Abstract
Various aspects such as organizational culture and its impact on business results, the role of senior managers and middle managers in bringing about change (not necessarily in the lean context) and the role of Community practice in the context of knowledge management have been studied separately. “Lean” has many counter intuitive concepts; their acceptance by the organization to the extent of modifying its culture plays an important role in success of lean implementation. Senior managers and middle managers need to deploy both transformational and transactional approaches during lean implementation. How significant is the role of cultural modification in ensuring a lasting transformation? Which is the most effective style in each of the phases of lean transformation? Community practice as a knowledge ‘management’ technique has been studied but how does it help in scaling up the implementation of these counterintuitive concepts across the company/companies? This paper proposes to link these elements into a model which would help a CEO to implement “lean” smoothly and effectively, rather than using trial and error methods.

Key Words: Lean implementation, Organization culture, Leadership styles

Introduction
In general, bringing about and sustaining change in an organization is indeed a big challenge. There are many case studies documenting the failure of change initiatives over a period of time. In particular, the overall success rate of lean implementation is rather poor (Bhasin & Burcher, 2006). In the context of lean manufacturing, the issues regarding the management of the change process are many. Most companies adopt some elements of lean such as cycle time reduction through SMED, lead-time reduction, inventory reduction etc., ignoring the more fundamental issues of ‘Flow’ across the supply chain. This limited focus leads to optimization of the sub-systems but sub-optimization of the whole (e.g. improvement of efficiencies of a machine or cell but reduction in the overall throughput etc.). A review of the existing literature revealed extensive focus on the practice of lean tools and techniques. However, lean is much more than just some application of tools (Alagaraja & Evan 2013).
There are many counter-intuitive concepts in lean management such as inventory should not be managed; standardized work improves creativity etc. (Womack et al 1990). Acceptance of these concepts across the organization and imbibing these as the new ‘culture’ are essential for success in lean implementation (Bhasin & Burcher, 2006). The critical role of organizational culture in implementation of a large change initiative, like TQM, has been studied and documented (Prajogo & Sohal 2001).

Lack of senior management commitment has been found to be a significant element affecting implementation of a change initiative (Douglas & Judge, 2001). Inability to manage change and resistance to change due to disruption of existing social networks were expensive and time consuming (Alagaraja & Egan 2013). Ineffective leadership exercised by the senior executive team, including a laissez-faire leadership style hindered the quality of direction and success of strategy implementation. However, lean literature also does not identify specific leadership characteristics that are important for successful implementation (Alagaraja & Egan 2013).

Without the leadership across the organization being fully committed to this new philosophy, there is a frequently noted phenomenon that the practices regress to the old ways. Poor coordination across functions and inadequate information sharing between individuals and business units have been found to be the main reasons for failure of change initiatives. Lack of collaboration has been identified as a hindering factor in lean implementation (Hrebiniak 2006). Similarly, financial function alignment with the lean initiative is crucial for lean success (Alagaraja & Egan 2013). Though the top leadership plays an important role in driving such change practices, it has been noted that two different plants under the same top leadership have achieved very different levels of success in implementation of lean practices. This suggests a greater change agent or a complex change intermediary role for the midlevel leadership (Balogun 2003).

Changing organization’s own practices is inadequate to bring about sustained change in the manufacturing paradigm of the organization. This is because we need to look at the whole value chain. Lean is concerned not only with the firm’s internal manufacturing capabilities, but is also heavily dependent upon supplier involvement within the supply network. Frequently, suppliers do not or cannot commit resources for such a change. However, there appears to be little empirical evidence in literature on the implementation of lean practices and the factors that might influence them in SMEs. With a few notable exceptions, most of the literature has focused on the premise of large sized enterprises only. Many SMEs, by default, reflect in their culture the personality of the owner/manager and are constrained by this in terms of the changes they may be able to undertake (Achanga et al 2006). The role of midlevel leadership of the large organizations in helping/mentoring/guiding their supplier (SME) during this change initiative is apparently crucial but not very well understood.

