

Exploring Values and Value Streams by BPM method solved by Lean Management tool

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Abstract: This paper suggests a continuous improvement plan that can satisfy customer's value and eliminate waste in the enterprise business process. In order to explore the applicability of lean management principles in the enterprise business process, the five fundamental concepts (specify value, identify the value stream, flow, pull, and perfection) of lean management are being used as a stable and proved approach. In addition, Business Process Management is applied as a new method to constantly improve the elimination of waste in the enterprise business process. This can be accomplished by the lean management concept. Moreover business process problems, such as overlapping work, redoing work, communication gaps, inflexible processes, and obscure processes, have the possibility of being solved by lean management.

Lean management has traditionally been adopted by manufacturing industries to improve operations through the identification and elimination of all forms of waste basically. The construction industry has also adopted this philosophy, primarily in the field of projects. In order to increase an organization's competitiveness and productivity, lean management is needed in the any business process as well as in the field. The intent of this work is to explore a method of introducing lean management which continuously improves any business processes. The five fundamental concepts (specify value, identify the value stream, flow, pull, and perfection) of lean management as an approach are being adapted in this project to improve quality of the processes. Hence the main objective of this paper to apply the tool of lean and six sigma management to improve the elimination of waste in the enterprises business process. Followed by a literature review which provides a brief summary of lean thinking and six sigma along with challenges might face while implementing. A case study follows that demonstrates how; Business Process Management is applied as a tool, method to constantly improve the business process.

I. Introduction

Lean management has traditionally been adopted by manufacturing industries to improve operations through the identification and elimination of all forms of waste. Eiji Toyoda and Taiichi Ohno of the Toyota Motor Co. and Shingo Shingo established the lean production philosophy in response to the deficiency in human, material, and financial resources. This system also has been implemented in other manufacturing industries, such as the automotive, the aerospace, the moulding, the plastic, and the environmental service industry. Since 1993, the construction industry has also adopted this philosophy. As work in the field has improved, the business processes in the enterprise area must also be improved in order to sustain market competitiveness and increase value. This can be accomplished by the lean management concept. Moreover business process problems, such as overlapping work, redoing work, communication gaps, inflexible processes, and obscure processes, have the possibility of being solved by lean management.

This paper suggests a continuous improvement plan that can satisfy customer's value and eliminate waste in the enterprise business process. In order to explore the applicability of lean management principles in the enterprise business process, the five fundamental concepts (specify value, identify the value stream, flow, pull, and perfection) of lean management are being used as a stable and proved approach. In addition, Business Process Management is applied as a new method to constantly improve the elimination of waste in the enterprise business process.

Five Concepts of Lean Management

Five fundamental concepts have been established to define the philosophy and implementation of lean management: (1) specify value; (2) identify the value stream; (3) flow; (4) pull; and (5) perfection. Customers must provide the definition of value, which is how the customer determines whether or not the provided service satisfies their needs. Once the desired value by the customer has been appropriately specified, the value stream, consisting of all actions (encompassing problem-solving, engineering design, administration, information management, and physical transformation tasks) required to produce value, must be accurately identified. At this phase, all actions that may not create customer value will be identified and removed. The concept of flow is then applied to the new value stream to enhance the efficient improvement of value through the operational stage.

The newly created value stream can be used to shift from a push system to a pull system. In other words, this system can accommodate the production of the good or service in response to customer demand. The final fundamental concept in lean management is continual striving to achieve perfection through radical and incremental improvement efforts.

These five concepts can provide a substantial lean management framework that can be implemented by the business processes of construction companies.

The five-step thought process for guiding the implementation of lean techniques are easy to remember, but not always easy to achieve:

1. Specify value from the standpoint of the end customer by product family.
2. Identify all the steps in the value stream for each product family, eliminating whenever possible those steps that do not create value.
3. Make the value-creating steps occur in tight sequence so the product will flow smoothly toward the customer.
4. As flow is introduced, let customers pull value from the next upstream activity.
5. As value is specified, value streams are identified, wasted steps are removed, and flow and pull are introduced, begin the process again and continue it until a state of perfection is reached in which perfect value is created with no waste.

In short the steps can be specified as -

1. Specify Value
2. Identify the value stream
3. Flow
4. Pull and
5. Perfection.

Specify Value:

The critical starting point for lean thinking is value. Value can only be defined by the ultimate customer. And it's only meaningful when expressed in terms of a specific product (a good or a service, and often both at once), which meets the customer's needs at a specific price at a specific time.

