



The Global Language of Business

Invest in High-Quality Product Data to Support Your Growth Strategy

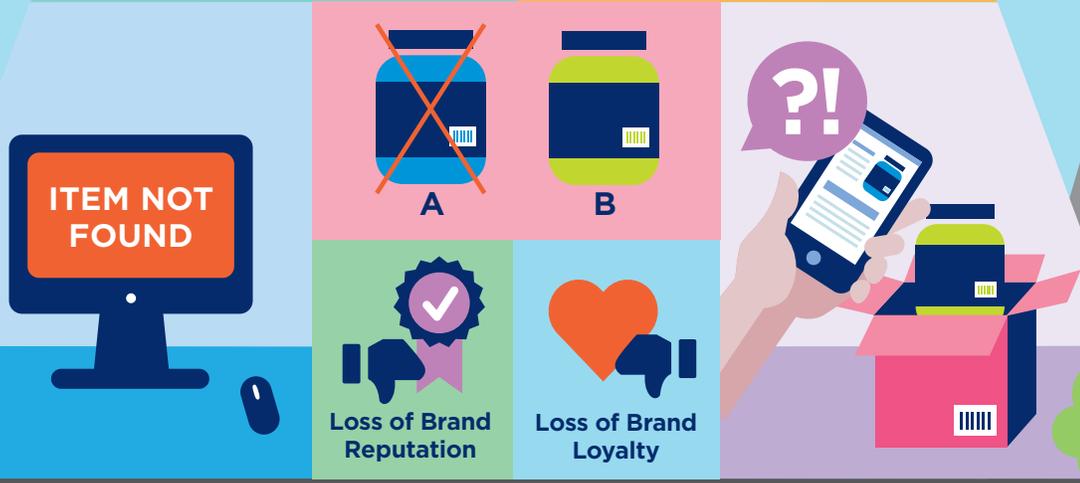
Target, Keurig, and Pilot Pen Share Their Data Quality Journeys



Bad Data: When It All Goes Downhill

Studies confirm that consumers today have a very low tolerance for mistakes when they search for product information. According to research from ShotFarm¹, 78 percent of consumers say that quality of product content is very important to them when making purchase decisions. Omni-channel shoppers have a 30 percent higher lifetime value than those shopping via only one channel, says a recent IDC² report.

1. The 2015/2016 Shotfarm Product Information Report
2. IDC FutureScape: Worldwide Retail 2015 Predictions — It's All About Participation Now



Loss of Sales

Any organization large enough to have accumulated appreciable amounts of product information will undoubtedly find that data shared with customers does not necessarily match the actual physical product. Data quality is an enormous challenge in today's hyper-connected, unified commerce world.

There are a number of reasons poor quality data exists. Perhaps product information such as measurements, extended descriptions, and the product's usage was treated as a mere "formality" when the product was introduced and not carefully recorded. The product may have been modified since its launch, but the data associated with it was not; and differing requests for product data may have resulted in multiple sets of data in varying formats, none of them comprehensive or wholly accurate. In addition, many companies may have multiple sources of data for the same product information, which can easily result in inaccuracies and inconsistencies up and down the supply chain.

Only over the past decade has the need for data accuracy become an issue of increasing urgency. That's because information is being increasingly leveraged by more and more departments within a company that needs data—almost instantaneously—for faster, more informed decisions. Technologies that allow trading partners to communicate electronically, automatically, and precisely are dependent on accurate—"clean"—data.

The warehouse foreman, the independent truck driver, the marketing and ecommerce teams, the retail planner, and hundreds of others cannot properly allot warehouse space, fill cargo holds, or plan shelf displays if the underlying product attributes are incorrect. Not to mention the disappointed consumer who can't find, research, or buy the product she wants when and where she wants. Or she purchases a product online, based on the information provided, and receives the wrong item, which can cause dissatisfaction and potentially a loss of a future sale. The ripple effect of an error can be vastly exacerbated by any of these inaccuracies.

