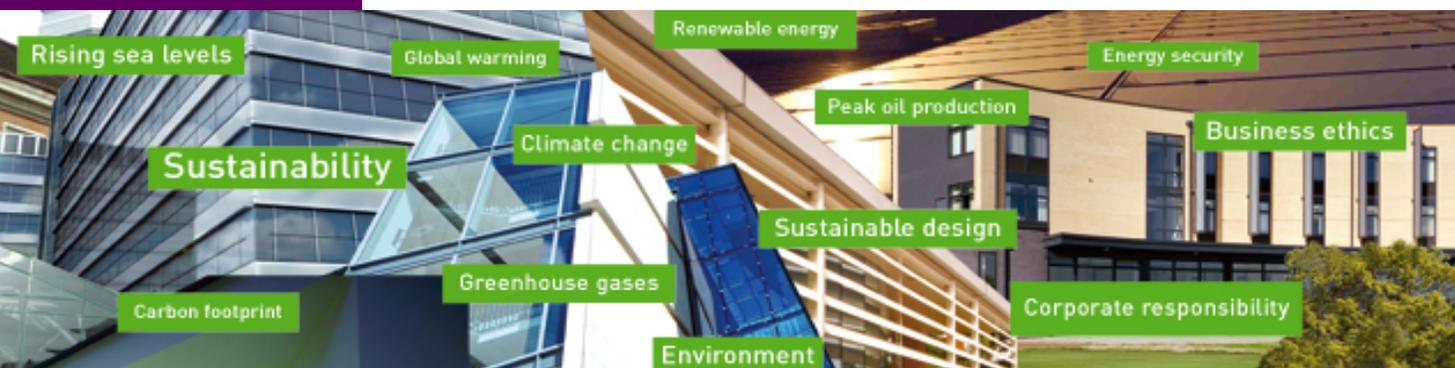


Analysis of Lean Implementation in UK Business Schools and Universities

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Written by AtoZ Business Consultancy

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Foreword

As this report will show, it is still relatively early days regarding the implementation of Lean in Higher Education. However, what it will also show is that the appetite, potential and opportunity for Lean is large with many individuals recognising that the need to deliver more efficiency and effective services to both students and for academics is critical.

The research was carried out and the report written around the time of the release of the Browne report which outlined funding arrangements in English Higher Education. This also coincided with the Comprehensive Spending Review in October 2010 which announced some of the largest saving and budget cuts of recent economic history. Both of these in themselves have created significant challenges in Higher Education and, whilst Lean is not a panacea to them all, as this report will indicate Lean can support and create opportunities to address many of the inefficiencies within the current systems. Lean, first developed in the automotive industry, has been transferred across manufacturing and service organisations. Its development in public services has seen significant programmes in HM Revenues and Customs, Department of Work and Pensions, HM Court Services as well as Health and Local Government organisations. HM Revenues and Customs recently announced that their Lean (Pacesetter) programme has realised over £900 million of savings. This has been through the systematic implementation of many new practices in order to develop a new culture based around continuous challenging and improvement of the delivery processes.

There are some risks to implementing Lean – as recent examples in Toyota and even Mid Staffordshire General Hospitals NHS Trust have shown it can mean the organisation focuses on the wrong thing exposing safety and quality. However, these risks currently are outweighed by the benefits and, as the case studies within this report will illustrate create real opportunity.

This report should be considered as a 'baseline' for Lean implementation in Higher Education. The illustrations and examples of the approaches from the case studies framed around the 'House of Lean in Public Services' could be regarded as tips and ideas of what and how to develop a Lean programme within a Higher Education institution. Further references and information can be found at the end of this report.

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Glossary of Terms

3Cs	The 3Cs document (Concern; Cause; Countermeasure) is a way of capturing day-to-day problems or issues. Problems are highlighted on a performance board and short team discussions are held to define the cause and determine and implement a solution.
5Ys	The 5Ys is a problem solving technique that explores the cause/effect relationships underlying a particular problem. It involves asking the question “Why?” five times to arrive at the root cause of a problem.
A3s	These are project definition documents highlighting issues to be addressed, key activities to undertake to resolve issues and the key indicators (metrics) to measure performance.
Competency Framework	A competency framework defines the knowledge, skills, and attributes needed for people within an organisation. Each individual role will have its own set of competencies needed to perform the job effectively.
Continuous Improvement	This philosophy focuses upon continuously improving business processes. It refers to activities that continually improve all functions, and involves all staff from top management to front line. It also applies to processes that cross departmental or even organisational boundaries. By improving activities and processes there is less waste.
Fishbone Diagram	Fishbone (or Ishikawa) diagrams show the causes of a certain event. They are used for process design, to improve quality and to identify factors causing an overall effect. Each cause for imperfection is a source of variation. Causes are usually grouped into categories to identify these sources of variation. The categories include: People; Methods; Equipment; Materials; Measurement and; Environment.
Flow	Flow is about how the items being processed move around an environment and what happens to them. The best way to run a process is to use the minimum resource and minimum elapsed time to move an item from the start to end of the process.
Lean	Lean is philosophy that uses tools and techniques to create a change of culture in order to implement the good practice of process/operations improvement that allows the reduction of waste, improvement of flow, more focus on the needs of customers and which takes a process view.
Log Frame Matrix	The Log Frame Matrix is an analytical, presentational and management tool which can help to: <ul style="list-style-type: none">• Analyse the existing situation during preparation.• Establish a logical hierarchy of means to meet objectives.• Identify the potential risks to achieving the objectives.• Establish how outputs and outcomes are monitored and evaluated.• Present a summary of the activity in a standard format.• Monitor and review activities during implementation.

Nominal Grouping Technique	Nominal group technique is a decision making method for use among groups of many sizes, who want to make their decision quickly and take everyone's opinions into account. First, every member of the group gives their view of the solution. Then, duplicate solutions are eliminated from the list of all solutions, and the members proceed to rank the solutions, 1st, 2nd, 3rd, 4th, and so on. Some Facilitators encourage the sharing and discussion of reasons for the choices made by each group member allowing the creation of hybrid ideas, often better than those ideas being initially considered.
Pursue Perfection	To continuously improve processes and the belief that improvements and change are never complete.
Process Mapping	Process mapping refers to activities involved in defining exactly what a business unit does, the steps involved in specific tasks, who is responsible and where hand offs occur, to what standard a process should be completed and how the success of a business process can be determined.
Pull	The term 'pull' describes demand of the customer for a process. Pull systems (make-to-order) have replaced push systems (make-to-stock), which traditionally have been based on the often inaccurate anticipation of demand. Lean processes are responsive to the ever-changing level of customer demand.
Rapid Improvement Workshops (RIWs)	Synonymous with Rapid Improvement Events (RIEs) and also Kaizen Blitz, these are normally attributed to workshops which focus on departmental or organisational issues and processes, with a view to resolving issues or designing improvements within the timeframe of the workshop (generally three to five days). The workshops are facilitated by internal or external staff. The facilitator manages the process of the workshop in the preparation phase, during the event itself and in the follow-up phase.
Root Cause Analysis	Root cause analysis is a problem solving method aimed at identifying the root causes of problems. The method is predicated on the belief that problems are best solved by attempting to correct or eliminate root causes, as opposed to merely addressing the immediate or obvious symptoms. By directing corrective measures at root causes, it is hoped that the likelihood of problems recurring will be minimised.
Six Sigma	Six Sigma aims to reduce organisational costs and enhance customer satisfaction by reducing defects or service failure, using a set of statistical and management tools to make improvement leaps. A key focus of Six Sigma is the implementation of projects using the DMAIC methodology (Define, Measure, Analyse, Improve and Control).

Six Thinking Hats	Six Thinking Hats (also known as the de Bono Hats system) is a thinking tool for group discussion and individual thinking. It provides a means for groups to think together more effectively, and a means to plan thinking processes in a detailed and cohesive way.
Value	Value is defined as profitably meeting or exceeding the customer's requirements and expectations. Eliminating waste in every aspect of business provides real value to the customer. This requires a good understanding of who the customer is at every level of the organisation and their requirements.
Value Stream	A value stream is an end-to-end business process which delivers a service to a customer. The process steps along the way may use and produce intermediate services and information to reach that primary end. Analysis may suggest the removal of intermediate process steps, services and information that do not move the value stream Forward to its primary target, provided they do not serve important secondary ends such as compliance, quality control or employee loyalty.
Value Stream Mapping	Value stream mapping is a technique used to analyse the flow of materials, services and information required to bring a service to a consumer.
Visual Management	Visual management is a tool that enables anyone entering a work place, even those who are unfamiliar with the detail of the processes, to very rapidly see what is going on, understand it and see what is under control and what is not. Essentially, the current status of the operation can be assessed, at a glance.
Waste	Any activity that does not add value or is unproductive is classed as 'waste'. The reduction of waste is an effective way to increase profitability. A process adds value by providing a service that a customer will pay for. A process consumes resources and waste occurs when more resources are consumed than are necessary to provide the service that the customer actually wants.

Executive Summary

The Lean implementation methodology (Lean) has its roots in manufacturing and particularly the automotive sector through the Toyota Production System. Over the last decade, Lean has expanded beyond manufacturing to become an improvement methodology firstly in the service sector and more recently in public sector organisations looking to improve efficiency and customer value.

It is within this context that AtoZ Business Consultancy undertook an analysis of Lean implementations across Business Schools and Universities in the UK. This analysis was undertaken using a case study approach of five diverse Higher Education organisations. The case studies included a combination of Russell Group and non Russell Group organisations, research intensive as well as teaching informed organisations and organisations with large non EU student numbers. The organisations were spread geographically across England, Scotland and Wales and included large metropolitan areas as well as smaller more rural locations.

There has been a driver for Lean in all public sector organisations as a result of draconian government budget cuts. Within Higher Education this has been further driven by the announcement of increased student fees following the Browne Review. Lean with its focus on value, customer, efficiency and effectiveness is sensitive to this context as well as other initiatives such as the sustainability and green agenda, supporting increasing the performance in the National Student Survey (NSS) and maybe most importantly allowing savings to be achieved.

There is little doubt that the Lean programmes undertaken in the case study organisations have had significant impacts. This includes:

- Creating an understanding of the need to change.
- Revising processes and practices which had been untouched for years.
- Engaging staff to enable them to challenge and question their working practices.

The main points highlighted from the study are:

- It is early days for Lean development and implementation in Higher Education. There is still a lot of opportunity for improvement and a lot to be learnt from the experience of other public service organisations.
- There is fragmented uptake of Lean making it difficult to identify some 'outstanding' examples of Lean implementation. However some of the early adopters are showing real signs of engagement and embedment.
- There was limited understanding of the key principles of Lean and how they should be driving the improvements.
- Lean appears to be driven by mainly administrative and support staff, who can see the benefits. However many are still distracted by the day job where they feel there is a lack of recognition / understanding of how Lean could support improvement.
- There is a focus on project based activities around one or two processes which are redesigned and then not always re-visited or monitored. There is less on developing a Lean culture.
- There is a need for more focus on developing the building blocks of Lean. This includes more senior management commitment to Lean, linking the Lean activity to

the strategy and a better understanding of the customer and processes, in order to sustain Lean improvements over the longer term.

- Value is being seen as process based with better processes leading to better value for internal staff. The concept of delivering value to customers (particularly students) needs to be developed further.

Key Successes

- All organisations implemented the majority of the Lean programmes themselves, either through building the internal capacity or increasing staff capability thereby ensuring greater engagement and buy-in to Lean from staff.
- Staff who have undergone Lean training appear to have benefited from this experience and had a good basic understanding of the Lean concepts in terms of making processes more streamlined and efficient.
- There was some discussions about matching capacity and demand, but not widely understood across all the organisations.
- It was encouraging to see that the concept of a customer is recognised and there is a perception of the need to provide a high level of service.
- There were examples of senior staff proactively engaged and driving Lean programmes.
- Revised processes were one of the key successes of the Lean programmes, which would be sustained even if the Lean programme ended.
- There was evidence of organisations communicating their Lean improvement work on their websites.
- The use of RIWs had enabled staff to understand processes in a different way, allowing opportunities and savings to be identified as well as a chance for staff to have their voice heard.
- One organisation had developed internal capability and using this resource to undertake RIWs. Having capability within the organisation to facilitate change ensures more ownership of change.
- Problem solving is being undertaken in some form in all organisations. This is mainly being done via brainstorming sessions in RIWs, but there are specific examples of problem solving tools being used in other Lean programmes.
- There were examples of visits being undertaken to other Lean organisations where those involved had witnessed Lean working in practice.
- All organisations recognised they were on a journey of continuous improvement with more work to be done on embedding improvement behaviours and robust processes and creating a groundswell of opinion to change the culture of the organisation.

Important Considerations

- Steering Groups and project teams are important in the design and roll out of Lean programmes such as communications, developing internal capability, designing and delivering training, tracking impacts, selling Lean to senior management and planning the next stage of the journey.
- There are assumptions regarding customer requirements and that the 'voice of the customer' has not been clearly articulated by direct involvement in Lean improvements, except in one organisation. There needs to be more evidence to support the quality and timing of information that would result in better processes and more satisfied customers.

- Senior management needs to be more actively involved taking on more responsibility and ownership of the Lean programmes. There should be an environment of 'go and do' as well as 'go and see' that includes Pro-Vice-Chancellors and Principals.
- There is scope for a better understanding of end-to-end processes (i.e. the student life cycle) to ensure that Lean was not seen only in terms of process-focused change but more in terms of a culture change in behaviours and attitudes. This would also support the defining of value and customer requirements.
- Better communication methods and media should be used to better inform all staff within organisations and there is significant scope for communication across organisations to share knowledge and best practice.
- More staff need to be involved in Lean events and follow through on implementation so that there is a greater understanding of Lean thereby impacting on the establishment and embedment of Lean.
- Visual management needs to be improved across all organisations. This should have a consistent layout across the organisation following the standard format of displaying information on people, performance and continuous improvement. Also the use of tracking information over time should be considered.
- All organisations should consider developing internal capability in order to create sustainability.
- There is a need to collect and monitor more data across all organisations, including information on time and cost savings as well as data indicating a change in culture as a result of process improvement.
- More training and development may be needed on problem solving techniques so that common lessons and learning can be transferred easily and more quickly between departments and teams.
- Managers need to 'go and see' Lean organisations as part of the training so that opportunities for transfer of learning can be achieved.
- Managers should learn how to challenge positively to further support a culture of continuous improvement.

Overall, the findings from the case studies show positive outcomes in terms of staff and student experience related to the delivery process. Very little evidence was found regarding the costs and savings of implementing the Lean approach – this is something that needs to be addressed to support the development and sustainability of Lean in the longer term.

The cases illustrate various ways to begin a Lean implementation – a programmatic approach or through RIWs; using external consultants or developing the skills of the staff in the organisation; taking an emergent or top down approach. Each have their pros and cons – but an important point is that there are different stages to the Lean journey and each has its own emphasis often starting with the tools but then developing the cultural to support continuous improvement. Figure 9.1 and Appendix 1 give some guidance on how and what regarding starting Lean. The key message is to start where is right for the organisation and then recognise the impact in terms of enhanced processes, reduction of waste, engaged staff and improved quality. In other words give it a go and recognise that it gives an opportunity to not just do 'more for less' but 'better for less.'

1. Introduction

This report highlights the main findings from an independent analysis of the implementation of the Lean improvement methodology in Business Schools and Universities in the United Kingdom. The analysis was undertaken on behalf of The Association of Business Schools (ABS) by AtoZ Business Consultancy between July and October 2010.

The Lean implementation methodology (Lean) has its roots in manufacturing and particularly the automotive sector through the Toyota Production System. Over the last decade, Lean has expanded beyond manufacturing to become an improvement methodology firstly in the service sector and more recently in public sector organisations looking to improve efficiency and customer value. It is within this context that AtoZ Business Consultancy was invited to look at Lean implementations across Business Schools in the UK where it was thought, due to their focus, the main drive to Lean would be taking place. However, it soon became apparent that in some Higher Education institutions the drive for Lean was from the centre and University wide. Therefore, the scope of the study became both Business Schools and Universities.

