Food Chain Centre

Best practice for your business

RMIF

Red Meat Industry Forum

Cutting Costs - Adding Value in Red Meat

Food Chain Centre
Best practice for your business

Produced in partnership with

RMIF
Red Meat Industry Forum

Red Meat

Sept
2003

Registration Form

To receive future free updates to this pack you must register with the Food Chain Centre.

You can do this in one of three ways:

1. Fax this form back to the Food Chain Centre on 01923 852531 after filling out your details below.

Name	
Address	
Email	
Telephone	

2. Email your details to karen.orford@igd.com

3. Telephone with your details to Karen Orford on 01923 851904

Thank you

Food Chain Centre
Best practice for your business

Produced in partnership with

RMIF
Red Meat Industry Forum

Red Meat

Sept
2003

How to Use this Pack

The pack contains a mix of material on the theme of driving improvement and raising profitability throughout the red meat chain. It spans pig meat, beef and lamb and from farming to consumption.

You'll find a combination of:

- Ideas and information
- Advice, guidelines and checklists
- Case studies, showing these ideas in action

The pack is written for the entire red meat chain so we have a mixed audience in mind. It will therefore contain things you already know, alongside things that you don't. So we've made the design easy to browse through and dip into. You don't need to read it from cover to cover; you can pick out the parts of most interest and value to you.

You may not be as familiar with other parts of the chain as your own and we hope that our total chain approach will help to broaden knowledge.

The pack is supplied in a loose-leaf binder that allows us to supply you with new and updated material. Each issue includes an introductory note, outlining the contents and pointing to areas of particular interest for different audiences.

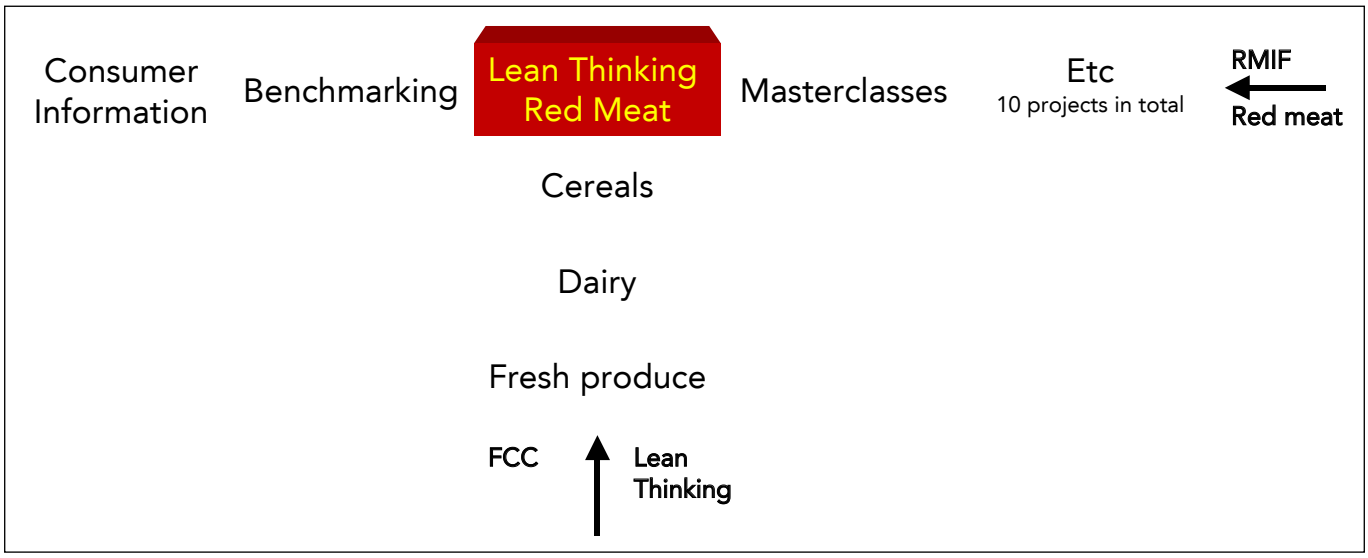
If you think you may be missing any updates, please let us know.

If you would like additional copies contact the Food Chain Centre or download it from our website on www.foodchaincentre.com

Food Chain Centre and Red Meat Industry Forum – Working in Partnership

This pack and the Lean Thinking in Red Meat initiative is a partnership between the Red Meat Industry Forum and Food Chain Centre. We sometimes also describe this initiative as Value Chain Analysis.

The Red Meat Industry Forum oversees ten projects, each helping to improve the efficiency and competitiveness of British red meat, of which this initiative is just one. The Food Chain Centre supports lean thinking and efficiency improvement initiatives across all British agri-sectors including dairy, cereals and fresh produce. The Lean Thinking in Red Meat initiative is therefore a natural place to combine our forces.



The pack incorporates the expertise of both organisations. It has been edited by FCC and financed by RMIF with the help of a grant from the Department of Trade and Industry.

For further information on the organisations:

RMIF	Sharon Ellis - 01908 844710	www.mlc.org.uk/forum
FCC	Karen Orford - 01923 851904	www.foodchaincentre.com

Food Chain Centre
Best practice for your business

Produced in partnership with

RMIF
Red Meat Industry Forum

Red Meat

Sept
2003

Welcome

CAP reform is on its way, ushering in a new era of innovation, market specialisation and swings in international trade. WTO negotiations are likely to result in even further movements towards free trade.

The bad news is that low cost producers from around the world want a bigger slice of our red meat market. And without decisive action, they are likely to succeed. Countries like Brazil and Argentina can produce beef at less than half the cost of their British counterparts.

The good news is that counter measures are possible. With concerted action, we can revitalise the British red meat industry. Part of the answer lies in new product development, branding and niche marketing. Another part lies in how we implement CAP reform, an important area for further debate. But this pack focuses on a third critical element – cost competitiveness.

It might sound like another painful round of belt-tightening, but we think there's a much better way.

We estimate that there is potential for cost saving of up to 10% in the red meat supply chain.

If that sounds far-fetched, consider the following statistics:

- Only 50% of animals classified by MLC meet the target specification for multiple retailers.
- Only 60% of operator time in abattoirs/boning plants typically is spent adding value.
- A 2% fault rate is common for vacuum packing machines in meat processing plants.
- Retail sales forecasts for red meat, three days in advance, are typically only 65% accurate.
- Food distribution lorries spend only 28% of their time on the road and 20% of vehicle miles are empty.
- Retailers lose about 1.5% of their revenue through 'shrinkage', i.e. theft and damage. This is roughly equal to a third of their profits.

These are just some of the cost-saving opportunities. There are many others and they add up to substantial numbers. No wonder people point to the large gap between farm-gate and retail prices. There are many necessary costs in the chain but also many unnecessary ones, spread across all sectors.

But these problems are not unique to red meat and not unique to the UK. Waste occurs everywhere in the world and therein lies our opportunity.

We want to see the British red meat industry make big inroads into the 10% of unnecessary costs and put it to better use, improving competitiveness and profitability.

Of course some businesses are already leading the way, demonstrating that major savings can be extracted through efficient supply chain management.

The secret is to "Think Lean" and eliminate waste in the supply chain. Lean Thinking is a simple philosophy which states that supply chains should dedicate themselves to satisfying consumers in the most efficient way possible.

But the more we've learnt about Lean Thinking and the benefits it delivers to other industries, the more excited we've become. This approach has helped save the British automotive parts industry from the brink of extinction. In some cases it has delivered a 50% cut in variable costs, a 90% reduction in defects and a 75% reduction in inventory.

Lean Thinking is not an instant cure and requires hard work and dedication. It is not revolutionary and is mainly just common sense. But it consistently delivers results and that is why the Food Chain Centre and Red Meat Industry Forum are testing and proving the methods for red meat.

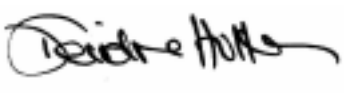
We invite you to find out more. Inside this pack, you'll discover a detailed explanation of Lean Thinking, a list of cost saving opportunities, 'best practice' guidelines and case studies that show how the theory works in practice.

In the first edition of this pack the emphasis is on outlining the opportunities and explaining our methods. We have also started to explore solutions and this will be our main focus in future. There is a great deal more to come.

We hope you find it thought-provoking and we'd love to hear your feedback and suggestions. It will grow as we make further progress, so stand by for future updates.

The pack reports on just one of the Red Meat Industry Forum's projects for the British red meat industry. The total programme provides many opportunities for companies of all sizes to engage in various ways to improve competitiveness. The Food Chain Centre is also supporting other agri-sectors in this way, including dairy, cereals and horticulture.

We hope you share our excitement in the potential for change.



Deirdre Hutton CBE

Peter Barr CBE

Food Chain Centre
Best practice for your business

Produced in partnership with

RMIF
Red Meat Industry Forum

Red Meat

Sept
2003

Issue One – September 2003

Contents

This first issue of the pack contains the following items:

Audience	Features of Particular Interest
All	Find out why we believe that at least 10% of the final red meat selling price could be saved in 'Where to Find Savings in the Red Meat Chain'. Discover some of the secrets to unlocking these savings in 'Are You Measuring Up?' and 'Stepping off the Roller Coaster of Demand'.
Farmers	Read how better information feedback and controls have helped to reduce production costs, reduce variability and improve returns in the Blade Farming case study. Find out what a British beef farmer learnt about his competitors on a trip to South America in the 'What can we learn from Argentina?' case study. If you thought that all South American farming has to offer is lower prices, prepare to think again. Learn how an Australian farmer seized the initiative, developed a new way to present meat to consumers and opened his own chain of stores in the Polkinghorne case study.
Abattoirs/Processors	Discover how the Lean Thinking philosophy has delivered massive benefits in other manufacturing industries, in the "Fresher, Simpler, Closer" section. Consider how best practice from other manufacturing environments can benefit red meat in Are You Measuring Up? Discover how an overseas abattoir achieved 20% higher productivity than its British counterparts in 'What can we learn from Argentina?'.
Retailers & Caterers	Find out what benefits Asda achieved from lean thinking and what prompted Chris Brown of Asda to say "It turns the term – partnership – from a nice to have concept into a reality' in the Asda/Dalehead/BQP case study. Discover a novel, consumer-centric approach to categorising and presenting red meat in the Polkinghorne case study. See how McDonalds have used Lean Thinking to achieve both low consumer prices and profitable suppliers.

There is a lot more to come in future updates, including items focused on other parts of the chain not listed above. In particular, stand by for additional improvement guidelines and more case studies.

Future Material

Here is some of the new material that we are lining up to release over the next six months.

- The full story from our Whitbread & Chitty Foods case study exploring beef supply to the catering industry.
- Our third sponsored case study involving lamb supplied to Sainsbury's by Lloyd Maunder.
- The results of our trials to adapt and apply 'lean manufacturing techniques' at farm level.
- A survey of best practice in exchanging information between farm and abattoir and the benefits this delivers.
- Advice on performance measurement for livestock farms.
- Advice on how to measure operator 'value added time' for processors.
- At least one further case study on creating new consumer value.

This will be followed by a further stream of outputs over the next two years.

Please ensure that you are registered with the Food Chain Centre to receive these free updates to your pack.

Project Update

This is the first release of our pack. We are currently eighteen months into a three year project to test and prove the Lean Thinking approach in red meat and so the pack contains our early conclusions.

Across the three years, we will apply the Lean Thinking methods to ten red meat chains in total, covering a mix of species, distribution channels and sizes of business.

Three of our chains are now nearing completion and these span lamb, pork and beef. Two are supermarket chains and the third, in beef, is a catering chain. This issue includes a complete case study of the pig meat chain (Asda/Dalehead/BQP) and a partial one for beef ('What can we learn from Argentina?').

As we progress, we will involve auction marts, organic production, specialist butchers, livestock traders and meat wholesalers.

Chains 4 and 5 are lined up and ready to go.

For project updates, see our websites:

- www.foodchaincentre.com
- www.mlc.org.uk/forum

At this early stage we are clear that Lean Thinking transfers easily to abattoirs and meat processing plants. Each of our three projects has identified quick wins in these plants and each company is making changes and beginning to benefit.

The projects have also identified large-scale opportunities to reduce costs and improve sales across chains. They require a true partnership approach. These opportunities are far-reaching and complex to achieve but represent the biggest potential prize.

To reap these savings, the participants will need to:

- share more information
- pool their expertise
- collect joint performance measures
- improve their understanding of cause and effect in the chain
- trace problems back to their source
- work together to find permanent solutions to these problems
- build trust
- develop longer term relationships

All parties can benefit substantially from this approach, especially if benefit-sharing arrangements are put in place.

Our current project focus is to adapt the Lean Thinking techniques to be more applicable to farm environments. This takes some work because they were originally developed for manufacturing and of course farming has some very different characteristics. However, we do strongly suspect they can be modified to help identify on-farm cost savings. We will report on our progress in the next update.

In the course of this programme, we have discovered many interesting examples, both in the UK and overseas of Lean Thinking in action. Not all of the businesses involved use the term 'Lean Thinking' but that's not really important. Anyone that is applying a particularly efficient and customer focused approach to business is interesting to us. So we have added some of these examples to our own project case studies in this pack. If you know of any further good examples, we'd be delighted to hear from you.

We believe that this pack will need to be reinforced by other forms of communication in order to prompt the widest response from the red meat sector. The RMIF is exploring various ways with industry leaders of how to disseminate the opportunities for saving costs and enhancing products to achieve 'critical mass' in the industry.

One of these is a major industry conference in London on 6 November 2003. Delegates will hear how industry is responding to the challenges described in this pack. For details see www.redmeatindustryforum.com

Acknowledgements

FCC and RMIF would like to thank the following people and organisations for their help in compiling this first issue of the pack. Helen Browning paid a particularly valuable role as our chief advisor.

- Helen Browning, Eastbrook Farm Organic Meats
- David Birrell, Unilever
- Richard Cracknell, ABP
- David Disney, Farmer
- Steve Ellwood, HSBC
- Kevin Hawkins, Safeway
- Andrew Hodgson, Farmer
- Richard Maunder, Lloyd Maunder
- Tim Bennett, Richard Haddock, Robin Tapper and Kevin Pearce, NFU
- John Roe, Sainsbury's
- Matt Simister, Tesco
- Freida Stack, Consumer Consultant

- AByP and El Descanso Cattle Ranch
- ASDA
- Blade Farming
- British Quality Pigs
- Cardiff Business School
- Chitty Food Group
- Dalehead
- Defra
- Esca Food Solutions
- McDonald's Restaurants
- MLC
- Polkinghornes
- Shearwell Data
- Southern Counties Fresh Foods
- Writtle College

Food Chain Centre
Best practice for your business

Produced in partnership with

RMIF
Red Meat Industry Forum

Red Meat

Sept
2003

Fresher, Simpler, Closer

Our Approach to Creating Efficient Red Meat Chains

"Farming and food businesses, like any others, have to be efficient. Efficiency does not automatically mean becoming more intensive. It does not necessarily mean getting larger. It certainly does not mean cutting corners on environmental and social responsibilities. What it does mean is maximising profit by optimising inputs and outputs - not necessarily maximising output. It means being ruthless in cutting out unnecessary cost."

Extract from, Farming & Food –

A Sustainable Future (Sir Donald Curry)

Almost everyone would agree that efficiency is vital for business success but this is already a high priority for the food and farming industry. What are the Food Chain Centre and the Red Meat Industry Forum doing that is new and different?

Lean Thinking

"Lean Thinking has been applied in many different industries, helping to lower costs and improve profits. The three words, 'fresher, simpler, closer', capture the idea of Lean Thinking in the food chain."

Professor Dan Jones, Founding Director of the Lean Enterprise Research Centre and Director of the Lean Enterprise Academy

Our approach is to test out, for the first time in the red meat industry, the ideas and practice behind 'Lean Thinking'. Lean Thinking provides a way to do more and more with less and less – less human effort, less equipment, less time, and less space – while coming closer and closer to providing consumers with exactly what they want. Stripping out the waste and focusing on the value.

The approach has been around for some time and is based on practices first developed in the Japanese motor industry. However, some of these ideas were borrowed and adapted from food retailing and so the cycle of ideas continues to turn.

Lean Thinking has become widespread in UK manufacturing and, according to a survey by McKinsey, it is what sets apart the best performing manufacturers.

Many companies that have embraced Lean Thinking have delivered some dramatic improvements over a three year period including the following:

- 90% reduction in defects
- 90% reduction in response time to customer orders
- 75% reduction in inventory
- 50% reduction in space
- 50% reduction in variable costs

The Lean Enterprise Research Centre at Cardiff Business School is world renowned in the application of Lean Thinking and their work demonstrates that businesses can definitely use Lean Thinking to improve profitability.

But Lean Thinking is not a quick fix or a "miracle cure". Instead, it promotes continuous improvement in which businesses constantly strive for better performance. As with any major initiative, it can only work with the full support of senior management.

Application to Red Meat

Lean Thinking may benefit manufacturing and has also been successfully applied to other sectors including construction, healthcare and raw materials. It has worked in other food sectors but can it help the red meat industry?

This is the question that our pilot projects are designed to answer. With the Food Chain Centre, the Red Meat Industry Forum and the Lean Enterprise Research Centre working together, we are examining 10 different red meat chains in detail, from farm to shop or restaurant. We are testing how much money can be saved when the whole chain pulls together.

The projects cover a broad mix of chains including:

- Pig, beef and lamb
- Retail and catering
- Large and smaller scale
- Simple cuts of meat and more processed products
- Conventional and organic production

The red meat industry has some unique features that challenge the Lean approach. These include:

- Dis-assembly, i.e. dividing one raw material (the animal) in to many end products, rather than assembly as in most industries.
- The length of the production cycle at farm level, i.e. the time it takes to bring one animal from conception to maturity.
- The environmental factor – in that farming also maintains the countryside and thereby serves a second industry, the tourist or leisure sector.

But Lean Thinking is highly adaptable and we believe that our pilot studies will prove its value in red meat.

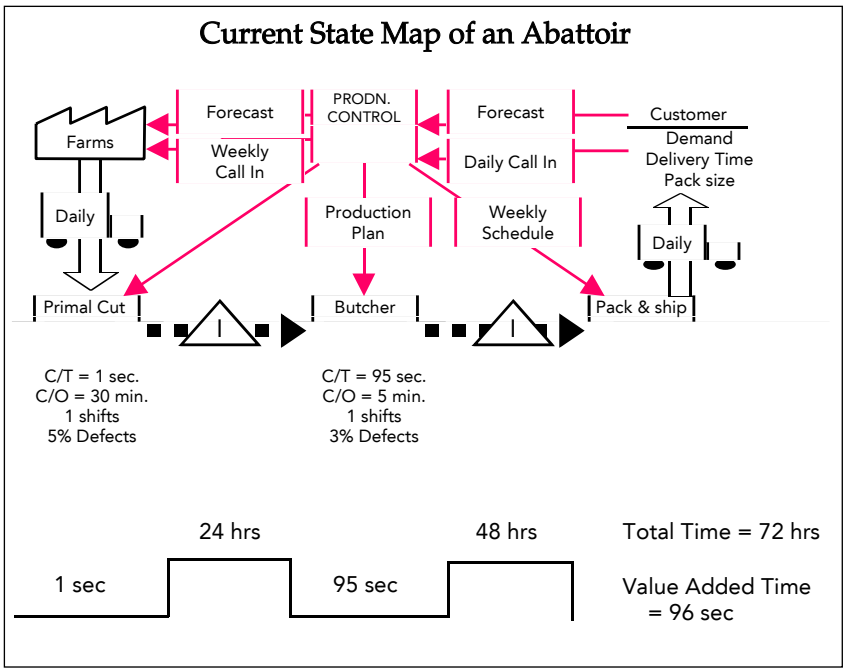
Lean Projects

The Cardiff team are not typical consultants and they are not red meat experts. But they are expert facilitators; they guide teams drawn from participating businesses and help them see the chain in a new light.

