a client commits to the planning phase on a discovery workshop, they get introduced to the PM and their allocated team.

Having the new PM in place freed up approximately 80% of the Directors' time. It allows them to focus on working on the business rather than in the business.

To improve the overall project management, we also needed a new project management platform. We reviewed a number of different options and ultimately decided to go with *Teamwork* as our primary tool for project communication. We use it for planning, collaboration, and the creation of multiple time and resource reports. It facilitates us working as a team rather than taking an individual siloed approach. All working hours are captured using this system.

At the start of the year when we rolled out our new project management approach and introduced the PM to the team, we also expressed our goals and visions for the business. We explained to the team why we were introducing a new level of management. This was to inform and educate the team as to what we expect to gain from the improved new processes and how it would improve their working life, and that it will eventually lead to growth in the team, pay raises, and cultural improvements.

Figure 2.

Changes at the Team Level

Weekly team meetings were introduced to continuously improve the processes and the sharing of knowledge. Each week a member of the team presents a class on a topic on which they are subject matter experts or have researched. We are currently applying the Lean process to the individual teams to improve the design and development processes to remove Over-Production and ways of reducing wasted time. We also have monthly Design/Development team conclaves where we discuss ways of improving team processes, collaboration, and production standards.

Figure 3.

Changes at the Management Level

Project statuses are now discussed between the management team and PM, and the team is managed by the PM. This allows the management team more time to focus on strategy and fundamentals instead of micro-management. We have weekly management meetings to set and review objectives and goals for the short- and medium-term. We also have monthly management meetings to set and review objectives and goals for the long-term. We have created a targeted marketing strategy and currently engage with a marketing freelancer in the fulfilment of this strategy.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

Since adapting to Lean, we have seen a significant reduction in wasted time. The improved processes are leading to a reduction in 70% of design team time wastage and 40% in development team time wastage. It is expected to yield significant productivity improvement of 70% in 2020. In all, these improvements have allowed us to grow our capabilities without significant growth to our cost base. It has also effectively removed the cost of management team involvement in the production process. This has had the knock-on effect of allowing for standards and processes to be improved. It allows the management team to focus on sales, growth, quality, strategy, and new markets. We are looking at the exporter market, and have signed up to our first international trade fair in London at the Excel Centre for the C+UX Expo 2020. This ties in with our growth and client acquisition strategy.

The movement of the Discovery Phase to the first step in the sales process allows the sales pitch to be focused on selling the process rather than on the price. It enables us to create quotations based on a much clearer understanding of the scope. It also gets the client engaged in the process and has the added benefit of adding value and opportunity to up-sell additional services and processes.

Since introducing Lean, we have created the following processes and standards:

- Creation of a new design and development process.
- Creation of a new client sign-off and hand-over standard.
- Creation of a time record allocation tool in Teamwork based on a previous project for future project pricing process.
- Creation of a new quotation process based on team involvement and data captured from similar projects.
- The building of an "Armour Core" code repository and component set.

Each of these new processes and standards has introduced new time-saving mechanisms and revenue generating opportunities. We have also spent time putting together a new company vision and mission focused on sales, growth, quality, and strategy.

As a team, we have introduced accurate daily task recording that allows us to generate time metrics which can be allocated against active projects and daily tasks. We have also improved communications by having daily stand up meetings. We use these to discuss projects that the individuals are working on, to check if they are on schedule, and to address any issues they may be experiencing or any discoveries they have made. Project meetings happen on a regular basis and post-project completion review sessions are done to check estimated versus actual timings. We feed this back into our quotation and estimation process.

Figure 4.

Internal and client communications have been improved through our singular project management tool – Teamwork – which helps keep communication open, helps in making decisions faster, and helps members stay in their workflow. It also allows the PM to keep an overview of what is being worked on and by whom, and it allows the team to submit time estimates for items in a project which feeds into the sales and billing processes.

"Having the Lean process in place allows us to focus on working on the business rather than in the business."

LEAN TEAM STRATEGIES

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MCWILLIAM SAILMAKERS

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OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

McWilliams Sails is a growing organisation with scope to grow in international markets in its three core revenue streams. The leadership team know that they need to scale smart in order to succeed. The team saw the investment in Lean as an investment in not only process improvement, but also in the growth of the employees and the quality of service they offer their clients.

The business was acquired in 2017 by the new owners; however, the business came with legacy processes and mindsets that it was imperative to change so as to improve the business as a whole.

The objectives were:

- Introduce Lean tools.
- Create a continuous improvement mindset.
- Find opportunities to add value to clients and improve the service.
- Grow capacity in bag production.
- Increase efficiencies in processes.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Acquiring a legacy business is not without its challenges, and one such challenge was the ability of the employees to recognise areas of improvement and then change the engrained processes to improve efficiencies. The Lean process has been instrumental in this, and savings in costs – both in time and in materials – have been realised and will continue to reward the progress that the programme has afforded us. We can already see that the productivity during busy times with the bags has been increased significantly compared to last year. Our sales are up approximately 40% versus a year ago, and the bags are being turned out quicker and the staff stress levels are much reduced.

What was wrong? As has been said, legacy businesses have legacy processes and mindsets. The organisation was littered with wasteful processes, materials, and so on. Nobody knew what we had, where it was,

COMPANY OVERVIEW

McWilliam Sailmakers has 6 full time employees and 1 part-time employee. It has three core revenue streams: handmade bags (holdall style); windsocks; and sails for yachts (including sail repairs and new sail builds). Annual turnover across the three revenue streams is €800,000.

Holdalls: The holdalls are popular across Ireland. The primary market is within the sailing community as the bags are water resistant, durable, and last a lifetime. Aside from the sailing community the bags are popular with all other sectors as travel bags, school bags, beach bags.

Windsocks: The windsocks are sold throughout the world. We do strong business within Ireland and supply windsocks to all major airports and factories. However, we also have a good customer base in the Middle East and Asia.

Sails: Our sails are sold primarily to the Irish sailing community, with modest sales in the UK.

www.mcwilliambags.com

MCWILLIAM SAILMAKERS

what it was doing, or why processes were being done the way that they were being done – aside from the fact that they were being done that way "because that's how things have always been done". An example from bag production is that the bags were being cut out using a large plotter machine which can cut approximately 20 bags in one go. Once they were cut out, they were being transported across the width of the loft only to be brought back to where they originated when a bag order was placed – lots of Motion waste. The whole loft space was redesigned to reduce such wasteful activities.

The first step of the Lean process was benchmarking how long does it actually take to make a bag. This had previously never been understood. We considered why we made the bag the way we made it, how we could organise the space around us to better utilise the tools we had, and what and where were the tools we needed to have close at hand. Once we knew where the bottlenecks were, we were able to identify fixes to the processes to enable us to get to a minimum amount of time that it takes to make a bag.

We had this information, but still we had issues with why the staff were stressed when orders came in, why some days no bags were being finished, and why external staff were helping make bags when the quantity of the orders were not large enough to warrant it. We knew our capacity but we were still having issues. We had issues with staff mentality – "we can't make that many bags a day, it's simply not possible... there are too many orders" and the like.

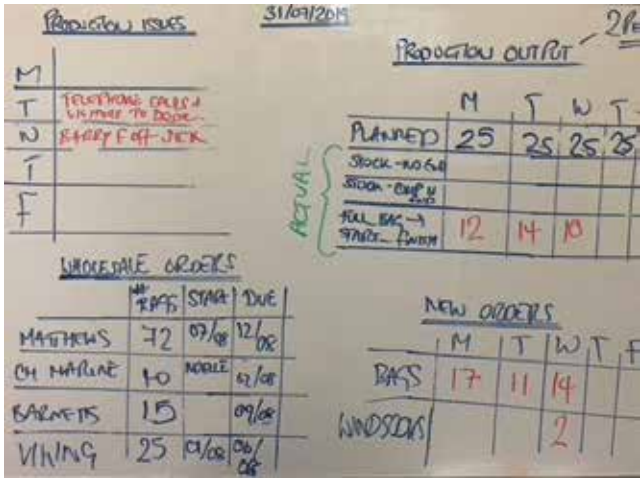

Figure 1.

It took a key member of staff being on holiday to finally force us to identify the bottlenecks and to understand how we can improve that process even more. We then went on to implement the PIT meetings to ensure that daily production targets are understood, providing a central place where we can record what wholesale orders are, when they're due, and a place to record the interruption issues causing production targets to not be met. With all of this, we were immediately and easily able to reach our 25 bags-per-day target production.

Another area of issue was the amount of "stuff" in the loft that was useless, not used, or not even known about. The loft was transformed one area at a time so as to only contain what was needed. Items were then labelled, and this led to being able to throw away what wasn't needed, provided us with the ability to see what we had in stock, and enabled the identification of what re-ordering levels we needed to implement.

A key challenge pertained to changing our previous way of working to a new way of working, and challenging pre-existing mindsets like "that's the way we've always done it, so why change", and implementing solutions. Our key changes included using 6S Workplace Organisation to transform stores, plus the revision of the Bag Production Process, and the adoption of standardised PIT meetings. Notable results include a 60% increase on Bag Production Capacity, and significant space gain through the 6S process.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

Whilst challenging, the whole Lean process has been incredibly rewarding and ultimately very successful. We entered into the programme to improve bag production primarily, but the results and work done were seen across the business as a whole.

It has led to having difficult conversations and times due to the nature of trying to change legacy processes and mindsets. It has caused issues as a whole, but ultimately the mindsets have been changed, the improved processes have been adopted, and we have come out on the other side with processes that are much more efficient, processes that work, increased productivity, and ultimately attained happier customers as they are able to get their bag in a shorter time.

We now have a streamlined process when a bag order arrives in the door. We now have the ability to see what

orders are in hand, how to prioritise these, and how to get all of the orders done in a timely fashion. Before the Lean processes were implemented, we were sometimes averaging only 10 bags a day – and the bags were only taking 21 minutes to make (timed as part of the Lean implementation), which was neither efficient nor cost-effective. We now have a process that improves on this to the extent that we can comfortably make 25 bags a day.

"This improvement in process has enabled us to enter into a book of work to rebrand the bags, create a proper social media strategy, and redesign the website as we now know our capacity and what we can achieve with the resources that we have. We can now properly plan for real growth."

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SAINT DAVID'S POULTRY TEAM IRELAND

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L-R: *Liam Walsh, John O'Shanahan*

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

The Lean project was carried out at St David's Irish headquarters in Newcastle West, Co Limerick. St David's focus is on offering a hands-on approach and providing clients with health care programmes tailored to their individual needs and requirements. In doing so, we aim to be proactive rather than reactive, providing preventative measures and strategic health planning with regular site visits and routine monitoring where required. St David's strive to use evidence-based medicine along with the promotion of best management practices. Over the years, we have moved with the times and implemented incremental change. As part of our Farm Management support, we utilise farm data to track welfare and performance, and this data-based approach has proven to be a critical element of our farm management programmes. While the data is critical to our health care programmes, we were acutely aware that the means and methods of collecting and analysing the data could be improved. We were interested in exploring new methods to collect the data in a more efficient manner, and this became the focus of the Lean project.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Current State

The initial stage of the Lean project involved a thorough review of the current state. Data was routinely collected from two population sources – the hatchery and farms – and the resulting data sets had to be combined to provide farm performance information. The data sets to be collected were clearly defined and the Lean project focus was on how to collect and collate the data more efficiently. The project focused on the farm data collection systems as data was being submitted from over 100 different farmers, whereas the hatchery data was from a small number of suppliers. The (then) current state involved all farmers submitting data weekly through the use of an SMS shortcode with all messages coming into a BulkSMS inbox. The admin team harvest the bulk SMS inbox and input the data into a database.

COMPANY OVERVIEW

St David's Poultry Team Ireland was set up in 2009, with the main base situated at Newcastle West. The Irish veterinary services and the poultry supplies shop are led by Liam Walsh. St David's Poultry Team Ireland offers a complete service for all your poultry veterinary requirements. We care for the layer and broiler birds in Ireland, working with all sections of the industry to improve the health, welfare, and performance. We also provide veterinary services to game bird enterprises.

