



PARADIGM[™]
technology



Informatica[™]

Perfect Order Index

PROBLEM

Supply Chain costs have steadily increased over time despite concerted efforts by many manufacturing, logistics and transportation companies to hold the line. For many of these companies, particularly those with large and complex supply chains, optimizing the sales and operations planning (S&OP) process to improve customer experience and control costs has not been easy. Evidence of the impact of poor performing S&OP includes missed deliveries, reduced brand image, lost customers, higher working capital in inventories, higher labor costs, inability to compete effectively, and reduced operational and financial performance. Worse, without meaningful operational insight, organizations can leave good money locked or stuck in the value chain.

Why is it still a problem? After all, sophisticated ERPs, supply chain management, warehouse management, manufacturing, and logistics execution systems became mainstream decades ago to avoid these problems. As it turns out, decades and tens of millions of dollars later, these applications are still managed in silos, on a per business unit, plant, or regional basis, and they tend to support a specific set of processes and related view of data. More often, these silos also still require significant manual intervention, creating business and systemic gaps. In response to customer demands and market conditions, changes in data requirements, such as packaging variations, shipping variations, and special orders, can exacerbate the problem, increasing the potential exposure to business process breakdowns. Further, because there is little or no consistent development coordination across business functions, these types of changes can be very costly to implement.

Gathering and interpreting information across the supply chain requires integrating disparate S&OP data from across multiple, distributed, heterogenous ERP systems. Moreover, many manufacturers often use a battery of metrics,

sometimes 50 or more, to fine tune operations. MESA¹ has 28 metrics and APICS SCOR² has over 250 metrics. Granted, not all of these metrics focus on S&OP, but which ones *should* an organization use? The decision can be overwhelming. One critical logistics performance measure is “on time in full” (OTIF). OTIF is not a new concept, and it indicates how many customer deliveries were on time and fulfilled 100% (or at an agreed upon % and time delay). It sounds simple, but actually measuring OTIF continues to bedevil many organizations. To help companies quantify OTIF, the American Productivity and Quality Center (APQC) introduced the notion of “perfect order.” Perfect order index (POI) is now an industry benchmark against which any manufacturer can assess their relative supply chain performance.

Logically, POI measures the flawless fulfillment of a customer order. Specifically, error-free order entry, immediate inventory allocation, on-time item(s) delivery, and accurate invoicing.

Below is the mathematical visualization of the POI:



Figure 1. Components of Perfect Order Index (POI)

In effect, POI = OTIF – (Percent of order damaged or incorrectly processed). So what? APQC’s benchmark of 2,561 companies shows POI can range from 95% to 82%, with a median of 90%.³ In other words, on average, 10 percent of all customer orders shipped have major errors. That could translate into millions of dollars of capital inefficiency somewhere in the supply chain, such as maintaining extra safety inventory to maintain high customer experience service levels.

BUSINESS VALUE

Understanding S&OP inconsistencies, failures, and associated costs can be an eye-opener for many manufacturers, especially for those that use a myriad of functional metrics, such as on-time shipments and line/unit fill rate, as a proxy for customer experience. There are numerous benefits of improving customer service and order fulfillment by process automation, including potentially 55% lower order processing costs, 99.6% order entry accuracy rate, and 60% reduction of labor overhead in order entry.⁴ These returns however cannot be achieved by process automation alone; they require good data management and data governance practices across the S&OP value chain.

According to Forrester Research, companies that layer the right tool and processes with the right metrics will enable themselves with three critical viewpoints: historical perspective, current trends, and forward looking projections.⁵ In addition, the Harvard Business Review points to three critical needs: 1) data integration; 2) analytics that drive growth; and, 3) treating supply chain planning as an enterprise-wide initiative that can be achieved incrementally through agile sprints with a focus on specific functions, products, and markets based on business priorities.⁶

¹ Manufacturing Enterprise Solutions Association (MESA)

² APICS Supply Chain Operations Reference (SCOR)

³ Metric of the Month: Perfect Order Performance. Supply and Demand Chain Executive. 2016.

⁴ Improving Customer Service and Fulfillment with Order Processing Automation: Research from Gartner with Exclusive Insight. Esker. 2016.