Investing in Data Quality

Add in new sales channels provided by the explosion of online shopping, and destinations and inaccuracies become exponentially more serious as millions of consumers purchase and return items that they then find unsuitable or unacceptable. The logistics and revenue-impacting nightmare of a substantial number of returns may pale in comparison to the appearance of deceptive practices to an established brand.

"We are heavily investing in becoming a world-class online channel leader. We're blending our physical and digital channels and investing in digital more and more, because

that's where our guests are going," says Angela Schulz, senior director for Target's Item Center of Excellence (COE). This department was created 2 years ago to shape the company's future and lead Target's data quality programs.



Guests who shop online and in our stores are spending more than twice as much as store-only guests. Our online guests are quickly becoming our most valuable guests as well as our most demanding ones. That's why we are investing in data quality. We're transitioning from data as simply foundational to data as a strategic asset that fuels revenue growth."

Angela Schulz Senior Director, Item Center of Excellence, Target

"Having quality data helps us increase our penetration in a highly competitive market," says Ashley Whaley of Keurig, a sales specialist dedicated to Target. "If consumers search online first, you know you've attracted their interest. Through data, content, and images, you show that you have the right product for them, and it captures sales—but it also helps on the back end with diminished returns."

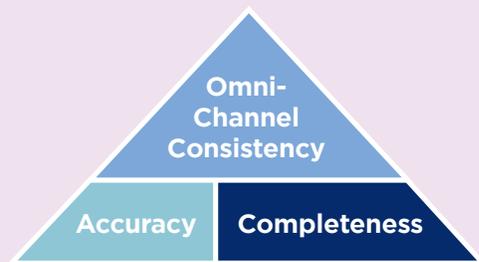
John Worthington, information architecture manager with Pilot Corporation of America adds, "Data quality has always been a priority for us. As an industry, we now have better tools as part of the GS1 US National Data Quality Program that assist us in providing and validating the quality of data for our customers."

Inaccurate data alert: 97% failure rate



The quality of product information is not where it needs to be. For example, Target found that **only three percent of its suppliers passed** data quality verification on the first attempt.

Pillars of Product Information



These objectives involve a standardized way to not only ensure accurate and complete data is being shared, but establish one way to exchange information to:

- **Reduce operational redundancies**
- **Improve business process efficiencies**
- **Create consistency for consumers who utilize multiple channels while shopping**

A standardized approach for listing and classifying products across all commercial platforms—as opposed to using proprietary data exchange systems—will allow consumers to discover more accurate, authentic product information on any device and in a store.

Minimize Supply Chain Waste, Maximize Sales Opportunities

The ubiquitous passport to modern life—the smartphone—has resulted in exploding numbers of consumers demanding more product information at their fingertips. Retailers need product content and if brand owners do not supply it, other non-authorized parties may. This acquired data could be worse than dated or inaccurate information—it could be fraudulent.

In one survey of 2,000 consumers, 39 percent said they would switch to a new brand if offered full product transparency and 56 percent say they would be loyal for life if the brand provided complete transparency. Imagine the reaction to incorrect product information from these information-hungry consumers.

“We have an innovative product, so having all the data and streamlining the shopping experience makes the consumer’s choice easier,” Keurig’s Whaley says. “It’s good for our business when we can provide our shoppers with as much detail as possible to help them make the right purchase.”

Regulatory bodies are also putting pressure on the many industries in which product safety or traceability is an issue. If regulations governing transparency do not already exist for a particular product category—as they do in the grocery, foodservice, and pharmaceutical industries—they may emerge in the near future.

Because of the pressing need for data quality today and far into the future, GS1 US® has launched the GS1 US National Data Quality Program to help fix and prevent poor data quality in any organization.

The Payoff Is in the Details

Data quality takes figurative elbow grease and a literal laser focus on detail. But the upside—in addition to increased customer satisfaction and revenue—accrue to an organization’s operations in added efficiencies and productivity gains, cost savings, growth opportunities in omni-channel commerce, enhanced brand reputation, and very possibly competitive advantages.

