

KAIZEN-DRIVEN APPROACH WHILE MANAGING INDUSTRIAL PROJECTS. A SCANDINAVIAN COMPANY SUCCEEDS IN EASTERN EUROPE

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ABSTRACT

Eastern European companies have experienced various and radical transformations, as result of the economic crises and turbulences, which exposed structural weaknesses. In the meantime, long-term challenges – such as globalization, shift of power centers from the national level to international structures or scarcity of resources – intensify. Given this context, it is mandatory for companies to develop strategies aiming at being competitive.

The paper aims to propose an exploratory analysis regarding a Swedish-Finnish owned company active in Romania – that was capable to build a strategic vision of its future, to define a plan for change and to implement the necessary measures for the project success. The author has conducted a study and developed a case along a project aiming at continuous improvement (Kaizen) in this company, emphasizing its main results. In order to analyze the project of implementing Kaizen methodology, the research initiative consisted both of primary and secondary research. The paper analyzes the project from the point of view of economic situation of the company and environment, time constraints, budget limitations, technical level/quality performance and risks.

The central finding is that *concept-oriented projects run by an advanced-country company could succeed in a less economically developed and culturally different country – even in turbulent periods and not even in highly dynamic and technologically advanced industries – if the top management is strongly committed and management team completely involved.* The paper concludes with study results, as well as some lessons learnt and managerial implications – useful for future similar projects either within the company under debate or by other organizations in similar circumstances.

KEYWORDS

project management, industrial projects, Kaizen, lean, Eastern Europe.

Introduction: Some challenges while managing industrial projects

The general theory of project management (*e.g.* [1–6]) and its practice [7] agree on the main concepts – easy to understand considering that project management was born within study area of general management.

General principles of project management were identified as well [8]. However, in case of projects,

particular concepts – as project lifecycle and its stages – have been developed, as well as successful management along stages.

In spite of common concepts and general principles of project management, industrial engineering projects require more formal procedures [9].

In addition, each industry has its own specific characteristics and, accordingly, there were developed own sets of regulations and procedures (good examples are aerospace, nuclear energy, constructions, IT industry).

In many engineering projects, reducing the time-to-market and improving the quality of the product are key-factors in winning the competition. In this respect, in addition to the traditional engineering drawings that still play a role, the model-based definition (MBD) approach is a trend in computer-aided design; however, there are still obstacles to overcome for complete implementation of the MBD initiative [10]. Shortening the product start-up cycles and faster completion of orders (i.e. speed-up the design and planning activities) are achieved by using integrated IT systems and concurrent engineering techniques [11]. According to Chelbus, the effectiveness of using computer techniques is realized in all phases of the product lifecycle by “utilising parallelism of engineering works, eliminating data redundancy, using determined access to the documents elaborated in electronic form and full control of the works” [12, p. 70].

Fierce competition in manufacturing industries and increasing pressure to shorten the product development and production cycles have led to integration of the design and manufacturing processes (e.g. CATIA system let the designers consider issues related to manufacturing and even servicing during early stage of design). Jakubowski [13, p. 100] supports the virtual product development by digital mock-up that “could be considered as a horizontal build up model as well as a traditional vertical approach” in product development.

Many industrial projects are ERP projects. Kopera [14] proposes the socio-organizational implementation determinants (SOID) model, consisting of over 160 elements influencing the effectiveness of ERP implementation projects – all regarding human resource – grouped in three categories: enterprise culture, project management, and knowledge management. A good source of information and even knowledge are experts and professionals who work in organizations and have knowledge of project management; their opinion is that benefits of web-based studies [15] will make them more attractive for respondents in the future.

A special category of industrial projects are turn-key-projects. A study completed by Korpivaara, Elfvingren, and Kässi [16] has demonstrated that in particular case of project manufacturing (firms that make-to-order projects instead of manufacturing products) the project key-success factor is rather in customer need assessment than in system’s technical expertise.

