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Green Product Development for Manufacturers of Consumer Packaged Goods

As with so many other industries, green is a macro-economic trend in today's Consumer Packaged Goods (CPG) industry as well. Indeed, to understand the impact of the green movement on the consumer goods market, you need look no further than product labels. Terms like "all-natural," "environmentally-friendly," or "made from 100% recycled materials" abound, and for good reason. According to Aberdeen's October 2008 *PLM Solutions for the CPG Industry* report, consumer demand for green or "eco-friendly" products was cited as a top pressure by nearly 30% of respondents. In short, consumers are demanding greener products, including products containing biodegradable ingredients and eco-friendly packaging. As a result, the current landscape is one in which consumer packaged goods manufacturers can dramatically differentiate themselves.

What a Difference Green Makes

In fact, product differentiation is noted as a top driver for all manufacturers in their attempts to deliver on the promise of green - but this seems to be especially true for the makers of consumer packaged goods. The message is a simple one. *"What a difference green makes – especially if it can truly differentiate your product from others in the marketplace."*

Table 1: Top Four Pressures Driving Green Product Development

Pressures	CPG	All Respondents
Green products offer greater competitive product differentiation	47%	35%
Developing green products part of corporate social responsibility initiative	42%	37%
Conscientious customers demand products that are more eco-friendly	35%	28%
Customer demand for products that use natural resources more efficiently	22%	22%

Source: Aberdeen Group, August 2008

In particular, according to Aberdeen's August 2008 *Greening Today's Products: Sustainable Design Meets Engineering Innovation* report, nearly half of the CPG respondents indicated that the ability to achieve greater competitive product differentiation through green product development was their number one pressure. With growing market interest in ecological impact, green can enable products to stand out to customers. In this regard, green is a phenomenon that has the potential to turn commodity products into highly differentiated ones. This, of course, is related to the third pressure: customer demand for products that are eco-friendly (35%). Similarly, the

Sector Insight

Aberdeen's Sector Insights provide strategic perspective and analysis of primary research results by industry, market segment, or geography

Sector Definition

For the purposes of this study, respondents who indicated that they operated within the consumer packaged goods space were isolated and aggregated for comparison against peer manufacturers across industries in Aberdeen Group's performance framework.

demand for products that use natural resources more effectively (22%) while not as high on the list, is still significant in that it relates to the pressure to go green being driven by market demand.

This top pressure to capitalize on green as a product differentiator is followed by the pressure for manufacturers to become more socially responsible, which points to corporate and board levels as the source of green. Essentially, no CPG executive can publically say no to a green initiative without public scrutiny of not only eco-friendly watch organizations, but consumer product safety groups. By being proactive, however, they can brand their organization as being both environmentally-friendly as well as safe.

Not surprisingly, these findings mirror those of *The 2008 Aberdeen Report* which found that a mixture of social responsibility (74%) and competitive advantage (62%) are the key factors responsible for driving green programs across the enterprise.

Top Green Challenges: Cost and Compliance

In their quest to become green, manufacturers struggle with many issues - but one of the greatest challenges is the cost. Like their peers, the challenge reported most often by CPG manufacturers is the high expense associated with developing new, green technologies. Moreover, CPG manufacturers cite the cost of recycled materials and options as a challenge, as well - nearly twice as often as their peers. Couple this with the difficulty associated with assessing and validating new technologies against green requirements and regulations, and the fact that recycled materials and options may fail to satisfy product specifications - and you begin to see just how tough it is for CPG manufacturers to "go green."

Table 2: Top Five Challenges in Developing Green Products

Challenges	CPG	All Respondents
High expense associated with developing new technologies that are green or compliant	41%	43%
Difficulty in assessing and validating new technologies against green requirements and regulations	31%	24%
Recycle materials and options do not satisfy specifications	30%	24%
Recycled materials and options are more costly	30%	17%
Difficulty measuring unconventional ROI on green products	25%	24%

Source: Aberdeen Group, August 2008

The High Cost of Green

The reality is that developing green products often requires product development teams to contemplate factors, materials, and approaches that they traditionally would not have considered. This can introduce new costs

into the product development process, both in terms of these new methods, which may not be as cost efficient as previous ones, but also simply in terms of figuring out what changes and adjustments need to be made. Additionally, new materials and manufacturing processes that are more ecologically friendly may not be as cost-friendly, which can inflate production costs. A reasonable alternative, investigating existing technologies and applying these to new scenarios and products, is certainly viable but also presents significant challenges. Researchers and formulators struggle with how to find applicable technologies and then figure out how to fit these to their needs.

