

## Contribution of Lean Management to Excellence

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### ABSTRACT

*To continuously and systematically improve efficiency and efficacy of processes, organizations need the implication of all employees in continuous improvement and innovation through suitable Quality Management Programs (QMPs). Effectiveness of these programs is directly linked to the requirement employees understand the methodologies and tools used for QM and the benefits that will derivate from their implementation, individually and collectively, so they can commit and implicate. Lean Management is a friendly methodology to continuously and systematically achieve process improvement, so helping the organization seeking operational excellence that contributes to overall excellence. This paper identifies Critical Success Factors (CSFs) for an effective implementation of QMPs, suggests Lean Management as an easy-to-understand, powerful and friendly methodology for operational excellence and overall excellence, and presents a case experience of implementation of Lean Management in a health care organization that applies the EFQM model, and the lessons learnt.*

**Keywords:** Lean Management, Excellence, Complexity, Quality Management, Kaizen.

### 1.0 Introduction

The competitive and complex environment of the twenty-first century requires continuously optimization of efficiency, high service levels, rapid response and high quality products and services. Public sector is not alien to this need. In the last years there has been a special effort to raise productivity and performance within public sector organizations, including hospitals and health care providers, through implementing QMPs based on private sector experience.

Medical sector takes some time to mature changes, and external and internal factors recommend to implement changes within a continuous improvement process rather than to apply a radical change based on Business Process Reengineering (Fernández-González and López-Fresno, 2002). Many organizations embark in complex methodologies before being ready for change, and consequently final results are not always successful. There is a need for “practical” methodologies that avoid the “rhetoric” of QMPs, so well identified by Zbaracki (1998) for TQM. Methodologies that allow to institutionalize the QMPs, embedding them in the organizations in a sustained way through people involvement. Effectiveness of QMPs is directly linked to the requirement employees understand the methodologies and tools used for QM, how they will be affected, how they can contribute to change and the benefits that will derivate from them, individually and collectively, so that they can commit and implicate.

Public medical sector incorporates an additional complexity: while patients are interested in healthcare efficacy, practitioner’s target is effectiveness, and policy markers look for efficiency. The common step is the improvement of clinical practice that leads to a patient focus care through easy-to-understand methodologies that imply all personnel, being managers, medical doctors or administrative personnel from a multidisciplinary point of view.

This paper identifies CSFs for an effective implementation of QMPs, suggests Lean Management as an easy-to-understand, powerful and friendly methodology to continuously and systematically achieve process improvement, helping organizations to seek operational excellence that contributes to overall excellence,

and presents a case experience of implementation of Lean Management in a health care organization that applies the EFQM model, and the lessons learnt.

### 1.1 What is Lean Production

Lean production is a systematic way that use several techniques to achieve efficient and effective processes, focused on creating customer value through low-cost improvements based on the elimination of muda (waste) in all activities.

Womack and Jones (1996) describe lean thinking as the perfect antidote to muda or waste elimination; it aims to continuously improve processes and their outputs, an endless quest for perfection, and Kaizen is often underlying principles of lean production (Imai, 1996).

Lean production or lean thinking was first introduced into the field of operations management (Womack *et al.*, 1990), and today these concepts have become associated with a more general view of the organization, as a lean enterprise or as a management philosophy (Krizner, 2001, Bhasin and Burcher, 2006, as cited by Suarez Barraza *et al.*, 2009). In the area of healthcare it frequently receives the name of lean healthcare, and its main objective is achieve a flexible, agile and reliable organizations to give effective response to the needs of the environment, improving patient safety, quality of healthcare delivery, respect for people and cost reduction.

Five key principles guide organizations that apply lean thinking: a) specify the value desired by the customer b) identify the value stream for each product; c) make the product flow continuously; d) introduce pull between all steps where continuous flow is impossible; e) manage towards perfection, so that the number of steps and the amount of time and information needed to serve the customer continually falls.

To achieve these principles, Suárez-Barraza *et al.* (2009), on the basis of literature review, identify the following main techniques necessary to be able to implement lean thinking in organizations: i) pull production-kanban; ii) Streamlined layout; iii) Total productive maintenance (TPM); iv) 5S; v) Single minute exchange of dies (SMED; vi) Supplier development; vii) One piece flow; viii) Cell design; ix) Process mapping and value stream mapping.

As a summary, we can highlight:

- Lean management is a change process that focuses the “no added value” part of the processes, while other methodologies focus the part of the processes that add value, according to the lean philosophy only a minimum part of the processes. Both focus are necessary and complementary, but depending on the maturity of the organization one could be more relevant that the other.
- Lean management is not a methodology to reduce costs, but cost reduction derivates from its implementation.
- Lean management does not identify activity (movement) with value. It rests on the principle that it is possible to produce more with less movement, so that costs are reduced and people work more satisfied.
- Lean management is based on continuously improving (kaizen).

