

*Lean and Just-in-time*  
*in a service operations environment*

*Operations and Service Management Coursework*  
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## 1. Lean and just-in-time

In the last few decades the importance of the service industry has increased, and more and more service providing enterprises have been founded. Today, the need to survive as a participant in the global market forces companies to focus on delivering quality services to the customers which satisfy or even exceed their needs. Hence, finding a way to reduce cost and improve quality in order to gain a competitive advantage has been, and still is, essential to any business of the tertiary economical sector.

A famous and successful approach largely known in the manufacturing industry is the *lean* philosophy. It uses the techniques of *just-in-time* to improve the company's operations and their performance.<sup>1</sup> Although these methods are not mainly designed for the service sector, many of them can be applied to it.

### 1.1 The lean philosophy

The basic concept of lean is to improve processes and reduce cost by harmonising value adding activities and *eliminating waste* of all kinds to meet the customer's demands instantaneously. The idea of *continuous improvement* and the flow of operations is a philosophy, therefore, *every employee needs to be involved* and trained to act and think in a lean way. Lean encourages one to solve problems in a team and increases responsibility for each job.<sup>2</sup>

*“The lean approach focuses on eliminating non-value activities from processes by applying a robust set of performance tools, ...”*  
 -- M. Allway and S. Corbett in the *Journal of Organizational Excellence*

The key part of lean thinking is the reduction of *waste* which can be defined as every non-essential step in the process that does not add value to the product, e.g. waiting time, transportation and inventory. Womack and Jones (1998) define the five following principles for this purpose: To decrease the amount of cost-adding processes, the first step is to determine what the customer is

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1 Operations Management (4th Edition, 2004), Nigel Slack et. al, p. 517

2 Operations Management (4th Edition, 2004), Nigel Slack et. al, pp. 518 (top), 524 and 526

willing to pay for<sup>3</sup>, and how the product or service should look to completely fulfil his or her needs (*principle I*). Once this has been estimated, all value adding activities across the whole value stream need to be identified and mapped, so that they can be optimised for a smooth flow of materials, data and people. This means that there has to be a constant movement of material and information with few or no stoppages and waiting times (*principles II and III*). To ensure that there will be no queues or buffered inventory, a lean company should only produce a good or service when a customer asks for it (*pull-principle, IV*). If the inventory is low, the chance to expose problems is higher and the frequency of interruptions decreases. Following these principles leads to an always visible objective of improvement and allows a company to strive for perfection (*pursue perfection, principle V*).<sup>4</sup>

## 1.2 Just-in-time techniques

The techniques of just-in-time (JIT) are strongly connected to the lean philosophy and can be seen as the way of how to achieve a lean environment. It “can be simply stated as *produce the right item, at the right time, in the right quantities*”. By using the JIT methods, companies are able to improve their productivity and product quality, simplify their processes and operate efficiently with a minimum amount of equipment, staff and inventory.<sup>5</sup>

As lean calls for involving all employees and continuous improvement, it is obvious that JIT establishes *basic working practices* as one of its guidelines. Workers need an environment of equality and autonomy where they feel connected to the company and are responsible for process relating issues and general problem solving. Moreover, they should be motivated to work independently and creatively to enhance the operations. Making all activities transparent to the staff further allows employees to understand management and operator decisions. For example, performance measures and stoppages can be displayed on screens in the production hall so that the results are *visible* for every-

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3 Lean Operations, Dr David Twigg, Lecture Notes, ch. 7, pp. 9 & 12

4 What is Lean, Lean Enterprise Institute, <http://www.lean.org/WhatsLean/Principles.cfm>, accessed 27/03/08

The Five Steps of Lean, <http://www.lean.org/WhoWeAre/LEINewsStory.cfm?NewsArticleId=17>, accessed 27/03/08

Lean Operations, Dr David Twigg, Lecture Notes, ch. 7, pp. 5 – 16

5 Just in time is not just for manufacturing: a service perspective, C. Canel et. al, Industrial Management, p. 51  
Operations Management (4th Edition, 2004), Nigel Slack et. al, p. 519

one. Operations should hence be *simplified* and reduced to a limited and manageable set.

