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Impact of Subpar Master Data Quality on Business Operations and Decision-Making

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Abstract

In the digital age, data is a critical asset that drives business operations, strategy, and innovation. Master Data—core business data shared across the organization—forms the backbone of any data-driven decision-making process. However, subpar Master Data Quality (MDQ) can disrupt business processes, undermine decision-making capabilities, and lead to significant financial and reputational risks. This paper explores the impact of subpar MDQ on business processes and decision-making, providing a comprehensive analysis of common data quality issues explaining through the scenarios that happens in an organization that operates with 3PL on its logistics, their consequences, and recommendations to enhance data governance and quality.

Keywords: Master data quality, Business partner, master data duplicates, Redundancy, Bank duplicates, supplier duplicates, Hazardous materials, sensitivity, inconsistency, inaccuracy, incompleteness, redundancy, replication issue, upstream, downstream, MDQ issues, sub-par master data, planning data missing, data missing, MDG, MDM, supply chain common issues, data stewards, stewards training, Financial loss due to master data, cost center, profit center replications, customer experience issue due to master data, delays due to master data.

1. Introduction

Master Data is the foundational element for operational, transactional, and analytical systems within an organization. This includes essential entities such as customers, products, suppliers, and employees. When Master Data is accurate and consistent, it enables efficient operations and reliable decision-making. Conversely, subpar Master Data Quality can lead to operational inefficiencies, compliance failures, and suboptimal strategic decisions. This paper addresses the repercussions of MDQ issues, emphasizing the need for robust data governance practices.

2. Problem Statement

Master Data is central to an organization’s information architecture, impacting nearly every aspect of business operations and decision-making. subpar Master Data Quality can impair an organization's ability to make informed, timely, and effective decisions. The footprint of subpar Master Data Quality extends across the organization, causing operational inefficiencies, increased costs, and missed business opportunities. Inconsistent, inaccurate, or incomplete Master Data leads to unreliable reporting and analysis, resulting in misguided strategic initiatives. As organizations strive to leverage data for competitive advantage, ensuring the integrity and quality of Master Data is critical to minimizing risks and maximizing value.

3. Understanding Master Data Quality

3.1. Definition of Master Data

In general Master data are entities which have a core set of attributes & identifiers which drives certain business functions and dictates the purpose of the transactions & to be precise more stable/unchanging values for duration of time.

Master data entities are like Product/Material, Customer, Vendor, Business partner, Cost center, profit center, In-house cash clearing account, employees, General ledger, Customer hierarchies and other user defined master data entities.

Master Data represents the critical business information that supports key operations and decision-making processes. This data is utilized across various business functions and systems, making its quality crucial for ensuring consistency and coherence in business operations (Loshin, 2010).

