The Global Language of Business

Data Quality ROI Calculator for Brand Owners:

Transportation Costs & Case Dimensions

GS1 US National Data Quality Program

The GS1 US National Data Quality Program addresses the need for complete and accurate product data by providing a common approach to data quality for organizations to adopt. This common approach will promote a level of trust about product information received or retrieved by trading partners and consumers alike.

The Program is based on a comprehensive approach to data quality that encompasses:

- *data governance within an organization to support the creation and maintenance of product data*
- *education and training within an organization with regard to creating and maintaining accurate product data*
- *comparing product attributes to data being shared with trading partners to have confidence that the data shared is accurate, complete and timely*

For additional information, visit:
http://www.gs1us.org/dataquality

CONTRIBUTORS *

DOT Foods
Knouse Foods
SCA Americas Inc.
Seneca Foods Corporation
Storck USA, LP
Unilever
USNutrition an NBTY Company

** Members of the GS1 US Data Quality Discussion Group – ROI Subteam*

Introduction to the Series:
calculate ROI to justify your data quality program

Most companies understand the basic premise of data quality: *inaccurate data can be detrimental to business*. However, the challenge for many companies has been how to calculate a Return on Investment (ROI) to justify the resources needed to address data quality issues within their organization.

In other words, how do you quantify quality?

When it comes to tackling data quality issues, the GS1 US National Data Quality Program advises companies to start small – with only one or two pieces of data. This guidance also applies to ROI: develop an ROI for one or two key pieces of data that can quantifiably illustrate the cost of inaccuracies, and conversely the benefit to be gained by resolving them.

This approach enables companies to begin the journey toward data quality using targeted, incremental steps where positive ROI can be calculated. To support that effort, GS1 US is preparing a series of ROI tools to help companies calculate quantifiable ROI associated with certain attributes in order to justify a data quality program.

Purpose of this Document

This document, entitled *Transportation Costs & Case Dimensions*, is part of that series. The ROI calculation in this document is based on transportation savings and efficiencies that may be gained by improving the accuracy of case dimension data (specifically, case height). It provides an example that illustrates the application of that ROI model, as well as detailed steps for how to recreate that analysis using your own data.

** Note: Although this guide focuses on case height, other case dimension data can have a similar impact on transportation costs, and you can adapt the ROI analysis provided in this document to analyze case width and depth as well.*

This ROI calculator is also available as an interactive spreadsheet tool. Be sure to visit www.gs1us.org/dataquality for more information.

The Effect of a ¼ Inch on Transportation Costs

Errors in case height can increase transportation costs by limiting the number of items allowed on a pallet and, ultimately, on a truck. Consider the following hypothetical example where the height of a case is incorrectly recorded within a brand owner's data management system as ¼ inch larger than its actual height. The incorrect case height is shared with trading partners and used by various systems (e.g., for optimal order quantities, pallet patterns, and truck optimization). The illustration below demonstrates the real-world impact of that quarter inch error and the cumulative effect it has on transportation costs. *(NOTE: Pallet height limit used below is 56 inches (including the wooden pallet).)*

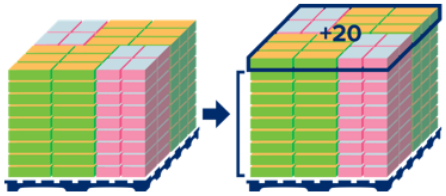
XYZ Widget Company – Hypothetical Widget

	SCENARIO 1 (based on **incorrect** case height)	SCENARIO 2 (based on **actual** case height)
Case dimensions	11.60 in x 7.68 in x **5.25 in**	11.60 in x 7.68 in x **5.00 in**
Pallet pattern	20 x **9**	20 x **10**
Cases per pallet	**180 cases**	**200 cases**
Cases per full truck *50 pallets (25 pallets double stacked)*	**9,000 cases**	**10,000 cases**

Case Height is actually a ¼ inch shorter

That extra ¼ inch per case would allow an **extra layer to be added to the pallet**

The extra layer would mean **20 extra cases per pallet**



1,000 more cases per truckload than originally configured!

Now, let's say that XYZ sold 500,000 cases of Widgets last year…

	SCENARIO 1 (based on the **incorrect** case height)	SCENARIO 2 (based on the **actual** case height)
Cases per truck	9,000 cases	10,000 cases
# of trucks	56	50
Cost per truck	$3,000	$3,000
Total cost	$168,000	$150,000

1,000 more cases per truckload

6 less trucks

$18,000 in savings

In the grand scheme of things, $18,000 may not sound like much, but remember:
this is only for one product that XYZ Company makes.