The highest standard of care is provided by our dedicated team of veterinary surgeons. Our highly skilled team of office and dispensary staff support the vets to ensure that all needs of our clients are met in a fast and efficient manner. The office team provides vital administrative back-up to include visit organisation, visit reports, health plans, and to administer the online poultry client system.

www.stdavids-poultryteam.ie

SAINT DAVID'S POULTRY TEAM IRELAND

8 Wastes

The data collection system was examined with the team through the lens of the 8 Wastes, and Over-Processing, Defects, Motion, Waiting, and Skills were identified as the biggest offenders:

- Over-Processing: Where farm data was missing, the admin team had to make multiple calls to the farmers to follow up on missing data.
- Defects: As the farm data was contained in a text string and had to be re-keyed in the office, the process was prone to data entry error.
- Motion: To input data, the admin personnel had to go through two systems, the SMS shortcode system and then the database.
- Waiting: There was a lot of communication over and back between the admin teams and farmers, leading to waiting loss on both sides.
- Skills: The admin team spent a lot of time re-keying farmer data into the database, and it was felt that the admin team could add more value to the process by tapping into their skills.

Process Mapping

Having identified the wastes in the current process, a series of team meetings were held with the key stakeholders to determine the main requirements of a new system. The (then) current and future (new) processes were mapped. All data currently being collected was to be included with some requests for additional information to be added if possible. While the (then) current system was cumbersome, from a farmer standpoint it worked as it was a mobile solution that involved the farmer keying data once. A key requirement for the new system was that it had to be as easy or easier than the current system for the farmer.

Standardised Work

Under the new process, the intention was to standardise the work on the admin and farmer side of the process. Standardising work helps organisations by creating and documenting a set and repeatable process for how work should be done. In the (then) current state, the means of transmitting the data was standardised, and the new process aimed to widen the scope of standard work in the processes.

Poke-a-Yoke

The Lean poke-a-yoke concept of error-proofing was discussed, and a plan was formed to utilise this concept at the farm and the admin side of the process. Under the new system, if a farmer submitted incorrect data, this condition would be highlighted on the admin side through colour coding on the data output sheets.

The essence of the new system was that the hatchery data, when inputted, would provide an online data connection to each farmer site. On reporting farm data, once a farmer selected their house number, the system automatically pulled in the relevant hatchery data. This automatic matching of farm to hatchery data eliminated the problem of farmers keying incorrect hatchery data.

The system would also highlight when a farmer missed a required report as the data repository would show a clear gap. Previously, there would have been robust discussions if data was missing, with farmers claiming they had sent the data by text.

Visual Management

Once the hatchery and farm data systems were designed, the final step was to incorporate them into a daily data reporting system. The new data reporting system would employ Lean visual management techniques. Specification and warning levels would be set up in the system, and these would flag when a particular result was out of spec. Visual management is a tool used to quickly and efficiently pass on key information. Information presented via visual management ensures that everyone can quickly see how performance is tracking against the target. This is particularly useful for St David's where they are providing performance feedback for a large number of farms.

Perfection

The application of Lean thinking to the hatchery/farm data collection was an iterative process. It was planned that as the new future state bedded in, further opportunities for improvement would present themselves and be built into the latest iteration.

Lean Initiative Improvements & Impact

A bespoke solution was developed using Google form/sheet technology. Three different systems were developed: a hatchery app, a farm app, and a reporting system. On the hatchery side, when a flock was issued to a farm, a unique reference was created and automatically updated to a hatchery spreadsheet. This record provided a full history on

the makeup of that flock. On the farm side, each farmer was issued with an app that automatically synced with the data from the hatchery system. Instead of a text input, farmers keyed data into the app. The work for the admin team and farmer were standardised in that all systems were connected together. The app forced farmers to follow a reporting protocol providing the admin team with a standard format that required minimal manual intervention.

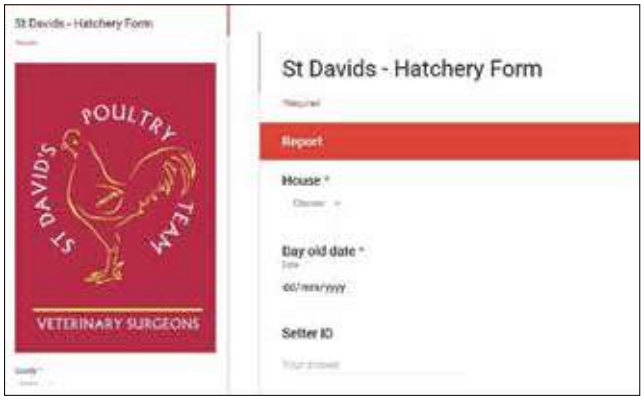

Figure 1.

On the data analysis, the data from hatchery and farm are copied daily by the admin team into a bespoke application that automatically provides the required reports. These reports are available in a cloud system allowing offsite personnel to access the reports and reduce communications with the admin team.

The hatchery and farm app were fully implemented over an 8-week period. Syncing hatchery data with farm data provides an error-proofing functionality early in the reporting process. Previously, issues with data validation were not highlighted until weeks after the event in which case the data would be out of date. Currently, if a farmer submits incorrect data, the system flags the issue and it can be resolved on the day.

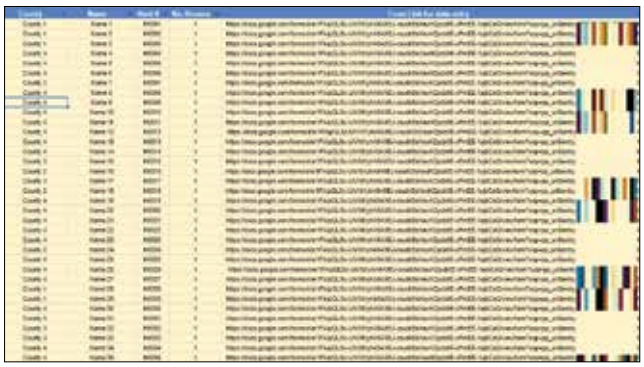

Figure 2.

The time required by farmers to submit data was reduced by 20%. Lean Production Systems have been adopted by various companies to improve their production processes through waste elimination; however, in general, agri-business organisations like poultry farms have not been exposed to the benefits of a Lean approach. The implementation of a Lean project at the farm level demonstrates to the farmer the benefits of a Lean approach to support better farm management.

The new farm system receives on average 150 submissions per week with a current data submission defect rate of less than 1%. There was an 80% reduction in the cost of administering the system through the elimination of the SMS shortcode system.

Figure 3.

The time required by the admin team to generate the data reports has reduced by 50%. Prior to the Lean system being implemented, the admin team spent a minimum of 2 hours per week calling farmers regarding missing data, and this has been entirely eliminated. The re-keying of the farm data on the admin side has also been completely eliminated, saving 10 hours per week.

The system provides enhanced real time reporting. Previous systems were stored locally, and now the Lean data entry system is stored in the cloud and can be accessed remotely by team members. The initial benefit from the system is the reduction in time required to input and tabulate the data. It is expected that the enhanced reporting will support improvement in performance at the farm level as the data in the new format can be utilised to easily benchmark farmers against one another. In addition, the skills of the admin team are better utilised by focusing less on data entry and more on data analysis.

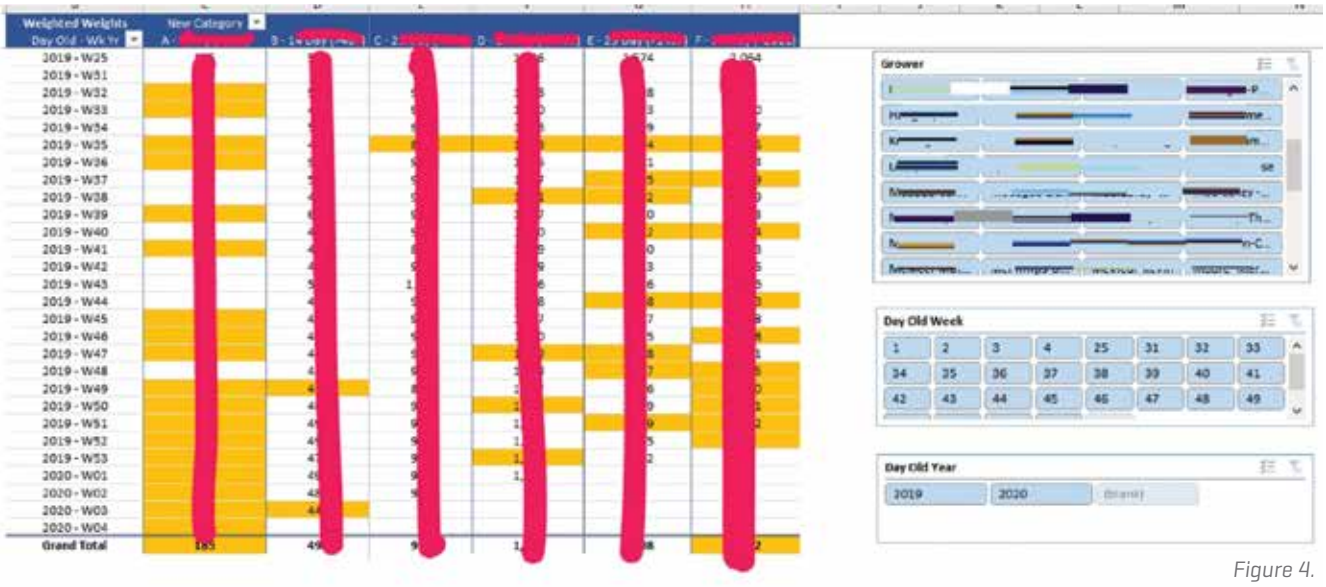

Figure 4.

The poultry industry is one of the fastest growing industries in the world. Poultry companies today are facing numerous challenges and it is expected that the implementation of the Lean reporting system will support improvement in mortality rates and assist in reducing variations in feed usage and maximise output per kg of feed.

"Initially I was quite reserved about how the Lean Programme would benefit our business but after going through the programme and have seen the benefits it has opened my eyes to other areas where we could use our time in a much more beneficial way. A Lean approach is very worthwhile, and it can help streamline many of your business processes."

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CLINICAL CABINETS

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OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

When our small furniture manufacturing business saw its turnover increase but its bottom line remain stagnant, there was a clear indication that something was not right. After close analysis, it was decided the company needed to adopt Lean for the following reasons:

- Trends in customer demand were inconsistent, leaving it difficult to deliver accurate sales forecasts.
- Making high-quality furniture for laboratory and cleanroom environments needs attention to detail and time which didn't easily translate into standardised work.
- Raw materials such as metals and specialist materials and components often have long procurement cycles and changeable prices.
- Labour skill and availability was shrinking due to a lack of qualified graduates and emigration.

Despite these challenges, we embraced Lean to a place where the cycles of production have shortened and profit has increased in line with turnover. Not only that, our customer satisfaction rating is at 96% and employees enjoy a more balanced work environment.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Several factors led Clinical Cabinets to determine in 2016 that things needed to change. The cost of doing business in Ireland was on the increase; inconsistent sales (customer type and product type) were forcing the company to be reactive instead of proactively managing its sales funnel; and, with the economy returning to a more positive position following the recession, new entrants were coming into the market. As John Walsh, Managing Director, notes: ***"The business reason for launching Lean was for survival and to get the business back to a solid foundation from which to build on".***

The company sought advice from LEO Galway, who in turn recommended Paula McNicholas of Lean Team Strategies as a Lean Service Provider. The company created a three-year plan to reduce costs by at least 20%,

Clinical Cabinets

COMPANY OVERVIEW

Clinical Cabinets is a leader in designing and creating inspiring laboratory and clinical workspaces in medical device, pharmaceutical, industrial, healthcare, educational and technology industries. Based in Ireland with customers in Ireland, the UK, and North America, we are ISO 9001 certified specialists and are renowned for our technical expertise and innovative laboratory furniture designs. We collaborate closely with laboratory managers and facility engineers to design furniture and spaces that empower and aid productivity. The business has 6 employees, and we work closely with a team of consultants and installation experts. Our product range includes Lean Workbench Systems, Height Adjustable Workstations, Fixed and Mobile Laboratories, Storage Cabinets, and Partition Systems. Our client base includes Boston Scientific, Smith & Nephew, Procter & Gamble, Abbvie, Abbott, McMaster University, Bon Secour Group, and Coca Cola.

www.clinicalcabinets.com

CLINICAL CABINETS

which encompassed better capacity utilisation (labour and machinery) through improved production management, JIT production, and creating a new Lean culture in the organisation. Key management were sent for off-site training with Paula, and this led the way forward for others on the team. Production improvements were the first targets.