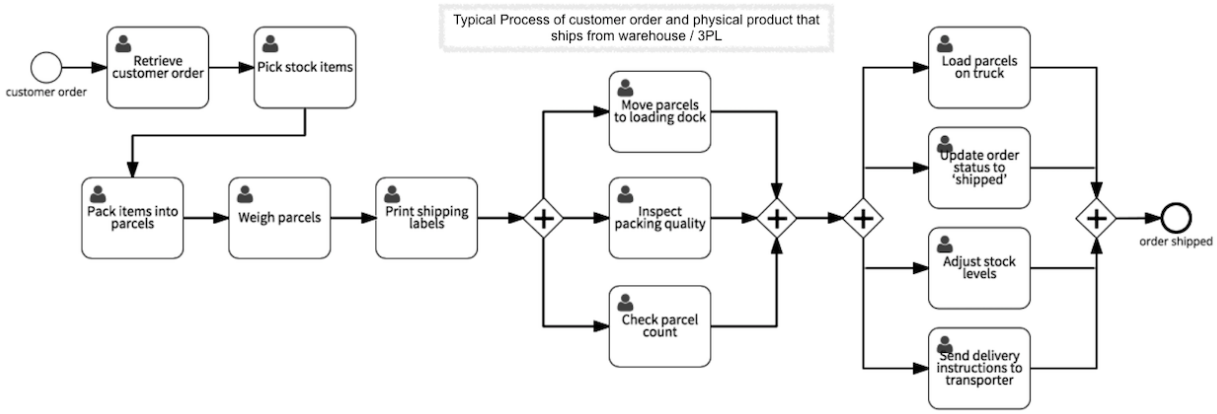
3.2. Importance of Master Data Quality

High-quality Master Data ensures that information used across business processes is accurate, consistent, and reliable. Good Master Data Quality enhances operational efficiency, reduces risks, and supports better decision-making. subpar MDQ, on the other hand, can lead to process disruptions, compliance issues, and flawed business decisions (Redman, 2016; Berson & Dubov, 2011).

4. Common Issues in Master Data Quality

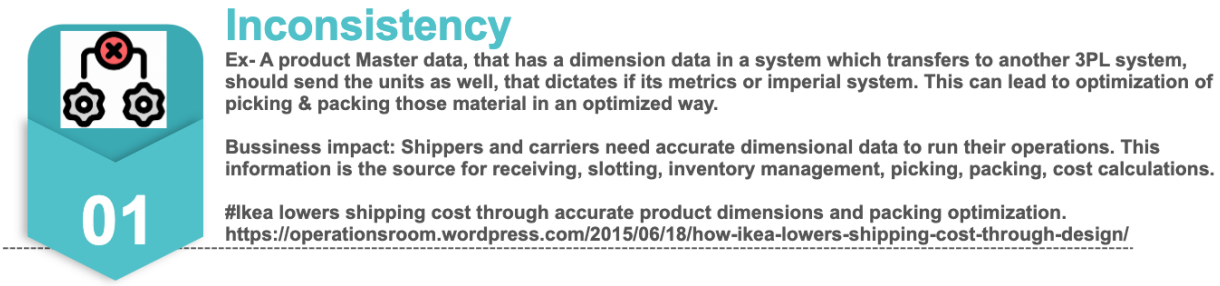
We will explain the common master data issues with the scenarios that happen within a retail company that uses 3PL(3rd Party Logistics) and a shipper outside of its network, which most retail or manufacturing companies now prefer with the higher margin and efficient logistics since the post-pandemic scenarios of supply chain crunch. Below diagram 1 would show the macro level operations within 3PL. Will walkthrough how our master data quality impacts this environment and that costs business in above discussed ways.

Diagram 1: Process of customer's product order and physical shipping from the 3PL/warehouse.



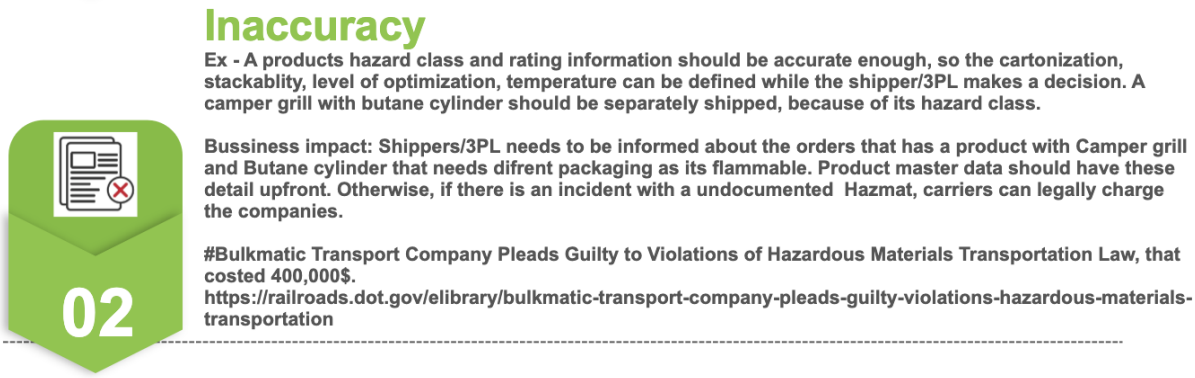
4.1. Inconsistency

Inconsistent Master Data arises when there are discrepancies in how data is represented across different systems. This can lead to confusion and errors in reporting and decision-making. For example, a customer name or address might be recorded differently in various databases, complicating data consolidation and analysis (Dyché, 2012; Otto & Wende, 2007).