Cardiff Business School helps each team to draw a flowchart of the current state of affairs, making sure to capture what is actually happening ('warts and all') and not what is supposed to happen.

Each project starts from a recognisable product that consumers purchase, for example a lamb chop or a beef steak. The charts then capture two flows: orders travelling back from consumers and products travelling forwards from their raw materials, i.e. from the farm.

These charts can be very detailed and complicated. Here is a simplified example, for just the abattoir but also showing its links with suppliers and customers.



The chart captures some key information:

- Flow of physical goods (in black)
- Flow of information (in red)
- Defect rate
- Value adding time (for example cutting, boning and trimming)
- Total elapsed time (between the delivery of an animal and despatch of the first products from its carcase)

The Cardiff facilitators help each project team to investigate some particular issues, including these:

- Do products flow through the chain as quickly as possible (allowing time for maturation) or are there unnecessary hold-ups?
- Do some activities add more cost than value? In which case what can be done about it? In particular, are there activities that add absolutely no value to the consumer that can just be eliminated?
- Have people learned to live with errors, treating them as inevitable or are they constantly striving to eliminate them?
- Are the right quality tests in the right place in the chain and are they working effectively?
- Are the right performance measures in place? How timely are these measures – do they allow problems to be identified and solved immediately or do they lag too far behind?
- When problems are identified, are they traced back to their source and dealt with or do the same faults keep re-occurring?

- Is the right information shared along the chain? Is it accurate and passed on quickly? How good are the sales forecasts? Do they help suppliers plan their operations efficiently in advance?
- Are there any ordering and stock holding policies that impose heavy costs on suppliers? For example, is a smooth pattern of customer demand converted into a very lumpy pattern of orders?

The team then draws a second flowchart of how they would like the chain to be in future, a more efficient chain without so much waste or 'leaking of money'. Finally, they draw up an action plan of how to work in partnership to get there.

"This approach is excellent for building team spirit. It recognises that everyone can come up with solutions, not just management."

Richard Maunder, Director, Lloyd Maunder Ltd

A huge variety of actions can arise from these projects but here are some common examples drawn from previous work:

- Re-designing the layout of part of a factory or farm.
- Creating a team of engineers and operators to focus on reducing faults at a particularly troublesome machine.
- Extra training to help staff become more versatile.
- Testing for quality in a new and different way.
- Agreeing to exchange information that is currently treated as secret.
- Collecting new performance measures and sharing these more widely.
- Making better use of information technology.
- Working in partnership, to improve the accuracy of forecasts.

It is impossible to reach perfection in a single bound and so the follow up to any project with the Cardiff team is a 'Continuous Improvement Plan' aiming to revisit the issues and save more money each time.

Our Principles

The approach we are adopting to apply Lean Thinking to red meat is underpinned by a number of principles.

1.	Think of Red Meat as a Value Chain
2.	Put Consumers First
3.	Work in Partnership
4.	Systematically Identify and Reduce Every Form of Waste

1) Think of Red Meat as a Value Chain

Most people are familiar with the term "Food Chain" – the series of steps from 'farm to fork'. But the Food Chain is also sometimes described as a Value Chain and this term is used to focus on the financial equation.

As a product moves along the chain, it incurs cost but also rises in value. If more value is added than cost, then the product is profitable to supply.

So the financial objective for the entire red meat chain is to generate profits by creating a large and positive difference between retail price summed across a complete carcase and the total cost of its production (breeding, rearing, slaughtering, processing etc.) plus distribution (transport, storage, retailing). This is achieved both by maximising value and minimising cost.

"The idea of a Value Chain is a simple principle to understand, but it can be a very difficult one to deliver. Lots of things can get in the way."

Matt Simister, Category Director, Meat, Fish and Poultry, Tesco

All of the stages are inter-dependent and our approach is to examine the whole chain as an opportunity for improvement and not just the separate parts.

Management effort is traditionally focused down to a single department or perhaps to a whole business that may produce many different products. By taking a different view, that of a complete chain for a particular product, many new improvement opportunities may arise.

2) Put Consumers First

The real arbiter of value is the consumer. Shoppers are the ones who make the final decision on value when they select products from the shelves.

Our second principle therefore is to put consumer needs to the forefront of our thinking. We need to know what consumers see as value, so that we can understand what activities are needed in the chain.

Value can be determined by putting yourself in the position of the consumer and asking whether you would pay less for the product or be less satisfied with it if a given step and its necessary time were left out.

Consumers see value in various product attributes. Each consumer has a personal view of value. For example, some but not all people, will pay more for extra-matured or organic beef. This creates different market segments.

In another section in this pack, we describe shopper and consumer perceptions of value in red meat because this vital part of the equation is not always a simple matter.

3) Work in Partnership

All businesses can benefit if they co-operate in the joint management of the value chain.

"I see great opportunities for improved relationships and partnerships between farmers, processors and retailers. Once you have established trust, everyone in the chain can focus their energies on improving their businesses and working together more effectively."

Matt Simister, Category Director, Meat, Fish and Poultry, Tesco

"This approach is a very effective way to develop meaningful co-operation along the chain. It starts to turn the term 'partnership' from a 'nice to have' concept into a reality."

Chris Brown, Head of Agriculture, Asda

Many improvements can only be made if managers take a fresh look at the whole chain, work in partnership across traditional boundaries and commit to sharing the benefits.

Sharing of benefits is vital so that everyone wins (including consumers), creating enthusiasm for the next round of improvements.

Trust is vital to this process. It can only be built gradually but can be betrayed and destroyed in an instant.

4) Systematically Identify and Reduce Every Form of Waste

Lean Thinking helps to track down the many ways that money is currently wasted in the chain and points the way towards solutions. A separate section in this pack itemises a long list of wastes in the red meat chain.

We define waste as any activity that adds costs without adding at least as much value. The Lean approach zooms in on wasteful activities and considers how to reduce or eliminate the waste, preferably without any major expenditure.

This is a continuous task, prioritising improvements and working towards the ideal of a completely efficient chain without any form of waste.

Conclusion

There is nothing revolutionary or fiendishly clever about Lean Thinking. It's really just the application of common sense. So why can it be so powerful in practice? Because most people have to focus on the day to day operations and rarely have the chance to take a step back, re-assess the whole chain, apply some simple analysis, ask some probing questions and consider 'is there a better way to run all of this?'

When people follow this approach it is encouraging just how much scope they normally find for improvement, even in the best run businesses.

"We don't believe in saving cost by cutting corners, reducing quality, damaging the environment or exploiting any members of the chain. There are better ways to find savings through the reduction of waste."

Jon Woolven, Food Chain Centre Director

So finally, a reminder as to why we call this approach 'Fresher, Simpler, Closer'.

- **Fresher** because an efficient chain is fast-moving so that products reach the shelf in peak condition.
- **Simpler** because an efficient chain is streamlined without any unnecessary activities.
- **Closer** because an efficient chain in many cases reduces the distance product is transported.

A fresher, simpler, closer red meat chain provides a better service for consumers and can deliver higher profits for everyone concerned.

Food Chain Centre
Best practice for your business

Produced in partnership with

RMIF
Red Meat Industry Forum

Red Meat

Sept
2003

What does Value in Red Meat mean to Consumers?

Lean supply chains add maximum value at minimum cost. The concept of cost is fairly straightforward but what about value? What exactly is meant by value and how can it be measured?

Value is defined by the decisions of shoppers and consumers. There is a subtle difference between the two. Whilst everyone is a consumer, only some members of the family might be shoppers. However, consumers express their views to shoppers in the family and so satisfying consumers is the key to sales.

Shoppers hold the ultimate power in the chain. Their purchasing decisions determine which retailers and which suppliers are rewarded with revenue.

This point is fundamental when considering cost and waste in the food chain. Ideally, every single activity in the chain should add value to consumers. A tough way to test for this would be to show each activity to consumers and ask if they feel willing to pay for it!

If activities do not add value to consumers then they are ultimately wasteful and so anyone who can deliver the product without this extra cost will have a competitive advantage. It is also possible to create new value by adding extra activities, for example by marinading a product. However in doing so, it is vital to ensure that the added value exceeds the extra cost.

"One of the great weaknesses of most Lean implementation programmes is that value is defined by the company or their consultants rather than the customer."

Lean Profit Potential, Hines, Silvi & Bartolini

Producers and retailers can easily fall into a trap when considering value.

- Wishful thinking – believing passionately in a particular way of doing things and therefore assuming that consumers must agree.

- Defensiveness - failing to accept that an established activity is not genuinely valuable and is really a waste of time.
- Blinkered thinking - assuming that one's own personal contacts are representative of all consumers, whereas they are almost always biased towards one section of society.
- Failing to keep up with developments – not recognising that society is evolving rapidly and so are consumer demands. For example, it is anachronistic now to think of shoppers as 'housewives'.

So there is no substitute for regular and robust consumer and shopper research. A wide range of detailed consumer information is available free to the red meat industry from the Red Meat Industry Forum via their website: www.mlc.org.uk/forum.

How do Shoppers Choose?

Shopper psychology is a complex and developing subject. Purchasing decisions are often sub-conscious and shoppers sometimes have great difficulty in explaining why they made a particular choice. We can all be influenced by advertising and various display techniques in store, but only to a certain extent. Ultimately, the products must satisfy us if we are to buy them repeatedly.

MLC conducted an in-depth survey on how shoppers choose red meat in 2002 and a report "The Shopping Decision Tree" was published as part of their Meat Market Insights Series.

IGD also studies shopper psychology and believes that some general rules apply:

1. Shoppers consider value whenever they make a purchase, although this is often a fleeting and sub-conscious judgement.
2. Every person's mind works slightly differently and judgements on value are personal.
3. Different things appeal to different consumers and at different times.

Sometimes it's said that "shoppers just buy on *price*" but that's too simplistic.

Shoppers almost always consider price when making a purchase decision, but they also weigh it against *quality* to decide whether a product is good value.

Value = Quality/Price

People often also factor *time* into this equation as if it were an extra cost. So they will only drive further to reach a cheaper shop if the cost savings outweigh the extra time taken. And they might pay more for a convenience food product that saves time in the kitchen.

A beefburger and a sirloin steak can therefore be considered of equal value (as can a Skoda and a Rolls Royce) provided that the difference in quality balances the difference in cost.

However each person has a limited budget and may put an upper limit on the price they are willing to pay.

So quality is something that a customer is willing to pay extra for. There's no point in developing a supposedly superior product, unless sufficient consumers agree and are prepared to pay more for it.

In red meat, there are various attributes that influence choice and that shoppers are willing to pay for. These include:

- Texture, taste and aroma
- Convenience
- Shape, size and flexibility
- Packaging
- Service
- Information and advice
- Reassurance and traceability
- Local production
- Storability (e.g. shelf life, freezability)
- Animal welfare
- Nutritional content

Activities in the chain that contribute towards these attributes are therefore 'value adding'. Activities that do not deliver a consumer benefit are just cost adding and therefore candidates for elimination in any lean improvement exercise.

The attributes are not of equal significance and in the mass market it is taste, convenience and price that predominate.

However, people have varying lifestyles, incomes and needs and these affect what is most important to them. For instance a wealthy and busy person might put a particularly high value on saving time.

Personal beliefs and attitudes differ. Some are particularly concerned about animal welfare, others by the nutritional content of food and still others by the place of origin.

To complicate things further, the same person may take a different view at different times. People think differently when eating out and eating in. On special occasions, shoppers are prepared to pay more for the finest quality.

So some people will pay extra for particular attributes at particular times, whereas others will not and this results in a series of nice or differentiated markets.

We suspect that many more opportunities exist in red meat to create extra consumer value and new niche markets by accentuating one or more of these attributes. See our Case Studies for successful examples.

Product Attributes

Each product attribute is a complex subject in its own right and much more information is available from MLC. See www.mlc.org.uk for details. Here we briefly touch on each theme.

1. Texture, Taste and Aroma

Texture, taste and aroma are vital ingredients of quality but shoppers often find it hard to judge them in advance. They mainly estimate from the appearance of the meat but as we all know, this is not an exact science and people can make contrasting judgements.

2. Convenience

The expression "time is money" applies to most people, many of whom will pay substantially more to save shopping, preparation or cooking time.

The drive towards convenience is one of the most pronounced consumer trends. According to research conducted by Geest the average time taken to prepare a main meal has fallen from 60 minutes in the 1980's to 20 minutes today.

3. Shape, Size and Flexibility

When it comes to red meat, one size doesn't fit all. Shoppers like to have a range of sizes to choose from according to individual recipes and appetites.

4. Packaging

Packaging helps to preserve products and can make them easier to transport. It also provides a form of portion control. Many people like to inspect meat carefully before buying and good packaging helps to do that.

The value and convenience of packaged red meat products means that they greatly outsell traditional counter service.

5. Service

Nonetheless, the shopping experience is an important factor and many people will pay extra for a store that provides friendly and helpful service.

6. Information and Advice

According to research by the Food Standards Agency:

- 75% of people look for best before dates or cooking instructions on pack.
- 70% of people study ingredients (on some products, e.g. ready meals).
- 60% sometimes look for nutritional information (e.g. calories).
- 13% look for ethical information (e.g. production method).

Consumers also appreciate off-label information e.g. recipe leaflets.

7. Reassurance and traceability

With some high profile food scares in the past, many consumers welcome assurance about origin, production and handling methods. This might be through an assurance scheme or a brand name.

Organic food provides extra reassurance to some consumers and may have taste and texture benefits too.

8. Local Production

YORKSHIRE BEEF Limited

Locally produced food is a strong selling point for some people. In fact most consumers prefer their meat to be local if directly asked, although a much smaller proportion actively seek out local products. So a challenge for the British red meat industry is to convert this somewhat vague sense of consumer loyalty into something more concrete.

The term 'local' cannot be defined precisely - there are different degrees of 'localness' ranging from European, through national, to regional and district. 'The more local the better' reflects one view, although others are fully satisfied with a national product.

Quality may also be associated with other non-local places of origin. Parma ham is one example.

9. Others

Other factors important to some consumers are storability, animal welfare and nutritional content.

- Shelf life is a key influence of shopping decisions and any process that can extend shelf life (but without any negative connotations such as certain preservatives) is valuable to consumers.
- Products can be differentiated through varying degrees of welfare, as demonstrated by the egg industry, but this requires careful explanation and a long term information campaign.
- A recent trend is to fortify foods or otherwise provide additional nutritional benefits. This has not been applied in a major way to red meat but may increasingly be done so in future.

Consumer Attitudes to Waste

The opposite of value is waste and consumers also have strong views about bad value and waste.

Elements of waste for consumers can include:

- Fat
- Bone
- Toughness
- Inconsistency
- Excessive packaging
- Lack of availability (products not on-shelf)

According to IGD research, most consumers can recall occasions where they had been disappointed with red meat. This illustrates the opportunity for industry to reduce instances of these problems, improve satisfaction and increase sales.

However, one person's value can be another person's waste. For example, some prefer their chops to include fat and bone. It reinforces the need for the industry to provide choice.

What Should Producers do about this?

The Lean philosophy involves taking a single-minded view of value, focusing the whole chain on what matters most to consumers, cutting out activities that don't add value and sometimes adding activities that do. But given that views of consumers vary, a vital first step is to choose a target market.

Examples might include mainstream supermarket cuts, supermarket premium range, Q Guild butchers, ready meals, fast food, family restaurants, premium restaurants or exports to a particular country. Each of these markets has a different value equation.

Step	
1	Identify a target market
2	Understand what really matters to satisfy consumers in that market
3	Gear everyone in the chain to maximising consumer satisfaction at the lowest possible cost

This may seem like a simple and obvious formula and yet in practice many things can get in the way including insufficient consumer understanding, lack of market focus and poor communication through the chain.

Each of these steps presents a separate set of challenges and the main emphasis of this pack is on step 3. There are many other sources of help for the first two steps and both MLC and IGD provide extensive research in this area.

An extra complication applies for red meat, because each animal/carcase may supply several, very different end markets. So a balance and compromise between target markets is needed. But the general principle of identifying value, maximising it and minimising cost remains.

Food Chain Centre
Best practice for your business

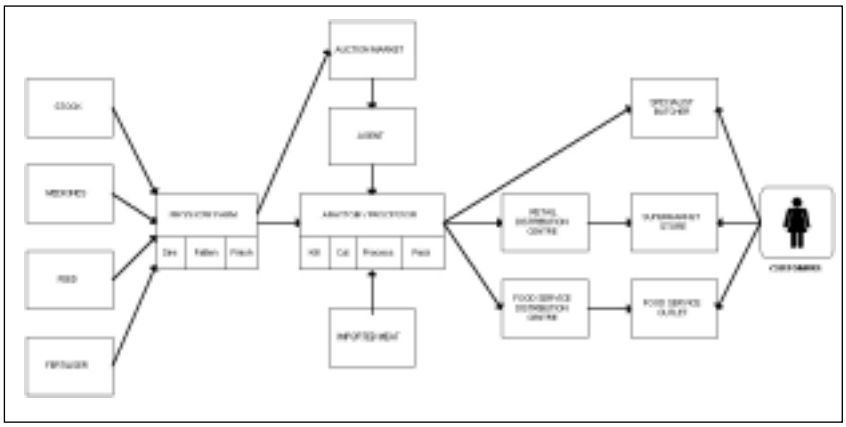
Produced in partnership with

RMIF
Red Meat Industry Forum

Red Meat

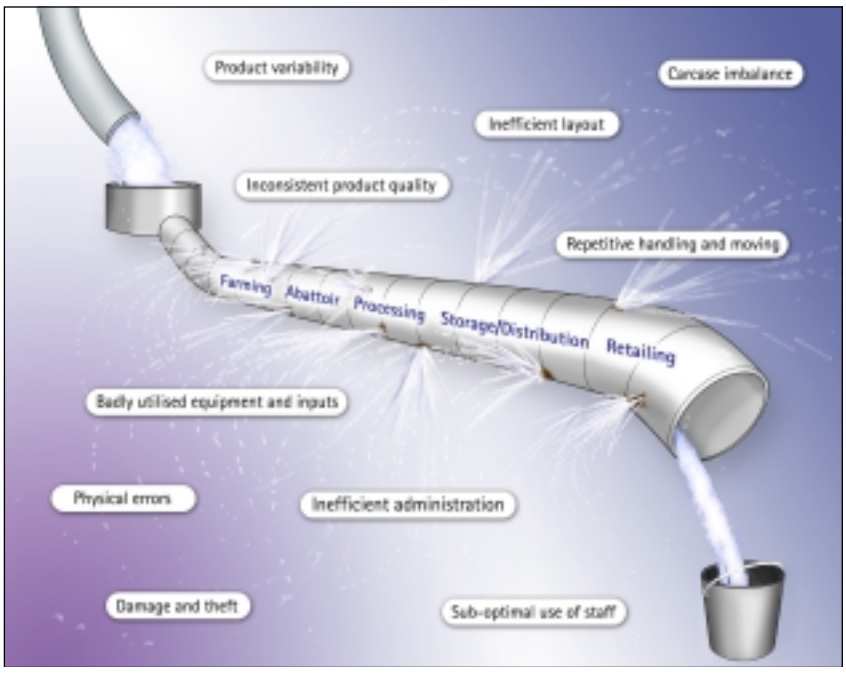
Sept
2003

Where to find Savings in the Red Meat Chain



Even the most streamlined red meat chains involve a large number of activities in order to convert a newly born animal into a range of products delivered to consumers. With such complexity involved, inevitably the chain is not 100% efficient.