The remit of the analysis was to look at Lean implementations via a case study approach. This report presents the results of the analysis in the following way:

- Section 2 provides a short introduction to the concept of Lean Thinking and its evolution from manufacturing into services and into Higher Education.
- The methodology adopted during the study is outlined in section 3.
- The case studies are introduced in section 4 together with a comparison of the main aspects of their Lean programmes.
- Section 5 outlines the organisational need for Lean and the aims of the Lean programmes being implemented by the different organisations.
- The impact of the Lean implementations, together with successes achieved and problems encountered, is presented in Section 6.
- Section 7 focuses on the strategic positioning of Lean, communication to support implementations, support by senior staff, understanding of end-to-end processes, customer interactions and impacts and the alignment of capacity and demand.
- Information on how improvements are being embedded across organisations and how they can be sustained over the longer term are provided in section 8.
- Section 9 summarises the key findings of the analysis, highlights areas of concern to be addressed and provides recommendations.
- Appendices to the report include tips for implementing Lean, the interview schedule used for the case studies, the biographies of the study team and a bibliography.

The data collection was done through semi-structured interviews with individuals in five Business Schools and Universities known to be involved in Lean implementations. Data analysis involved summarising responses to questions asked during the interviews. These summaries were then amalgamated and common issues chunked together. The chunked data were used to develop emergent findings, which are presented in this report supported by actual comments made by interviewees.

2. From Lean Manufacturing to Lean University

The business improvement methodology Lean has its roots in the Toyota Production System (Womack and Jones, 1990). It was introduced as an alternative to mass production techniques in the Toyota factory and led to increased productivity and quality levels by allowing the flexibility of “skilled” production with the volume efficiencies of “mass” manufacturing. The term ‘Lean, was first adopted in the 1980s as it was claimed that the implementation of Lean practices resulted in using less of everything (e.g. raw materials, labour, time, etc) compared to mass production.

Lean has been developed over time, with Womack and Jones (1990 and 1996a) regarded as the originators of the term and its associated principles. The five core principles of Lean, based on an underlying assumption that organisations are made up of processes, are (Womack and Jones, 1996a; Porter and Barker, 2005; Radnor and Boaden, 2008):

1. Specify the value desired by the customer. This implies identifying the real customer and gaining a better understanding of their requirements, which can be complex.
2. Identify the value stream for each product or process providing that value, and challenging all of the wasted steps.
3. Make the product or process flow continuously. Standardisation around best practice allows work to run more smoothly, freeing up time for creativity and innovation.
4. Introduce pull between all steps where continuous flow is impossible. This focuses upon the demand from the customer and triggers events backwards through the value chain. In this way inventory and human activity is linked to customer needs.
5. Manage towards perfection so that non-value adding activity will be removed from the value chain and the number of steps and the amount of time and information needed to serve the customer continually falls.

Whilst all five principles are key to the implementation of Lean, the most important element is argued to be ‘specifying and identifying the value’. Womack and Jones (1996b: 141) state that *“failure to specify value correctly before applying Lean can easily result in providing the wrong product or service in a highly efficient way.”* Also, when defining the ‘value stream’ Womack and Jones (1996b: 141) point out that there is a *“need to look at three critical activities of business; product definition, information management and physical transformation”*.

The core characteristics of a Lean organisation can be described as (Oliver et al. (1994):

- Team-based organisations involving flexible, multi-skilled operators taking a high degree of responsibility for work within their areas.
- Active staff problem solving structures, central to continuous improvement activities
- Lean operations, which force problems to be surfaced and corrected
- High commitment human resource policies, which encourage a shared destiny.
- Close, shared destiny relations with suppliers, typically in the context of much smaller supply bases.
- Cross-functional development teams
- Close links to the customer

Within Lean it is stated that all other activities that do not provide value are a waste and should be eliminated (Hines et al, 2008). Therefore, a crucial element of Lean is the

removal of non added value or waste, variability and inflexibility (Bhatia and Drew, 2006). These also have Japanese terms of muda (waste), mura (unevenness) and muri (overburden) (Hines et al, 2008). Bhatia and Drew (2006) identify those elements of waste which are of particular relevance to the public sector:

- Waste; scrap and rework, waiting, inventory, unnecessary motion, unnecessary transport, over production and over processing.
- Variability; examples of which in public services include the variation of gathering evidence for a trial.
- Inflexibility especially with regard to staffing levels being inflexible and the same every day on the assumption that a standard service necessarily offers economies of scale, whereas customer segments require different levels and types of service.

It is important to note that Lean is argued to be a philosophy with some authors suggesting that what organisations need or are creating is “*a Lean lifestyle*” (Hines et al, 2008; Radnor and Bucci, 2007). Also the implementation of Lean is described as ‘a journey’ – with the various stages of the implementation being landmarks of the total journey (Bicheno, 2004; Radnor and Bucci, 2007).

There has been literature with evidence of the transfer of manufacturing concepts to the service sector since the 1970s arguing that service characteristics are not an excuse for avoiding manufacturing methodologies as a means of efficiency gains (Levitt, 1972; Bowen and Youngdahl 1998). Some studies argue that any organisation can gain substantial benefits including improved quality, reduction in costs and increase responsiveness from at least some new practices (Waterson et al. 1999). There are strong benefits that can be gained from implementing Lean whatever the size or sector of the organisation (Hogg, 1993; Sohal and Egglestone 1994).

Public Sector organisations over the past few years have experienced a rise in focus of the use of business process improvement methodologies particularly Lean and Six Sigma (Radnor and Boaden, 2008). The evidence of their implementation includes Health (Guthrie, 2006; Fillingham, 2007), Central Government (Radnor and Bucci, 2007) and, Local Government (ODPM, 2005; Seddon, 2004) organisations within the UK (Lodge and Bamford, 2008) and the US (Krings et al, 2006). The drivers for introducing business process improvement methodologies are stated as the need to reduce costs and increase quality (Oakland and Tanner, 2007). Although within the public sector the drivers for introducing business process improvement methodologies often include government agendas (e.g. in the UK the Gershon review in 2004 (Gershon, 2004) and more recently the Efficiency Agenda (HM Treasury, 2008), struggle with performance indicators, introduction of new leadership or technology, threat of competition, demand for increased efficiency and the need for service expansion with limited resources (Radnor and Walley, 2008). In a recent literature review focusing on the use of process improvement methodologies in the public sector 51% of publications sourced focused on Lean, and 35% on health services (Radnor, 2010).

It is against this backdrop of Lean that a decision was made to look into the development and implementation of Lean in Higher Education to take a ‘snapshot’ of what was happening across the UK. The aim is to identify early adapters of Lean, examples of good practice and ultimately to share knowledge across the sector.

3. Methodology

3.1 Survey

The original intention of the study was to undertake a survey of Lean implementations in UK Business Schools. A survey questionnaire was developed (Appendix 1), which asked a series of questions regarding understanding of Lean, success elements and problems encountered, the impact of Lean and the future for Lean in organisations.

The questionnaire was distributed via email by ABS to 54 individuals known to be involved on Lean implementations. However the response rate to the survey was low with only 10 completed questionnaires returned (approximately 19%). A further two questionnaires were returned highlighting that the organisation had very little contribution to make because Lean had only just started to be implemented. Therefore, it was decided that the focus of the study would shift to developing understanding through case studies. However, data from the survey have been included in relevant sections of the report to support the interview information.

3.2 Case Studies

Case Studies were carried out with five Higher Education organisations in England, Scotland and Wales. They consisted of both Russell Group (2) and Non Russell Group Universities (3). Semi-structured interviews were undertaken with a range of individuals across the organisations using a tailored interview schedule. The profile of those interviewed across organisations varied due to the different size and nature of the organisation. The individuals interviewed included the Dean of a Business School, an academic, two heads of Lean programmes, a faculty manager, a deputy department manager and one Lean team member. In total seven individuals were interviewed from the five organisations. It is from these interviews that data was obtained.

Interviews were held over the phone on an individual basis. A semi-structured interview schedule was prepared divided into key topic headings with key questions to be asked. The interview schedule is shown at Appendix 1. The schedule also highlighted follow up topics for the interviewer to pick up on as key words were mentioned. Notes were taken of all interviews and all were recorded using a digital recorder.

3.3 Data Analysis

At the end of each interview, notes were transcribed from the recording so a full record was available. These notes summarised the main responses to the questions asked during the interviews. These notes were then amalgamated and common issues chunked together and coded so that the interviewer was aware of which interviewee raised the issues. The chunked data were used to develop emergent findings. These findings are presented in this report under the specific topics discussed during the interviews. This information is supported by actual comments made by interviewees. These are presented in italics throughout the report.

Sections 5 to 8 of the report are based solely on the information provided to AtoZ Business Consultancy during the interviews. These sections do not reflect the views of AtoZ Business Consultancy. The views of AtoZ Business Consultancy are highlighted in section 9 under summary and reflections.

4. The Case Studies

4.1 Case Study A: Cardiff University

Cardiff University have just over 27,000 students and has a breadth of expertise in research and research-led teaching encompassing the humanities; the natural, physical, health, life and social sciences; engineering and technology. The University is also home to many research institutes offering radical new approaches to health, science, the environment and business.

The Lean University project came about as a result of discussions between senior academics in the Business School and the Vice-Chancellor, outlining that the University had a Lean centre of excellence and should practice what it preached on its undergraduate, postgraduate and executive teaching programmes. The Lean University started in 2006, initially a three-year project to see if Lean was appropriate in an academic environment. A manager for the programme, with 15 years' Lean experience in a manufacturing and service environment was recruited to lead the project.

There is a dedicated Lean University team consisting of four full-time and one part-time staff. This team has now been given permanent positions in the University demonstrating its commitment to Lean. The team calls on expertise at the Lean Enterprise Research Centre of excellence located within the Business School.

4.2 Case Study B: Nottingham Business School

Nottingham Business School located in the East Midlands, offering a wide range of business courses to over 5,000 students. It has 30 years experience of delivering business courses, combining a learning environment with real-world experience. The Lean project at the Business School started in 2008, led by the Dean, who has had extensive experience in the automotive industry, takes a continuous project approach to improvement. Although focused on the Business School, the Lean project has engaged with the wider University in improvements to central functions including admissions and alumni.

The approach used here has deliberately been to focus on a holistic culture change and creation of an overall Lean system rather than islands of Lean tool application. Whilst this approach is time consuming it delivers the ability to sustain the changes that Lean demands.

The Lean project aims to increase value add and reduce waste in processes. This is done by creating an overall framework for Lean, training staff so they know how to operate in a Lean environment and deploying the tools and techniques needed. Through Lean training and communication, the emphasis has been on cost reduction as an outcome and not a driver of Lean.

The Lean project is being driven by the Dean and is supported by the part-time involvement of an external consultant who has experience of working in a Lean environment in the automotive sector.

4.3 Case Study C: Portsmouth Business School

Portsmouth Business School located on the south coast of England offers a wide range of full-time and part-time courses for students and professionals ranging from part-time work-based Foundation Degrees to postgraduate programmes for executive managers. The School has approximately 4,500 students (1,200 of whom are postgraduate students) from all over the world.

The Lean programme (CLeanUp) started in 2010 and is being run by the Faculty Finance Manager and the Manager of the Undergraduate Centre in addition to their existing duties. To date the project has focused on undertaking Rapid Improvement Workshops (RIWs) focusing on administrative processes mainly within the finance department and the undergraduate centre.

At the moment there is no dedicated budget allocated to the project. A request has been made to the Dean to formalise the project and to provide a budget for activities. Also discussions are taking place to establish a Steering Committee and a list of staff to become part of this steering group has been identified.

4.4 Case Study D: The University of St Andrews

St Andrews is one of the UK's most research intensive institutions and has a high reputation for research and teaching quality in the arts, sciences, medicine and divinity. It also has a strong international reputation for delivering high quality teaching and research, with a third of its 7,000 students coming from overseas.

The Lean University project started in October 2006 as a three year project. The project was set up with a budget to cover staffing costs and an office. Initially the Lean project was devised by the Director of Business Improvements at the University, in discussion with the Quaestor and Factor (the Principals Office level staff member responsible for Finance, Residences and Estates). The Quaestor and Factor, is the senior sponsor and advocate for the project and controls the University budget.

The Lean Team started in October 2006 with an internal secondment of three staff. As the Team members were new to the concept of Lean, they received Lean training during this time. The Lean Team currently consists of three full time staff who work together with an external consultant used for approximately 10 days per year. They are line managed by the Director of Business Improvements. The team was placed on a permanent footing in October 2009 because it was seen as adding value to the University and making a significant improvement.

The Team are working to embed Lean as a way of life across the University, including Lean training as part of the Universities standard management development training, aiming to create an institutional culture of continuous improvement and respect for people.

4.5 Case Study E: Warwick Business School

Warwick Business School has students from over 150 countries and offers undergraduate, masters, MBA and PhD programmes. Warwick Business School also offers executive education and develops new knowledge to benefit business through teaching and research.

An audit of Warwick Business School identified a number of factors that meant that the organisation needed to maximise efficiencies; save time and money; release capacity within the organisation; and reduce waste. The Lean initiative at the Business School started in November 2007, under the leadership of a steering group, with clearly defined terms of reference. It applies all the principles of Lean that might be experienced in manufacturing to a service environment.

The Lean programme is being led and driven by internal Business School staff, with some administrative staff acting as internal facilitators for improvement workshops. The Business School has also used the services of an external provider to help develop the skills of these facilitators.

A summary of all case studies is presented in Table 1. Throughout the report, extracts or vignettes from the individual cases are highlighted in coloured boxes. These examples illustrate particular aspects of the case study and are designed to share knowledge across the sector.

Table 1: Summary of the Case Studies

Organisation Project Name	Start	Type of Project	Main Tools and Techniques ¹	Project Management	Outside Facilitation
Cardiff University Lean University	2006	University wide with input from Business School academics	RIWs Process Mapping Value Stream Mapping 5Ys Fishbone Diagrams Visual Management Team Information Boards	Dedicated central University team leading and running the project	No
Nottingham Business School Lean @ NBS	2008	Business School led with input into central University processes	A3s Visual Management Value Stream Mapping Root Cause Analysis Fishbone Diagrams	Dean led project. Business School Executive oversees project with budget allocation. Add on to existing job.	External academic acting as consultant.
Portsmouth Business School CleanUp	2010	Business School with some discussion into central University administrative processes	RIWs Process Mapping Flow Charts	No dedicated team or budget. Two individuals running Lean and RIWs. Add on to existing job.	No
St Andrews University Lean University	2006	University Wide	RIEs Process Mapping Value Stream Mapping Nominal Grouping Techniques Six Thinking Hats Competency Framework Log Frame Matrix	Dedicated central University team leading and running the project.	External consultancy involved to provide initial training and continuing coaching and mentoring.
Warwick Business School Operational Excellence	2007	Business School led with some input into central University processes	RIWs Process Mapping	Project Steering Group oversees project with budget allocation. Add on to existing job.	External organisation initially undertook RIWs and trained internal facilitators.

¹ This is not an exhaustive list of the tools and techniques used by the organisations, but an example of some of the main tools and techniques.

5. The Aims and Delivery of the Lean Programmes

The views of interviewees were obtained regarding the context of the Lean programme in their organisation. This focused on whether there was a need for a programme to improve working practices, the aims of the Lean programmes, how programmes were being delivered and what activities were being undertaken. Finally interviewees were asked what made the Lean programme different from other programmes that had been undertaken in the organisation before.