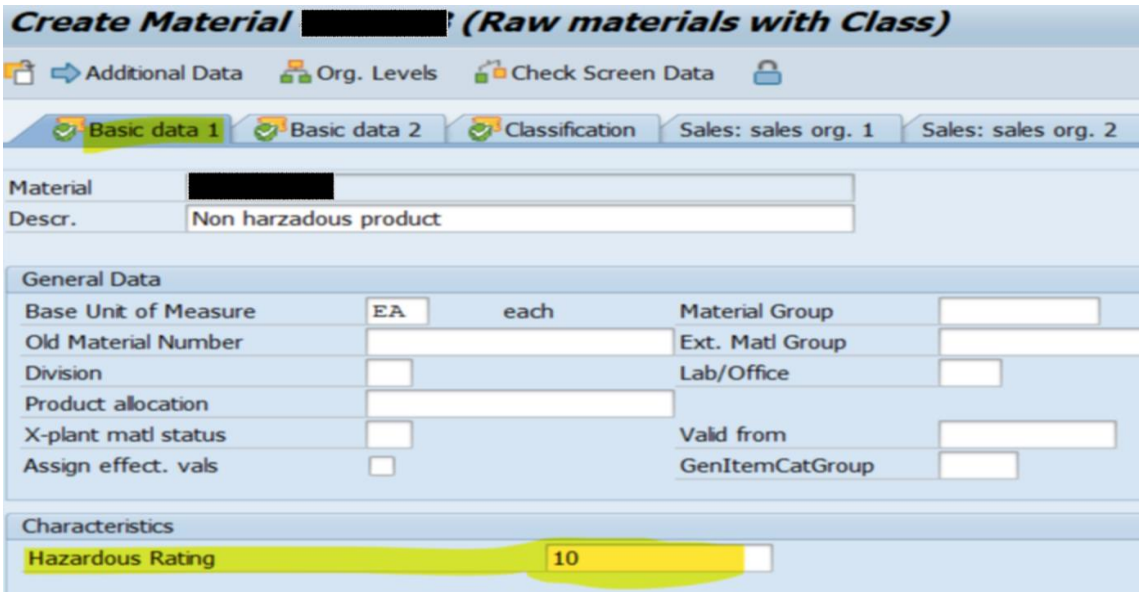
4.2. Inaccuracy

Inaccurate data refers to incorrect or erroneous data, which can lead to misinformed decisions. Common sources of inaccuracies include human errors during data entry, outdated information, and insufficient validation processes (Otto & Reichert, 2018; Berson & Dubov, 2011).

