

Using PLM to Simplify Business Complexity

CIMdata Commentary

Key takeaways:

- *Portfolio, product, and process complexity issues are easy to identify and difficult to quantify but have real impact throughout the product lifecycle*
- *Actively managing complexity enables resources to be allocated to higher value activities such as developing profitable product differentiation and more efficient product production*
- *Identifying and eliminating sources of non-value-added complexity is not enough, applying a targeted governance strategy and supporting processes can prevent complexity from creeping in*
- *Accenture's end-to-end product complexity management solution focuses on managing product portfolio, design, and process complexity to reduce costs, drive efficiency, and improve profitability*

The Business Impact of Complexity

Complexity can manifest in many areas including the product portfolio, product development, and product production. While not all complexity is bad, care must be taken to ensure that any embedded complexity has real value. Some product complexity is needed to meet diverse customer needs or to differentiate products in the marketplace. The key is how to decide what and when complexity is “good.”

The end-to-end costs of incremental complexity can be very difficult to quantify when new product features are added to drive incremental sales. In many cases, these features are added without a broad understanding of the associated complexity cost impacts across the value-chain and throughout the product lifecycle. The types of complexity where costs typically show up include:

- **Product Portfolio**—When complexity is added to a portfolio of products, development and support costs increase due to additional product options and variants. The additional configurations that make up the variants can slow speed to market and add complexity to marketing, design, production, service, and inventory, and other through-life functions.
- **Product Design**—Depending upon the product architecture, design complexity can significantly increase as features or product variants are created. Additional variants designed to support specialized or low volume demand can also increase internal and customer documentation, bills of materials cost, validation testing, packaging, as well as complicate customer service.
- **Process**—Process complexity impacts all business processes including design, manufacturing, assembly, and service. It can also impact planning, procurement, quality, and on-time delivery. Incomplete process definition coupled with inconsistent process execution can make effective management of product complexity even more difficult.

Balancing Complexity and Cost

Managing existing complexity issues is a relatively straightforward process once the driver of complexity is identified and its impact quantified. However, it is more complicated than just eliminating low volume or low margin products. The first step is to identify a baseline of the portfolio, design, or process to be measured against. Analytic tools can be used to identify and select complexity reduction candidates and quantify the potential benefits. Lean and 6-Sigma tools can certainly be used to identify and address product and process issues. Moreover, an effective change management process mitigates financial and quality risks and supports a smooth transition to more agile practices.

Preventing complexity from creeping back into a portfolio, design, or process is a significant challenge. When a product or process is new or in the conceptual stage there is a limited baseline for comparison, and the developers may be more concerned with just making things work rather than optimization. Analytics tools are needed to map and assess associated complexity costs, and ensure alignment across the relevant business functions such as marketing, product management, engineering, supply chain, etc. Perhaps most importantly, a governance process is required to develop and enforce rules to prevent unwanted complexity from reestablishing itself.

Accenture's Complexity Management Solution

CIMdata has reviewed Accenture's Product Complexity management framework and solution. The framework consists of tools and processes that support identifying and addressing portfolio, design, and process complexities for existing and more importantly, planned products.

The first level in Accenture's solution is to quantify the cost of complexity. Analytic tools are used to accelerate the cleansing and structuring of the relevant technical and commercial product data. Next, an analysis is conducted to better understand product lifecycle costs as well as improvement potentials. Complexity reduction targets are identified via cross-functional and strategic analyses across the portfolio. Tools are also provided to address direct product costs via standardization, design and process reengineering, and supply chain management. Using consistently structured data to drive decisions improves the quality of the decision and removes emotion, making the process more repeatable and collaborative.

The second level is to implement complexity reducing design strategies. These strategies affect business processes such as planning, marketing, design, manufacturing, distribution and product support. The key strategies that Accenture implements at clients are platform based product development, modularization, component commonality, and design for assembly. Accenture helps clients assess and select appropriate strategies, solutions, and tools to meet their competitive goals, industry needs, and regulatory requirements. Accenture's experience and practical approach enables them to work across organizational boundaries to ensure that silos are reduced and handoffs between functions and across organizations are improved.

Governance is an important part of Accenture's complexity solution. Accenture leverages its management consulting expertise to help clients implement processes that prevent unneeded complexity from happening in the first place, eliminating the cost and effort of removing it later. The governance process gets tightly integrated with the new product introduction (NPI) process. Decisions are made by cross-functional teams that extend throughout the supply chain, using data from portfolio, design, and process indicators. This data drives decisions to ensure that complexity stays within appropriate boundaries and adds appropriate value.

Accenture's broad range of skills enables them to support end-to-end product lifecycle management including NPI and sustaining engineering. They take a practical approach and focus on harnessing analytics to impact business results. Their tools include value chain analysis, product portfolio optimization and complexity financial modeling. This end-to-end product lifecycle view includes a focus on product change management and governance.

According to Accenture, clients typically see portfolio complexity reductions of 20 to 40%, which reduce operating expenses by 10 to 20% while improving time to market. Design complexity reductions deliver 6 to 10% product cost reductions. The design cost savings come from part rationalization, improving design modularity and from value analysis / value engineering. Commercial savings come from the application of strategic sourcing, supply chain rationalization and demand management. Furthermore, product and technology roadmaps are better aligned with supply chain and sourcing strategies. In addition to hard cost savings, complexity reduction also improves the predictability of product launch dates, reduces program overruns, reduces product developments costs, and improves product quality through streamlined processes. Product complexity management enables more effective product strategy and portfolio decisions thereby providing additional focus on true product innovation.

Conclusion

CIMdata believes that increasing complexity is a fact of life today and into the future—it is neither inherently good nor bad. When managed improperly, complexity causes issues with cost, speed to market, customer service, and inventory. Managing complexity is not about product commoditization, rather, it is about better decision making into how best to meet the needs of a diverse set of customers and deliver market leading products and services.

CIMdata recommends that companies implement an end-to-end strategy to manage complexity throughout the product lifecycle. This can enable them to maximize product value to their end customer while delivering quantifiable improvements and profitability to their business. A properly implemented, complexity management strategy will leverage flexible tools that support well-designed processes with strategic and tactical governance.

Accenture's Product Complexity management solution has been shown to help clients across diverse industries from consumer products and healthcare to retail and high-tech to develop and implement a holistic complexity management solution that helps keep their businesses competitive today and into the future.

About CIMdata

CIMdata, an independent worldwide firm, provides strategic management consulting to maximize an enterprise's ability to design and deliver innovative products and services through the application of Product Lifecycle Management (PLM). CIMdata provides world-class knowledge, expertise, and best-practice methods on PLM. CIMdata also offers research, subscription services, publications, and education through international conferences. To learn more about CIMdata's services, visit our website at <http://www.CIMdata.com> or contact CIMdata at: 3909 Research Park Drive, Ann Arbor, MI 48108, USA. Tel: +1 734.668.9922. Fax: +1 734.668.1957; or at Oogststraat 20, 6004 CV Weert, The Netherlands. Tel: +31 (0) 495.533.666.