Information Management Report

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Project Deliverables:

A.Target’s Data Strategy

Target's data strategy leans more toward offensive objectives (around 75%) by focusing on improving customer engagement, operational efficiency, and real-time insights. However, strong defensive measures (around 25%) remain crucial, ensuring data security, compliance, and operational consistency across global operations. This balanced approach will support Target’s scalability, operational efficiency, and ability to maintain a competitive edge in the retail industry.

B.4 Data Models (3 transactional applications + 1 data warehouse)

In our report for Target, we assume these key Transaction Management Systems and Their Data Structures mentioned below :

1. **Sales and Payment Processing System**
2. **Customer Loyalty and Engagement System**
3. **Order Fulfillment and Inventory Management System**

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1. Sales and Payment Processing System

Data Model

The Sales and Payment Processing System manages customer orders, payments, and invoices. Below is the data model:

1. **Customer**: Stores customer information such as name, contact details, and address.
2. **SalesOrder**: Tracks customer orders, including order dates and statuses.
3. **SalesOrderItem**: Links products to specific sales orders, with details about quantities and prices.
4. **Product**: Stores product details such as name, description, price, and stock.
5. **Payment**: Tracks payment details for each sales order, including payment methods, dates, and amounts.
6. **PaymentMethod**: Manages various payment options (e.g., credit card, cash).
7. **Invoice**: Tracks invoices generated for completed sales orders.

E.Target’s Data security matrix

	Inventory Manager	Warehouse Staff	Procurement Officer	Store Manager	Sales Associate	Finance Analyst	IT Admin	Auditor
Products	Create, Read, Update, Delete	Read	Create, Read, Update	Read	Read	Read	Create, Read, Update, Delete	Read
Warehouse	Create, Read, Update, Delete	Read	Read	Read	Read	Read	Create, Read, Update, Delete	Read
Inventory	Create, Read, Update	Read, Update	No Access	Read	No Access	Read	Create, Read, Update, Delete	Read
Suppliers	Create, Read, Update, Delete	No Access	Create, Read, Update, Delete	No Access	No Access	Read	Create, Read, Update, Delete	Read
ProductSupplier	Create, Read, Update, Delete	No Access	Create, Read, Update	No Access	No Access	No Access	Create, Read, Update, Delete	Read
Orders	Read, Update	No Access	Create, Read, Update	Read	No Access	No Access	Create, Read, Update, Delete	Read
OrderDetails	Create, Read, Update	No Access	Create, Read	Read	No Access	No Access	Create, Read, Update, Delete	Read
Deliveries	Create, Read, Update	Create, Read	No Access	Read	No Access	No Access	Create, Read, Update, Delete	Read

Role Descriptions

- Inventory Manager: Responsible for managing all aspects of inventory, including products, suppliers, orders, and deliveries. This role has comprehensive access for creating, reading, updating, and deleting data.

- Warehouse Staff: Primarily focused on operational aspects of inventory management, including reading inventory levels and updating stock counts but does not have access to sensitive supplier data.

- Procurement Officer: Manages supplier relationships and orders from suppliers. This role can create and update supplier data, manage product-supplier relationships, and create purchase orders.

- Store Manager: Oversees the store's operations and inventory management, with access primarily to product and inventory data but limited access to sensitive supplier or order details.

- Sales Associate: Engaged in customer interactions and sales processes. This role has read access to product information and limited access to inventory and order data.

- Finance Analyst: Responsible for financial oversight, including supplier payments and financial reporting. This role has read access to most tables but limited to no access for creating or updating data.

- IT Administrator: Responsible for managing the database and system configurations, which involves extensive access rights for maintenance and administrative tasks.

- Auditor: Focuses on compliance and reporting. This role has read access to all tables for the purpose of conducting audits and ensuring data integrity.

F.Target's Data Governance Implementation

For Target, an effective data governance mechanism would include the following:

1. Data Stewardship and Ownership: Assign Data Stewards in key business units (e.g., supply chain, sales) to manage data quality, and Data Owners for accountability across the organization.
2. Data Quality Management: Implement automated tools to monitor data accuracy and consistency, with validation protocols and periodic audits.
3. Data Security and Privacy: Ensure compliance with privacy laws (e.g., GDPR, CCPA) through encryption, role-based access controls, and multi-factor authentication.
4. Master Data Management (MDM): Centralize data in an MDM system to create a single source of truth for products, suppliers, and customers, reducing data silos.
5. Metadata Management: Use a metadata system to catalog key data assets for easier access and interpretation.
6. Data Lifecycle Management: Define data retention policies and track data lineage to ensure compliance and cost-efficient data storage.
7. Data Governance Council: Establish a council with cross-functional representation to set policies and address data issues.
8. Training and Culture: Provide ongoing training to promote data literacy and adherence to governance policies.

Rationale:

This approach ensures scalability, compliance with global privacy laws, and operational efficiency, while supporting Target's data-driven decision-making and maintaining data security across its global operations.

G. Lessons Learned

1. What did you learn?

A significant learning point from this project was the importance of balancing offensive and defensive data strategies. Target's data strategy emphasizes offensive objectives (customer engagement, operational efficiency, and real-time insights) while ensuring a robust defense (data security, compliance, and consistency). This dual focus is essential for companies to scale effectively while managing risks.

Also, working with Target's four data models (3 transactional and 1 data warehouse) provided practical insights into how large-scale organizations handle high volumes of data. The separation of transactional applications from the data warehouse highlights how structured data is processed efficiently for operational tasks and stored for analytical purposes.

2. What was most valuable?

Developing and working on Target's data security matrix was valuable. It demonstrated the importance of assigning differnet role with different control privilges. This activity highlighted how data security protocols are tailored to the operational needs of different users while maintaining high security standards.

Moreover, learning how Target ensures data consistency and quality through MDM systems and strong governance practices was critical. Target's ability to manage its massive data repositories through stewardship, quality management, and compliance protocols demonstrates the power of centralized and well-structured data governance frameworks.

3. How can you use this learning going forward?

The project emphasized the use of advanced tools (NLP, sentiment analysis, computer vision) to handle semi-structured and unstructured data. These techniques can be applied in future projects that involve analyzing customer feedback, product trends, or security footage to derive actionable insights.

4. What are additional opportunities for learning that this project did not capture?

While the project provided a good overview of Target's real-time data insights, it could have dived deeper into the specifics of real-time processing, such as stream processing and event-driven architectures that manage data as it is generated, especially in high-transaction retail environments.

5. How can we change this project to capture these opportunities?

Future iterations of this project could incorporate a detailed exploration of how Target processes real-time data streams, using technologies like Kafka or Flink. Additionally, incorporating an AI-driven model (e.g., demand forecasting using predictive analytics) would add depth to understanding Target's data strategy.