The use of smaller, less complicated and more stable machines makes the system less vulnerable for breakdowns and renders it possible to produce in *smaller batches*. A well thought-out *layout* of machines, workstations and departments with short process routes allows a *smooth flow* of information and materials and avoids cost adding delays. Furthermore, employees with relating tasks are able to share and synchronise their work.

One of the most important aspects of the JIT techniques is to see all operations of a company in a *holistic context*, be it a manufacturing or a service enterprise. If *processes are designed* in advance, cost and errors can be cut down to a minimum.<sup>6</sup>

Slack (2004) defines more methods to realise the lean concept on the whole and explains them in detail.

## 2. The JIT concept in the service sector

The just-in-time concept has its seeds in the Japanese automaker company Toyota, and used to be a part of the Toyota Production System (TPS). It was originally designed for the manufacturing industry, which can be seen in aims like the minimisation of inventory and raw material and the striving for higher product quality.

However, the concept of lean and JIT generally focuses on operations, not on the product. It is about seeking ways to make processes more efficient and eliminate waste.<sup>7</sup> This means that most of the principles can also be applied to any process in the service environment without change. Lean is a “way of thinking, a whole system philosophy”.<sup>8</sup>

*“The JIT concepts and techniques are equally applicable to both manufacturing and service operations because they are process rather than product oriented.”*

*-- Cem Canel et al. in Industrial Management and Data Systems*

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<sup>6</sup> Operations Management (4th Edition, 2004), Nigel Slack et. al, pp. 527+

<sup>7</sup> Just in time is not just for manufacturing: a service perspective, C. Canel et. al, Industrial Management, p. 51

<sup>8</sup> What is Lean, [http://www.lean.org/WhatsLean/CommonLeanQuestions.cfm#non\\_manufacturing](http://www.lean.org/WhatsLean/CommonLeanQuestions.cfm#non_manufacturing), accessed 27/03/08

In the manufacturing industry, for instance, inventory is one of the most expensive factors and the just-in-time techniques try to decrease it where possible. The service sector doesn't deal with queuing resources or products to be processed, but with customers waiting to be served.

For example, look at a bank: The time a customer has to wait in a queue to withdraw money; this does not add value, only cost. Waiting time disgruntles most customers and, therefore, needs to be minimised or eliminated. Another technique, the pull principle is used by fast food chains. They only cook their food on customer demand. The higher the demand, the more food they make.

These are just two examples, but by considering the basic principles and techniques in detail you are able to see that they are applicable to most services. However, service operations have properties that differ from manufacturing operations. Hence some principles need to be changed or can be extended to apply better to services.

Unlike a production process where the customer doesn't need to be present, in most services like consulting or hotlines the client's *participation is required*. All operations need to be more flexible to react and respond to wishes of the customer. Also, the staff needs to be trained to act in a competent way and give a positive impression. In a hairdresser's shop the actual service is as important as the appearance of the staff and the atmosphere in the salon because every process is visible and will be valued by the client.

Furthermore, a service is completely or partially *intangible*. Customers cannot touch or see the product, but they have to rely on the company. Companies, on the other hand, cannot rely on the product they designed and which they know works properly. They have to prove day by day that the service they provide is worth the money the customer pays for it. Establishing a good reputation and the customer's trust in the brand is more important than it is in the manufacturing industry.

Another problematic issue of services is that most of them are not storable. Produced items like radios or laptops can be inventoried in case of a false estimation of the demand. Services however are *perishable* so that flexibility and the synchronisation of supply and demand become key issues. Considering a fast food restaurant again, if the queue of one restaurant is too long be-

cause the management doesn't employ enough staff, a customer may decide to eat at a competitor.<sup>9</sup>

As you can see from the consideration above, it is possible to apply the just-in-time techniques to service organisations if their special properties are kept in mind. Today, lean thinking is essential for any service providing business. By reducing cost and offering the chance to gain a competitive advantage, lean makes it possible to compete with companies worldwide.

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<sup>9</sup> Just in time is not just for manufacturing: a service perspective, C. Canel et. al, Industrial Management

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