Inefficiency or waste is part of any supply chain. For example, about a quarter of the UK's water supply is lost through leakage somewhere in the system. For red meat, the leakage is financial and drains the sector's profitability.



We use the term 'waste' in its broadest sense. We define it as the excess use of any resource beyond that strictly necessary to create and deliver products demanded by consumers. It applies to excess materials, machines, land and labour.

Total wastage in the red meat chain is extremely difficult to measure because it stems from many different issues and spreads throughout the diverse industry.

However, in our initial projects we have found waste through the chain equivalent to at least 10% of selling price. And these, we believe, are relatively efficient chains.

We are therefore confident that financial waste in the red meat chain amounts to at least 10%. If this figure can be reduced, then the money saved could be used to increase profits, reduce prices (and increase sales) or both.

Given that 'every problem also represents an opportunity', we view this as encouraging. It demonstrates the scope to reduce costs and raise profits if we can find new ways to eliminate waste, in particular by working better together.

By combining observations drawn from Cardiff Business School's initial projects, with the comments of various industry experts, we have compiled a 'top ten list' of supply chain improvement opportunities for red meat.

Ten Improvement Opportunities for Red Meat
1. Reduce product variability
2. Better manage the problem of carcase balance
3. Improve product quality
4. Streamline administration
5. Reduce handling and movement
6. Improve layout
7. Optimise the use of equipment and inputs
8. Reduce the number of physical faults
9. Improve staff productivity
10. Reduce damage and theft

These opportunities apply to the chain as a whole and across all red meat species and products.

Of course these issues are not new to the industry. Many solutions have been tried and applied and many improvements have already been made.

Nonetheless, significant waste still exists and new solutions are needed to maintain progress. We contend that 'Lean Thinking' can bring new momentum to these issues through the following principles:

- Treat red meat as a Value Chain
- Take a 'consumer first' attitude at all points in the chain
- Work in partnership, sharing information and pooling expertise
- Systematically identify and eliminate the root causes of waste

The top ten list is in a rough priority order for the red meat industry and chain as a whole, although this is only an estimate and certainly varies from business to business.

Where is Waste Commonly found in the Chain?

Here we consider in more detail, where waste occurs in the chain or to express this more positively, the opportunities to improve. These are grouped under our ten areas of opportunity and then divided by farm, abattoir/processor, distribution and retailer.

Of course, chains may also involve other participants including agents, auctioneers, traders, wholesalers, caterers and small retailers. We will include comments on these at a later stage, although some of the points listed here under other sectors will already be relevant.

The purpose of this section is to highlight problems/opportunities rather than offer solutions. Elsewhere in the pack we provide guidelines and case studies and relate these solutions to our top ten issues. This will be a growing collection and new updates for the pack will be available at regular intervals.

In producing this list we do not mean to accuse the industry of incompetence or complacency. The modern red meat chain is professional and sophisticated. It exhibits some leading edge practices, from which other sectors could learn. And it is working hard to make further improvements.

Rather the list reflects the sheer difficulty of efficiently converting naturally variable raw materials (livestock) which take a long time to reach maturity via a complicated production process into a whole series of end products with a limited shelf life amidst fluctuating consumer demand.

Some of the issues listed are company specific and can be dealt with internally. Others are generic industry issues, best dealt with collectively for example through industry bodies. But many are inter company or supply chain issues.

Actions at one stage of the chain can inadvertently create waste for others. Interfaces are also the source of much waste. That is why we believe that a greater spirit of teamwork between parties in the chain is now essential for the next phase of improvement.

In producing this section, we have estimated the extent of waste where possible but this is not easy. It varies greatly from business to business. Some of the problems are not accurately measured. In some cases, for some businesses, they may not occur at all. But all of the problems listed have been observed in our projects.

You will probably be familiar with most of these issues and how they affect your own sector. However, you may be less familiar with their impact on others in the chain and we hope that this brief analysis gives you a broader understanding.

So to return to the Ten Improvement Opportunities ….

1. Reduce product variability

Variability introduces considerable cost to the chain. It can reduce the price to farmers and the attractiveness of products to consumers. For abattoirs, variability makes automation more difficult and requires equipment and effort to sort and grade.

Reducing variability can save costs, improve returns and increase consumer satisfaction and therefore sales.

Livestock Farms	• Livestock farmers must cope with three drivers of product variability: those caused by 1. geography (e.g. climate, soil), 2. biology (e.g. genetics and disease) and 3. stock management (e.g. production system, housing conditions, feed and husbandry). It is therefore a complex problem to manage. • The long production cycle, particularly for beef cattle, provides an extra difficulty. There can be a long delay between making a change (e.g. to the feed regime) and seeing the results in the finished animal. • Each production system poses a different challenge. It is more difficult to deliver standard products from the more extensive systems in which animals have greater choice in exercise and food. However, these regimes offer other benefits beyond standardisation. • Nonetheless all livestock farms, whatever their production system and location, have scope to reduce variability. • Variability creates a marketing challenge for farmers. Some deal with this by selling through livestock markets or to an agent/dealer. This provides a solution but also adds an extra transaction to the chain.

Abattoir/ Processor	• Meat processors, like most factories, run most smoothly and efficiently when their inputs (carcases) are consistent. Variability requires sorting activity which requires extra manpower or more complex machinery. It can also cause the frequent recalibration of machines and disrupts the rhythm of the production line. • Abattoirs therefore prefer all animals in each delivered batch to be as close as possible to the target specification but in practice, there is often a wide variation. • A recent trend is for retailers (and particularly caterers) to ask for red meat to be supplied at a fixed weight, to provide standard portions. This is a particular challenge for meat processors and variations in carcase can cause them the following problems: - Give-aways in which the cut is over the standard size even though the processor receives no return for the extra weight. - Rejects when the cut is underweight. - Wastage when lean meat is trimmed along with the fat in order to achieve the right weight and size. • Variability can also be the root cause of mistrust between farmers and processors because it prompts the need for an authentication system of weight, carcase description and grade to determine price. If this is not perceived as accurate and independent, it can be a regular source of dispute.
Shop	• Retailers disappoint customers if their packs are uneven in shape and size because in most cases, shoppers want everyone in the family to enjoy a similar product.

2. Better manage the problem of carcase balance

Carcase balance is critical for processors and we explain it here for those less familiar with the subject.

Profitability for the abattoir depends on revenue summed across all cuts from the carcase.

Except in extreme circumstances, the market absorbs all the meat produced, but at varying prices. Achieving the optimum returns from the various cuts is a complicated equation. For example, a high cost and quality animal might earn a premium for its prime cuts of meat but only a standard price for the rest of the carcase, reducing overall revenue. The best returns are usually obtained for fresh (rather than frozen) meat but given its limited life, fresh meat must be sold quickly.

Although carcase balance is primarily a problem for processors, it also has a knock-on effect to the prices paid to farmers.

In the short term, the problem is complicated by the difficulty of forecasting sales, e.g. because the weather effects demand and by customer marketing activities such as promotions.

In the medium term, the problem shifts with the seasons. For instance, summer is the peak time for steaks and chops whilst winter is the peak for roasts and casseroles.

In the long term, consumption trends are magnifying the problem as demand increases for the prime cuts of meat by comparison with the rest.

The constant challenge therefore is to develop new methods of managing carcase balance to improve total revenue per animal.

Livestock Farms	• Farmers influence the shape of the carcase and therefore the relative size of each part, through their breeding regimes. However for them to assist processors by adapting breeds in response to changing consumer demands requires good information exchange and this is often missing.
Abattoir/ Processor	• Processors employ both people and information technology to keep track of carcase balance and to find markets for the 'leftover' parts of the animal. • Particular problems arise from: - Retail promotions that cause a surge in demand for a single cut. - Export restrictions that close off potential markets for the lower value cuts. - Ripple effects from one section of the market to another, e.g. when a competitor is selling off a major surplus.

3. Improve product quality

Quality is subjective and depends ultimately on consumer perceptions. It is a complicated equation that reflects a variety of attributes including taste, texture, shape, colour and aroma. For more information, see the section 'What does Value in Red Meat mean to Consumers?'

Different consumers express different preferences and these also vary on different occasions. The result is a series of differentiated markets for red meat.

Each market has its own requirements. Success therefore, is not just about reaching the highest quality standard possible but also about achieving the target standard every time. Given the inherent variability of producing beef, this is not easy.

Quality and safety inspection is necessary at various stages of the red meat chain. Inspection costs occur both for legal (food safety) and commercial (quality control) reasons and have increased in recent years.

Every time an animal or meat product is rejected, the animal or its meat is either discarded or downgraded to a lower price. A further cause of rejection is sub-standard packaging.

Various types of quality problem have been observed in the chains studied by Cardiff Business School, for example:

- Where an animal does not achieve its target specification or grade.
- Where an animal is mis-graded or where this is open to dispute.
- Where the grading system is insufficiently precise to reflect consumer perceptions of quality and therefore market signals are not sent through to producers.
- Where a problem arises that effects quality after grading, i.e. during processing, distribution or retailing.
- Where a problem is not detected and results in a dissatisfied consumer and potentially a complaint.

The sooner that an issue is detected and resolved the lower the cost. If a quality problem is undetected and the faulty product continues through the chain, then the cost begins to multiply.

According to AV Feigenbaum, in his book 'Total Quality Control', as a rule of thumb, for each stage in the chain that a quality problem remains undetected, the cost of the fault increases ten-fold!

Raising quality and improving quality control can therefore increase sales value and volume and reduce rejection and rework costs.

Livestock Farms	• Producing animals to the specification required by the market is a constant challenge. At present only around 50% of animals classified by MLC meet the target specification. Many farmers do not receive the feedback they need from their abattoir to improve performance. • A poor diet regime can adversely affect eating quality. • Some animals do not reach the standard of being fit for the food chain, e.g. owing to sickness.
Abattoir/ Processor	• Processors inspect carefully for quality throughout their plant. For products that fall outside of the regular customer's specification, other, usually lower price markets need to be found. • Quality depends on the 'raw material' supplied by the farmer but is also affected by the abattoir, e.g. through its lairage, dressing, cutting, hanging, chilling, maturation, gas flushing and packing activities. Problems in any of these areas can cause quality faults. • If major faults are missed and only picked up by the retailer or consumer, then the processor is normally forced to bear the costs of handling the complaint.
Distribution	• Fresh red meat needs to be chilled throughout the chain and if there are any major temperature control faults, all of the product involved must be discarded. Smaller temperature problems can affect the colour and saleability of the meat. • Temperature control is a particular challenge for home deliveries.
Shop	• Shoppers make a quality check of products in-store. Unappetising products may be left unsold and must be disposed of. • If below-par products do reach the home they are likely to cause dissatisfaction. Disappointed consumers may shop elsewhere next time or buy less of the product in future.

4. Streamline administration

No business can operate without paperwork and yet administration adds little or no value to the product in the consumer's eyes. So of course the less time needed to complete administrative tasks the better.

One of the great challenges for any supply chain is to eliminate all administrative mistakes. These are often the root cause of physical errors. Problems particularly arise around boundaries, between departments and especially between companies where there is so much scope for miscommunication and misunderstanding. Examples include order, invoice, delivery note, technical information and weighing errors.

The more times that information is handled and manipulated by different people, the more likely are errors - the 'Chinese whisper' effect. A classic example of this is known as 'demand amplification'. This occurs when small changes in consumer demand are progressively amplified or exaggerated as orders are passed from one company to the next along a supply chain.

One good test of administrative systems is the amount of inventory in the chain. If communication is poor and errors are common, then companies keep high levels of stock to keep as a buffer against problems.

The "Stepping off the Roller Coaster of Demand" section deals with this in more detail.

Streamlining and error-proofing administration can therefore substantially reduce costs.

Livestock Farms	• Livestock farmers wrestle with an increasing amount of administration and the information demands upon them are often not joined up. Any mistakes in completing official forms can be very damaging to their cash flow. • The wrong planning and marketing decisions (which stock to sell at which time to which market) can make a big difference to farm income.
Abattoir/ Processor	• Similar to farmers, abattoirs have an increasing administrative burden e.g. to meet safety requirements. • Good planning is essential to the efficient running of an abattoir. If the supply of animals is available, equipment is running smoothly, the full complement of staff is on site and the customer order list is fixed, then planning is reasonably simple. However, whenever a problem occurs in any of these areas, planning becomes a major challenge. • In particular, last minute changes to orders from the customer can be very costly. Processors may need to keep spare people on standby, to cope with late changes.
Distribution	• Even though fresh meat has a short life, inventory can accumulate between the processor and retailer. In our observation, five days worth of stock is not unusual. • Today's supply chain is increasingly information driven and large volumes of data flow automatically, particularly between retailers and their suppliers. However, as with any information system, data accuracy is critical and 100% accuracy is extremely difficult to achieve. Data errors can result in physical problems such as the wrong quantity of the wrong products arriving in the wrong place at the wrong time. • If products are over-ordered, they cause a stockpile and may need to be heavily discounted to clear the stock.
Shop	• A critical challenge at shop level is to keep exactly the right quantity in stock. Too little stock results in gaps on shelf and disappointed customers. Too much creates a surplus that must be marked down in price or even discarded. • Problems of shortage or surplus can arise from inaccurate sales forecasts or from problems at any stage of the supply chain. • Forecasting is particularly difficult for products such as red meat that are affected by the weather for sales. Forecasts are often changed at short notice, causing a problem for suppliers who may need to provide large quantities at very short notice. • Special promotions (e.g. 'buy one – get one free') are the most difficult to forecast accurately. Competitor promotions also have a major effect on sales. • One source of error is scanning at the till. If a product has an incorrect barcode or is not scanned correctly then the retailer's stock records become inaccurate and the wrong product is re-ordered.

5. Reduce handling and movement

Each time an animal or product is handled or moved, it adds cost but does not always add value. It can also impair quality. One of the most difficult challenges of supply chain management in any industry is to minimise handling and movement and this is particularly true for red meat in which production (farming) is so widely dispersed.

Reducing handling and movement can save costs both directly (through cheaper distribution) and indirectly (by reducing quality problems).

Livestock Farms	• Trading of animals plays a role in the smooth running of the market. There are good reasons why some farmers outsource the marketing of their livestock to others. There are also good reasons, relating to land and climate, why some farmers start the process of rearing animals whilst others take over to finish the job. • However, each transaction does introduce further handling and distribution costs. It can also raise exposure to disease. Data from Defra shows that cattle for slaughter, on average, move 5 times while sheep for slaughter may move 2 to 4 times during their lifetime. Breeding sheep can move 8 to 10 times during their lifetime. • The distance to travel from farm to market or abattoir is often considerable and has grown as a result of consolidation. • Various problems can arise when transporting animals, including at the loading and unloading stages.
Abattoir/ Processor	• The abattoir section of most meat processing plants operates as a flow line in which product is immediately passed from one work station to the next minimising handling and movement. However, later in the process there are various ways in which flow can be disrupted including: - Re-sorting and re-sequencing of carcases. - Complex conveyor layouts in boning halls that result in extra handling. - Packing lines interrupted by equipment breakdowns, low running speeds or defective sealing. • Extra distribution cost arises if the slaughtering and processing plants are split over more than one site, particularly if they are far apart.

Distribution	• Distribution accounts for 12-15% of total costs in most food chains. Total mileage throughout a complete chain such as red meat can be considerable. • On a micro scale - within each warehouse, products may be handled several times as they are unloaded, repackaged, put on to and taken off storage racks and loaded on to vehicles. • Increasingly, transit packaging is needed between each point of the chain beyond the abattoir. For example vacuum packing between cutting and manufacturing plants. • For transporting products to shops, products are typically packed in cases and then loaded on to pallets. These might be shrink-wrapped for protection. All of these materials and activities add cost.
Shop	• In-store handling is labour intensive and there can be several steps between unloading a delivery vehicle and placing products on shelf. Tesco calculated that the last 50 yards from delivery vehicle to shelf accounted for 48% of its distribution costs and this is probably typical of most retailers. Cost adding activities can include: - Checking the paperwork - Removing shrink wrap - Taking to a back room store - Moving to shelf - Unloading the case - Returning or disposing of the case

6. Improve layout

Even when staff and equipment are working constantly they may not be entirely productive. Less than ideal layouts can cause people, products and vehicles to waste time moving unnecessarily. Inefficient layout is a constant time-stealer that can add up to a great amount of wasted effort during the course of a year. Without anyone fully realising it, inefficiencies can become regarded as the norm.

Re-laying out can improve both staff and equipment productivity and thereby reduce costs and increase capacity.

Livestock Farms	• The wrong farm layout can result in extra stock handling. Road networks, historical inheritances, tenancy agreements or impositions from planning authorities can adversely affect farm layout. • Some farm buildings that have been converted, e.g. for mechanisation, may be less efficient than those purpose built.
Abattoir/ Processor	• Factories that have evolved over many years often have layout problems because new elements have been 'bolted on' wherever space is available. • Conveyors can be a source of waste. They can occupy a great deal of space and when they break down, a large proportion of the plant can be disrupted.
Distribution	• As with a factory, warehouses and distribution networks can grow in an ad hoc way. The wrong layout reduces productivity in the warehouse as staff and forklift trucks make longer journeys than necessary.
Shop	• An unhelpful store layout can increase the average shopping time for customers. The same applies to each individual counter. A poor layout can create the following problems for shoppers: - Taking a long time to find products. - Not finding the products at all (and so the shop loses a sale). - Taking a long time to select products because the display does not help to make comparisons.

7. Optimise the use of equipment and inputs

Under-investment can push up costs elsewhere in the business, for example through low staff productivity. Bottlenecks can constrain output and reduce the return on other equipment.

However, over-investment in capital is another potential source of waste, for example through equipment that is 'over-specified' for the business needs. It can also be inefficient to over-utilise an asset, when it is not really required. For example, inventory might expand to fill the space available in a warehouse.

For farmers, under-use of inputs reduces the rate of livestock growth whereas over-use results in excessive costs that are not justified by higher outputs.

Optimising the use of land, equipment and inputs therefore makes a big difference to the business bottom line.