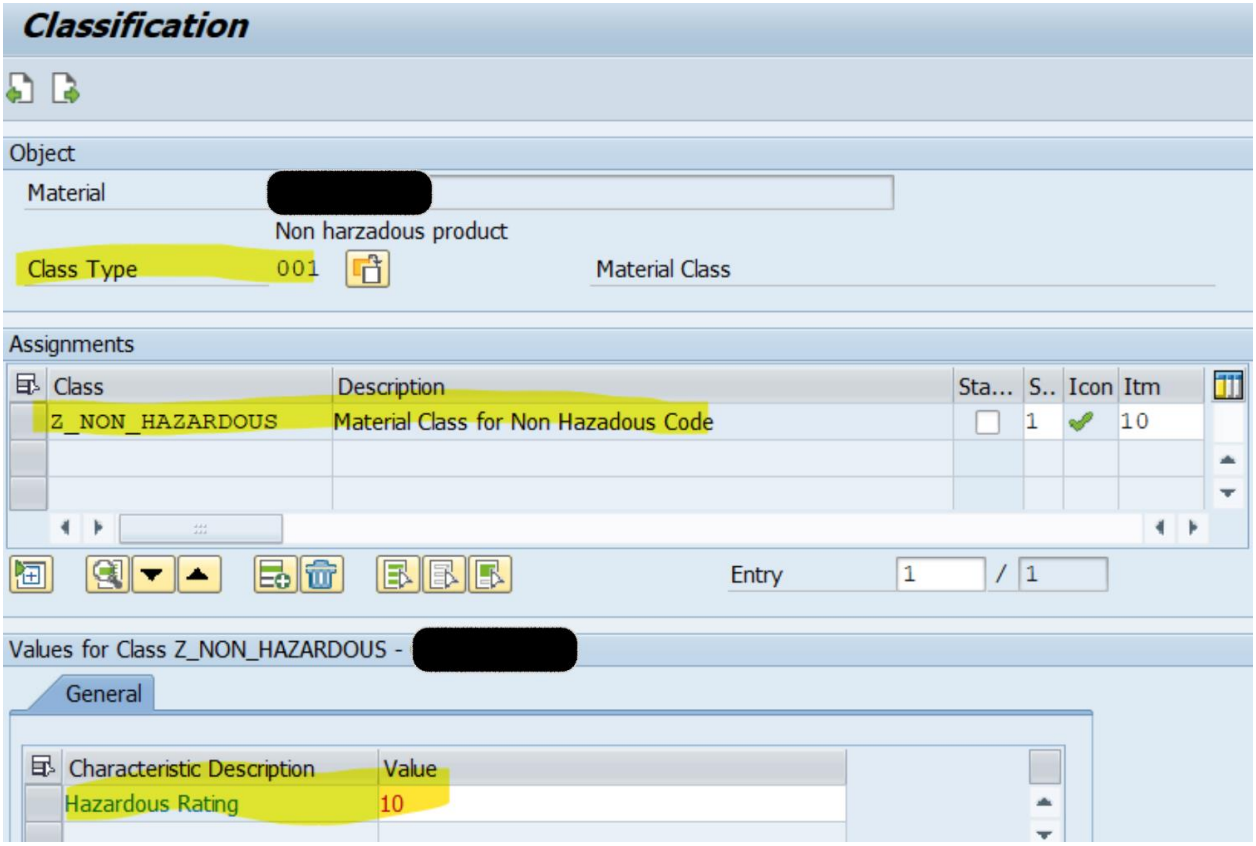


Many ERP products like SAP-MDG allow Hazmat to be defined with Classes that's needed for the regulatory and compliance purpose. Hazmat values for products had to be defined and sent to 3PL systems to recognize it while doing the cartonization and pelleting. Below picture ‘SAP Material creation’ and ‘SAP Material classification definition’’