### 1.2 Benefits of Lean Production

Among the advantages of adopting lean production we emphasize the following:

- Facilitates a cultural change, due to: i) it brings top management together to the operational level (go to gemba); ii) requires a clear identification of the products provided to customers and a clear definition of

concepts such as value, customer or product, that are very powerful for people and helps to change culture; iii) it helps to achieve quick and continuous improvements that directly benefit employees, as they find solutions that impact on their day-to-day work.

- *Produces quick and visible improvements*, so that it facilitates a sense of achievement and reinforce employees' motivation and sense of belonging, because they quick see the results of their efforts and clearly perceive what the value stream for each product is and how their work contribute to add value.
- *Implies all employees in continuous improvement*, through an easy-to-understand concepts, of common sense, applicable to daily work in all processes. So it is a friendly methodology useful to achieve operational excellence that contributes to overall excellence. In the case of application of an excellence model, such as EFQM, lean management contributes to the efficiency and efficacy of its implementation.
- *Facilitates continuous learning*. As Senge (1999) stated, learning needs time and patience, and it is only the dialectics between thought and action that make it possible.

Competitive position, when based on capabilities that are embedded in the company's people and operating processes is difficult to imitate. So an operations-based strategy, such as Lean Management, can provide the basis for a sustainable competitive advantage and overall excellence.

## 2.0 Critical Success Factors for QMPs

Researchers and practitioners reported extensive failures associated with the implementation of QMPs (see for ex. Beyer *et al.*, 1997; Choi and Eboch, 1998; Dale, 2003; Harari, 1993; Garvin, 1986; Zbaracki, 1998). Several researches identified CSFs for institutionalization of QMPs (Kwak and Anbari, 2006, Anthony and Banuelas, 2002, among others). Based on Cagnazzo *et al.* (2001) and in previous experiences and researches by the author (López-Fresno and Fernández-González, 1999, 2002, 2007, 2008), the following CSFs are highlighted:

- *Top management commitment*: commitment versus consent. Top management commitment is crucial to guarantee a successful implementation of the QMP and it should be based in a conviction that change is necessary. Top Management must provide the appropriate leadership in demonstrating its commitment, must foster a culture commensurate with the organization's vision and mission and must provide necessary funds to implement the QMP (Laszlo, 1999).
- *Co-operative leadership*: achievement of an adequate leadership and assertive behaviors at all levels of the organization, starting from Top Management. Leadership should be deployed top down to all levels of organization.
- *Culture*: there is a need of a strong common culture, instead of various sub-cultures, which guarantees alignment between the values of the QMPs and the values of the organization (Tata and Prasad, 1998), emphasizes co-operation and involvement (Wilkinson and Dale, 2002, as cited by Asif *et al.*, 2009), fosters the learning process and steers various functions in a coherent direction. During the course of implementation managements' behavior and emergent culture must become consistent over time with the QMP philosophy or employees will become cynical (Beer, 2003, as cited by Asif *et al.*, 2009).
- *Complexity*: organizations seen as dynamical adaptive complex systems. As relevant for the behaviour of the system as a whole, we must put emphasis in the analysis of its functional structure, identifying the interconnection and interrelation between its parts or components (cells or microsystems). Soft aspects have great relevance, in particular those ones related to information, communication and culture.
- *Strategy fit*: To achieve maximum benefits, a global, cohesive and integrated QMP needs to be designed ad-hoc for each particular organization, covering the whole organization, not as sub-methodologies that take the form of tools and techniques, aligned with the organization's strategy and sustained in its technical, cultural and organizational strengths to give response to its weaknesses and improvement

areas. Organizations that fail to link QMPs with their strategic priorities are left with a situation in which they do the wrong things right, in other words, being efficient at the cost of effectiveness (Hernel, 1997 as cited by Asif *et al.*, 2009).

- Deployment strategy into operations: there is a need to translate strategy into operational context so people in the organization understand how they will be affected by the QMP and what must be done to address the challenge. If the link is broken between the strategic and operational issues, there is a risk of misdirected efforts leading to no or limited bottom-line benefits.
- People implication: in order to obtain hard results, organizations need to take into account the soft side of the organization (“Soft is hard”, as said by Peters and Waterman, 1982). Several authors (Corrigan, 1995; Evans, 1995; Shin *et al.*, 1998; Dahlgaard-Park *et al.*, 200, as cited by Dahlgaard-Park and Dahlgaard, 2007) have argued that the unbalance where the human dimension is underestimated while tools and techniques are prioritised in implementation processes can be one of the main causes of QMPs failures. Current skills and motivation of the people within the organization need to be understood, so that the QMPs can be developed and motivated in the appropriate way.