Livestock Farms	• Over-investment can include owning equipment that is used only rarely instead of sub-contracting or joining a machinery pool. • Under-investment can include postponing the renewal of equipment but paying for this through low productivity and high repair bills. • For livestock farmers, the over-or under-use of inputs might include: - Feed specification and diet formulation - Animal health products - Forage

Abattoir/ Processor	• Machines in a factory can become idle for various reasons: - No orders to work on (lack of sales). - No animals or packaging available to work on (supply problem). - Machine broken down or running too slowly. - No qualified staff available to operate the equipment. - Equipment taken down for routine maintenance. - Bottleneck elsewhere in the plant. • Most processing plants have bottlenecks that constrain output, e.g. holding chillers, boning or cutting facilities. Seasonality and weekly cycles can result in different bottlenecks arising at different times.
Distribution	• Distribution assets can be under-utilised owing to: - Vehicles not fully loaded. - Delays in loading vehicles. - Long journey times because of delays or bad route planning. - Delays at the destination. - Problems in unloading, e.g. because of incorrect paperwork. - Empty vehicle on the return journey. - Vehicles sitting idle. - Poor fuel consumption. • There are many root causes behind these problems, for example: - Pack sizes vary and do not always fit neatly into a crate for transportation. - Traffic problems are unpredictable and cause delays. - Vehicles are assigned delivery slots at the retailer's warehouse. If they miss that slot, it can be a long wait before they can be attended to and unloaded.
Shop	• Prime retail space is expensive and so empty shelves are a waste of this asset.

8. Reduce the number of physical faults

Administrative errors were listed above. Physical faults are another source of waste, especially if they are regular and systematic.

Reducing physical faults is therefore another substantial opportunity to cut costs.

Livestock Farms	• On livestock farms physical faults might include: - Breakdown of machinery. - Preventable diseases. - Feed ration errors. - Ineffective breeding stock.
Abattoir/ Processor	• Machine faults are a problem for any manufacturing process. In a food plant, machines operate at a high speed and come under heavy mechanical stress triggering problems. For example, a 2% fault rate is common for vacuum packing machines and so these products must be inspected, repacked or discarded. • Trimming of fat is not 100% accurate and so some lean meat is accidentally trimmed and discarded. • Meat can also be under trimmed in the boning hall, requiring a second trim in the packing section.
Distribution	• A common warehousing problem is the placing or collection of products from the wrong place. This is called a 'mis-pick' and causes delivery of the wrong products to stores. • Errors may also occur with stock rotation. This occurs if products with short shelf life are left in stock.
Shop	• Similar problems to the warehouse can arise in a shop's backroom storage. Stock rotation is a particular problem in store because many shoppers pick from the back of shelf to take the freshest available product. • Other potential faults in store include: - Displaying products incorrectly, e.g. in the wrong shelf position. - Failing to notice that a shelf is empty and so missing the opportunity to restock from the backroom store.

9. Improve staff productivity

People are a critical and expensive resource in any chain and it is a constant challenge to keep them fully productive.

Raising staff productivity reduces costs and can increase output.

Livestock Farms	• Most farms now operate with very few people. The lack of availability of skilled stockmen is a particular concern. All the more important then to ensure that time is always spent productively on value adding activities. • Seasonality of workload can result in peaks and troughs. It is difficult to achieve the right balance of fully employed/temporary/contract labour.
Abattoir/ Processor	• Abattoirs and meat processing plants operate like many other factories as a production line. Starting with a whole carcase at one end and finishing with a series of packed meat products at the other, there is a series of cutting, trimming, cleaning, packing and inspection stages. The plant aims to keep a steady flow with every stage working at the same speed. • To achieve this there must be a 'pace setting' process on the line to ensure a constant cycle time (for example, one animal every 60 seconds). Furthermore, the line should be balanced, in which the task of every operator takes the length of the cycle time. If the line is out of balance then everyone is reduced to the pace of the slowest operator. • Staff recruitment and retention is a particular challenge for the sector and a shortage of staff can constrain output. • Particular problems arise if staff are not multi-skilled. So for example, if one operator is absent then the substitute may be less effective. • A major cost for processors can be the need to keep spare capacity (both equipment and people) to cope with very short notice requests from customers.
Distribution	• Staff scheduling is an important part of running an efficient warehouse and vehicle fleet. Ineffective scheduling results in low staff productivity.
Shop	• Staff scheduling is one of the store manager's main tasks. It is a constant challenge to deploy staff to prevent queues at the checkouts. • However, this must be balanced by the need to keep the shelves full and if staff are not available for this task, sales are lost.

10. Reduce damage & theft

Some products are never sold because they are lost, damaged or stolen. Retailers and manufacturers refer to this as "shrinkage".

Reducing damage and theft has a very direct impact on the bottom line.

Livestock Farms	• There is a whole host of relatively minor problems relating to damage or theft at farm level ranging from criminal activity through to storm damage and casualty livestock.
Abattoir/ Processor	• Poor slaughtering and dressing procedures can result in damage and downgrading of products, particularly with inexperienced staff. • Dropping products in processing plants, particularly on to the floor, is another form of wastage. • An ECR Europe study found that stock loss for all food & grocery manufacturers averaged 0.6%
Distribution	• Every time a product is handled, there is an opportunity for damage, especially to the packaging. An American study by GMA found that 0.6% of all products supplied by manufacturers was rejected as damaged by retailers. • Theft is also a problem in warehouses.
Shop	• The ECR Europe study found that stock loss for retailers averaged 1.75% for all products. Of this, 37% was caused by shoplifting, 24% by staff theft, 12% by supplier fraud and 24% by process failures. • A further proportion of products is damaged in-store, either by staff or by customers. The GMA American study found that an average of 1% of all products on-shelf is unsaleable.

Improvement Checklist

On the next page we offer you two pro-formas to help your business to assess opportunities across the ten improvement areas. We suggest it be used as follows:

1. In the Waste Checklist, identify major costs to your business stemming from each of the ten issues. You may need to collect some new measurements to do this accurately.
2. Prioritise by selecting your five most expensive problems. Transfer these to the Priority Problem List.
3. For each of the priority problems, identify the root cause. Make sure you trace the problem back to its true root, perhaps by using the 'several whys' technique. This is where you repeatedly ask why a problem occurs, to remove each 'layer of the onion' until you reach the heart of the matter. In many cases you will find that the root cause lies outside of your own business.
4. You will be left with a list of top priority issues that should become the focus of your improvement strategy.

You can tackle this exercise at varying levels of detail, from a quick and simple assessment to a very thorough survey.

The exercise is just the first stage of improvement – identifying your priority problems. Of course you will then need to move on and develop solutions.

Elsewhere in the pack we provide guidelines and case studies to suggest possible solutions. This will be a growing collection as we develop our ideas, test our recommendations and identify further examples of best practice.

	Waste in your Business
Product Variability	
Carcase Balance	
Product Quality	
Administration	
Handling and Movement	
Layout	
Land, Equipment and Inputs	
Physical Faults	
Staff	
Damage and Theft	

Priority Problem List

	Problem	Cost	Root Cause
1.			
2.			
3.			
4.			
5.			

Food Chain Centre
Best practice for your business

Are You Measuring Up?

Reduce product variability	✓
Better manage the problem of carcase balance	✓
Improve product quality	✓
Streamline administration	✓
Reduce handling and movement	✓
Improve layout	✓
Optimise the use of equipment and inputs	✓
Reduce the number of physical errors	✓
Make better use of staff	✓
Reduce damage and theft	✓

"If you don't measure the process you cannot improve it"

Masaaki Imai, President Kaizen Institute

Choosing what to measure is one of the most important decisions that any business takes. Getting the right measures in place is an essential part of driving improvement and increasing profits. Equally, sharing performance measurements is vital to promote improvement throughout a chain.

In this section we provide some general principles of measurement, recommend new measures for the red meat industry and explain why measuring in partnership is critical to success.

Principles of Performance Measurement

Business performance measurement has become a well studied subject by academics as they seek to understand which practices work and which ones do not. Some general principles about measurement have emerged and we discuss these here.

If you are certain that you already understand them, then jump to the next section on measures for red meat.

Produced in partnership with
RMIF
Red Meat Industry Forum

Red Meat

Sept
2003

Most of the principles are fairly obvious and yet challenging to implement. Many organisations have problems in this regard and it takes strict discipline to get it regularly right.

Best Practice in Performance Measurement
1. Make sure your measures fit your business objectives
2. Choose a Vital Few measures
3. Make the data as current as possible
4. Use Exception Reporting
5. Make the measures visible
6. Act quickly on what the measures say

1. Make sure your measures fit your business objectives

"Examples abound of organisations that have introduced performance measures that quite simply drive entirely the wrong behaviours."

Neely, Adams and Kennerley, The Performance Prism

Each major objective of the business should have a measure attached to it. But according to measurement experts, many people fall in to the trap of measuring what's easy to collect rather than what's most important.

"A major cause of companies getting into trouble is the tendency to accept simplistic notions in evaluating performance … the general tendency is to evaluate manufacturing primarily on the basis of cost and efficiency. There are many more criteria to judge performance. "

W. Skinner, The Decline, Fall and Renewal of Manufacturing

One variation of this trap is to focus on financial results to the exclusion of all other aspects. Finances are critically important of course, but they only measure historical results and show the impact of decisions that were made some time ago.

Businesses should also collect forward-looking measures. So although livestock farmers are concerned about getting the best prices for today's animals, they will achieve better returns for tomorrow's if they also focus on rearing, for example by monitoring weight gain per unit of input.

2. Choose a Vital Few measures

"We had so many damn numbers in so many damn folders, that no one was looking at them. But no one would admit it. Everyone just bluffed their way through meetings, pretending to be familiar with every detail."

Ricardo Semler, CEO of Semco

With performance measures, there's a tendency to keep adding more until you create an avalanche of figures. Critical information is then swamped by irrelevant data.

Some measures take a great deal of resource to produce but are never applied to any useful purpose and only exist because 'they've always been collected'. So it is a good idea to have an occasional cull of outdated measures.

However, in business, there are many things that genuinely deserve to be measured. So it is also important to prioritise, raising a 'Vital Few' measures to prominence above the others. These are the measures on which the future of the company critically depends.

One candidate as a vital measure for any business is safety both for the product and for staff. Studies show that a good safety record is usually an indicator of a successful business. Red meat has high standards in product safety due to stringent HACCP (Hazard Analysis and Critical Control Points) procedures. Operator safety is a separate challenge and is not just about serious accidents. It is also important to measure near misses and minor accidents.

We provide recommendations for other vital red meat measures below.

3. Make the data as current as possible

Information is degradable. Every delay between recording data and presenting it as a performance measure reduces its value. It puts a longer distance between any problem and the possibility of remedial action.

For example, a successful in-store promotion increased the sales of hindquarter meat above all expectations. The processor was delighted at the time but later, when the accounts were produced, discovered that the promotion caused them a loss. They needed to buy extra animals at a high price and sell the rest of the carcase to a short-term market at a low price.

Ideally, measures should be in 'real time', i.e. recording events as they happen. In this example, a real time financial measure would have raised the alert earlier and given managers the opportunity to find a solution.

4. Use Exception Reporting

The main principle of Exception Reporting is to set minimum and maximum acceptable limits for each measure. When performance falls outside of those limits, it should activate a 'red flag', in other words trigger management attention.

The vital few measures are usually monitored in detail. Exception reports are particularly valuable for the less vital measures that can become critical if there is a major problem. They ensure that problems are raised to attention whilst preventing managers getting bogged down in detail.

An example is at the abattoir. Processors typically set a target range for weight. The more narrow the variation, the more smoothly and efficiently processors can run their plant. If the system is running normally, then managers can rest assured. But if a higher than usual proportion of animals falls outside of the target band then senior staff need to know because it could impact on quality, factory output and customer service.

5. Make the measures visible

Sometimes, important measures are buried away in the desk of a senior manager or kept only in 'cyberspace' on a computer system. But the more people that see a measure and the more often they see it, the more likely they are to act upon it.

If a measure is displayed prominently and employees see it regularly, it reinforces the measure's importance. Again, the vital few measures should always stand out from the rest.

Although different people prefer to see figures presented in different ways, most people respond best to graphics, such as charts. Simple techniques, such as colouring a graph in red when the numbers are falling, help to clarify what is actually happening to the measure.

6. Act quickly on what the measures say

This is the most obvious rule of all and yet one of the most difficult to apply. Whenever there's a red flag, signalling an unacceptable performance, it should generate an immediate response.

You may wish to test your own business against each of these principles. Measurement systems are difficult to get exactly right, so it is likely you will find some weaknesses if you probe deeply enough.

Measures for the Red Meat Chain

The choice of 'vital few measures' depends on circumstances but if we apply Lean Thinking to the red meat chain then some strong candidates emerge.

We believe that the following areas are or should be major priorities for the red meat chain. If so, then they each should be measured.

- Consumer Satisfaction
- On Shelf Availability
- Carcase Balance
- Carcase Classification
- Demand Amplification
- Equipment Effectiveness

Earlier we mentioned safety and this is another priority measure.

These are our general recommendations for the red meat industry. However, each business should determine its own set of vital few measures to help control and improve quality, cost and service.

But looking at each of our recommendations in turn…

1. Consumer Satisfaction

Consumers want excellent products at reasonable prices. Every time they make a purchase in store, they cast an 'economic vote'. If they are satisfied, they buy more.

So the 'acid test' measure of consumer satisfaction is sales and particularly repeat sales.

Everyone in the chain has a shared interest in satisfying consumers and generating sales. It is a vital measure that is widely recognised, shared and acted upon.

The opposite side of the coin is dissatisfaction. Retailers normally measure this by the number of complaints, e.g. as a percentage of total sales. When the number exceeds a particular limit, this triggers an exception report and they then share the issue with suppliers. Ideally, the root cause of the problem is then investigated and rectified.

However, most dissatisfied customers do not complain and formal complaints are only the tip of the iceberg. Detailed consumer research is needed to gain a more in-depth picture.

Satisfaction is a moving target and what satisfies consumers today, may not do so tomorrow. Again, various consumer research techniques can be used to forecast consumer needs in the future.

2. On Shelf Availability

When products are unavailable in store the result is a loss of sales, which hurts everyone in the chain. Even worse, some consumers will substitute for another product instead and this could change their long-term consumption pattern.

According to research by ECR Europe, the average out of stock rate for all products in supermarkets is 8.3%. In other words, for 8.3% of the time, a particular product (e.g. pork loin steaks) is not available to shoppers.

Faced with non-availability, according to IGD research in the UK, 37% of shoppers go elsewhere to another store, 35% substitute and buy a different product, whilst 28% of shoppers delay or forfeit the purchase.

These figures are not available separately for red meat, although anecdotal evidence suggests that red meat is no better than average.

To improve this area, the first priority is an accurate estimate of availability on shelf.

$$\text{Availability \%} = \frac{\text{Number of Hours Product is Available on Shelf per Week} \times 100}{\text{Total Store Opening Hours in Week}}$$

Unfortunately, this could only be recorded completely accurately by maintaining a constant watch on every shelf. At some future stage, electronic tags may make this possible but for the time being, a method of estimation is needed.

There are two alternative approaches. The first is a 'mystery shopper' survey, in which researchers armed with a shopping list, record the products that they cannot find in store. Surveys are taken regularly to establish the percentage of occasions on which each product was unavailable. They should be taken at varying times of day and week to achieve a representative mix.

The second approach is to study the checkout sales (EPoS) data. If a popular product remains unsold over a longish period, it suggests it was unavailable. Statistical analysis can therefore be used to estimate availability. This method can be applied every day at every store but is only accurate for fast selling products.

So the first stage is measuring the scale of the problem. The next is to understand the root causes which could be anywhere in the chain.

On an occasional basis, researchers can follow an audit trail for sample products. Working backwards from an empty shelf they can explore the reasons, beginning in-store and if necessary, following the trail back to the distribution centre and supplier.

However, it is impractical to do this constantly and so control points are needed to measure service at each link in the chain.

Normally a supplier and customer (e.g. retailer) each develop their own measure of service and commonly these differ substantially. Generally, customers apply a stricter definition of on-time delivery and suppliers sometimes kid themselves that they have satisfied customers when they don't.

The toughest standard for measuring service is Quality On Time In Full or QOTIF.

$$\text{QOTIF\%} = \frac{\text{Number of perfect deliveries (on schedule, complete, no quality faults)} \times 100}{\text{Total number of deliveries}}$$

A regular monitor of service through the chain reveals the weak points. Again, exceptional service problems should be traced to their root cause, e.g. a forecasting, quality control or handling problem. This should be used to focus improvement activity.

One method of improving service and availability is to hold more stock but this ties up cash in working capital and can result in unsold products that pass their 'sell-by' date.

So measures of availability should be balanced with stockholding, waste from discarded products and price marking down for short life reasons.

$$\text{Waste \%} = \frac{(\text{Units Disposed} + \text{Units Reduced}) \times 100}{\text{Total Units Sold}}$$

(Units Reduced = No. units discounted x discount %)

$$\text{Availability/Waste Ratio} = \frac{\text{Availability \%}}{\text{Waste \%}}$$

The ideal is 100% availability and 0% disposals/markdowns but this requires perfection in forecasting and supply.

3. Carcase Balance

As is widely known, a carcase is made up of a range of cuts of meat for which the market pays different prices and requires varying volumes. For example, the market pays a high price for beef hindquarter steaks, for which there is often a shortage. There is less of a demand for forequarter cuts, which are therefore routinely minced and reach a lower market price.

Meat traders seek to balance the varying demand for parts of the carcase, maximising the return for each in a range of markets, so creating the overall best returns. This is not easy as demands vary at different times and sales can get out of balance. Discounts are then required to move product in oversupply.

Special promotions create a particular challenge by generating high demand for one particular cut of meat. This results in a large surplus of other cuts requiring markets. Some might be frozen and held in storage but this normally reduces their value. Other products can be diverted to processing such as pies and sausages.

New ways of managing carcase balance are constantly being sought to improve overall returns. Examples include better planning of promotions and creating alternative uses of cuts by developing new products.

Various tools exist for managing carcase balance but we believe that the ideal version would include live or real time data. Inputs to the system would include orders, stock and scheduled production. It would monitor the status of primals, e.g. showing the average number of days of shelf life remaining and show the proportion currently unallocated to a customer. The tool would provide constantly updated financial forecasts.

We are currently investigating the concept of a real time carcase

4. Carcase Classification

Classification is used in an abattoir to evaluate a carcase against the characteristics needed by the market, principally the meat yield and ideally a measure of eating quality. The percentage of carcases that achieve target specification is an important measure for everyone in chain. It reflects the industry's success rate in meeting the needs of consumers and is a key determinant of price and incomes.

A general way of measuring the success rate in meeting specification is Right First Time. This is simply:

$$\text{Right First Time} = \frac{\text{Quantity of non-defective units}}{\text{Total quantity of units supplied}}$$

The alternative is to measure Not Right First Time.

$$\text{Not Right First Time} = \frac{\text{Quantity of defective units}}{\text{Total quantity of units supplied}}$$

In the case of carcase classification, a 'defective unit' is any animal that fails to achieve its target grade.

This can be measured separately by abattoir and farmer.

The abattoir figure would be based on the plant's ideal product specification and show whether suppliers were improving their performance through time.

The farmer figure would track the success rate in achieving his/her target specification (which may sometimes be below the abattoir's ideal) per animal.

However, this measure should be just the starting point. The success rate can be increased by tracking carcase classification against breeding stock, feed regime and other farming variables. This approach has been used by many livestock producers to improve consistency and financial returns. It requires good feedback of information, record keeping and traceability.

Improving the success rate is also most likely when it is strongly incentivised through a significant price differential.