It is also seen that frequently, after some small gains are celebrated, the company/plant starts to revert to the old practices. This is true for the parent company and truer for the supplier.
Long-term focused measures, adoption of systems-level perspective and the development of formal strategic plans were more likely descriptors of implementation success (Bhasin & Burcher, 2006). Lean literature also emphasizes external partnership, alliances through supplier and customer development, and channel alignment, to ensure stabilized demand patterns, improved organizational efficiency, effectiveness, productivity, and quality (Brau, Fawcett, & Morgan, 2007). Education and involvement of personnel in and of the lean principles and methods are integral to its implementation. Sustainability is also linked to the engagement and training of employees (Alagaraja & Egan 2013). Sustainability of lean is reliant on the extent of embedded cultural change and training of personnel within an organization adopting lean (Radnor, 2011). As there is no cookbook for implementation of lean, each organization needs to develop own methodology for lean implementation. Researchers have attributed this non-sustenance to an excessive focus on results, not process. Some have also attributed this to the non-clarity on the critical success factors (Achanga et al 2006).

### Hidden Issues & Practitioner’s Concerns

One of the authors of this paper, having been a practitioner for over four decades and leading implementation of change initiatives (including lean transformation) for over a decade in midsized organizations, has some observations and questions.

### Cultural Impact

#### Acceptance of Counterintuitive Elements by Stakeholders

As regards the cultural impact in organizations, some questions arise regarding the acceptance of counter-intuitive elements of lean transformation by all key players (Womack et al 1990). There are many such counterintuitive elements in lean, as shown in the Tables 1, as noted by one of the authors during his lean implementation initiatives over the past three decades:

<table>
<thead>
<tr>
<th>Conventional View</th>
<th>Counterintuitive View</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Concepts such as zero defects, waste elimination are principles of lean</td>
<td>Lean principles are linked to flow of material and any enemy of flow needs to be eliminated</td>
</tr>
<tr>
<td>2 Train (as many people as possible) before launching lean transformation</td>
<td>Train only as needed and in limited areas. Let people learn by doing whatever is taught and then give them further new concepts</td>
</tr>
<tr>
<td>3 Lean production system will not work without elimination of scrap and rework. Therefore, zero defects must be achieved before launch of lean initiative</td>
<td>Quality improves as flow improves. Lean can work even in bad quality lines….</td>
</tr>
<tr>
<td>4 Design a perfect flow on paper and then re-layout based on this</td>
<td>Do not look for perfection – just start with a (reasonable) concept and then improve as you go along</td>
</tr>
<tr>
<td>5 Sequence activities and then change them across the company</td>
<td>Change all activities in one small area and then snowball across the organization</td>
</tr>
<tr>
<td>6 Inventory should be kept close to the customer</td>
<td>Inventory should be kept close to the producer</td>
</tr>
<tr>
<td>7 Flow of material should be</td>
<td>Sometimes, it is good to interrupt flow and</td>
</tr>
</tbody>
</table>
synchronized across the plant | synchronise only within a tier, in order to improve overall flow across the plant
---|---
8 | Capacity utilization of machines is very important to reduce conversion costs
8 | Level workload, even if capacity is idling, to improve overall capacity utilization
9 | Creativity of workers needs to be fostered and therefore they should be encouraged to experiment
9 | Standardization of work (repetitive and uniform work pattern) should never be compromised. Creativity should be on offline activity
10 | Human productivity is critical to conversion costs reduction – they should never be allowed to idle
10 | Flow of material (material productivity) is more important than that of man. Human being should be available when material is ready to be worked on
11 | Inventory is a locked-up capital. Hence must be minimized
11 | Building planned inventory reduces overall inventory
12 | 5S activities reduces productive time of workers
12 | Taking time to put things back in its place (2S) improves overall productivity

Table 1

Many organizations struggle with some or all of these concepts. Traditional financial thinking is at variance with some of the above concepts on inventory (e.g. point 11 of Table 1). Similarly, plant layout design is at variance with some concepts (e.g. points 7, 14 of Table 1).

