

A STUDY INTO CONTINUOUS IMPROVEMENT INITIATIVE SUSTAINABILITY

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ABSTRACT

The idea of continuous improvement is familiar to most managers and there are many examples of how its use can increase a company's overall performance. However, while numerous companies have adopted the approach, very few have seen the long term sustainability of such programmes. This paper reports on research that was carried out into the sustainability of continuous improvement initiatives. A case study was carried out in a manufacturing company that had been using the approach for five years. The case study identified several factors that helped to sustain the initiative but it also revealed some elements that had a negative impact.

Keywords: Continuous Improvement, Sustainability, Performance Improvement,

1 INTRODUCTION

The advanced manufacturing tools employed for improving operational performance are well known (Anand et al., 2009). One of these is continuous improvement (CI) which is the planned and systemic process of ongoing incremental and company-wide change of existing practices aimed at improving performance (Boer et al, 2000). Research into the implementation of CI programmes suggests several enabling factors such as management commitment and training (Rapp and Eklund, 2002). What is less well understood are the practices employed to sustain CI performance improvement gains (Bateman, 2005). A previous study of continuous improvement initiatives found that only 11% of the companies that had introduced them considered them to be successful (Anand et al., 2009).

There have been a few studies undertaken to help better understand this area of change management. Based on their research Bessant et al. (2001) proposed a behavioural model which suggested that the development and sustaining of CI capability is an evolutionary process that sees the organization move through 5 stages, leading to the "learning organization".

However, is the development of a CI capability only achievable through the attainment of the predetermined levels of behaviour development in the sequence observed by Bessant et al. (2001)? An alternative theory, proposed by Van de Ven and Poole (1995), is that of a constructive mode of change; that is one that consists of changes based on goals as the final cause for guiding change. This often produces unpredictable solutions, albeit they are made within a consistent set of broad organizational values. In theory, this would allow a more spontaneous or self-directed approach, with different routes to developing a CI capability. Consequently, this approach may not be consistent with the model of this development process proposed by Bessant et al. (2001).

A different approach to CI capability development is that by Anand et al. (2009). They found that infrastructure practices can fulfil an important role via the coordination and support of projects and create a culture for continuous improvement to help sustain an initiative beyond the immediate gains.

It has been suggested that for CI initiatives to be successful, there needs to be: support and priorities at a strategic level, employee participation and commitment and a set of tools and processes to facilitate the company approach (Bessant et al, 1993). It is also important that the employees have training in both the tools and techniques (Bessant et al, 1993; Jorgensen et al, 2007). What is not clear is whether rewards and incentive schemes are important factors for successful CI programmes (Bessant et al, 1993).

Although the research that has been carried out has improved our general understanding of how to build a CI capability, some issues, such as improving idea generation and selection, have received less attention. An examination of the CI idea generation process is needed because of the different approaches organizations have adopted for this task. Delbridge and Barton (2002) reported that “there is widespread evidence that plants are appointing specialists to lead or facilitate continuous improvement”. While, others, such as Anand et al. (2009) have emphasized that “a hallmark principle of most CI initiatives is that the best process improvement ideas reside in front-line associates”. In light of this, they suggest there is a need for further research into whether CI methods experts can act as conduits for bottom-up sustained flow of improvement ideas, thus obviating the need for additional infrastructure mechanisms to capture improvement ideas directly from front-line employees.

2 RESEARCH AIM

The aim of this exploratory research was to examine how continuous improvement initiatives are planned and executed. In particular, the research investigated the factors that helped to sustain such initiatives over several years. The research had the following research question:

What are the factors that help to sustain continuous improvement initiatives?

3. RESEARCH METHODOLOGY

The case study method was selected as the methodology to address the research questions. A leading manufacturer in the engineering sector was selected for this case research. The company was selected because it had invested significantly in the development of CI. This initiative had been sustained by the firm over several years, albeit with varying levels of success.