Regulatory Compliance

The second set of challenges that manufacturers must overcome to introduce green products is a more familiar concern: regulatory compliance. Just as green-awareness and consumer consciousness is driving companies to pursue corporate responsibility initiatives; it is also driving government organizations to introduce new regulatory bodies, regulations and stricter penalties for non-compliance. Requirements often change by market and region, meaning multiple, differing sets of regulations that manufacturers must be able to address. This can make it difficult to simply understand what the regulations are and which ones need to be followed in a particular industry. Indeed, assessing and validating new technologies against green requirements and regulations is cited by CPG manufacturers even more often than their peers (31% versus 24%).

An important part of compliance, of course, is meeting product and labeling requirements. One of the greatest challenges facing CPG manufacturers, in particular is that product and labeling regulatory vary in different regions of the world. In terms of meeting product requirements, for example, the challenge emerges from differing regulations around what raw materials or ingredients can be used in products. In terms of compliance to labeling requirements, requirements vary by region both in terms of what needs to be included and in terms of the claims that can be made about the product on labels in different markets. Formulators can adjust a product so that specific claims can be made, which has consequences on the development of the product. As a result, it can become difficult to know when different product and label regulations are satisfied in which market, particularly when attempting to identify when regulations are violated as changes are made to the formula.

In short, CPG manufacturers are highly motivated to take advantage of global market opportunities which are often gated by regulatory requirements. But ensuring that a product, or a series of product variants, satisfies these varying regulations around the world is no small task. These regulations may apply to specific ingredients, the final product, the labeling or even the packaging, all of which could be within or even under specific regulatory definitions to certain precisions.

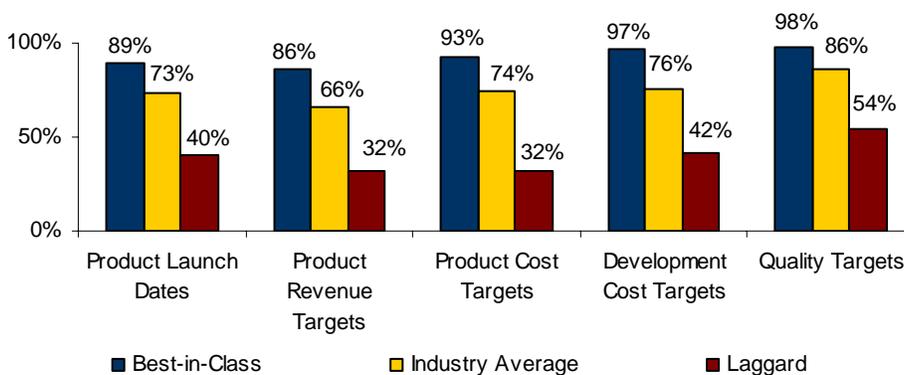
"The international regulatory environment is very difficult to stay on top of, especially without a dedicated regulatory function. There are so many changes, and it is very difficult to understand the requirements and impacts of each, and to manage them cost effectively."

~ Formulator
Cosmetics and Toiletry
Manufacturer

Aberdeen Analysis

In order to understand how manufacturers could overcome these challenges to successfully bring green products to market, we looked at the survey results of the *PLM Solutions for the CPG Industry* benchmark report, which was conducted between September and October 2008. As part of this research, Aberdeen Group surveyed over 140 CPG manufacturers about the strategies they are adopting to improve the performance their product development organizations.