⁵ Evelson, B. and Yuhanna, N. Craft Your Future State BI Reference Architecture. Forrester. 2012.

⁶ Driving Business Growth with Finance-Led, Integrated Business Planning. Harvard Business Review. 2016.

Informatica®’s Industry Consulting team has worked with myriads of clients across various industries. As a result of assisting these clients with transformation initiatives, Informatica has found that, in general, manufacturers with \$15 billion in annual revenue can achieve upwards of \$7 million in annual benefits by reducing order management errors from better data management practices.⁷ In addition, using enhanced information management practices to control discretionary, controllable spend, and other operational costs, such as hiring, training, incentive compensation, remuneration practices, and business process changes, can achieve an additional improvement of 1-7%.

According to McKinsey, uncovering supply chain insights to improve customer experience, reduce operating costs, and reduce working capital requirements, isn’t sexy, and often painstakingly technical.⁸ As the McKinsey report highlights, it’s all about the “data,” that is, systematically collecting the right data in the right format, in a consistently repeatable manner, is critical to enabling decision-makers to analyze complex events. Further, McKinsey reports: “Ideally, managers should build data collection into their core IT processes. Those who can draw on a single integrated system to automate the process will have an easier time of it.” Therein lies the opportunity – selecting the right technical platform, engaging the right technical partners that can address the challenges of a typical heterogeneous IT environment, and delivering actionable insight built on a high-performing solution.

SOLUTION APPROACH

Giving management access to more reliable, accurate and timely information in the appropriate format equips them with more actionable insight and opportunities to improve S&OP efficiency and effectiveness. How? This is where a foundational and strategic investment in the right technology – specifically an advanced, cohesive and comprehensive product suite – can be a “game changer,” empowering the organization to optimize its supply chain, meet and exceed customer expectations, and achieve critical business objectives.

Paradigm Technology™ chose to build the Perfect Order Index solution on Informatica’s end-to-end – “always on, anytime, anywhere” – data integration platform that includes a homogenous set of proven, stable, scalable technology components as depicted below:

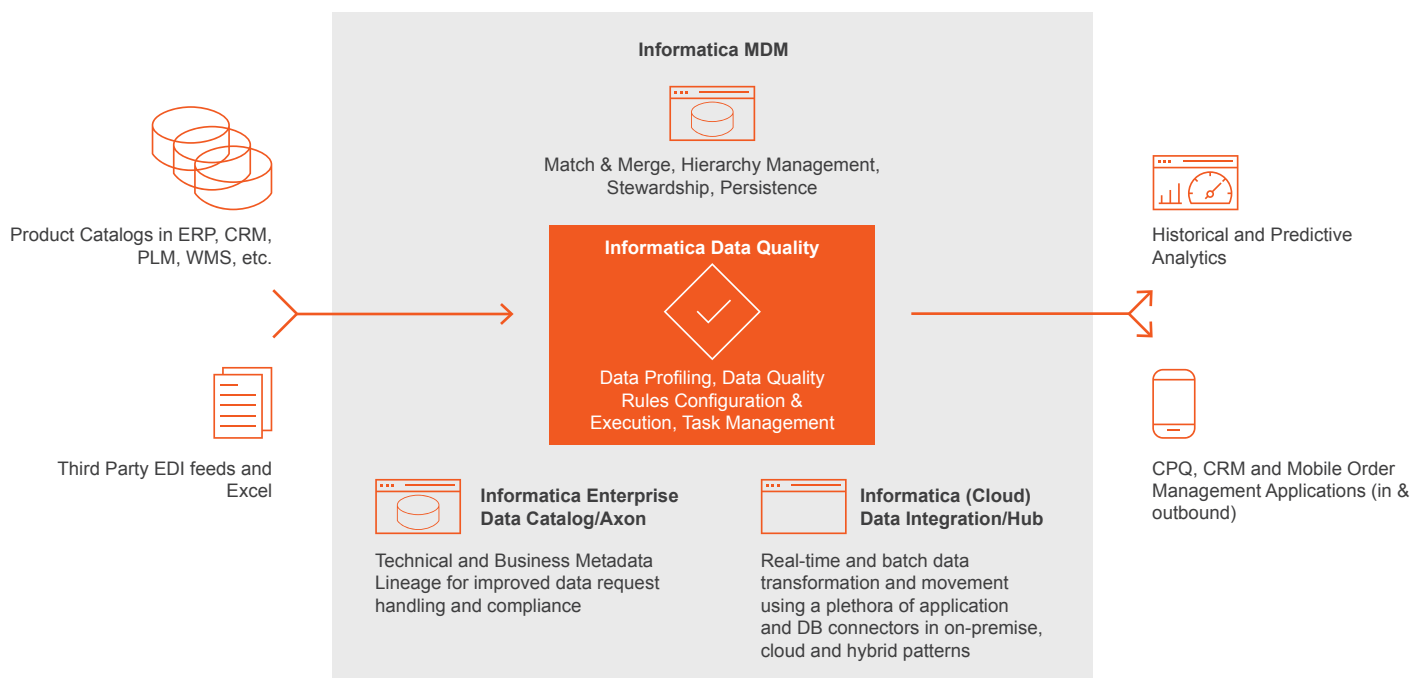


Figure 2. Informatica’s MDM, IDQ, Axon, Data Integration Hub are essential to construct a robust supply chain infrastructure.

⁷ Zoder, Stephan. Enterprise Master Data Management - What’s the ROI?. Association for Information Systems. 2015.

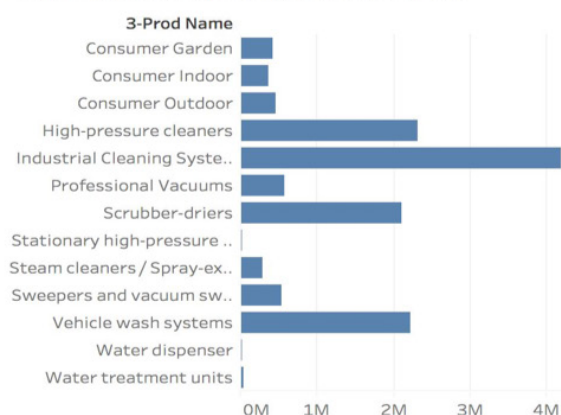
⁸ Davies, R. and Merin, D. Uncovering Cash and Insights from Working Capital. McKinsey. 2014.

In addition, in collaboration with Informatica, Paradigm has developed a simple, yet visually compelling dashboard to calculate OTIF, POI, order errors, and potential impact on working capital. Informatica Data Quality (IDQ) is the core of the solution, together with the analytical dashboards and the ETL jobs, which acquire the item catalog and order information. IDQ enables data profiling and correction of data inconsistencies, such as numeric outliers, invalid values, and formatting errors (hyphens, special characters, sequence ranges, etc.). Consequently, creating data quality rules in IDQ to remedy these anomalies for “key data elements” becomes the logical next step before running a post-correction analysis to refresh performance metrics. Paradigm has helped many clients build instructive dashboards using order line data to deliver S&OP key performance indicators. This bottom-up approach allows multi-dimensional aggregation to calculate the metrics across different hierarchies such as Product, Customer, Location, Geography, Business Unit, Cost Center, etc. While many other solutions offer visually impressive graphics, icons, and metaphors which can be difficult to interpret and act upon, Paradigm’s approach provides a top-down view of S&OP consequential exceptions, rather than attempting to triangulate a multitude of operational insight and trends across dozens of metrics.