“It is a journey,” says Jason Lavik, director of Target’s Item Center of Excellence and responsible for Item Data Certification and Compliance. “And if you haven’t started yet, it’s time to accelerate—to get up to speed on that journey.” Target’s Schulz even suggests putting it into overdrive, warning, “You may even become obsolete.”

“When we started our data quality journey, we focused on using the GDSN® (Global Data Synchronization Network™) as a way to efficiently receive item data from our suppliers,” Lavik says. “That’s where our journey started: case dimensions, case weights and contents, and the GTIN® (Global Trade Item Number®) identifying the product itself.”

Pilot Pen installed a CubiScan® system and requires that all case weights and dimensions are recorded and input into its warehouse system before being shipped to the distribution warehouse.



The journey went much further with the consumer shift to digital. Digital makes good, accurate item data crucial and it became evident that additional attributes were needed to build on the data. In the digital world you can’t physically touch the product or look at its packaging—your data has to be buttoned up and complete, if you want the consumer to make a purchase decision.”

Jason Lavik Director, Item Center of Excellence, Target

Target provides a consummate example because it plays in most categories with a balanced mix between its own brand and other national brands. As such, Target is the source of product data for its own labels and dependent on other manufacturers and suppliers for data on their products.

The Owner’s Manual on Governance

Before the journey begins, an organization needs to commit to adopting the GS1 System of Standards and guidelines for assigning attributes properly to its products. One of the benefits of leveraging the GS1 System is that a full complement of potential attributes have already been formulated, taking the guesswork out of what is meant by certain attribute categories or measurements, so comparisons between products are always apple-to-apple.

Three major signposts mark the route to data quality.

The first is data governance—the processes and procedures that an organization establishes to maintain accurate data over time. With massive amounts of data to marshal, it can be all too easy to lose control over it without an established, enterprise-wide methodology.

It is recommended that an organization assign a sole owner of data quality within the organization, which may equate to a data quality team. These are the “disciplinarians” who will audit all new items in a sustainable production environment through the lens of data quality to be certain the finished item is authentically represented by its data.



If supplier partners provide a single, complete, and standardized set of product images and data attributes—a set that provides dependable product representation across all consumer channels—retailers can reduce item set-up time and enhance speed-to-market, leading to more opportunities for all.

GS1 US National Data Quality Program

The GS1 US National Data Quality Program (NDQP) is built on a standards-based framework for all industries and addresses three essential components of data quality.



- 1** Data Governance Process
Master Data Management
- 2** Education & Training Protocol
- 3** Attribute Audit

To address these challenges, GS1 US has brought together cross-industry stakeholders to develop the GS1 US National Data Quality Framework for establishing and sustaining high quality data. Participants have found that making seemingly small corrections to their data—catching a measurement that was just **1.5 pounds off, for example—could save a company \$100,000 in cost avoidance in annual transportation costs***.

GS1 US has a robust set of resources for organizations looking to launch or improve their data quality efforts, including ROI calculators for brand owners, best practices guidance, advisory services, and more to lead to a successful data quality journey.

Learn more at www.gs1us.org/DataQuality.

* Source: GS1 US Case Study: IPC/Subway

The Rising Risks of Poor Data Quality—

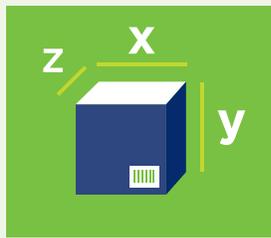
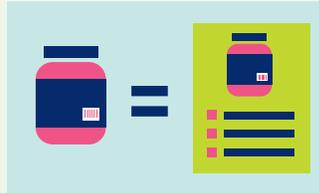
Supply Chain Operations



Product information

Data quality

impacts the entire system. Unique product identification is the essential foundation for getting the right information to the consumer.



