

# Lean Six Sigma and marketing: a missed opportunity

Chaplin, L. and O'Rourke, Simon T.J.

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**Paper Type** Case Study

### **Introduction.**

This paper reflects on a business improvement programme that utilised the Lean Six Sigma (LSS) methodology and was conducted at a large UK ambient food manufacturing site. Briefly outlining the initiative itself the document examines the involvement of the marketing function within the business improvement project. The piece discusses the gains derived from the LSS projects and identifies gaps in potential benefits in particular the paper questions how well any potential marketing messages were exploited by the organisation. The research critically evaluates the impact that marketing function involvement could have in helping to promote the wider productivity message and its contribution to the wider Corporate Social Responsibility (CSR) strategy for the organisation. The document also suggests how the company could leverage internally focussed projects to adopt a companywide marketing orientation and use such leverage to support future Lean Six Sigma project selection and justification.

### **Business Improvement.**

Many organisations have recognised the need to drive for continued improvement within their operations. Approaches currently used within the UK range from single point projects to whole business improvement initiatives linked to attempts at developing an improvement culture within the organisation. The tools and techniques

used by companies to deliver any of these initiatives are equally diverse and often the same technique can be seen driving very different approaches. For example the concepts of Lean Manufacturing as described by Womack and Jones (1996) have been applied by organisations on single projects, using the 5 Lean principles, but also by others to drive major change across the whole organisation and beyond (Lean Enterprise Institute 2009). Whilst the scope of improvement projects has widened from predominantly manufacturing operations to cover a far wider range of service delivery organisations and from the operations department to all the business functions, the focus in the vast majority of initiatives remains internal, at the most starting to influence activities back down the supply chain. This limited focus is particularly puzzling as most of the improvement techniques currently being utilised start with a consideration of customer need. There is little research that has been carried out on the link between business improvement techniques within the organisation and any potential external marketing communications message.

### **What is Lean Six Sigma?**

Lean Six Sigma is an amalgam of two previously established improvement approaches, Lean and Six Sigma. The concepts of Lean Manufacturing have been well documented (Womack et al 1990, Womack & Jones 1996) and are often seen as exemplified in the Toyota Production System (Ohno 1982, Liker 2004). At its core, Lean thinking is concerned with identifying what the customer desires, eliminating all activity within the production process which does not contribute to this goal (often termed MUDA), stream lining the remaining steps and then matching all activity to deliver at the speed required by the customer. The process is seen as never ending

in that once you have completed the cycle you return and try to reduce the number and duration of the steps again at its core Lean thinking is concerned with the control of waste.

The development of Six Sigma is generally credited to Motorola in the 1980's (Pepper and Spedding, 2010). The focus of Six Sigma is the reduction in variability, the underlying concepts of the approach are statistical, the term itself is derived from the statistical unit of standard deviation and that 99.997% of a population falls within 3 standard deviations of the mean. In addition to the analysis of process capability that forms the heart of the approach, Six Sigma also includes a strict project management approach, DMAIC (based on the phases Define, Measure, Analyse, Improve and Control), combined with a regimented practitioner hierarchy known as the belt system at its simplest Six Sigma is the control of variation.

Progressively through the 1990's manufacturing companies started to combine the two approaches of Lean and Six Sigma (Snee 2010), there seemed to be a natural fit between the two process orientated approaches. Variability is one of the sources of waste within a process and so Six Sigma can in itself be seen as an application of Lean. The Lean Six Sigma (LSS) technique that was originally applied across manufacturing companies started to be adopted by the service sector. Today LSS is seen as the most prevalent improvement methodology within the western business world (Pepper and Spedding 2010) and is in use in organisations as diverse as the National Health Service in the UK (Westwood and Silvester, 2007) and Insurance companies in the Netherlands (Koning et al, 2008). With extensive research

undertaken on the implementation of the LSS methodology (Zhang et al, 2012, George et al, 2003); and with several authors having proposed potential implementation models based on the observation of successful projects, (Snee, 2010, Sunder, 2013), it is not difficult to understand the benefits that organisations are gaining from the application of the technique. Yet for all of the improvements accredited to the concept and the plethora of training and consultancy that exists to support the approach it remains at its heart a process targeted, internally focused methodology.