The key question that needs to be answered is - **How important is the acceptance of counterintuitive elements of lean in initiating change?**

**Involvement of functions across value chain**

Another question is regarding the involvement of functions across the value chain. Some researchers (Achanga et al 2006) have started stressing the importance of focusing on whole value chain. Researchers have expressed the importance of financial function integration with the lean initiative for a sustained success (Alagaraja & Egan, 2013). Lean is not only concerned with the firm’s internal manufacturing capabilities, but is also heavily dependent upon supplier involvement within the supply network. This aspect is explored by Achanga et al (2006), who have identified the critical success factors for lean implementation in SMEs (who could typically be the suppliers to the bigger companies implementing lean).

The key question to be addressed is - **How critical is the involvement of functions across the value chain in ensuring long term success of the transformation initiative?**

**Initiating mindset change in an organization**

Changing the mindset of the top leadership downwards to cover all employees of the organization is a key prerequisite for change. According to Ahlstrom (1998), it is first necessary to change employees’ attitude to quality, in order to attain a material flow containing only value adding operations. Managers need to devote effort and resources to quality first. Achieving consistently high quality requires a high degree of control over the manufacturing process, which is the driver of subsequent improvements (Womack & Jones 1996). A lean production system will not work properly without the elimination of as much scrap and rework as possible. It is therefore important to start the work of achieving zero defects early during implementation. Ahlstrom (1998) discusses Storhagen’s concept of implementing ‘process factors’, for example job rotation and teamwork before ‘structural
factors’ (layouts and set-up time reduction) and/or ‘interaction factors (geographical proximity and quality certification of suppliers). Lean production consists of eight principles each concerned with a particular aspect of the manufacturing system (Ahlstrom 1998): elimination of waste, zero defects, pull scheduling, multifunctional teams, delayering, team leaders, vertical information systems, continuous improvement. The core principles however remain elimination of waste, multifunctional teams, and pull scheduling. Lean is much more than just some application of tools as per. The typical obstacles are underestimating the cultural and managerial impacts, the illusion of progress, conflicting measures, believing the excuse list, not remaining principle based, and using lean as a set of tools rather than a way of doing business (Bhasin & Burcher 2006). The critical role of organizational culture and mindset change in implementation of TQM has been discussed by many authors (Prajogo & Sohal 2001). Mindset change influenced by organizational culture would affect execution degree of TQM, as explored by some researchers who have also measured the influence of organizational culture (Prajogo & Mcdermott 2005).

However, from the practitioner’s viewpoint, the question which begs to be answered is - **How do the mindset change criteria which starts with the top leadership, percolate to the entire organization.**

**Leadership Styles**

**Leadership styles of the top leadership**

Lean literature also does not identify specific leadership characteristics that are important for successful implementation. However, strategy implementation literature in the management sciences identifies factors that share common (e.g., structure and flexibility) and distinctive (e.g., leadership) characteristics from the Lean literature (Alagaraj & Egan 2013). Lack of senior management commitment was a significant element affecting implementation. Facilitating communication and training at all levels in the organization was particularly significant in managing resistance to change (Scherrer-Rathje et al 2009). Targeted employee training and development efforts, identifying key human resources, encouraging open communication, adequate dialogue with employees on implementation success and challenges, and involvement of operating line members in improvement projects teams are some of the leadership styles that have been found effective (Alagaraja & Egan 2013). However from the perspective of a practitioner, it is often observed that in similar sized organizations, the success rates of implementation vary significantly.