Data sharing

Increased labor costs



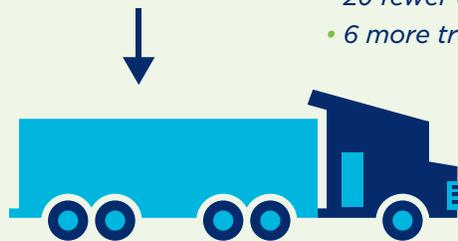
Use of inaccurate transactional data can cost up to 25% more in labor.¹



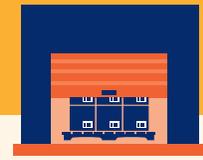
Freight and warehouse management

1/4" error in case height =

- 1,000 fewer cases per truckload
- 20 fewer cases per pallet
- 6 more trucks than necessary²

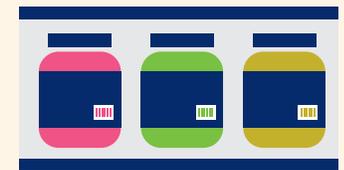


In-Store Operations and



80% of retailers

are not confident in their product data.³



Inventory accuracy and availability



8.7% lost sales

due to inventory inaccuracy.⁵



In-store fulfillment picking accuracy

50% failure rate

for Buy-Online-Pickup-In-Store (BOPIS) shopping experiences.⁶

1. GS1 US Land O'Lakes Case Study, 2017

2. GS1 US Data Quality ROI Calculator, 2016

3. E-retailers beware: 3 perils of unvalidated product information. *Internet Retailer*, December 2016

4. Planogram compliance—how boring...unless it might save billions. *Cosy*, 2016

5. Kurt Salmon RFID in Retail Study. *Kurt Salmon Part of Accenture Strategy*, October 2016

6. Dr. Bill Hardgrave, Auburn University, NRF 2016

7. How Mobile Is Transforming the Shopping Experience in Stores. *Google Shopper Marketing Council*, May 2013

8. Customer Desires Vs. Retailer Capabilities: Minding The OmniChannel Commerce Gap. *Forrester Research*, January 2014

9. Customer Desires Vs. Retailer Capabilities: Minding the OmniChannel Commerce Gap. *Forrester Research*, January 2014

10. Why bar code numbers matter. *Internet Retailer*, December 2016

11. Retailers Are Losing \$1.75 Trillion Over This. *CNBC.com*, November 2015

12. Jason Lavik, Sr. Item Operations Manager, Target

and Its Impact on Your Entire Business



84%

of shoppers use their devices to help them shop in store.⁷



Product information
86% of consumers

are unlikely to buy products from a brand after an experience with inaccurate product information.¹¹

Planogram compliance

Less than 50%

achieved planogram compliance (primarily in grocery sellers).⁴

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Angela Schulz, Senior Director, Item Center of Excellence, Target

71%

of shoppers expect to view in-store inventory online.⁸



3 top errors

caused by a lack of data validation:

- Listing the wrong products
- Listing inaccurate product attributes
- Duplicate listings or content¹²

15%

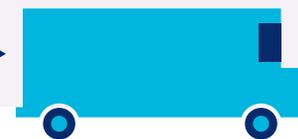
to 30% of sales lift when dynamic buy-online-pickup-in-store fulfillment option is available.⁹



Flexible fulfillment

If you don't deliver what a consumer thinks they ordered the consequences are dissatisfaction, loss of loyalty, and potential loss of future sales.

Overstocks and returns are costing retailers \$1.75 trillion a year.¹⁰



Keurig created a centralized data governance group to oversee its data quality practices. Eileen Hanafin, current director of the Keurig master data management team, explains, “We’re the ‘one-stop shop’ within Keurig when it comes to learning about and implementing data quality processes. People across marketing, manufacturing, planning, and other functions now have a single point to contact, to ask questions, and get guidance about upcoming product launches or other data governance topics.” For example, on the organization’s website, visitors find the GTIN Management Standard and Keurig’s own internal operating guidelines.

