

How Dirty Data Affects the ROI of Supply Chain Planning Software



Table Of Contents:

1. Introducing the Role of Data in Supply Chain Planning
2. The Challenge: Dirty Data and Its Implications
3. Dirty Data: The Roadblock to Maximising Supply Chain ROI
4. Ripple Effects: Additional Supply Chain Complications Stemming from Dirty Data
5. Achieving Clarity: Data Cleansing, Enrichment, and Comparison
6. AICA: Revolutionising Product Data Management with Advanced Technologies
7. The Power of Automation: Harnessing Machine Learning for Efficient Data Management
8. AICA's ROI Calculator: Estimating Potential Savings from Data Management Initiatives
9. Conclusion: Making the Most Out of Your Supply Chain Planning Software Investment

1. Introducing the Role of Data in Supply Chain Planning



Data plays a crucial role in driving business decisions. This is especially true in the realm of supply chain management, where the efficient movement of goods from production to the end consumer is steeped in complexity.

Supply chain planning software has emerged as a valuable tool to navigate these complexities. It can analyse vast amounts of data to provide insights for efficient forecasting, demand and supply planning, inventory management, and route optimisation. But the accuracy and usefulness of these insights hinge on one key factor: the quality of the underlying data.

Understanding the different data types involved in supply chain planning is the first step towards appreciating its importance. These data types include:

1. Demand data

This includes historical sales data, promotional plans, and market trends, which aid in forecasting future demand.

2. Supply data

Information about current inventory levels, supplier lead times, and production capacity is crucial for matching supply with demand.

3. Logistical data

Details about transportation modes, routes, and costs are needed for optimising the movement of goods through the supply chain.

4. Product data

This is a crucial data type in supply chain management, providing detailed information about the products being sold, manufactured, or procured. This can include data about product specifications, SKUs, supplier details, price, availability, and more.

5. Financial data

Cost data related to production, transportation, storage, and more, is essential for profit calculations and making cost-effective decisions.

These different types of data feed into the supply chain planning software, enabling it to make accurate predictions and optimal decisions. However, if the foundational data inputted is flawed or "dirty," the software's outputs won't bring about the desired efficiency or profitability which impacts on the supply chain as a whole –underlining the undeniable importance of data quality in supply chain planning.

As we delve further into this document, we will explore the concept of dirty data, its impact on supply chain planning, and how AICA is able to help businesses tackle this challenge, thereby unlocking greater return on investment (ROI) from supply chain planning software.

2. The Challenge: Dirty Data and Its Implications



Dirty data refers to data that is inaccurate, incomplete, outdated, or inconsistent. It can be introduced into a system through human error during data entry, system errors during data migration, or even naturally occurring changes over time that render data outdated.

The various forms of dirty data can be categorised as follows:

Erroneous data

This includes data that is incorrect, out of range, or otherwise invalid. For example, a product's weight might be inputted as 1,000 pounds instead of 1,000 grams.

Duplicate data

Duplicate entries can create an illusion of more data than actually exists, leading to incorrect conclusions. For example, if a product appears twice in an inventory list, it could lead to overestimation of stock levels.

Inconsistent data

Inconsistencies can occur when data is recorded in different formats or units across different databases or systems. For example, dates might be recorded in one system as 'DD-MM-YY' and in another as 'MM-DD-YY'.

Outdated data

Data that is no longer current or relevant can skew analysis and forecasts. For example, a supplier's lead time might have been reduced, but if the system still holds the old, longer lead time, it could lead to unnecessary overstocking.

Incomplete data

This refers to missing data or gaps in data sets. For example, if some products' costs are missing, it would be impossible to calculate accurate total inventory cost.

Dirty data in supply chain planning can lead to myriad problems, hampering the ability to make accurate forecasts, plan effectively, manage inventory, and optimise logistics – all key functions of supply chain planning software. As we'll see in the next section, a foundation of dirty data can significantly restrict the ROI of these advanced tools and, more broadly, impede effective supply chain management.

3. Dirty Data: The Roadblock to Maximising Supply Chain ROI



As we've established, data quality is critical in effective supply chain planning. However, a foundation of dirty data can undermine the ROI from supply chain planning software, hampering its potential to drive strategic and operational efficiencies.

Dirty data can lead to several issues that limit supply chain ROI and can be characterised as waste. Waste removal has become a key issue in the development of optimal and lean supply chains. These limitations and waste include:

Inaccurate Forecasts: Dirty data can cause forecasting errors, leading to demand-supply mismatches. Overestimation of demand could result in excess inventory and increased holding costs, while underestimation could lead to stock-outs, lost sales, and diminished customer satisfaction.

