

DATA WAREHOUSE RECOMMENDATION

This document contains a Warehouse recommendation for Avocados2Go, accompanied with the business requirements and necessary dimension details for their subsystems.

BULLISH CONSULTING, LLP

Group 2 Consultants

Kishore
Vlothuge@buffalo.edu

Saloni Topiwaala
Salonypr@buffalo.edu

Shruti Bhatnagar
shrutibh@buffalo.edu

Business Requirements for Avacado2go

Avocado2go's company is a large retail organization with over 50 stores(1 in each state) and an e-commerce website. Each business channel has a wide range of products that they sell, like fresh produce directly from the Farmer's market and merchandise like Avocado tools, T-shirts, keychains, etc.

From the information about the system detail provided to us by Avocados2Go's IT department, we find that the team manages a large variety of database systems, a cloud-based Human resource system, and data in the form of a spreadsheet. Though these systems can be quick, the primary issue is that they are not structured to do analysis well. The problems that we identified through business requirement gathering are that there are a lot of data inconsistencies, and there is no surety if all of the systems are consistent. All the stores are working in silos, and it becomes difficult to measure the growth and inaccuracies in the system. For instance, to generate a Sales report, it is necessary to query data from each system separately, get information from each store and consolidate it, which is time-consuming. The manual integration of the report is prone to have consistency risks, essentially making it unusable.

The business goal is to expand business operations soon into a different country such as Europe and to have a holistic view of the Sales and Sales-based metrics; we have decided to design a data warehouse using Kimball's dimensional modelling approach. Our data warehouse project will utilize existing facilities and databases, bringing them together and using their strengths in new ways. Our data warehouse will be a central, logical site that stores all the data from different sources like the retail transaction system, Customer relationship management system, store information, Inventory management system and all others, complementing Avocado2go's business needs.

Kimball data warehouse design is described as bottom-up in which dimensional data marts are first created to provide reporting and analytical capabilities for specific business areas such as "Sales". These data marts are eventually integrated to create a data warehouse using a bus architecture consisting of conformed dimensions between all the data marts. The primary feature of this design is that information will be more structured and consistent. Moreover, Kimball's approach relatively takes less time to implement, it is more scalable, and the data integration requirement is focused on the particular business area.

The broad scope of activities that we would take are listed below:

- Extracting data from all the disparate data sources like the Retail transaction system, Customer relationship management system, Store information etc
- Cleansing and preparing data for efficient decision making to ensure data consistency in the data warehouse
- Maintaining the data consistency for proper storage and extraction.
- Accessing and analyzing data using a variety of analytical tools.
- Providing both summarized data and a dashboard developed through the analytical tools that would help in data-driven decisions.

Though the data warehouse will be designed, primarily giving benefits of timelier data to make strategic decisions for the company. However, they have some drawbacks as well. The significant limitations that would be faced in the future by our Datawarehouse are :