5.1 The Need to Improve

All interviewees highlighted the need to improve, with the following diverse reasons being mentioned:

- Two organisations outlined issues with processes. One University outlined that although academically it was seen as offering a world class service, there were a lot of complaints about its administrative processes, which were seen as confused, wasteful and inefficient. One Business School outlined that the organisation had outgrown its processes and traditionally that if there were issues with processes, more staff would be recruited to resolve the issues. However the current economic climate meant that there had been a freeze on posts and recruitment, and that processes had to become more efficient.
- One Business School outlined that it was currently going through a transformation and that Lean would help the Business School implement its transformative agenda.
- One Business School highlighted that although there was no identified need for improvement, staff felt that it took a long time to provide a service and that this could be improved.
- One University stated that following the merger between the University and the Medical School, there was a need to look at processes in order to remove elements of duplication.
- In one Business School, a workplace audit highlighted that there were some issues concerning stress.

“The School has grown relatively quickly and there are some systems that are not fit for purpose anymore because we have outgrown them. It was generally accepted across the School by administrators that tasks were more difficult than they needed to be. It seemed like hard work to get anything achieved.”

“Academically we offer a world class service but there was a feeling when Lean was launched that our administrative processes did not live up to this standard. There were also complaints about these administrative processes. Lean was a response to this.”

5.2 Aims of the Lean Programmes

All interviewees were asked about the aims and purpose of their Lean programme. Whilst using different words, the focus of all responses was very similar. The following comments were made:

- Three organisations outlined culture change as an important aim. At one Business School the overarching aim of the Lean project was to get to a culture of continuous improvement and to provide the best possible service for the customers, mainly students. This involved reducing or removing the steps in the process that did not

add value to the customer. One University outlined that Lean had three aims: to challenge the University to become the best it can, to reduce waste, and to create a culture of continuous improvement. Another University stated that the Lean programme aimed to change the culture in the University by enabling staff to take ownership for their processes and to improve the efficiency of these processes. In this way the University was using the Lean programme to enhance customer value through the elimination of waste.

“What we see as a priority for Lean is cultural change. The emphasis is to move from a ‘it’s always been like this’ culture to a ‘striving to be the best’ culture.”

- Three organisations outlined the aim of reducing waste, especially staff time on some process tasks. One Business School outlined that Lean was about increasing value add whilst reducing waste. The interviewee stressed that Lean was not about cost reduction but about adding value in a more effective way. One University outlined that cost savings in terms of reducing staff time were also important. However these staff time savings did not translate into removing staff, as staff savings tended to be small savings across a large process and not limited to specific individuals. Another Business School highlighted that Lean would create capacity in the organisation, through staff working more effectively and efficiently, saving time and money and reducing waste.
- Three organisations stated that Lean aimed to encourage staff to take more responsibility and ownership of their work. In one university this involved challenging the belief that approval for changes needed to be made by committee or management. However more generally it involved staff questioning the way that they work and coming up with innovative ideas about how to work better.

“We want staff to continually think about how to do things better, how to work smarter and to challenge the way that they work – question whether every activity actually adds value.”

5.3 Scope of the Lean Programmes

Interviewees were asked about the scope of the Lean programmes, whether they were just one individual project or a fully integrated improvement system, whether they extended beyond their team or department and whether they looked at academic as well as administrative processes. The following responses were given:

- One Business School outlined that its Lean programme was being delivered as a perpetual system and not a single project or series of projects. This involved creating an overall framework for Lean, and training staff so they knew how to operate in a Lean environment and how to deploy the tools and techniques that enabled value to be created and waste to be reduced in the process. In the other organisations, it appeared that Lean was more a series of individual projects with some common themes and sharing of information rather than a single system of improvement.
- In three Business Schools, the Lean programme started in the Business School and was mainly focused on Business School processes, but there was a need to interface with the wider organisation. Therefore discussions and joint improvement activities were taking place with other central functions of the wider University including admissions, staff recruitment and alumni services.

- The two University case studies had a dedicated Lean Team that oversaw the Lean programme and undertook strategic improvement work across the University. In the three Business Schools, staff undertaking the Lean programmes were doing this as part of their normal roles and responsibilities.
- Two organisations had assistance in the early days of the Lean programme from external consultants. The external consultants were involved in delivering Lean training to staff and in developing staff to be able to run RIWs internally. In both cases, the external consultants are still involved with the organisation, though in a smaller role providing guidance and mentoring to the Lean programme.

The University of St Andrews: Use of External Consultants

Part of the Lean engagement at St Andrews University was to have contact with an external consultancy to provide support. There was also a consultant based in house for three months guiding the Lean Team through the initial improvement work.

The external consultants were initially involved in providing Lean training to the three members of staff of the University's Lean Team as well as two members of staff from the Business Improvement Team. The one week-long training course was delivered on site, and was based around Lean tools and techniques using a Lean simulation. Subsequent training also involved a visit to a bank to see Lean operating in a service environment and introductions to various Lean tools and techniques.

“The intention was always for the University to equip its own Lean Team with the skills to be able to facilitate workshops and lead on improvement work, thereby taking the reliance off the [external consultancy].”

Initially the plan was to work with the external consultancy on Lean implementation via a five day RIE model backed up with a Lean daily management system (LDMS) using visual management and team meetings. There was strong resistance to implementing a LDMS system, so the project focussed on using RIEs to drive change. This was planned to involve observing a workshop, shadowing on the next workshop and then undertaking a workshop. However the nature of the relationship altered during the early stages of the Lean programme as the Lean Team quickly developed its own expertise.

“It became more of a mentoring relationship with the external consultancy, where we would do the RIE and then share the information with them in order to improve what we did.”

After the initial three month period, the reliance on the external consultancy has reduced. The external consultancy is still involved with the Lean Team providing support through guidance and mentoring. An external consultant is still involved about 10 days per year.

- Two Universities outlined that their Lean programmes had focused on academic as well as administrative processes especially in trying to support academics doing research work. In one University this included work on improving teaching programme approval, e.g. going from having an idea for a course to getting students to attend the course.

“Most of what we do is Lean service in Higher Education and not directly geared to the delivery of teaching although some work is geared towards how academic funding is obtained.”

5.4 Lean Activities Being Undertaken

The following types of activities were being undertaken by the organisations as part of their Lean programmes:

- Three organisations were using Rapid Improvement Workshops or Events (RIWs or RIEs) as the main method of improving processes. This mainly involved process mapping activities in order to highlight and focus on steps in the process that did not add value.
- Three organisations were undertaking significant training in Lean, to staff though the methods and scale of the training differed between the organisations. One organisation was focusing more on managerial training, whilst one was looking at more general training for all staff. The third organisation was offering a one day Lean training course for any member of staff wishing to take part, but was also planning a management training programme that will be launched across the University for mid level managers i.e. staff who report to heads of schools or units. Lean management will be one of the core modules in this.

Nottingham Business School: Staff Training on Lean

Nottingham Business School has adopted ‘blanket training’ approach for staff in Lean techniques. NBS is trying to enable every member of staff to work in a Lean environment.

“If staff are trained, they become more familiar with Lean and are more willing to become integrated with it.”

NBS has worked together with the Lean Learning Academy at Jaguar Land Rover’s Halewood plant to deliver customised training to NBS staff. The Dean of the Business School, using expertise gained in delivering Lean training to manufacturing and service sector staff, helped to design a specific training programme that would meet the needs of NBS staff.

Staff attend a three day training programme in mixed groups consisting of academic, administration and clerical staff. The training starts by looking at how Lean works in a complicated environment and then focuses on how it can work in the Business School. The training also looks at the overall Lean operating system, the tools and techniques and the culture of Lean. For the vast majority of staff attending the training, Lean is a totally new concept.

The Business School plans to train all 250 staff and by Autumn 2010 had trained about half this number, as well as finance staff from other University departments. This has the additional benefit of ensuring that knowledge of Lean becomes invested in other areas of the University.

“This is important because when [other University staff] liaises with staff from the Business School, they will use the same language.”

Training in Lean is also available to senior staff. The Leadership Team also attended a workshop for “a one day immersion in Lean”. The leadership team is the Business School’s Executive Committee and includes the heads of divisions, departmental heads and heads of function.

Cardiff University: Management Training in Lean

Cardiff University runs a Lean Skills for Leaders Programme for middle and senior managers and leaders to undergo Lean training. This programme, which began in April 2008 is a way to equip managers with the ability to apply Lean thinking in their part of the organisation and to give them the skills to do continuous improvement work themselves, without reliance upon the Lean University Team. This training has been successful in helping to embed some of the principles of Lean.

“We need key skilled managers and key senior administrative staff with good Lean knowledge and understanding to help the groundswell we need to keep the momentum of Lean going.”

Managers and leaders attending the course learn how Lean can be applied successfully within their own working environment. It also equips them with techniques in order to help teams identify problems within systems. They are then expected to work with their own staff to overcome these issues.

The training programme is being delivered by staff in the Lean University Team and at Cardiff Business School. These are experts in the field being based at the University’s Lean Enterprise Research Centre. The training consists of a one day workshop followed by six staggered half day sessions over the following months. Workshops are attended by approximately six members of staff. As of Autumn 2010, approximately 50 managers from across the University had been through the training programme.

There have been some culture change outcomes from the training programme. There is the recognition that it has enabled staff to lead in a more confident way, to realise that they were experiencing similar problems, to voice and share issues and concerns and ultimately to accept the improvements that have taken place.

“Improvement has become more accepted. It is not as scary or as new as before. People are more used to current state analysis. It is becoming more ingrained as the way we do things.”

It is the intention of the Lean University team to have the Lean Skills for Leaders training accredited through the Lean Enterprise Research Centre, thereby making the training more attractive to potential participants.

- Three Business Schools were also liaising with other colleagues across the wider University about trying to ‘spread the word’ or ‘use the language’ of Lean.
- Two organisations had undertaken visits to see Lean working in other environments. One Business School undertook a visit to a central government department which had adopted Lean several years ago. This visit looked at how Lean worked in a complex service environment as well as looking at the visual management and

customer elements of Lean. As part of Lean training for its Lean Team, one University undertook a visit to a bank to see how Lean worked in a service setting. Both organisations saw the benefit of these visits in terms of understanding how Lean could work within their own organisation.

“The key I see about making the bridge between Lean in other environments and Higher Education is to use manufacturing as a metaphor. If you understand Lean in manufacturing as a metaphor then you can apply Lean in any environment.”

- One Business School was developing internal Lean facilitators in order to reduce their reliance on expensive external consultants and also to drive improvement work internally.
- One University was using its project management expertise to scope out Lean projects prior to any improvement work being undertaken with staff. This had helped to ensure that problems and issues had been mitigated during implementation.

The University of St Andrews: Approach to Scoping Lean Projects

The Lean Team at the University of St Andrews act as internal consultants and facilitate meetings and internal improvement workshops. The main aspect of the work is a five-day RIE model. These are flexible and tailored to individual needs of the area under consideration in terms of length and content.

The start of a Lean project would typically start with a request made by senior member of administrative staff i.e. head of department. Where projects are suggested by frontline staff members the Lean Team will seek a senior staff member to ratify this. This member of staff would come to the project team with an idea and the Lean Team helps to identify a project, outlines whether it is something that they can help with and identifies the individuals that need to become involved.

These individuals are brought together to scope out the project, highlight what specific process data is required, take an initial look at this data to understand the process in more detail and identify the goals to be achieved by the improvement. The outcome of this is usually a five-day RIE, but it could be highlighted at this scoping stage that a longer or shorter programme of events is required. This stage will highlight whether staff have been involved in Lean work before. If they have not, then the Lean Team runs training sessions before the workshops to help them understand the principles of Lean, what a process is, how to do process mapping and any other relevant tools. Where this stage highlights that staff may have been involved before, the Lean Team tries to vary the tools and techniques involved during the RIE.

“We want to customise the workshops that we run to suit the needs of individuals attending those workshops. It may be that some key staff require training or if they have already been to one or two of the five-day RIEs they may see the same tools are being used over and over again and it could get quite boring.”

At the start of the RIE, if the planning has been done right there will be clear goals, data that helps to understand the process and possibly a high level process map. The RIE would review the data and start to develop a more detailed current state process map in the first day. An analysis of the main issues and problems in the process would then take place. This would be followed by a creative thinking session to resolve the issues.

The rest of the workshop involves creating the future state map, writing the documentation for this process map, an action plan to implement the new process, a communication plan for how this process will be communicated out to the University and a log of the benefits expected from this new process. The staff involved in the RIE would then be responsible for going away and implementing the new process. The Lean Team would project manage this implementation via regular feedback meetings at specific times (2 weeks, 1 month, 2 months etc) in order to check actions are being completed and progress is being made (<http://tiny.cc/LeanStAndrewsPlan>).

There have been issues in the improvement work once it has started, and the Team have learnt that the best approach to avoiding these is to scope appropriately and not continue work if it becomes clear that the benefits of the work are not substantial. At request or planning stage, improvement work can be halted by the Lean Team. Often if there is other redesign work going on to the process, or if there does not appear to be they will carry out the improvement, then requested improvements will be halted. This is why this planning stage is undertaken. This assessment will be undertaken with the specific area team at the planning stage.

“We don’t want to get to the costly experiment of having staff in the room for five days and then half way through say that it cannot go ahead anymore. A lot of time is spent up front ensuring that improvement activity will go ahead. Therefore, if the benefits do not outweigh the costs, improvement work will not go ahead.”

The Lean Team have learnt the importance of ensuring that approval for the project scope is given from the relevant authority before improvement work is undertaken, to prevent delay in post event approval processes. The Team is able to use their business grant scheme to mitigate challenges where implementation may require additional resourcing.

Depending on the process, the fastest time taken to turn around and implement a new process (i.e. from request to final implementation) has been 6 to 8 weeks and the longest time taken has been approximately one year.

5.5 Different Type of Programme

Interviewees were asked whether the concept of Lean was new to staff and whether the type of programme being implemented was different to other types of programmes normally implemented within the organisation. The following comments were made:

- The concept of Lean was new to some interviewees but not to others. In four organisations, staff working on Lean had had previous experience of Lean in a manufacturing, service or public service environment in their previous working life. Only in one University was the concept of Lean totally new to the Lean Team prior to the start of the programme.
- Four organisations outlined that there was a lot of academic knowledge of Lean in specific groups in the Business Schools. It was pointed out however that knowledge rested solely with academics and that the concept of Lean was new to many of the administrative and clerical staff involved in the programmes.

- One University specified that this was the first cross university improvement programme that had been implemented.
- One University outlined that Lean was the first programme to challenge the culture of how things are done in the University and to move from a culture of committee or management decision making to staff decision making. It was this challenge to staff that was the important difference about the Lean programme.

“The feedback from academics and senior staff is that they are quite excited about [the Lean programme] and state that nothing has ever been done in the Business School like this.”

“This is the first programme at [the Business School] that looks at process improvement in a systematic way across the whole of [the organisation]. It involves culture because staff quickly accept that it’s difficult to change.”

6. Impact of Lean Implementations

The views of interviewees were obtained regarding the implementation and impact of the Lean programme. They were asked to give specific examples of improvement work that had been undertaken to highlight the main quantitative and qualitative impacts of Lean. The discussions then focused on what successes and problems had been incurred during the implementation and what critical factors had contributed to these success or problems. Interviewees were then asked about senior management commitment to the Lean programmes from Heads of Sections, Departments, Schools through to Pro-Vice-Chancellor or Principal level. At the end of the discussions they were asked about the tools and techniques that had been adopted in the Lean programmes.

6.1 Selected Lean Implementations

Interviewees were asked to give some examples of where Lean had contributed to some improvement in their organisation. There were many examples provided, including the following qualitative and quantitative impacts:

- In one University improvement work had been done in the School of Dentistry, which focused on both academic and administrative aspects. This involved Lean improvements to the provision of the service, which was supported by increased communication notifying students of the improvements. This resulted in the School increasing its students' satisfaction rating achieving the highest score across the University.
- In one Business School, a RIW looked at committee systems and the decision making process within committees. The purpose was to draw some general lessons about how one committee was running to see if elements of good practice could improve the way all committees ran.
- In one Business School, a RIW undertaken by finance staff found that financial data that were not thought to be available until March in the academic year were available in the previous September. This enabled a lot more accurate reporting to be done earlier in the year and had an immediate impact in the accuracy and quality of data.
- In the Finance Department of the same Business School the manager developed a management accounts reporting tool using excel. This reduced the time taken to produce monthly accounts from two days per month to half an hour. This tool has been replicated across other University departments saving about eight to ten days a month.
- In the Estates Department of one University, the Lean team facilitated improvements in the job tracking process. This required spending money to PDAs for staff. The ultimate impact of this was a reduction in the backlog of maintenance across the University.