Within Keurig, finance, manufacturing, package engineering, and research and development all provide input into the set-up of product data. “A significant amount of the time has been spent the last two years creating a culture of data ownership within the company,” says Katie Nunn, incoming director for master data management. “Different functions own the data and are accountable to provide us with the governing rules for the data. And then we’ll (the centralized data governance group) make sure these rules get followed.”

As for Target, its Center of Excellence (COE) focuses on item set-up, item maintenance, item operations and structure, item taxonomy, classification, and product content—all in one team. Previously some of these functions were scattered throughout the company. The primary goals of the COE are to deliver new items with speed and a high level of accuracy and relevancy.

“Our COE’s first priority is building executional excellence and concentrating on item data quality at the point of set-up for new items as well as for existing products,” Lavik says.

Worthington from Pilot Pen adds that effective data governance is “something that the entire company must strive for and not just the IT department.”

Rules of the Road: Education and Training

In any broad initiative, education and training are integral components, and with data quality, it is especially true since product data touches so many key functions and involves multiple divisions within any enterprise. Bringing awareness to data quality issues and outlining its implications to numerous stakeholders will help to preserve the integrity of the governance and the data itself.

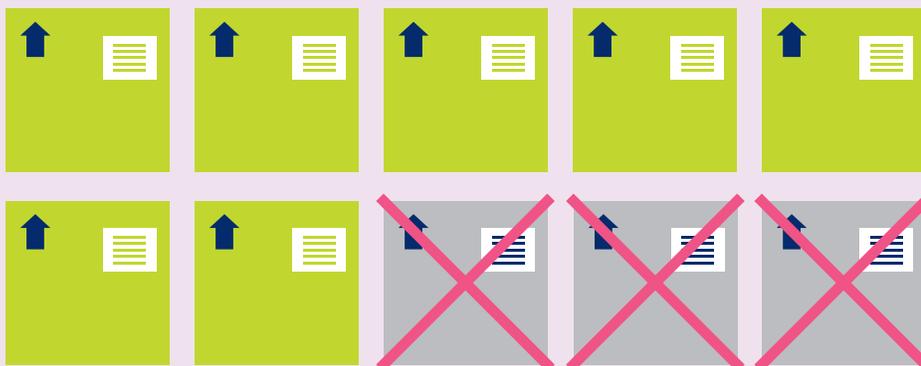
The Keurig master data management group has been working directly with its distribution centers, providing the logistics team with training led by GS1 US. “We want to ensure that everyone on the floor, that’s part of the sustainable data quality process, is using industry standards for weights and dimensions,” advises Hanafin.

“Target publishes all merchandise type attributes (MTAs) across all departments in the store. They gave us descriptors for what each attribute is intended to explain. They have done a great job in communicating exactly what they’re looking for and that’s been extremely helpful,” Whaley says.

Importance of Physical Audits

Conducting routine physical audits—comparing an actual product to the most recent information shared about that product—is the best way to test the success of your program, your governance, and your data.

Consider a key finding from the GS1 US benchmark audit of **1,700 cases** where case weights were found to be **accurate only 71.4 percent of the time**. By conducting physical audits, you can confirm your “good data” assumptions or fix your “bad data” findings.



In an instance of rogue data entry—a supplier sales rep adds new product information, for example—additional education and training may be needed within an organization to communicate who governs the data, the importance of being executed correctly by the owners, and how the ramifications of poor quality affect everyone. Leadership buy-in and commitment can be a strong motivation for compliance.



Building awareness of and bringing transparency to the state of the data is an absolute must. Until stakeholders realize how good or how bad the data is, they cannot understand what the real costs are in terms of margins and sales.”

Angela Schulz *Senior Director, Item Center of Excellence, Target*

Taking a Test Drive: Attribute Audits

Rounding out the trio of must-do practices in a data quality initiative, are attribute audits that validate data governance processes and institutional knowledge. Conducting routine physical audits—comparing an actual product to the most recent information shared about that product—is the best way to test the success of your program, your governance—your data.

