
Cost & **Value Engineering 2.0**

Optimising the impact of your cross-function cost management



Summary

In an aerospace design environment, where there are competing challenges on engineers in terms of functionality, performance and time, cost can often be seen as something for procurement to worry about “after we get it to work”.

Unfortunately, all the evidence tells us that the ability of procurement to magically produce significant savings after the design is fixed through “great negotiation” is wishful thinking.

Often the volumes in question are low and the ability to demand price reductions on the supply chain are constrained by the uniqueness of the requirements and test and qualification specifications.

For example, low volume companies (such as a supplier for satellites) do not have the ability to pick and choose their own suppliers of a low cost nature due to their business being “un-substantial” compared to others, such as automotive suppliers. Normally, a local, family owned prototype suppliers is engaged with niche knowledge and high cost bases. It is imperative that these suppliers are developed in order to provide design-to-cost opportunities.

In many cases, the initial design activity was conducted prior to supplier selection and contract award. The net result often being a lack of awareness of supplier capabilities (thus driving up cost) and of existing “off the shelf” solutions that would be much more price competitive.

In a survey of aerospace and defence second and third tier suppliers, 72% indicated that earlier involvement in the engineering design process would be beneficial both in terms of programme cost and lead time.

The challenge then is one of taking a collaborative approach to design and commercial arrangements far earlier than is traditionally the case.

Realistically this can only be accomplished where engineering, procurement and suppliers are working together with a common set of design objectives – including target unit costs.

For existing programmes, where the design is already in production, all is not lost. By taking an engineering focused look at costs the evidence suggests that significant savings can still be achieved, far in excess of those available through traditional procurement negotiation levers.



The current approach to **third party cost management**

The vast majority of the resultant manufacturing costs (including third party spend) are locked in at the early stages of the engineering design.

Very few design-to-manufacturing projects have as much engineering time required as they wished for and most are conducted under some degree of time constraint.

In this environment, and, in an attempt to meet the competing needs of functionality, performance and delivery, cost is often an afterthought or perhaps “whatever it turns out to be” in the list of Engineers’ priorities.

This mindset may well be compounded by a hands-off relationship between engineering and procurement where design is seen as the province of the former and cost the latter.

In order to keep some degree of commercial tension for price negotiations, suppliers are often only involved in the design process well after the point at which they could add impactful value.

The net result of these factors is then entirely predictable. Costs are often way higher than would otherwise be the case and technically successful projects are less commercially successful than would otherwise possible.

Subsequent cost reduction efforts often rely on procurement negotiation tools, many of which can lead to minimal short-term gains and longer-term pain as supply chain relationships become damaged.

Vendigital Case Study 1: Space System

A satellite manufacturer was faced with significant cost challenges during the early stages of a three year manufacturing programme.

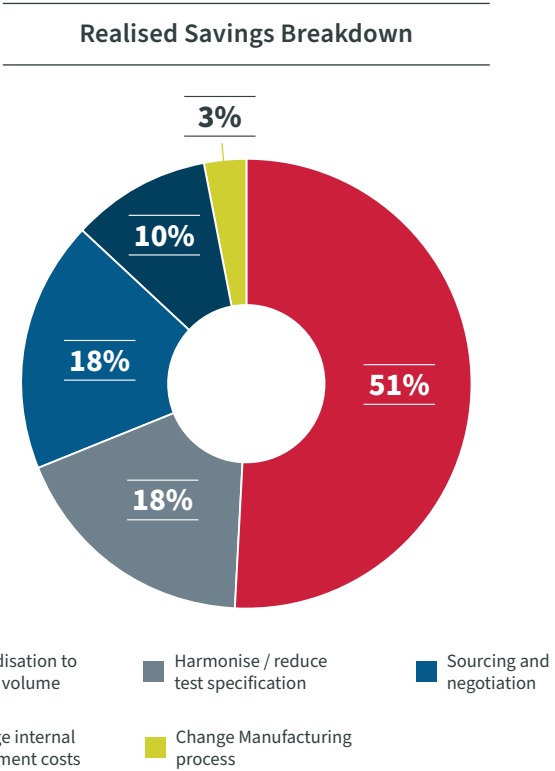
To make the programme commercially viable, the company concluded that it needed to make significant savings in third party spend.

A traditional procurement led activity found only minimal potential savings opportunities available (circa 2 - 3%).

Deciding to adopt a different approach, the company empowered a multi-disciplinary team including engineering, testing, manufacturing, procurement, and suppliers to consider the same problem.