The key aspect to be analyzed is **What are the elements of the leadership styles of the top leadership that seem to make an impact?**

**Role and leadership styles of midlevel leadership**

Traditional roles of Middle Managers have been that of an intermediary between the top management and the operational level. Middles connect an organization's strategic and operational levels through mediation, negotiation, and interpretation (Floyd & Wooldridge 1997). Also, roles are changing as organizations are becoming flatter. Middle managers may be strategic assets (Floyd and Wooldridge 1997), even when they are restricted to implementing deliberate strategy. This analysis implies that the role played by middle managers is a passive one of transmitting the instructions from the top to the operating teams. This aspect is still not explored as extensively. The role of middle management in technological transitions in particular, and in organizational ambidexterity more generally, has received less attention than has the role of top management. However, as one of the key
strategic tasks of these managers is strategy implementation, this cannot be accomplished unless middle managers’ role is analysed in detail, especially in the context of implementing transformational change in an organization. Balogun (2003, 2006) and Balogun & Johnson (2004, 2005) have done a longitudinal study on this aspect and have concluded that middle managers should be treated as partners. Middle managers fulfil a complex ‘change intermediary’ role. As per Balogun (2003), the interpretation activity involves personal changes they attempt to undertake, how they help others through change, how they keep things going during transition and what changes they implement in their departments. However Huy (2012) looks at it differently and concludes that middle managers are undervalued lynchpin in the strategy process, particularly in planned radical change. Balogun & Johnson (2004, 2006) feel that middle managers were recipients of change as much as its implementers. They had to make the new structure work but had little involvement in the up-front change design or decision making. As per some researchers, organizations cannot appreciate the role of middles in organizational restructuring unless it is recognized as involving a process of cognitive reorientation entailing accompanying changes to the informal side of organizations. Barnes (2000) looks at this in the context of driving manufacturing excellence. Middle managers are the implementers of senior executive decisions, and as such are critically important role players in the necessary shift towards world class manufacturing. As per Balogun (2006), middle managers have been said to have a ‘bilingual role’ that requires them to translate the strategic and often abstract language of upper management into the operational language which guides workers towards concrete action.

In the context of lean transformation, the question which needs to be asked is - *Does the leadership styles of midlevel leadership play an important role in lean implementation success?*

**Evolution of leadership styles during implementation**

Hines (2010) discusses the evolution of the leadership emphasis of all the stakeholders’ viz. top, middle leadership as well as the operators, indicating that it evolves from the firefighting to a more strategic role for all three, the most impacted being that of the top leadership. Also relevant is the type of leadership style that these senior/ midlevel leaders apply. A transformational & transactional leadership style of the midlevel leaders comes to the fore. Sun & Anderson (2010) study concerns the influence of the combined leadership styles of top and middle management on the exploratory, transformative, and exploitative learning processes of absorptive capacity. Their case study suggests that both top management and middle management should adopt a transformational leadership style during the exploratory learning process. During the transformative learning process, top management should continue to exercise transformational style while middle management should switch to a more transactional style. During the exploitative learning process, both top and middle management should exercise a transactional leadership style.

The question for the practitioner is - *Does the leadership styles have to change as implementation proceeds for lean implementation as well?*

**Implementing and scaling-up change**

**Implementing change**
Despite the vast literature and self-help books that are available on lean implementation, researchers now widely acknowledged that there is no cookbook for lean implementation. Training has helped organizations develop core competencies in relation to the content of the strategy and long-term focused measures, adoption of systems-level perspective and the development of formal strategic plans were more likely descriptors of implementation success (Bhasin & Burcher, 2006). Lean literature also emphasizes the importance of external partnership, alliances through supplier and customer development, and channel alignment, to ensure stabilized demand patterns, improved organizational efficiency, effectiveness, productivity and quality (Brau, Fawcett, & Morgan, 2007). Education and involvement of personnel in and of the lean principles and methods are integral to its implementation (Ahlstrom 1998). Implementation of lean is linked to the engagement and training of employees as well as reliant on the extent of embedded cultural change and training of personnel within an organization adopting lean. Most organizations quickly revert to the earlier style of working. Researchers have attributed this to focus on results, not process (Pecci et al 2011). Some have also attributed this to the non-clarity on the critical success factors (Achanga et al 2006).

The critical question, however, that needs to be answered from the practitioner’s viewpoint is - While initial success may have been achieved with relative ease, how does one sustain it over a period of time?