The production floor was set up in a 'per-man' system, meaning each cabinet maker had everything around them. From materials, to boxes of components, to jigs, to equipment, they barely had any space to move. The first step was to embark on a 5S journey. Production shut down for one week and every item was checked, sorted, organised into its area or thrown out. Immediately we could see the difference in both the workspace and the team ethos.

Figure 1.

The next step was to reorganise the production floor into cells, whereby each stage of the manufacturing process had its own cell. This alone reduced waste and cut manufacture time because the production process was now in flow. A designation area was created for WIP and finished goods, which meant it was clear to see if there was product sitting and not being dispatched. A new system for managing the purchasing and production schedule was introduced which meant everything was tracked to a job number. Concern & Corrective Action Reports (CCARs) were tracked as part of this system, and this enabled a reduction in errors along the production process, especially from suppliers. The team also introduced a daily 'check-in', a Clinical Cabinets adaptation of Scrum methodology that improved team communications and led to a more supportive environment.

Once a rhythm was introduced in production, the sales and finance area of the business got to work. Value streams were looked at which led to re-organising some individuals' roles and positions. Initially, this was challenging because cabinet makers are creative and skillful people, but once people saw the value-add and ease that value streaming contributed to the workplace, they took it on, albeit reluctantly initially. That said, this is still a work in progress, and involving them throughout is key. Where possible, we batch produce items such as lockers and standard cabinets into a Kanban from which we can 'pull'. This gives an approximate improvement in lead time of 20%. Currently, our average lead time for standard items is 2 weeks, and larger laboratory design, manufacture, and fit projects sit at 4-6 weeks from receipt of a purchase order.

Figure 2.

Improving communication was key for the initiative. Daily meetings between sales and operations were introduced. A Kanban system for sales, design, and materials ordering and

production was introduced. Whiteboards were added to the sales office, design office, and production floor as visual aids. Hours are now tracked against targets and metrics are reported on a weekly basis. With greater tracking came better cost accounting and estimating.

"The best thing about the Lean initiative is that we are able to pass our improvements onto the customer either through better pricing or by adding value in our design and service" says John Walsh.

At Clinical Cabinets, the foundation work has been put in and now the Lean mentality exists in everything we do. Ongoing reminders through mini-training sessions occur which keep the team constantly in step with Lean tools and techniques.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

The success of the Lean programme can be seen and felt on a daily basis in Clinical Cabinets. The culture has changed to becoming more customer focused, which means everyone is striving to meet customer expectations, be that in design, purchasing, production, or installation.

During the initial Lean initiative, the KPI for hours over target went from 56% in the first month to 23% in the second month to 0% in the third month. Productivity increased by a massive 82% with a total cost saving of approximately €76,000.

Lean accounting principles are now being adopted, and this is supporting better decision making around technology and system improvements. New manufacturing technology and business expansion is being planned around our Lean experience. We intend on introducing a new ERP system too, however, not without planning it appropriately into our Lean-led company development. In essence, we're following the basic Lean principle of Plan, Do, Check, Act(PDCA).

As we progress each year, we get closer and closer to having a true figure of actual costs and that is helping us fine-tune our expectations and support better decision making. Over the course of the three years we have seen turnover and profit improvements of up to 20%.

"Clinical Cabinets is a small business with a family-like culture. Lean brings everyone together, where everyone's voice matters. Using Lean practices, we deliver products and services that meet the expectations of the world's biggest multinationals. We are taking pride in this and our team, and I feel this translates to our customers. Paula McNicholas was instrumental in changing the nature of how we work in Clinical Cabinets. Her supportive, client-led approach allowed everyone the opportunity to participate at whatever level they were at. She has a unique talent for getting the best out of people while keeping an eye on the quantitative demands of Lean projects. We thoroughly enjoyed working with her."

LEAN TEAM STRATEGIES

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CAREER TRAINING INTERNSHIPS

CASE **14**

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OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

Career Training Internships is a growing organisation with scope to grow in international markets with its various revenue streams. The leadership team know that to succeed, they need to scale smart, and the team saw the investment in Lean as an investment in the growth of our people and the quality of service they offer our clients, as well as in process improvement.

The Lean project objectives were:

- To introduce Lean tools and techniques.
- To create a continuous improvement mindset.
- To find opportunities to add value to clients and improve our service.

The expected project duration was 8-12 weeks, to which the company committed the time and resources of two staff members and a key contractor, with a view to completion of the programme within the time limits. The main cost reduction project was to streamline the manual administrative processes currently utilised by the organisation. The expected performance improvements were in overall organisational efficiency and reduced administrative time. The initiative was carried out across a series of 8 sessions between 21st June 2018 and 28th October 2018, with a final report issued on 14th December 2018.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

The team attended an initial ½ day offsite training workshop for small and micro enterprises, where they learned about the goals and objectives of Lean. The specific initiative involved a full workshop conducted over a series of sessions, and it focused on the reduction and condensing of forms and the implementation of web-based forms to replace paper forms, including applications, proposals, and feedback surveys.

On the general communications front, the Lean framework was applied to email communications and setting up *WhatsApp* as a form of group communication for more immediate access to clients. In addition, "Welcome Packs" for trainees and host families were introduced to

Career Training Internships

COMPANY OVERVIEW

Career Training Internships nurture emerging talent through learning a language and training in the world of work. We bring trainees from abroad to work in Irish companies, and we provide an unforgettable experience of the Irish culture, workplace, and landscape.

We work to match interns' goals with host companies' needs so as to facilitate a valuable experience for both parties. We also work with host families, English schools, and cultural providers. We help trainees and their sponsors to take care of all of the paperwork, and our work often involves assisting the socially-deprived or long-term unemployed to find new direction in their careers.

www.careertraininginternships.com

standardise documentation and anticipate some of the needs and common questions of those parties.

Lean Thinking, Tools, and Techniques used included:

- The Kano Model.
- Cost Reduction Methods.
- Customer Profiling (what is of importance and value, observe, immerse, and engage).
- Problem Statements.
- Continuous Improvement Mindset.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

We have already seen improvements in a number of areas. As discussed above, some of the major changes undertaken as a result of this collaboration were:

1. **Introduction of online feedback forms** – *deemed a great success* – the introduction of new online forms for feedback and applications have resulted in a 70% increase in first-time responses to feedback reports. The review of these feedback reports has been reduced to 5 minutes per group (down from 60 minutes) because the information is all consolidated in one place.
2. **Introduction of mobile messaging to contact trainee groups and leaders** – *deemed a great success* – direct connection has hugely reduced the volume of email communication once used exclusively for groups, instead meeting them where they are and providing a more immediate line of communication. An office mobile phone has been introduced, allowing the streamlining of information flows and an "always in touch" model that suits the nature of the business.
3. **The use of Welcome Packs for host families and trainee groups** – *deemed a success* – as these have been introduced to anticipate common questions, both for host families and groups of trainees. These have been successful, although at this stage a year on, they do require revision and additions to keep up with the changing nature of our business processes.
4. **The review and simplification of project plans** – *deemed a limited success* – while we addressed this topic in our sessions, the amount of time spent in pulling together the various pieces of information required for these plans is still longer than we would like, but the principles we learned are proving very useful as we continue to work on the issue.
5. **The use of specific excel tools to improve access to information and reduce data duplication and errors** – *deemed a limited success* – while some of the advanced techniques in excel (PivotTables, VLookup) were explored as potential solutions to common data entry problems, additional intensive staff training would be needed to get the real efficiency benefits out of these tools.
6. **Red-flagging issues that require attention within 30 days** – *deemed a success* – we continue to manage issues in this way and take advantage of built-in tools in our operations systems to keep track of the many issues that arise
7. **Improvement potential regarding client management through use of a Customer Relationship Management system** – *deemed a limited success* - while we have adopted *HubSpot* during the last year as a system for managing customer relationships, we have recently moved on to another CRM. Still, a marked improvement in sales and the implementation of a sales funnel model have been beneficial over the past year.

"Overall, Career Training Internships has benefitted from the implementation of the Lean techniques that Stuart introduced to us. We have achieved efficiency in a number of communication areas, and we continue to have a staff that is willing to pursue these techniques and embrace the principles of Lean and sustainability as we look to constantly improve our business processes."

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WHELEHANS PHARMACY

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OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

We first heard about the Lean for Micro Programme through a supplier of ours who had already completed the programme. He couldn't recommend it highly enough and the benefits that had resulted from his own experiences after having completed the programme.

We decided to apply for the Lean Programme in 2018, and began to work with Allyson English as our Lean Service Provider. It was very important for us that we were able to call on Allyson's expertise throughout, and she was of particular benefit during the site visits in helping each of us to understand Waste and most importantly help us understand how to see our wastes.

Before beginning the Programme, we had never heard of Lean and were mistakenly under the impression that it was only applicable to manufacturing businesses. Happily, we were proved wrong and could see very quickly that the initiative could equally be rolled-out to services businesses. Wherever there is a process there is waste, and wherever there is waste there is an opportunity for a Lean project – no matter what the sector.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Streamline Admin Processes, Standardise Work Practices, Improve Stock Management

We commenced our Lean project by streamlining our admin processes and standardising our work practices, and we also looked at our stock management with a view to creating efficiencies in how we ordered and stored stock. We did this with the help of the following Lean tools and techniques:

- 5S Workplace Organisation.
- 8 Wastes.
- Visual Management.
- Standardisation.
- Kanban
- DMAIC (Define, Measure, Analyse, Improve, Control).

WHELEHANS PHARMACY
Delivering Care to the Community

COMPANY OVERVIEW

Whelehans Pharmacy has been serving the people of Mullingar in County Westmeath and surrounding areas since 1898. Offering excellent and personalised customer service, our friendly and highly-trained staff are always on hand to give assistance and advice. We cater for all health and beauty needs, offering a comprehensive range of medicines, cosmetics, and fragrances. The core of our success for over 100 years is delivering care to the community through exemplary customer care. Our staff provide an efficient service in a friendly and personal manner.

WHELEHANS PHARMACY

Figure 1.

We began by reviewing our workstations and our workshop floor layout. By using the 5S principles, we were able to remove clutter, see problems much quicker, and increase productivity. We introduced visual standards for each workbench which allowed anyone visiting the stations to see how the area should be kept. This process also negated duplication as the workflow was then clearly identified and issues were more visible to each operative. We provided each workstation with its own set of tools to carry out the job and identified the need for separate PCs to negate waiting. This in turn improved turnaround times and greatly streamlined the whole ordering process. The rearranging of fast-moving stock items closer to the workbenches also increased productivity and improved turnaround times.

Throughout this project we learned about the 8 Wastes, and, by identifying practical examples relating to our situation, we were able to encourage and engage staff members to actively look for these in our day-to-day operations. Involving the staff in this activity not only improved morale and engagement, but it also promoted a buy-in from the rest of the team. In relatively quick time, we successfully transitioned to looking for Wastes as a part of our daily routines, and more importantly discussing how we could negate them occurring at all.

Visual management has played a big part in our Lean journey and has made our team stronger by opening up new communication channels. We have found that involving the team and building a platform to allow for new ideas has resulted in the team becoming more energised and engaged.

Stock management was of concern prior to the Lean Programme. We had identified that the purchasing and storing of our goods could be improved. We learnt about Kanban systems and colour-coding cards to identify stock levels and push–pull to balance production. We found this a benefit that directly resulted in reduced stock levels and let us see where the time and cost savings could be made.

Figure 2.