Making strategic decisions in new product development projects is riskier than in other engineering projects. When several teams work on design-

ing a new complex product the risk is even higher. Marmier, Filipas-Deniaud, and Gourc propose a generic decision support system – decision tree type – applied in case of a satellite design project [17]. Notable risks while implementing industrial projects are associated with implementation disruptions that can delay the project execution. Based on PMBOK standards [7], Knosala and Łapuńska [18] propose a methodology for project management – considering disruptions as events – illustrated by a case study.

When dealing with uncertainty in project management along project lifecycle, fuzzy numbers and fuzzy analysis may be a practical solution – from assessing the quality of an investment project based on its financial indicators (ex-ante evaluation) [19] to changing the project specification after commencement of investment [20] (design and implementation stages). Relich also argues that “for models based on the fuzzy neural network, better results have been achieved than for neural network or statistical techniques” [20, p. 53].

Stage-gate type methods [21, 22] are used to better compromise the conflict between shortening the duration of the project lifecycle (design-implementation stages in particular) – i.e. time-to-market *versus* increasing the cost by *Stage-gate* procedures [8]. This conflict is currently solved by *concurrent engineering* approach and methods [23–25]. The recent developments of the parallel computing [26] make possible to report unparalleled performance of the industrial projects - in terms of product quality, cost, and duration (time-to-market).

A group of Scandinavian scholars [27, 28] have successfully conducted a case study from a large Swedish company active in telecommunication industry. They analyzed a *Six Sigma* project back in 2002 (a turbulent period impacted by the ‘dotcom crisis’ and new Asian competition) as well as its outcome until 2014; they found that joint-use strategy of *Lean* and *Six Sigma* can lead to improved flexibility, robustness, and efficiency. Other researchers also found significant advantages in using *Lean* and *Six Sigma* [29].

It is beyond the purpose of this paper to provide a critical analysis or evaluation of advantages and disadvantages of different approaches – in order to propose project-based universal solutions to industry problems.

However, it is appealing to try to answer the following question:

- While traversing turbulent periods and environments, can concept-oriented (e.g. *Lean*, *Six Sigma*) projects succeed only in particular developed

countries (e.g. Sweden), and in high-tech dynamic industries (as telecom)?

Lean thinking – based projects

Many projects aim to solve problems of industrial processes – by continuous improvement techniques (*Kaizen*) – based on lean thinking approach.

The basis of *lean thinking* came from the just-in-time (JIT) production concepts pioneered in Japan at Toyota [30, p. 402]. Although JIT has gained worldwide prominence in the 1970s, elements of its philosophy can be traced back as early as 1900s in the United States (Henry Ford used JIT concepts as he developed his assembly lines in automotive industry). In the context of supply chains [31, 32], lean production refers to a focus on eliminating as much waste as possible. Lean systems concentrate on pacing production and synchronizing delivery of incoming supply.

Kamauff mentions five principles of “lean thinking” [33]: (i) *Value*: determine exactly what *value* means for the customer for a specific product (good, service, or combination); (ii) *Value stream*: identify for each product or, in some cases, for each product family the entire *value stream* – the series of specific actions required to bring a specific product to the customer; (iii) *Flow*: make the remaining, value-creating steps *flow*; (iv) *Pull*: customers should *pull* products and services through their orders; the organization should not push its products and services; (v) *Perfection*: pursue *perfection* by reducing effort, time, space, cost and mistakes while offering products of ever greater value to customers.

Among its advantages, the lean project management can improve the existing standards on project management – as demonstrated by Reusch and Reusch [34]. However, when trying to implement lean production methods, small and medium-sized companies face “enormous difficulties” [35].

Transition to a lean system is not an easy process and planning a successful conversion is a challenge. To increase the probability of successful transition projects, companies should adopt a carefully planned approach that includes certain particular important elements [36, p. 643] – among which the commitment of top management, involvement of management, and support and cooperation of workers are key-elements.