“This has saved time equivalent to eight FTEs across the tradesmen, which means that they can now be used to do the proactive maintenance rather than the reactive problem solving. It is really motivating for staff to see that the University will invest in them.”

One Business School improved the process for giving feedback to students on their assessed work. The problem was identified through the National Student Survey which highlighted that only about 50% of undergraduate students collected their

feedback. As a result of improvement work, all coursework was able to be submitted electronically and a web-based system for accessing coursework and entering marks and feedback was developed. Not only did the improvement speed up the process of providing coursework feedback to students, there was also an increase in the quality of the feedback being provided. Additional time was saved with less administrative and academic involvement in the process totalling approximately 40 days per year.

- One University used Lean to deliver specific research benefits to academic staff. It developed one consolidated Research Funding Office for the University making a simpler, clearer Research Funding process. In addition, academic schools have become more able to manage their own research leave more easily. Furthermore, the committee which met to discuss research leave was also disbanded because it was seen as not adding value to the process.

Portsmouth Business School: Rapid Improvement Workshops

Portsmouth Business School undertook a RIW to look at the referral – deferral period. There are three assessments per year. The first semester comprised exams and assessment followed by the second semester of exams and assessment. For those students who fail some of these, there is a period in the late summer called the referral – deferral period, when they have the opportunity to retake some of these assessments.

For many years, as the referral – deferral period approached there was confusion amongst administrative staff and students as to whether the assessment was an exam or a piece of coursework. It was highlighted at the RIW that the correct information was not always forthcoming at the appropriate time.

“We did not know as administrators because we did not get the correct information coming from the academics. Sometimes even those academics who provide the information change their minds without telling us. If we don’t know then how are we supposed to tell the student?”

Staff involved in this RIW included the manager of the undergraduate centre who facilitated the RIW, the deputy manager of the undergraduate centre, the assistance officer who looks after coursework and examinations, input from an exam invigilator, a member of staff from the postgraduate department and the faculty manager. The Faculty Finance Manager observed the workshop.

During the two hour RIW, staff mapped out the current state process using a roll of paper stuck on the wall. There were discussions about stakeholders – identifying who they were and what each one did. This information was put down the side of the process map. Along the top the timeframe was highlighted. Tasks were highlighted on the process map and questions were asked about why specific tasks were done and whether they had to be done or not and who was involved. The future state process was mapped out on more paper on another wall. In total the process was reduced to about half a dozen tasks. The outcome was a flow chart of the future state process

This flow chart has been distributed to the staff who were at the RIW. They have the chance to comment before it is taken to the management meeting. The next step is for the manager of the Undergraduate Centre to take the flow chart to the programme management meeting. This meeting involves Heads of Departments who are academics and they will need to be involved in the first part of the revised flow chart. If the flow chart is approved, then it will be implemented by the individuals involved in the RIW.

6.2 Successful Elements of Lean Implementations

Interviewees were asked to highlight what they saw as the main successes of the Lean implementations. The following were outlined:

- Improvement activity being undertaken with staff was seen as successful at four organisations and was starting to change the culture in specific areas of the organisations.

“Some staff have started to understand Lean and realise that Lean has given them the tools to enable them to arrive at the solution. They realise that Lean is about empowering them to make the changes.”

“People are thinking about Lean. It’s now a very different environment from when I started 4 years ago.”

- The training that was being provided was seen as successful at three organisations, helping staff to develop skills, become familiar with Lean and to implement the tools and techniques to solve specific issues.
- The success of RIWs was highlighted at two Business Schools. These had tackled quick wins and had immediate impacts, which had freed up capacity to enable staff to look at improving other processes.

“We had one member of staff who did the monthly management account report and staff reconciliation who has now had her workload reduced by two days per month.”

- Academic involvement in the Lean programmes was seen as successful in two Universities. This was particularly the case if their contribution was made clear to them and the argument for improvement was delivered in an appropriate manner.

“With academics, as long as they know the work required of them, then they are more than happy to participate. Most are very logical and if they understand the logic then they are happy to take part. Once they have been convinced, they will come along with you on the journey.”

- In one Business School, the willingness of staff to attend the Lean events and in particular the RIWs was especially successful as in many cases it was the first time that support staff had been given the opportunity to be involved in this type of activity looking at internal processes.

“During the RIWs staff were engaged in the exercises and contributed. The feedback of the experience was also very positive.”

- One University pointed to its work with the Estates Department and how initial scepticism about Lean was overcome. Early on in the Lean project, the external consultants involved, alienated the Estates team, by presenting some of the efficiency gains in a public way.

“The estates team felt that their dirty laundry was being done in public. It has taken us three years to get back into estates and some of the work done with them recently e.g. on their job tracking process, has been great.”

The main factors contributing to these successful elements include:

- Commitment from senior management was seen as crucial to the success of Lean at three organisations. In all three cases, there was a senior sponsor for the Lean programme, with influence at Pro-Vice-Chancellor / Principal level and across the wider University.

“When a Lean project works properly, it is because of senior management buy-in. This is the hardest bit to get. It’s quite easy to get front line buy in because they can be motivated to improve and change. But unless you have the senior buy-in to commit to the change you are not going anywhere.”

- Three organisations outlined the critical success factor of staff attending RIWs and the Lean training programmes. As a result staff were more familiar with Lean and had witnessed the demonstration of the benefits that could be obtained from the tools such as process mapping.

“Initially staff are not sure about Lean, but once they go on the training, come back and see it operating within the vision of the School, they are pretty much on board. [Lean] is not a threatening mechanism, it is an enabling mechanism.”

- The enthusiasm and personalities of the individuals leading the Lean work in the organisation. In many cases, the traits of individuals driving Lean in the organisation include good interpersonal skills, an ability to lead University staff and act as a leader, have good influencing skills and a high level of personal resilience as well as a positive outlook.

“We get on well attending external workshops, bouncing ideas off each other, meeting regularly to keep the momentum going and attending each other’s RIW from an outsiders perspective to ask critical questions and provide support.”

- Having a dedicated team working full time on Lean was seen as crucial at two Universities. Both outlined that despite the costs of having such a resource, Lean would not have happened with having a team dedicated to Lean.

“Lots of organisations say that the existing staff can do Lean and the best way would be for the existing management structure to be running a Lean implementation project, but the paradox is that a Lean organisation would not have the need for a Lean team. At present we add value because the University is not Lean.”

- The enthusiasm and commitment of front line staff who buy into Lean was highlighted at two organisations. In both cases, staff acknowledged the customer benefit of Lean but did not always see Lean as saving more time than it took to make the improvement.

“Staff see the Lean benefits for the students but they perceive Lean as more work for themselves. This is probably because they see the short-term cost of Lean activity i.e. taking time away from the office to do Lean improvement work, and they don’t see the time savings that they make because these are small time savings that add up across members of staff.”

- The length of time that the organisations need to dedicate to Lean and the realisation that the organisation is on a long journey was also seen as critical by one Business School. This implied it would be several years before Lean became common business practice across the whole of the organisation.

“Speaking to the School Executive about two years ago they would have known nothing about this. About a year ago, they would have said that they ‘had’ to do it. If you speak to them now, they will say that this is how things are done.”

- At one University it was highlighted that previously improvement work might have been viewed with suspicion, but that the current economic climate was helping to highlight the sense that improvement was needed.

“People start to realise the University is under pressure and that there will be funding cuts, so we need to look at where we can improve. We didn’t have this view before because there was no threat.”

6.3 Measuring Success

All case studies with two exceptions highlighted that there were no real hard measures in place to monitor the performance of the Lean programmes. One Business School was adopting a scorecard approach to track progress and provide the hard evidence of the success of its Lean programme.

Nottingham Business School: Scorecard Approach to Measuring the Impact of Lean

Nottingham Business School has adopted a scorecard approach to enable a quantitative and qualitative assessment to be made regarding the success of improvements through their Lean programme. Performance against the information presented on the scorecard is monitored on a weekly basis by School Executive. This is the management group for the Lean programme.

There is a ‘Blue Sky’ document which highlights direction of the school with respect to Education, Research and Executive Education and External Engagement in terms of quality, quantity, money and people. This document is then translated into a scorecard with appropriate metrics.

Each scorecard has a sponsor from the members of the School Executive. This is usually a senior academic who is the head of a department. Each one of these scorecards has several A3s. These are project definition documents highlighting issues to be addressed, key activities to undertake to resolve issues and the key indicators (metrics) to measure performance. The A3s drive the scorecard and staff undertake the work that lead to changes in the metrics.

“The School Executive meets every week to review projects and the [scorecard] is the first item on the agenda. In week 1, the Executive will review the status of all the A3s associated with education, week 2 it will focus on research, week 3 focuses on executive education and week 4 on external engagements and other projects. There is a rolling review that is repeated on monthly basis.”

The development and the agreement of the format of the A3s was a long term process. It took NBS one year to agree the correct set of scorecard metrics and then it took another year to produce high quality A3s and review them. Once the work was done in developing appropriate A3s, the review at the weekly meetings is now done within an hour.

The scorecard will show whether the school has succeeded in changing outcomes or not and will also capture the cultural aspects.

“There are aspects of the scorecard that deal with people and these will be captured in a quantitative way. But getting staff to use the Lean language and to become more empowered is also part of the softer more cultural aspects.”

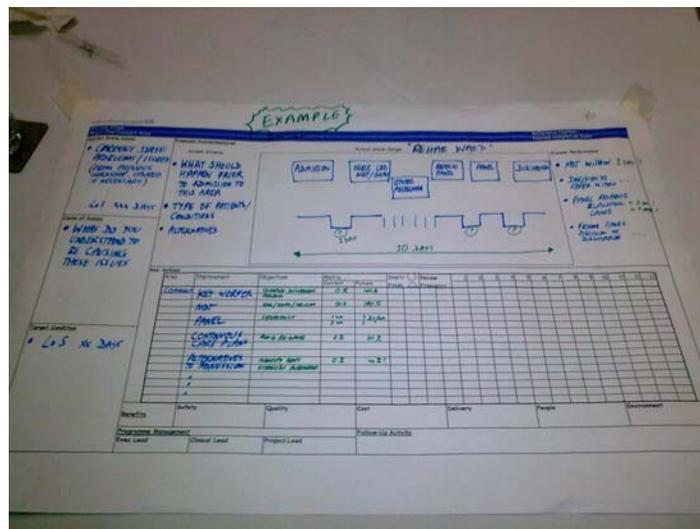


Figure 6.1 Example of an A3

One University outlined that it had tried for each improvement project to identify what the potential benefit would be. However the University became too concerned about the type of measurement that was taking place and it did not continue. The majority of the measurements were related mainly to intangible benefits as opposed to hard cost or quality measures.

“We have got some measures and the best measures we have are full time equivalents. We may save time by improving processes and this equates to FTEs but we will not get rid of people. So what we have tried to do is add up the saved hours.”

It was stated in the same University that although this lack of measurement had been beneficial, in terms of cultural engagement, not having it was a failing of the Lean programme and more work was needed.

“Not having the information has helped me to do projects without people worrying about jobs. On the other hand it has been difficult to justify why we need Lean in the organisation.”

Future measurement work at this University involved, taking the direction from a senior management led project highlighting priority areas that the University needed to work on. These priority areas would have definite measures against which the Lean programme would work. Discussions were now being held regarding the involvement of the finance department about how to equate costs savings in future state processes.

In one Business School, one department used to get a lot of complaints from students. The new processes that had been implemented via RIWs were expected to result in fewer complaints and this quantitative measure was expected to demonstrate the success of the new processes. Additionally in this department there used to be significant pressures on staff because they had to go and find out the information for students. Therefore the implementation of the new processes is also expected to have qualitative impact by reducing pressure on staff.

In all but one organisation there was a governance structure (steering group) giving direction to the Lean programmes and overseeing success. The overarching feeling amongst those interviewed was that these groups believed the Lean implementations were having successful qualitative impacts but lacked the evidence to justify this. Only one University had undertaken a survey of staff to try and quantify improvements to some of the qualitative aspects.

The University of St Andrews: 2010 Lean Impact Assessment

The University of St Andrews has undertaken a Lean impact assessment across their staff members. This has been undertaken via a restricted online survey available only to University staff. The assessment asks a series of questions about the involvement of staff in Lean projects during the calendar year 2010 and has been able to demonstrate some of the perceived quantitative benefits of Lean. To enable this, after gathering some background data, respondents to the survey were asked to rank their answers to a series of statements using a five point scale ranging from ‘very negative’ to ‘very positive’.

The first part of the assessment focuses on the background of the staff member undertaking the survey and their involvement in improvement work. 75% of respondents were front line staff, working in administrative services, directly involved and benefitting from the Lean improvements. Almost half the respondents had worked at the University for more than ten years. With regard to improvement work, over 50% of respondents had been involved in one or two facilitated Lean events. As far as types of event was concerned there was a range of involvement from a short meeting to full five-day RIE, with many staff being involved in more than one type of event.

In terms of Lean improving relationships, 35% of respondents felt positive or very positive about this in terms of improved relationships within their departments and 27% were positive or very positive about improved relationships with students. Furthermore 33% of respondents felt Lean had resulted in them having more control over the work and 54% of respondents believed that Lean had positively affected continual improvements in the work place.

In terms of improving the service delivered by the University, 50% of respondents were positive or very positive about improved service to students and 52% of respondents felt that Lean had improved the service to staff. With regard to new service development, 41% of staff felt that Lean had positively impacted upon the development of service to students and 47% of respondents felt that staff had benefitted from new service development.

The final part of the survey focused on perceptions of reductions and savings brought by Lean implementations. The following table indicates the percentage of staff that felt positive or very positive about the efficiency gains Lean has delivered.

Impact	% of Respondents
Saving staff time	56%
Reducing delays	52%
Reducing effort	49%
Reducing waste	46%
Saving costs	34%

This survey has shown that staff at the University of St Andrews feel that there have been some clear benefits of implementing Lean, both from a staff and student point of view.

<http://www.st-andrews.ac.uk/lean/Projects/LeanImpactAssessment2010Results>

6.4 Problems and Issues Encountered

The main issue or problem encountered by interviewees was that of resistance to change from differing levels of staff. The following specific elements were mentioned:

- Academic resistance to engaging in Lean improvement was mentioned at two Universities.

“Speaking to academics about removing the burden of administration, they think it is a good idea, but when it comes to working with academics responsible for designing administration, then they find it very difficult to engage with Lean. This is usually down to stubbornness on the part of the academic. Unfortunately some of the big duplications in the University come when academics are responsible for commissioning administrative processes.”

- Resistance from senior management was also highlighted as the major issue at one University. This was partly because of the complex nature of processes that were not owned by one department but also because in some cases some managers did not want to lose their responsibility over the part of the process under their influence.

“I can go to a manager and they can agree the change. But if half of the process is owned elsewhere and the managers there are not bothered, then improvement is lost. Sometimes you can also get a territory battle. Even if both managers are keen on the improvement, it may not go ahead if there is a loss of empire.”

- Departmental cynicism about the Lean programme leading to a lack of involvement with RIWs was cited at one Business School.

“Two departments are not very interactive with the project. They have not attended the RIWs despite being offered places. We will not force these departments to attend but speak to individuals in the departments about the results that have been achieved in order to encourage their engagement.”