Our administration processes were also improved by standardising our workflows and analysing the times and staff activities involved with the completion of paperwork. By defining the process and measuring it, we were able to improve the processes and in turn reduce our downtime and duplication. As a result of balancing the line in our admin processes, we were able to increase capacity by 20%.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

The Lean improvements and impact included overall savings in the admin processes that resulted in an increase in capacity of 20%, and the standardisation of work at the dispensing workstations with the introduction of individual PCs and tools to carry out the job resulted in a reduction of 20% in turnaround times. With the introduction of tighter controls on stock management and improved purchasing processes, this too has led to reduced costs both in monetary terms and in time savings.

One of the biggest improvements we have seen has been in our admin process. We have not only balanced the line of work here and increased capacity, but we have introduced better ways of working and communicating with each other which in turn has allowed us to provide a better service to the customer.

"As a high volume dispensing pharmacy that specialises in dispensing and delivering medicines safely and accurately to nursing homes all over Ireland, we need the business to be as efficient as possible by 'systemising the routine and humanising the exception', and this is what Lean did for us. Becoming involved with the Lean Programme meant that we could learn the best practices from international industry to make our business as efficient as possible, reducing waste, and making the most out of the limited resources we have in a low-margin high-volume business. If you are an SME with aspirations of growing or are struggling with costs, I could not recommend Allyson and the Lean for Micro Programme highly enough. With the support of your LEO, it makes affordable this type of mentorship which would often be out of the budget of small businesses. Do not miss out on this amazing opportunity to make your business as Lean as possible."

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O'KEEFFE PIGGERIES

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OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

After initial introductions were made, a basic presentation on the principles of Lean and the basic tools was given to all the staff by Barry O'Brien of the Leading Edge Group. A mapping exercise was performed on the overall process to define the organisation's key processes. This involved a walkthrough of the whole plant supported by a few face-to-face meetings with the consultant. The flow and layout throughout the pig farm was deemed very good with logical progression from area to area, and with good access to the farm for contractors and feed deliveries. Several opportunities were identified, including a 5S programme; data driven management; visual management programme and dashboard; and a full feed system review introducing machine performance analytics and centralising machine records. A simple-to-follow 5S procedure and plan was to be generated for the facility and divided up into several areas with a pilot area selected. The first area to be selected was the Maintenance area. The pig farm is a 24-7 concern, and, in certain cases tools and implements are needed at unsociable hours and thus having the area properly organised was key.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

The Sort, Set-in-Order, and Shine Phases of 5S

These stages took place over a 3-day period. Any tasks outstanding from the 5S were recorded on a task list that was shared with the team, and, as tasks were completed, they were struck off the list.

The initial 5S on the Maintenance area was very successful, with several items reorganised and relocated, and the area scoped down to its core function of maintenance and repair of fabrications and equipment. Following on from the Maintenance area, the Mineral Storage, Medicine Storage, and the Weaner Mixing Room were all successfully reorganised and involved different core operators who were actively involved in their areas.

In addition to the 5S in the Mineral Storage area, a simple Kanban system was put in place to organise and store the mineral samples by month of use.

P & V
O' Keeffe Piggeries

COMPANY OVERVIEW

O'Keeffe Piggeries is a family-owned and managed piggery based in Ballylough, Mitchelstown, Co. Cork, run by Pat and Veronica O'Keeffe. The farm has approximately 2,000 sows and comprises a unit originally built in the late 1960s that has steadily expanded over time to its current size. We operate a weekly cycle of pig production, servicing, farrowing, weaning, transfer to finishing, and shipment out. There are 13 full-time employees and one part-time support employee. The piggery due to its current size, needs to be treated more like a small-to-medium-sized business than just a farm.

Figure 1.

The Standardise and Sustain Phases of 5S

Key to the standardisation and sustaining of the 5S was its simplicity. As the owner, Pat was responsible for driving the implementation of 5S, and, due to his other key duties, he didn't have time to follow a complicated process. Once areas had their first 3 phases of 5S completed, a simple area checklist detailing weekly, monthly, and quarterly/annual tasks was generated. This has been placed in a central location in each area for ease of reference by the people working in those areas.

Finally, a simple monthly audit with a clear set of guidelines was generated and the first audit performed. As simplicity is the key, the audit consists of only 5 questions for each area, with the score being 0, 1, or 2 for each question. This generates a total score out of 10 max for each area, with a control chart showing the monthly score for the piggery to be displayed in central locations for all to see. The control chart is colour-coded, with scores of up to 6 being in red (signifying substantial action needed), scores of 7 or 8 being amber (signifying minor corrections needed), and scores of 9 or 10 being deemed acceptable.

As part of feed traceability, minerals used in the month need to have their batch IDs stored as per the month used. In addition to the snapshot in time of one area, each area tracks its monthly progress month-on-month, and it is envisaged that over one year, data can be reviewed to see each area's progress in maintaining the high levels of organisation.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

On the surface, our farm operates well, but most if not all of the management type activities currently fall on Pat's shoulders. When taking holidays and breaks, he is still in constant communication with the farm. While the day-to-day operations of maintaining output of the piggery

functions is fine, there are many strategic issues that Pat needs to concern himself with, ranging from AI to strategic changes in herd health, from slurry output to feeding systems set-up.

The principles employed on 5S has had an immediate impact on our staff, with housekeeping and hygiene standards improved in the areas changed. We are continuing to drive this throughout the farm with all areas participating. Pig farms, and the industry itself, have huge amounts of data and KPIs, with Teagasc gathering this data and providing benchmarking exercises to each pig farmer of their performance against the national herd. This data, while providing a large amount of metadata to Teagasc, is now being used to help us decide how to run our business. This data gives us empirical evidence upon which we make key decisions, as opposed to solely acting on gut feelings and experience. Changing the reporting of figures to a visual management basis has allowed us to use control charts so that we can see where we are performing well and not so well. By targeting specific achievable figures, we now monitor the previous 13-week results to see if the system is performing as expected and can thus spot trends much more quickly.

We have achieved total cost savings of €30,755 – most of which can be achieved on an annual basis – and a total output increase of €36,540 per annum.

We have continued to roll out the 5S programme across the farm. The system implemented is very simple which allows us to maintain it at a high level. We are also looking at the possibility of sourcing an additional person in a management function, and will allow Pat to concentrate on the more strategic projects. We believe that further savings would be made across the farm if there was a full-time or part-time resource concentrating on continuous improvement, and we will keep this under continuous review. More importantly, a succession plan has now been put in place to actively involve Pat's two sons who are college educated and who were involved in the initial Lean training.

"The piggery, due to its current size, needs to be treated more like a small to medium sized business than just a farm. The principles employed on 5S has had an immediate impact on our staff, with housekeeping and hygiene standards improved in the areas changed. We are continuing to drive this throughout the farm with all areas participating."

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THE IRISH ONION COMPANY

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L-R: *Eamon Crowley, John O'Shanahan*

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

This project was undertaken at The Irish Onion Company's production facility in Bandon, West Cork. The initial focus was to apply Lean principles and methodologies to the company's management systems and support processes. While the company had a lot of experience with handling fresh produce, it was felt there was opportunity for business improvement through the improvement of management processes. In the product business, raw materials are commodities with prices varying daily, and, in addition to material prices, product quality and yields have a big bearing on production costs. For these reasons, it is not possible to operate a standard cost system. The company operated an existing monthly costs analysis system, and the information generated was dated relative to new customer enquiries and was cumbersome to operate.

LEAN INITIATIVE UNDERTAKEN - LEAN THINKING, TOOLS, TECHNIQUES

The focus was on Lean management, which is an approach to running the company that supports the idea of continuous improvement. Effectively, it is an ongoing effort to improve processes, products, and services. The Lean approach requires incremental improvement over time in order to increase overall business efficiency. It was decided to leverage technology as much as possible to lighten the management workload.

Weekly Business Performance

The first project undertaken was to develop a new system for managing the weekly business performance. The aim of the project was to eliminate waste in the reporting process by cutting out unnecessary steps and improving how the processes were operated.

The following Lean methodology was followed:

- Defined value from the end customer viewpoint.
- Identified each step in the reporting process and eliminated steps that did not add value.
- Automated steps where possible.
- Repeated continually until all waste was eliminated.

IRISH ONION COMPANY

COMPANY OVERVIEW

The Irish Onion Company (formerly "WCVS – West Cork Vegetable Solutions") is a family-run business, established in 2012 by Eamon Crowley. WCVS originally took over the business from Bandon Co-Op, where Eamon worked at the time. In 2012, WCVS bought the equipment from the Co-Op, took some experienced staff with them, changed the production layout, and peeled six tonnes of raw material in the first week. A year later, additional equipment was purchased and production relocated to a premises on the bypass in Bandon.

The Irish Onion Company, based in West Cork, delivers nationwide in a fleet of refrigerated vehicles. Customers include manufacturers of an award-winning black pudding, and our products are used as ingredients in soups, coleslaw, salad products, relishes, and chutneys.

We provide a cost-effective and efficient solution to your prepared vegetable needs, providing whole, sliced, or diced onions in a selection of grades.

www.irishonionco.ie

THE IRISH ONION COMPANY

There were a number of challenges with this system. The existing measures for evaluating raw materials (utilised) cost and yields had to be revised. The sales data existed in a format that was difficult and slow to work with.

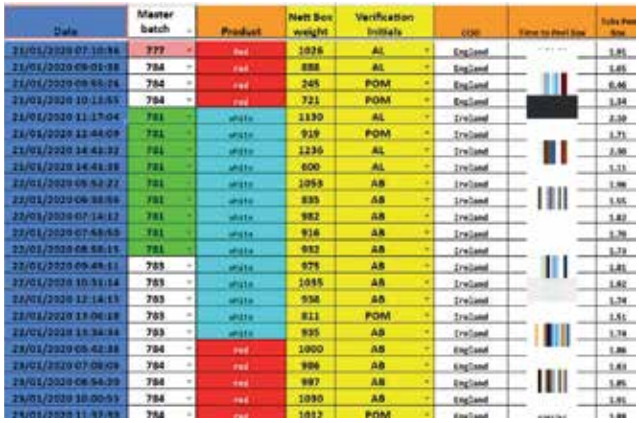

Figure 1.

Paperless BRC System

The second project undertaken was to implement a paperless BRC system (British Retail Consortium Food Standards). The BRC project started with measurement and analysis of the existing key food safety processes in order to understand the various wastes impacting process efficiency. This involved the evaluation of team members operating the existing processes to establish a performance base level. In evaluating the processes using the 8 Wastes, all of the 8 Wastes were represented in the existing processes:

- **Transportation:** Daily movement of records from the factory floor (ground floor) to the admin area on the 2nd floor.
- **Inventory:** Storage and filing of paper records. Records needed to be stored for a year from end of shelf life leading to physical storage requirements.
- **Motion:** Accessing paper records on the factory floor resulted in excessive motion.
- **Waiting:** Incomplete records/waiting for quality sign off.
- **Over-Production:** Over-printing dated production records.
- **Over-Processing:** 100% cross-checking paper files prior to audits.
- **Defects:** Errors in production sheets were difficult to detect, leading to problems at audit stage.
- **Skills:** Team members were filling paper sheets, then submitting to management for storage and archive.

As the company was operating under an existing certification, the new paperless system was developed to be fully compatible with the existing paper systems.

Order Entry System

The third project undertaken was to reduce waste in the order entry system. Again, evaluating the existing process against the 8 Wastes, Motion, Waiting, Over-Production, and Over-Processing were the main wastes identified in this area. Existing systems involved messaging the production team on required orders, updates on order fulfilment involved a lot of manual communication, and visibility on pre-orders was poor. Wastes observed in the existing order entry process included:

- **Motion:** Excessive movement by team members.
- **Waiting:** Delays in production due to poor visibility on orders required.
- **Over-Production:** Periodic over-production due to

Figure 2.

production work ahead on expected pre-orders.

- **Over-Processing:** Multiple processing of ordering data by admin and production.

There were some hardware changes implemented with the paperless BRC system, and this infrastructure was leveraged to support the revised order entry process.

Daily Lean Management

The fourth project implemented supported daily Lean management. Lean Daily Management is an ongoing part of daily operations that helps to ensure that production targets for productivity, quality, and safety are met. This approach allows team members at all levels to see whether each individual day was a good day or bad day. Production was monitored to develop standard performance targets for the various tasks. A Process Performance Board was developed to allow management and team members to visually track performance. These targets were incorporated into the daily process improvement board.