**Scaling-up change to cover the whole organization**

Scaling up change is typically not very successful. The percentage of success is rather low. Literature survey indicates that up to 2007, research emphasized the management of internal operations to achieve the goals of lean production (Bhasin & Burcher, 2006) which could be considered as one of the major reasons for failure to scale up. However, in an attempt at clarifying all the elements supporting the core lean principles and developing a multifaceted measure for lean scale up, Shah and Ward (2007) identified ten key aspects related to the system. Most of these ten aspects (six) are linked to internal features of the company while the others relate to the management of external aspects connected with suppliers and customer involvement, going beyond the scope of the original principles. However, a review done by Fuentes & Diaz (2012) emphasizes the importance of “respect for people”, a principle that is often missing from the practice of lean.

Though there is a lot of discussion on the critical factors, it is not clear as to the organizational imperatives that need to be identified and driven for scaling up - How can the organization scale-up the change initiative seamlessly?

**Sustaining change across the supply chain**

To sustain the benefits of change, there are three clear requisites: (i) Clear measures for defining success of implementation, (ii) Focus on continuous improvement, so that enthusiasm does not falter, (iii) Use of community practice to create a social system for continuous learning.

Designing and implementing an effective measurement system is an important readiness factor for successful lean implementation in that it guides an analysis of the value-stream, establishes accountability, and provides easy recognition of progress (Shah and Ward, 2007).
Tangible and intangible benefits of lean are discussed extensively. Lean manufacturing is not a panacea to solve short-term competitive problems, and its effects can only be seen in the long term (Fuentes & Diaz 2012). Chauhan & Singh (2012), in a study of lean implementation in India have found that most of the responding firms are in transition towards the realization of lean manufacturing. These firms believe that the factors that drive the realization of lean manufacturing are just in time deliveries and achieving continuous improvement. The essential characteristics of lean production include the following factors: Integrated production, with low inventories throughout, using Just-in Time management; Emphasis on prevention, rather than detection in quality; Production is pulled in response to customers, rather than pushed to suit machine loading or other in-house ideas of scheduling; Work is organized in teams, using multi-skilled workforce problem solving to eliminate all non-added value; Close vertical relationships, integrating the complete supply chain from raw material to customer (Fuentes & Diaz 2012). Many researchers have listed other dimensions that can be measured to assess the degree of evolution in a lean transformation (elimination of waste, continuous improvement, continuous flow and pull driven systems, multifunctional teams and information systems). Farris et al (2009) have indicated that lean implementation timetable could serve as a “just-in-time” training mechanism, impacting employee knowledge and skills related to continuous improvement. Most Kaizen event accounts suggest that goal clarity (i.e., specific, well-defined goals) is key task design characteristic promoting event effectiveness. Use of community practice as a key social system for learning has been researched ever since Wenger (1998)’s seminal paper. However its use in lean transformation has not been studied as it should have been, as this is one of the lean transformational change initiatives which require social support for understanding, accepting and improving upon the concepts.

The key question for a practitioner as well as a researcher, therefore, is – How does one organizes improvements across the supply chain to ensure sustenance of the lean transformation journey?

The proposed model
The questions posed are important, to the researcher, in particular to the practitioner. They are, in fact, of utmost importance to the practitioner as it defines a blue print for implementation of lean transformation. The relative position(s), linkages among the organization structure & across the supply chain is graphically depicted in the Figure 1.

![Figure 1](image-url)
Conclusions
In this paper the authors attempted to investigate the enabling questions to ensure a successful lean implementation/ transformation in an organization and attempted to link them in a model that links these counter intuitive questions into an implementation model. This model proposes that the adoption and then adaptation of the lean principles into the organizational culture of the organization is central to a lasting success of the lean transformation. Though there are extensive studies on the influence of culture in organizational change initiatives, the acceptance of the counterintuitive elements of lean by the organization have not been studied. This paper describes the work in progress in developing and validating the model through study of a representative industry vertical.

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