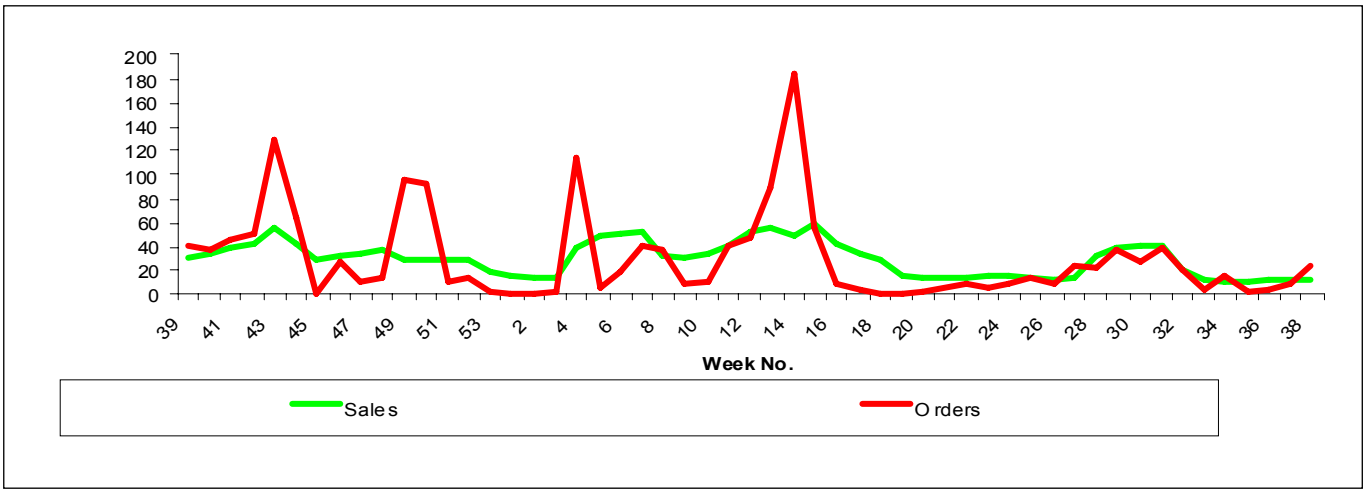
5. Demand Amplification

Demand amplification occurs when small changes in consumer demand are progressively amplified or exaggerated as orders are passed from one company to the next along a supply chain. This effect is present in red meat chains and is a major cause of uncertainty, cost and waste.

Red meat sales fluctuate for seasonal and other reasons but orders, shipments and stock tend to vary to a much greater extent. This can be explained by:

- Inaccurate forecasts of demand
- Delays in transferring information or not sharing it at all
- Adding extra to a forecast or order to 'be on the safe side'
- The need to fill lorries for efficient distribution

Demand Amplification can be monitored by plotting retail sales and orders to suppliers on the same chart. This gives an immediate visual impression.



Demand amplification is discussed more completely in a separate module in the pack.

6. Equipment Effectiveness

Overall Equipment Effectiveness (OEE) is a measure to test the total performance of a machine or process. It assesses how effectively a single machine is used but increasingly also to measure a complete factory.

Machines rarely run at 100% efficiency owing to a series of problems associated with availability, performance and quality. For example:

- Availability – time lost through machine breakdowns, changeovers or lack of staff.
- Performance – time lost through slow running speeds, e.g. because of problematic raw materials.
- Quality – time lost through producing defective products or on rework.

OEE uses the key measures of availability, performance and quality in a formula to arrive at an overall percentage efficiency figure for the operation.

OEE = %Availability x %Performance x %Quality

- Machine Availability = actual machine running time/planned running time.
- Performance = actual output achieved when machine was running/ideal output that could have been achieved in the same time.
- Quality = number of unrejected items/total items made.

OEE is used widely in manufacturing but in our experience less so in abattoirs and meat processing plants. We believe it can readily be applied to meat processing and provide an excellent overarching measure for machine performance.

More recently a similar measure entitled Overall Vehicle Effectiveness has been developed for the haulage sector.

OVE = %Route Efficiency x %Time Efficiency x %Vehicle Utilisation x %Quality

- Route Efficiency = minimum/actual route cost.
- Time Efficiency = shortest possible/actual delivery time.
- Vehicle Utilisation = actual/full vehicle load.
- Quality = good products (with no faults) delivered/total products delivered.

Cardiff Business School is now developing an equivalent measure at farm level entitled Overall Farm Efficiency and we are currently testing this concept. We will report on our findings in a later update.

Measuring in Partnership

Most of the measures that we have recommended require data collected from various parts of the chain. No single player in the chain could see all of these measures unless they traded information with others.

To generate long term improvement, rather than daily firefighting of problems, it is essential to link the effect of problems back to their cause.

In many cases, measures taken at one part of the chain reveal issues that lie in a different part. For example, the cause of a shopper complaint about eating quality might be a problem in the animal feed. Or the reason why a cutting plant has a lower than usual Overall Equipment Effectiveness could be a series of inaccurate demand forecasts from the retailer.

So the main benefits of Lean Thinking, of collecting the vital few performance measures, of establishing and confronting the causes of waste and driving substantial savings can only be achieved by partnership. And this requires a true collaborative spirit based on trust, information and benefit sharing.

The partnership in measurement concept is a hugely powerful element of Lean Thinking. This one idea of jointly developing and sharing measures for the whole chain can trigger a huge number of profitable improvements.

So in summary, we recommend that you:

- Define, collect and share measures across the whole chain.
- Prioritise a vital few whole chain measures.
- Set minimum and maximum limits for each measure.
- Continually monitor.
- Act immediately when a value goes outside the limits and trace the problem back to its root cause.
- At the point of root cause, introduce actions to stop the problems recurring.

Food Chain Centre
Best practice for your business

Stepping off the Roller Coaster of Demand

Better manage the problem	✓
Streamline administration	✓
Reduce handling and movement	✓
Optimise better use of staff	✓

What is Demand Amplification?

In a Lean supply chain, product flows along the chain according to the pace of consumer demand. A good analogy is household water. This is always available on demand by simply turning a tap and the mains water system then automatically replenishes the water tank.

Of course the same effect is more difficult to achieve in the food chain but in the ideal system, the rate at which shoppers buy red meat would be matched by the rate at which processors supply the retailer and farmers send animals to the abattoir.

One of the impediments to this flow is the problem of Carcase Balance, because the pattern of demand varies across different parts of the animal.

A second issue is Demand Amplification or the 'Roller Coaster Effect'. It is a regular problem for red meat but also eats in to the profits of many other industries and so the causes and solutions are well known.

Demand Amplification occurs when small changes in consumer demand are progressively amplified or exaggerated as orders are passed from one company to the next along a supply chain. In particular, the public might consume the product at a fairly even rate but orders for a primary producer might be a series of unpredictable peaks and troughs.

In this section, we explain how Demand Amplification arises, why it's important and what can be done to reduce its effect.

Produced in partnership with
RMIF
Red Meat Industry Forum

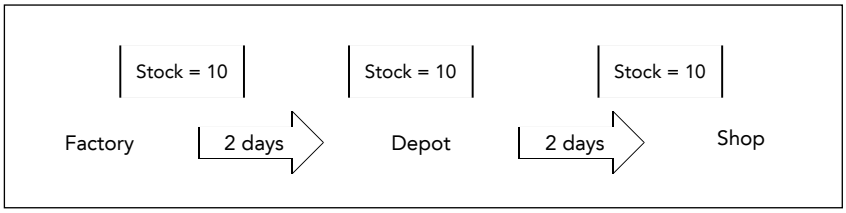
Red Meat

Sept
2003

How does it arise?

Demand Amplification can be illustrated by a simple example.

Take a supply chain comprising a shop, depot and factory. Deliveries are made every day but there is a 2 day delay between ordering and receiving each product. So, for example, an order that is placed on Monday is delivered on Wednesday and Tuesday's orders are delivered on Thursday.



To start with, everything is running smoothly and 10 products are sold every day. The shop, depot and factory each maintain a stock of 10 items and the shop places a new order for 10 items each day. Everything is in equilibrium but what happens if consumer sales suddenly rise to 11 items?

At the shop, the stock would fall to 9 items. The shop has noted the increase in demand and now expects to sell 11 items per day but there is a 2 day gap between order and delivery. So the shop would need to order 3 extra items (13 in total) - 1 to bring its stock back up to 10 items and 2 to cater for higher sales for the next 2 days.

So the depot would receive an order for 13 items, reducing its stock to 7. It would now need to replenish its stock but must also anticipate future orders from the shop. In the absence of any other information, it might forecast that the shop will now order 13 items per day. Given the two day order time lag it would be inclined to order 10+3+3+3 = 19 products from the factory.

So the depot, unaware that the retailer is making a stock adjustment is prone to over-react to the increase in consumer demand.

You can see how a small change in consumer demand has become amplified. The factory in turn might amplify this further, placing an order of 10+9+9+9 = 37 on its own suppliers.

An increase from just 10 to 11 items sold at the shop could become an increase from 10 to 37 items placed on the factory's suppliers!

This overreaction to a change in sales is common in real life. The Lean Enterprise Research Centre at Cardiff Business School has frequently observed this effect with red meat products such as pork chops and beef steaks.

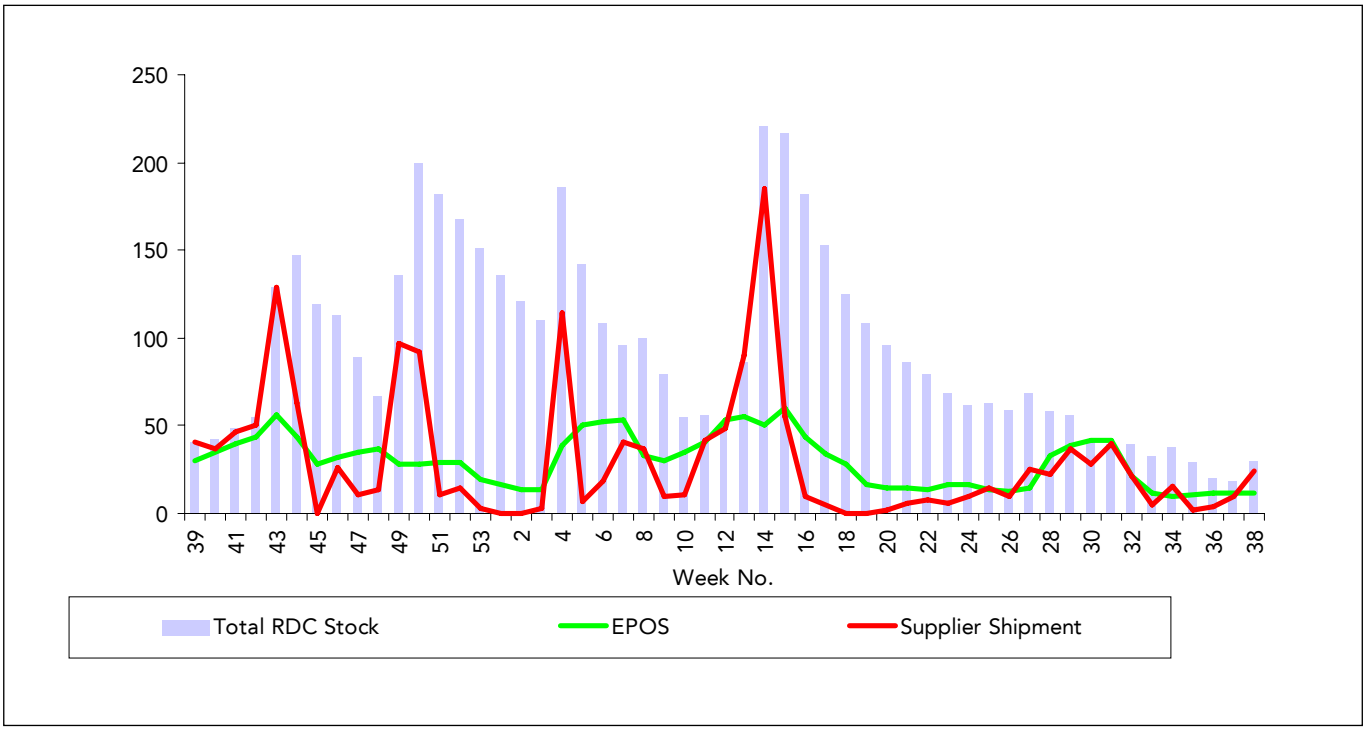
Other factors can add to the distortion in buying patterns including:

- Automatic inventory and ordering systems with faulty logic.
- Bulk buying at a bargain price or stockpiling in anticipation of a rising price.
- End of year business targets, e.g. to reduce inventories.
- Faulty products or missed deliveries.
- The need to round orders up or down to make full pallet and vehicle loads.
- Human error.

When the Cardiff team investigate Demand Amplification they begin by mapping consumer sales on a graph. They find there are some fluctuations for seasonal reasons, but usually demand is very stable. The exception is when the retailer runs a special promotion.

The Cardiff team then move back down the supply chain, plotting and comparing both orders and production on the same graph. Just as the theory of Demand Amplification predicts, they usually find that the further removed from the consumer, the more erratic is the pattern.

The following chart is compiled by averaging studies in red meat conducted by the Cardiff team. The green line shows retails sales, the purple bars stock in the retailer's warehouse and the red line deliveries by the supplier. It is clear from the graph that deliveries fluctuate much more than sales.



Why is Demand Amplification Important?

Demand Amplification adds cost to the chain in several ways:

- During the (artificial) peaks, it requires more overtime.
- The carcase balance problem is intensified during the peaks and other parts of the carcase may need to be sold at very low prices.
- During the troughs, people and other resources may lie idle.
- Market ready animals may be held back by the processor during a trough, incurring extra feed costs to the farmer.
- Extra inventory is held to protect against unpredictable variability in demand.
- More administration is needed to manage the problems.
- There is more likelihood of gaps on shelf or price mark-downs for short life reasons than in a smoothly flowing system.

How to Reduce Demand Amplification

1. Speed the Chain

In our earlier example there was a two-day lead-time between placing an order and receiving the products. It was this delay that prompted much of the amplification.

Suppose instead there was just a one-day lag at each stage. In the same example of a rise in sales from 10 items to 11:

- the order from shop to depot would have been 12 (instead of 13)
- from depot to factory 14 (instead of 19)
- from factory to its suppliers 18 (instead of 37)

The amplification is reduced because all parties can readjust their stock levels more quickly and there is less need for exceptional orders. So speeding the chain and compressing order response times are key to resolving Demand Amplification. Remember the aim is to create a flow, rather than a stutter of products.

Speeding the chain is a central objective of Lean Thinking. There are various ways to achieve this but the underlying principle is to identify and eliminate non-value-adding activities and delays.

2. Share Information

Again referring back to our original example, the amplification arose largely because companies misinterpreted their customers' actions. The store made a one-off adjustment to its stock position but the depot interpreted this as a potential ongoing demand for 13 items. The same problem arose between the depot and the factory, magnifying the over-reaction.

Sharing information along the chain, including the latest sales and current stock positions would have avoided the misunderstanding. The factory would have seen that consumer sales had increased only slightly and recognised that the depot and store were also rebuilding stocks with their latest orders. They could have forecast that orders would soon settle back to a regular pattern of 11 items and thereby avoided over-reaction.

Developments in technology, such as radio frequency tags and high speed internet access now make it easier to keep an accurate and up to date record of stock in the system.

So sharing key information and discussing the reasons behind any unusual orders is the second key to eliminating Demand Amplification.

3. Reduce the Number of Stock Points

In our example chain, every stage maintained an inventory of 10 items. When the rate of sales changed, each player readjusted its stock by placing an extra-large order. This masked the true rate of consumer demand and created a wave of amplification.

When companies adjust their stock levels it often sends misleading signals and this can partly be solved by better communication (as in point 2). The next stage is to get to the root of the problem and reduce the number of stock holding points.

Inventory is held for various reasons, but one key purpose is to keep a safety stock to cope with a sudden surge in demand or disruption in supply. The more reliable is the chain and the better companies are able to forecast sales, the less is the need to hold safety stock.

When companies in the chain have little trust in each other and share little information, everyone maintains a high safety stock. But if the chain is managed as one complete system, with trust and visibility, then not only can the amount of stock per warehouse be reduced but also the number of warehouses.

4. Improve Sales Forecasting

Referring again to the example, if the increase in consumer demand had been anticipated, then a larger order could have been made in advance without any need to adjust stock levels. So accurate sales forecasting is another protection against Demand Amplification.

Our evidence suggests there is plenty of scope to improve the accuracy of sales forecasts for red meat. The table below shows a real example.

When	Variation between Forecast and Actual Sales	Target Variation
(Day minus 7)	40%	30%
(Day minus 3)	38%	25%
(Day minus 2)	52%	15%
(Day minus 1)	5%	5%

In this case the retailer made a series of forecasts for the processor ahead of each daily order. Unfortunately, the accuracy of forecast was consistently below target. The forecast two days out was particularly misleading.

This made it very difficult for the abattoir to plan production and had a knock on effect on supplying farmers who were given fluctuating information on what, where and when to deliver.

Retailers know best about their own customers, whereas suppliers know best about their own products. So forecasts can usually be improved by pooling the expertise of retailer and supplier.

5. Improve Reliability

Although our example didn't illustrate this point, human and systems errors can also distort orders, send confusing signals to suppliers or customers and create amplification.

Eliminating errors requires good control procedures, for example:

- Consistent order cut-off times, and no late amendments.
- Computer systems that flag up suspicious data entries to be checked and validated.
- Cleansing of data such as EDI master data. Unless data is regularly checked and updated it will fall into disrepair and result in errors.
- Strict controls over human intervention to computer generated orders otherwise valid quantities can be wrongly altered.
- Monitoring and enforcing vehicle delivery slots.
- Developing and implementing Standard Operating Procedures, e.g. for handling in warehouses.

6. Measure and Monitor

A basic principle of improvement is that 'only what gets measured, gets improved'. If Demand Amplification is indeed a problem, then it should be constantly measured and monitored by plotting a graph as on page 4.

If the gap on the chart between retail sales and supplier orders falls outside of a target range, it should trigger an exception report. This should alert managers and prompt an investigation. If a problem is found, it should lead to a corrective action.

It is through simple disciplines like this that most problems can be brought under control. However, to resolve a problem like Demand Amplification, that occurs around the interfaces between companies, both the measurements and the follow up actions need to be shared. If there is lack of trust and good faith between companies it acts as a barrier to obscure the problems and prevent their resolution.

7. Manage Demand

Although forecasting sales is important, companies need not be completely passive about demand. Sales can be influenced by various techniques such as advertising, merchandising and promotions and these can be used to even out demand or stimulate it during peaks in supply.

For example, ice cream has successfully been promoted as an all year round product.

Food Chain Centre
Best practice for your business

Produced in partnership with

RMIF
Red Meat Industry Forum

Red Meat

Case Study

Sept 2003

Lean Thinking in BQP – Dalehead – Asda

In the Autumn of 2002, Asda and their pork suppliers, Dalehead and British Quality Pigs (BQP) embarked on one of the first pilot 'Lean Thinking' projects for the Food Chain Centre/Red Meat Industry Forum. The team leaders were David Taylor, Cardiff Business School, Mike Wijnberg, BQP, David Salvage, Dalehead and Chris Brown, Asda. This case study reflects their experience.

Approach

Lean Thinking is a way to focus on eliminating cost/waste from the chain and thereby enhance value to consumers. It has been applied in many industries, but would it work for red meat?

'We realise the need to challenge existing approaches and knew it was sensible to look at best practices from other industries – even if at first sight these seem very different to the red meat chain.'