Process Performance Boards are updated daily by production team members and the board is used daily during stand up team meetings. This simple visual tool makes the actual current performance clear and highlights how it compares to the expected performance. The boards help to quickly identify any deviation from the performance targets, and effectively puts some pressure on the system to attain target performance.

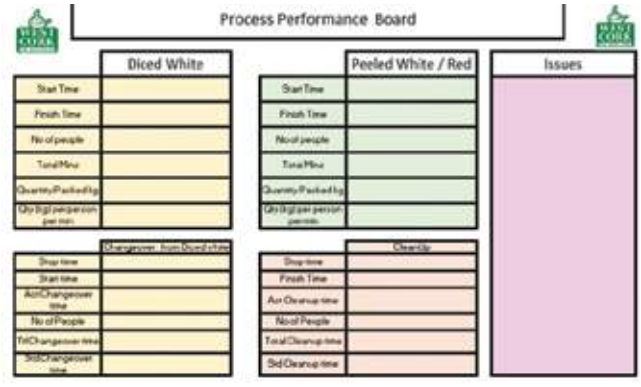

Figure 3.

Looking beyond day-to-day performance, production results were tabulated and trended to provide visibility on longer-term performance. The Process Performance Board provided a leading indicator on production performance as the data is tracked on the production floor on a daily basis and provides insight into how we are doing on any given day.

The weekly and monthly trends of production results provide us with lagging indicators, and these are useful in telling us if we are hitting our targets.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

The Lean projects had a very positive benefit in each of the areas involved. Prior to the Lean management projects being implemented, all of the business performance analysis was done by the Managing Director. After streamlining management processes, a Production Manager was hired to look after day-to-day production, including performance analysis. This allowed the Managing Director to work on a strategic initiative to plan and grow own-sourced onions.

Weekly Business Performance

Bespoke systems were developed that reduced the time required to prepare management reports by 16 hours per month. The new systems provide data on product yield by batch, enable visibility on weekly actual production costs, and support monitoring of overall business performance. Tools involved the use of macros to convert the sales data and a Power Pivot model to provide the margin analysis. Frequency of reports has changed from monthly to weekly. Gross margin per client and by-product type is available weekly.

Paperless BRC System

A mini network was installed in the plant. A google sheets application was developed, and this cloud-based system allowed multiple users to access the system at the same time. All of the existing BRC requirements were covered by the new system. As a result of using an electronic system versus the paper system, it was possible to link batch numbers and quality records, thereby reducing risk of defects in the data. The administration of the BRC system was reduced by 40% as a result of moving to a paperless system. From a records standpoint, the company is audit-ready at any given time. Since the paperless system was installed, the company has successfully passed through a number of BRC surveillance audits.

Order Entry System

Utilising the new network, a google sheets application was developed that reduces the touchpoints on an order. The order is now put in the cloud-based system once,

production plans are scheduled from the google sheets, and production fulfilment status and ship schedules are updated from the same system. The measured production time savings to communicate order status was 6 hours per week, with additional benefits including reduction of product lost due to scheduling issues that resulted in Over-Production.

Daily Lean Management

The process performance boards, daily team meetings, and long-term trending of production results has resulted in a 1% productivity saving. Prior to implementing Daily Lean Management, some production shifts were particularly inefficient if order volumes were low on a given day with team members adjusting work pace depending on order volumes. As a result of monitoring minutes per kg for peel and pack, there has been a tightening on the production efficiency performance regardless of the production volume on the day.

Next Steps

There is opportunity to continually develop the management systems, and there are plans to update the current google sheets to scripted google sheets, thus supporting further gains in efficiency.

"Lean needs to be the foundation stone of any business. Our engagement with Lean brought clarity to our organisation by simplifying our work environment, increasing productivity, assisting with developing more effective monitoring of our KPIs, and thereby reducing waste and allowing the organisation to become more profitable. I would highly recommend the Lean programme to any small business interested in change and business improvement."

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POP UP RACES

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L-R: *Brian Conroy, Stuart Nelson*

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

Two projects were identified during the Lean for Micro Programme, and from these projects, several smaller projects originated.

The business started as an owner-manager business, where everything came through Brian. As the business scaled and staff were recruited, having Brian as the point of contact for all things became unworkable. So we decided that the main focus of the Lean programme would be the implementation of a Customer Relationship Management (CRM) software package. The aim of the project was to have all of the information on the business, from contacts to pricing to correspondence, located together in one place that would be easily accessible to all that needed it.

We also wanted to improve our customer's experience with us. Having over 200 race organisers (our direct customers) meant that we needed systems in place to ensure each one was getting as much focus as the next, and nothing was being missed or forgotten.

Figure 1.

We wanted to use Lean principles for the implementation of this package because it was important we got things right the first time. Our ambition is to grow, and investing our time into implementing the most streamlined systems possible meant that we could grow our customer base without having to grow our overheads.

Pop Up RACES

YOUR RACE • FROM START TO FINISH

COMPANY OVERVIEW

Pop Up Races is Ireland's leading race timing company, providing timing and event management services to the running, triathlon, swimming, and equestrian markets across the island of Ireland. In 2019, over 150,000 participants have crossed our finish lines, improving their physical and mental health as well as raising much needed funds for clubs, schools, and charities nationwide.

"Pop Up Races – Your Race, From Start to Finish"

www.popupraces.ie

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

We started by naming our project, and it couldn't have been simpler: "Operation get information out of Brian's head" was born. Our entire team – Office, Operations, and Owner – were the key stakeholders, and from there the Process Flow Chart was completed.

We started off by mapping all of our processes from our customers' perspectives, and from there we looked at how we wanted the customer journey to flow when our new package had been implemented. We looked for blue sky thinking, and everything was scrutinised using the 5 Whys approach. A number of quick wins were identified during the mapping out process, but, longer-term, the success of the project depended on how clear our vision was for how things should work after the plan was completed.

In partnership with a software company, we came up with our action plan along with a realistic timeline to implement our new CRM system. The plan is still evolving, but phase one was completed within 2 months of an action plan being drawn up. The objective of the project for phase 1 was met, with success defined based on a simple indicator: "If Brian goes away for a week and turns his phone off, the business needs to carry on seamlessly". This thankfully was the case.

The project, as mentioned, is ongoing. Phase one was the important one as it got all relevant stakeholders on board, it made us question the status quo and the "normal" way of doing things, and it shifted the mindset of the group to thinking about doing things differently.

As an aside, a quick win story is based around using 5 Whys. Upon returning to the office after an event, all equipment in the vans was brought back upstairs to the office to be charged; and this involved up to 6 journeys to and from the vans along with extensive manual handling. So we examined it using 5 Whys:

- Why do you charge the gear? It won't work uncharged.
- Why do you charge it back at base? We do not want to have to power them on site with costly diesel generators that pollute the environment.
- Why do we bring the gear upstairs to the office? There are no charging points downstairs.
- Ok – so why don't you run a cable downstairs? And since then, the gear to be charged remains in the vans and is packed in such a way that the van is plugged in on arrival back to the office, and everything is charged in the van.

All in all, a very simple solution, but one that saves us over 100 hours per year.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

The implementation of a simple and clear CRM system has changed our business. From our customers' perspective, by having a 360° view of their event on file for all to see, and by automating 90% of our contact with them (whilst still giving the feel of a personal experience), it has seen not only an increase in customer retention/re-bookings, but also a large increase in new business through word of mouth, with all leads being tracked on our CRM system.

Internally, the system has allowed the staff in the office to concentrate on adding more value elsewhere in the business, safe in the knowledge that the CRM has successfully automated hundreds of hours of work annually. This freed up time has allowed us to concentrate on growing our sales pipeline, as well as adding some of our own events onto the recreational running calendar in 2020.

The story previously about charging our gear is an example of some of the simple quick wins we had during our Lean for Micro journey. When the mindset shifted in the business to think outside the box, things changed for the better. Problem solving is encouraged, all ideas are discussed and informed decisions are made.

"Pop Up Races as a business fundamentally changed on the day we took part in the Lean for Micro workshop. As a business in the service sector, I questioned if we'd gain from the process. I can say with certainty now that whether you are in services or manufacturing, or any sector, introducing Lean principles and tools into your business is a decision you will not regret."

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GLEN KEEN FARM

AUTHORS:

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OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

The Lean for Micros Programme was pivotal to our business as we had experienced losses and inefficiencies in our staffing and in-house operations. The structure of the Lean Programme enabled us to take an in-depth look at how we were running our business, and the programme provided a view from the outside in. Through the programme, we monitored how we delivered our service from each section of the business and thus adapted and changed our model to improving efficiencies.

Figure 1

For Glen Keen Farm, the Lean Programme introduced the assessment of current work flow and customer interactions, and followed with a business process review, and concluded with a more efficient model that mandated standard operating procedures (SOPs) and delivery standards. The assessment and review provided a critical analysis that enabled us to mandate changes and standards from our team to provide a uniformed and efficient method of delivering the variety of experiences and customer interaction required to move our organisation forward towards economic sustainability.

GLEN KEEN FARM
LOUISBURGH • COUNTY MAYO
www.glenkeenfarm.com

COMPANY OVERVIEW

Glen Keen Sheep Farm & Visitor Centre provides experiences for group and private bookings that include sheep dog herding demonstrations, whereby visitors meet our friendly sheep dogs and watch them in action on the farm herding the sheep and the visitors also get to meet the sheep. Other demonstrations include traditional turf cutting, wool spinning, Irish Coffee making, music and dance lessons, bread and scone making, and private hiking. We also provide a food and beverage service and craft shop for our customers.

The company has seven employees, and its visitor base encompasses the USA 65%, Europe 25%, Domestic 3%, and the Rest of the World 7%.

www.glenkeenfarm.com

GLEN KEEN FARM

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

The objectives of the Lean Programme were to have a more efficient running of the operation and to free-up management time to be more strategic and sales focused. The business revolves around bus tours visiting the farm for the various experiences, and staff are brought in to facilitate this. To bring staff in for a minimum of 3 hours (for example 3 staff by 3 hours is 9 man hours) just for one tour bus was not sustainable. The staff were unable to complete their tasks in the 3-hour period due to lack of time management, inefficiencies, and lack of task prioritisation. The Lean Programme objectively highlighted areas to improve around inefficiencies and inconsistencies in methodology.

The roles and responsibilities of staff were reviewed and designated areas ("work stations") were assigned to each staff member for tour visits. Simple management systems were implemented, including for example, standard work check-lists of tasks per area were developed to complete and monitor during a tour. We also utilised a versatility matrix to ensure flexibility of staff to work in each of the areas. We reduced the menu down to popular packages such as "Tea & Scones" or "Soup & Sandwiches". This yielded savings in less wasted food and less energy used. We improved the flow of visitors through the activities when multiple tours were booked so as to avoid congestion in key footfall areas like the shop, the till, café, and toilets.

Figure 2

Tour set-up activities were reviewed for robustness to ensure timely communication to all parties involved at key stages between booking the tour and arrival of the bus. A strategy was developed for offering a private high-end "VIP Tour" experience to boost both brand and turnover. As coach tours are seasonal between March and October, additional opportunities were identified for holding events in the Visitor Centre over the winter season, and this has proven to be successful.

Some tasks that had previously been done by management have been delegated to the existing admin assistant and thus freed-up time for management to focus on greater value-adding activities. Having the overall management system in place has enabled the business owner to focus more on business strategies, sales missions, and promotional trips to grow the business in 2020.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

The implementation of new management systems and standard work has reduced the number of staff required for a Tour from 6-7 to 4. This was not only a cost saving, but it resulted in an improved focus on roles and tasks, and was a lot more efficient overall. Through delegation and better systems, this freed-up an additional 20 hours per week for the business owner to spend on business strategies and marketing.

Reducing the hours in which equipment was turned on has provided energy savings of 30%. Having a smaller and simpler menu has significantly reduced food stock to 25% of what it was with the previous menu, and with minimal food wastage. Additionally, sales per labour hour has shown a 65% increase in productivity, and overall cost savings have been quantified at €53,000 per year.

