ANALYTICS IN PD ARE THE PATH FORWARD

Our industry is flourishing with innovation, not only in product, but in how we operate. Consumers are presented with new and exciting experiences from mobile shopping to buy online pick up in-store. Marketing teams leverage AI and vast amounts of consumer and shopping data in micro-targeted digital campaigns. Advanced planning and allocation algorithms predict demand and move inventory to the right place at the right time. Designers leverage 3D and 2D CAD to visualize and advance product ideas before ever seeing a physical sample.

When we look at Product Development however, we do not see the same level of advancement and innovation – while the formats may have changed, the tech pack and various trackers the teams leverage today would be perfectly at home on the desk of their predecessors a generation ago. This stagnation isn't due to a lack of need. Expectations on Product Development teams are as high as they have ever been - reduce lead times, institute sustainability practices, increase supply chain flexibility, mitigate risk, and achieve ever increasing quality expectations, all while achieving the aggressive cost targets set before them. The constant pressure to keep teams as lean and nimble as possible increases the need to find unique and forward-looking solutions to meet these heightened expectations.

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Fortunately, others have blazed this path for us, and we can leverage the map our peers in other departments and industries have built. Beginning today, Product Development should embrace advanced analytics in such a way that transforms daily operations, drives better decision making, and reduces, or avoids altogether, the waste in the system. Integrating advanced analytics into Product Development won't be easy – it will likely require new team structures, process changes, and tools, but we see little other opportunity to make the step change that is demanded.

THE CURRENT STATE

In talking to our clients, the main reasons Product Development struggles with analytics are because teams lack the information and the time required, and because the Product Development culture is typically not oriented towards analysis.

LACK OF INFORMATION: There isn't enough direct knowledge on the team to ask the questions and generate the analyses. A great example of this is how Product Development teams frequently push back at estimating yields without direct input from the vendor because the vendor is the one creating the patterns. Having to wait for yield information from vendors negatively impacts Product Development's ability to estimate material usage for the season, and delays opportunities to position and negotiate on them.

BANDWIDTH REALITIES: There isn't enough time, especially given the turnover in product and constant change, to conduct the analyses. Product Development teams are busy with day to day tasks of supporting cross-functional partners, tracking down samples, making last minute product changes, and entering an abundance of data into various systems and trackers. Samples, quotes and ultimately production are the priorities, and after that, there typically is little to no time left for any proactive or hindsight analysis.

PD CULTURE: Unfortunately, the overwhelming majority of Product Development teams are reactive. Some of that is by its nature – PD is a service to the merchant and design teams and executes on their vision. There is no value in building out a detailed game plan for sweater yarn to only learn later that this season will focus exclusively on wovens. Beyond those inherent difficulties, Product Development teams do not typically have a culture and goal structure built to incentivize avoiding issues or finding opportunities to improve beyond targets. Without change to how we set and measure against PD goals little real progress can be made.

DATA & ANALYTICS WILL TRANSFORM PRODUCT DEVELOPMENT

Analytics is a broad term that is frequently used in different ways. When we describe analytics in the Product Development world, we are specifically speaking of three distinct areas.

1. *Decision Support* - leverage data to make more proactive and informed day to day decisions. For example: today, costing teams check quotes one by one, comparing against their IMU and retail driven cost targets. Tomorrow, teams should be directed by analytics to where there is the greatest opportunity and likelihood to improve margin and given the key data required to execute on that.

2. *Continuous Improvement* - data mining to find and prioritize opportunities for improvement. For example: today, teams track lab dip orders and test results. Tomorrow, analytics can be applied to identify correlations between colors, materials, and countries to identify patterns in testing failures to influence what substrates and colors we are requesting and where we are requesting them from.

3. *Complex Correlations and Predictive Analytics* - leverage data and AI to find correlations in attributes and predict outcomes. For example: Today, most track where there are quality failures and work with vendors that show higher defect rates than others. Tomorrow, with the help of predictive analytics, we can go beyond reacting to defects and begin to identify root causes - does the issue lie with the vendor or the material?

current triage approach of attacking the daily stack of emails and prioritizing based on what came in first, last, or who was the loudest.