The cultural dimensions always impact the project management [37]. In addition, Stevenson [36] argues that some cultures relate to the lean philosophy better than others – not to forget that *cultures* vary from organization to organization. If a culture

does not relate, *it can be difficult for an organization to change its culture within a short period of time*. Hence, another question arises:

- How important is the cultural element – Could concept-based projects (e.g. *Lean*) succeed in a different cultural environment?

Imai [38] supports the idea that the most important aspect of JIT as well as TQC (Total Quality Control) is a *philosophy of continuous improvement* (*Kaizen* is the word originally used by the Japanese). This philosophy seeks to improve all factors related to the process of converting inputs into outputs on an ongoing basis [36, p.392]. It covers equipment, materials, methods, and people.

Although both Westerners and Japanese agree on the need to improve, the two cultures have different concepts of what this term means [39, p. 569]. While the Westerners think of improvement as a step function (a change represents a marked increase in performance; this level of performance is held until the next performance leap is introduced) the Japanese view of continuous improvement as an upward sloping line – driven by numerous incremental improvements.

The Japanese developed a checklist, known as *the 5S* from the words *Seiri* (sort and clear out), *Seiton* (straighten and configure), *Seiso* (scrub and clean up), *Seiketsu* (maintain sanitation and cleanliness of self and workplace) and *Shitsuke* (self-discipline and standardization of these practices). A development of this checklist (*5S*) is an easy vehicle to assist the culture change that is often necessary to bring about lean operation [40]. The US managers use to add two *Ss* that contribute to establish and maintain a lean workplace (*Safety* and *Support/maintenance*). An interesting cross-national comparative study of new product development processes (Japan vs. United States) is provided by Song and Perry [41].

A more comprehensive study – at least as geographical dimensions – was conducted by Spalek [42] in order to analyze the influence of country of origin on project management. The survey covered over 400 companies from 20 countries, in three types of industries: machinery, construction, and IT. There were two major findings: country of origin matters for immature companies in project management; and industry specific issues count once companies are project management mature [42, p. 4].

Although the project management maturity is not the purpose of this study – neither is the investigation of the large and complex set of factors that may influence the project success [43–47] – it is to be emphasized that quality of the managerial act is among important success factors, besides other like technology [48] and training.

Consequently, it makes sense to study a case of a concept-based project managed in a country with a different culture (and – to make the things worse – in a turbulent environment and period).

Then the study was constructed around the following case:

- Concept-based (*Kaizen* and *lean*) project;
- Managed by a technologically advanced company from a developed country (ASSA-ABLOY, a Swedish-Finish firm – just call it Scandinavian);
- Implemented in different cultural environment (Eastern Europe: Romania mainly, and Slovak Republic);
- Industrial sector: metal processing, average technology;
- The story covers the period 1998–2013, over turbulent times, featured by tumultuous economic environment (post economic transition and reforms; global financial and Euro zone crises).

The case research question is rephrased as follows:

- (1) While traversing turbulent periods, *can concept-oriented (as Kaizen, lean) projects run by an advanced-country company (Swedish-Finnish firm) succeed in Eastern Europe (Romania) – which is: less economically developed and culturally different – in the average-technology metal-processing industry?*
- (2) If so, *which was the key-element to succeed?*

The case is extensively presented in the next section. It is a good example of how globalization works today: a Scandinavian group, using an originally Japanese methodology (*Kaizen*), has succeeded in Eastern Europe.

The case: ASSA ABLOY Romania – a success story

Methodology

In order to analyze the project of implementing *Kaizen* methodology at ASSA ABLOY Romania, the author carried out a systematic study comprising both secondary (examination of the company documents and books) and primary research: in-depth interviews with two members of the company's top management (the technical manager and one of the business units' managers); the first interview was audio recorded; in the second case the interviewee declined the invitation [49].

