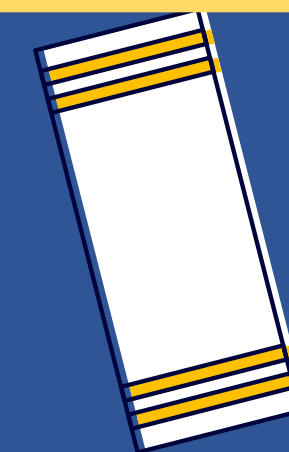
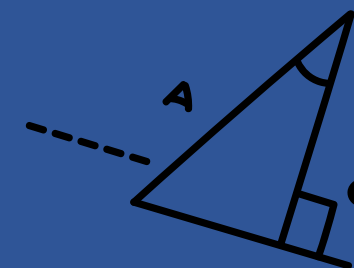


# WELCOME TO OUR PRESENTATION

Here is where your presentation begins





UNIVERSITY OF ECONOMICS AND LAW  
FACULTY OF INFORMATION SYSTEMS



# FINAL PROJECT REPORT

**PROJECT NAME:**

**“ BUSINESS INTELLIGENCE SOLUTIONS FOR PURCHASING  
PROCESS OF ADVENTURE WORKS CYCLE “**

**Lecturer:** MSC. Nguyen Van Ho

**Technical Lecturer:** MSC. Nguyen Van Tuyen

**Tutor:** Nguyen Anh Nhat

**Subject:** Business Intelligence

**Subject code:** 212MI3305

**Conducted by** Group 4

# GROUP 4 - OTTO'S MEMBERS

Core team members

2022



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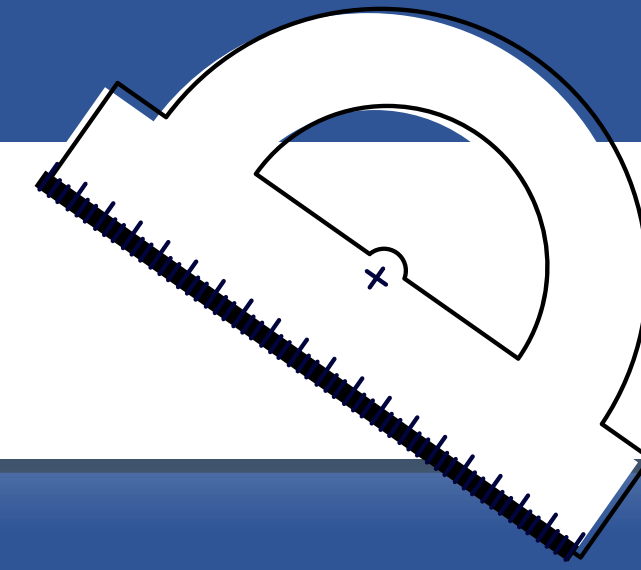
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**Nguyen Thi  
Duyen**

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Introduction to AWC Company Database

01

## Business Requirements

Analysis of AWC's requirements

02

## Dashboard

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## Data Warehouse Building

Schema Design  
Data used

04

## SSAS Analysis

Building cube  
Building KPIs system

06

## Conclusion



A global and multinational manufacturing company that sells bicycle also provides accessories, clothing, and components