Figure 3

A number of lessons were learned from the Lean Programme for Glen Keen Farm, mainly around the importance of reviewing business operations and work flow on a regular basis and ensuring maximum efficiencies at all times. It is also important to carry out regular pricing comparisons for energy and service suppliers to the business to ensure we are receiving the best prices and attaining full benefits and incentives from our suppliers.

We have also learned the importance of involving the team in adapting and learning new ways to become a better and more efficient operation, through greater teamwork, regular staff meetings to review the business operation, staffing plans, and the visitor experience. Staff take ownership and are motivated when there are clear, positive results from changes in business systems and the implementation of checklists as a result of the Lean Programme.

LEAN TEAM STRATEGIES

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SANCTUARY SYNTHETICS

CASE **20**

AUTHORS:

L-R: *Mark O'Loughlin, Stuart Nelson*

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

The team attended a 2-day offsite training workshop and various ongoing mentoring sessions where they determined their goals and objectives and understood better how to implement Lean thinking into the organisation.

We focused on two main areas: Warehouse Operations, and Office Operations. Having purchased and renovated an old derelict paint factory in the centre of Naas town in 2015, it has become the company's bespoke headquarters called GRASSLAND. Given constraints on funds and the need to operate and grow, the operation has evolved. It became increasingly apparent that, despite economies of scale, more effective workflows, layouts, and organisation would come from taking a new and Lean focus.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Warehouse Operations

Taking the Lean theories and practical examples on board, there was great buy-in from all the staff, not just those who attended the workshops. Over time, and through brainstorming and mindmaps and using a lot of post-it notes, several specific areas were identified. Some obvious low hanging fruit was quickly picked, for example, getting a 5,000 litre diesel tank on site for the fleet and thus saving 10% on fuel costs along with substantial time savings.

With Brexit looming, we also looked at our vulnerable trans-UK shipping route. Now, instead of trucks delivering via the land bridge, we constructed a new loading ramp at HQ that costed costing approx. €7,000 and which allows container deliveries with the same lead time as those coming directly from Rotterdam to Dublin, but at a 40% saving in shipping costs and with about 40 deliveries per annum. The ramp investment was paid off in weeks, along with tens of thousands of euro in annual savings going forward.

Another example was as simple as asking "Why is equipment stored there in Bay 3?". By simply moving racking and re-organising the store to

www.sanctuarysynthetics.ie
artificial garden grass & greens

COMPANY OVERVIEW

Sanctuary Synthetics is Ireland's leading installer and supplier of artificial grass to the childcare, school, and domestic market. It also wholesales to the landscaping and corporate trade. Established in 2002, the company has grown from 1 man-in-a-van to having 18 employees in a fleet of 8 'hairy' green vans on the road and installing grass nationwide from its Naas headquarters, "GRASSLAND", which comprises offices, internal and external display areas, warehousing, and yards.

www.sanctuarysynthetics.ie

Bay 1, we have saved at least ½ a minute per man by several men per day by multiple manual movements in a day – a substantial time and cost saving overall.

Office Operations

Initially somewhat more challenging than expected, the process forced us to study our normal methodologies, from marketing and sales processes right through to administration and accounting. A paper-dependant system had evolved naturally with several overlapping processes. We looked at several new software options before eventually settling on a new CRM system which encompasses most of the daily tasks.

As a nice operation with increasing competition, we have always relied heavily on marketing, both online and offline and including award-winning Bloom gardens, TV and Radio appearances, relentless social media, and celebrity endorsement from Lucy Kennedy and Mario Rosenstock on giftgrass.ie.

Moreover, all of our installs are once-off bespoke jobs, and even a simple €1,000-2,000 private garden install demands several contacts and the collation and coordination of a lot of information, including location, names, photos, videos, precise measurements, and so on.

Hence the value of Lean. We painstakingly broke down and logged all the steps involved from start to finish, thus providing a clearer overview of what we did and how we did it (our then current state). Only then would we draw up a wish list before seeking office staff systems that might suit. At present we are implementing a new and all-encompassing software system with bespoke plugins customised to perfect communications, and much of it automating and minimising administration and paperwork. Now the same info is visible to all employees and substantial extra sales and efficiencies are anticipated.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

Notable benefits include:

- 12% reduction in loading time at start of the day.
- 15% reduction in offloading time.
- 12% planned reduction in overtime.

"20 years ago I was that 1 man-in-the-van. Now with millions in turnover and plenty of employees, I became conscious of not being set in my ways. The Lean process jolted me out of my complacency and allowed an inclusive and logical process to evolve internally which, I'm delighted to say, quickly and continually bore fruit – and when I say fruit I mean tangible time and money savings."

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MOLLOY'S BAKERY & HONEST BAKERY

AUTHORS:

L-R: *Declan Molloy, Paula McNicholas*

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

Molloy's has a long and proud tradition in Roscommon town, and have been baking with pride since 1922. We are currently in our fourth generation, and, with 90 years of experience behind us we have learned how to delivery top quality bread and confectionary for every occasion. Our custom-built bakery was completed in 1998 on the outskirts of Roscommon town. From there we supply both our wholesale business and our own retail/coffee shop. Molloy's has come a long way from its humble beginnings 97 years ago. Back then we had three bakers producing only a white batch loaf, and over the years we have developed a much wider range of products with over 150 lines now in production. We also now have 40 people working for the company between our bakery floor and shop. Four nationalities make up our team, all working in unison.

Originally based in Downpatrick, Northern Ireland, Honest established a reputation for its delicious gluten-free mini cakes. At the same time, Molloy's Artisan Bakery in Abbeytown, Roscommon, was looking to enter the gluten-free market. In 2011, it took the plunge and took over the Honest Bakery and moved it lock, stock and barrel to a new and completely dedicated bakery in Roscommon. Declan and Mary T. Molloy continue to run the traditional artisan bakery and delicatessen, and their children Mark and Jackie-Ann have taken over the running of Honest. Despite commercial scale today, everything is hand-made in small batches using only the finest quality ingredients. Building on the success of its mini-cakes, Honest has expanded its product range to now include gluten-free biscuits, cantucci, fresh bread, tarts, granola, and rocky road.

Roscommon LEO approached us to see if we would be interested in undertaking the Lean for Micro Programme to examine and improve efficiencies in our bakeries. The fact that the LEO was funding the project made it a no-brainer as we had nothing to lose. Molloy's Bakery produces over 150 different lines with very little mechanisation, and Honest Bakery is a relatively new company with a limited range of products with higher volumes of individual products. We had a good context to look at improvements, and we met with Paula McNicholas of Lean Team Strategies and decided to go ahead with the project.

MOLLOYS ARTISAN BAKERS

honest

COMPANY OVERVIEW

Molloy's Artisan Bakery is a family-run business operating in Roscommon town since 1922. Now in our fourth generation, we at Molloy's pride ourselves in producing top quality bread and cakes to the domestic market.

Honest Bakery is the sister bakery to Molloy's, and is also run by our family. It makes award-winning gluten-free baked goods in Roscommon. All products from biscuits to cakes are made in our dedicated gluten-free facility that has been certified a BRC AA site. Honest serves the domestic, European, and UK markets.

www.molloysbakery.ie
www.honestbakery.ie

MOLLOY'S BAKERY & HONEST BAKERY

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

The objective of the Lean Programme was to identify the waste and improve productivity in each of the bakeries.

Following the LEO Lean workshop, Paula came to each of the bakeries to explain the process and we looked at areas where we felt improvements could be made. Packaging was the main area identified for both companies. As the same process was carried out every day and there were no obvious issues with the results, it was hard to think there was a better way to complete the task.

In Molloy's, a variety of baked products were put through the wrapping machine daily. The speed of the machine was turned up to get the wrapping done as quickly as possible. This resulted in a backlog at the end of the line and consequently the products were handled several times as each process step was batched. Paula noticed this and explained the Lean concept of one-piece-flow and suggested we try it. The first and most important thing was slowing down the wrapping machine. The initial reaction from the staff was that this won't/can't work – "We will be here all day". We set up the system as suggested, ran the wrapping machine slower, put an extra person on the line so the products could be packed straight into the delivery crates, which saved approximately one hour straightaway. Paula explained that we were batching too many times during the dispatch process and this meant we were handling the products too many times. It was a very effective change, and our main packing/dispatch person said he would not go back to the way he was wrapping in the past.

We also got benefits in our cake decorating/finishing department. We were batching in this area too, similar to the problems in the wrapping/dispatch area. Too much handling of products and taking up too much space. At first, like the dispatch area, the staff could not see that changing the system would improve efficiencies or make their life easier until they understood the concept and could experience it for themselves. We now have a mini-production line of sorts, just without the typical conveyer belts. The staff are working better together as a team, now that they understand the Lean concepts and have experienced how much quicker the process can be. Explaining the process and the reasoning behind the changes to staff was paramount in bringing about the changes plus the change in attitude to challenge the 'way things were always done'.

Figure 1.

In Honest Bakery it was a very similar process. We were running the wrapping machine too fast and again had a backlog at the end of the line. It was a matter of slowing down the wrapping machine, having a person packing, a person labelling, and putting a person at the end of the line boxing the products as they came off the line. It is important to have everything set up and in place before you start the process. Before Lean, 2-3 people would carry out a process step at a time, creating huge piles before moving on to the next process step. There was some re-training involved in getting the team to understand the changes to the process.

The main difference between the two bakeries is the size of the production runs. Molloy's has a big range of products with smaller volume, while Honest has the very opposite with a smaller range with bigger volumes. Honest ended up saving many hours per week on packing and this meant staff could be more productive in other areas.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

Molloy's Bakery

After implementing one-piece-flow in Molloy's dispatch process, it can now be completed in less than a third of the time. There is less handling and it is a lot easier and is done in a much calmer atmosphere.

In the bakery itself we are using one-piece-flow for the iced bracks which can now be produced with 1 less person and in half the time. Numerous other processes have followed suit with productivity improvements, including for example our tarts and mixes.

In the confectionery department, for 10 different types of cakes we implemented Lean processes with productivity improvements ranging from 20-100%. There were space savings as a lot less space was required, and there was less stress for the people and better teamwork resulted ensued.

Overall for Molloy's Bakery, the savings were in the region of €60,000 with many processes enjoying greater than 100% productivity improvements.

Honest Bakery

In Honest Bakery the focus was on the high-volume products. For the high-volume biscuit, the reduction in production time of each pallet went from 26 man hours to 17 man hours. The staff were utilised more efficiently. Further reduction in labour cost came by changing packaging to a printed box and eliminating the need for labelling. The savings in labour costs per pallet were significant. With the recent addition of a new depositor too, the output has now doubled. The production of tarts reduced from 3 hours for 2 people to 1.5 hours for 3 people, saving 1.5 hours each time.

We implemented batch to one-piece-flow on every process where possible, bringing significant savings in time overall producing the likes of Rocky Road, 2-pack biscuits, granola, and tray bakes. The bakery team implemented Lean techniques when developing the process for a brand new product, the Caramel Tray Bake, with great results.

The improvements in productivity, creation of capacity, and subsequent growth in sales increased profit by €48,000.

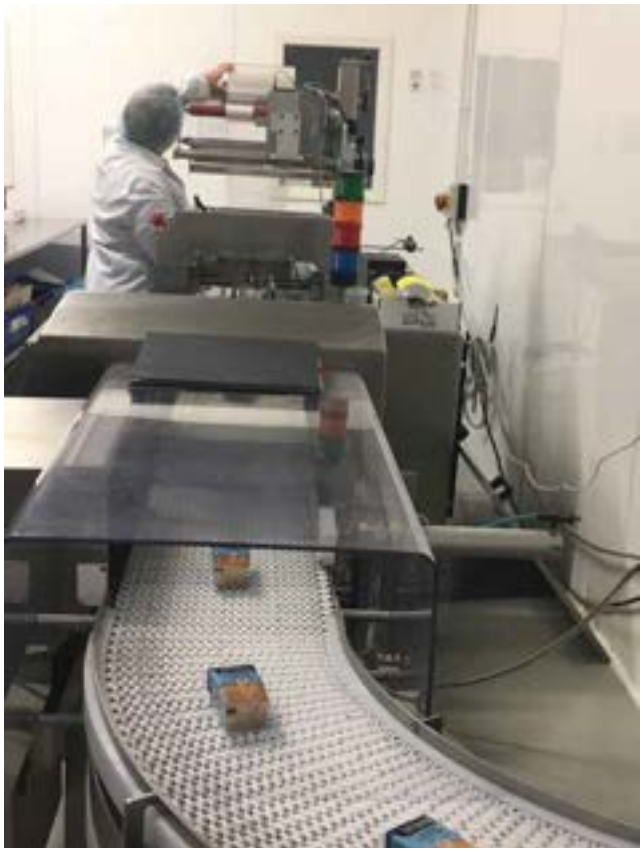

Figure 2.