- At two organisations there were problems encountered at the planning stage or RIW stage because the appropriate decision makers were not involved . This resulted in a lack of information, an inability to approve or reject decisions that had been made and ultimately to slowing down improvement.
- One Business School mentioned that one of the departmental managers was old fashioned and had a cautious approach to change. Whilst not being against the Lean programme as such the individual was seen as not encouraging or being proactive regarding change.

Two organisations highlighted two ways of overcoming this resistance. One way to prove that Lean worked was for the majority of staff including senior managers to see proof of the benefits.

“Staff normally come on board when they realise that Lean doesn’t threaten them but aims to drive the business Forward.”

Where there were no proof of the benefits of Lean because the project had only just started or because it was hard to drive implementation, one University highlighted that there was the need to get the Pro-Vice-Chancellor involved as project sponsor.

“Because I have no ownership with implementation, it can be hard to drive implementation. I try and sell the message by saying what benefits can be obtained but for the big projects, I get the Pro-Vice-Chancellor as the senior sponsor. The Pro-V-C then has responsibility for taking this Forward.”

Other problems and issues highlighted included:

- Two universities stated that some of the problems and issues encountered were more systemic within the University and the technical tools that staff were being trained on (5Ys, fishbone diagrams) could not overcome them. These systemic (or established) ways of working can have the effect of slowing down improvement. An example of systemic ways of working included the belief that decisions need to be made by committees rather than individuals.

“Staff sometimes come into RIEs without the understanding that they have the authority to do whatever they must do to improve the process within an agreed scope. They can think that they need to get approval from elsewhere and then all the good ideas get stifled. This can be mitigated by ensuring that when staff come into the RIE, the team has the authority to make decisions.”

- The lack of co-ordination of the Lean programme across the University was seen as a real challenge by one Business School. This lack of co-ordination meant that the

Business School was sometimes approached by other parts of the University to undertake improvement work but that there was no University arrangement for having staff facilitate workshops or oversee improvement.

“We have taken the lead as a business school, but there is no current University response to Lean. We can get approached by other parts of the institution to help out but there is no arrangement for this. There needs to be more coordination and joined up working across the University.”

- One University mentioned some problems with the language of Lean. This University involved external consultants, in their Lean implementation, who used a different Lean language to that that had been used in the University.

“We had some external staff come and talk to us and the feedback they gave us was that the language we use was completely different from the language that would be used in a manufacturing setting.”

Warwick Business School: Staff Recruitment RIW

A RIW at Warwick Business School looked at the staff appointment process, a function of the Human Resources (HR) Department in the Business School and the University HR Department. The scope of the RIW was to improve (speed up) the staff recruitment process starting from the point that a recruiting manager identified a vacancy, through to the arrival of the appointee on his or her first day. This was a large process in terms of the scale and complexity of the process because it involved so many steps, levels and handovers.

“This RIW involved looking at central HR functions, so we deliberately invited central HR personnel to the RIW to make sure they were involved and signed up to any changes we wanted to make to the process.”

The RIW was attended by the relevant staff from the Business School and also had representation from senior staff from the University HR department. However, the most senior staff member from the University HR department was not present and subsequently after the workshop one of the key improvements agreed on was not authorised.

The most contentious improvement involved the decision to devolve more authority from the University HR Department to the Business School in order to speed up the process. Following the RIW, the University HR department was reluctant to do this and the implementation stalled.

“We thought we did have the seniority required and didn’t realise that the proposed decentralisation would be difficult until later. If the most senior person had attended the RIW, then we would have known in the workshop we could not go ahead and we would have decided something else.”

This experience shows that it is vitally important to have all the relevant stakeholders attending the RIW, in order to approve the decisions being made. This lesson has now been learnt by the Business School.

As a result, a second staff recruitment RIW was held that involved only Business School staff in order to improve the part of process that the Business School was responsible for.

“Staff from the University HR team cooperated during the workshop but afterwards there were problems with the proposed changes. This has not been resolved. Rather we have worked around it.”

Despite one of the key decisions not being implemented the RIW did identify a large number of improvements that were operationalised and the working relationship between the University and Business School HR teams improved as a result of the RIW. There was a greater understanding of the process from end to end and of each person’s role in it.

6.5 Senior Management Involvement

Interviewees were asked about the commitment of senior management towards the Lean programmes. Whilst there were examples of many senior staff involved in Lean engagements, only in one Business School was there a senior academic (at Dean level) driving the Lean programme. In other organisations, the project was being championed by administrative staff. The following comments were made:

- At two organisations it was highlighted that the Pro-Vice-Chancellor / Principal was supportive in word, speaking at meetings, engaging with the Lean team and providing weekly reports about the Lean work, but that they were “a bit distant” in their actual engagement in the Lean implementation.
- At one Business School, the Pro-Vice-Chancellor was seen as engaged and committed. As a result the Lean champion in the Business School was given authority to familiarise the Deans of other schools in the University (Social Science, Law, Head of Administration, Graduate School) with Lean. They are now seen as supportive.
- In one Business School, the Lean programme was started by the Associate Dean for Administration. This person was well placed to work with front line staff and also to influence the decision makers in the School. The current Head of the Lean programme did not have this kind of profile in the school, but felt that the support of the Academic Dean and the Chief Administrative Officer was there to continue the work of the programme. At University level there was the feeling that the Registrar, the University’s Chief Administrator was also supportive.

“I have the ear of the decision makers in the Business School if not the opportunity to see them-face to-face. They are supportive of OE but in a hands off way.”

- At one University interviewees stated that although the senior management said they were behind the Lean programme, there was the misunderstanding that Lean was about extra projects rather than the way the University should be working. Therefore there was the view that Lean should ‘be made time for’. However there were examples of heads of departments who understood the improvements that Lean was capable of achieving. It was felt that with similar commitment from other senior staff, Lean work would continue.

“Both the Pro-V-C and V-C are behind the Lean University in terms of what they say. In terms of action, the University will not be changed by one person. There needs to be a groundswell of people and I have not got this yet.”

- It was felt at one Business School that there was a big role for the Dean to highlight areas of underperformance and to authorise the Lean project to investigate. Although this was seen as useful, it was felt that Lean would be easier to implement if staff voluntarily asked for help rather than have it forced upon them. Also at this School, there was no formal Lean programme across the Business School. This was in the process of being discussed with the Dean.

“The Faculty Executive Committee supports the project. But there is no current budget. Requests for a budget for activities have been made. Also a request for a Steering Committee has been made to the Dean and a list of staff to become part of the Steering Committee has also been made.”

Nottingham Business School: Senior Management Commitment

Lean at Nottingham Business School is being led by the Dean. This academic has experience of implementing programmes in product development at previous workplaces. The Dean is the project lead. This involves initial set up for the programme, specifying the training required for staff, reviewing the projects on a weekly basis and a direction to the rest of the school that this is how business is done.

“To become a Lean school, the top management needs to be on board and drive it. This is not an add-on. It’s about getting the entire operation of the school adopt Lean philosophy and practice on a continuous basis.”

The approach adopted by the Dean is not to take one or two critical processes and engineer them, but to try and enable staff to continuously question and look at the process and practices and try to improve them all the time. Staff are therefore empowered to make the changes.

“This is a fully blown Lean implementation and not small islands of Lean.”

The Dean was responsible for outlining and developing the required training programme that will be delivered to all staff at NBS through collaboration with a local company. There has also been leadership through example with the Dean attending a three week training event and attendance by the School Executive at a one day training event at the company location.

The Dean is part of the School Executive reviewing the performance of individual improvement projects as part of the overall Lean programme. This is done at School Executive meetings on a weekly basis. Crucially the Dean is also involved when there are blocks in the improvement system. This intervention usually involves assistance from other senior staff from other parts of the University so that there is a greater level of understand regarding the improvement the Business School is trying to achieve. These discussions ‘at the right level’ enable the improvement to happen more quickly and more smoothly.

“Sometimes I need to remove road blocks that exist. These could be resource, systems, processes or lack of decision making. E.g. one of the things we looked at was increasing the number of exchange students we have. The road block for this was the University structure which didn’t allow easy exchange with other universities. We went through the process of talking to various parties in the university and changing the structure of our second year. This required talking to senior academics and the University’s central authorities to make changes to the overall university’s system and module structure for this change to happen.”

6.6 Tools and Techniques

A variety of tools and techniques were outlined by interviewees. These included:

- RIWs were undertaken by four organisations as the main technique of improvement. Within this environment the main tool that has been used was process mapping where a process was ‘drawn’ or ‘mapped’ onto a wall. Tasks and activities are highlighted over a specified timeframe and responsibility for undertaking tasks identified. The purpose is to reduce the number of staff involved and the number of duplicated steps in the process that are considered not to add ‘value’. One University stated that a variety of tools would be used in a RIW so that staff became familiar with them applied them in their work environment to change the culture.

“For the staff involved there will be a lot of them who had not done this before. Therefore process mapping is explained using the example of ordering pizzas from the moment of order to delivery. This training helps them to understand the concept.”

- Value stream mapping events were being undertaken by three organisations. Both these organisation were using the concept of ‘value’ to drive their Lean work. Therefore these events were being held to define and promote the value steps in particular processes.



Figure 6.2 Example of a Process Map

- There was sporadic use of visual management in two organisations, which was being used to visualise course content and to make Lean information visual in public areas. There was a recognition however that one organisation could do with more team information boards. These had been tried across isolated areas in the University but the boards were not standard.

“Good work has been done in the Dental School visualising the content of courses using colour coding. What this has enabled staff to do is to look at their degree courses and see what areas of Dentistry (e.g. clinical work) are missing.”



Figure 6.3 Example of a Team Information Board from HM Court Services

- Problem solving tools and techniques were being adopted by three organisations. These included the 5Ys where solving a problem involves asking the question “Why?” five times to arrive at the true answer and root cause analysis and fishbone diagrams and nominal grouping techniques.

“Nominal grouping requires getting creative ideas from an independent group with diverse experience. Start with an issue or problem and each individual identifies all their responses to this issue or problem on post it notes – one response per post it note. Then the group as a whole will arrange the post it notes into themes. From this the group can develop a prioritisation matrix of solutions and actions.”

- One University was using a competency framework listing the tasks and team members identifying the level of experience each team members had in the specific tasks. This skills matrix tool also helped to identify areas of training or skills development required.

Warwick Business School: Approach to Undertaking RIWs

Warwick Business School is implementing its Lean programme mainly through the use of RIWs, under the leadership of a steering group. These workshops are run over a one to three day period depending on the scale of the process being looked at. They have involved approximately 12 staff per workshop. There has been a cross section of staff involved including academic, administrative and clerical, as well as staff from the central university functions (as and when required). Initially, in the early days of the Lean programme, the Business School relied upon an external consultancy to facilitate these workshops. However, the Business School has now developed a pool of 20 internal staff to facilitate these events and depending on the process a decision is made to run the events with one or two facilitators.

“I have run about five RIWs. The first two I was a co-facilitator in the background. One of these was run by an [external provider]. The second, I facilitated with another colleague. The third I ran with another colleague and the final two I ran on my own locally in my team.”

“Depending on the scale of the process and its complexity you may need two facilitators as it can be quite tiring on your own. On other processes that are quite contained, these can work well with just one facilitator.”

One of the tools used in some of the RIWs is a simulation game, based upon a real life example of a public sector service environment. The simulation game is used at specific times throughout the RIWs to exemplify a particular tool and see how it can be applied to a real situation. The simulation game has been developed by an external provider and the Business School has a license to use it.

This simulation game is used in conjunction with other tools and techniques, including process mapping to outline the key stakeholders and tasks associated with a process and critical success tree which outlines the factors critical to success e.g. cost, quality and time. As more staff have become trained or have become involved in RIWs, there has been less need to run the simulation game. Therefore the RIWs have focused more on deploying the right tools to achieve process improvement.

The main focus of the RIWs is to improve a process. This involves defining the current state process and highlighting issues and areas of duplication (or other types of ‘waste’). The final part of the RIW is the development and agreement on a revised future state for the process. After the revised process has been defined, staff who have attended the RIW are charged with task of implementing the revised process and a project champion (previously identified at the RIW) is responsible for ensuring that all the actions are followed through. There is therefore an ongoing element to the improvement work and RIWs are one element in this work.

“[RIWs] are a brilliant way of improving processes. When I think about improvement, I now think of it using this procedure because it is systemised and logical.”

There have been many improvements resulting from the RIW approach at the Business School. In addition, there have been other less tangible (but equally important) benefits that Business School staff have obtained from being involved in RIWs. These include:

- Learning how other departments or teams within the Business School undertook their day to day processes. Some of this has contributed to smaller scale discussions regarding future improvements to processes.
- Realising that there were so many processes in the Business School that had grown overtime, which had multiple stakeholders.
- Getting to know other staff from other areas of the Business School, many of whom had worked in the School for many years, as well increasing awareness of how specific tasks are undertaken in other areas. This has all contributed to increasing the knowledge of end-to-end processes.
- Learning new information including a better understanding of the terminology and learning to look at tasks in a more systematic way.

“I learnt a lot about how other parts of [the Business School] were operating in this area, about the different types of projects students do, the different organisations we deal with and the ways that we develop relationships with organisations in this way. Some of the territory was familiar to me, but it was a new experience because I was going through it with different people.”

7. Organisational Readiness and Ability

This section of the study focuses on the ability of Business Schools to implement a change programme such as Lean. This helps to determine whether the criteria (or the readiness factors) are in place to enable Higher Education institutions to become Lean organisations. As a result, interviewee opinions were sought on whether they were aware of the links between the Lean programme and the longer term strategic direction of the University and whether communication about the programme had enabled learning and dissemination of good practice to be shared between departments and groups. The discussions then focused on improved understanding of end-to-end processes, customer interaction and the alignment of capacity and demand.

7.1 Links to Strategy

In general, this was not clear in all organisations except one. The following specific comments were made:

- There was the recognition that there was strategic side to Lean at one University, which had a University Strategy map on its website. Whilst Lean was not mentioned specifically, under the enablers, Lean was supporting the activities that the University needed to do especially nurturing leadership, empowerment and development, recognizing and valuing good performance and developing rapid and efficient processes.
- One University highlighted that efficiency and effectiveness and working the right way were core to enable the University to go forward and that strategically this was recognised by the University. However there was no strategic requirement to achieve this via Lean. Furthermore at the front line staff level, most staff did not understand that they could engage with Lean to improve their processes.

“Senior management put pressures on heads of schools / unit to achieve savings and report on efficiency gains. However they can do this however they want to. One way to do this is to engage with the Lean team. But as long as savings are made they don’t have to engage with Lean.”

- One Business School was unsure about where the Lean programme sat strategically. It was acknowledged that the Lean programme had a place in the Business School and was formally constituted as part of the School’s activities. However no strategic document outlining Lean had been seen.

However in all cases it was agreed that more work was needed.

“We are trying to encourage the link but we are just not there yet. I just think more work needs to be done in turning that overarching university strategy and cascading it into all the schools.”

Cardiff University: Strategic Link

Cardiff University is running a University-wide Lean implementation with a dedicated team responsible for driving Lean. The Lean University is underpinned by the training which is aimed to help staff undertake continuous improvement activity themselves.

The Lean University is delivered at three main levels:

- At strategic level working with teams, school, directorates or divisions to decide on their strategy for improvement.
- End-to-end processes that cut across the University e.g. staff recruitment is mainly a human resources function, but requires input from finance and academic divisions.
- Continuous improvement activity focusing on 'four walled' processes where there is one manager who has sole responsibility for the process. Due to the complexity of processes, there have been only a few of these interventions.

"The school of nursing and midwifery studies approached us to do a strategic piece of work and also put their schools manager through our Lean skills for Leaders course. So they got the understanding of Lean in their senior management. We also did the strategy for the school and this highlighted what projects needed to be worked on. From this we got the continuous improvement work that was required and this has been done with our support or the schools manager has run them or we've done local Lean training to suit their improvement environment. This is the ideal way of engagement."