Inefficient Inventory Management: Inaccurate inventory data can lead to both overstocking and understocking. Overstocking ties up capital and increases storage costs, while understocking can disrupt operations and harm customer relationships.

Suboptimal Route Planning: Inaccurate or outdated logistical data can lead to inefficient transportation routes and schedules. This inefficiency can increase fuel costs, wear and tear on vehicles, and delivery times.

Poor Decision Making: Dirty data can lead to poor strategic and operational decisions. Decisions based on incorrect, outdated, or inconsistent data are unlikely to yield the expected results and can result in wasted resources and missed opportunities.

These issues not only increase costs and decrease revenues but also make it difficult to accurately measure the ROI of supply chain planning software. After all, if the data driving the software is flawed, the resulting ROI calculations will be too.

The bottom line is that without clean, accurate, and up-to-date data, businesses cannot fully leverage the power of their supply chain planning software, nor can they accurately measure its ROI. In the next section, we'll explore additional complications that dirty data can introduce into supply chain operations.

4. Ripple Effects: Additional Supply Chain Complications Stemming from Dirty Data



Beyond the direct impact on return on investment from supply chain planning software, dirty data can spawn a host of additional complications within supply chain operations. These ripple effects further amplify the importance of maintaining high-quality foundational data.

1. Vendor Relationship Strains: Erroneous data can lead to misunderstandings or disagreements with suppliers, impacting negotiation, delivery schedules, and overall relationships.

2. Compliance Risks: Inaccurate or outdated data can create compliance risks, particularly in highly regulated industries where precise record-keeping is mandatory.

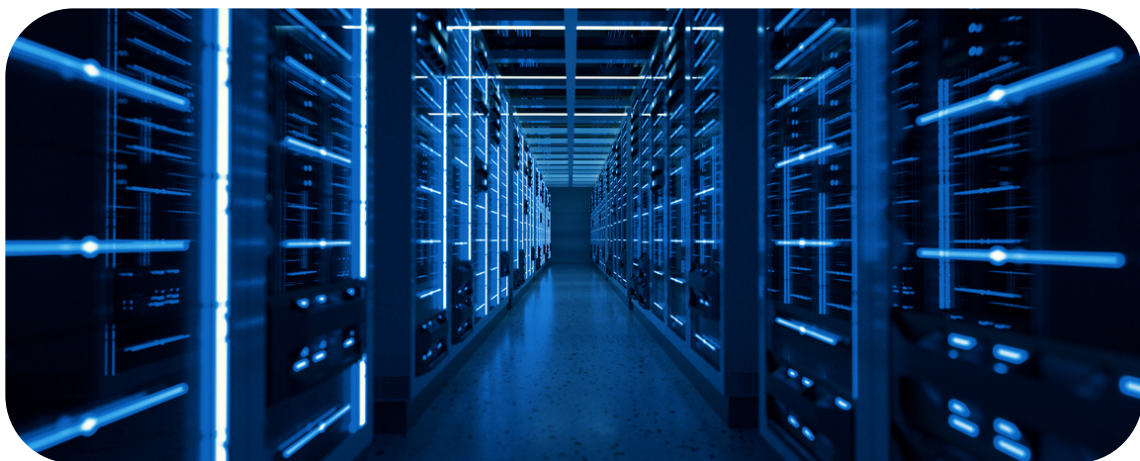
3. Inefficient Resource Allocation: Dirty data can lead to the misallocation of resources. For instance, excess stock can tie up warehouse space needed for other products, and incorrect demand forecasting can lead to understaffing or overstaffing.

4. Damaged Reputation: Errors in order fulfilment, caused by inaccurate inventory data, can lead to customer dissatisfaction and damage a company's reputation.

5. Inability to Leverage Advanced Analytics: Dirty data restricts a company's ability to use advanced analytics and artificial intelligence effectively. These technologies rely on accurate data to produce valuable insights.

6. Hindered Growth: Dirty data can also hinder a company's growth. The inability to accurately forecast demand or manage inventory can prevent a company from confidently making strategic growth decisions.

5. Achieving Clarity: Data Cleansing, Enrichment, and Comparison



In the era of data-driven decision making, maintaining the quality of foundational data is pivotal. This quality assurance can be achieved through the processes of data cleansing, enrichment, and comparison. Let's delve deeper into these processes and understand how they can significantly upgrade the value of your data.

Data Cleansing:

Data cleansing, or data cleaning, is the proactive process of identifying and rectifying inaccuracies within a dataset. The aim is to make data as error-free as possible, thereby enhancing its reliability. This process is not merely about erasing data; it's about spotting errors, filling gaps, removing duplicates, and standardising datasets for consistency.

