

# Research Design through Product Life Cycle Management

Rajiv Kaushik

Department of Management, Vaish College of Engineering,  
Rohtak (Haryana) Pin 124001  
India

*Email Address: rajivkaushikprince@gmail.com*

## Abstract

Product and Life Cycle Management (PLM) has emerged as a tool to counter the problems which couldn't be solved merely by using CAD or CAM. PLM helps in supporting product planning, collaborative product development, validation and manufacturing planning etc. PLM can cater the designing need of the parent company through a number of designing centers spread geographically across the globe. PLM give designer to do list. PLM leads to business sustainability and transforming innovations.

**Key Words:** PLM, CAD, CAM, ERP, mass customization and outsourcing and globalization.

## 1. Introduction

Product life cycle management (PLM) has emerged as a key ingredient of the business strategy for the manufacturing industry. In its initial avatar, PLM helped manufacturing companies in the form of computer aided design (CAD) and computer aided manufacturing (CAM) tools. Since then, Indian manufacturers have increasingly adopting PLM to support their efforts in product planning, collaborative product development, validation and manufacturing among others. The integration of PLM goes back right into developing new product and evolving new practices into manufacturing.

After information technology, global manufacturing companies are eyeing India as an outsourcing hub for engineering design. A number of big global multinationals like Suzuki Motors, Bosch, ABB and Intel have set up their own research and design centers in India. Some other global players have adopted a different business model and have outsourced their research and design activities to small niche players in India. PLM as a tool comes handy for such design centers. These two business models are the growth drivers for PLM markets in India. In addition to that, the domestic companies in sectors like automobiles, auto components, engineering service and hi-tech

instruments are moving up in value chain and investing significantly in research and design. This will again provide fuel to the already growing PLM market.

PLM as a tool has tremendous potential to help domestic manufacturers as well as companies doing design outsourcing work for the global majors. For instance, a global multinational might have a number of design centers spread geographically across the globe. Designers in these centers can cater to the designing needs of manufacturing operations of parent company irrespective of plant locations. There are three benefits to the global multinationals (or companies doing outsourcing work) from this. First, there would be no conflict among designers working on the same design across different geographies and second, work can be done from any location which offers cost advantage. Also, the company's design division can work seamlessly round the clock. "PLM will give the designer" to do list" in the morning hour. Once he finishes his job during the day, he can check in and managers can further review it", said Mr. Narender Reddy, Managing Director-India Siemens PLM Software Operations.

For domestic manufacturers (both small and big) the benefits can be of different types.

"The Manufacturing business opportunity is rapidly growing in the country. The main challenge for the companies is to manage these new businesses. And this is where tool like PLM can be useful" said Mr. A.P. Arya, Managing Director, TAL Manufacturing Solutions.

PLM can be used as a tool to aid in mass customization process. There can be number of designers working on new concept and many designers (since they are supposed to be innovative) don't like to follow a particular process for their work. PLM tools can help in pulling the innovative designs made by different designers to arrive at a final product.

Another benefit of PLM is that sometimes the design submitted by a designer gets slightly distorted at the customer end due to different reasons and they end up blaming designers about the design. Such conflicts between the designers and customers can be avoided using PLM tools.

The major reason why PLM is attracting so many new customers is because of high attrition rate in most of the knowledge intensive industries and the desperate attempt by the companies to retain the knowledge even after employees leaves the organization.

“It is an infrastructure tool which enables collaborative design, better efficiency, security and better knowledge retention power”, said Mr. Reddy. The use of PLM tool is very much linked to the CAD/CAM used by manufacturing companies. Earlier, many small companies were using CAD/CAM when there were few number of designs and few people working on each design and hence the total amount of data was small. But as size of data grew, these companies had to look at other alternatives since CAD/CAM cannot handle huge data. And this is where PLM tools started becoming popular.

Many times people confuse the PLM with the famous enterprise resource planning (ERP) products like SAP and Oracle. Though both are used to increase operational efficiencies, there are some significant differences between the two. One, PLM is used mostly in manufacturing set-up where ERP is used across the industries. Second, the ERP implementation is mostly one time implementation where PLM is a continuous implementation process.