The Lean University is linked to the Cardiff Futures project. This involves senior managers across the University looking at several topic areas to determine what needs to be done in each area. This will highlight definite measures that improvement needs to be measured against. This will need to involve finance staff to enable the Lean University to equate costs savings from implementing future state processes.

"I think this strategy will be a driver for Lean as it should highlight three or four key processes that we need to get right. If senior managers determine these priorities, then they will have a vested interest in any Lean projects that come from this."

7.2 Communication

Three organisations were communicating their Lean activities and improvement work through the University website. These websites outlined the background of Lean, listed improvement projects that had been undertaken, highlighted successes achieved, had links to documentation and presentations about Lean as well as contact details for further information. One of these organisations had established a forum for internal facilitators to further spread information about Lean.

"There is a lot of information on Lean on the website and the Lean team refers staff to the information there. Some of the communication is to get staff to look at the website. As an example the 2010 Lean impact survey was communicated through a University's internal memo system with the link to the information on the website."

One University stated that senior administrative managers discussed Lean at the group meeting. This University also communicated information on improvement events that

took place, including the project plan and the activity lists. Staff were given access codes to see the information stored on the website. However, there was an acknowledgement by all organisations that more communication was needed to make staff more aware of Lean and also for staff to discuss improvement work more generally. A couple of the Universities also recognised the need to reward involvement and support, particularly facilitators, in the Lean work although no formal mechanisms had yet been introduced.

“The best way to spread the message is for staff to talk to other staff about Lean. Rather than it being [the Lean team] having a big communication launch, staff in the University should tell each other what it’s like. We want Lean to become part of what every member of staff does and less part of something that is driven by us.”

One Business School that was doing some good work on Lean recognised its failure to communicate its progress.

“We need to put something on the website about Lean as there is no information. People who have come here and have seen how we are implementing Lean normally say we are the most advanced although, we haven’t publicised it. We need to.”

Warwick Business School: Facilitators’ Forum

As part of its Lean programme, Warwick Business School has developed its own pool of internal facilitators. In order to encourage these internal facilitators to get together, share ideas and good practice, and inform each other of what they are doing, the Business School has established a Facilitators’ Forum. The aim is to enable facilitators to come together on a regular basis to allow Lean related ‘continuing professional development’ activities to flourish.

The Facilitators’ Forum runs in parallel with the steering group for the Lean programme and acts as a mechanism for ensuring good internal communication. The Forum informs the Steering group about projects that facilitators have been doing within their own sections, and also escalates to the steering group any improvement opportunities that cut across more than one section. The Head of the Lean programme has also developed a communication framework to be rolled out, which will formalise how communication regarding the Lean programme is to be undertaken in the Business School.

“Through the Forum there is the possibility to undertake inter-team projects i.e. projects that cover more than one section / team in WBS. This should act as a conduit for improving communication horizontally across the Business School and also vertically through sections / teams.”

7.3 End-to-End Processes

One of the aims of all the Lean programmes that all organisations mentioned was the need to increase value, particularly to the customer. There were many examples of internal teams or small processes being looked at and improved within individual departments or schools.

“It has made a lot of difference using the [Lean] tools in my team to how we do things. But it is a smaller team and it meant that they have got a better understanding of end-to-end processes and their role in the whole process.”

“The most mature Lean area is the Finance Department. They run their own internal improvement Lean work and only engage with the Lean team when improvement work cuts across another University function.”

However for customer value to be increased in all elements of a process, there is the need to focus on end-to-end processes. Given the complexity and size of all the organisations involved in this study, end-to-end processes cut across departments and had several areas of responsibility and control. Therefore it was not surprising to find that there were no examples of complete end-to-end process improvements in any organisation.

“We have to acknowledge that as a University, staff don’t really see end-to-end customer focused processes. Therefore [the Lean team] needs to help staff to see end-to-end processes across the institution as centred on their customer.”

“One of the stumbling blocks to process improvement is that we don’t focus on managing along the value chain. We have too many ‘hand offs’ and process owners. The problem is that there is still a silo mentality.”

However there was some evidence to suggest that progress was being made in this area. One University acknowledged that some of the work the Lean team was now doing was across departments, whilst a lot of the early Lean work was restricted to only one department. Also the comment was made in three organisations that although end-to-end processes had not been looked at, the hope was that if improvements could be demonstrated, then opportunities to impact on processes across the University would be more forthcoming. At the very least there was the expectation that there would be increased discussions about end-to-end process improvement.

“Slowly staff are starting to understand end-to-end processes. The interactions between staff from different departments is helping to break down barriers and to make the University feel like a smaller place. Getting staff together with colleagues helps them to see how each other’s work affects other areas.”

However there was the recognition in two organisations that increasing value across end-to-end processes would be difficult. This was because of the ownership elements that would need to be overcome and because of the different ways of working between departments.

“The way the University is structured, processes tend to cut across directorates and there are several ‘hand off’s so this is difficult to do.”

“We have got [lots of departments] in the University and when you do end-to-end processes, you become aware that each [department] does their work differently.”

7.4 Customers

Interviewees were asked about the organisational understanding of customers and whether the improvements that had taken place had had a positive impact upon the customer experience. In general, there was an appreciation in all organisations that they were there to serve the needs of a customer. Indeed the term ‘Customer’ was being promoted across the organisations. Furthermore there was also an understanding that Lean was one of the drivers that would enable staff to understand the concept of the customer. However there were issues with using the term customer as well as the specific understanding of what constituted a customer. There was a recognition that more work was needed.

“It will take time for these messages to get through. We have got to be constant in our messages but it will take time as we are on journey here.”

The following comments were made regarding the understanding of the customer:

- Two organisations highlighted that students were not considered as pure customers. They were not seen as a one dimensional / transactional type of customer, paying money and receiving a service. They were more of an integral type of customer because of the nature of the engagement they had with the University. This view of the student not being a pure customer was shared in another University, where students were not seen as customers but partners.

“Students are customers because their transformation is our product, but they are also stakeholders because they have a long engagement with the University.”

- Two organisations highlighted that more work was needed to change the view of the wider University from a research focused institution to a customer focused institution. This focus on research made it difficult to see students as customers to whom the University should be delivering value.

“We are trying to highlight that somewhere along the process the student has to be a customer and staff have to recognise what is value to them and whether value is being delivered. So far the concept of delivering value to students is not there.”

- In one Business School, it was clear that the student was a customer. Lean was therefore being used to improve the student experience and to provide as good a service as possible to the student. This view had been reinforced by the visit to a local tax office where there were many examples of how to visualise a customer.

“Staff should bear in mind that behind every course work or exam there is a student. Therefore any processes that involves students should be reviewed e.g. marking exams and coursework and displaying exam results as soon as possible.”

- The recognition in one Business School that staff were beginning to understand that there was a multitude of customers; students (UK, EU and international), government sponsors and private sponsors.

Discussions were had with two Universities about internal and external customers. One University highlighted that there had always been an understanding of internal service units being each others’ customers. However at another University it was highlighted that there was no concept of an internal customer. Staff were seen more as colleagues. Attempts had been made through some of the improvement projects to break down some of these misunderstandings and to develop better relationships. This included involving academics, who were customers of administrative processes, in the improvement work.

“We have found tension between support staff and academics, where there is a chasm in terms of whether the support staff are providing a service to academics. This has been borne from academics maybe not understanding the pressures support staff are under and vice versa. It’s a classic organisational barrier.”

With regard to involving customers in the Lean implementations, there was only one University where this had taken place. Students had been represented on the Lean events the Lean team had run, where staff had seen customer data and tried to understand the customer needs. At this University, it was admitted that there was a significant drive to customer service as part of the student experience agenda.

“Just as the senior managers provide a drive towards efficiency, and use Lean as a tool towards this, they also make a drive towards customer service and use Lean as a tool towards this also.”

As a result of the misunderstandings about what constituted a customer and the lack of involvement of customers in Lean implementations, there was little actual evidence of Lean impacting on the customer experience. The following comments were made:

- At one Business School using measures in improvement processes had noted that customer satisfaction metrics had changed. However whether this change had happened because of Lean, was not able to be determined as yet.
- At another Business School, there was the belief that the improvement in one process had contributed positively to the student experience. However it was too early in the academic year to determine this. Also it was also acknowledged that there was no facility for students to provide comments on the revised process.

7.5 Aligning Capacity and Demand

Brief discussions were had regarding whether organisations had tried to align capacity with the demands made by customers. Only one University stated that such a concept was increasingly becoming understood. This University made the following points:

- Managers would not necessarily talk about capacity and demand but they would understand the concept of when students would access a service, how many students would access the service and for how long. They would therefore try and understand what staff would need to do for the students and this would impact upon how many staff would be needed.

“The Lean team is working with the Library to undertake a redesign. They have just appointed a project manager who has to move some of the University’s most precious books to another area within 22 weeks. This person has worked out and timed the process, knows the staff that are available and what they can do. This person therefore understands the capacity needed to be able to do this.”

- Managers also were beginning to realise that they would not be getting any more staff, and needed to understand that they would have to deploy the staff they had more creatively.

In all other organisations this concept was not understood as it was seen as too early on in the Lean journey to alter the working patterns of staff to meet demand. In one University it was stated that this stage in the Lean implementation, such a development would be seen as too radical.

8. Sustainability

An important aim of the study was to determine whether the changes that had occurred in Higher Education would be sustained over the medium to longer period. Therefore the opinions of interviewees were sought with regard to what the future was for Lean in their organisation and whether staff could identify what areas or processes Lean would be applied to next. Interviewees also outlined the one element of Lean that had made such an impact that they would not want to change.

8.1 Future for Lean

Interviewees were asked what they saw as the longer term future for Lean in their organisation. The following points were made:

- All organisations outlined the need to continue to identify and facilitate opportunities for improvement. In addition two organisations were hoping to focus on larger and more complex processes and also to get more senior staff from the wider University involved. One organisation outlined the need to undertake significant 'platform' projects supported by smaller 'pillar' projects that would have more of a strategic impact across the University.

"The opportunities have always been there but now we have given them a name and there is starting to be a mindset about improvement, that staff can come and speak to us about making these improvements."

"We need more platform projects that go across the central functions. If we can develop a few pillar projects to support these types of projects, then building the platform projects will become a bit easier."

- Continuing staff training was also seen as important for embedding Lean in three organisations. Training was seen as important at all grades of staff, front line, middle management and senior management. This would give staff the skills to enable them to do continuous improvement work themselves. In two Universities with a dedicated Lean team, this would provide the opportunity for the Lean team to focus on strategic and end-to-end process improvement.

"The University needs to develop its leadership so that staff on the front line can understand how they can contribute to making [the University] better. This is being done through management development. As managers develop capability, the Lean team will be called on to deliver more specialised services."

- Three organisations highlighted that the immediate future was to make "Lean ubiquitous in the [organisation]". This implied having more staff involved in Lean work to understand that Lean was not a project, but a way of working across the organisation.

"There are three aspects to it; the cultural aspects, the methods and the application of the tools. We need to push all of these and make Lean an everyday occurrence."

- Two Business Schools saw the long term of Lean in terms of perpetually delivering more value and less waste e.g. duplication of activities, reduced use of paper and emails.
- Two Business Schools were unsure about the future of Lean. This was because of one of the Schools lacked a budget for Lean work , whilst the other had recently experienced a change in leadership. However interviewees in both Schools were adamant that Lean improvement work should continue.

“Hopefully [Lean] will go onwards and upwards. It would be a complete disaster if it stopped now. The institutional memory would be what waste of time and effort. It is a crucial stage and needs to pick up again. It’s on the cusp of becoming embedded and just needs that final push.”

- Two Universities believed that to become a truly Lean organisation, a dedicated University Lean team would need to continue to evolve over time. In both Universities, the Lean team would evolve to focus on more specialised work e.g. working with relevant staff from different areas on customer focused end-to-end process improvement. Linked to this in one University was the need to promote and use the Lean Centre of Excellence. This Centre should not seek to lead Lean work but to share the skills that enable the different areas of the University to own the improvement work.

“Working with organisations like LERC, the Lean University project will only get better. Hopefully other schools in the University will also look to use this facility. What we have to do in LERC is not to lead the projects but share our skills with staff in other areas.”

- One University believed that over the longer term the University needed to have more strategic alignment and needed to understand that there were large cross functional processes that needed to be reviewed. This University saw this lack of understanding *“as a barrier to becoming a Lean organisation, which needs to be overcome.”*

8.2 Next Steps

Interviewees were asked what they would like to see happen in terms of Lean over the short term. Many responses were given and there was no overall consensus. In many cases interviewees had already defined improvement projects in mind, but there were other ideas being planned that would encourage continuous improvement in the organisation. The following were mentioned with regard to continuous improvement:

- One Business School was keen to remind staff about the opportunity for process improvement. This involved an important piece of communication work to raise the profile of potential improvement opportunities.
- One Business School was keen to introduce more visual management. The Head of the Lean programme was going to visit a financial institution to see how to introduce such a tool. The challenges were to find a consistent way to measure the performance of teams and to make sure staff were happy to have the information visible.

“My current mission is to establish a visual management template that staff could adopt and roll out in their own area. I want to capture some key performance data so that any manager walking around can have an instant view of what the team is doing and how it’s performing against its objectives.”

- One head of a Lean programme at a Business School had developed an improvement tracker to keep up-to-date on the work that had been done and what stage it was at, what current projects were being worked on and what the priorities for future projects were.
- One University was keen to focus more on the senior University management to make sure they are more familiar with Lean and its focus on continuous improvement rather than savings costs.

“In the current economic climate, we need to be doing Lean. At the moment it’s more of a cost cutting driver rather than a culture change driver, but we don’t want to cut costs and jeopardise the quality.”

- One Business School was looking to improve teamwork, and increase the incidence of face-to-face discussions to resolve issues. However there was uncertainty about whether this element could be formally incorporated into the Lean work being undertaken.
- One Business School had increased the number of staff working on Lean because it felt it was time to expand the Lean work across other areas of the University, thereby giving other staff the opportunity to get involved. It also felt it was time share some of its improved process with other University departments.
- A dedicated Lean team working at one University was trying to build the experience of the team externally.

“We want to share what we learnt here with other people in the sector and of course that helps us get more experience which we can feedback here in the University.”

- One Business School wanted to develop in house Lean facilitators to help to take the concept of Lean to the wider University community.

Warwick Business School: Developing Internal Capacity

Warwick Business School has adopted the RIW approach to improve small internal processes to larger cross-cutting projects that impact across the whole of the Business School or the wider University. Initially, these RIWs were facilitated by an external organisation. However the Business School has now developed its own pool of internal facilitators.

The intention was always for the Business School to equip its own staff with the skills to be able to lead on improvement work using internal resources and to reduce the reliance on the external provider. In the early stages of Lean, the external provider ran the RIWs with Business School staff work shadowing. This was followed by training for staff, co-

facilitation of RIWs with the external provider to eventually being able to RIWs internally.

“The first thing we did was appoint an external training provider. We had a facilitator training event and I was one of the first staff to be trained. The advice was that we needed internal capacity, because external facilitators were expensive. Also longer term to change the culture of the Business School, we needed internal people to do this.”

In total, there are approximately 20 internal facilitators. In all cases these are from an administrative discipline. Many are staff from the Business School, but there are also some staff from the wider University. All facilitators are trained by the external provider to use a simulation game for process improvement. The training is about four days, based on a workshop type of environment with approximately eight staff. The next stage the facilitators have the opportunity to observe, shadow or co-facilitate on an up-coming workshop.

All internal facilitators have volunteered to take on this additional role. Staff volunteer because they see Lean as a opportunity to change processes for the better and for personal development, both in terms of increasing their skills and knowledge of other parts of the Business School or wider University. However working as an internal facilitator is still over and beyond the normal duties of staff and is a real commitment on behalf of those who undertake the role.

“The opportunity to have the training was there and it looked interesting and was a new skill. It interested me from a development side. Being a facilitator requires a lot of commitment and enthusiasm. We are doing this over and above our day job but we do get some thanks for it.”