The cleansing process involves:

1. De-duplication: Removing duplicate entries within the supply chain data that can skew inventory levels, inflate sales figures, or distort demand forecasts.

2. Error Correction: Spotting and fixing errors, such as a misentered delivery date or incorrect product specification, which could disrupt planning and operations.

3. Validation: Checking supply chain data against set rules or recognized standards to ensure its validity and usability.

4. Standardisation: Creating consistency across data, such as unit of measure, date formats, or location names, to enable accurate, seamless data analysis and reporting.

Data Enrichment:

Data enrichment is the process of refining and augmenting internal supply chain data with external information. This enhanced data provides deeper insights and aids in making more informed, strategic decisions.

Enrichment can include:

1. Third-party Integration: Incorporating external data, such as market trends, additional product attributes, images and KPIs that therefore supplement internal data and provide broader context for supply chain planning.

2. Data Linking: Combining related data from various sources, like integrating supplier performance data with inventory and procurement data, to generate a more holistic view of the supply chain.

3. Data Annotation: Adding explanatory notes or comments to the data to provide context, improving the clarity and usefulness of the data.

Data Comparison:

Data comparison involves contrasting different datasets to identify changes, inconsistencies, or anomalies. In supply chain management, it's essential for tracking trends, monitoring supplier performance, and verifying data accuracy.

Data comparison can be used for:

1. Change Detection: Monitoring variables like supplier lead times, freight costs, or demand trends over time to ensure that your supply chain planning is based on the most current data.

2. Consistency Check: Comparing data across various databases or systems to ensure consistency, crucial for coordinating operations across different facilities or departments.

3. Accuracy Verification: Cross-checking internal data with trusted external sources for verification can provide an additional layer of assurance in the data's reliability.

Employing these processes as part of a holistic data management strategy significantly enhances the quality and usefulness of supply chain data. The upcoming sections will explore how AICA can assist in these data services and how modern advancements like machine learning can streamline these processes, ultimately supporting more accurate, efficient, and effective supply chain operations.

6. AICA: Revolutionising Product Data Management with Advanced Technologies



AICA is a leading provider of product data management services, focusing on data cleansing, enrichment, and comparison.

AICA harnesses the power of Artificial Intelligence (AI) and Machine Learning (ML) to deliver a streamlined, automated solution that significantly minimises manual effort, leading to time and cost savings of up to 90% in product data management.

Advanced Data Cleansing:

AICA's product data cleansing service is meticulously designed to create a unified, consistent view of product data across your supply chain. It achieves this by eradicating incorrect values, validating data patterns and formats, and ensuring appropriate data types that are standardised across all MDM systems.

This rigorous cleansing process is crucial for maintaining accurate inventory records, reliable supplier databases, and dependable product specifications, which are fundamental to efficient supply chain operations.

Bespoke Data Enrichment:

The product data enrichment service offered by AICA goes beyond filling gaps. It enhances existing product information, making it more relevant and meaningful for supply chain analysts.

By supplementing missing or incomplete data fields, AICA bolsters your product data, thereby enriching your ability to make informed decisions about product procurement, inventory management, and demand forecasting.

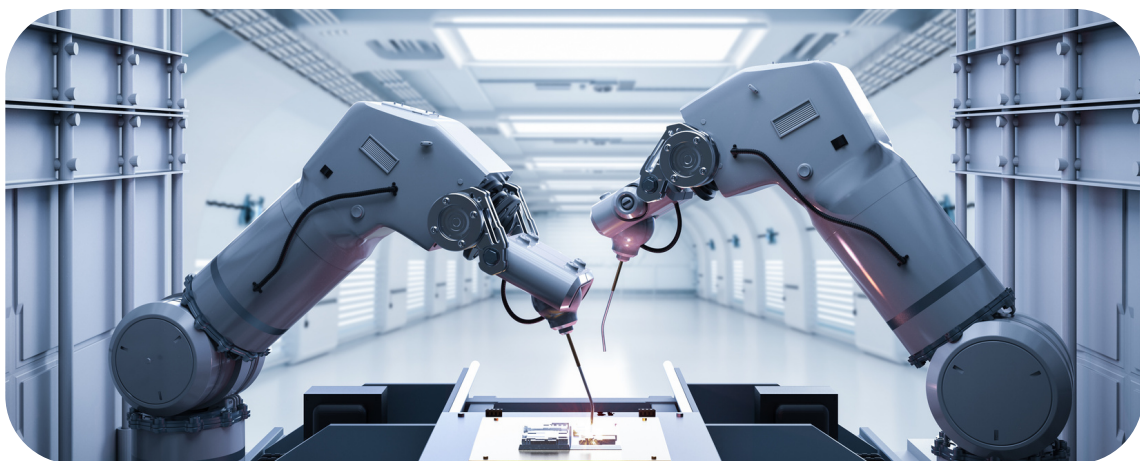
Intelligent Product Data Comparison:

AICA also excels in product data comparison, enabling businesses to compare products based on detailed technical specifications and prices. This intelligent comparison proves incredibly useful in procurement and tender processes, helping supply chain managers make cost-effective choices by identifying the most suitable suppliers based on product attributes and cost.