*Let's pretend that XYZ Company has **200 SKUs**, and **just 3%** of them have the case height overstated in a similar fashion:*

That would be **$108,000** in potential savings!

Step 1: Identify a Target Set of Items to Check

Identify instances of incorrect case dimensions that you can use in the ROI analysis. Obviously, you cannot examine every single item your company makes/sells for this analysis. **You'll need to be strategic** -- look to operational red flags to help point you to which items might have problems:

- Which items do your customers tell you are taller/wider/deeper than your published data?
- Do your distribution and transportation teams routinely struggle with certain items (e.g., pulling pallets off trucks because products would not fit; pallets too tall to double stack; etc.)?
- Does your customer service team routinely get complaints about certain items (e.g., order multiples, adjustments, damages, etc.)?
- Are there certain plants/DCs where it is more challenging to build truckloads than others?
- Are there cases that have excessive or repetitive instances of damage reported?
- Are there cases with excessive head space causing crushing?
- Are there pallets with excessive overhang or underhang?

Step 2: Collect Case Dimension Data

Once you have your targeted list of items to check, collect the recorded and actual dimensions of those items:

- Obtain the case dimension data currently recorded in your master data systems. *(Although this analysis focuses on case height, you will need the other dimensions as well to define pallet pattern.)*
- Physically measure a sample case based on the GS1 Package Measurement Rules.
- Compare those values for each item to identify instances of incorrect case dimensions on which you can build your ROI analysis. (If multiple instances are discovered, consider using the items with the biggest issues for the ROI analysis in order to strengthen the message to your executives.)

Step 3: Gather Transportation Metrics to Support the Analysis

Gather the following metrics about your own transportation costs:

- Pallet Height Limit (usually 56 inches including the wooden pallet)
- Cost per Truck
- Number of Cases Sold Annually (per item)
- Number of SKUs sold by your company

Step 4: Calculate the Impact on Transportation Costs

- Using the **case dimension data** recorded in your systems for the sample item:
  - Define the **pallet pattern** based on the **case dimensions**.
  - Calculate the **cases per pallet** based on that pallet pattern.
  - Assume 50 **pallets per full truck** for simplicity (as was used in the graphics on page 2). (Note: you can adjust this number if needed based on your products.)

    Note: Depending on the product, the maximum number of pallets may exceed the cube parameter when only considering weight and may exceed the weight parameter when only considering cube. Be sure to understand which parameter will be reached first when determining the maximum number of pallets to fit on a truck.
  - Multiply the **cases per pallet** times the number of **pallets per full truck** to calculate **cases per full truck**.
  - Divide the number of **cases sold annually** by the number of **cases per full truck** to determine the **number of trucks** needed.
  - Multiply the **number of trucks** needed times the **average cost per truck** to calculate the **annual transportation costs** based on the recorded data.
- Repeat the sub-bullets in the previous step using the **case dimension data** based on your measurements.
- Subtract the **annual transportation costs** based on the recorded data from the **annual transportation costs** based on your measurements to calculate the **extra transportation costs incurred annually** for this item (for excess trucks).
- Multiply the **total number of SKUs** sold by your company by **.03** (3%) to calculate an **estimated number of items having similar issues** with case height data.
- Multiply the **estimated number of items having similar issues** by the **extra transportation costs incurred annually** for the sample item to calculate **potential annual savings** for your company.

Note: The other case dimensions can have a similar impact on transportation costs. You can adapt this ROI analysis for width and depth in order to analyze their impact on transportation costs as well.

This ROI calculator is also available as an interactive spreadsheet tool. Be sure to visit www.gs1us.org/dataquality for more information.