Most companies will start with basic capabilities where data is visualized and summarized in dashboards, highlighting exceptions and opportunities that teams should be focusing on now, and deprioritizing those that will have less impact.

How can analytics change the questions we ask?

	TODAY		TOMORROW
COSTING $	• How does the quote compare to last year? • How does the quote compare to another vendors quote?	– ->	• Where are costs, or components of costs, higher than they should be? • Where should I expect cost changes due to commodity, currency and macro-economic shifts? How can I optimize my mix to best take advantage of those changes?
QUALITY	• Which colors failed testing? • Which samples are out of tolerance with specifications?	– ->	• Where are issues driven by my choices vs. vendor execution vs. external factors (e.g. weather or holidays)?
LEAD TIME	• What fabrics and products have long lead times? • What is our historic vendor performance?	– ->	• What is the optimal vendor allocation to minimize late deliveries? • Where are the true "trigger dates" that optimally balance availability with risk of liabilities?

Is the issue with a specific vendor when using a specific type of material? Is the issue with vendors in a certain region that are using certain materials at certain times of year? Root cause analyses like this will help us avoid situations that are likely to result in quality problems. The key lies in discovering correlations that are hidden deep in the data.

Analytics allow us to progress beyond the

More advanced analytics begin to unlock strategic opportunities by looking for patterns and relationships in the data, allowing PD to move beyond 'what happened' or 'what is happening' to 'why did that happen' and even 'what will happen next.'

It's that understanding of the root causes and likely outcomes that will drive the next level of change,

transforming PD from being efficient conduits of information between brands and vendors to being effective operators, proactively positioning their colleagues, vendors, and products for success while avoiding the issues that plague today's development process.

Some of the opportunities are surely lofty goals. Many companies may never progress to the end of an analytics maturity curve, but given the scale of what Product Development touches, even small improvements can drive outsized results. In prior research we found that every one percent of product cost reduction can result in up to a 3% increase in EBITDA, proving that even the most minor changes become significant when multiplied across every single SKU and unit.

PLM PROVES A STRONG FOUNDATION, BUT CAN NOT ALONE PROVIDE THE ANSWERS
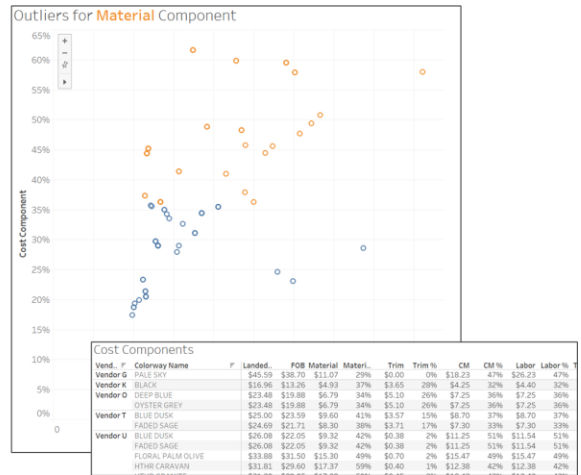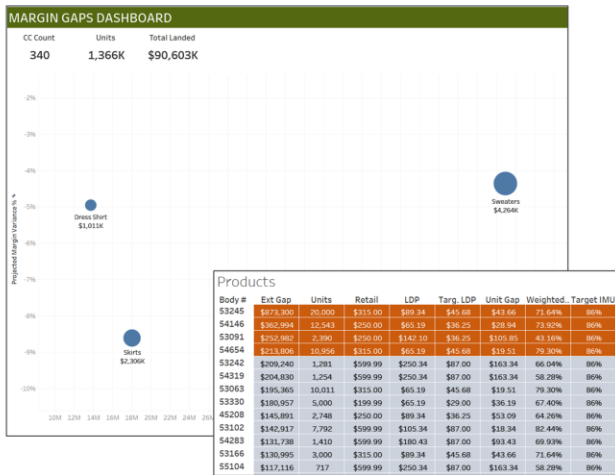
Any analytics initiative is only as good as the data available to work with, and that is one area where PD shines. The multi-million-dollar PLM investments over the past fifteen years have delivered great process efficiencies, a means for collaboration, and a global version of the truth for the entire supply chain. Most importantly for this discussion, they capture, format and store a vast amount of raw data throughout the development process.