### United Kingdom

2003	2004
5.683	4.232

### United State

2003	2004
27.265	14.631

### Canada

2003	2004
4.721	2.278



### Canada

2003	2004
4.721	2.278

### France

2003	2004
3.915	2.576

### Australia

2003	2004
2.412	1.917

Adventure Works Cycles Product Orders by Country/Region



## ADVENTURE WORKS CYCLE

### 2 *Business models*

- Retail stores
- Internet sales



**290 EMPLOYEES**



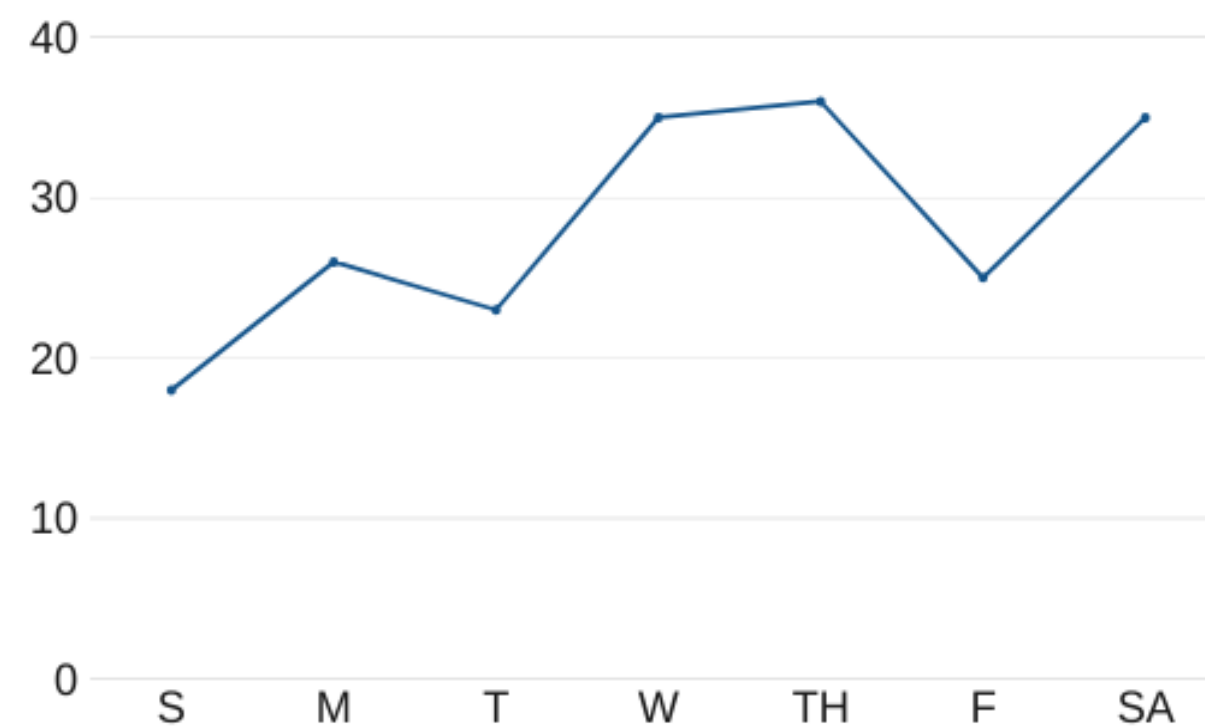
**700 STORES**



**19000  
INDIVIDUALS**



**100 VENDORS  
COMPANIES**



### Broaden market share

- Targeting sales to the best customers



### Reducing the cost of sales

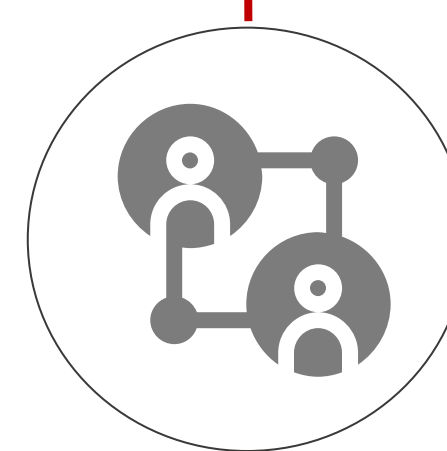
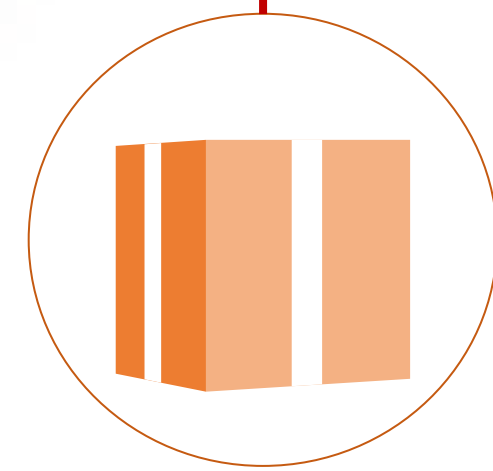
- Extending the product availability

# INTRODUCTION



- **Database:** AdventureWorks Database which supports standard online transaction processing scenarios for a fictitious bicycle manufacturer
- **OLTP Database version:** 2014.
- **Sample Data Warehouse version:** 2014.
- **Subsystem:** Purchasing
- **Scope of the project:** support the Purchasing department in product purchasing process in an effective and efficient way.