The team undertook a detailed review of the main system components which challenged specifications and opportunities for standardisation with other very similar componentry.

The results yielded realised savings of 9% across the total spend.



Third party **cost management 2.0**

By adopting a collaborative approach to front-end engineering design it is possible to engineer the lowest cost into the final product solution.

Businesses and projects that have had the most success in doing this are ones in which engineering and commercial functions as well as the supply chain are all aligned and working towards a common set of objectives. Specifically, for Engineers, this means treating unit production cost as another variable in the design parameters in the same way as weight, mechanical and electrical properties, and functionality are considered.

Co-location of engineering and commercial staff helps this process and ensures that a wide range of potential suppliers can be engaged at the earliest possible point in the design project – thus making the maximum contribution.

Utilising internal as well as supplier parametric databases it may be possible to eliminate the need for some engineering and test activity altogether as well as keeping production costs to a minimum. Before designing a new component, it should be confirmed that there does not already exist something that would satisfy the same requirements and potentially increase purchase volumes.

Evidence suggests that there is significant hidden cost associated with over-specification of component test requirements (or missed opportunities to conduct screening internally and at a lower cost on lower specification components). By including test engineering experts with an understanding of the cost and risk implication when writing procurement specifications unnecessary costs can be avoided.

Many of these simple approaches can be applied retrospectively to existing designs – with surprisingly good results.

Vendigital Case Study 2: Electronic Components

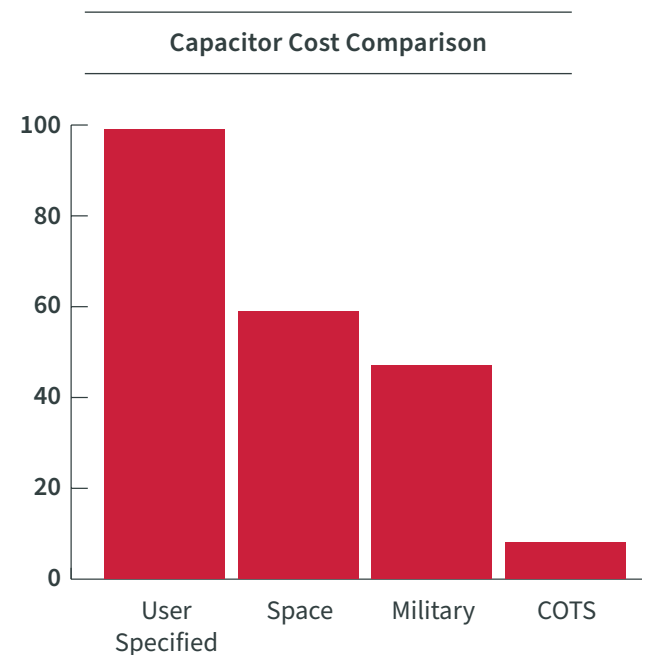
An aerospace manufacturer was challenged by its customer to reduce costs on one of its main sub-systems.

Having conducted a detailed review of the bill of materials it was concluded that several electronic components were costing significantly more than the benchmark for similar devices in other systems.

An engineering led team reviewed the specifications and performed a should-cost exercise to identify potential savings opportunities.

The team found that non-standard electronic components had been designed to such an exacting set of requirements and test conditions that the resulting cost was 40% higher than for space applications and 60% higher than for military.

The team undertook a comparatively straightforward redesign exercise to enable the use of standard components applicable for the application, and subsequently instigated policy changes throughout the design function to prevent this future reoccurrence when not absolutely necessary.



Conclusions

The boundaries between business functions tend to include explicit as well as implicit ownership of outcomes; Engineering is responsible for functionality and performance, Manufacturing is responsible for quality and delivery, Procurement is responsible for cost and lead time. The reality is much more nuanced, all main functions to some degree impact the range of outcomes with cost being the most obvious example.

There are some practical steps that can be taken to ensure that costs are managed effectively throughout the design process and not left solely to the domain of procurement:

1. Include target unit production cost within the design parameters of all components / subsystems
2. Review existing components before designing new ones and where possible standardise across programmes to increase procurement volumes
3. Engage the supply chain very early in the design process
4. Co-locate engineering and procurement staff
5. Rigorously challenge the appropriateness of test specifications

Even at the late stages in product development and early production, there are still significant opportunities to reduce costs if there is a willingness and aptitude to collaborate across functions.

Want to learn more?

Find out how Vendigital can help.

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