SAP Material creation

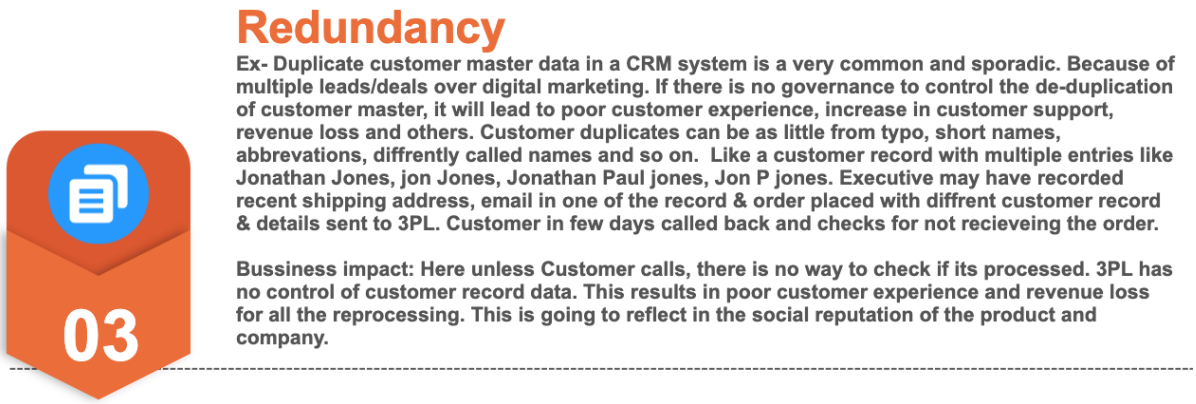


SAP Material classification definition



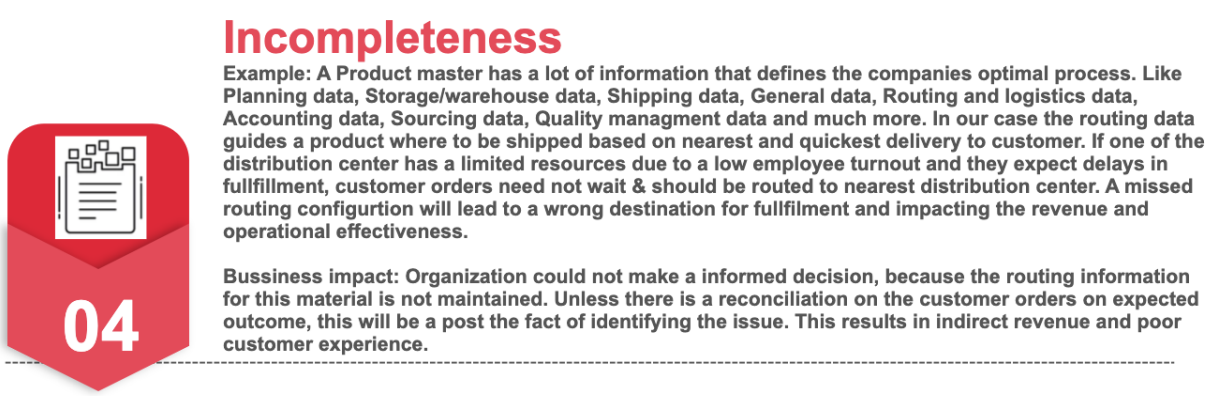
4.3. Redundancy

Data redundancy occurs when the same information is stored in multiple locations, often leading to inconsistencies and errors. Redundancy can increase storage costs and complicate data management (Loshin, 2010; Silvola et al., 2011).



4.4. Incompleteness

Incomplete data lacks necessary information, which can impede business processes and decision-making. For instance, missing product attributes can disrupt inventory management, while incomplete customer information can hinder customer service and marketing efforts (Redman, 2016; Helfert & Heinrich, 2003).



5. Impact of subpar Master Data Quality on Business Processes

5.1. Operational Efficiency

subpar MDQ can disrupt day-to-day operations, causing delays, errors, and additional work. Inconsistent or inaccurate data may lead to inventory mismatches, incorrect shipments, and billing errors, negatively impacting operational efficiency and customer satisfaction (Otto & Reichert, 2018; Loshin, 2010).

5.2. Supply Chain Management

Effective supply chain management relies on accurate and timely data. subpar MDQ can cause inventory shortages or overstocking, incorrect supplier information, and delayed shipments, resulting in increased costs and customer dissatisfaction (Silvola et al., 2011; Helfert & Heinrich, 2003).

5.3. Customer Relationship Management

High-quality customer data is crucial for delivering personalized customer experiences and effective CRM strategies. Inaccurate or incomplete customer data can lead to communication issues, ineffective marketing campaigns, and subpar customer service, which can damage customer relationships and brand reputation (Dyché, 2012; Berson & Dubov, 2011).

5.4. Compliance and Risk Management

Organizations must comply with various regulations that require accurate and complete data reporting. subpar MDQ can lead to compliance failures, resulting in legal penalties, fines, and damage to the organization's reputation. Moreover, subpar data quality can hinder risk management efforts, making it difficult to identify and mitigate potential risks (Radcliffe, 2007; Silvola et al., 2011).

6. Impact on Decision-Making

6.1. Strategic Decisions

Strategic decision-making relies on accurate data analysis. subpar MDQ can lead to incorrect insights, affecting long-term strategic planning. For example, inaccurate market data can result in misguided market entry strategies, product launches, or mergers and acquisitions (Redman, 2016; Helfert & Heinrich, 2003).

6.2. Financial Planning and Analysis

Accurate financial data is essential for budgeting, forecasting, and financial reporting. subpar MDQ can lead to errors in financial statements, misallocation of resources, and flawed investment decisions, ultimately impacting the financial health of the organization (Otto & Reichert, 2018; Loshin, 2010).