Unfortunately, PLM systems on their own do not provide the answers that Product Development teams require. The primary outputs of a PLM implementation are a combination of artifacts required by the process (e.g. tech packs or sample

requests), operational reports (e.g. line sheets and development trackers) and integrations to other systems (e.g. products and costs). What is rarely on that list are true insights, and it is even less common to see anything that can be described as predictive – something that analytics engines excel at providing.

To an analytics engine, the rich data set found within PLM about products, samples, evaluations, and costs is invaluable. With some variety in exactly how, most PLM systems capture not just the 'what' but also 'when' things happen and 'who' did it. It documents complex relationships between products, materials, vendors, raw material suppliers and costs, with a layer of time and seasonality. Data in PLM tools is typically well structured and relatively 'clean' for an enterprise system. Joining PLM data with Purchase Orders, logistics data, and other relevant sources increases the value and possibilities substantially.

Fundamentally, building a comprehensive and usable data set is the most difficult and time-consuming element of an analytics initiative. Analytics rely on deep multi-year data sets and it is rare that actions completed in the past can be accurately reconstructed if data was not captured at the time. Efforts to cleanse and structure data can require time and dollars that are simply not reasonable for most companies. Those companies that have implemented PLM and implemented it with an eye towards capturing a broad, deep and clean data set can be confident that they have already taken the most difficult, costly, and longest lead time step to transforming PD with analytics.

MARGIN GAPS DASHBOARD

CC Count	Units	Total Landed
340	1,366K	$90,603K

Products

Body #	Ext Gap	Units	Retail	LDP	Targ. LDP	Unit Gap	Weighted...	Target IMU
53245	$873,300	20,000	$315.00	$89.34	$45.68	$43.66	71.64%	86%
54146	$362,994	12,543	$250.00	$65.19	$36.25	$28.94	73.92%	86%
53091	$252,982	2,390	$250.00	$142.10	$36.25	$105.85	43.16%	86%
54654	$213,806	10,956	$315.00	$65.19	$45.68	$19.51	79.30%	86%
53242	$209,240	1,281	$599.99	$250.34	$87.00	$163.34	66.04%	86%
54319	$204,830	1,254	$599.99	$250.34	$87.00	$163.34	58.28%	86%
53063	$195,365	10,011	$315.00	$65.19	$45.68	$19.51	79.30%	86%
53330	$180,957	5,000	$199.99	$65.19	$29.00	$36.19	67.40%	86%
4520B	$145,891	2,748	$250.00	$89.34	$36.25	$53.09	64.26%	86%
53102	$142,917	7,792	$599.99	$105.34	$87.00	$18.34	82.44%	86%
54283	$131,738	1,410	$599.99	$180.43	$87.00	$93.43	69.93%	86%
53166	$130,995	3,000	$315.00	$89.34	$45.68	$43.66	71.64%	86%
55104	$117,116	717	$599.99	$250.34	$87.00	$163.34	58.28%	86%

