

# Defining and analysing the continuous improvement



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Corus is a steel manufacturing company and is a subsidiary of Tata Steel, part of the giant Indian conglomerate. Corus focuses on meeting the needs of its worldwide customers and providing innovative solutions. It manufactures processes and distributes steel and aluminum products worldwide.

Corus has steel manufacturing facilities in Scunthorpe, Teesside, Scotland and France. The key markets include construction, energy and renewables, engineering and machinery, mining and earthmoving equipment, shipbuilding, fastenings and rail. The principle of manufacturing at Scunthorpe covers 2, 000 acres and employs 5, 500 people. The site consumes 6. 5 million tonnes of iron ore and 2 million tonnes of coal each year to produce 4. 3 million tonnes of steel products.

### Continuous improvement

The business environment is constantly changing and it is very important to adapt to these changes in order to have an advantage over their competitors and gain market share. Continuous improvement is a highly integrated tool that helps business gain that competitive edge.

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Continuous Improvement is often referred to by the Japanese word 'Kaizen'. Kaizen means 'change for the better' and covers all processes in an organization. In the competitive environment today's, businesses has to be strengthen and profit maximizing in the competitive market. Indeed, Corus has no exception to this fact. Corus adopted Continuous Improvement (CI) as a business strategy to overcome steel works problems. Continuous Imporvement is a strategic design and implementation, strategies that continue study lead discovery, creation, innovation then New Product Development. (Cleland & Ireland, 2006) According to Saul, 'A constant, systematic cycle of identifying best practices and applying them within an organization to promote better performance' (Saul, 2004: p7), in other words, to make a better tomorrow.

Products or services are the essence of the business; therefore, businesses need to improve the quality of the products or services and to control the quality of production effectively and efficiently. According to Kumiega and Vliet, 'Continuous Improvement is an ongoing effort to improve benchmarked methods and technologies that are no longer able to implement their competitive advantage' (2008: p271). On the other hand, Armstrong and Stephens using four key words to defined Continuous Improvement, which is focused, continuous, incremental and innovation. Focused on the weakness that needs to be enhanced, never ending searching for the problems solving. Through these add-on research process, new ideas developed eventually then research carry on new product develop to approach the market. In fact, Corus used Continuous Improvement to support its New Product Development (NPD) to meet the customer

satisfaction and quality control. For instance, Corus adapted its core product, steel, and through research and development, improved the quality in order to meet the standards of the Royal Navy, which is in the process of building the biggest and most powerful surface warship ever built.

However, another author, Young indicated 'Continue has no end'. It focuses on immediacy to solve a problem quickly and at minimum cost to maintain or restore production. In a long term solution would discover the new products or services (Young, 2007: p36). Therefore, another theory explains that there is a link between Continuous Improvement and New Product Development. Using Continuous Improvement is a strategy that helps to minimize the waste and maximize productivity.

Explain the link between Continuous Improvement and New Product Development?

## **New Product Development**

The concept of new product development has always been linked with continuous improvement. The senior managers of firms always look out for new ideas and improved methods to innovate new products. Most positive goods are effects of constant search for prospects and organized to evade the improbability surrounding them. The procedure for new product development passes through eight phases which are also related with refining ways of a firm's development chain. The processes are:

Idea generation

Idea Screening

Concept development and testing

Product development

Business analysis

Test marketing

Commercialization

Monitoring and evaluation

All these new product development stages works together in steps one after the other which are also a part of improvement in the firm's operations. The link between continuous improvement and new product development is strong as companies can't be successful in carrying out their plans for new products if they don't have tactics to create a strong organizational culture and high motivation for success in the world's leading markets or to become market leaders.

Developing innovative product through continuous improvement is at the heart of Corus' business strategy. Through continuous improvement, Corus enters early vendor involvement, during the bid process Corus sat with Royal Navy to understand the full product specification and perform the end-to-end design by understanding and studying the product requirements by applying the principle of just in time and lean production.

Continuous improvements enable Corus to enhance its technology, its machinery and the processes. They engaged the research and development

team by its innovation, came out with new steel formulae which met the product requirements for Royal Navy. In fact, by applying continuous improvement as a business strategy together with new investment has enabled Corus to win the £3.8 billion contract with Royal Navy aircraft carriers.