The internal facilitators have found that facilitating RIWs takes them out of the comfort zone and provides a challenge to be able to work in a situation with a range of staff at all levels. Furthermore, the benefits of using internal facilitators have been:

- Financial savings by not employing expensive external facilitators.
- From a Business School perspective, it is advantageous to have facilitators and expertise in specific departments where there are gaps in knowledge.

“We have representatives for [Lean] in every section / team in the Business School. Staff can therefore talk to their colleagues about process improvement. They can either facilitate themselves or access facilitators through a network of facilitators.”

- From an individual perspective, staff have increased their knowledge about other areas and departments of the Business School.
- Developing a team approach to improvement work, with the facilitators very much part of the teams even though they are not involved in every aspect of the improvement work.

“Using external facilitators to carry out improvement work means that they own the improvement rather than the area they are improving. There is an ownership element if you are doing improvement work yourself. The team based improvement approach is owned by the team.”

The immediate improvement work being planned or about to be undertaken, included:

- One Business School was about to undertake two RIWs on the process to approve the modules that form part of a teaching programmes and on the process for appointing doctoral students to a specific teaching activity. Other potential improvement work includes the staff recruitment process, the dispatch of study materials, committee decision making process and admissions process for different degree programmes.
- One Business School wanted to focus on how to generate external work and how deal with external customers who want us to do external courses. This would require a detailed look at the current process for generating external work.
- One University was about to introduce a computer system to replace some of the human resources and payroll processes, which would require a complete rewrite of every human resource and payroll process.

“We have to document current state and work on the future state. Therefore the electronic solution should suit what we need and not the other way round.”

- One University wanted to develop a ‘Life Student’ project which looked at student engagement from the point of students thinking about coming to the University to the point where they are alumni possibly donating money to the University and the processes that support these activities.

“We will then use all the student surveys we have to give us the customer voice we need to highlight priority areas for improvement.”

- One University with a dedicated Lean outlined that the Lean team had started to pick and choose projects with which to engage with. Specifically this included not undertaking projects that were not considered Lean.

“A year ago we would have undertaken business analysis because we would have been able to add value. Now we would pass this on to the business improvement team.”

8.3 Significant Impacts

All interviewees were asked what they considered to be the biggest impact of Lean improvement within their organisation. Although there was no consensus on this, it was mentioned by all interviewees that if the Lean improvement work stopped, these elements would still continue. The following specific elements were mentioned:

- In one Business School, the work between the managers had had the biggest impact. This included discussion about how to work better together and how to combine some of processes. They had also been given the confidence to challenge their work and to seek assistance to help them make the improvements.

“Faculty managers meet informally on a regular basis to talk about the linkages between processes and how these processes can be improved. These meetings used to happen before but they used to focus on sharing knowledge. Now it has moved to actual improvement work.”

- One University mentioned the fact that staff had been given an opportunity to challenge their working practices. They now felt they had a voice to share their problems and had been given the opportunity to do something about them.
- The training provided to managerial staff was one element that staff would like to see continue in one University.

“We are trying to give people the skills to enable them to do continuous improvement work themselves. My team should not be doing any of this.”

- Specific process improvements were outlined at one Business School. Specifically the improvement made to the online marking and feedback process was outlined as having the biggest impact.
- One University outlined department improvement as the biggest impact. The Financial Department now understood process improvement and delivered its service better. There was also a significant amount of staff saving as a result of improvement and culturally staff were starting to think in terms of working more efficiently.

“Staff are starting to understand that Lean trick of getting rid of waste and making processes more efficient and better for customers. The legacy is that staff are beginning to understand that they can do their jobs better, deliver a better service and save themselves time.”

9.1 Summary

There is little doubt that the Lean programmes undertaken in Higher Education have had significant impacts within the organisations that have undertaken them. This includes creating an understanding of the need to change, revising processes and practices which had been untouched for years, engaging staff to enable them to challenge and question their working practices. The Lean programmes have been very different types of improvement programme for Higher Education.

The original intention of the study was to undertake a survey of Lean in Business Schools only followed by focusing on specific case study organisations. However it became clear early on that very few Business Schools had significant Lean implementations that had been on-going for some time. Hence there was a low response rate to questionnaire. It also became clear that some Business Schools undertaking Lean as part of an overall Lean programme across the University and others were just starting Lean implementation and therefore had very little to say at such an early stage. It was therefore decided that the study would expand to include the wider university and to focus only on a case study approach.

The current picture is that it is not possible to define how many Business Schools or Universities are involved in Lean but those that are provide some good examples of improvement and change. As a result, it was decided to focus on case study examples to share knowledge across Higher Education. Therefore five case studies were selected, some of whom had established Lean programmes, while others were at the start of their programmes.

Importantly all organisations, whether at the start of their Lean journey or well into their improvement work will need to consider important elements in order to ensure successful implementation.

The main points highlighted from the study are:

- It is still early days for Lean development and implementation in Higher Education. This means that there is still a lot of opportunity and much that can be learnt from other public service organisations such as HM Revenues and Customs, HM Court Services and Health.
- There is fragmented uptake of Lean in big institutions with lots of talk but not much action. It is difficult to identify some 'outstanding' examples of Lean implementation but some of the early adopters, a couple presented in this report, are showing real signs of engagement and embedment.
- Lean appears to be driven by mainly administrative and support staff (who can see the benefits) but who are still often distracted by the day job (where they feel there is a lack of recognition / understanding of how Lean could support that).
- There is a focus on RIWs and project based activities around one or two processes which are redesigned, but not always re-visited or monitored. There is less of a focus on developing a Lean culture. Related to this there is more emphasis on using tools than on developing the foundation, readiness and building blocks for Lean. This is a concern as without developing understanding on elements such as the need for

senior management commitment, linking the activity to the strategy, understanding the customer and process then the tools will be developed without any underpinning. It will become difficult to sustain Lean improvements.

- Finally, value is being seen as only process based with better processes leading to better value mainly for internal staff. The concept of delivering value to customers (particularly students) needs to be developed further.

9.2 Reflections

The framework set out in Figure 9.1 indicates the elements to develop and support Lean within Higher Education. These include a full understanding of the organisational processes, customer requirements or 'value', levels and types of demand, the link with strategy through committed leadership and clear communication. These factors are incorporated as strong foundations in the house to ensure that an organisation is ready to engage with, or can enable, Lean. These are defined as factors of 'organisational readiness'. These factors themselves should be supported by ongoing training and development and a steering group and project team, as the bedrock and foundations.

The tools and techniques are represented as the pillars of the house. The red assessment and improvement tools should be implemented first as these achieve some quick wins, clear focus and engagement. The orange pillars are focused on the monitoring tools to allow the impact of the activity to be identified and established. The green pillars are tools which will allow Lean to become embedded in the day-to-day processes and service delivery. The House integrates the technical and culture aspects of Lean throughout with them feeding into each other in order to achieve a whole process, value chain or system view, embedded improvement behaviours and stable robust processes.

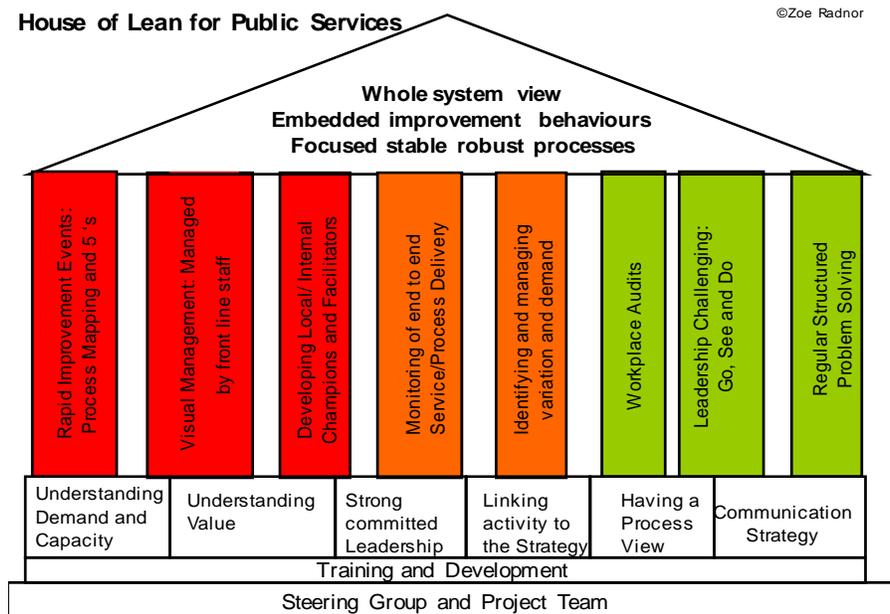


Figure 9.1 House of Lean for Public Services (Radnor, 2010)

9.2.1 Foundation: Steering Group and Project Team

Four of the case studies had established steering group/project teams. The role of these groups has been important in the design and roll out of Lean programmes. This includes communications, developing internal capability, designing and delivering training, tracking impacts, selling Lean to senior management and planning the next stage of the journey.

All organisations have implemented the majority of the Lean programmes themselves, either through building the internal capacity or increasing staff capability. Building internal capacity and capability has resulted in lessons being learnt along the way which hopefully mean a greater engagement and buy-in to Lean from staff. In two organisations critically this has also meant that having a stable, focused and committed team to manage the journey. Initially these teams were on a project basis but both teams have become permanent, thereby confirming the importance of Lean within the organisations concerned.

9.2.2 Foundation: Training and Development

Staff who have been exposed to training either through formal training events or as part of their involvement in Lean implementations appear to have benefited from this experience. However it appears also to be clear that those staff not involved in Lean implementations or training are less aware of what Lean is and what benefits can be gained from it.

The interviews highlights that there was a good basic understanding of the Lean concepts in terms of making processes more streamlined and efficient but there was a poor understanding about the key principles of Lean and how they should be driving the improvements. Regarding leadership training for senior managers, this appears to have been done well in two organisations and was less fragmented in the others. In order to improve this understanding more Lean training is required for more staff and especially for new staff. This requirement was acknowledged by all organisations.

9.2.3 Building Blocks: Readiness Factors

The information provided by interviewees regarding understanding of process, value and capacity and demand as well meeting the customer requirements, shows some improvement through the implementation of Lean. However, there is still some work to be done regarding what these concepts really mean for a Lean university.

Regarding capacity and demand, it was apparent from discussions in one organisation that thought was being given to the reallocation of resource when needed. This is excellent but was not common across other organisations. In general there is still a need to concentrate more on how to change patterns of work to meet the demand so that the capacity (staff) is available to meet varying levels of demand.

In responding to the question about the 'customer', there appeared to be a general consensus that students are customers and that the delivery of academic courses generally meets their requirements. However it was in the administrative areas i.e. student admissions, coursework assessment, project generation etc, that had previously not met student requirements and these were the areas that Lean projects were focusing on to improve service. Also with regard to service between internal customers, attempts were being made to improve this. It is encouraging to see that the concept of a customer is recognised and there is a perception of the need to provide a high level of service. The concern is that there are assumptions regarding the requirements and that the 'voice of the customer' has not been clearly articulated by direct involvement in Lean improvements, except in one organisation. There is little evidence to support the level of quality and timing of information that would result in better processes and more satisfied customers which is important when trying to ensure student satisfaction is high.

Furthermore as regards customers, staff leading Lean teams or implementations recognised the need to understand value and customer requirements more clearly, as defining value drives the processes. At present it is quite easy for staff to improve value for the customer as many improvements have tackled only the 'low hanging fruit'. If the value of a customer is not clearly defined, it may become more difficult to tackle the next set of improvements i.e. when you want to start picking the apples.

As mentioned, there is commitment from senior staff in the some organisations. There was a recognition, though, that many senior managers were supportive of Lean only in principle and were distant from the improvement work. In future senior management needs to be taking on more responsibility and ownership of the programme. There should be an environment of 'go and do' as well as 'go and see'.

There were mixed responses regarding the link to strategy across the analysis. Some staff interviewed believe they understood the link. Others, including the senior management felt the link could be made stronger. In particular, one Business School (NBS) has placed great emphasis on both senior management commitment and linking the activity to strategy. This is showing real benefits in terms of the profile and impact of the Lean programme as well as on service improvement.

Revised processes were felt to be one of the key successes of the Lean programmes by those interviewed. This improvement work was seen as being sustained even if the Lean programme ended. However, many of these improved processes were internally focused and were concerned with revising processes which had been in place for many years. There is scope for a better understanding of end-to-end processes to ensure that Lean was not seen only in terms of process-focused change but more in terms of a culture change in behaviours and attitudes.

This better understanding of more efficient end-to-end processes would also help to define value and customer requirements, which in itself would help in achieving the next set of improvements. For this to happen more customer involvement in Lean programmes is required as well as extending joint collaborations across departments to ensure that the more efficient processes meet the needs of everyone.

Three organisations were communicating their Lean improvement work on their websites. However there was an acknowledgement that more communication was needed. This is less to do with the quantity or the quality of the information but the degree to which information penetrates down to front line staff and external organisations. Communication was organisation focused and the understanding of the Lean programmes in other organisations was weak. Better communication methods and media should be used to better inform all staff within organisations and there is significant scope for communication across organisations to share knowledge and best practice.

9.2.4 Pillars: Engagement

The first set of pillars focus on tools which develop skills and knowledge to engage staff in Lean. This refers to the RIWs undertaken and the tools used within this environment, the use of visual management and the development of internal capability.

The main type of lean event undertaken in many organisations was RIWs. These events have helped in understanding Lean. In particular they have enabled staff to understand processes in a different way, allowing opportunities and savings to be identified as well as a chance for staff to have their voice heard. However this is only true where staff have been involved in these events and not for those staff who have not engaged or been involved in these events. The only way to really understand Lean is to be involved in a Lean event and follow through on implementation. If only a few staff are exposed to Lean then the practical and theoretical knowledge of the remaining staff is limited which would have an impact on the establishment and embedment of Lean.

There is very little evidence of widespread use of visual management. Two organisations have made use of this in specific areas and another organisation is developing plans to introduce more visual management. However there is no overall organisational move to implementing visual management. All organisations should consider introducing this concept for both administrative and academic processes. Further consideration should also be given to consistent layout across the organisation following the standard format of displaying information on people, performance and continuous improvement (figure 6.2) as well as tracking information over time. Figures 9.2 and 9.3 give examples of visual management boards which could be used for academic processes – publication progress and, research seminars.