Employees can be strong allies or formidable opponents for change. Lack of employee involvement usually comes from: i) the employees do not understand the project: what is it about, which are the benefits for them and for the organization; ii) unclear definition of roles and responsibilities: how their work will be affected, how they will contribute to design and implement the project; iii) lack of communication; iv) difficulty to understand the methodologies used and lack of training; v) lack of commitment from top management, vi) lack of resources.

There is a need for a user-oriented QMP design to promote buy-in by employees, thus facilitating them to incorporate QMPs into their routines (Fischer and Weerd-Nederhof, 2001, Irianto, 2005, Pasmore, 1988, cited by Asif *et al.*, 2009).

- Availability of resources: allocation of resources and capacity building is a requirement for institutionalization of a QMP (Asif *et al.*, 2009). Resources refer to technical support and organizational structure.
- Apoptosis criteria: identification and management of critical indicators and attributes (apoptotic signals) to prevent fatal entropy of units or processes. As a result, some components (processes, units, departments, etc.) could lose relevance and disappear in benefit of the overall QMP.

Performance measurement: performance measurement should be designed to suit the process and the outcomes required and accompanied by performance management, that involves training, team work, dialogue, management style, attitudes, shared vision, employee involvement, multicompetence, incentives and rewards, etc (Lebas, 1995, as cited by Radnor and McGuire, 2004). Performance metrics should not only assess internal processes efficiency but also their effectiveness in terms of impact on the customers.

- Ad-hoc design: quality practices are not universally applicable to every context in the same manner, but need to be match with the internal and external consistencies. It is recommended therefore that organizations are very critical against long lists of fashionable methodologies and best practices. It is always better to identify what are the most important general principles for achieving excellence in the long run, and then use these general principles as the basic work principles when specific practices are being tailored to organizational contexts (Dahlgaard-Park and Gahlgaard J., 2007).
- Cellular implementation: organizations should be seen as a set (system) of units and processes (cells or microsystems), autonomous but interdependent. Cellular implementation allows the gradual implementation of QMPs, starting with those units/processes that comply with the minimum requirements to generate a cascade effect in other parts of the organization.

A QMP is institutionalized when it is formally and philosophically embedded into the structure and functioning of an organization (Asif *et al.*, 2009), that is, when they are both accepted and taken-for-granted as part of the way people feel and think and the way they usually do things (routines). Routines promote institutionalization of a QMP through developing firm, stable and consistent patterns for execution of activities, and need to continuously improve, so that the organization is able to exploit resources and competences to be profitable in the short term and explore the environment to identify new opportunities that could be transformed in competitive advantages in the long term. Addressing the SCFs detailed before help organizations to institutionalize the QMPs.

### 3.0 A Case Experience

#### 3.1 Introduction

The organization described in this case study is a group of public hospitals and primary health care centres in Spain, named here as the Group, that employs 2500 people. The Group has ISO 9001 certification for various processes, two of the hospitals were awarded the Seal + 400 plus by the EFQM (EFQM, 1999) and it is now in process of being assessed for Seal +500 EFQM for the whole Group.

#### 3.2 Background

Since the Group was set up in 1997, top management was total committed to quality. Mission, vision and values of the organization were identified, policy and strategy defined, as well as CSFs and processes, and Top Management adopted EFQM model as the reference to manage the organization.

In the area of process management they used diverse strategies and techniques for process improvement, but although they received ISO 9001 certification for almost 20 processes, continuous improvement was still not institutionalized in a daily basis throughout the organization. So the Group still had important challenges: i) to deploy strategy into operations; ii) to institutionalize continuous improvement in the day-to-day operations; iii) implicate all personnel in continuous improvement, in particular medical doctors and nurses. So management started to look around for an approach that would build on the existing and ongoing QMPs and initiatives, strengthening them to continuously and systematically improve efficiency and effectiveness of processes. What was found, as the solution, was lean management, as the suitable methodology to address the challenges that had been identified.

Processes are the “nervous” system of the organization (Clark, 1994, as cited by Radnor and McGuire, 2004). Building processes means that leaders, individuals and teams day-by-day try to practice the needed values and competencies based on the principle of continuous improvement and the speed is continuously improved and at the same time costs are reduced through improved people relationships in the system (Dahlgaard-Park and Dahlgaard, 2007). Process management in healthcare views patients as complex entities experiencing the clinical course of a disease rather than viewing their care as series of discrete episodes (Fernández-González and López-Fresno, 2003). This is the focus the Group aimed to achieve.

#### 3.3 Methodology

The QMP based on lean management was designed taking into account the SCFs detailed in section 2.0 of this article and implemented according to the following phases, starting March 2008:

- *Phase I: Training.* 110 people from top management, middle management, process owners and other employees from those processes chosen to start implementation under cellular implementation criteria were trained in lean management principles and techniques.