At the factory, semi-structured interviews were carried out with a cross section of employees, from the top of the organization right down to the shop floor. Interviews were conducted with the following individuals:

- Managing Director
- Manufacturing Manager
- 2 Manufacturing Team Leaders
- Human Resources Manager
- 7 Production Operatives

All interviews were recorded and at the same time detailed notes were taken by the interviewer. In addition to the interviews, company documents were examined. These included: manufacturing strategy, factory performance data (for example: first time pass rate, productivity), employee training information, employee absenteeism, kaizen activities and their results.

The company was willing to give the researcher copies of most of these documents but, in the case of financial statements they were not able to take copies and only allowed to inspect them and make notes.

The authors were also able to visit the shop floor and to view the factory layout and examine the data presented on the shop floor (team performance measures, CI results).

3.1 Analysis

The case analysis synthesized evidence from three sources; the interview transcripts (and notes), documentation provided by the case company, and our observations on the factory tour. The case analysis was conducted in two main stages:

- The case was reviewed separately to build a complete picture of the organization’s approach to continuous improvement and its development. Triangulation was used between different respondents’ comments and between their statements and company documentation
- Data reduction was then performed to 3-4 page case description. This was sent to the chief contact at the company to check the detail and also to ensure that they did not contain information that was likely to compromise their business.

4. RESEARCH RESULTS

4.1 Background

The case company is a leading engineering firm and it produces large white good items for the consumer market. Its factory is part of a large network of 10 plants. The factory has several assembly lines and also a metal press shop and a paint area.

The arrival of a new Managing Director in 2006 saw the start of significant change in the factory. He started by introducing 5S into the factory and then followed it up with training in lean manufacturing (MUDA training course – 1 day) and also Yellow Belt training. Alongside the increased training he initiated the Kaizen idea scheme (suggestion scheme). In the past five years there has also been significant investment in automation both in assembly and the paint shop. These investments have helped to reduce costs and improve quality.

The factory had over the last few years developed two ways to undertake continuous improvement, these are:

- Kaizen ideas scheme – all employees are expected to submit 2 continuous improvement ideas per year. The employees complete a form (outlining their idea), which is entered into an electronic system; these are then passed to the relevant Manufacturing Team Leader (MTL) for evaluation and approval (or rejection). If the idea is approved then the relevant steps are taken to bring the idea to fruition.
- Continuous improvement projects – these tend to be relatively large scale projects which are developed after a training course. So, for example, a group of operators who had completed a Yellow Belt course would be asked to work on an improvement project.

The results of the continuous improvement initiative, for the period 2008 to the end of 2012, can be seen in Table 1. The table shows the total number of ideas implemented, the number of ideas with cost savings and the total value of these savings.

Table 1: CI: Ideas implemented by year with costs savings

Year	2008	2009	2010	2011	2012
No of Ideas	4	61	45	60	45
No of ideas with cost savings	2	54	33	28	17
Cost savings in £1000s	50.2	424.3	126.6	50.6	24.1

4.2 Case Analysis – Emerging Factors

The analysis of the data by the three researchers identified several factors that appeared to be associated with the sustaining of the continuous improvement initiative at the case company.

Senior management focused on continuous improvement

The senior managers interviewed were focused on the continuous improvement initiative. The managing director had started the initiative and along with the previous manufacturing director had been the driving force behind it. The managing director in particular had kept an eye on the initiative and maintained the continued emphasis on it as he states “I had to push it, to keep it young”. During the morning meeting that the MD had on the factory floor with the MTLs, he would always ask about the progress of improvement projects and if anybody had ideas for improvements in the plant.

Front line employees and middle managers expected to make improvements

The strong focus on continuous improvement by the senior management team translated into an expectation that the front line employees and the middle managers should make improvements. The managing director stated that he wanted everybody to be involved in CI (“everybody should be involved in CI”, Managing Director), and this expectation was reiterated by the interviewees.

Rewards for participation

The interviews revealed that the company had linked the Kaizen idea scheme to the plant bonus system. For every idea that an employee put into the scheme they got a number of points that went towards their personal bonus. The maximum number of ideas that they would get rewarded for was 2 per year. For some of the interviewees this was a motivation to put ideas in, as one commented “you get a bonus for putting a Kaizen in, it gives you the motivation to put an idea in” (Production Operator). However, one interviewee had not put any ideas into the scheme in the past and did not intend to put any in the current year.