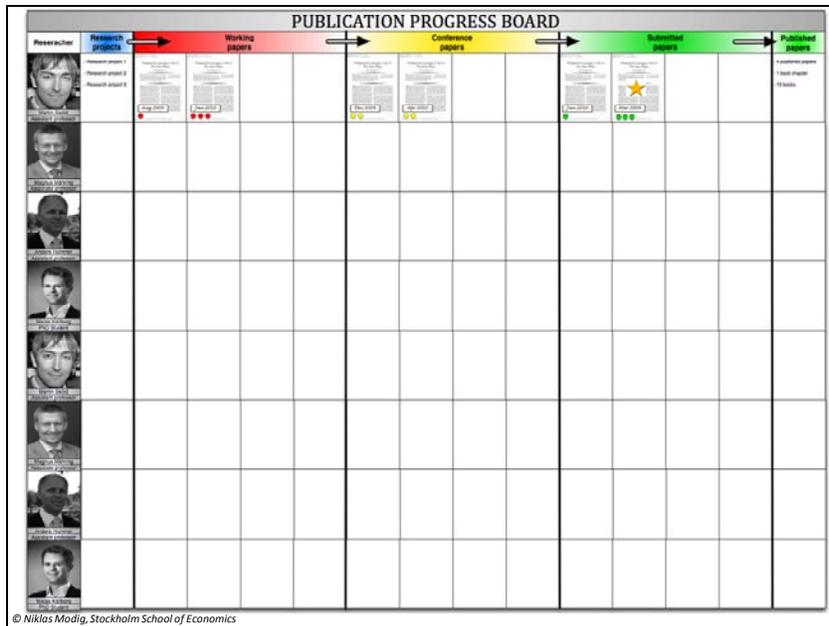


Figure 9.2: Example of Publication Progress Visual Management Board

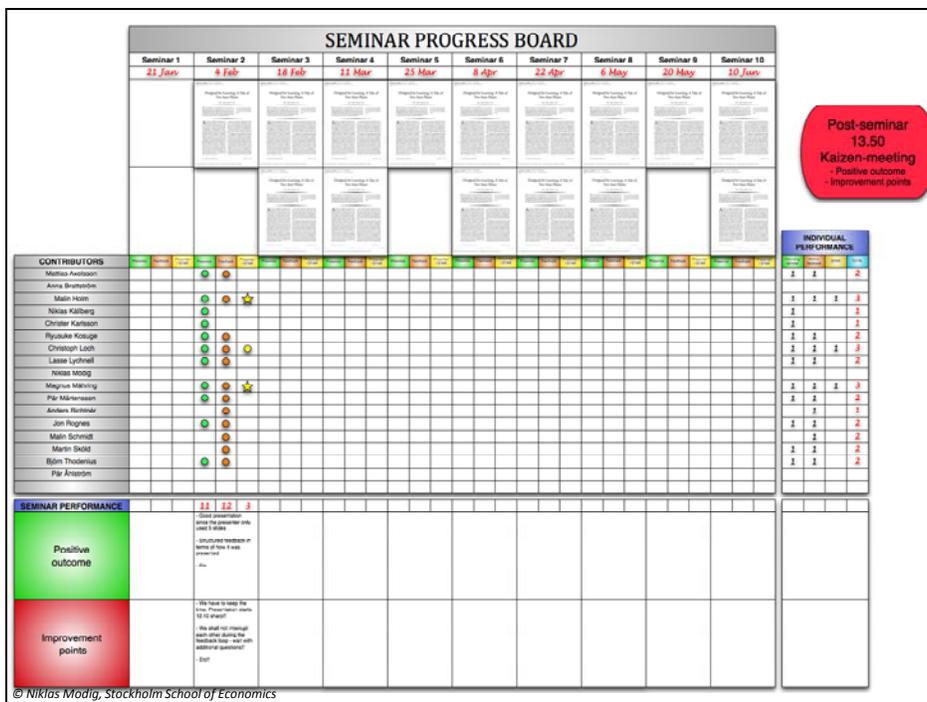


Figure 9.3: Example of Seminar Progress Visual Management Board

The development of internal capability has only taken place in one organisation, where RIW facilitators are administrative staff. In principle, generating a group of individuals from within the business to facilitate the change is another aspect in the successful roll out of Lean. These individuals are generally committed and very enthusiastic about the role. Two other organisations were aware of the need to develop capability within their organisations. However all organisations should consider developing internal capability in order to create sustainability.

9.2.5 Pillars: Establishment

In order to establish Lean, previous work has highlighted the need to focus on the monitoring of the end-to-end process related to service delivery and also managing the variation and demand.

Currently there is very little collecting and monitoring of data across all organisations except one. Process improvement data is being collected in two other organisations, which focuses on the time savings generated as a result of Lean. This information is reported on websites and although there have been significant time savings, there is no information on cost savings generated or on whether there has been a change in culture as a result of process improvement. Furthermore it appears that although one organisation provided examples of trying to manage variation and demand based, there did not appear to be any formal mechanism for capturing demand data (i.e. using visual management) over time and analysing the data to determine trends.

9.2.6 Pillars: Embedding

Problem solving is being undertaken in some way of another in all organisations. This is mainly being done via brainstorming sessions in RIWs, but there are specific examples of problem solving tools being used in other elements of Lean implementations. This includes nominal grouping techniques, fishbone diagrams and 5Ys. However the overall engagement with problem solving is still fairly low across most organisations. There was also a lack of small or recurring recording problems using a visual management tool such as 3Cs (Concern, Cause and Countermeasure) (see figure 9.4). Therefore, whilst general problems encountered in processes may be being resolved in Lean implementations, common day-to-day issues may not be fully resolved, may be being resolved many times across different teams or that trends in occurrence of issues and problems may not be recognised.

Problem Solving - 3Cs					
Concern	Cause	Countermeasures	Date	Status	Owner

This is the basic method of Problem Solving used by teams to address day-to-day issues affecting performance. The process has 3 steps:

Concern:
Define the Problem clearly – doing this is essential, as it will help to ensure that you don't try to put the whole world right in one go.

Cause
Think carefully – try to get to the "ROOT CAUSE" of the problems, rather than just dealing with the symptoms.

Countermeasures
Try to fix the problem once and for all, but if that's not possible, then do everything you can to mitigate the impact on the customer.

Figure 9.4: Example of a 3Cs Document

More training and development may be needed on problem solving techniques. The Lean teams and senior managers have a particular role in ensuring that an ongoing structured problem solving environment is created. Also, the development of a 'problem knowledge' portal could be a useful resource where problems and their solutions are captured so that common lessons and learning can be transferred easily and more quickly between departments and teams.

As part of the training, visits have been or are being organised to other Lean organisations including HM Revenue and Customs and HM Courts Service. Where this has occurred interviewees spoke of the usefulness of these visits saying that by visiting and seeing other organisations, they had seen Lean working and this had a big impact and influence. This 'go and see' approach should be a key part of the training and development for all staff but particularly the managers so that opportunities for transfer of learning can be achieved. Managers should also develop learning skills on how to challenge positively to further support a culture of continuous improvement. Leadership development and commitment are crucial, especially for those managers who have not embraced Lean.

9.2.6 Roof: Sustainability

In terms of the future and sustainability of Lean, all organisations acknowledged that they were on a journey of continuous improvement that would never end. More work has to be done on creating a whole systems approach, embedding improvement behaviours and robust processes and creating a groundswell of opinion to change the culture of the organisation. The evidence indicates that the majority of staff implementing Lean or who have been involved in Lean realise that the journey is a long one which still needs time to become embedded.

Appendix 1: Tips for Implementing Lean

The points and bullets below outline various factors and elements which should be considered when implementing a Lean programme. The material within the main body of the report and the House of Lean (figure 9.1) will also help in deciding what and how to implement Lean in Higher Education.

Remember that the key principles of Lean are:

1. Value
2. Value Stream
3. Flow
4. Pull
5. Reduction of Waste

Focus on outcomes from Lean which should include:

- Improved Efficiency
- Increased Problem Solving
- Standardisation of Work
- Streamlining Processes
- Reducing Waste

Decide on your aim of the Lean programme. Examples of aims are below but just focus on 2 or 3:

- Achieve team targets more
- Empower staff to make decisions
- Highlight poor performance
- Improve customer satisfaction
- Improve office layout
- Improve senior manager visibility
- Improve staff motivation
- Improve staff work/life balance
- Improve the quality of work
- Improve team working
- Increase job satisfaction
- Increase problem solving
- Increase productivity
- Make processes more efficient
- Make processes more flexible
- Recognise good performance
- Reduce backlogs
- Reduce costs
- Reduce errors
- Reduce wasted time
- Release capacity
- Standardise work

Activities that you should consider doing as part of a Lean implementation include:

- Front line staff training on Lean
- Problem solving events
- Rapid improvement workshops or events
- Senior manager training on Lean
- Stakeholder /customer events
- Training in house Lean facilitators
- Using external Lean experts to implement Lean
- Value stream events
- Visits to other Lean organisations

All levels of staff should be involved in a Lean implementation including:

- Academic staff
- Administration staff
- Associate Deans / Deans
- Clerical staff
- Pro-Vice Chancellor
- Senior administration staff / Department Heads
- Staff from support departments
- Subject / Group Heads

The tools and techniques which can be used in a Lean implementation are:

- 5S / Red Tagging
- Daily team meetings
- Problem solving charts (3Cs, fishbone)
- Problem solving meetings (root cause analysis, hubs)
- Process Mapping
- Spaghetti diagrams
- Standard work instructions
- Value stream mapping
- Visual Management / Whiteboards
- Workflow reorganisation
- Workplace Audit

Remember to draw on external support and expertise from:

- Customers (students, external business)
- Wider university expertise (Business School, research centre)
- Government Departments (HMRC, NAO)
- External consultancy
- Suppliers

Main elements for a successful Lean implementation are:

- Adequate resources committed
- Bottom to top ownership of change
- Senior management commitment
- Good communication
- Hands on approach to change

- Implementing quick wins
- Involvement of relevant staff
- Provision of relevant training

The main problems/issues which needed to be recognised and managed are:

- Culture of no change
- Lack of accountability
- Lack of adequate resources
- Lack of ownership of change
- Lack of senior staff commitment
- Lack of training
- Little time allowed for implementation of changes
- Poor communication
- Staff resistance
- Suspicion of change

Communication is critical and multi-modes should be used including:

- Emails
- 'Grapevine'
- Internet / Intranet
- Individual / Team Meetings
- Memos
- Newsletters
- Notice Boards
- Posters advertising events

As a result of Lean:

- There should be a clearly understood link between the implementation of the Lean programme and the long term strategy of the Business School and / or University.
- Senior managers should be more committed to increasing performance.
- There should be a group of internal Lean facilitators who can sustain Lean over the longer term.
- Staff should focus more on improving the end-to-end processes.
- Improved services should meet customer requirements better and support an increase in National Student Survey (NSS) scores.
- Managers should be able to better match staff resources to workload.

Appendix 2: Interview Schedule for Case Studies

Introduction

Thank you for agreeing to take part in this study that AtoZ Business Consultancy.

We are especially interested in your understanding of the Lean programme, the impact it has had and how the changes that have taken place can be sustained over the longer term. The interview will last approximately 45 minutes.

- Use of tape (check interviewee is happy with this – explain for our purposes only!)
- Open by inviting interviewee to briefly describe their job and role (also note the site, the date, interviewee full name and job title)
- Make a note of any documents that may be needed i.e. data showing levels of quality and productivity improvements
- Try to get examples all the way through.

Background information to be obtained from each organisation:

- When did the Lean implementation start in the organisation?
- How many processes have been involved in the Lean implementation?
- What resources have been committed to Lean?
(Number of change agents, other external / internal staff involvement, costs)
- What % of personnel on site have been involved in Lean?
- Which Lean tools and techniques have been used?
- What training has been carried out in Lean?
- What monitoring and measurement data are you collecting and how are you using it?

A. Perceptions and Understanding

1. Is there a need to improve the workings within the Business School/ University? If so, why:

- What improvement methodologies are being used to improve efficiency?
- Are you aware of other improvement methodologies available to improve efficiency?

2. What is your understanding of the aims of the Lean programme?

3. How is Lean being defined for the purpose of the programme?

4. Has this Business School/ University had previous experience or of change / improvement programmes?

- Have you had any previous experience or training in Lean / other process improvement methodologies?

Pick-ups

- *Recognising and understanding the need to improve*
- *Lean: standardisation of the process, reduction of waste, productivity and quality improvement, improve customer service.*
- *5 principles of Lean: flow, pull, customer focus, value chain and perfection.*
- *Other methodologies; continuous improvement, Six Sigma, BPR, EFQM.*

B. Implementation and Impact of Lean

5. What has your involvement been with the Lean programme?
6. What would you describe as the quantitatively and qualitatively impact of the Lean programme?
 - What has been the impact on performance? How has this been measured?
 - What qualitative outcomes have occurred as a result of Lean?
7. What elements of the Lean programme do you see as having been successful?
 - What critical factors ensured the success of these elements?
8. What elements of the Lean programme have you had particular problems or issues with?
 - What factors contributed to these problems / issues?
 - How have these issues been resolved?
9. To what degree are the Senior Management (Dean, Pro-Vice-Chancellors etc.) of the Business School/ University engaged in the programme?
10. Are tools such as problem solving and visual management being used?

Pick-ups

- *Trained, involved in workshops, implementation and follow up work.*
- *Performance / productivity increased, throughput increased, quality increased, capacity released.*
- *More job satisfaction, more recognition, more motivated, standardised work, reconfigured layout, better teamworking, recognition of 'failure demand'.*
- *Success factor or barrier (senior leadership commitment, communication, lots of resources, given time to change, provision of training, culture of change, more staff accountability, professional vs. managerial conflicts).*
- *Which staff more responsive / engaged and why, impact on teamworking, differences between Lean and non-Lean teams, working differently as a consequence of Lean.*
- *Problems / issues more visible and acceptance of problems by all staff, all staff more willing to solve problems and more able to solve problems.*

C. Organisational Readiness and Ability

11. Do you see a link with the Lean programme in the Business School / University and the strategic direction or corporate strategy of Business School / University?

12. How has the Lean programme been communicated at the start and during the implementation?

13. Would you say the perception or understanding of 'process' has changed? Are departments / sections working differently?

15. Who is your customer? What are their requirements?

- How has Lean effected customer interaction?

16. Is there more of an understanding of capacity and demand?

- Has Lean changed the working patterns of staff so that in times of increased demand, more staff are working?

Pick-ups

- *Communication strategy, type and frequency / familiar with impact in other universities / success stories from other universities / similar issues other universities have encountered / spreading of knowledge / best practice.*
- *Senior leaders more visible, engaged in Lean activities, supportive of changes.*
- *Recognition that part of a wider process and not in isolation.*
- *Failure demand recognised – not being able to meet customer needs*
- *Value work recognised – aligned capacity and resources to customer needs*

D. Sustainability

17. Do you see a future for Lean within this Business School / University? If so what?

18. Would you use Lean again? Where and Why?

Pick-ups

- *Will Lean carry on or be replaced with other programmes, less important when savings have been made / no of staff reduced / processes been streamlined / waste removed. Emphasis still on striving for value.*
- *Other processes suitable for Lean*
- *Daily meetings, team hour targets, visual management, problem solving, layout / 5S, teamworking, continuous improvement, exposing poor performers, recognising good performance.*

Appendix 3: Study Team

Professor Zoe J Radnor has recently taken up the position of Professor of Operations Management at Cardiff University after being an Associate Professor (Reader) in Operations Management at Warwick Business School. She has a PhD in Lean Working from UMIST. Her expertise is in increasing awareness of quality and improvement through 'Lean Thinking' ideas, concepts, tools and techniques to front line staff, senior managers and executives (including public sector managers) and also undergraduates and postgraduates students.

Her experience includes lead research and evaluation projects across a variety of organisations including HM Court Services, HM Revenues & Customs, The National Audit Office, Welsh Local Government Association and NHS Trusts. Currently she is:

- Principal Investigator in the Strategic Lean Implementation Methodology for the Health Sector project at Warwick Business School (www.slimproject.ac.uk)
- An Advanced Institute of Manufacturing (AIM) Research Fellow with a remit of looking at business improvement methodologies in the public sector (www.aimresearch.org)

Giovanni Bucci has experience of evaluating projects in both the public and private sector. This includes evaluating the Operational Excellence programme at Warwick Business School, Lean implementation projects in HM Revenue and Customs, HM Revenue and Customs and Scottish Executive, European Commission research projects in healthcare and supply chain management. Private sector experience includes assessing Lean implementation in Unipart and the logistical operations for Jaguar Land Rover and Jessops.

Giovanni has also been involved in evaluations in the NHS. This has involved evaluating the impact of service improvement programmes across NHS Trusts in Scotland and England, evaluating the ability of Primary Care Trusts to develop World Class Commissioning competences and more recently in looking at the adoption and use of forecasting simulation in Primary Care Trusts.

Appendix 4: Bibliography and Websites

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Useful Websites:

- The Association of Business Schools: [http://www.the-abs.org.uk/files//Lean in HE.pdf](http://www.the-abs.org.uk/files//Lean%20in%20HE.pdf)
- Cardiff University: <http://www.cardiff.ac.uk/lean/index.html>
- University of St Andrews: <http://www.st-andrews.ac.uk/lean/>
- Warwick Business School: <http://www2.warwick.ac.uk/fac/soc/wbs/central/oe/>

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