Figure I: The Maturity Class Framework - Manufacturers of Consumer Packaged Goods - Product Development Processes



Source: Aberdeen Group, October 2008

What stands out here about leading CPG manufacturers is the consistency with which these organizations meet all of their performance targets. While Laggards meet 54% of their product quality targets, they do so while meeting only 32% of product revenue and product cost targets. In comparison, the Best-in-Class meet 86% of product revenue and 93% of product cost targets while still meeting 98% of quality targets.

In fact, product cost and product revenue present the two areas with the greatest differentiation across the CPG product development Maturity Class Framework. While the Best-in-Class meet 30% more and 26% of their revenue and cost targets respectively than the Industry Average, the Industry Average in turn meet over twice as many of these targets as Laggard organizations. Balancing these concerns is critical to guaranteeing product profitability. You can develop a formula that represents an innovative and competitive product, but if it involves a substance or material that is brand new, then costs and schedules can be difficult to predict using existing knowledge. Additionally, getting new materials and raw materials or ingredients approved by differing regulatory bodies can delay new product introduction, raising costs while potentially eroding revenue and market share.

The Green Path: A Tough Road

Because of such compliance challenges and the difficulty associated with managing the many product variants often characteristic of CPG products, it's not surprising to learn that manufacturers of consumer packaged goods, when compared to other manufacturers, haven't yet achieved "Best-in-Class" performance as an industry in terms of their green product development efforts (Table 3). The reality is that although they are clearly committed to "going green," CPG manufacturers lag behind their peers in their adoption of a number of important green capabilities including:

- Explicit definition and documentation of requirements for product disposal, recycle-ability, or substance regulatory compliance
- Allocation of disposal, recycle-ability and substance compliance requirements to specific product configurations
- The ability to quickly and easily generate a bill of substances (a roll up assessment of material compositions of the entire product)

Table 3: Green Capabilities of CPG Manufacturers

	Green Capabilities	Best-in-Class	Industry Average	CPG
Recycled Materials or Eco-Friendly Disposal	Requirements are explicitly defined and documented for product disposal, recycle-ability or substance regulatory compliance	67%	43%	27%
	Disposal, recycle-ability and substance compliant requirements allocated to specific product configurations	68%	38%	32%
	Design products out of more easily manufactured materials	80%	62%	63%
	Generate a roll up assessment of material compositions of the entire product (bill of substances)	58%	37%	26%
Reduced Packaging	Designing packaging so it can be reclaimed	60%	49%	33%
	Designing packaging with biodegradable, reclaimed or recycle materials	64%	39%	37%
	Packaging is integrated into product	33%	33%	33%

Source: Aberdeen Group, August 2008

This is not surprising, especially when you consider the fact that CPG manufacturers have really only recently begun to embrace green product development. In particular, while 58% of the Best-in-Class have been focused on "going green" for more than two years, only 36% of CPG manufacturers fall in this category. However, 45% of CPG manufacturers have begun to embrace green product development over the past two years, suggesting that they are working hard to position themselves for a strong green future (Table 4).

Table 4: Maturity of Green Product Development

	Best-in-Class	Industry Average	Laggard	CPG
More than two years	58%	41%	38%	36%
Less than two years	9%	27%	26%	45%

Source: Aberdeen Group, August 2008

Interestingly, while CPG manufacturers' green capabilities overall are relatively immature at this stage, they are ahead of their peers in terms of the strategies that they're pursuing in order to *improve* how they develop green products. Indeed, according to our findings, CPG manufacturers are 50% more likely than their peers to have plans to design products from or for recycled or reclaimed materials as well as for eco-friendly disposal. CPG manufacturers are also focused on designing products that can be reused or recycled, products that can be disposed of in an eco-friendly manner and designing products with reduced packaging - on average, 30% more often than their peers

Effectively Managing Compliance

What becomes especially interesting, however, is to examine the strategies of leading CPG manufacturers in terms of their ability to assess regulatory compliance. Their approach? To screen for compliance early and often during the development process. Indeed, in a fast-changing environment such as green product development, changes to formulas and specifications can take place very quickly, with each one having the impact on product or labeling compliance. In order to keep up with these changes, Best-in-Class CPG manufacturers are leveraging new technologies to automate the propagation of changes from the formula to the specification and bill of substances which are then used automatically for compliance screening and labeling generation.