## BUSINESS REQUIREMENTS



Stock control	Product Quality Management	Vendors selection	Monthly report	Ship Method selection
Reduce the costs of holding stock while ensuring to meet the customer's demand and the required quantity of goods	Quality control protocols may lower the inspection costs and use your resources in a more cost-effective manner.	The supplier assessment process benefits of finding low-risk sources of high-quality goods and services plus long-term business relationships	Generate monthly comparison reports and update prices regularly to reinforce smart purchasing strategies.	Choosing the most efficient and effective shipping method to ensure the company can have the cost as low as possible.



## PROJECT IMPLEMENTATION

### DETERMINE BUSINESS OBJECTIVES

Define the scope and desired outcome

### INFORMATION COLLECTION & ANALYSIS

Collect customer requirement

### IDENTIFY CORE BUSINESS PROCESS

BI solution for Purchasing process



### CONCEPTUAL DATA MODEL CONTRUCTION

Galaxy schema

### DATA SOURCE & DATA TRANSFORMATION

AWC database  
ETL process

### DATA VISUALIZATION & SOLUTIONS

Dashboard  
Recommendation



## FACT TABLE IDENTIFICATION

### FactProductVendor

ProductVendorKey  
ProductKey  
VendorKey  
AverageLeadTime  
StandardPrice  
LastReceiptCost  
LastReceiptDate  
MinOrderQty  
MaxOrderQty  
OnOrderQty  
UnitMeasureCode  
ProductName  
VendorName  
CreditRating  
PreferredVendorStatus  
ActiveFlag  
ModifiedDate

### FactProductInventory

ProductInventoryKey  
LocationKey  
ProductKey  
LocationName  
Shelf  
Bin  
Quantity  
ModifiedDate  
SafetyStockLevel  
ReorderPoint