### **LSS in the UK Food Industry: The Case Study.**

A major ambient food factory had a problem, the buildings housing the business were old and poorly designed, the overhead costs of manufacture were excessive and there was a perception that the inefficient working practices being pursued were ingrained in the workforce and could not be changed, as such the parent company were discussing closure of the site and building new premises in a different geographical area. A new site management team decided to challenge these assumptions and initiated a programme to keep the business unit open by 'closing the gap' between the cost of production at the existing site and the likely cost at any new facility. The management team started to address some of the wastes and associated issues using 'traditional' management techniques and also examined a range of business improvement approaches that would facilitate projects directed at solving some of the more deep rooted problems whilst also addressing the more behavioural aspects of developing an improvement culture within the business unit.

The parent company had initiated a companywide operations academy approach utilising a training and consultancy provider, this approach had an underpinning structure of improvement methodologies and associated training. The site under the previous management team had already been involved in some of the more generic problem solving training, such as business improvement techniques and Kaizen events, although there was a belief within the employees that this initiative had not been leveraged very well once the training had been completed. As part of this new improvement initiative the new management team in collaboration with the training organisation decided to implement a Green Belt Lean Six Sigma certification programme. The course would include the initial training as well as consultancy support for the prospective Green Belts as they completed their first projects. A final portfolio formed the summative assessment that then led to the certification. These certificates were validated and issued by a UK University.

The factory management team in collaboration with the educational provider developed an approach that linked the prospective projects and training with the wider strategic plan designed to 'Close the Gap' between the benefit of closure and keeping the site open. The initial wave of Lean Six Sigma projects would include 11 Green Belt candidates, including the business improvement manager charged with running the overall initiative, each with a project sponsored by one of the factory senior management team (Yellow Belts) and linked back to an element of the overall site strategy. The training provider identified a single trainer/consultant who both carried out the training and supported the initiative through coaching and involvement in the 'gate review' process inherent in the DMAIC methodology, in the hierarchy of the LSS belt structure acting as the Black Belt.

The overall LSS implementation plan included a second Green Belt wave of 10 further projects; this would give a core of 20 LSS practitioners and 1 coordination manager within the factory unit once the training had been completed. The expectation was that each project would involve up to 8 additional members of the workforce as part of the project team and further individuals working with these teams on specific aspects of each project. Progressively this would mean that a large proportion of the workforce would be at least peripherally engaged or at least aware of an improvement project. This latter factor thereby addressing the wider behavioural aspects required by the management team.

In support of both the specific LSS initiative and the wider survival strategy an extensive internal communication campaign was initiated including posters, newsletters and regular team briefings. The 'Close the Gap' campaign was launched with the workforce through a site wide briefing late in 2010. As part of the overall campaign the management team were introduced to the concepts of the LSS approach and undertook training to support them in their roles as sponsors (Yellow Belt training). The Green Belt training and formal project launches followed in early 2011.

### **Research Strategy.**

The research carried out for this study was conducted using observation. The researcher was present at a number of the Yellow Belt (project sponsor) and Green Belt training sessions to allow an appreciation of both the type of training being given

and the receptiveness of those receiving it. The research then continued as the projects developed and were refined. Because of the nature of the study, the observations were linked to the intervention of the external trainer/ consultant and included various coaching sessions, project reviews and the formal gate reviews. There was also an opportunity for interviews with some of the key players in the initiative including members of the senior management team and project sponsors (Yellow Belts), project leaders (Green Belt candidates) and project team members. The research also focused on the links between the projects, and to some extent the wider survival strategy of the factory site.

## **Results**

The overall survival strategy achieved its objectives in the first year reducing the manufacturing cost base of the factory by over £3.7 million against an original direct cost figure of £35 million a saving of over 10%. These savings were additional to other ongoing cost reduction initiatives within the factory e.g. supplier rationalisation. The strategy was then re-aligned and re-launched with a second set of objectives associated with developing a future for the factory rather than just avoiding closure. The first year's savings were predominantly based on traditional cost control approaches and could be seen as addressing the 'low hanging fruit' within the factory. The first LSS projects did make a small contribution to the attainment of this objective but their full impact was not felt until the second year when they were collectively expected to eventually deliver £1.5 million per annum to the bottom line, while all of the projects deserve individual analysis, two of the projects in particular

will be described to illustrate the type of savings being achieved and the disconnect with the marketing function, one of the eventual findings of this study.