The study refers to the 2009–2012 period, which covers the three-year-duration of the *Kaizen* project. Nonetheless, the case story covers an extensive period of 15 years (1998–2013).

The research endeavor started from the assumption that if the *Kaizen* system is adopted in the company then the decision was appropriate, and the implementation process properly managed.

The Company

ASSA ABLOY is a relatively young business group established in 1994 by the unification of two companies: ASSA and ABLOY. At that time, the two companies – one from Sweden, the other from Finland – were leaders on their markets.

The group decided an organic approach as strategy of development, in fact to buy the local and regional market leaders for their specific domains of activity – no matter the country or even the continent. In Romania, the market leader was Urbis, a state owned company with a long and substantial tradition and brand name. ASSA ABLOY initiated the process of acquisition and finally in 1998 the part of Urbis developing activities similar to those of the Swedish-Finnish group was bought (price paid was close to 8 million dollars).

The factory's personnel were very enthusiastic about the change of property; new methods and technologies were expected to be brought and implemented, and new markets approached. However, by the end of 2000 not too many things were changed, just some small production capacities were brought from Western countries.

The first significant transfer of technology took place in 2001 when an aluminium foundry and galvanization production capacity was brought from Norway.

The period of time that followed, meaning the years 2002–2004, represented a permanent effort of assimilation of production capacities – mostly from Germany: another aluminium foundry, a door lock systems factory and so on – as attempts to take advantage of the lower cost (both labor and energy) from Romania.

By 2005–2006 the diversification was way beyond imagination and organization's members were 'specialized in everything'. It is the first moment when the situation really seems concerning and there is an attempt to reorganize complex processes using manufacturing footprint approach. In fact, it was started a process of externalizing the hot processes sectors – also considering the reality that energy price, according to the agreements signed for joining European Union, were about to rise significantly. Parts of the production processes are relocated to China and sometimes India, ASSA ABLOY Romania being decided to remain for the time being only with the

fabrication of door lock systems. Why ‘for the time being’? Because the perspective of complete closure of the company was the truth behind relocation decision.

An argument in favor of this intention is the fact that in 2006 it was appointed as general manager a person specialized in closing complex production facilities. Nevertheless, during the stage of analyzing and outsourcing fabrication processes the general manager together with the top management of the company came to the conclusion that parts of the activities could and deserve to be maintained and even developed. However, at certain moments some actions seemed eventually contradictory – due to the antagonism of initiating measures to close parts of the factory in parallel with actions to improve elements of the technological chain. But there is also a positive result: the group management starts to believe that there might be a chance for the Romanian company to remain functional – at least parts of it – and produce profits for the shareholders.

In this respect in November 2008 the general manager is replaced by one intended to identify ways to reconstruct the business and make the company reliable on the market. From now on only hard work and a little bit of luck might save peoples’ jobs. The financial figures for the year 2008 were not good at all; at 8 million euro sales ASSA ABLOY Romania reported 4 million euro loss. The relocation process, started in 2007, was under intensive implementation; as planned by the group, it was suppose to be finished completely by the end of 2009 – hot processes sectors to China and India and door lock systems to a factory in Slovakia.

Here comes the drop of luck: the figures for the Slovak factory for 2008 were much worse: at sales of 2 million euro, it registered almost 3 million euro loss. Hence the idea launched during the group headquarters meeting: to keep the door lock systems production in Romania – instead of closing it – and to shut down the Slovak company.

In 2009 the process of relocating the hot processes sectors from Romania comes to the end. At the same time, at the beginning of the year the new general manager brings the top management together, speaks to them about the need for a new strategy, about reconstruction, restructuring, and development. These are good news for people – future might be positive and jobs could be maintained. The members of the management team – and in fact the entire company – are supporting the general manager; everybody is minded for full involvement.