6.3. Marketing and Sales Strategies

Marketing and sales decisions are increasingly data-driven. subpar MDQ can lead to ineffective targeting, reduced campaign effectiveness, and lost sales opportunities. Accurate customer and market data are

crucial for developing and executing successful marketing and sales strategies (Dyché, 2012; Berson & Dubov, 2011).

7. Case Studies

7.1. Case Study 1: Operational Disruptions in Manufacturing

A leading manufacturing company faced significant operational disruptions due to subpar MDQ. Inaccurate product data led to frequent production errors, resulting in increased costs and delays. By implementing a robust data governance framework and improving data quality, the company was able to enhance its operational efficiency and reduce costs (Loshin, 2010; Redman, 2016).

7.2. Case Study 2: Customer Satisfaction Decline in Retail

A major retail company experienced a decline in customer satisfaction due to subpar-quality customer data. Inconsistent and incomplete customer information led to ineffective marketing campaigns and subpar customer service. By investing in data quality management tools and processes, the company was able to improve its CRM strategies, leading to increased customer satisfaction and loyalty (Dyché, 2012; Berson & Dubov, 2011).

8. Strategies to Improve Master Data Quality

8.1. SAP MDG Data Quality Checks and Interventions

Implementing SAP Master Data Governance (MDG) can significantly enhance Master Data Quality by providing a centralized approach to managing and maintaining critical data. The following strategies can be employed to improve MDQ using SAP MDG:

1. **Data Quality Rules Implementation**: Define and implement data quality rules that enforce consistency, accuracy, and completeness. These rules should be aligned with business standards and regulatory requirements. SAP MDG can automate the enforcement of these rules, reducing manual errors and ensuring compliance.
2. **Automated Data Validation and Cleansing**: Use SAP MDG's data validation and cleansing capabilities to identify and correct data quality issues in real time. This includes checking for duplicates, validating data against predefined standards, and cleansing data to remove inaccuracies and inconsistencies.
3. **Workflow Automation for Data Management**: Implement automated workflows for data approval and change management. This ensures that all changes to Master Data are reviewed, approved, and documented, maintaining data integrity and traceability.
4. **Data Stewardship and Governance**: Establish clear roles and responsibilities for data stewardship within the organization. SAP MDG provides tools for monitoring data quality and managing data stewards' activities, ensuring that data quality is continuously monitored and improved.
5. **Regular Data Quality Audits**: Conduct regular audits of Master Data using SAP MDG's reporting and analytics tools. These audits help identify areas of improvement and ensure that data quality standards are being met consistently.

8.2. Alternative Strategies

While SAP MDG provides a comprehensive solution for managing Master Data Quality, organizations can also consider alternative strategies to complement or substitute SAP MDG:

1. **Data Quality Management Software**: Use specialized data quality management tools like Informatica, Talend, or Trillium Software that offer advanced data profiling, cleansing, and monitoring

capabilities. Beyond using these tools, like we discussed, strategy and environment has to be analyzed to see which of these tools could be helpful. Strategies should pave a way to address the source of data quality and rule engines.

2. **Manual Data Governance Frameworks**: Develop and implement manual data governance frameworks tailored to the organization's specific needs. This involves creating policies, procedures, and guidelines for data quality management without relying on automated tools. Unless the env has a very complex scenario to be addressed, a manual framework is not needed, as it will not meet the ROI (return of investment). Also the maintenance cost goes up after implementations.
3. **Training and Change Management**: Invest in training programs for employees to increase awareness and skills related to data quality. Change management initiatives can help foster a culture of data quality and encourage employees to adhere to data governance standards. Again this is also one of the guard-rails to enforce the governance.

9. Conclusion

Subpar Master Data Quality has far-reaching implications for business processes and decision-making. It can lead to operational inefficiencies, compliance failures, and flawed strategic decisions, ultimately impacting an organization's profitability and competitiveness. By understanding the causes and consequences of subpar MDQ, organizations can implement effective data governance and quality management practices, ensuring that their Master Data supports, rather than hinders, their business objectives.

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