Product formulas are never right the first time. Developing a final product invariably demands some iterative work back and forth, trying different and new combinations of raw materials or ingredients and formulas to get just the right product characteristics. This aspect of product development is often what creates the necessity to assess things like product cost and regulatory compliance early on. This is primarily true in the lab, but also plays a part in manufacturability studies especially for new product introduction.

Leading CPG manufacturers use the capabilities of newer technologies to keep up (Table 5). Specifically, they ensure that the bill of substances is not only generated directly from the formula but it is also updated in real time as the formula changes. This is also true of product specifications. This enables the formulator to iteratively try new concepts and ideas without the repercussions of obsolescing any regulatory or cost analyses done in a prior iteration.

Table 5: Enabling Trade Studies

	Best-in-Class	Industry Average	Laggard
Trade Studies	Bill of substances generated automatically based on formula / recipe		
	47%	46%	32%
	Changes to formula / recipe result in real time update to bill of substances		
	53%	43%	19%
	Changes to formula / recipe result in real time update to product specification		
	40%	31%	30%

Source: Aberdeen Group, October 2008

Easing Product and Label Compliance

Banned raw materials or ingredients can vary from region to region, making them difficult for formulators to track. The ability to quickly assess regulatory compliance does become easier with newer technologies. In fact, the Best-in-Class use these tools to ensure that formulators are automatically notified about banned materials. This corrective action stops the problem right up front where it originates. Additionally, the Best-in-Class use these new technologies to provide automated compliance screening for the formulator as changes are made. Again, visibility into the resulting compliance to regulation is critical to providing insight into the impact of formula decisions that are made.

Table 6: Product and Label Compliance

	Best-in-Class	Industry Average	Laggard
Regulatory Compliance	Formulator is automatically notified about banned raw materials or ingredients they should not use while formulating		
	73%	70%	39%
	Changes to formula / recipe result in real time update to product specification		
	40%	31%	30%
	Baseline regulatory and claims label specification generated and then edited		
	47%	39%	19%
	Baseline labeling specification information is generated and then edited		
60%	46%	32%	

Source: Aberdeen Group, October 2008

Developing the correct labeling information for market entry into various regions around the world is also problematic. As with product regulations, claims that can be made on labeling vary a great deal from region to region. The Best-in-Class adopt technologies to automatically generate required product specifications and labels, which provides formulators and others a baseline they can edit and fine tune them, rather than creating new materials from scratch.

Required Actions

In summary, to achieve Best-in-Class performance in the area of green product development, CPG manufacturers should:

- Leverage new technologies to automate the propagation of changes from the formula to the specification and bill of substances which can then be used automatically for compliance screening and labeling generation
- Provide real time visibility into product changes and regulatory compliance and screen for compliance early and often during the product development process
- Ensure that the bill of substances is not only generated directly from the formula but that it is also updated in real time as the formula changes
- Adopt technologies to automatically generate required product specifications and labels
- Manage regulatory compliance needs across regional markets through automated assessments to product bills of substances

Summary

In spite of the fact that CPG manufacturers have work to do in terms of building up their green capabilities, it is clear that they recognize the challenges and are prepared to address them. Their shortcomings notwithstanding, the actions that CPG manufacturers are planning to take to improve their green product development efforts paints a very clear picture of the green side of CPG. They aren't there yet - but it won't be long. Armed with a strong sense of commitment to green - both in terms of its ability to help them to achieve greater product differentiation as well as the ability to appeal to environmentally-conscious consumers and to more easily meet the regulatory compliance requirements of markets around the world- CPG manufacturers are working hard to position themselves not only to be green, but to truly capitalize on green product development in the years ahead.

For more information on this or other research topics, please visit www.aberdeen.com.

Related Research

[PLM Solutions for the CPG Industry;](#)
October 2008

[The Key to a Competitive Green Product Strategy;](#)
October 2008

[Greening Today's Products;](#) August 2008

[The Engineering Executive's Strategic Agenda;](#) June 2008

Author: Amy Rowell, Research Analyst, Product Innovation and Engineering
(amy.rowell@aberdeen.com)

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