John Hughes, Managing Director, Dalehead

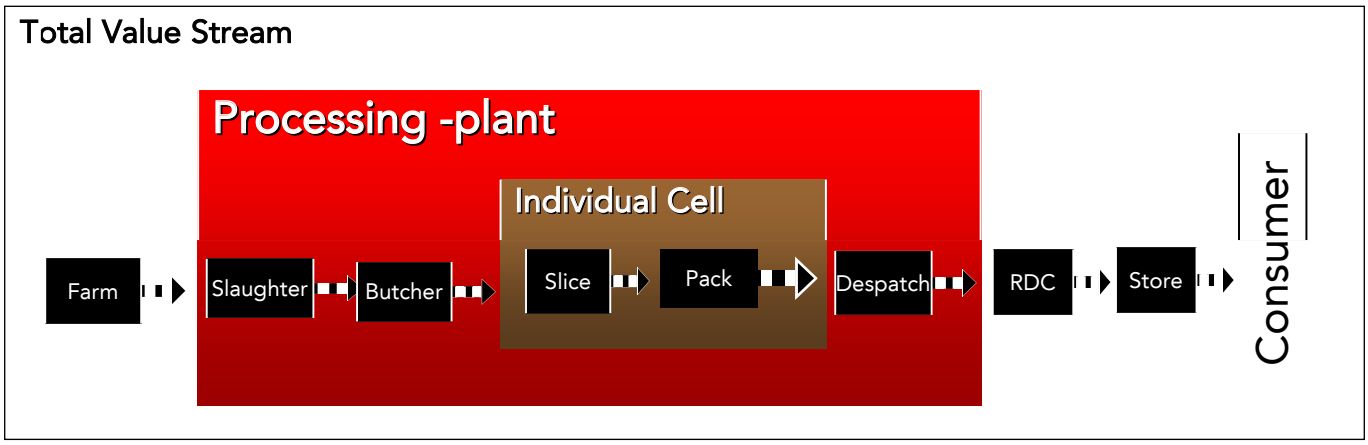
The project's objectives were to:

- Understand the current state of the whole supply chain from farm to consumer;
- Identify key wastes, problems and opportunities across the supply chain and within individual plants;
- Develop a future state vision of how the pork supply chain could operate more effectively;
- Develop an action plan to achieve the future state vision.

This was achieved by using a set of tried and tested methods developed by Lean companies that include:

- Mapping tools – to analyse and quantify the current process
- Improvement tools – to eliminate waste and create flow and pull
- Strategic tools – to develop and deploy Lean strategy

These tools can be applied equally at all levels from the individual production cell to the complete value stream.



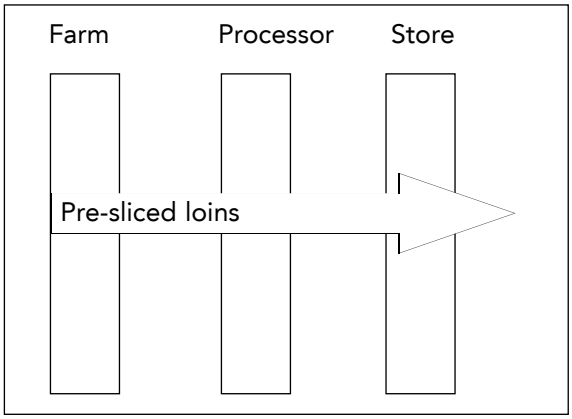
To carry out the work a value stream mapping team was established comprised of senior level representatives from BQP, Dalehead Foods and Asda, plus a facilitator from Cardiff Business School.

'Creating a team jointly with Dalehead and BQP was a vital first step in undertaking the project. It meant that we all gained a first hand understanding of how the complete chain works from breeding farm to store check-out and got a real appreciation of each others operations, problems and opportunities for improvement.'

Chris Brown, Asda

Step1: Select a value stream

The start point was to select a key product – a value stream – on which to focus the analysis. In this project, pre–sliced pork loins was chosen.



Step 2: Follow the product through the whole value stream

The mapping team attached themselves to the product and walked the whole chain from breeding farm to store check out and collected key performance data along the way.

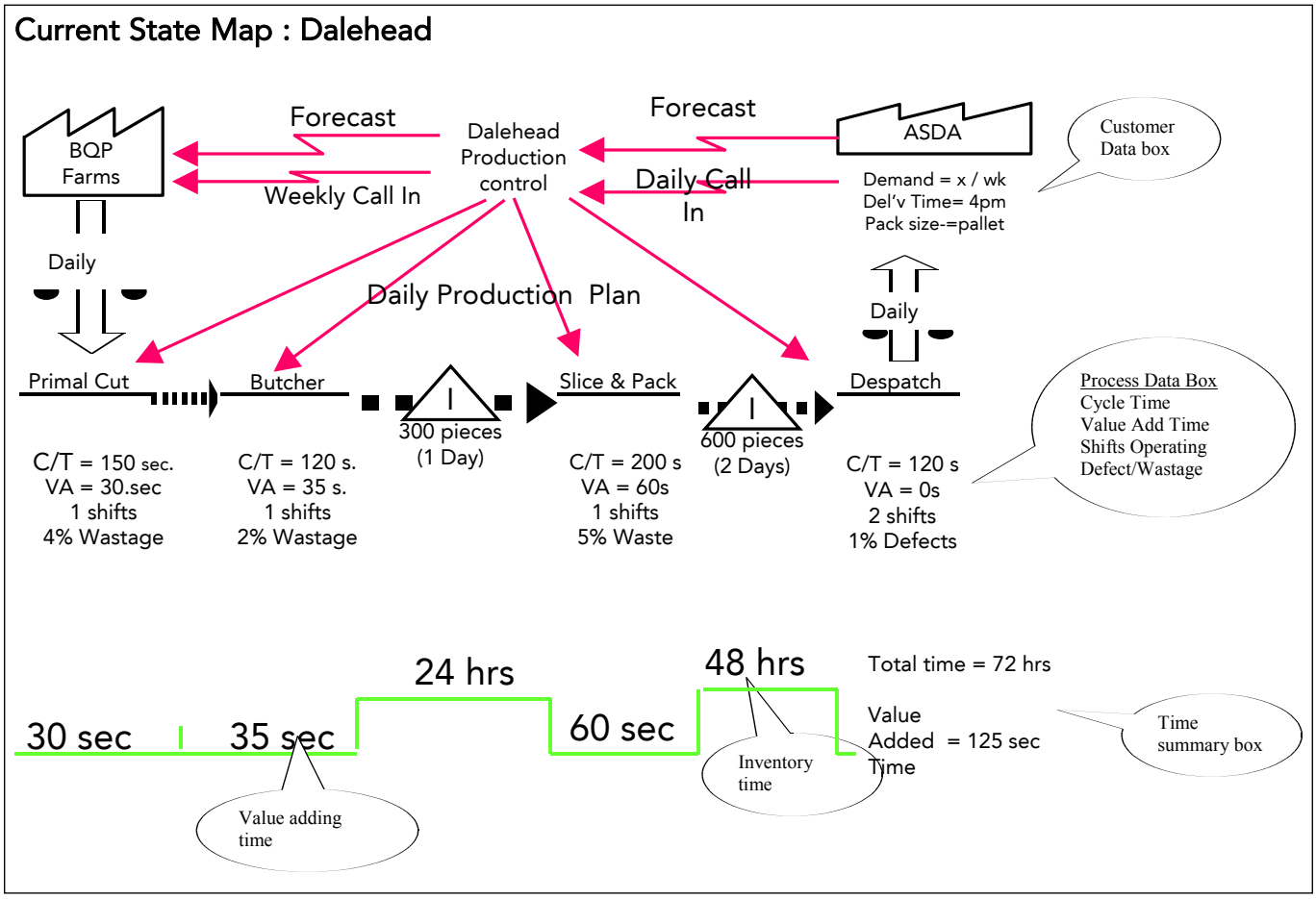
'It soon became clear that we should not rely on people telling us what they thought happened – we had to see it for ourselves. The reality was often quite different than what was supposed to happen.'

Mike Wijnberg, BQP

Step 3: Draw the current state map

The data collected from following the product through the chain was then used to draw a current state map. This summarises the key features of the process and highlights the waste and improvement opportunities in the chain.

A simplified current state map for Dalehead, omitting some of the steps in production and modified to protect confidentiality, is shown below.



The current state map summarises the information flow and physical product flow showing the time line for the overall process.

'The current state map is a great tool to simply and visually summarise what is happening in the process. Once you understand the structure of these maps – you can see at a glance the key features of your process.'

David Day, Dalehead Plant Director

The low proportion of value adding time to total time is shown in the Time Summary Box.

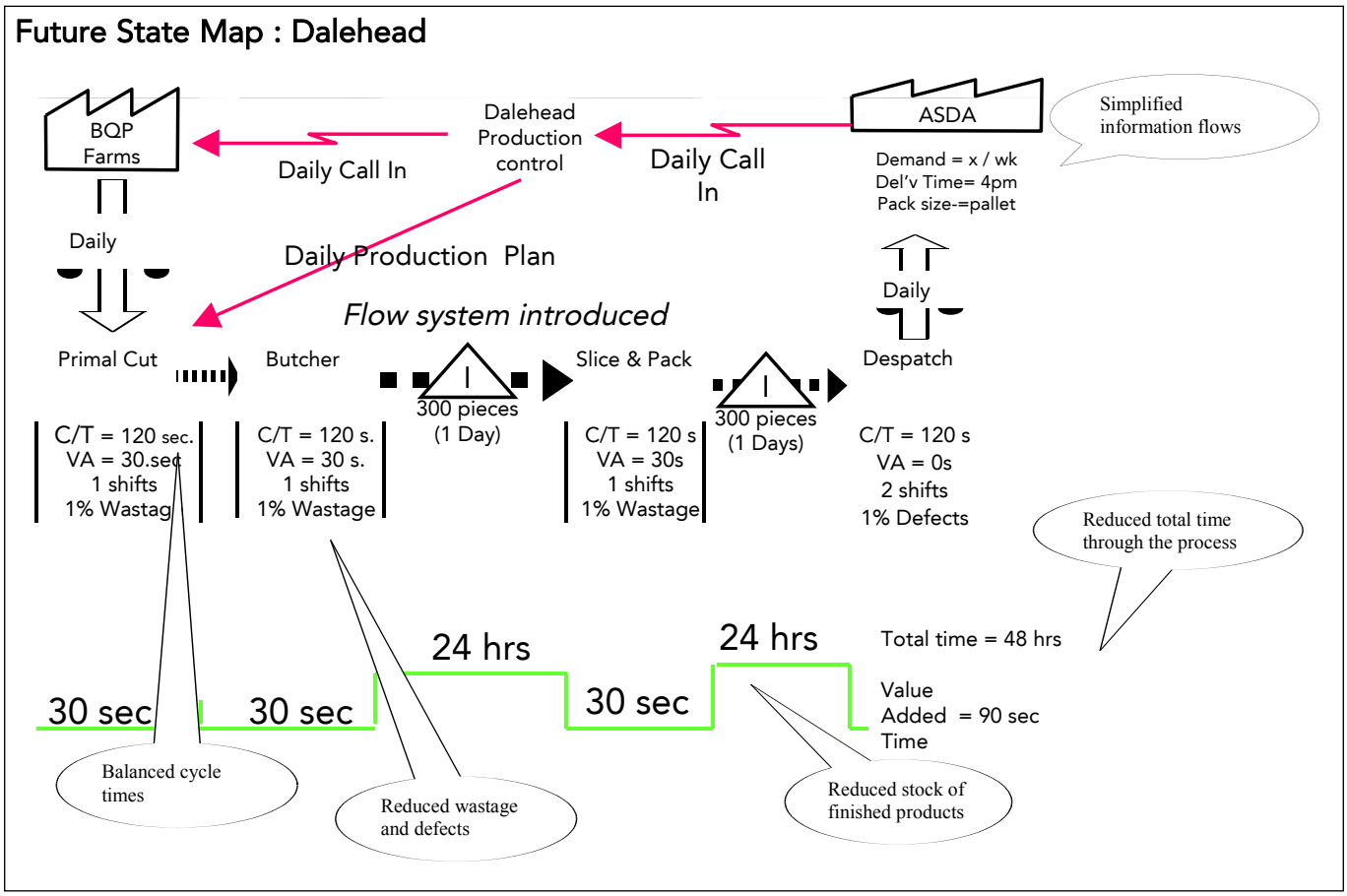
'Mapping identified lots of opportunities to take out non-value adding steps and thereby reduce cost or improve quality. We were able to grasp lots of low hanging fruit immediately.'

David Salvage, Dalehead

Step 4: Develop a future state map

The team used Lean principles together with more detailed Lean ideas such as Takt time, Standard Operations and Demand Levelling to develop a vision of an efficient Lean process.

The future state map for Dalehead, omitting production steps and modified to protect confidentiality, is shown overleaf.



Step 5: Develop an action plan

The team then produced an action plan with prioritised actions, clear statements of how each initiative links to achieving Lean objectives, together with the timing and resources required.

SMART Action Plan

(Specific Measurable Achievable Resourced Timed)

Value Stream : Pre-sliced loins

Value Stream Team : DS; DD; DM;
Customer : Asda

Improvement Initiative	Lean Value Stream Objective	Current state	Goal	Monthly Schedule J F M A M J J	Action Resp	Team	Resources Hours	Cash
Reduce product wastage in butchery	Improve quality & Reduce cost	8%	5%		DM	FG	20	
Reduce leakers on Vac bags	Improve quality Reduce rework	2%	1%		DS	RT	15	£500
Reduce non-value added steps on slice & pack line	Cost down	7people	5 people		DD	AM, RE	20	£100
Total productive maintainence on machines	Increase productivity by improved OEE	50%	65%		TM	GG	50	
Regularised delivery schedule to store	Establish Standard operations	Variable	4pm daily		DS	PL	10	
Establish finished goods supermarket & reduce stock levels	Achieve Pull & levelling	2 days	1 day		DS	PL	15	
Compress vehicle loading time		60 mins	40 min		DS	RE	5	

'This form of plan helps to avoid initiative overload and makes it clear to everyone what we are trying to do and how it fits into the overall objective of creating a Lean process'

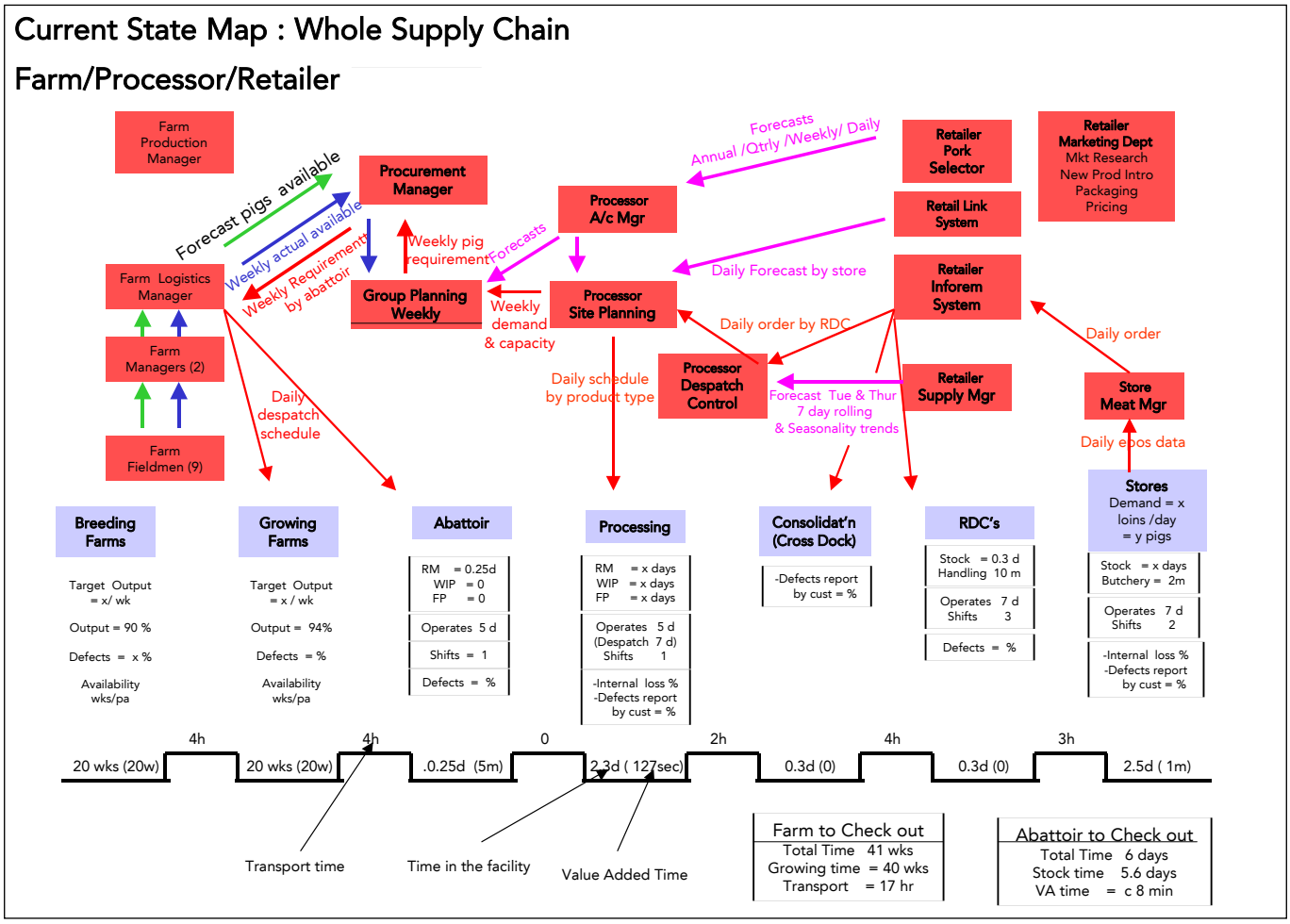
David Day, Dalehead Plant Manager

Step 6: Develop a map of the complete chain

The maps of individual facilities along the chain were combined to show the whole process from farm to store check-out.

The map shows:

- Information flows within and importantly between companies;
- Data boxes at each plant that show key characteristics impacting on whole chain performance including total stock, quality and non-conformance levels, on time delivery and plant availability;
- A time line that shows the total time from birth of a pig to product in store.



'This exercise is the first time we have seen the whole chain in detail and really started to appreciate each others operational challenges and the problems we create for each other in the current way we do business.'

Chris Brown, Asda

'The whole chain map was particularly useful in identifying interface waste – the sort of problems that occur between two companies that no one seems responsible for'.

David Salvage, Dalehead

'The current state map is really a useful way to summarise and present the very large amounts of data we found through the mapping process and saved us writing lengthy reports. It became the main working document of the value stream team'.

Mike Wijnberg, BQP

Step 7: Identify Issues and Problems across the Whole Chain

The tables below show examples of what the team found.