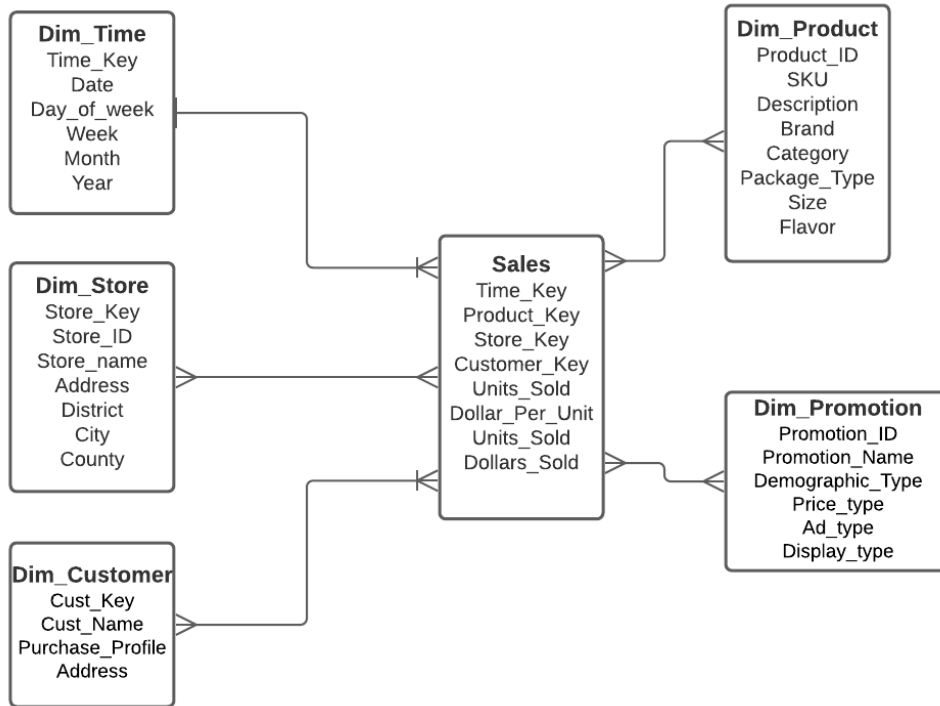
- Data collected from multiple sources: Across listed 8 dimensions in our enterprise data matrix, data will be consolidated from atleast 6 different sources including as primary as Spreadsheets to sophisticated such as Database systems. It will be task to maintain consistency.
- Requirement of maintainence systems: This Warehouse involves two different sources: Avocado vendors and Avocado merchandise vendors, leading to an intricate (but hopefully) sophisticated data integration environment. However, the main challenge there would be maintainece of such a system including various routine checks.
- Additional Visualization and BI software requirements: Another future limitation may be the need of visualization tools to actualize Warehouse operations in the Organization. Business Intelligence operations depend on the efficiency of the warehouse and are an added benefit to materializing the power of efficient and relevant data access across various systems.

Outcomes

- Increasing Productivity: Unifying all the different data sources throughout will increase the efficiency to fetch the desired data and on top of that using a reporting is much easier in which there is no need for pivoting, dealing with complex data transformations.
- Provides Competitive Advantage: once the data warehouse management system is set up, Avacados2go will have a holistic view over the current standings, evaluating opportunities and risks, perspective clients and evaluating competition.
- Generates Higher ROI: Studies show that the companies experience higher revenues and cost savings than those that haven't invested in Data warehouse management systems.
- Enhances data quality and consistency: The data can be present in different formats in different places. With the help of Data warehouse, the entire data can be converted to one format using ETL.

Appendix

1. ER Diagram – Star schema



2. ENTERPRISE BUS MATRIX

Business Processes	Date	Product	Warehouse	Store	Promotion	Customer	Employee	Order
Issue Purchase orders	X	X	X	X			X	X
Issue customer returns	X	X	X	X			X	X
Issue Cancellation on orders	X	X	X	X			X	X
Receive Warehouse Deliverables	X	X	X	X			X	
Retail sales	X	X		X	X	X	X	X
Retail sales forecast	X	X		X				
Store inventory	X	X		X				
Customer engagement	X	X	X			X	X	
Customer retention	X	X	X			X	X	
Customer issues	X	X	X			X	X	
Run payroll	X			X			X	

Business Processes	Date	Product	Warehouse	Store	Promotion	Customer	Employee	Order
Manage attendance and clock in hours	X			X			X	
Automated Approvals for sick leaves, training etc	X			X			X	
Retail promotion tracking	X	X		X	X			
Send Warehouse deliverables	X	X	X	X				
Warehouse inventory for merchandise	X	X	X	X				
Vendor inventory for Avocado	X	X	X	X				
Send Inventory deliverables	X		X					
Delivery process management	X	X	X	X				

3. Interview Questions

- What are the different business processes within the various segments of Avocados?
- Please dig deep into the typical workflow analysis which will help us understand how various segments of the business function.
- Can you please help us understand the possible areas where data is currently being siloed within various segments of the business?
- What are the major pain points associated with the current business processes?
- We want to know if this business is customer-driven or product-driven, this could help us go with the right type of architecture for the warehouse.
- How many stakeholders are involved (Direct and Indirect) that could potentially impact the performance and scalability of the Warehouse?