Above all, lean practitioners must be relentlessly focused on the customer when specifying and creating value. No any other consideration should distract from this critical first step in lean thinking.

Why is it so hard to start at the right place, to correctly define value?

Partly because most producers want to make what they are already making and partly because many customers only know how to ask for some variant of what they are already getting. They simply start in the wrong place and end up at the wrong destination. Then, when providers or customers do decide to rethink value, they often fall back on simply formulas lower cost, increased product variety through customization, instant delivery rather than jointly analyzing value and challenging old definitions to see what's really needed.

Values in Construction Industry

As a part of project work many values are explored which are generally demanded by customers. With the help of observations and case studies following values found to be of importance in the construction industry. They include:

Elegance (Interior)	Economy	Comfort	Energy efficiency
Novelty	Simplicity	Sustainability	Elegance (Exterior)
Multiple Use	Controlled	Low Maintenance	Space efficiency
Ease	Creativity	Hygienic	Environment friendly

These values are necessary for the customer satisfaction.

Identify the Value Stream

The value stream is the set of all the specific actions required to bring a specific product through the critical management tasks of any business: the problem-solving task running from concept through detailed design and engineering to production launch, the information management task running from order-taking through detailed scheduling to delivery, and the physical transformation task proceeding from raw materials to a finished product in the hands of the customer. Identifying the entire value stream for each product is the next step in lean thinking, a step which firms have rarely attempted but which almost always exposes enormous, indeed staggering, amounts of waste.

Value Stream Mapping is a Lean technique used to analyze the flow of materials and information currently required to bring a product or service to a consumer/customer.

Customers must provide the definition of value, which is how the customer determines whether or not the provided service satisfies their needs.

Once the desired value by the customer has been appropriately specified, the value stream, consisting of all actions that is,

1. Problem-solving,
2. Engineering design,
3. Administration,
4. Information management, and
5. Physical transformation tasks required to produce value, must be accurately identified.

At this phase, all actions that may not create customer value will be identified and removed. The concept of flow is then applied to the new value stream to enhance the efficient improvement of value through the operational stage.

The newly created value stream can be used to shift from a push system to a pull system. In other words, this system can accommodate the production of the good or service in response to customer demand.

Flow

Only after specifying value and mapping the stream can lean thinkers implement the third principle of making the remaining, value-creating steps flow. Such a shift often requires a fundamental shift in thinking for everyone involved, as functions and departments that once served as the categories for organizing work must give way to specific products; and a "batch and queue" production mentality must get used to small lots produced in continuous flow. Interesting, "flow" production was an even more valuable innovation of Henry Ford's than his better-known "mass" production model.

Pull

As a result of the first three principles, lean enterprises can now make a revolutionary shift: instead of scheduling production to operate by a sales forecast, they can now simply make what the customer tells them to make. You can let the customer pull the product from you as needed rather than pushing products, often unwanted, onto the customer. In other words, no one upstream function or department should produce a good or service until the customer downstream asks for it.

Perfection

After having implemented the prior lean principles, it dawns on those involved that there is no end to the process of reducing effort, time, space, cost, and mistakes while offering a product which is ever more nearly what the customer actually wants.

II. Methodology:

Implementing Lean Management in Construction to implement lean management in construction industry, authors used following forms to primarily investigate the values required by the customers.

III. Case Study

A case study is carried out in Dhule and Jalgaon district in Maharashtra India; number of project works are going on around A site survey was carried to collect data of about 400 owners of the houses. A personnel discussion was made with various architects, consulting engineers, owner of project at all level to conclude the best, easy, convenient and more practical working system. Based on this we have found out the better convenient practical feasibilities for implementation of lean and Six Sigma. For the Survey of Values two forms were prepared: - 1 Value Survey Forms and 2: Customer Feedback Form as given Form 1 and Form 2. These forms were given to 400 customers out of whom 307 were selected based on complete viability of Technical data and taken into consideration, for implementing the Analysis of the Values demanded by the customer. Following Table 1 shows the summary of the survey of primary value demanded by the customer. This analysis is also shown in Figure 2 and Figure 3.

IV. Discussion & Conclusion:

This work reviewed, identified and implemented the effectiveness of lean management principle along with value engineering tools that are suitable to apply in construction organizations.