The project

The new general manager was a person with significant practical experience in *lean* management – that was acquired during previous assignments within Romanian branches of Western companies. He was determined to be successful at ASSA ABLOY Romania as well, to bring the company to positive results and maintain peoples’ jobs; he individually discussed with the company’s top managers in order to identify their strengths and weaknesses as well as their capability/potential to contribute to the change process.

The idea that emerged: a clear strategy to maintain the company on the market. The general manager called the management team outside Bucharest for several “thinking days”. They worked as a team; the general manager was in the lead during the process, with intelligence and without brutal involvement. The result was *the new strategy*. Elaborated together, in common, people feel about it as being ‘their baby that it is part of them’. Within the lines of the strategy, steady supported by the general manager, there were *lean* and *Kaizen*. Oriented on three axes (business development, business excellence, and cost efficiency), the strategy included *Kaizen* as part of the business excellence axis.

Based on personal knowledge and previous practical experience, the general manager has designed the *Kaizen project* and its implementation plan – structure, phases, and means.

Time constraints

The period of time intended to be allocated for the implementation of *Kaizen* project at ASSA ABLOY Romania was three years, within 2009–2012 period. In the spirit of truth, it has to be mentioned that the initial deadline was slightly extended.

Budget limitations

The project was privately funded and the budget was not communicated to the management team. However, a *seven digits figure* was submitted as proposal by the general manager to the group management, for the three project years. It might look a lot, but – compared to the company loss figures – it was not.

Technical level/quality performance

As regards quality issues, the progress to be encountered during the implementation process was supposed to be based upon the fulfillment of the action plans established step by step, stage by stage. An important milestone defined from the very beginning was that *by the middle of 2010 ASSA ABLOY*

Romania to reach break-even point – objective that was in fact fulfilled.

Supplementary risks

The project implementation became more complex due to the group level decisions (code name: ‘Dracula’ relocation program): four production capacities from Western countries – one of them being the door lock systems factory from Slovakia – were to be relocated at ASSA ABLOY Romania by the end of March 2011. Therefore, 2009 was an extremely difficult year, with hot processes sectors leaving the company and other production capacities coming and replacing them. On top of these, at the beginning of 2010 ASSA ABLOY’s management is informed at a group meeting in Amsterdam that ‘Dracula’ relocation program needs to be shortened with 6 months. They were told that if supplementary problems occur, no one would blame them; in fact, during the next months whenever something went on wrong the company’s management was criticized. As it is said: *success has a lot of fathers but failure is orphan!*

Project management

Designed and implemented as a result of team work and commitment, the project to implement *lean* and *Kaizen* techniques at ASSA ABLOY Romania was led, actually, by the general manager – relying on his previous experiences.

The general manager was aware of the low level of knowledge (as far as *lean* techniques) the top management team had about. Bearing that in mind, at the end of 2009 he decided that, if it is for *Kaizen* implementation to be successful, it must be done with the help of professionals, of the best consultancy team available on the market in Romania: *the Kaizen Institute*.

Activities

Good planning is necessary but it is not enough. A strong leadership is necessary as well.

A complex training program was designed by the experts of the *Kaizen Institute*; it was composed both of training sessions out of Bucharest headquarters and workshops on the company premises. The training program was split on segments following *Kaizen* logics.

However, after the first session of training the general manager was totally dissatisfied and considered that the standard package offered by the *Institute* does not respond to the company’s practical needs. After a tense meeting between the ASSA ABLOY’s general manager and manager of the *Kaizen Institute*, it was agreed that from that point forward the working procedure will be the follow-

ing: the general manager proposes the theme, the *Institute* materials are tailored accordingly and then approved by the general manager.

The training sessions were highly applicative, with lots of useful examples for the managers participating at them – the large majority being engineers. The general manager was capable to put pressure on the *Institute*’s consultants – and this was crucial. After defining this procedure things developed orderly and in a constructive manner.

Year 2010 was a cornerstone for acquiring the necessary knowledge for implementing *Kaizen*. ‘*Kaizen* is a methodology to be implemented top-down but it becomes functional when it works according to a bottom-up approach’ says the technical manager.