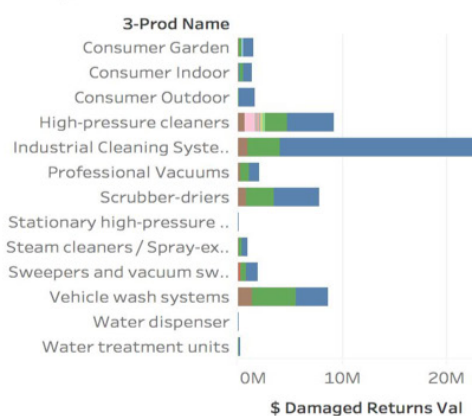
Perfect Order Index

3-Prod Name	TOTAL ORDER LINE	OTIF	Perfect Order Index (POI)	DIFF %	Working Capital (\$)
Consumer Garden	30,996,409	96.6%	87.11%	9.48%	4,461,454
Consumer Indoor	69,084,704	95.1%	91.42%	3.71%	10,002,494
Consumer Outdoor	84,174,296	95.0%	91.20%	3.83%	12,150,962
High-pressure cleaners	183,096,320	89.2%	80.51%	8.69%	26,565,970
Industrial Cleaning Systems	157,727,540	95.1%	76.83%	18.27%	22,915,623
Professional Vacuums	83,048,025	95.0%	90.29%	4.74%	12,056,398
Scrubber-driers	156,458,101	95.0%	85.78%	9.24%	22,727,631
Stationary high-pressure clea..	202,835	94.6%	84.95%	9.67%	30,839
Steam cleaners / Spray-extrac..	20,193,239	95.0%	85.48%	9.48%	2,929,177
Sweepers and vacuum sweepe..	79,432,230	94.9%	90.31%	4.59%	11,537,741
Vehicle wash systems	170,599,500	90.2%	81.28%	8.93%	24,777,301
Water dispenser	2,822,317	96.6%	91.93%	4.69%	415,798
Water treatment units	6,991,859	95.1%	90.54%	4.54%	1,029,394

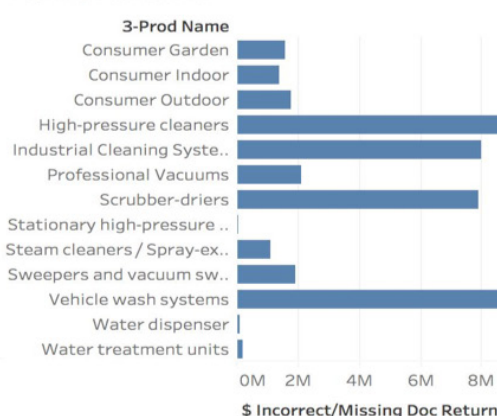
OTIF-POI DIFF CONSUMING THE WORKING CAPITAL



Damaged Returns



Incorrect Doc Returns



Damaged Return Reason

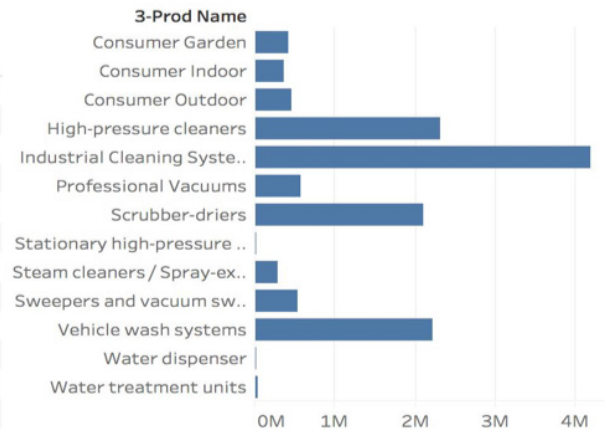
- Null
-
- Bursting pressure, max.
- Diameter
- Dimensions (L x W x H)
- Flow rate
- Hose length
- ID
- Ironing surface dimensions (L x W)
- Length
- Length of accessories
- Max. pressure
- Max. temperature
- Max. working pressure
- Mesh size
- Nozzle size
- Quantity
- Thread size
- Weight

Figure 3. The dashboard focuses on OTIF, POI and metrics that make up the difference between the two.

Perfect Order Index

3-Prod Name	TOTAL ORDER LINE	OTIF	Perfect Order Index (POI)	DIFF %	Working Capital (\$)
Consumer Garden	30,996,409	96.5%	87.17%	9.35%	4,468,171
Consumer Indoor	69,084,704	95.1%	91.30%	3.79%	10,024,783
Consumer Outdoor	84,174,296	95.1%	91.35%	3.75%	12,215,509
High-pressure cleaners	183,096,320	89.2%	80.52%	8.66%	26,506,192
Industrial Cleaning Systems	157,727,540	95.0%	76.80%	18.24%	23,097,745
Professional Vacuums	83,048,025	95.0%	90.38%	4.59%	11,993,004
Scrubber-driers	156,458,101	95.0%	85.88%	9.12%	22,602,007
Stationary high-pressure clea..	202,835	92.4%	85.03%	7.37%	36,216
Steam cleaners / Spray-extrac..	20,193,239	95.1%	86.06%	9.02%	2,937,584
Sweepers and vacuum sweepe..	79,432,230	95.0%	90.39%	4.64%	11,482,773
Vehicle wash systems	170,599,500	90.2%	81.36%	8.82%	24,863,513
Water dispenser	2,822,317	97.1%	91.78%	5.34%	408,917
Water treatment units	6,991,859	94.8%	90.01%	4.80%	1,000,731