This study shows that the lean management tools and business process management can be modified for use in construction projects and successfully implemented. The commitment of the construction manager or engineer for implementation of these tools may prove to be the most important factor in successful implementation of these tools. Sufficient training is needed to be provided to promote behavioral change, encouragement of client involvement and rewarding real improvement proved to be critical factors in eliminating barriers to change.

The workers enjoyed being a part of a structured planning and decision making process. Training will be a key aspect of implementation and success of the lean at the site. The staff and workers will need to be trained to use this tool effectively. This will also make the construction process oriented more to customer.

References

[1]. Peter S. Pande, Robert P. Neuman, Roland R. Cavanagh, "The Six Sigma Way", Published by T.M.H.,2006.
 [2]. R. Sacks and M. Goldin, "Lean Management Model for Construction of High Rise Apartment Buildings", Journal of Construction Engineering and Management, May 2007, pp. 374-384.
 [3]. R. Sacks, A. Esquenazi and M. Goldin, "LEAPCON: Simulation of Lean Construction of High Rise Apartment Buildings", Journal of Construction Engineering and Management, July 2007, pp. 529-540.
 [4]. Ballard and Howell, "Completing Construction Management Paradigms", Lean Construction Journal, June 2004, pp.38-45.
 [5]. Sven Bertelsen, "Lean Construction: Where are We and How to Proceed?", Lean Construction Journal, June 2004,pp.46-69.
 [6]. 8. Howell and Balard, "Implementing Lean Construction: Understanding And Action", Proceedings of IGLC '98
 [7].

Table 1: Summary of the survey of primary value demanded by the customer

Value	Count	%	Total 307
Elegance	20	6.51	
Economy	40	13.03	
Comfort	25	8.14	
Energy efficiency	10	3.26	
Novelty	10	3.26	
Simplicity	10	3.26	
Sustainability	4	1.30	
Elegance	30	9.77	
Multiple Use	2	0.65	
Controlled	30	9.77	
Low Maintenance	40	13.03	
Space efficiency	20	6.51	
Ease	4	1.30	
Creativity	2	0.65	
Hygienic	40	13.03	
Environment friendly	20	6.51	



Figure 1: Process in Value Engineering

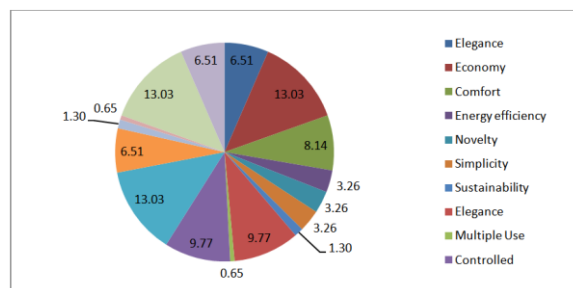


Figure 2: Analysis of values

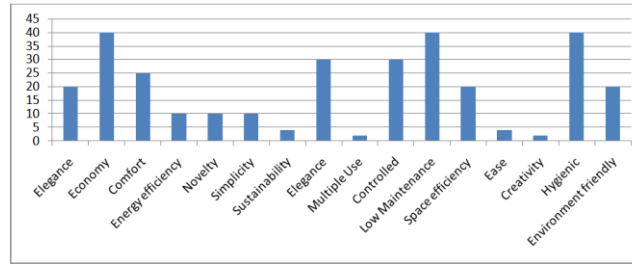


Figure 3: Analysis of values

Form 1- Value Survey Form

Developer / Designer / Consultant Name		
1.	Client Name	
2.	Site Address	
3.	Construction Type	Commercial Mixed b. Residential d. Other (Specify)
4.	Values Required	Elegance Economy Comfort Energy efficiency Novelty Simplicity Sustainability Elegance Multiple Use Controlled Low Maintenance Space efficiency Ease Creativity Hygienic Environment friendly
5.	Specific Requirement	
6.	Remarks	
	Date & Signature	

Form 2 -Customer Feedback Form

Developer / Designer / Consultant Name		
1.	Client Name	
2.	Site Address	
3.	Construction Type	Commercial c. Mixed b. Residential d. Other (Specify)
4.	Values Demanded	
5.	Are you satisfied with the construction?	
6.	What do you feel about Work performance ?	
7.	Whether the work has been completed within time?	
8.	Remark	
	Date & Signature	