The first project was associated with waste management, in this case not the reduction of waste from the process but the mechanisms used for dealing with it. The project was focused on a consideration of the process for handling and disposing of the waste from the site. The factory was despatching most of its waste completely unsorted increasing the cost of disposal. In addition to the disposal cost mixed waste usually ends up in landfill sites, since 1996 in the UK there has been a landfill tax, in the 2010 budget the rates of charges for disposal were set to increase each year until 2014 (HMRC 2013). This was likely to further increase the costs to the factory unless landfill waste was reduced. The fundamental objective of the project was to reduce the cost of waste disposal; the criteria identified to achieve this were mainly centred around segregation and recycling. One of the declared objectives for the initiative was to achieve 'zero landfill' a phrase that became one of the project mantras.

The project was deemed a success by the company, with careful management of the segregation of waste and in collaboration with an external recycling organisation not only was the target of zero landfill achieved but also the cost of disposal was offset by substantial revenue from recycling. The initiative had a very visible impact in both the factory and associated offices with additional recycling bins and instructional posters. The savings identified were calculated at £250k per annum mostly gained through the avoidance of landfill charges and the generation of recycling revenues.

An additional benefit from this project could have been increased awareness of the impact on the overall Corporate Social Responsibility 'green' strategy for the business and the potential use of such a message in any external marketing communications. However as the marketing function within the wider organisation were not involved either in the projects or as a project sponsor (Yellow Belt) or indeed overseeing the whole business improvement initiative, the potential benefits of a CSR message were missed.

A second project examined the control of one of the production processes. Food companies in the UK are governed by various weights and measures legislation that controls the relationship between supplied weights and the declared weight on the packaging. At its simplest a company can be prosecuted if the actual weight is more than a certain level below the declared weight but will not be prosecuted if packets are over that weight. The impact of this is that where food companies have processes incapable of achieving these tight weight tolerances they will tend to produce products heavier than the package weight in order to ensure that the product will be above the prosecution threshold. The result of this is that most items are sold above the declared weight, i.e. the customer gets more than they have paid for, this phenomena is known in the industry as 'Give-away'. Projects associated with the measurement and control of process capability is particularly suited to be addressed by the LSS technique, as they are concerned with variability. This made a 'Give-away' project almost mandatory in this food production environment. The scope of LSS Green Belt projects has to be controlled to ensure delivery within a reasonable timescale, for this reason the initial project was limited to a single product line. The expectation in such projects is that any techniques adopted can then be

rolled out across all product lines with a huge potential cost saving across the business.

The project used the LSS techniques of statistical analysis to identify the significant process variables and once these were controlled there was a significant reduction in the 'Give-away'. One particularly interesting facet was that as control was gained it became possible to change the relative proportions of various ingredients within the product, this allowed for the reduction of the most expensive ingredient, a chocolate coating, while not altering the overall declared weight again the potential saving to the company in terms of 'Give-away' was the main focus of the project.

At this stage marketing had to become involved as this change in proportions needed to be reflected on the packaging declaration, this was the first time the function had been involved in any LSS initiative. After initial resistance from the marketing function to get involved it became clear that they [marketing] were making assumptions about customers' preferences and perceptions and on researching the customer voice i.e. actually asking the customer, these assumptions prove incorrect. The resulted research identified that not only did the customer agree to a reduction in chocolate by 1% to meet the required recipe specification but the customer didn't know the original percentage of chocolate and did not seem concerned with what had been assumed by marketing as the products unique selling proposition. A classic case of customer voice not being recognised, not by operations as is sometimes the assumption but by the very department charged with analysing customer voice, the marketing department.

The project generated annual savings of £75k, with the potential to further improve the control; the product was still heavy, just not as much, and also to apply a similar technique to other product lines.