OTIF-POI DIFF CONSUMING THE WORKING CAPITAL



Perfect Order Index & OTIF Difference

Customer Name	TOTAL ORDER LINE	OTIF	Perfect Order Index (POI)	DIFF %	Working Capital (\$)
TURNER _2	2,336,891	93.0%	81.68%	11.32%	318,135
SHAHEEN FAMILY_1	2,135,638	92.6%	81.59%	11.06%	305,392
TRES LL _1	2,487,681	93.0%	82.16%	10.89%	360,835
B & L CORP	2,316,449	93.7%	82.92%	10.74%	323,947
DE VILLE ROGER _1	2,373,388	93.6%	82.95%	10.70%	355,829
W G ENTERPRISES	2,231,697	93.5%	82.90%	10.59%	322,284
MPDS WEST PARK	2,304,482	93.0%	82.40%	10.57%	318,137
DBI LAND COMPAN_1	2,362,865	93.8%	83.24%	10.51%	356,680
STEELS POINTE G	2,488,065	93.3%	82.81%	10.48%	356,928
KAPPA DRI	2,454,764	92.9%	82.51%	10.41%	369,579
WINTERS & ROWE	2,725,340	92.7%	82.36%	10.38%	401,180
NOTICE COLSTON_1	2,064,699	92.5%	82.22%	10.32%	291,063
KRATSA PROP_1	2,312,577	93.2%	82.89%	10.31%	336,725
TURNER COMMUNICATIO..	2,400,714	92.8%	82.53%	10.28%	358,085
HIGH LTD	2,116,017	92.5%	82.24%	10.27%	315,741

Figure 4. The figure above shows product and customer views of the POI and OTIF data.

The screenshots below display the easy-to-use, browser-based Informatica Data Analyst tool that empowers the line-of-business managers, data stewards, and business analysts to easily participate in data quality improvement without the need for IT intervention. Informatica Analyst enables data profiling and analysis, and it creates data quality scorecards with the flexibility to filter and drill down on specific records for better detection of problems. Informatica Analyst enables the business to finally engage all the right people in improving data quality.