"As a result of having Paula assist Molloy's and Honest bakeries with some Lean processes, we have noticed big changes in our production flow. We are now more streamlined, more efficient, and definitely more cost effective. Lean within the business is something that has to be monitored on an ongoing basis to get the best results."

LEAN TEAM STRATEGIES

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THE CHOCOLATE SHOP

AUTHORS:

L-R: *Rose Daly, Stuart Nelson*

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

The business is now in its twentieth year and was established and run by a husband and wife team, supported by seasonal staff. All aspects of the business had been managed by a pair of very hands-on managers who split all tasks between them as required. Following the death of one of the pair, the business had continued with a team of part-time staff who still operated in the groove of the old systems. So looking at that was our first challenge.

Also, the physical retail space is small and becomes very congested seasonally when cluttered by additional product. The office space had also become cluttered over time. This was our second challenge.

Furthermore, the uncertainty around Brexit caused a challenge in the sector, and we knew we needed to consider how we could do what we do differently. The Lean initiative made us consider the What, Where, When, Why, and How of everything we do.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Our first question was "Where are we now and where do we want to go?". The answer was that we wanted to do what we do as efficiently as possible going forward.

We began by looking at our Workplace Organisation. What seems obvious in retrospect simply hadn't been prioritised in the busy task-focussed working day, that is, simply sorting our office space, setting in order, and so on. For example, we no longer required several of the files in the filing cabinet. Some elementary reorganisation of the office space was our first achievement. Shortly afterwards, we took the same approach to the retail environment.

There were several IT issues, for example email was not working on all devices and thus different email addresses were being used and information was getting lost between the various systems being used. The website email was going to an unmonitored address and there were several incompatible systems in use. This was resolved successfully.

THE CHOCOLATE SHOP
ENGLISH MARKET, CORK

COMPANY OVERVIEW

The Chocolate Shop is a small, family owned and run confectionery business with three sales channels: Retail, Wholesale, and Online. We are simply passionate about chocolate. When we opened in 2000 we had a mission to stock the largest range of the world's finest chocolate under one roof in Ireland, and we have done just that. We are unique because we are independent of any single manufacturer or franchise, and therefore free to source only the best quality chocolate from the best artisan chocolatiers from around the world.

www.chocolate.ie

Then we looked at how we produce our products and associated tasks. There were several phases to this as production changes seasonally and what is done at Easter is very different to Christmas. We began by looking at our company handbook, and, as a result, we revised the book to separate, for example, work instructions from orientation which had blurred the lines of the purpose of the book.

Next we looked at our inventory management and what we do to make the things that we sell on a daily basis. We consulted the data from our point of sale system and concluded that we were overproducing on a weekly basis. This led to a consultation with staff about how we do what we do and why which led to more efficient processes.

Next we analysed our use of retail space, and this has had one of the most tangible and visible impacts on the business. We began to change how we think about the space we use, and this led to an interesting change in mindset amongst the staff who had been part of the consultation. The thinking around this is a process that is ongoing.

We reviewed our processes around the wholesale business, including reviewing journey plans, marketing plans, and marketing tools – all with positive outcomes. We reviewed our customer invoicing processes and analysed the production time and inefficiencies through the systems used. We also clarified roles within the team.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

As a result of participation in the Lean initiative, we have improved the physical layout of our office space and the physical layout of our retail space. We have fixed problems and the broken parts in our IT systems. We have improved our production systems so that we produce inventory according to what we need only when we need it. This has improved our availability of product for other areas of the business and has reduced the need for reordering. We have improved our approach to our wholesale business and have established clearer responsibilities for the team.

"Apart from the obvious positive outcomes, we have had, without a shadow of a doubt, a subtle shift in our thinking as a result of our participation in the Lean for Micro Programme. This may have been our greatest gain as it is continuous and it feeds into our culture. I would recommend the programme to any company of any size as an opportunity to question whether their modus operandi is still the best there is for them, given that we all operate in a rapidly-changing business environment. While yes, we had some initial resistance to change – many of the principles seemed 'undoable here' – everyone embraced the changes and continues to come up with 'what if' solutions. For example, this has led to us participating in group training in other areas and we are focussed on a common goal."

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CHAPTER 3

Glossary

A3 – This is a one-page report prepared on a single sheet of paper that adheres to the discipline of PDCA thinking as applied to collaborative problem solving, strategy development, or reporting. The A3 includes the background, problem statement, analysis, proposed actions, and the expected results.

Agile – This is a practice, developed primarily within the software/tech sector, that promotes continuous iteration in development and testing throughout the software development lifecycle of a project. Essentially, both the development and the testing activities are concurrent. It emphasises four core values: i) individual and team interactions over processes and tools; ii) a working solution over comprehensive documentation; iii) customer collaboration over contract negotiation; and iv) responding to change over following a plan. Scrum is a simple set of roles, responsibilities, and meetings, and is a key part of the Agile methodology.

Buffer – A mechanism for deadening the force of reality unfolding in a manner that is contrary to what was anticipated in the plan. For example, a capacity buffer is created by committing to complete less work than what would be achieved according to the planned capacity of the resource. If production falls behind schedule, there is capacity available for catching up. Lean production generally prefers capacity buffers to inventory buffers.

Capacity – The amount of work that can be produced by an individual, specialist, or work group in a given period of time.

Constraint – An item or requirement that will prevent an activity from starting, advancing, or completing as planned. Typical constraints on design tasks are inputs from others, clarity of requirements criteria for what is to be produced or provided, approvals or releases, and labour or equipment resources. Typical constraints on construction tasks are the completion of design or prerequisite work, or availability of materials, information, and directives. Screening tasks for readiness is assessing the status of their constraints. Removing constraints is making a task ready to be assigned.

Corrective Action Preventive Action (CAPA) – This is a process that investigates and solves problems, identifies causes, takes corrective action, and prevents recurrence of the root causes. The ultimate purpose of CAPA is to assure the problem can never be experienced again.

Critical To Quality (CTQ) – These are the key measurable characteristics of a product or process whose performance standards or specification limits must be met in order to satisfy the customer. CTQs represent the product or service characteristics as defined by the customer/user.

Current State Map – This is a snapshot of how a process is currently done, showing the current methodology of how you produce products or perform services for your customers. It is a visual method of succinctly recording the key aspects of the current structure and processes in the whole, or any part, of a value/supply chain.

Customer – The individual engaged in a conversation for action who will receive the results of performance either requested from, or offered by, the performer. That is, the person receiving goods/information from a performer. Customers can be internal (the next colleague/team/department in a process flow) and external (end user customers and clients).

Cycle Time – The time it takes a product or unit of work to go from beginning to completion of a production process. That is, the time it is "work-in-progress"/"work-in-process".

Defined Task – A quality task must be "defined". It must have a beginning and end, and it should be clear to all when it has been completed.

Dependence – This refers to where two or more tasks are sufficiently related that one cannot be started (or finished) without a certain measure of progress or completion having been achieved by the other, for example, waiting on release of work.

Direct Observation – Also known as "Observational Study", this is a method of collecting evaluative information in which the evaluator watches the subject/process in the usual work environment without altering that environment.

DMAIC – Define, Measure, Analyse, Improve, and Control. It is a data-driven improvement cycle used for improving, optimising, and stabilising business processes and designs. The DMAIC improvement cycle is a core tool used to drive Six Sigma projects.

Eight Wastes – A framework of eight types of activity that do not add value, that is they are "Waste". They can be summarised as "DOWNTIME" (**D**efects, **O**ver-Production, **W**aiting, **N**on-utilised resources/talent, **T**ransportation, **I**nventory, **M**otion, **E**xcess-Processing), or as "TIMWOODS" (**T**ransportation, **I**nventory, **M**otion, **W**aiting, **O**ver-**P**roduction, **O**ver-Processing, **D**efects, **S**kills).

Enterprise Resource Planning (ERP) – This is the integrated management of core business processes, often in real-time, mediated by software and technology and providing an integrated and continuously updated view of core business processes using common databases.

Fishbone Diagram – This was developed by Ishikawa – often referred to as an "Ishikawa Diagram" – and is a cause-and-effect diagram used in root cause analysis to better understand the factors contributing to a problem.

Five Core Principles – These are the core principles underpinning Lean that were developed by Womack and Jones (1996), and include:

i. Value – It is defined by your customers who buy results not products (clean clothes vs. washing machines). We should give the customer what they want rather than what is convenient for us to give them.

ii. Value Stream – The sequence of all processes from raw material to customer.

iii. Flow – Keep value moving; avoid batches and queues; there should be few non-value-adding steps.

iv. Pull – Short-term response to the customer's rate of demand and with no Over-Production.

v. Perfection – Delivering exactly what a customer wants, when they want it, at a fair price, and defect-free, with minimum waste. The ongoing pursuit of perfection using PDCA.

5S – (1) Sort; (2) Set in order; (3) Shine; (4) Standardise; (5) Sustain. This five-step process for workplace efficiency uses visual controls to eliminate waste, and helps us organise what we need and to eliminate what we don't need, thus allowing us to identify problems quickly.

5 Whys – An iterative questioning technique, using cause-and-effect analysis, to get to the root cause of a problem by successively asking "why" whenever a problem exists in order to get beyond the apparent symptoms. As each answer to the why question is documented, an additional enquiry is made concerning that response.

Flow – Movement that is smooth and uninterrupted, as in the "flow of work from one colleague to the next" or the flow of value at the pull of the customer. Much of Lean Production is focused on "one/single-piece-flow", and entails the movement of a single product through the full production process at a time.

Future State Map – A vision of the desired future state process/system, and which is used as the guide for the Lean improvement process.

Gemba – The Japanese term for where the actual value is added or where the actual work takes place. Lean experts encourage "going to the gemba" to see how things are really done and to see where there is opportunity to eliminate or reduce waste.

Hand-Off – The act of releasing an item or activity to the person or group performing the next step or operation on that item or activity.

Hoshin Kanri – The Japanese term for direction management or strategy/policy deployment. Ho means direction; Shin means Focus; Kan means Alignment; Ri means reason.

Just In Time (JIT) – A system for producing or delivering the right amount of parts or product at the time it is needed for production.

Kaizen – The Japanese term for incremental continuous improvement. Kaizen is a structured process to engage those closest to the process to improve both the effectiveness and efficiency of the process. Its goals are to remove waste and add standardisation. Kaizen has come to mean the philosophy of continuous improvement.

Kanban – The Japanese term for a signposting mechanism associated with the demand pull principle. The signal tells workers to pull parts or refill material to a certain quantity used in production, and they are a signal that a downstream or customer process can use to request a specific amount of a specific part from the upstream, or supply, process.

Key Performance Indicators (KPIs) – These are a set of measures designed to benchmark a business's most important characteristics against a set of strategic targets.

Lean – The concept that all processes contain waste. Lean is an integrated, value-driven approach to designing and improving work towards a customer-focused ideal state through the engagement of all people aligned to common principles and practices. It is associated with the ability to accomplish more with less. Lean Enterprises use less human effort to perform their work, less material to create their products and services, less time to develop them, and less energy and space to produce them. It implies a culture of respect and continuous improvement aimed at creating more value for the customer while identifying and eliminating waste.

Lean Thinking – The philosophical foundation, leadership mindset, and management orientation that enables all individuals in an organisation understand true Lean; and to design, develop, implement, manage, and maintain a Lean Enterprise.