## **Discussion**

The mechanism in most organisations for reflecting the customers voice back into the business lies within the marketing function and as this case study shows there is a disconnect within the business improvement process and the company being able to adopt a marketing orientation. It seems clear however that the main criticism that was highlighted in this reflective piece is the lack of interest from the marketing function within the business improvement process itself. Almost from the outset of the research it appeared that the marketing department were not interested in the survival strategy of the site, the overall strategic plan to 'Close the Gap'. Part of this may have been associated with self-interest as marketing saw itself as a central function, even though they are located at the site being researched, and therefore not affected by any plant-based concerns. It appeared that there was almost a desire to remain apart from the production site so as not to be caught up in the disruption surrounding the closure announcement. It seemed that the marketing function didn't recognise that anything connected to the manufacturing process and associated business improvement techniques would have direct relevance to their external activities. This separation was also perpetuated by the project teams themselves with no thought being given to any of the supporting business functions including marketing. It is also worth noting that although project sponsors (Yellow

Belts) from the senior management team included other business functions such as HR., finance and even engineering no senior management representative from the marketing function were present or involved.

The research highlighted a number of the projects that were generating a potential CSR marketing communications external message, for example the 'Zero Landfill' project. The potential benefit to the brand for reducing landfill for the overall marketing communications message were in this case simply overlooked because the marketing function were not involved either by the project teams or from marketing themselves. The sustainability of waste segregation and subsequent recycling was also not being exploited in any external marketing communications message and little consideration of the productivity implications of this was recognised.

The role of the marketing function as the custodian of the customer's interests also speaks volumes towards the traditional functional silo mentality of the organisation and again underpins the need to recognise the involvement of marketing within each LSS project. The very nature of the LSS approach places the Voice of the Customer at the heart of each project and if marketing is seen as the conduit for that voice it is difficult to justify their exclusion. In fact there is a strong argument that the marketing function should be at the heart of any LSS initiative. Conversely when approached by the teams the marketing department limited itself to addressing the specific issues being raised and had little concern for the wider project objectives or impacts. This was demonstrated in their involvement with the 'Give-away' project. This behaviour

represents what might be thought of as the typical views of functions within a business still very much constrained by the traditional silo mentality of large organisations. Marketing have their own tasks to perform rather than consider how operations are limiting the amount of product rejected due to some process deficiency, similarly operations need to control and maximise the potential of the solution so as to reduce costs. The organisations view of productivity is that it is the preserve of operations and is very much focused on the economic benefits. There is little recognition of each other's roles in helping to maximise the overall benefits of each project. This was exemplified by the fact that as mentioned the senior factory management team were identified and trained as project sponsors but this did not include a 'Yellow belt' from the marketing department. This myopia is missing a major factor in the current climate, an elimination of MUDA within the production process may not only reduce costs but could also reduce the environmental or social impact of a process, a fact that could be important to a number of stakeholders and certainly could be exploited within any marketing message and in the overall CSR strategic plan.

Views of productivity have widened in recent years with one of the main considerations being the three dimensions of social, environmental and economic productivity, the SEE model (Tuttle and Tebo, 2007). The traditional focus for LSS projects has clearly been the economic dimension, but there is evidence that this may be changing. The 'Green Agenda' in particular has started to have a much larger influence on organisational views of project justification (Tuttle and Heap, 2008) and with the recent publicity associated with the Dhaka factory collapse in Bangladesh and the questions that this has raised about production methods

employed for major western retailers in the developing world (BBC, 2013) social productivity may well also start to rise further up the agenda. The linkage of this wider sustainability view of project justification has been detailed by Willard (2012), the seven point sustainability related contributors to profits he proposes as an appropriate project justification would fit well within most LSS project charters. This fact does not appear to be reflected in the improvement projects observed in this paper.

When reviewing these types of internally focused Green Belt initiatives or any business improvement project, descriptive terms such as waste and efficiency are common in most of the charters and the project objectives. It is suggested that these terms tend to limit the view the organisation takes of these projects and they are seen as just cost cutting exercises. The case study illustrates this, in fact even the LSS projects that were targeted at reducing lead-time were justified through the savings that a reduction in inventory would generate, rather than the positive customer impact that faster service would provide. So if the justification being proposed for the wider productivity agenda is still not being implemented for most organisations and the company accountants are not recognising the savings being identified by more enlightened thinkers, how can this message break through? Ultimately the missing link in this equation is the customer, the perceptions of environmental and social impact that can have a negative impact are in the minds of those purchasing the product, and it is pressure from this most significant group of stakeholders that will eventually breakdown the gap between production and marketing.