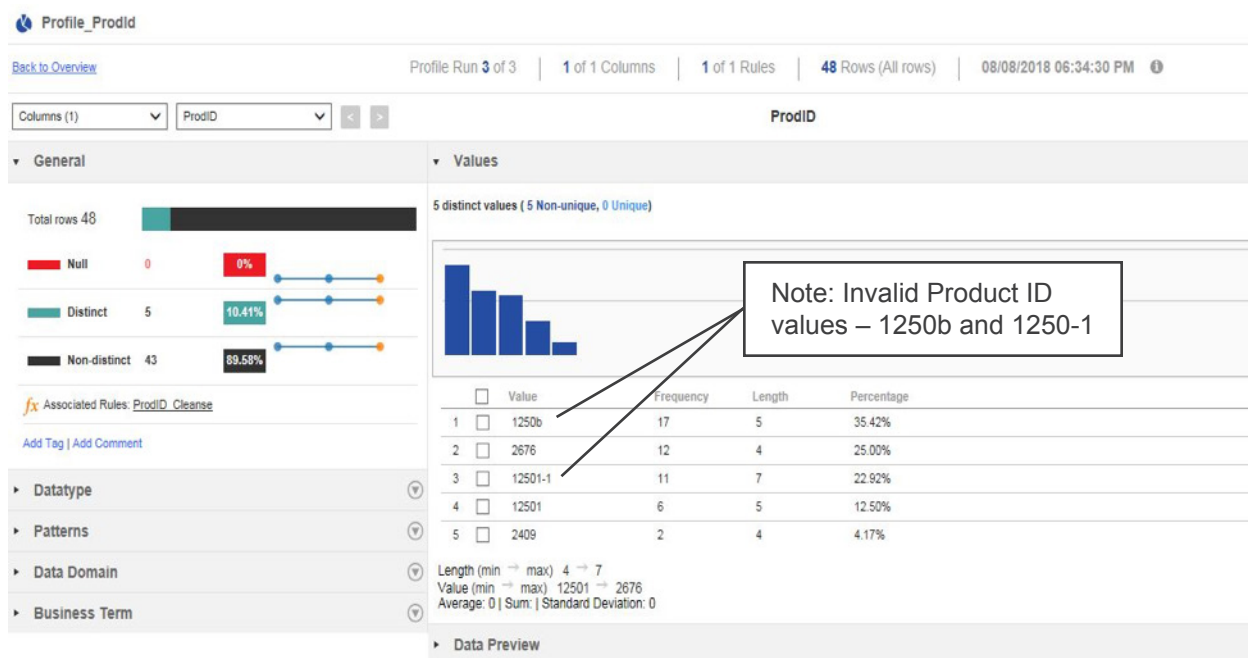


Figure 5. Product ID. Before - product ID's ending with '-1' and letter 'b.'

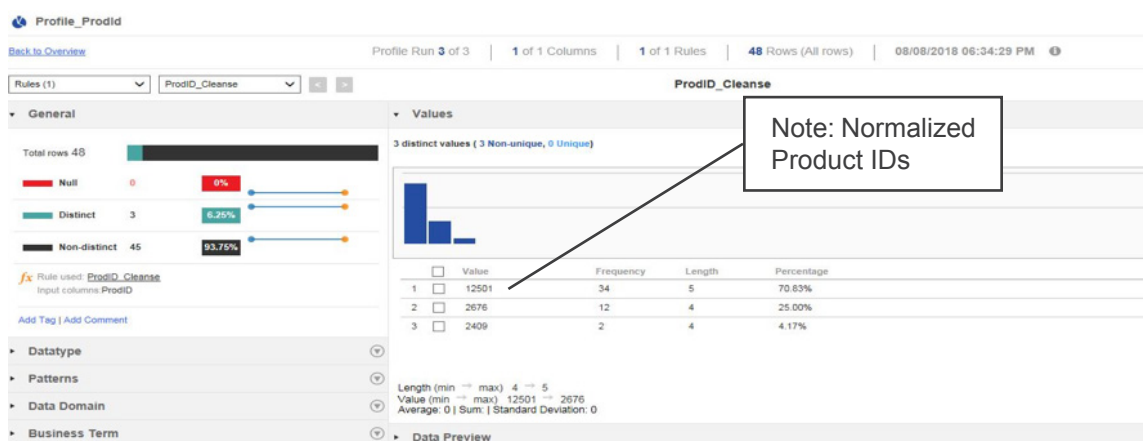


Figure 6. Product ID. After - cleansed.

SUMMARY

Increasingly, manufacturing companies are realizing that more insightful information across supply chain operations can improve customer experience and customer satisfaction in the face of increasing competition, market pressures, logistics, and supply chain performance challenges. A combination of the right technical and analytic components brought together in a holistic, integrated platform can provide more timely and accurate information from across the supply chain. This approach brings focus to the distribution and communication of S&OP metrics of supply chain performance, costs, risks, and exceptions. Giving management access to more reliable and accurate information in the appropriate format empowers them with options on how best to improve S&OP efficiency and effectiveness.

ABOUT THE AUTHORS

Paradigm Technology is a strategic consultancy that focuses on Digital Transformation, Analytics, Governance and Cloud. Started in 1994, we partner with clients to deliver business and technology solutions that enable our clients. Analytics and Governance are at the heart of the value we deliver.

Paradigm Technology and Informatica, the world's leader in Enterprise Cloud Data Management, are prepared to help you intelligently lead - in any sector, category or niche. We invite you to explore all that Paradigm Technology and Informatica have to offer and unleash the power of data to drive your next intelligent disruption.

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