Five two-day weekend training sessions were organized with ten top managers of the company – led by two *Kaizen* trainers; the general manager participated side by side with his subordinates. By the same time, *twenty workshops* were organized: eight middle managers were coached by two external consultants. To note that top management has to be present at the beginning and at the end of each workshop day. Moreover, at the end of each training session/workshop an action plan was developed – including milestones, deadlines, and responsibilities.

In 2011 the implementation process continued. It was the year when the main part of the efforts was concentrated on middle management’s development.

Year 2012 has marked the successful execution of the *Kaizen* implementation plan, observing, in general, its deadlines and budget.

Results

As a result of applying the new strategy centered on *Kaizen* project, in terms of overall performance, ASSA ABLOY Romania simply skyrocketed:

- 2009: the Romanian company was situated on the 26th place out of the 40 companies of the group;
- 2012: the organization was situated on the first place together with a German company;
- 2013: on the second place.

In term of sales, the progress was impressive as well:

- 2009: 4 million euro;
- 2013: 19 million euro;
- 2014 (estimated): 22 million euro.

To complete the picture of the company success, the general manager was promoted at the group level – Chief Operating Officer ASSA ABLOY Eastern Europe. His dream of having other companies from the group taking lessons from his company became true.

Today, the company has a *lean* manager – member of the top management, subordinated directly to the general manager. The *lean* manager generally leads the workshops and supervises the accomplishment of the action plans adopted during the workshops; also, he is auditing each business unit and is involved in the yearly *lean* assessment of the company within the group. During the last two years the *lean* manager delivered more training sessions to other companies from the group than internally.

Paradoxically, this situation affected the company's performance – mainly due to the fact that Kaizen is not yet part of the staff behavior in an organic indestructible manner. It could not be said yet that people are coming up front with new ideas and new initiatives in a systematic manner. Quality problems reappear, delivery time increases again. 'We started teaching others and became careless ... it happened on the background of production boom, from 4 million euro in 2009 to 19 million euro sales in 2013' (technical manager's interview, excerpt).

Faithful to its own principles of *continuous* improvement, the insertion of Kaizen techniques into the company continues even today. ASSA ABLOY Romania is still working with the Kaizen Institute – especially in new areas such as total service management. Practically, the progress of the Kaizen implementation project has been measured also continuously, becoming part of the firm's culture.

Professor Masaaki Imai (founder of *Kaizen Institute Global*) stated when he visited the Romanian company: it is a 'gold mine', meaning – in Asian wisdom – that there is still a lot of work to be done to unearth the gold.

Main findings

The positive results of the company neatly confirm the success of the change project implementation [50] – which is a positive answer to the main research question. The central finding is that *concept-oriented projects run by an advanced-country company could succeed in a less economically developed and culturally different country if the top management is strongly committed and management team completely involved*.

The success was significant, considering that:

- progress of the Romanian company was considerably higher – as compared to other group members (progress in ranking from the 26th to the second in just three years);
- this progress is sustainable (the company continues to hold the second position).

In addition, the positive results were reported

over a turbulent period, in an industrial sector under high competitive pressure (from China and India), and in spite of cultural differences (between Scandinavian and Balkan countries and people).

Nevertheless, the progress was not linear (*e.g.* the recent increase in time delivery) but the impact of the project implementation made a clear difference.

The second major finding refers to the driver of the positive results: the *management factor* – in several forms (clear change strategy development; total involvement of the firm management; full commitment of the top management; significant personal managerial experience and competence of the general manager), and all combined.

Discussion

As presented, the cultural gap always is a significant obstacle. However, the strength of the management factor has triumphed over the cultural differences: not only because of the high quality of the former but also because the cultural differences are less and less significant as the managerial position and its international exposure are higher and higher (which was the case of the general manager).