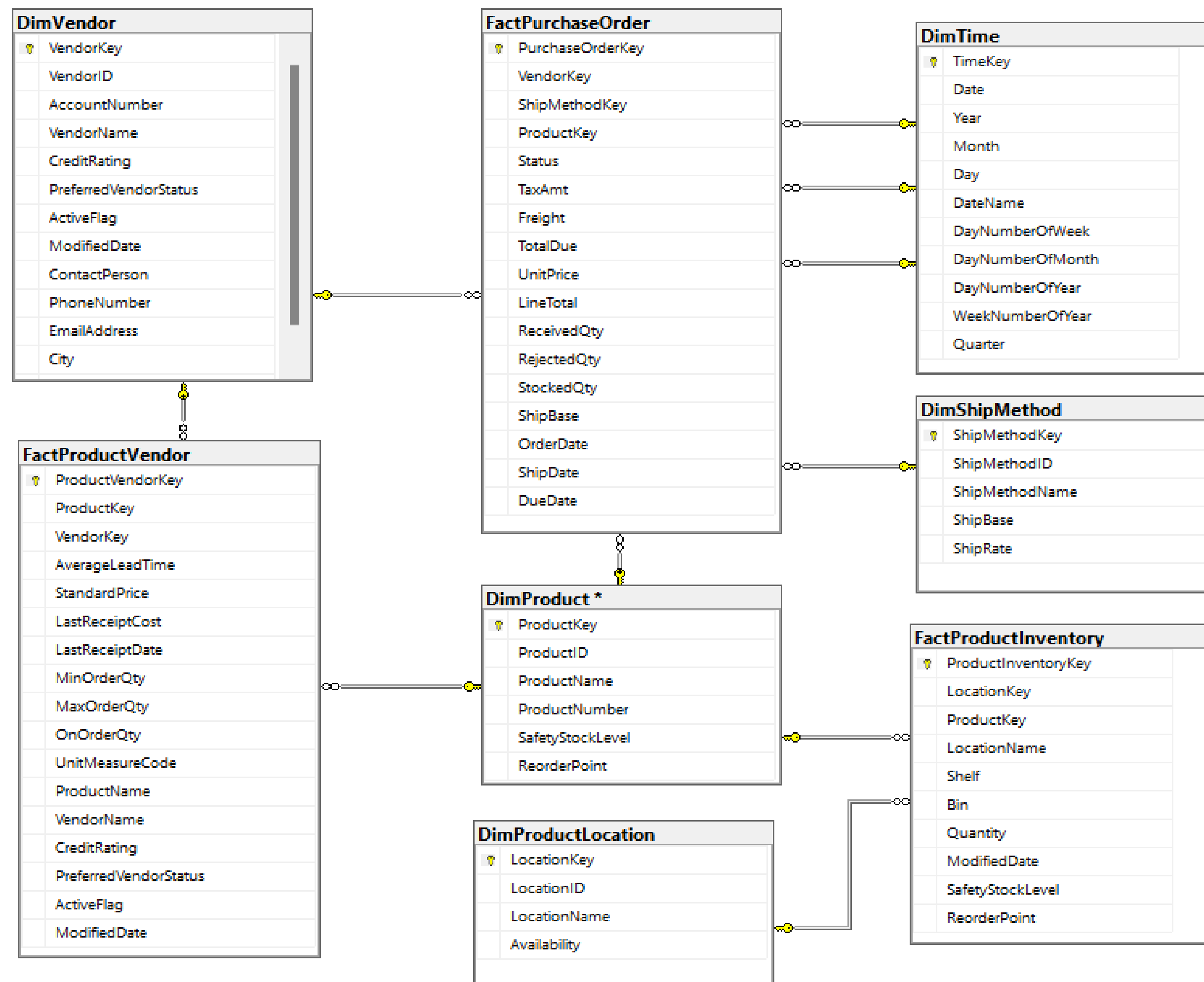
### DimShipMethod

PurchaseOrderKey  
VendorKey  
ShipMethodKey  
ProductKey  
Status  
TaxAmt  
Freight  
TotalDue  
UnitPrice  
LineTotal  
ReceivedQty  
RejectedQty  
StockedQty  
ShipBase  
OrderDate  
ShipDate  
DueDate

## DIMENSION TABLES IDENTIFICATION



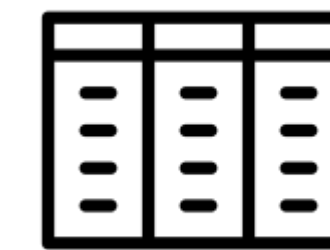
DimProduct	DimProductLocation	DimShipMethod	DimTime	DimVendor
ProductKey ProductID ProductName ProductNumber SafetyStockLevel ReorderPoint	LocationKey LocationID LocationName Availability	ShipMethodKey ShipMethodID ShipMethodName ShipBase ShipRate	TimeKey Date Month Year Day DateName DayNumberOfWeek DayNumberOfMonth DayNumberOfYear WeekNumberOfYear Quarter	VendorKey VendorID AccountNumber VendorName CreditRating PreferredVendorStatus ActiveFlag ModifiedDate ContactPerson PhoneNumber EmailAddress City Title