According to Dr. K Anantha Padmababhan, Professor of Eminence, Anna University “India’s competitiveness as a low cost producing country would eventually go away. So companies should move towards more value added products to retain their competitive advantage and PLM can be used in designing such a high- end products.” And this, like any other research area, would require companies to team up companies to team up with universities in developing the product and better trained man power.

The PLM concept, which was used only by large companies during the beginning years, has now trickled down to small companies.

Though the PLM helps in design improvement and collaborative work, the end result should be reflected in business performance. It should help the management in taking better decisions. PLM should help the top management to have a better view of the project status at different design centers. This will save the management time from routine activities by improving focus on core business.

“Implementation of PLM is an important step and has its own challenges. First, the cost of setting up PLM infrastructure is significant. Second, the company has to integrate its existing technology with the new one. The most important point that companies should remember is that they need to understand their own business process properly before selecting any PLM vendor.

“The management should show interest in such implementation and form the right cross-functional teams which will overlook the implementation process. If this is

done properly, almost 80% of the implementation issues would be resolved”, said Mr. Reddy.

Adoption of new technology among the employees is a challenge for any organization. If the workforce is young, the adoption issue becomes less challenging since they are more flexible and willing to learn.

Though PLM has done a great job so far, it has yet to find out the solutions to many of the supply chain related problems. PLM solution for products with long life cycle is in an evolving stage. The challenges are galore and PLM vendors are geared up to take advantage of these opportunities to reach next level of innovation.

## **2. PLM: Transforming Innovation**

It is tough market today for the manufacturers. Not only do manufacturers have to worry about rising input costs to keep overheads under control and maintain margins, but keep an eagle’s eye on what customers desire. The discerning customers today demand world class quality products and services customized to their needs and to the price points agreeable to them. They seek value yet are price conscious.

To remain ahead of customers and service their needs, the call of hour is infusing a sense of collaboration, not only within the organization, but also across the entire stage of product life cycle and value chain. It is critical to optimize the exchange of ideas as well as the product and process information amongst all the stakeholders, enabling real time virtual collaboration and providing information access to all those who need it. This means fostering innovation at every stage involving each and every strategic partner, suppliers and even customers.

Thus the crux is to create a global innovation network, which allows thoughts and ideas to be shared for each and every aspect of product life cycle. PLM is the digital platform companies use to build up their global innovation networks. There are many advantages, which accrue using the PLM. PLM enable companies to optimally utilize the resources and increase efficiency. Since PLM is spawns across globally, one can harness ideas and thoughts from various parts of the world easily. Such accessibilities allow companies to address business and regulatory requirements optimally. Further PLM ensures that the time to market is compressed and companies can benefit from yield on product and process innovations.

There are ample examples to showcase the success of PLM and how companies have benefited from PLM. For example, A global auto manufacturer achieved \$ 1 billion in annual savings and reduced cycle time from four years to just one year. Similarly, a leading automobile manufacturer in India achieved reduction in design to launch time of 25 percent while one of the most respected brands in heavy duty trucks reduced direct and indirect labor costs by 30% on a new plant start up. From the world

of fashion, a leading women's fashion chain reduced the time needed to take design from initial sketch to finished item by up to 30 percent.

### 3. Conclusion

Product life cycle management is adopted not only by MNCs but also by SMEs. PLM helps them to remain competent in shrinking product lifecycle of products, mass customization, outsourcing and globalization, reducing time to market, reducing product development cost and revenue generation.

### References:

1. [www.urenio.org](http://www.urenio.org)
  2. [www.gartner.com](http://www.gartner.com)
  3. [en.wikipedia.org](http://en.wikipedia.org)
  4. [www.product-lifecycle-management.com](http://www.product-lifecycle-management.com)
  5. [www.findwhitepapers.com](http://www.findwhitepapers.com)
  6. [www.inderscience.com](http://www.inderscience.com)
  7. Santanu Mishra, A New Approach to Research and Design through Product Life Cycle Management, The Economic Times, dated 17.10.2008
- 
1. [www.ibm.com](http://www.ibm.com)
  2. [en.wikipedia.org](http://en.wikipedia.org)
  3. [www.wiley.com](http://www.wiley.com)

**About Author:** Dr. Rajiv Kaushik is presently working as Professor in department of management, Vaish College of Engineering, Rohtak. He is having more than 15 years of experience both in industry and academia. He has conducted MDPs in HIPA & SISI. His area of interest is marketing, retailing and strategic management.