Relatively to the general manager's competence and significant international experience: the recent 'bearish' period of the company might be connected to the general manager's departure / promotion.

Even the size of the company was not the focus of the case it is noteworthy to recall that transition to *lean* is a difficult project [36]. And the difficulty is enormous in case of small and medium size enterprises [35]. The case firm was not a prominent competitor in the global market; however, it was and continues to be local market leader in its industry – overall the size of the company has its advantages and disadvantages in terms of influencing the success of the Kaizen project.

As the change project was in line with the new company strategy, and the strategic decisions were less risky (because they were not very much related to new products development [17]) all these made up a favorable factor that positively influenced the project implementation (higher probability to succeed).

Last but not least, the strong training component constructively contributed to the successful project implementation.

Conclusions

ASSA ABLOY Romania implemented during the last five years a series of necessary changes identified during training sessions and workshops in order to

achieve lasting improvement. Even if not completely, the cultural change took place.

At this moment the company is in the position of preserving the gains and then repeating the improvement cycle on another process internally or extends lean implementation beyond internal boundaries to the processes of suppliers up the supply chain and, potentially, customers down the supply chain.

The experience developed at ASSA ABLOY Romania is encouraging. Despite several drawbacks, the company successfully managed to overcome the difficult periods (do not forget that Kaizen project started under terrible pressure: the company was already in the red zone – under the threat of closure), and implemented a significant change project.

As demonstrated during implementation of this Kaizen project, there is no doubt that understanding the *lean thinking* principles and adoption of the *5S* technique are useful in order to be able to construct a value stream map of all process steps and of the associated value that is added. The analysis of the value stream map helps to eliminate non-value-adding activities.

Deploying *lean thinking* often starts and is maintained through Kaizen events. A Kaizen event may take between two days and one week and is focused on creating significant improvement in performance (quality, speed, and cost) in one particular area of operations. An important point in understanding lean implementation is that deploying lean thinking may sound simple; in reality, it is very challenging. It is not a decision to be made easily; it requires sustained commitment, a change in philosophy and culture along with changes in practices – as well as strong leadership.

A good start is to establish a team of employees to study the process/processes that needs improvement. These employees should come from different functional areas and management levels of the organization to represent all stakeholders involved in the process. It was not exactly the case for the company – mainly due to scarce training in *lean* management of the personnel. Nevertheless, the approach of defining together, as a team, during training sessions and workshops the action plans with deadlines and responsibilities is definitely a sound process. This team should focus on determining what the customer values are. The customer can be internal (the next process) or external to the organization. However, it has to bear in mind that the customer only can specify what is valued in that specific good or service. It is also the customer demand that should be used to pull the flow of work through the process; let the customer signal when work from the process is needed.

Lessons learnt, and managerial implications

This case is meaningful for both company and consultants. Some lessons should be drawn from the Kaizen project's implementation and the implications of specific actions – positive or not – remembered.

Besides the specific *lean*- and *Kaizen*-related concepts, there was a number of lessons learnt related to project management and project lifecycle – specifically in the design and implementation stages (how to optimize the design cost against its duration by stage-gate approach and methodologies; how to shorten time-to-market by concurrent engineering).

The most important lesson is for strategy makers and top managers: the projects must be developed in line with the company strategy. In order to succeed, several factors should be considered (as size of the company and its profile, technology, level of innovation, and *project management quality*) – in certain order; this order might change, depending on other factors like cultural context, economic environment, and industry.

Regardless the project, the quality of the project management is crucial – both as professional individuals and management team.

Besides its obvious advantages, this study has some limitations as well: the singularity of the case has limited value as it does not allow general statements yet. However, the promising results are in line with other recent studies; they open generous avenues for further research – by extensions, inside and outside industry, in many directions (as company size, types of projects and industries, across countries and cultures).

The opinions presented in this work belong to the author entirely and do not imply or engage any institution he is affiliated to, in any way.

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