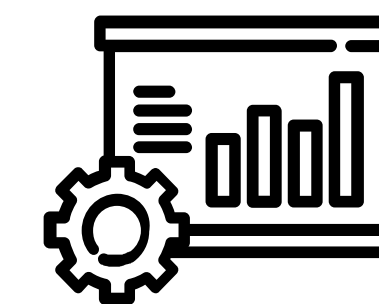
## SCHEMA DESIGNING



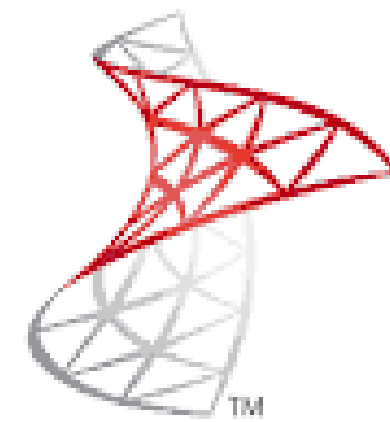
Galaxy Schema



DimProduct  
DimVendor  
DimShipMethod  
DimTime  
DimProductLocation



FactProductInventory  
FactProductVendor  
FactPurchaseOrder



Microsoft®  
**SQL Server®**  
Analysis Services



### Create Data Source View

Simple connection to relational database



### Calculation

Calculate measures for the cube



01

02

03

04

05

### Create Data Source

Connection to the data



### Building Cube

Enable data to be modeled and viewed in multiple dimensions

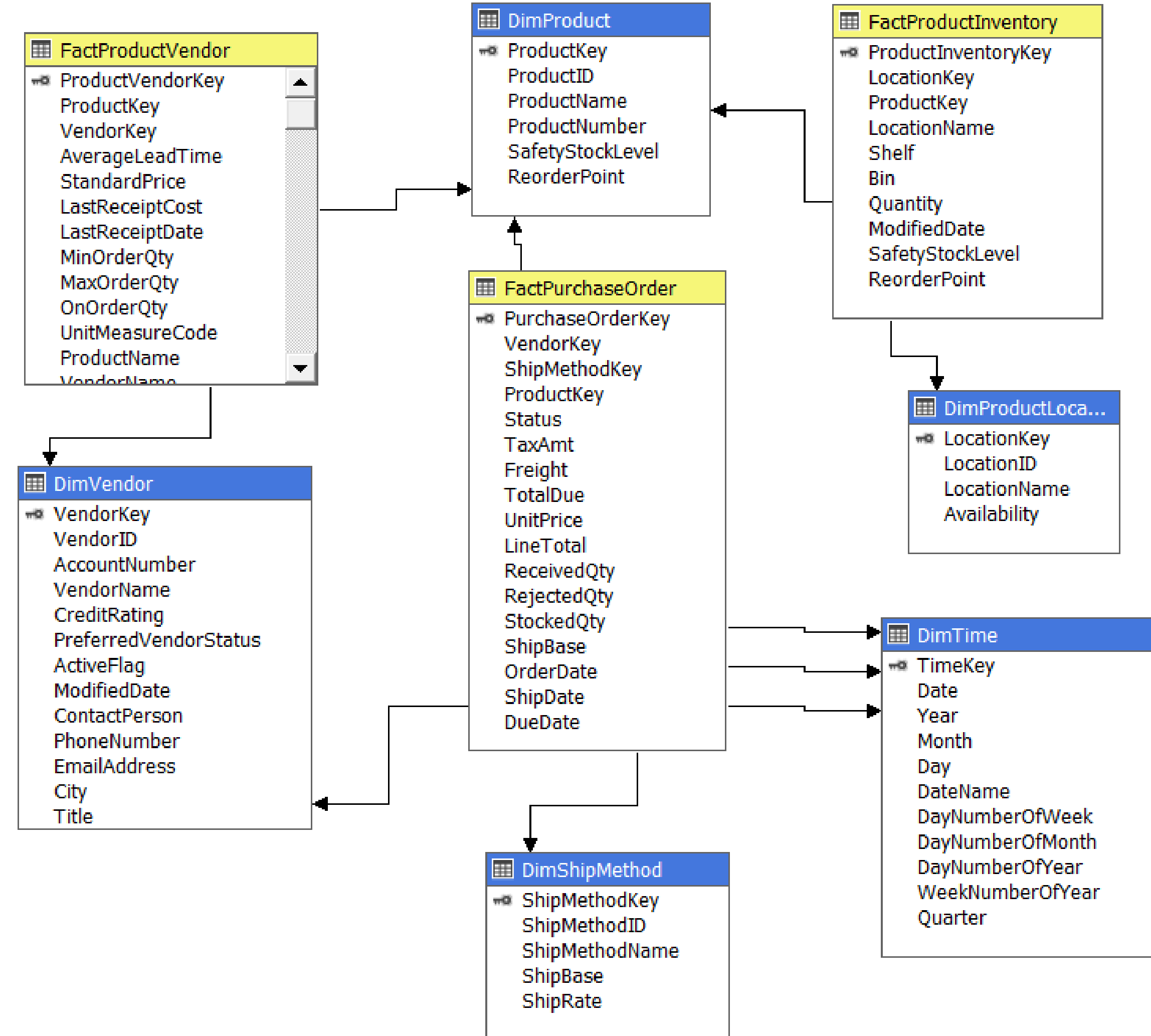
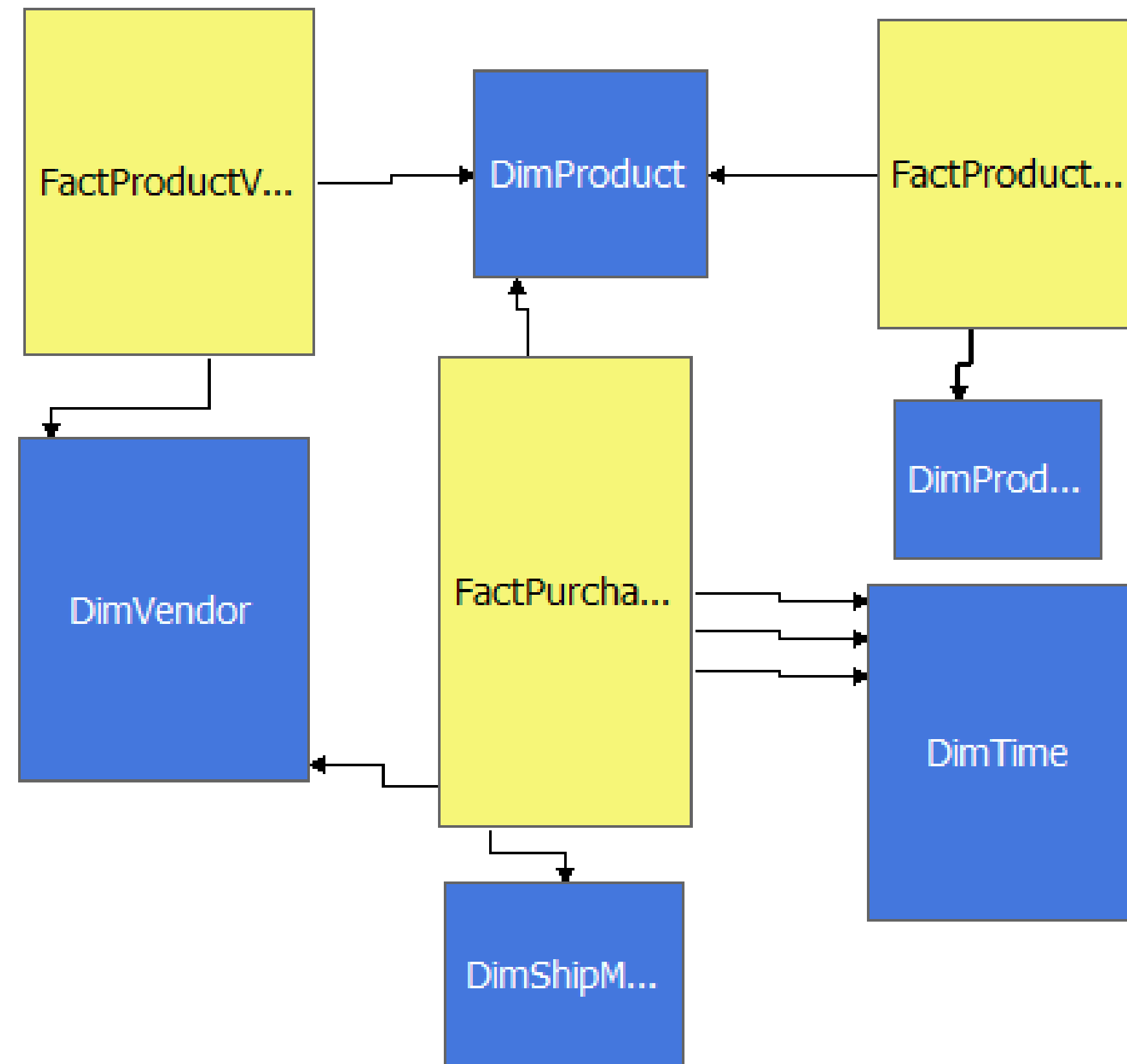