There are many more companies which are using the lean production strategy to achieve their goals and long-term objectives. For instance, Toyota using the Just in Time system to improve its services and become the market leader in its industry. Dell minimizes the need for large inventory by using the Just in Time system as well. Wal-Mart works in partnership with their suppliers to minimize the inventory accumulation. Starbucks Coffee, Pret a Manger, Eat, Costa, Nero Cafe are all using the First in First Out method to manage the food and beverage inventory. General Electric is using TQM of the power of cycle time reduction. Most of the automation and robots firm will apply TQM to control their product quality.

Question 3: Using examples, analyze the importance of lean production principles for each of Corus' internal and external stakeholders.

## **Lean Production and Just-in-Time**

Lean production refers to the minimizing of the waste and increasing the production backed by the effectiveness of supply chain management. The five principles of Lean production are to identify who the customers are and to specify their lifetime value, identify and map the value stream, create flow by eliminating waste, customer pull, and pursue perfection.

Firstly, it is important to identify who the customers are to and specify their life time value. This helps in establishing the fact that only a small fraction of the total time and effort spent by any organisation actually adds value for the end customer. By clearly defining value of a specific product or service from the end customer's perspective, all the non-value activities – or waste – can be targeted and removed.

In this above case, our end customer is Royal Navy (external stakeholder) who is waiting for steel to enter service aircraft carrier HMS Queen Elizabeth and HMS Prince of Wales by 2014 and 2016 respectively at a total value of £3.8 billion. The steel for the new aircraft carriers needs to meet a very high specification set by the Royal Navy. Materials for the warships have to be able to endure the unique conditions in which they operate, such as, extreme temperatures and the high seas. This contract required several grades of steel with strength and toughness higher than those which Corus had put forward during the previous contract bid.

Secondly, identifying and mapping the value stream is the entire set of activities across all parts of the organisation that is involved in jointly delivering the product or service to the end customer. This represents the end-to-end process that delivers the value to the customer. Once we understand what our customer requirements are, the next step is to identify how we are going to deliver (or not) that to them. In the case of CORUS, we found the value stream is satisfied through the following channel:

Competitors – developing a product in response to competitors helps the industry as a whole to move forward

Changes in technologies – as a result of the research and development

Innovation – using new ideas to make new products

Employees – who see opportunities from working with products?

The market – where customer demands suggests the gap for a new product or service.

Here the entire process is focused on the best efforts to satisfy the External Stakeholders- Royal Navy, Ship builders and Lloyds Register of ship building.

Thirdly, Creating the Flow by eliminating waste is to create the steps that occur in tight sequence so that the production will flow smoothly toward the customer Continuous improvement. Corus helps to eliminate waste in seven key areas. It uses the mnemonic 'TIM WOOD' which given assurance smooth flow of steel plate to the ship builders, which is Transport , Inventory, Motion, Waiting times, Over-processing, Over-production and Defects.

Fourthly, customer pull refers to understanding the customer demand on service and then creating r process to respond to this. Such as produce only what the customer wants when the customer wants it. In this case, the customer, the Royal Navy, drove demand. It wanted a single preferred supplier for all the materials it needed. Corus satisfied the contract through research and innovation based on its continuous improvement processes. During the bidding process, Corus worked with the Aircraft Carrier Design Team. This is known as 'early vendor involvement'. Corus did this to make sure that it understood could direct and could meet the final product specification requirements.

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Finally, pursue perfection in order to create a flow and pull starts with radically reorganizing individual process steps, but the gains become truly significant as all the steps link together. As this happens more and more layers of waste become visible and the process continues towards the theoretical end point of perfection, where every asset and every action adds value for the end customer.

The small batches enabled Corus to create prototypes to test and discover how well each met the required specification. It needed to examine which elements of the steel manufacturing process affected the strength and toughness of the plate. It was important to test various factors to see what impact changes in each would make to the finished product:

- The steel chemistry – what ingredients made the steel ‘ recipe’ better?
- The reheating conditions – how did the temperature affect the steel?
- The rolling schedule – did different mill processes have an effect?
- The cooling speed – did the speed of cooling affect the product?
- The additional heat treatment processes – would additional heating change its qualities?