Load – The amount of output expected from a production unit or individual worker within a given time.

Muda – This is the Japanese word for "Non-Value-Adding" or "Waste", namely any activity that consumes resources but adds no value. They are a target for reduction or elimination. All Muda is caused by Mura and/or Muri.

Mura – This is the Japanese word for "Unevenness", namely any activity that has not been levelled out and which thus creates consequential complexity and cost. They are a target for reduction or elimination.

Muri – This is the Japanese word for "Overburdening", namely any activity that causes excessive demand on a system and that causes the system to produce beyond its reasonable capacity. Pushing a machine or person beyond natural limits. Overburdening people results in stress, safety, and quality problems. Overburdening equipment causes breakdowns and defects. They are a target for reduction or elimination.

Necessary Non-Value-Adding (NNVA) – Those support activities that are necessary under the present operating system or equipment, but which do not per se add value. One should seek to optimise these.

Non-Value-Adding (NVA) – Those activities/processes that do not directly add/contribute value to customers – namely those activities the customer would not be happy to pay for. One should seek to reduce and/or remove these.

Optimal Equipment Effectiveness (OEE) – This is a hierarchy of metrics to evaluate how effectively a manufacturing operation is utilised with results stated in a generic form which allows comparison between manufacturing units in differing industries. It is not an absolute measure and is best used to identify scope for process performance improvement. It is a composite measure of the ability of a machine or process to carry out value adding activity. OEE = % time machine available * % of maximum output achieved * % perfect output. It measures the degree to which machines are adding value by not being wastefully employed due to planned or unplanned downtime or in producing defects.

Pareto Analysis – Sometimes referred to as the "80:20 rule", this is the tendency in many business situations for a small number of factors to account for a large proportion of events. For example, 80% of total sales volume might be attributable to 20% of customers and 20% of the product range. In terms of quality, 80% of defects might be attributable to 20% of causes. The 20% is sometimes referred to as "the vital few".

PDCA – Plan, Do, Check, Act/Adjust. This is the cycle introduced by Walter A. Shewhart and popularised by Dr W. E. Deming as a method for continuous improvement.

Performer – The individual engaged in a conversation for action who agrees to undertake performance either requested from or offered to a customer.

Planning – The act of conversation that leads to well-coordinated action.

Poka-Yoke – A Japanese term for mistake-proofing. It was developed by Shigeo Shingo and is used to prevent an error or defect from happening or being passed on to the next operation.

Process Mapping – A flowchart identifying all the activities, operations, steps, and work times for a process.

Pull – A method of advancing work when the next-in-line customer is ready to use it. A request/demand from the customer signals that the work is needed and it is pulled from the performer. Pull releases work when the system is ready to use it.

Push – Push an order from a central authority based on a schedule, or advancing work based on central schedule. Releasing materials, information, or directives possibly according to a plan but irrespective of whether or not the downstream process is ready to process them.

Quality – Conformance to a customer's valid and agreed upon conditions of satisfaction.

Reason for Variance – Factors that prevented an assignment from being completed as promised and used by the team to promote learning concerning the failure of the planning system to produce predictable workflow. By assigning a category of variance to each uncompleted task, a team is able to identify those areas of recurring failure that require additional reflection and analysis.

Reliable Promise – A promise made by a performer only after self-assuring that the promisor: (1) is competent or has access to the competence (both skill and wherewithal); (2) has estimated the amount of time the task will take; (3) has blocked all time needed to perform; (4) is freely committing and is not privately doubting ability to achieve the outcome; and (5) is prepared to accept any upset that may result from failure to deliver as promised.

Request – The action taken by a customer to ask a performer to take some action to produce a mutually understood result – a condition of satisfaction – by a definite time in the future.

Right First Time (RFT) – This concept involves making sure that all activities are carried out in the right manner the first time and every time. A quality management concept that defect prevention is more advantageous and cost-effective than defect detection and associated rework.

Root Cause Analysis – A systematic method of analysing possible causes to determine the root cause of a problem.

Should-Can-Will-Did – To be effective, production management systems must tell us what we should do and what we can do, so that we can decide what we will do, then compare with what we did do to improve our planning.

SIPOC – Suppliers, Inputs, Process, Outputs, Customers. This is a visual tool to assist in documenting a process from beginning-to-end. Used when process mapping.

6S – This is all of the 5S with the addition of Safety as the 6th S.

Six Sigma – A method and a set of tools to reduce variation in processes, particularly quality, using mostly statistical tools. It is a complement to Lean.

SMED – This stands for "Single Minutes Exchange of Dies", and it is a Lean production method to enable improved line changeovers and reduce the waste therein.

Standard Work – Integral to Lean, this aims at creating standardised processes and procedures that are repeatable, reliable, and capable – this being the basis for continuous improvement.

Takt – Takt time may be thought of as a measurable beat time, rate time or heartbeat. In Lean, Takt time is the rate at which a finished product needs to be completed in order to meet customer demand. If a company has a takt time of 10 minutes, that means every 10 minutes a complete product, assembly, or machine is produced off the line because on average a customer is buying a finished product every 10 minutes.

Task – An identifiable block of work.

Throughput – The output rate of a production process.

Total Productive Maintenance (TPM) – This is a technique designed to optimise the performance, reliability, and productivity of plant and equipment. Responsibility for maintenance is given to the actual operators.

U-Cell – This is related to one/single-piece-flow. With a U-shaped cell, the operator finishes their work in the same location that they start it in, thus eliminating the waste of walking from the end of the line back to the start. A U-shaped cell can be set up to allow two operators to work back to back if the workload requires it. Overall space in a plant is reduced when using U-shaped cells.

Under-Loading – Making assignments to a production unit, or a resource within a production unit, that absorbs less than 100% of its capacity. Under-loading is necessary to accommodate variation in processing time or production rate, in order to assure plan reliability. Under-loading is also done to release time for workers to take part in training or learning, conducting first-run studies, implementing process improvements, or for equipment to be maintained.

Utilisation – The percentage of a resource's capacity that is used in actual production.

Value – What the customer wants from the process. The customer defines value. This is the fundamental basis of Lean.

Value-Adding (VA) – Those activities/processes that directly add/contribute value to customers – those activities the customer is happy to pay for. One should constantly strive to expand these.

Value Stream – The sequence of activities required to design, produce, and deliver a good or service to a customer, and it includes the dual flows of information and material.

Value Stream Mapping (VSM) – The process of mapping out and visually displaying a value stream so that improvement activity can be effectively planned. VSM is the meta tool that guides all other Lean tools. When we utilise VSM we visualise the current state plus desired future state of a process that take a product or service from its beginning through to the customer.

Variance – When an assignment is not completed as stated, it is considered a variance from the daily/weekly/monthly work plan.

Variance Trend Analysis – This refers to the quantitative investigation of the difference between actual and planned behaviour. This technique is used for determining the cause and degree of difference between the baseline and actual performance and to maintain control over production.

Visual Management – Placing tools, parts, production activities, plans, schedules, measures and performance indicators in plain view. This assures that the status of the system can be understood at a glance by everyone involved and actions can be taken locally in support of system objectives.

Waste – The opposite of value, these are activities/processes that do not directly add/contribute value to customers, and that the customer would not be happy to pay for. The aim of Lean is to reduce and remove waste from processes.

Waste Walks – These are a form of direct observation and are simply a planned visit to where work is being performed to observe what's happening and to note the waste. It differs from go-see activities in that you are specifically looking for waste.

Work Flow – The movement of information and materials through networks/cells/lines.

Work Structuring – Designing the production system to determine who does what, when, where and how, usually by breaking work into pieces, where pieces will likely be different from one production unit to the next. The purpose of work structuring is to promote flow and optimise system throughput by focusing on handoffs and opportunities for moving smaller batches of work though the production system.

Work in Progress/Process (WIP) – The inventory between the start and end points of a production process.

X-Matrix – Used in Hoshin Planning, the X-Matrix is a template used in organisational improvement that concisely visualises on one page (A3) the alignment of an organisation's True North, its Aspirations, its Strategies, its Tactics, and its Evidence.

CHAPTER 4

LEO Directory

LEO DIRECTORY

Local Enterprise Offices (LEOs)

Carlow
Local Enterprise Office Carlow,
Enterprise House,
O'Brien Road,
Carlow
Tel: (059) 912 9781
www.localenterprise.ie/carlow

Cavan
Local Enterprise Office Cavan,
Cavan Innovation and
Technology Centre,
Dublin Road,
Cavan
Tel: (049) 437 7200
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Clare
Local Enterprise Office Clare,
Áras Contae an Chláir,
New Road, Ennis,
Co Clare
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www.localenterprise.ie/clare

Cork City
Local Enterprise Office Cork City,
Room 101,
City Hall,
Anglesea Street,
Cork
Tel: (021) 496 1828
www.localenterprise.ie/corkcity

Cork North and West
Cork North Office:
Ground Floor, Blackwater House,
Mallow Business Park,
Gouldshill Mallow,
Co. Cork

Cork West Office:
8 Kent Street,
Clonakilty,
Co Cork
Tel: (022) 43235
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Donegal
Local Enterprise Office Donegal,
Enterprise Fund Business Centre,
Ballyraine,
Letterkenny,
Co Donegal
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www.localenterprise.ie/donegal

Dublin City
Local Enterprise Office Dublin City,
Civic Offices,
Block 4,
Floor 1,
Wood Quay,
Dublin 8
Tel: (01) 222 5611/2
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Dún Laoghaire-Rathdown
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1 Harbour Square,
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Fingal
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Wood Quay Court,
Wood Quay,
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Local Enterprise Offices (LEOs)

Kerry
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Áras Chill Dara,
Devoy Park,
Naas,
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Kilkenny
Local Enterprise Office Kilkenny,
Kilkenny County Council,
County Hall,
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Leitrim
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Áras an Chontae,
Carrick on-Shannon,
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Moneen Road,
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Co Mayo
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Meath
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Navan Enterprise Centre,
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Roscommon West Business Park,
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Local Enterprise Office Sligo,
City Hall,
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Sligo
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South Cork
Local Enterprise Office South Cork,
Business Growth Hub,
County Hall,
Carrigrohane Road,
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South Dublin Local Authority,
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Dublin 24
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Nenagh,
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32 The Mall,
Waterford
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Westmeath County Council,
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Mount Street,
Mullingar,
Co Westmeath
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Wexford
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Wexford County Council,
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Wicklow
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Wicklow County Campus,
Clermont House,
Rathnew,
Co Wicklow
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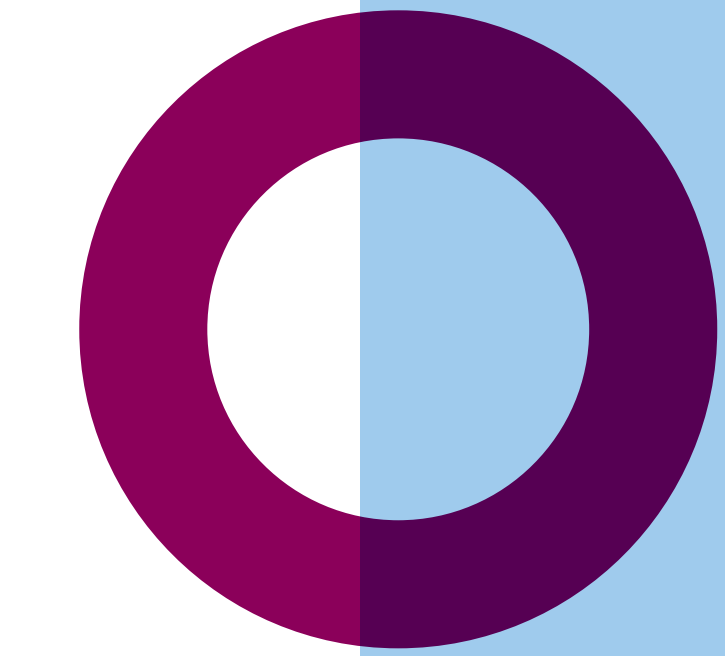
www.localenterprise.ie/wicklow



Ireland's European Structural and Investment Funds Programmes 2014-2020
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