By offering a comprehensive suite of data services that dramatically reduce the time and cost of product data management, AICA presents a smart and efficient solution to the challenges of dirty data within supply chains.

In the next section, we will delve deeper into how machine learning algorithms play a pivotal role in automating these data cleansing and enrichment processes.

7. The Power of Automation: Harnessing Machine Learning for Efficient Data Management



In the rapidly advancing world of technology, automation is no longer a luxury but a necessity, especially when dealing with extensive datasets in supply chain management.

One of the primary drivers of this automation is Machine Learning (ML), a subset of Artificial Intelligence (AI) that enables systems to **learn and improve** from experience without being explicitly programmed.

In the context of data cleansing, enrichment, and comparison, ML algorithms can significantly enhance efficiency and accuracy. They can sift through vast volumes of data, identify patterns, learn from them, and make accurate predictions or decisions without any human intervention.

ML algorithms can automatically identify and rectify inaccuracies in data, drastically reducing the time spent on manual data cleansing. They can fill in missing information, enhance data relevance, and compare complex product data swiftly and precisely. This level of automation not only increases efficiency but also minimises the risk of human error, a common occurrence in manual data management.

The true power of ML, however, lies in its capability to learn and improve over time. As more data is processed, the algorithms become smarter and more efficient, providing increasingly accurate and valuable insights. This continuous learning process means that your supply chain management becomes more effective and efficient as time goes on, allowing for more proactive decision-making and better strategic planning.

8. AICA's ROI Calculator: Estimating Potential Savings from Data Management Initiatives

Recognising the need for businesses to measure the financial impact of effective data management, AICA has developed an innovative cost savings calculator. This tool allows organisations to estimate potential cost savings that could be realised from various data cleansing initiatives. To get a customised estimate for your organisation, a direct consultation with AICA is required.

The AICA cost savings calculator takes into account several key factors:

- The number of SKUs
- Total annual part purchases
- On-hand inventory
- Percentage of OEM items in the item master
- The number of maintenance team members

Using these inputs, the calculator makes several saving assumptions based on effective data cleansing, including:

- The percentage of duplicate value available for inventory reduction
- The percentage of annual purchases that would qualify for leverage opportunities
- The average percentage price reduction through purchase leverage opportunities
- The average hours that maintenance members would save per day
- The purchase price savings on OEM to MRO conversion

Moreover, the AICA cost savings calculator provides a comprehensive analysis of potential savings across various supply chain operations, including:

- **Duplication:** Estimates the average cost of item duplication, the duplicate value available for inventory reduction, and the total annual duplication cost savings.
- **Procurement:** Identifies the value of annual purchases that would qualify for leverage opportunities and the total annual purchase price reduction.
- **Maintenance:** Calculates the total number of maintenance hours saved per day and per year, as well as the total annual maintenance cost savings.
- **OEM Conversion:** Assesses the savings from OEM to MRO interchanging, the purchase price saving on OEM to MRO conversion, and the total annual OEM conversion cost savings.

9. Conclusion: Making the Most Out of Your Supply Chain Planning Software Investment



High-quality, accurate data is the backbone of any effective supply chain planning software. As you've learnt, dirty data reduces your ability to make informed decisions, undermining the efficiency and reliability of your supply chain. As a result, the anticipated return on investment in supply chain planning software becomes elusive.

The role of advanced data management solutions like those provided by AICA becomes paramount in this scenario. By applying ML algorithms for data cleansing, enrichment, and comparison, AICA ensures your data is reliable, relevant, and readily usable for effective supply chain planning. With an AICA's cost savings calculator, the potential savings and ROI from these data management initiatives can be estimated, allowing data cleansing to become a quantitative solution.

In the end, the successful execution of supply chain planning depends significantly on the quality of foundational data. By investing in proper data management, businesses can maximise the ROI of their supply chain planning software, ensuring that their supply chain operates efficiently, effectively, and most importantly, profitably.

Remember, the quality of your decisions is only as good as the data you base them on. Don't let dirty data compromise your supply chain planning. Contact AICA today to discover how clean, enriched data can drive up the ROI of your supply chain planning software.