Pilot Pen’s Worthington agrees, “Suppliers should do cycle audits to verify the attributes. I highly recommend it.”



You just can’t assume your data is good. You have to measure it.”

Jason Lavik *Director, Item Center of Excellence, Target*

“Once you have those measurements, the data will inform you of a lot: What are the things our suppliers need to work on? What are the things that we are making too complicated, that we need to simplify?” Lavik continues. “We use the data to make informed decisions on how we ask for attributes and how we make it easier for our suppliers to give us information.”

Target noticed a lag time between a supplier’s new item set-up to actual in-store availability, a time period in which the disparity between the original sample and the actual product widened, but the original data had not been altered.

Often, Lavik and his team will go to the Target nearest the Minneapolis headquarters and use the actual product on shelf to audit the product data.

For logistical attributes, Target has automated equipment at one of its distribution centers that helps capture the case dimensions of shipping units.

To establish a data accuracy baseline, brand owners can audit their item data themselves or have GS1 US certified auditors do it.

Scorecards are sent to vendors to advise them of their performance and progress and alert them of errors. To elicit responsiveness—and to show the importance of data quality to its operations—Target created a supplier certification program, modeled on the GS1 US National Data Quality Program.

As the program matured, Target found it had to hold vendors more accountable for accuracy, levying financial penalties if errors continue. Target hopes these fines are temporary, but they found them necessary when initial certification of its vendors yielded only a low single digit percentage that fully qualified. Barely nine months later—once more stringent accountability was instituted—the number had improved 10 fold and continues to increase.

Avoid Bad Data

Five best practices for initial item set-up include:

-  **1** Adhere to GS1 Standards and rules for initial attributes during internal item set-up.
-  **2** Assign data owners throughout the organization.
-  **3** Appoint one entity, department, or individual as the sole owner of product data.
-  **4** Audit all items produced in a sustainable production environment ready for shipment (e.g., finished goods).
-  **5** Execute communication of initial attributes and package measurements, both internally and externally.

Concurrent to the data quality program that addresses accuracy, Target works with its suppliers on data synchronization to ensure the electronic sharing of the data is seamless and that items are synchronized before an audit takes place. Items that are not synchronized can affect a supplier's audit score.

"There can be well over a hundred attributes Target asks for in a particular category," Lavik reports. "We do not audit all 100, we focus on the ones that are most important to our guests: those that help in making purchasing decisions and those that generate expense in the supply chain to move products through our network."

Target notifies its suppliers when it's about to conduct an audit in a particular category. It is interesting to note that when a mistake is found, it is not unusual for the mistake to be one that's repeated across the entire category, allowing a remedial action to "kill many birds with one stone."

Whaley, along with help from Keurig's digital team, proactively performs quarterly audits, more comprehensive audits twice a year, as well as spot checks after product launches. The team goes to retailer sites and proactively checks data, reviews images, and checks merchandise attributes. When a source of confusion or

another anomaly is discovered, it is sent to Whaley to resolve with the appropriate stakeholders. "We'll submit it to Target and filter it back through to make sure everything is updated correctly."

Fixing Bad Data



Don't rely on a retailer to tell you the data is bad. Put practices in place on your own. Measure and audit your own product to get correct information, before you send it to a trading partner. Target is not the only retailer that asks for it. There are others out there as well."

Jason Lavik Director, Item Center of Excellence, Target

He also recommends reading the signs. "Look for patterns within the data. If you're getting the same item wrong across retailers, there's probably something wrong with your data that needs to be fixed. If you're getting something wrong with just one retailer, check to see who entered the data. Rather than the data owner, perhaps a sales rep entered the data without understanding what is being asked for or has not followed the proper protocol."

The Data Quality Framework



1

Follow data governance best practices.



2

Bring GS1 Standards knowledge to your organization and never let go.



3

Conduct attribute audits to validate processes are working as intended.

