

AEROSPACE INDUSTRY PROMOTES LEAN ACCOUNTING

The Society of British Aerospace Companies has initiated a number research studies relating to lean manufacturing. The most recent study is entitled "Costing for Competitiveness; Cost Management & Accounting for Lean Aerospace Enterprises". The report details the reasons why traditional accounting methods are harmful to lean improvement and counter to lean thinking. The authors then recommend a number of accounting changes to transform the accounting, control, and measurement methods into a thoroughly lean system.



The report is authored by a Lean Accounting Working Group consisting of managers and finance people from the Society's member companies supplemented by academic specialists from the University of Bath in western England. The work started with a survey of the Society's members. This survey gave the working group an understanding of the accounting, control, and measurement methods used by a variety of companies within the aerospace industry, and what changes they anticipated as they become more mature with lean thinking & lean methods. This survey was followed by a comprehensive study of the available literature on the topic and by visits to member companies that were taking a lead in this important aspect of lean. The result of the working group's 3 years of work is the report providing a number of key recommendations.

The adoption of lean manufacturing principles requires a radical re-think of how operations are managed and controlled, how product costs are calculated, and how continuous improvement efforts are supported by financial information.

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Value Stream Costing

Picking up from lean experts by like Womack & Jones (authors of "Lean Thinking") the report recommends organizing the business around value streams and using Value Stream Costing to provide simple, accurate, and easily attainable cost and Income Statement information.

The authors recognize that the wide variety of different firms within the UK aerospace industry are at different stages of maturity with lean thinking, and that the methods of Value Stream Costing will need to be approached differently. They recommend that companies that have not yet developed a value-stream approach should use such methods as ABC or Time-Based Costing (like features & characteristics costing) to determine individual product costs, as a stop-gap until value streams are identified and value stream costing adopted.

Value Stream Costing allows the tracking of the actual costs of a value stream and aligns cost reporting to lean goals. All costs incurred by the value stream are charged into a cost pool for the value stream, including labour, machines, materials, support services, and facilities. As a result, up to 90% of costs can be directly assigned to the product groups and only a small fraction requires allocation from general overhead.

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Lean Performance Measurement

The report does not dwell on performance measurement issues because this was the subject of an earlier report from the Society of British Aerospace Companies, but it does point out clearly that "*the Operational Control system must be compatible with lean ideas*".

The authors state that traditional measurements like production efficiency, machine utilization, and variance reporting is not only unnecessary for lean production, but actively harmful. They lead to "large batch sizes, high inventory levels, the acceptance of poor quality, and lack of motivation for continuous improvement." They recommend introducing complementary financial and **non-financial measurements** that provide more appropriate reporting than traditional cost measures, give sound information for decision-making, and are created, owned, and used by the operations people.

Target Costing, Value Engineering, and Life-Cycle Costing

The aerospace industry needs to pay special attention to understanding target costs and life-cycle costs because the design lead times are very long, customer frequently change their requirements throughout the design process, the up-front investment in products is often extremely high, and the life-time of the products and their ancillary customer support services run into decades. These combine into a risky mixture of uncertainty and high cost.

The report advocates the careful and thorough use of **Target Costing** and **Value Engineering** to understand the value created for the customer by the company's portfolio of product, service, and intangible value-adders; and then to convert that understanding into products engineered for very high value and very low cost. Rigorous use of Value Engineering enables design teams to "recognize that their final output is not the product per se, but the services that product delivers to the customer". The purpose of Value Engineering is to drive down cost while - at the same time - enhancing the value to the customer.

Life-Cycle Costing is also recommended so that company managers constantly have in front of them the longer-term effect of their decisions. While it is difficult to develop "accurate" life-cycle costs when the products life-cycle is so long, it is essential to provide the best information for each stage of the products life; development, design, pre-manufacture, manufacture, post-manufacture, end-of-life.

With the adoption of lean manufacturing, it is critical that operational control mechanisms are developed to demonstrate operational and financial improvement at cell and value stream levels. This can be achieved by introducing a set of key measures, such as on-time shipment, right-first-time, or scrap rate, to each cell. These measures can be used to control the cell's activities, thus complementing visual controls such as kanban systems, and the drive for continuous improvement.

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The underlying cost of a product is designed in at the very start. It is difficult to take cost out later down the line, and so we live with that cost for the life of the product. Designing your product in a different way results in a much less costly product that is more competitive in the market-place.

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Eliminating Transaction

The report advocates the elimination of as many transactions as possible; with particular emphasis on inventory and shop-floor control transactions. While falling short of the full elimination of inventory transactions, standard costs, and production tracking; the authors do recommend (what they call) an *extreme version of backflushing* where costs are reported only when the product is shipped and suppliers are paid or vouchered as a part of the backflush process.



Continuous Improvement

The need for methods to show the financial benefits of lean improvement is presented. The purpose of these methods is not only to show financial improvements when they occur, but also to motivate and prioritize the continuous improvement effort on the part of the value stream team. The non-financial performance measurements together with appropriate yet simple cost information is used to "drive" the improvement process day-in & day-out, week-in & week-out.

Eliminating Cost and Waste in the Extended Value Stream

Many aerospace companies have relatively high material costs because major components and assemblies are often purchased rather than manufactured. This leads to a greater than usual reliance on the relationship with suppliers to bring down costs, reduce lead time, improve design, and create more value for the customer. The report advocates using methods to assess the "total cost of ownership" of purchased components and assemblies; viewing the supply chain from raw materials through to finished product.

The adoption of cost methods along the extended value stream in an integrated manner produces substantial benefits. Cost reduction activities need to extend beyond individual firms in order to realize savings at the value stream level. Supply chain management and supply chain cost management become increasingly important as total care packages, partnering arrangements, and risk/revenue sharing become more widespread throughout the aerospace industry.

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Role of Financial Personnel

Finally, the report focuses on the people. Accountants and financial people within aerospace companies are encouraged to learn lean principles, get actively involved in lean improvement projects throughout the organization, apply lean methods to their own (totally wasteful) processes, and become change agents.

This report has outlined the tools and techniques that you can adopt to drive value creation and waste elimination during New Product introduction, to control operations and support continuous improvement during manufacturing, and to engage the extended enterprise in cost reduction activities. A radical re-think of the role of accountants and finance personnel within aerospace organizations is advocated as well as the education and training of management accountants. High level commitment from senior management and financial directors is required to advance these changes and reap the significant benefits.

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