Issues with the Physical Product Flow
No link between pig breeding and consumer demand ● Pig production is a 'push' system ● Creates problems of under and over supply
Poor link between Processing and Consumer Demand ● Processing and retail is a 'pseudo pull' system ● Disconnected by stocks at store and at processor
More Stock than Necessary in the Chain
Many Non-Value adding steps
Significant product waste due to product non-conformance ● Pigs out of specification in weight or probe ● Primals and finished product out of specification
Limited mechanisms to identify and solve root causes of operational problems in the chain particularly across corporate boundaries

Issues with Information Flow

Multiple Forecasts

- Made independently by retailer, processor and farmer
- Contradictory
- Many of which are not used

Demand information often provided in a poor format

- Creates non-value added re-work for recipients

Demand Amplification is apparent

- Small changes in end user demand gets amplified up the chain

Issues with Management and Control of the Chain

No one responsible for management of the whole supply chain

- Fragmented approach
- Isolated islands of improvement

No overall value chain KPI's

- Nothing to drive improvement in overall supply chain performance

Independent decision making by Farmers – Processors – Supermarket

- Does not foster an environment for joint continuous improvement

'Value chain analysis is a very effective way to develop meaningful co-operation along the chain. It starts to turn the term – partnership – from a nice to have concept into a reality'.

Chris Brown, Asda

'Mapping inevitably unearths many issues, problems and opportunities across the chain at both micro- and macro-levels. Categorising these into information flow, product flow and control issues was a useful way to help us sort out the priorities.'

Mike Wijnberg, BQP

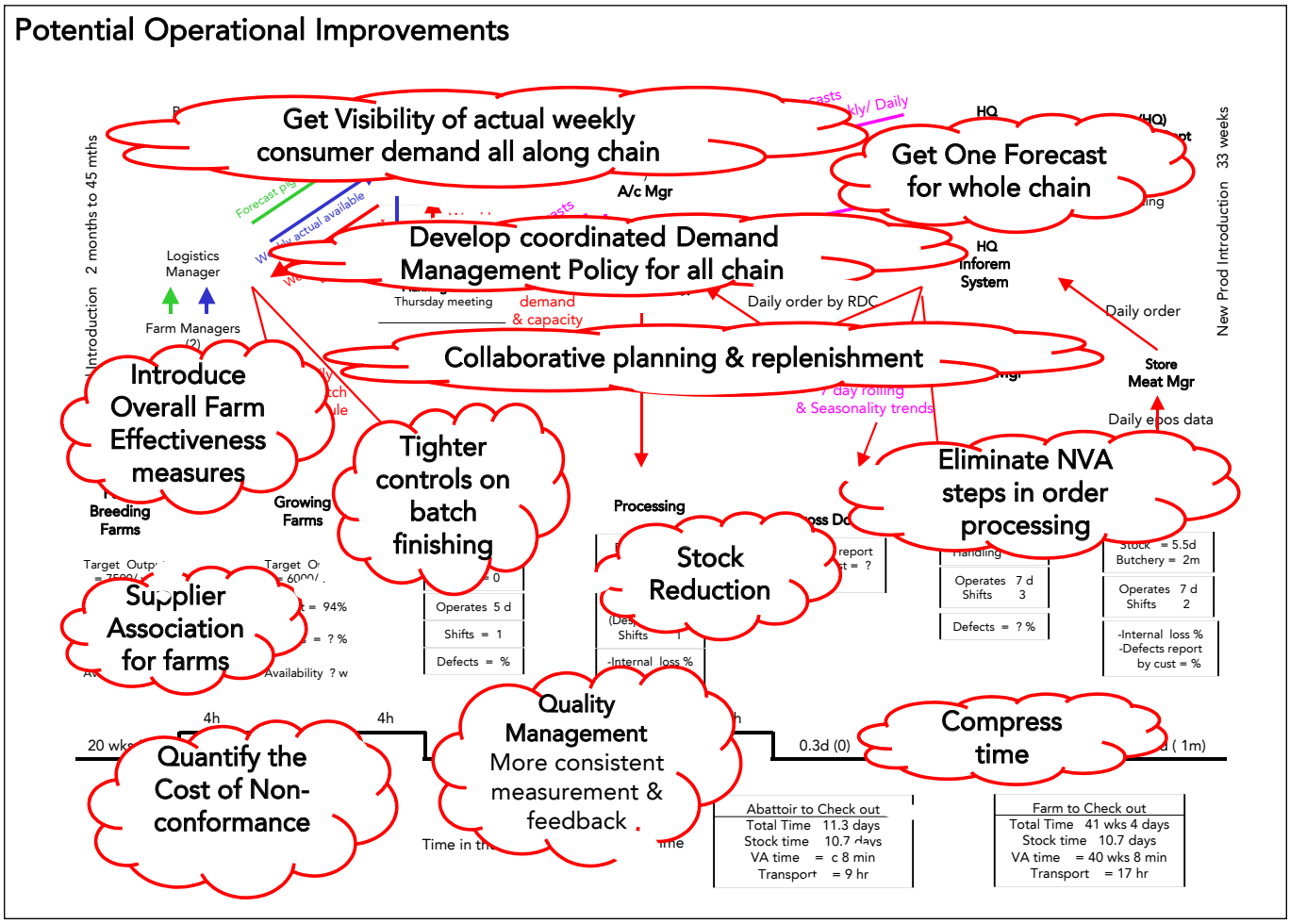
Step 8: Identify Potential Operational Improvements

Using Lean principles the team focused particularly on opportunities to reduce waste at corporate interfaces and on possibilities that arise through co-operation across the whole chain.

'It became clear that some opportunities for improvement in chain performance can only be achieved if we all co-operate. For example, we are duplicating stock holding of finished products because we currently don't have visibility of each others stocks.'

David Salvage, Dalehead

The results can be used to develop a Future State map for the whole chain.



Step 9: Strategic Decisions on the Way Forward

To complete the process:

- Mapping results and potential improvement opportunities were presented to the senior management of the three companies
- The strategic implications of developing a co-operative and Lean approach to value chain improvement were evaluated
- Potential benefits were identified in terms of cost savings, improvements to product quality and improvements to service levels
- The resources required to develop a Lean chain were identified in terms of appropriate personnel, time requirements and financial costs
- Decisions were made as to how to progress in light of the opportunities identified

"This has been a revealing exercise which has given us transparency of a complex supply chain.

We have been able to identify areas where we can save time and money which would allow us to save cost and improve quality for the consumer.

This approach to the supply chain is exactly what the industry needs in order to give transparency to all involved, allowing us all to focus on where we can save cost for the benefit of all in the supply chain."

Peter Pritchard, Trading Director Fresh Foods, Asda

"I believe that the use of Lean Thinking methodologies offers a good opportunity to all components of the pig meat supply chain as we endeavour to establish global competitiveness"

Andrew Saunders, Managing Director, BQP

"We have been very pleased with the results of the Value Chain Analysis project. It has helped us to improve both our internal activities and our business processes with suppliers and customers. The pork supply chain has traditionally been fragmented and this approach has been very useful in helping to identify ways we can work in common with our partners to improve performance to the end consumer."

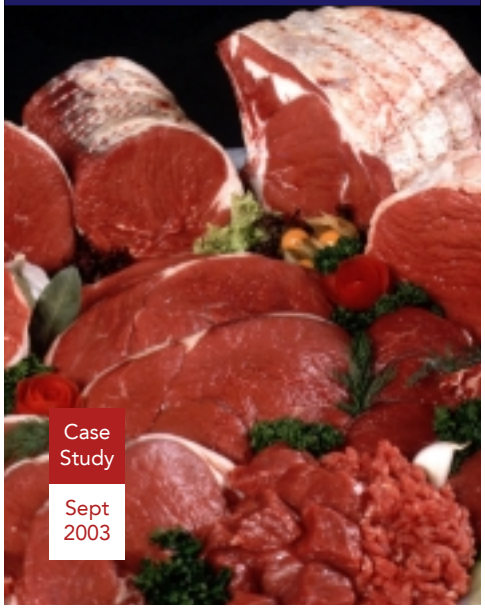
John Hughes, Managing Director, Dalehead

Food Chain Centre
Best practice for your business

Produced in partnership with

RMIF
Red Meat Industry Forum

Red Meat



Case Study

Sept 2003

McDonald's Restaurants

Reduce product variability	✓
Better manage the problem of carcase balance	✓
Improve product quality	✓
Streamline administration	✓
Reduce handling and movement	✓

McDonald's is the largest user of beef in Europe. 8–9000 cattle a week are needed to satisfy their beef requirement in the UK.

The first McDonald's UK restaurant was opened in 1974 and they now have over 1200.

McDonald's operates in the fiercely competitive burger market and you might imagine that it purchases the lowest price beef from anyone in the world. In fact, all of their European sold beef is supplied from Europe and the great majority of their British sold beef is sourced from Britain.

'Our philosophy at McDonalds is to develop a collaborative approach with our suppliers. We are committed to sharing best practice with all our suppliers including the beef farmers who benefit from this commitment because it helps improve quality and increase value.'

David Thomas, Senior Agricultural Assurance Manager, McDonald's

Supplier Relationships

Esca Food Solutions Ltd. (formally known as McKey Food Service Ltd) was founded in 1978 and is the exclusive supplier of beef patties to McDonald's UK. Production takes place at two plants located in Milton Keynes and Scunthorpe.

As a modern plant, dedicated to the needs of its customer, Esca quickly adopted "Lean and efficient" principles. It then translated and applied these principles throughout its supply chain, proving that Lean methods can reduce costs and enhance value to the benefit of all in the chain.

The BSE crisis of 1996 was a landmark for McDonald's and Esca. Traceability and product integrity became even more important. They introduced a policy of information sharing and transparency, made possible by a sense of teamwork throughout the chain.

Re-enforcing the Lean and efficient strategy, Esca Food Solutions reduced their abattoir supply base, helping to develop closer relationships including with beef farmers.

Today, 14 abattoirs in the UK and Ireland provide all of McDonald's British Isles beef. Forequarter and flank is used to produce the famous hamburger patty. Each abattoir therefore also needs a good outlet for the hindquarter and this is mainly achieved through long term relationships with multiple retailers. Carcase balance is therefore less of a problem for McDonald's suppliers.

Supplier Alliance programme

Esca Food Solutions has worked with the abattoirs to develop industry leading practices through a Supplier Alliance programme.

'Our beef patties are only as good as the meat that goes into them and to ensure a consistent supply of quality raw materials we have to have knowledge and control of the supply chain back to its origin. McDonald's and their customers expect nothing less.'

Peter Mitchell, Esca Food Solutions Ltd.

Esca Food Solutions, as McKey Food Service have always had a close relationship with their suppliers but following the BSE crisis of 1996 it decided that much more was needed. Before 1996, traceability was rudimentary and feed knowledge was basic.

The abattoirs and their supplying farmers must comply with the Esca policy on:

- Animal Welfare Guidelines during Transport and Slaughter
- Code of Practice for Slaughterhouses and De-boning Plants
- Beef Raw Material Specification
- Code of Practice for the Supply of Cattle

Now, Esca's suppliers build close relationships with farmers and hold their details on a computer database. All cattle are sourced direct from the beef farmer rather than an agent or market. There is a genuine partnership feel to the relationship and openness is expected at all levels.

Each farmer complies with standards as part of the Code of Practice for the Supply of Cattle:

- Minimum rearing standards
- Complete feed records on the finishing farm
- Traceability back to birth
- National Farm Assurance membership
- No more than 3 movements between birth and abattoir

In return, the farmers enjoy long-term security knowing they are a part of an efficient supply chain.

'We are committed to long-term relationships with our suppliers. Through openness and trust we are developing a beef supply chain that is sustainable and industry leading and most importantly, one from which all parties can achieve a realistic return.'

Peter Mitchell, Esca Food Solutions Ltd

And this is endorsed by Ronnie Vincent, Goulds Farm, Wincanton, Somerset, a beef supplier to Southern Counties Fresh Food - Esca's largest single supplying abattoir.

"The reason I joined the Southern Counties Producer Club is that I receive more information feedback which allows me to improve the quality of cattle finishing. I have a good relationship with Southern Counties and I also benefit from regular feedback from the purchasing team who keep me informed of customer concerns and developments."

Ronnie Vincent

The Supplier Alliance programme also benefits abattoirs. For example, it has helped Southern Counties Fresh Foods, the largest supplier to Esca in the UK, increase throughput by 50%.

Improving Performance

A key part of the McDonald's philosophy is continuous improvement, not only in the restaurants but with its primary and secondary suppliers as well.

McDonald's has developed a 'supplier quality index' (SQI) by which all suppliers are measured. It allows the company to monitor performance of suppliers across the many agricultural and non-agricultural products and services purchased. There is a philosophy of sharing best practice across all suppliers where common issues are discussed at regular meetings.

McDonald's also conducts regular audits of each supplier including the two plants of Esca Food Solutions Ltd. It has also commissioned the European Food Safety Inspection Service (EFSIS) to audit and accredit all meat suppliers.

All Esca Food Solutions suppliers in turn are subject to audits:

- One in-depth technical audit per year usually taking 2 full days.
- Traceability audits – unannounced – three times each year for every supplier including farm visits.
- Animal welfare audits.
- SRM Audits.
- Product integrity audits.
- Third party audits, carried out by EFSIS.

As part of the McDonald's continuous improvement philosophy, Esca has introduced a sophisticated system of monitoring performance of its meat suppliers. Based on a number of Key Performance Indicators (KPI's) the system benchmarks quality performance both against other suppliers and past performance.

The system operates in real-time, with all suppliers linked to Esca via an Internet platform known as Osi-link (after Esca's parent company the OSI Group). It provides access to data showing the performance of each delivery, including:

- Meat intake analysis
- Temperature on arrival
- Chemical Lean Content
- Microbiological Results
- Physical assessment

Suppliers receive a monthly summary report of performance with supplier league tables.

Performance trends prove the value of this approach. Through time the best scores have not only improved but the range of scores has narrowed, showing that measurement and sharing of best practice helps everyone to improve.

The long term commitment between SCFF and its suppliers has led to a substantial improvement in cattle achieving target specification. Those farmers who supply at least 92% of cattle in specification become part of the Southern Counties Gold Club. All members of their Producer Club receive a regular Newsletter and maintain close contact through Southern Counties fieldsmen who help and advise with cattle selection and more.

Food Animal Initiative

McDonald's with Tesco are also joint founders of the Food Animal Initiative at Oxford. FAI's main objectives are:

- To develop sustainable farm systems that provide benefits to animal welfare, the environment and human health.
- To demonstrate the success of these systems through practical and commercial application.
- To supply knowledge and training to commercial farmers.

McDonald's also support the Blade Farming initiative (see separate case study).

Conclusions

McDonald's operates in a famously competitive market and delivers good value for consumers.

How does McDonald's achieve this?

- Not by searching on the commodity market for the lowest cost suppliers. It sources only from dedicated suppliers.
- Not at the expense of safety or quality. It operates an extremely strict auditing regime.
- Not by pressurising suppliers. It believes in a policy of paying for performance and long term sustainability for suppliers.

The secret is a Lean and efficient chain via rigorous measurement, the spreading of knowledge and a real sense of teamwork.

Food Chain Centre
Best practice for your business

Produced in partnership with

RMIF
Red Meat Industry Forum

Red Meat

Case Study

Sept 2003

Blade Farming

Reduce product variability	✓
Improve product quality	✓
Streamline administration	✓
Reduce handling and movement	✓
Optimise the use of equipment and inputs	✓

Blade Farming is a new approach to rearing beef animals, aiming to capture and apply best practice to produce high quality products, profitably and competitively.

'The Blade Farming system embraces the key issues that effect farming. Farmers in the Blade system are focussed on a quality end product and receive guaranteed prices for their animals'

Alan King, Managing Director, Blade Farming

"Blade Farming is an important new development in beef farming that has the potential to help improve profitability. I have seen Blade Farming at first hand and was very impressed. As Chairman of NFU Livestock, it has my full support."

Richard Haddock, Chairman, NFU Livestock.

History

Around the turn of the Millennium, a joint venture called the Best Beef Scheme was developed to address the falling quality of beef animals and to improve profitability at farm level. It included two Tesco suppliers, Express Dairies (milk) and Southern Counties Fresh Foods (part of the Hilton food Group).

Under this scheme, the dairy farmers supplying Express Dairies began to use semen from bulls on MLC's best beef sire list – a breeding programme designed to produce more and better quality beef. This secured a better market for calves so that they were no longer just a low value by-product of the dairy industry.

After this success, the participants considered the next step.

"We wanted to go further and help farmers improve the consistency of their beef animals and to provide them with a guaranteed market. Traditionally farmers have been too reliant on a good export market and that resulted in lack of focus on the genetics of calves. I felt that the supply chain had a responsibility to encourage a better raw material which would benefit all involved".

Richard Phelps, Managing Director, Southern Counties

The Blade Farming System

The result was Blade Farming, a cattle rearing and finishing approach that applies a pen system for consistency. Blade is a farming method that is franchised out to farmers for a fee. It applies a blueprint to produce beef aiming to meet customer needs at the minimum cost through the use of a sophisticated information system.

Key features of the system are:

- Physical and financial management including:
  - Individual animal records
  - Standardised daily feed intakes
  - HACCP (Hazard Analysis and Critical Control Points)
  - Health incidents and treatment details by individual animal
  - Re-weigh information
  - Pen socialisation
  - Carcase information

- Reports to the farmer on:
  - Daily live weight gains
  - Feed costs of gain
  - Overhead costs of gain
  - Pen socialisation and performance
  - Health issues
  - Feed inventories
  - Full costs with detailed profit and loss per pen or batch

Blade Farmers aim to produce cattle between 260kg and 300kg finished within 12 to 14 months. All calves spend a short time on the dairy farm to ensure they are fit and healthy before moving on, typically in batches of 40 to be finished.

The batch of 40 is kept together throughout the finishing process to promote consistency and to ensure that all are ready for slaughter simultaneously. The batch size is designed to fill a cattle transporter and therefore achieve distribution efficiencies.

Welfare standards are high and the Blade precision approach to farming should not be confused with intensification or 'factory farming'. Instead it is based on information, analysis, established best practice and close controls.

Blade Farming has been thoroughly tested over two years of research and trials at two sites:

- Calf rearing at a Reading University farm where welfare and efficient production are monitored.
- Finishing at the Food Animal Initiative in Oxfordshire where the animals are kept mainly indoors but with outside loafing areas that the cows are free to access when they choose.

Contracts and Profits

The Blade Farming approach has been tested and proven using one particular production method but the system can be adapted to meet the circumstances of different farmers – the franchisees.

Participating farmers must meet the standards of a recognised assurance scheme. They must also produce in a batch size of 40 to achieve economies of scale and provide consistency to the processor.

In other respects Blade can be modified to work with most farming systems, including organic and the team is working with various farmers to test and demonstrate this point.

Through an agreement with Southern Counties Fresh Foods, participating farms are guaranteed a minimum price as the cattle enter for finishing, provided they meet the specified grade. Because the calves have been selected for their potential, the farmers start from a good position. So if they farm efficiently and apply the protocols in the farm manual, this guarantees a profit.

Final payment is based on carcase grids with a 20p/kg variation.

At the time of writing, in the summer of 2003, some 10,000 cattle were in process under the Blade Farming system. Around 6,000 will be slaughtered in 2003 and the plan is to increase this quickly to 30,000 annually.

28 farms currently finish the cattle and 3 are dedicated to rearing.

Southern Counties

Southern Counties Fresh Foods is one of the founders of the Blade Farming system. The company de-bones and packs both beef and lamb for manufacturers and retail customers through its sister companies, RWM Group and Hilton Food Group. They are now one of Europe's largest meat packers. At present it is the only processor to buy animals reared under the Blade system. Their two main customers are Tesco and McDonald's.