Target has noticed a sea change in their suppliers' mindset surrounding data quality: "Complete, accurate data has become important for our company and as a supplier for Target," says Keurig's Whaley.

"If a product is listed with inaccurate dimensions, it may cause disruptions across the supply chain," adds Hanafin. "And every disruption is costly, whether it's within the logistics area or the customer service area. We are working to be proactive and get the data right in the first place."

Worthington describes the value of quality data practices for Pilot Pen: "We're most definitely saving costs on chargebacks. And in the future, when our other trading partners require data quality certification, it will enable us to continue selling to those customers."

"We want to get to 100% accurate and complete data with speed and precision," says Schulz.

When a one-pound weight differential can cost hundreds of thousands in shipping costs over time, there is no question that data quality is not some quaint penchant for precision.

When a measurement error means a shipment will not fit into the warehouse space assigned, deep and unexpected retail discounts to move product may be the least punitive alternative.

When a product ingredient missing from the data causes an adverse reaction in a particularly vocal consumer using social media, lack of data quality is not a simple oversight, it's a brand-impacting event.

The upstream/downstream metaphor for the supply chain is a particularly apt one when discussing data quality. An upstream error carries its poison downstream, contaminating every touch point on its journey from shipper to warehouse to retail shelf to consumer. One bad byte is just not worth it.

Continuing Growth of E-Commerce

As e-commerce grows year after year, so does a consumer's reliance on accurate digital information.



The pressure to enhance omni-channel performance has never been greater, yet the gap between what the industry can provide and what the consumer demands is wide. To help catch up to consumer expectations, retailers are pushing stronger requirements for suppliers to provide more detailed product information.

Consistency is key to closing this gap, as consumers expect product descriptions to match as they move from store to online and vice versa. Retailers and suppliers must work together to ensure omni-channel product information consistency.

* Source: Forrester

To learn more about best practices for data quality, visit www.gs1us.org/DataQuality

About Target

Target Corporation is an upscale discount retailer that provides high-quality, on-trend merchandise at attractive prices in clean, spacious, and guest-friendly stores. Minneapolis-based Target serves guests at 1,803 stores and at Target.com. www.target.com



About Pilot Corporation of America

Pilot Corporation of America is a leading manufacturer and marketer of quality writing instruments in the United States. The company's state-of-the-art manufacturing facilities in the United States, Japan, and around the world operate under strict quality control standards, ensuring the superior quality of all Pilot products. www.pilotpen.us



About Keurig Green Mountain

Keurig Green Mountain, Inc. (Keurig) is a leader in specialty coffee and innovative single serve brewing systems. Committed to delivering exceptional coffee for more than 35 years, today our Keurig® brewers and single serve hot beverages are in more than 20 million homes and offices throughout North America. www.keurig.com



About GS1 US

GS1 US®, a member of GS1® global, is a not-for-profit information standards organization that facilitates industry collaboration to help improve supply chain visibility and efficiency through the use of GS1 Standards, the most widely-used supply chain standards system in the world. Nearly 300,000 businesses in 25 industries rely on GS1 US for trading partner collaboration that optimizes their supply chains, drives cost performance and revenue growth while also enabling regulatory compliance. They achieve these benefits through solutions based on GS1 global unique numbering and identification systems, barcodes, Electronic Product Code-based RFID, data synchronization, and electronic information exchange. GS1 US also manages the United Nations Standard Products and Services Code® (UNSPSC®). www.gs1us.org

About the GS1 US National Data Quality Program

The GS1 US National Data Quality Program provides organizations with a comprehensive approach to data quality that encompasses:

- Data Governance Process—Validating that a data governance process exists within an organization to support the creation and maintenance of product data based on GS1 Standards.
- Education and Training Protocol—Confirming proper education and training on GS1 Standards within an organization with regard to creating and maintaining accurate product data.
- Attribute Audit—Auditing, verifying, and comparing product attributes to most recently shared data to enable trading partners to have confidence that the data shared is accurate, complete, and timely.

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