Worksheet

GTIN		
Item Description		
SCENARIO 1: Using the dimension data *recorded in your systems* for the sample item:		
case dimensions		***L x W x H obtained from your systems***
pallet pattern		*based on case dimensions and pallet height limit*
cases per pallet		*based on pallet pattern*
pallets per full truck		*assume 50 (or adjust as needed for your products)*
cases per full truck		*cases per pallet x pallets per truck*
cases sold annually		***metric***
number of trucks needed		*cases sold annually ÷ cases per full truck*
average cost per truck		***metric***
annual transportation costs		*number of trucks needed x average cost per truck*
SCENARIO 2: Repeat that analysis using the *dimension data from your measurements:*		
case dimensions		***L x W x H based on your measurements***
pallet pattern		*based on case dimensions and pallet height limit*
cases per pallet		*based on pallet pattern*
pallets per full truck		*assume 50 (or adjust as needed for your products)*
cases per full truck		*cases per pallet x pallets per truck*
cases sold annually		***metric***
number of trucks needed		*cases sold annually ÷ cases per full truck*
average cost per truck		***metric***
annual transportation costs		*number of trucks needed x average cost per truck*
COMPARISON		
extra trans. costs per year		*annual trans costs for Scenario 2 - annual trans costs for Scenario 1*
total # of SKUs		***metric***
estimated # of items with issues		*total number of SKUs x .03*
potential annual savings		*estimated # of items with issues x extra trans costs incurred annually per item*

Additional Resources

Get started with the GS1 US National Data Quality Program:

- GS1 US National Data Quality Program Framework
- GS1 US Data Quality Assessment Guide (for benchmarking where your organization stands in terms of data quality processes and to identify areas of opportunity)
- GS1 US National Data Quality Program – Data Governance Best Practice Guidance
- GS1 US National Data Quality Program Certification Quick Start Guide

Advance your data quality program:

- Attend a GS1 US Data Quality Workshop.

Need in-depth guidance for your data quality program?

- Contact GS1 US Advisory Services for customized training and implementation support to address company-specific data quality challenges.

All of the above resources are accessible at www.gs1us.org/dataquality.

Proprietary Statement

This document contains proprietary information of GS1 US. Such proprietary information may not be changed for use with any other parties for any other purpose without the expressed written permission of GS1 US.

Improvements

Improvement and changes are periodically made to publications by GS1 US. All material is subject to change without notice. Please refer to GS1 US website for the most current publication available.

Disclaimer

Except as may be otherwise indicated in specific documents within this publication, you are authorized to view documents within this publication, subject to the following:

1. You agree to retain all copyright and other proprietary notices on every copy you make.
2. Some documents may contain other proprietary notices and copyright information relating to that document. You agree that GS1 US has not conferred by implication, estoppels or otherwise any license or right under any patent, trademark or copyright (except as expressly provided above) of GS1 US or of any third party.

This publication is provided "as is" without warranty of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement. Any GS1 US publication may include technical inaccuracies or typographical errors. GS1 US assumes no responsibility for and disclaims all liability for any errors or omissions in this publication or in other documents which are referred to within or linked to this publication. Some jurisdictions do not allow the exclusion of implied warranties, so the above exclusion may not apply to you.

Several products and company names mentioned herein may be trademarks and/or registered trademarks of their respective companies. GS1 US does not, by promulgating this document on behalf of the parties involved in the creation of this document, represent that any methods, products, and/or systems discussed or recommended in the document do not violate the intellectual property rights of any third party. GS1 US has not performed a search to determine what intellectual property may be infringed by an implementation of any strategies or suggestions included in this document. GS1 US hereby disclaims any liability for any party's infringement of intellectual property rights that arise as a result of any implementation of strategies or suggestions included in this document.

This publication may be distributed internationally and may contain references to GS1 US products, programs and services that have not been announced in your country. These references do not imply that GS1 US intends to announce such products, programs or services in your country.

No Liability for Consequential Damage

In no event shall GS1 US or anyone else involved in the creation, production, or delivery of the accompanying documentation be liable for any damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or other loss) arising out of the use of or the results of use of or inability to use such documentation, even if GS1 US has been advised of the possibility of such damages.

IAPMO

In this publication, the letters "U.P.C." are used solely as an abbreviation for the "Universal Product Code" which is a product identification system. They do not refer to the UPC, which is a federally registered certification mark of the International Association of Plumbing and Mechanical Officials (IAPMO) to certify compliance with a Uniform Plumbing Code as authorized by IAPMO.

GS1 US Corporate Headquarters
Princeton Pike Corporate Center, 1009 Lenox Drive, Suite 202
Lawrenceville, NJ 08648 USA
T +1 937.435.3870 | **E** info@gs1us.org
www.gs1us.org

Connect With Us

6 14141 02253 3