- *Phase II: Pilot implementation.* Two processes were chosen to test the methodology, through two gemba-kaizen five-day workshops. This type of technique is characterized by the search for and elimination of muda (waste) in workshops, run by employees who work in the unit or units where the process flow, all looking for improvement ideas with a clear objective, as one of the main critical factors for success (in other case efforts could be misdirected).

Having established the objective of the improvement for each process, the five-day workshops worked on its achievement. During the first day, a presentation by the work-team was made. During that day, there was a brief training session on the concepts of lean thinking as well as an explanation given by the consulting firm to the work-team regarding the objective to reach during the week, and what steps were to be taken to find what was redundant or wasteful in their current working practices (muda). From Tuesday to Thursday, the employees in the work-team, who all of them knew the processes, detected various wasteful or redundant steps in their work.

Once identified the wasteful elements, the work team set up the actions needed to bring about improvements. During the five-day gemba-kaizen workshop, notable improvements in the elimination of wasteful and inefficient activities were achieved, principally the most critical ones. After a further three months of applying the improvement techniques, processes improved, confirming the clear gains identified before as objectives.

- *Phase III: Linking strategic planning and lean management.* A detailed analysis of the strategic plan for period 2009-11 was carried out, in order to identify how and where (in which processes and to achieve which objectives) lean management could help the organization to continuously and systematically improve processes and general performance, building on the existing and ongoing QMPs. Twenty projects were identified and were prioritized according to their contribution to achieve the objectives of the strategic plan and the difficulty of their implementation.
- *Extended training and implementation:* once analyzed the results of phase II, the 20 projects started to be put in place, what required training of all personnel implied, so lean awareness was cascading throughout the organization. A key message of the training was that lean is not an independent methodology, but it fits into the global and cohesive QMP, in order employees didn't see it as another "flavor of the month". 35 gemba-kaizen weeks were planned for 2009-10 to carry out the 20 improvement projects and are now under implementation.

### 3.4 Results

The healthcare group analyzed in this case experience is a clear example that lean management, when well defined and integrated with company's strategy as part of the QMP, reports important quantitative and qualitative benefits. Main results obtained since the implementation of lean management are related below:

- *Quantitative:* a) reduction of stocks and space needed, by average of 35%; b) optimization of use of the operating room, by average 17%; c) optimization of use of increase of patients satisfaction: from 3,39 to 3,95 points; d) increase of productivity, by average 20%; e) reduction in time of response and a general improvement in the services offered to the patients.
- *Qualitative:* a) better visual identification and control of materials, documentation, files and other aspects of workplace environment, etc.; b) increase of motivation and implication of employees; c) sustained implementation of continuous improvement; d) improvement of internal communication and knowledge.

The methodology helped to give response to the challenge the organization had in the area of processes.

### 3.5 Lessons Learnt

Lean management has not only delivered major performance gains, in terms of reducing lead time and improving productivity, but it has also delivered some crucial lessons, as following:

- Leadership: clear and visible leadership from top management is crucial, and the need to deploy it throughout the organization (co-operative leadership). Better results were obtained in those centers with stronger top management commitment and leadership.
- Organizational structure and resources: implementation requires an adequate organizational structure to support it.
- External support: it is also important to have external support, but knowledge has to be kept into the organization to guarantee sustainability of the QMPs.
- Quick fixes – long term projects: it is necessary to combine small projects that provide quick results (quick fixes) with longer and more strategic projects.
- Clear objectives: it is very important to define very clearly the objectives of each improvement.
- Follow up: it is necessary to perform follow-up in order to avoid deterioration and degradation with the passage of time of the QMPs.
- Communication: results must be communicated to all personnel, with transparency, to strength awareness and implication and to generate a cascade effect.

Lean management was revealed for the Group as an easy-to-understand, suitable methodology to drive continuous and systematic improvement with the implication of all personnel, and to contribute to achieve an adequate culture of continuous learning and improvement that leads to operational excellence and overall excellence, reinforcing previous gains.

### 4.0 Conclusions

To obtain maximum benefits, QMPs need to be implemented as a meta-methodology targeting the whole organization, in order to avoid stand-alone programs which fail to yield desired results. QMPs need to be effectively integrated with the business strategy, which steers the business processes towards its unique competitive advantage.

Institutionalization of QMPs requires a context specific design that promotes greater buy-in by employees; developing the routines and structures that act as memory of organizational knowledge, and nurturing a common and fostering culture. Lean management is an easy-to-understand, suitable, methodology to drive continuous and systematic improvement within an organization with the implication of all personnel. It contributes to institutionalize QMPs, achieving as a result an adequate culture of continuous learning and improvement that leads to operational excellence and overall excellence.

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