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Executive summary

Lean is a philosophy with a general set of principles made to precipitate the elimination of waste, focusing on the value adding processes throughout a company. In recent years many Danish companies have been trying to embrace these principles, changing their production in agreement with the concepts from Lean; many of which do not seem to get the desired benefits from the implementation. Through the paper two areas have been identified as important; Kaizen, and production scheduling, in addition to these management commitment has also been identified as crucial for having Lean becoming a success.

The Japanese production companies have long been famous for their excellent performance, and are also considered the place where the Lean philosophy, as we know it today, originates. The main part of this thesis has been to analyse and describe how the Japanese production companies are achieving their high performance, with focus on areas, where Danish companies are having problems. The analysis has emphasised practical issues used on the Japanese shop floors. The research has therefore been carried out in cooperation with Osaka University, and is the result of a six month stay in Japan, with visits to twelve different companies.

Travel schedule

Copenhagen – Vienna

Vienna – Osaka 13/9 -2004

Osaka – Frankfurt
Frankfurt – Copenhagen 3/3 -2005

Research

During the period from 15th September 2004 to 1st Marts 2005, the stay at Osaka University has created the possibility to achieve first hand information from both companies and research institutions around Japan. Visits to these sources have been the main input for examining how Japanese companies are handling the problems seen for the implementation for Lean Manufacturing in Denmark. Table below shows the companies visited.

Company	Visited factory
Denso Corporation	Nishio Plant
Fujitsu Ten	Kobe Plant
Kawasaki Heavy Industries	Banshu Works
Komatsu Ltd.	Osaka Plant
(Matsushita Corporation)	Hikone Factory
Matsushita Corporation	Kusatsu Factory
(Mazda Corporation)	Rotary Engine Factory
Omron Corporation	Mishima Factory
Sumitomo Metals	Kashima Works
Sumitomo Electric Industries	Itami Plant
TCM Corporation	Shiga Factory
(Toyota Motor Corporation)	Tsutsumi Plant

The paper has dealt with aspects to ensure a more appropriate transformation of companies towards Lean manufacturing. Through the paper two areas have been identified as important, Kaizen and production scheduling, in addition to these management commitment has also been identified as crucial for having Lean becoming a success.

The kaizen culture has been mentioned in most literature about Japanese manufacturing, but without a clear indication of focus areas, when adapting this, and information like this can help a potential implementation in Denmark

Kaizen works as a motivation factor for employees and at the same time helps improve production. It is expected that Kaizen could be a part of companies in Denmark, but the more flat organisational structure complicates the application a great deal. Solutions to some of the foreseeable difficulties from implementation has therefore been given. The problem with depriving time from the managers has in general been handled by delegating more jobs to employees.

It is so common for workers to improve their workplace in Japan, that workers usually don't think of it as something done beside their normal job. End up getting improvements to be a part of the job description should also be the goal of Danish companies.

The description of the scheduling systems seen in Japan, has shown a vast amount of methods used for achieving an appropriate scheduling. Methods for adjusting the capacity to the demand and the demand to the capacity, has been described.

Focus on adjusting working hours to seasonal demands, usage of non-regular workers and rearranging employees is defined as methods, which could increase the flexibility.

Adjusting the demand can not be generalised in the same way, but the Japanese companies have shown a vast amount of methods for this. Individual companies use different methods for achieving an appropriate scheduling, and knowledge of these can be used as inspiration for companies towards flow and pull. Especially focus on production capacity and changeover time is important to achieve a mixed schedule.

In addition to the two main areas (Kaizen and scheduling) management commitment has also been identified as an important area for Danish companies to focus on. The management commitment is creating the foundation for changing the organisation. Two focus areas have been identified as essential; creating understanding for changes, and development of employees.

Exchange student life

The student life in Osaka is quite eventful. There is plenty of sightseeing to be done and many places to go to enjoy oneself. If travelling alone, it can also get quite lonely, since the English language abilities of the general population in Japan is quite poor, it can be difficult acquire and maintain friends there. Osaka University arranges events and parties for the exchange student, which are good to attend.

I stayed at an international dorm with mostly Chinese people and the life outside the university have mostly involved people from the Oussepe student exchange program and the from the DeMaMech Exchange program. There are plenty of opportunities to do sports at the campus (Suita) especially tennis is popular and easily accessible. The spare time have been used by for going sightseeing: Kobe, Kyoto, and Nara are very close and very nice to visit. Also Hiroshima and of course Tokyo are worth the journey. If travelling to Tokyo, it is recommendable to do it with nightbus. It takes around eight hours, but only costs around 10.000 Yen, return.

The Osaka nightlife is quite fun especially Amemura and Namba is worth an evening out. Unfortunately, the dorm I lived at (Senri International House) close the doors at 1 am through 5 am so if you want to go out, you either have to stay out the whole night or return early. Unfortunately my project have taken up a lot of time, and the last couple of months have left very little time for anything but studying.

Suggestions to the project

If the participants do not speak Japanese its advisable to be located with other English speaking people, otherwise it gets very lonely. Especially if there is no time to take Japanese courses. We were two students writing together, but for those who write alone can it be very lonely. It is therefore recommended to locate new students near other western students.

More dialog between the next students and the host professor might avoid situations like Michiel, hereby does both the student and the prof. know what to expect.

The two weeks in Holland was a very nice preparation for what to expect when arriving in Japan, and took away some of the "adjusting time" needed when arriving. It's a very different country and it is important to be prepared for that, especially if you only have six months there.

Summary

The stay 6 months in Japan have been very nice, although also looking forward to coming home, I have not got any regrets about leaving. I have been very well taken care of by the university and our Laboratory. Besides giving us the opportunity to have all the company visits for our research, they have also helped with translating, with bank accounts, and everything necessary for staying in Japan over a longer period of time. It has also been necessary, since you feel quite helpless sometimes, when your not able to speak Japanese. The stay have opened a lot of doors professionally and taught me a lot personally and I can only recommend it for others.

Our professor and assistant professor has helped us a lot with all the company visits and we are gratefull for being in such a helpful lab.