The case also highlights the need to involve marketing and more generally customer facing departments in any improvement activity. Implementing Lean development has to start from a consideration of what the customer requires this is a basic tenant of the Lean philosophy, whether Lean production or LSS. When marketing represent the voice of the customer in the wider organisation then their involvement early in the development of an organisation's business improvement strategy is key. This places an emphasis on both the wider organisation to involve marketing and on the function itself to both embrace the efforts of the business to improve and also to ensure that they are very aware of what the customers' requirements are not just in the traditional aspects that the organisation may already monitor but across a range of subject areas. This becomes particularly important when we widen the productivity discussion to include all the elements of the SEE model. Marketing should identify how customers are likely to respond to the whole sustainability debate and reflect this position into the organisation. By widening the company understanding of these aspects of productivity, marketing can not only improve the CSR message but also encourage the understanding of the wider potential longer term financial benefits of sustainable productivity.

It seems that even after the revolution in productivity and the potential benefits of implementing a business improvement plan, that the gap between operations and marketing and ultimately the customer voice is still as problematic as ever. This research therefore maintains that despite the academic identification of the benefits and examples of organisations adopting a market orientated strategy that in practice,

adopting a customer orientation is still problematic (Narver and Slater 1999, Johnson et al 2012). The gap between the marketing department and operations demonstrated in this case study suggest this. Similarly while there are some specific examples of a wider productivity agenda there is still little consideration of anything but the direct economic value of improvements at the grass root level. From this analysis it appears that businesses need to recognise the wider implications of many of the projects that are undertaken. LSS is a mechanism to improve productivity, admittedly by reduction of the divisor in the traditional output over input equation, but nevertheless the main target is a productivity gain. The organisation should be able to analyse and consider such projects against the criteria of a productivity improvement. Moreover, productivity thinkers are starting to recognise the need for a wider view of what productivity represents and to identify the real bottom line contribution that this approach will generate. However, there are businesses that are actually carrying out the projects who are limiting their justification not just solely to economic considerations but also very traditional internal cost based arguments.

## **Conclusion.**

This paper clearly demonstrates the gap between many of an organisations internal improvement activities and the marketing function, this disconnect is a common feature of all the projects undertaken in this paper. The case also illustrates that while the sustainability agenda and the SEE model of productivity measurement are gaining credibility there is still some way to go before this message gets beyond a few exemplar companies. The situation is further complicated by the proximity of an organisation to the general public. There are a number of companies who are

currently pursuing a sustainability agenda as part of their overall marketing message. In the UK probably the best known of these is the Marks and Spencer Plan A initiative (Retail week 2013). The plan is widely disseminated and frequently referenced in M&S advertising and progress against its objectives separately reported (Marks and Spencer 2013). Interestingly the food manufacturer in the case study is a supplier to M&S and although Plan A has a waste section with a declared zero to landfill policy this does not seem to have yet directly impacted this supplier. One assumes M&S would be interested in an additional supplier achieving one of their declared objectives, yet the main concern reflected by the marketing department was of potential short falls and retaining sufficient stock for all eventualities.

The benefits of adopting a marketing orientation and the move towards adopting a societal orientation are widely recognised as beneficial however as this case suggests the gap between customer focus and operations remains as wide as ever. The advantages to the marketing department of not only embracing business improvement projects to gain potential CSR marketing communications messages but actually understanding production are being missed. It is therefore suggested that in future LSS improvement projects the marketing department senior manager should be involved from the off-set.

So the situation is a complex one, there are clear examples of companies leveraging their sustainability credentials and similarly companies concentrating on internal financial returns and even where these contain an element of what might be termed

sustainability benefits failing to capitalise on the potential external message. This case study demonstrates the need to engage with the whole organisation when establishing improvement activities. In particular the suggestion would be that by involving the marketing function right from the initial sponsor training and project selection the organisation can not only capitalise on the potential external message but can use this as part of a project justification. For a great many organisations this appears to be a route that an organisation could utilise to advance the wider sustainability agenda.

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