The Blade farmers that supply Southern Counties typically do not need to put substantial new investment in their farms to become a franchisee. Blade works as a partnership and the roles of the franchisor and franchisee are shown below:

Franchisor (Blade)	Franchisee (Farmer)
Production manual and protocols	Providing facilities, equipment and farm management
IT system and software	Selecting cattle
Pricing policy	Sourcing other inputs
Approved input supply companies	Adhering to the production manual
Management support and advice	Farm Assurance
Farm Assurance	Inputting data to IT system

Eating Quality

Using MLC approved, as well as independent taste panel tests, beef from the Blade system has scored highly on measures of eating quality, including tenderness, juiciness and appearance.

What Next?

The next stage for Blade is to agree forward contract prices with participating dairy farmers to procure calves. There has been a pilot exercise carried out with Evershot Farms, a substantial milk producer, to procure all of their calves on a weekly basis. This has provided a regular supply of calves of known genetics and health status. The dairy farm benefits from having a secure customer for its calves without the complication of marketing.

"Calves are a necessary part of our production cycle but rearing and marketing bring additional complications to a busy schedule. So having a regular pick up and known price allows us to focus on our main business of milk production."

Robbi Taylor — Farms Director Evershot Farms dairy enterprise

The information system is also evolving. Data, logged on each farm computer, will in future be linked to a central database. With the farmer's agreement, this will be used to benchmark performance with financial analysis to help farmers compare in a confidential way.

The system will also give the farmers detailed costing on the viability of each batch. The impact of changes to raw material price will then be highlighted in the final gross margin.

Blade Farming hopes to continue its success and roll out the system further across the UK so that more abattoirs and livestock farmers participate.

Conclusions

Blade Farming may not suit all British beef farmers and potential members should evaluate it carefully in light of their financial objectives and target market. However it is rigorous and well tested, it captures and spreads good farming practice and is a proven, efficient method of providing beef for the mainstream market.

It therefore has the potential to benefit farmers, processors, retailers and consumers.

For farmers:

- Access to rigorously tested technical best practice.
- Opportunities to supply a guaranteed market with a minimum price for all cattle finished to specification.
- Predictable costs allowing accurate financial projections.
- Detailed feedback on performance.

"I operate my farming enterprise as a stand alone business and do not expect that any area of the farm should subsidise the other. I was concerned that starting a beef enterprise may compromise the rest of the farm, but with the Blade Farming package it is easy to see where all my costs are and more importantly that I am earning money from beef farming".

Simon Weaver – Turnstone Farming Company finishing farm

"The Blade system works for Lordswood farms as we are developing a dual purpose cow which can deliver good milk yields as well as good quality beef from the calves produced. The beef industry has been backward in recognising the quality benefits from our breed, so we have found that this system has worked well in promoting the Montbeliard breed".

Neil Darwent – Lordswood Farms specialist dairy

For abattoirs:

- Greater consistency helping to reduce processing costs.
- Higher standards of quality.
- Accurate forecasts of when animals will be ready, helping to improve planning.

For retailers:

- A longer than average shelf life for products (as a result of the Blade feeding regime).
- Superior product appearance that is more attractive to shoppers.

Food Chain Centre
Best practice for your business

Produced in partnership with

RMIF
Red Meat Industry Forum

Red Meat

Case Study

Sept 2003

What can we Learn from Argentina?

Reduce product variability	✓
Reduce handling and movement	✓
Improve layout	✓
Optimise the use of equipment and inputs	✓
Reduce the number of physical errors	✓
Make better use of staff	✓

Argentina is a strong competitor in the beef market and not just based on price. In particular, Argentina has a strong share of the UK catering market for steaks by consistently meeting the needs of the market.

How do they achieve this and what can we learn from their methods? One of our project teams pursued this question and arranged for a fact-finding trip. They were impressed by what they saw and grateful to the Argentinians for their openness and hospitality.

We should emphasise that the team's hosts were not typical of the Argentinean beef industry. They were focused on UK catering and had developed their methods to succeed in this market. Other Argentinian farmers and processors apply quite different systems.

This case study is in two parts. The farm report is by Andrew Hodgson, a beef farmer from the Isle of White and supplier to the catering market. The abattoir report is by Cardiff Business School who contrast their experience with several UK visits.

1. Beef Farming at the El Descanso Ranch

El Descanco Ranch is located in the province of Buenos Aires in an area of Argentina known as the 'Pampas'. El Descanso Ranch is 5,000 hectares of flat, productive land receiving 1,200 mm of rain a year with a good sunny climate where frosts are rare. This is an ideal grass and crop growing climate, and nearly all the land on the Ranch (4,300 ha.) is good enough for crop rotation.

All of the land was well served with farm tracks and water. The grazing areas have semi-permanent electric fences. It was rare to find a field under 100 hectares and fields, fences and tracks only came in straight lines!

El Descanso Ranch is part of a larger farming company (AB&P), farming a total of 260,000 hectares and running 180,000 head of cattle, spread over 27 farms, either owned (20) or share farmed (7). This is a well established business that has beef production from its breeding farms in the North of the country, through its finishing farms to its own abattoir (in the heart of the finishing area) with a capacity of 700 head per day shift. In addition, the business organises transport to the docks from where hindquarter cuts are shipped to the UK.

Rearing

The breeds were dominated by Hereford and Angus, both with about 1/8th Brahman in them, to increase hardiness. These breeds dominate in Argentina because they can remain outdoors and forage for all food, keeping costs to a minimum.

The farming system was very simple. Calves arrive on El Descanso at weaning. The steers weigh 140-180 kg., and the heifers are about 10 kg. lighter. The calves come in twice a year.

Arrive on Farm	Weight		DLWG	Fattening Time	Slaughter Weight	
	Heifers	Steers			Heifers	Steers
Spring	150	160	0.8	12 months	270 -	360 -
Autumn	150	160	0.5	15-18 months	330	450

DLWG = daily live weight gain

Cattle were grazed to achieve the target DLWG. The main grazing sown is a mixture of lucerne and coxfoot. These were sown in 3 rows of lucerne to 1 row of coxfoot. This mixture creates the right nutritional intake, ensures the grazing is of even quality and enables the target DLWG to be achieved through all seasons of the year.

Cattle were kept in groups of around 600 animals and moved to fresh ground every day, on a strip grazing system, with a fence to constrain their movement. All of these fences were semi-permanent and can be removed when the field reverts to arable cropping.

The less productive land was planted with rye-grass and grazed at lower densities.

There was a novel way of re-seeding these less-productive areas. The rye-grass was allowed to seed, then sprayed with Roundup, and then after the seeds have struck, nitrogen was applied.

The farm had 14 members of full time staff. They all live on the farm and are housed and fed there.

3000 hectares of arable land had only one arable store worker. It was not considered a big enough block to justify machinery or permanent labour, so was all done by contractors.

The Gauchos had their own horses and did all the stock work. This usually meant there were 1,000 head of cattle to each man. They were highly skilled and apparently dedicated and loyal, often spending their entire working life on one farm.

'The quality of the cattle and the care and attention that was taken in their rearing was impressive. Equally impressive was the level of financial detail with which all management decisions were made. It was clear that financial margins were tight, and the preservation of these margins was the primary factor in all decisions. The depth and detail of their financial equations to all aspects of cattle production were astounding.

All stocking rates were calculated in cow equivalents per hectare (1 cow = 410kg.) and all financial measurements were on this basis. Detailed forward planning and "what if?" scenarios were done on a regular basis, allowing margins to be maximised and the full potential of the farm to be realised.

Annual 'grazing efficiency ratios' were a useful benchmark.

Stock wt/ha. in / stock wt/ha. out = grazing efficiency

These calculations were exchanged and compared with other farmers to the mutual benefit of all. This is co-ordinated through the producer group run by the abattoir. There is no secrecy or perceived competition between the producers. They feel they are aiming for the same markets, with the same raw materials, climate and economy. This co-operation helps them to achieve a single, optimised production system for their market and produce a consistent product, making marketing much easier.'

Andrew Hodgson, Beef Farmer

The table below compares the costs in Argentina with an example UK intensive bull-beef system. It shows that the cost structure is very different between the two countries.

	Calf In	£ Difference	Carcase Out
Argentine System	150kg. £67.20	£112.30	70p./kg. DWt. 450 LWt. @ 57% KO = 256.5 kg. DWt.=£179.50
UK System	150kg. £290.00	£156.00	165p./kg. DWt. 520 LWt.@52% KO =270.4 kg. DWt.=£446.00

DWt. Dead weight LWt. Live weight KO Killing out

Cattle lose on average 5% body weight from farm to abattoir because of the often long transport distances involved.

Farmers receive a fixed price for each animal regardless of grade. The grades are similar to the EUROP system and the grades achieved by the animals were variable. However, the team ethos provides the incentive to aim for the highest grade rather than direct financial reward.

The higher Killing Out% was achieved in Argentina because the abattoir did less trimming of the carcase and farmers were paid on the hot carcase weight.

With the advantages of cheaper land and economies of scale in Argentina, El Descanso can convert a 150kg calf into a 256kg carcase for just £85.00 (including all fixed costs and marketing) leaving a positive margin of £27.30.

Some elements of the system – such as the land and climate are not transferable to the UK. But other elements could help UK livestock farmers, including:

- The dedicated focus on the market supplied.
- The attention to financial planning and detail.
- Sharing performance data such as grazing efficiency ratios through the Producer Group.

2. Processing

The scale and throughput of the Argentine processor visited greatly outweighed typical abattoirs in the UK but another striking contrast was the simplicity of layout, visual management and uninterrupted flow of the line.

Perhaps most impressive was a measure taken by the visiting team. They observed the plant in great detail over a 30 minute period, stopwatches in hand and recorded that 80% of all operator activity was value adding. This contrasts with an average of 60% observed in similar experiments in UK plants. In other words, the Argentinian operators were 1/3 more productive in this period than their UK counterparts.

Although this single measure from just one observation is far from conclusive, it did support the team's impression of a modern, efficient and well run plant.

Whilst almost all UK plants measure and pace the productivity of their line, typically they control this through a manual feed of product (an operator judges when to launch the next carcase into the system). By contrast, an indexing conveyor drove the Argentinian plant line with a speed automatically set according to the type and weight of animal.

This method ensures that each operator receives a standard amount of work per time interval and must work to this pace. The figure was the first piece of information mentioned by the production manager. The manager understood the importance of providing each operator with an equal amount of activity. Otherwise, some operators go faster or slower than their peers and time is wasted through lack of synchronisation – termed an unbalanced line.

The layout of the room was simple and consisted mainly of an overhead conveyor until the product was cut to a size that was easy to handle, followed by a single lower-level cutting conveyor. In contrast to many UK plants, there was no need physically to handle large cuts of meat.

Conveyor guards prevented any major cuts of meat being dropped during the visit. Handling of secondary product away from the line was done using wheeled bins and there was a less complex secondary conveyor system.

Visual management and hygiene were excellent. For example, yellow and white lights corresponded to yellow and white knife handles that controlled the knife changeovers.

Not everything was efficient in the plant. Vacuum packing was a problem, just as in the UK and there was a similar rate of 'leakers' (failed vacuum packs) at about 2%.

In common with all UK plants, control of carcase balance was key to profitability. Medium term carcase balance was less of an issue because the domestic market provided more equal demand for all parts of the carcase. However, short-term balance was still a challenge and stock in the chillers and vacuum pack store was closely controlled and monitored by various spreadsheets of stock, orders and production schedules several times per day.

The IT team's next objective was to develop a system to allow a sales inquiry and its financial contribution to be analysed immediately. This would allow the plant to interact straight away with the customer on product mix and delivery date.

There was a commitment to sharing information with farmer suppliers. By 6pm on the day of slaughter the grading results for all animals processed were made available by Internet. There was virtually 100% take up by farmers of the Internet system with no phoning or faxing of results.

This reflected the shared interest of both farmers and processor to reducing variability, a particularly important aspect for the catering market. Despite their already strong performance in this regard, product consistency remained a top priority.

Conclusions

The whole team: farmer, processor, caterer and analysts found the visit to Argentina invaluable. It proved once again the benefits of visiting other countries and studying their methods with an open mind.

Any stereotypical views of Argentina were soon dispelled. True enough – some natural conditions helped the Argentineans to contain their costs but these advantages were reinforced by professional management, a strong sense of teamwork, investment in modern equipment and a dedicated focus on the needs of the customer.

This was all underpinned by the organisational structure, i.e. a co-operative of farms, integrated with the abattoir.

Whilst appreciating that they had probably witnessed the best of Argentinian standards and that these were not typical, it did bring home the challenge facing the British red meat industry. To hold off imports and gain a bigger share of the growing catering market, these are the standards we must match or exceed albeit through our own solutions, matched to our own conditions.

Food Chain Centre
Best practice for your business

Creating Consumer Value at Polkinghornes

Create consumer value	✓
Better manage the problem of carcass balance	✓
Improve product quality	✓

'Our mission is to re-establish the direct link between farmer and consumer. That's the way to deliver beef at its best.'

Rod Polkinghorne

In the ideal Lean supply chain, every activity is dedicated to satisfying the final consumer. For livestock farmers, often several stages removed in the chain, consumers and their needs can seem remote. But when farmers do get close to consumers and seize the initiative, the results can be dramatically impressive.

It is unlikely that you will have come across Rod Polkinghorne unless you travel 'Down Under'. Rod has farmed there for over 30 years and in 1990 Rod purchased a farm near Bairnsdale in Victoria's eastern district, where he manages a herd of more than 500 breeding cattle.

In his new venture, he now oversees the entire process of beef production from conception to the consumer.

After many years of watching meat sales decline and hearing consumers complaining of the lack of standards in beef, resulting in product inconsistency, fluctuations in cooking, eating quality and tenderness, Rod became instrumental in the creation of a system known as Meat Standards Australia (MSA).

Produced in partnership with
RMIF
Red Meat Industry Forum

Red Meat

Case Study

Sept 2003

Consumer Research

Rod had led a research project to analyse the factors that determined beef eating quality. This program was developed over 8 years and included 58,000 consumers performing 350,000 taste tests with a variety of beef cuts, testing produce from a wide range of cattle breeds, management systems, cuts, ageing periods and cooking methods.

The research helped him to rate beef on a tenderness scale. In 2000, the Meat Standards Australia system was finalised whereby **every individual piece of beef (not just the carcase) in the scheme is graded**. Ultimately the system is designed to ensure that when MSA beef is cooked as recommended, the eating quality is certain to achieve the labelled standard, backed by a 100% money back guarantee.

Retail Stores

Initially Polkinghorne planned to sell his new products through the Australian supermarkets but when they were sceptical about his ideas, he decided to prove them wrong, by opening his own retail outlets.

Rod opened his first concept store in May 2001 in Melbourne, redefining the traditional butcher's shop and bringing customers a new approach to buying and cooking beef.

Fresh meat is displayed by cooking method – grill, barbecue, stir-fry, casserole or roast – rather than cut, so customers don't need to know which cut is which. Cooking instructions are supplied with each product. This takes the guesswork out of buying meat and all products are fully trimmed and ready to be cooked.

The products are also separated by grade, where:

*** Guaranteed tender

**** Premium succulent

***** Melts in your mouth!

There is a significant premium charged for each extra star rating and 5 star is designed for very special occasions.

'Its all about attention to detail, a passion for quality and innovative retailing that uses leading-edge beef grading technology to bring our customers excellence in beef.'

Rod Polkinghorne

The stores also offer a wide selection of convenient and value added home style pre-prepared meals and accompaniments. These are prepared daily by in-store chefs. The selection includes, but is not limited to: casseroles, curries, soups, pies, freshly prepared sauces, salads and vegetable dishes to round out the meal.

Particular attention is paid to developing attractive and convenient meals that use the lower value cuts of meat, so that all parts of the carcase are in regular demand.

Quality Control

The Polkinghornes concept relies on encouraging consumers to pay extra for the guarantee of quality. Accurate grading and outstanding quality control is therefore essential.

'To meet Polkinghornes exacting standards of production, all unnecessary fat and gristle is removed, ensuring value for money, because customers only pay for the parts that are fully edible.'

Rod Polkinghorne

The stores also offer lamb, pork and free-range chicken. These products are sourced from other suppliers who have to adhere strictly to the Polkinghornes code of practice.

To reinforce the quality proposition, Polkinghornes does not use any growth hormones or promotants or artificial fertilisers.

Polkinghornes meticulously maintains exacting standards of quality and care in breeding, pasture, feed, transport and how the carcass is hung, aged, chilled and cut.

Any cuts of meat that do not achieve at least a 3 star tenderness rating in their in-house grading system are sold through other channels.

Early Lessons

Despite the meticulous preparation, the first Polkinghornes store had its share of teething troubles. Retailing is a contrasting skill to farming and some early mistakes were made, for example in how the products were packaged and displayed.

Polkinghorne needed to break through the barrier of consumer acceptance that stands in the way of any innovation. Especially as he needed to charge a premium above established retail prices. It required marketing flair, plenty of information for customers and patience to allow the 'word of mouth' effect to work.

The second challenge was to convert top line (sales) in to bottom line (profit) growth. Cost control is critical to any retailer.

The skills required didn't come automatically but Rod Polkinghorne is a determined man. He appreciated the need to learn quickly and used his personal network to build new contacts. He was eager to learn from anyone with retail experience, particularly visitors from the UK, which is in the forefront of innovation in prepared meals.

The first store was adjusted and refined many times. Once he achieved the right formula, with rising sales and positive customer feedback, Polkinghorne was ready to rollout the concept.

But by targeting the top end of the market he required heavy investment. To move at speed, Rod Polkinghorne realised he needed an investment partner.

In February 2002, Polkinghorne sold a controlling interest to the Australian Agricultural Company. AACo is one of the oldest companies in Australia, established in 1824. It farms 400,000 cattle and owns almost 1% of Australia's land mass.

This move has brought further investment in research and systems development to Polkinghornes, in preparation for the opening of more stores. At the time of writing, two more stores had opened in the state of Victoria with plans for much wider expansion ahead.

Owning and controlling the whole chain has been a big help to Rod Polkinghorne as he developed his new concept. He can apply an exacting grading system without creating tension between farmers, processors and retailers. As a farmer, it is against his interests to over-grade products because as a retailer, it would disappoint customers. Equally, he directly receives the financial return for every carcase and this gives him a great incentive to improve quality in every possible way. He therefore takes a precise approach to measurement, control and improvement at each step of the chain.

As a processor, he appreciates the daily problem of carcase balance but as a retailer he has the freedom to innovate and to adjust prices to manage demand effectively.

However, the Polkinghornes integrated model is easier to manage in its current small scale. Growth will be challenging as he and AACo seek to bring more farmers and abattoirs on board, applying the same standards.

Conclusions

Polkinghornes/Meat Standards Australia exemplifies the consumer focus dimension of the Lean philosophy:

- A strong emphasis on creating consumer value, reflected in the packaging and presentation of the meat but also evident in quality control procedures, animal genetics and rearing methods.
- Regular feedback from consumers and full traceability so that satisfaction is linked with production methods and quality constantly improved.
- Minimal waste through carcase imbalance by developing a constant stream of attractive new products.

Will Rod Polkinghorne succeed in his vision to re-establish the connection between farmers and consumers and to present and provide meat in a more consumer-focused way?

And are any of his ideas transferable to the UK?

These are critical questions and only time will reveal the answers. But this is a bold attempt to drive extra value into the beef industry at a time when it is badly needed and many people will wish Rod Polkinghorne success.