The product testing stage enabled Corus to make sure the final product met the required brief from the design team. It used computer modeling software to identify the impact of changes in each factor. By understanding the best combination, Corus came up with the winning formula.

At a glance we can see how important and useful the lean production for external stakeholders:

Stakeholder

Benefits

Government

High quality product support long-term defense policy and ensure taxpayer value

Royal Navy

New world class vessels delivered on time to high specification

Customers (shipbuilders)

Get the exact materials they require when they need them

Lloyds Register of Shipping

Provides quality assurance for approval of the product

Question 4: Evaluate how Corus could use developments through the processes of continuous improvement to meet the needs of new groups of customers for its steel products.

Continuous improvement not only means improvement in manufacturing, but also to improvement customer relations, this is not limited to retention of

old ones, but also to get more customers and meeting the higher demands of all the groups.

Now the phase Corus is in at the moment is where it should improve even more. Below are the focus areas where Corus can look at in continuous improvement phase;

Customer focus – Pilot testing of products under new technology, dropping delivery times, modifying the products precisely according to customers' needs, no product defects.

Quality – research and development teams can come up with the ideas and proper recipe for the production of steel products, contribution of old staff to enhance work practices.

Cost – Low cost production, follow lean production method by eliminating the waste within the business.

JIT – Needs the contribution of all the employees to meet the deadlines according to customer needs. JIT also helps to save on storage costs; which could a factor to provide customers with low costs products. Under JIT principal Corus needs to make sure all the employees are contributing and goods are being delivered to customers on time.

Also, Corus is to develop a new £31.5m offshore wind farm business, creating up to 220 jobs on the site of its mothballed plant in Teesside. The new facility will be located on the vast 3,000-acre site in Redcar, bringing much-needed cheer to the town, which was battered by the loss of more than 1,000 jobs when the Teesside Cast Products business was shut down  
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earlier this year after more than 170 years of steelmaking in the area. It will produce the steel structures used to fix wind turbines to the seabed known as monopiles.

Geoff Waterfield, chairman of the Corus multi-union committee, said: “ It is absolutely fantastic. We are so due a bit of good news. People have been through very hard times and we deserve this good news today. Companies like ours should certainly be looking at renewable energy, as projects will require a huge amount of steel and the north-east has been earmarked for that. But it is a new area for Corus and it is a little bit of a gamble. This is a good opportunity for the government to give some support to Corus that was not forthcoming earlier in the year.”

Talks over the sale of the Redcar plant to Thai industrial group SSI have been under way since May and unions hope a deal will be sealed imminently. The proposed development will not affect negotiations. “ We are still in a strange sort of limbo state as we are waiting for the news on the main event,” Waterfield said.

The government has approved plans to build thousands of offshore wind turbines and Corus believes that around 6m tonnes of steel will be needed for the foundations and towers.

Kirby Adams, Corus’s outgoing chief executive, said: “ This is one of a wide range of new employment and business opportunities which Corus is working on in Teesside. It also follows recent recruitment at our Hartlepool and Skinningrove plants, as well as at our South Yorkshire and Scottish plants.”

This is the first business group that Corus is going to undergo in the year 2010 , although this kind of business is new and it may take a certain risk , however if there is risk there are opportunities as well for example by developing a new offshore wind farm business it has created up to 220 jobs on the sit of its plant. Other opportunities that Corus offer is that since this is a new development in the north-east of the U. K , Corus would have a niche market and for other competitors to enter the market would be hard. In my opinion Corus may take a gamble on entering this new market but if its successful it could be highly lucrative.

## **Conclusion**

From the above study into the implementation of Continuous Improvement, we have seen how Corus has managed to move from where it was to where it is now. Having lost the Royal Navy contract led them to consider the fact there was a need for change and quickly. The quicker a company is able to identify the gap in its services and act upon it, the better it gets at being able to capture the market share. Through CI, then went on to implement Lean Production and Just in time. This helped in minimizing cost and wastage and hence maximizing profits. For Just-in-time process to be implemented successfully, it is crucial to maintain a good relationship with the suppliers, logistics and the customers. There has to be coordination and fluid communication between all the relevant bodies. This helped Corus in not only meeting its target but also going the extra mile.