Employees also got points for working on or leading the improvement projects. However, two operators reported that shop floor individuals were reluctant to lead projects, considering this to be an activity that the MTLs should do. It is worth noting that the total number of ideas submitted had declined in the last two years, as can be seen in Table 1.

Focus of day-to-day activities

A few of the front line employees who were interviewed commented that the factory management was also concerned with achieving production volume targets and this had resulted in continuous improvement project work stopping, as one production line employee commented when boiler orders increase “the projects (improvement projects) get pushed to the side” (Production Operator).

Continuous improvement culture is present

The organization had tried to build a culture of continuous improvement; they had taken actions to encourage all employees to come up with ideas for improvements. The idea scheme was considered to be the vehicle to get everybody involved. The scheme had been very successful in the first few years as one operator commented “Kaizen was very successful when they first launched it, got good ideas, some good savings” (Production Operator). However, since then, the number of ideas had declined. One MTL had tried to encourage improvement by placing an ideas board on the shop floor to encourage the production operators just to write their ideas on post-it notes and put them on the board. Another MTL always ended his monthly team brief with a report “what can we do better”; he stated that he was getting anywhere up to ten ideas which he then pursued with the individuals and helped them to complete a Kaizen ideas scheme sheet.

Continuous improvement infrastructure for idea selection and processing

The case company had an infrastructure that supported CI. The ideas scheme was successful at the start but recently had been in decline. There appeared to be several reasons behind this. Firstly, the operators stated that the process took too long and when finally a decision was made, if it was negative, there was no constructive feedback as to why the idea was rejected. Secondly, the

information that was to be provided had increased, in particular since the involvement of the finance department. Operators were now expected to detail the cost savings to be made – in the past, an estimate was sufficient.

This requirement meant that more work had to be done on the idea before it could be submitted; this had alienated some operators and one MTL now had to spend time with his team members helping them to complete the Kaizen ideas form.

Improvement project leadership

The case company had tried to ensure that the individuals leading the improvement projects were trained in the use of CI tools, had the support of a trained facilitator and came from the shop floor rather than the ranks of management. However, the operators were reluctant to take on the project leadership role and most projects tended to be run by MTLs.

Standardised improvement methods

The interviews indicated that they were using a standard approach to the continuous improvement projects they worked on. A manufacturing team leader stated that they “have a CIP process which is a group standard” (Manufacturing Team Leader). Some of the techniques that the employees used during projects had come from the Yellow Belt training they had received in the last five years.

Standardisation of the improvements made

The interviews indicated that the case company had a standardised way in which improvements were incorporated into a process. The company had standard operations procedures (SOPs) for the operations in the factory; when an improvement was made the SOP would be updated. The production operators would then be trained in the new procedures and then observations and checks would be made to ensure they were being followed.

Training in continuous improvement provided

The interviews indicated that the shop floor employees received formal in-house training in continuous improvement techniques. They were encouraged to go on the training course by the awarding of points which would go towards their personal bonus. However, recently, a Yellow Belt training course was cancelled because of the increase in customer orders; during the interviews, several of the production operators questioned management priorities and their real commitment to CI.

Managers are trainers

The interviews revealed that the junior managers (Manufacturing Team Leaders) at the case company were involved in the delivery of training for the shop floor employees in the various continuous improvement techniques.

Objective for employees

The case study data indicated that all the employees had involvement in continuous improvement activities as one of their personal objectives.

5 CONCLUSION

The research is still on-going, but initial analysis suggests several interesting findings. Initial results suggest that several factors have an influence on sustaining a continuous improvement initiative; these include having a senior management focused on continuous improvement (not only focused by driving it forward), front line employees and middle management expected to make improvements, the preserve of a continuous improvement culture, the use of standardized improvement methods and a standardization of the improvements made. The research also indicates that there are other factors that can impact the sustainability. One area that has been overlooked by previous researchers is the infrastructure for idea selection and processing; if this is not simple, transparent and relatively fast, employees may be discouraged to continuously put forward ideas. Also the excessive focus of the

plant management on the day-to-day activities, especially production output, can cause the employees to concentrate on this and to ignore the improvement work.

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