Outliers for Material Component

Cost Components

Vend...	Colorway Name	Landed...	FOB	Material	Materi...	Trim	Trim %	CM	CM %	Labor	Labor %
Vendor G	PALE SKY	$45.59	$38.70	$11.07	29%	$0.00	0%	$18.23	47%	$26.23	47%
Vendor K	BLACK	$16.96	$13.26	$4.93	28%	$3.65	28%	$4.25	32%	$4.40	32%
Vendor O	DEEP BLUE	$23.48	$19.88	$6.79	34%	$5.10	26%	$7.25	36%	$7.25	36%
	OYSTER GREY	$23.48	$19.88	$6.79	34%	$5.10	26%	$7.25	36%	$7.25	36%
Vendor T	BLUE DUSK	$25.00	$23.59	$9.60	41%	$3.57	15%	$8.70	37%	$8.70	37%
	FADED SAGE	$24.69	$21.71	$8.30	38%	$3.71	17%	$7.30	33%	$7.30	33%
Vendor U	BLUE DUSK	$26.08	$22.05	$9.32	42%	$0.38	2%	$11.25	51%	$11.54	51%
	FADED SAGE	$26.08	$22.05	$9.32	42%	$0.38	2%	$11.25	51%	$11.54	51%
	FLORAL PALM OLIVE	$33.88	$31.50	$15.30	49%	$0.70	2%	$15.47	49%	$15.47	49%
	HTHR CARAVAN	$31.81	$29.60	$17.37	59%	$0.40	1%	$12.38	42%	$12.38	42%

THE PATH FORWARD

With PLM providing the required data set, Product Development leaders should focus on the strategy, people, tools, and processes required to develop a robust analytics capability.

STRATEGY: While the approach with PLM should be to build a data set that is both as deep and as broad as possible, the goals of an analytics initiative (at least at first) must be narrow and focused. No initiative should move forward without being able to answer a few key questions – What specific problem are we trying to solve? What information is required to solve that problem? What actions will we take with that information? Will those actions make a material difference in our results or how we operate?

PEOPLE: Today most Product Development teams approach their process with a great deal of intuition built upon years of experience. They are masters at brokering information between designers, merchants, and vendors and lean heavily on those relationships to advance their objectives.

Those skill sets are critical today, and will continue to be critical in the future, but they are also significantly different than those required to execute an analytics methodology. By no means does this suggest replacing existing teams, but rather augmenting existing resources, working side by side to provide the tools and insights for fact-based decision making.

TOOLS: Analytics tools are specifically designed and built for their purpose – processing large amounts of raw data, performing simple and complex analyses, and presenting that back to users in ways that encourage rapid and meaningful action, by summarizing results in visually appealing and easy-to-consume formats, and making the detailed data readily available.

These tools are not unique to Product Development, and many companies already have a platform in place that can accomplish some or all of the analytics that we discuss. The unique effort is around tailoring these tools to meet the specific needs of Product Development.

To illustrate how we envision a Product Development analytics toolkit, the example included in this article is a snapshot of a relatively simple outlier and drill down approach. In this example the toolkit identifies a category negatively impacting overall margin and provides a drill down into the products having the largest impact. This was built in a tool that is readily available (and often already found in a company's system architecture), but the analysis itself is fundamentally different than how other departments would use the tool.

PROCESSES: Successful analytics initiatives will change the way that people work. The scope of change will vary per organization, but any analytics effort will require some transformation. This doesn't have to be an all at once approach – many companies will start with simply changing the type of questions that are asked of internal and external teams (What should this product cost? Where are our largest margin misses?) and later progress to those that are more complex (What vendor allocation is most likely to result in the highest maintained margin, best on-time delivery and lowest defect rate?).

As the questions and analytics progress and mature, the processes supporting them will need to be redesigned to ensure that not only is there adequate time to analyze the data, but that the analyses are structured to provide relevant insight when particular decisions need to be made, and that the decision making process expects and embraces new data driven insights.

CONCLUSION

The environment facing Product Development teams is as demanding as ever and existing approaches are nearing their limit to meet the high expectations. Leveraging data and analytics is the path to change the trajectory, shifting PD teams to proactive decision making based on facts and focusing them on the levers that will have the greatest probability for material improvement. With PLM providing the foundation, initiatives to implement these analytics are well within the reach of companies of all sizes and should be at the top of priority lists.

Want to learn more?

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