### Analysis

Based on KPIs  
Import SSAS to visualization tool



## OTTO PURCHASING'S CUBE



## Quality Check KPI

### *Calculation:*

[Measures].[Rejected Qty]/[Measures].[Received Qty]

### *Value Expression:*

[Measures].[PercentageofRejectedQty]

### *Goal Expression: 0.01*

### *Status Expression:*

```
case when KPIVALUE("KPIQualityCheck")/ KPIGOAL( "KPIQualityCheck") >0.9 then -1
when KPIVALUE("KPIQualityCheck")/ KPIGOAL( "KPIQualityCheck") <= 0.9
and KPIVALUE("KPIQualityCheck")/ KPIGOAL( "KPIQualityCheck") > 0.8 then 0
else 1 end
```

### *Trend expression:*

```
case when [Measures].[PercentageofRejectedQty] > (PARALLELPERIOD([Due Date].[Year].[Year],1, [Due
Date].[Year] ),[Measures].[PercentageofRejectedQty]) then -1 when
[Measures].[PercentageofRejectedQty] = (PARALLELPERIOD([Due Date].[Year].[Year],1, [Due
Date].[Year] ),[Measures].[PercentageofRejectedQty]) then 0 else 1 end
```

## Ship Method KPI

### *Value Expression:*

[Measures].[Ship Base]

### *Goal Expression: 17500*

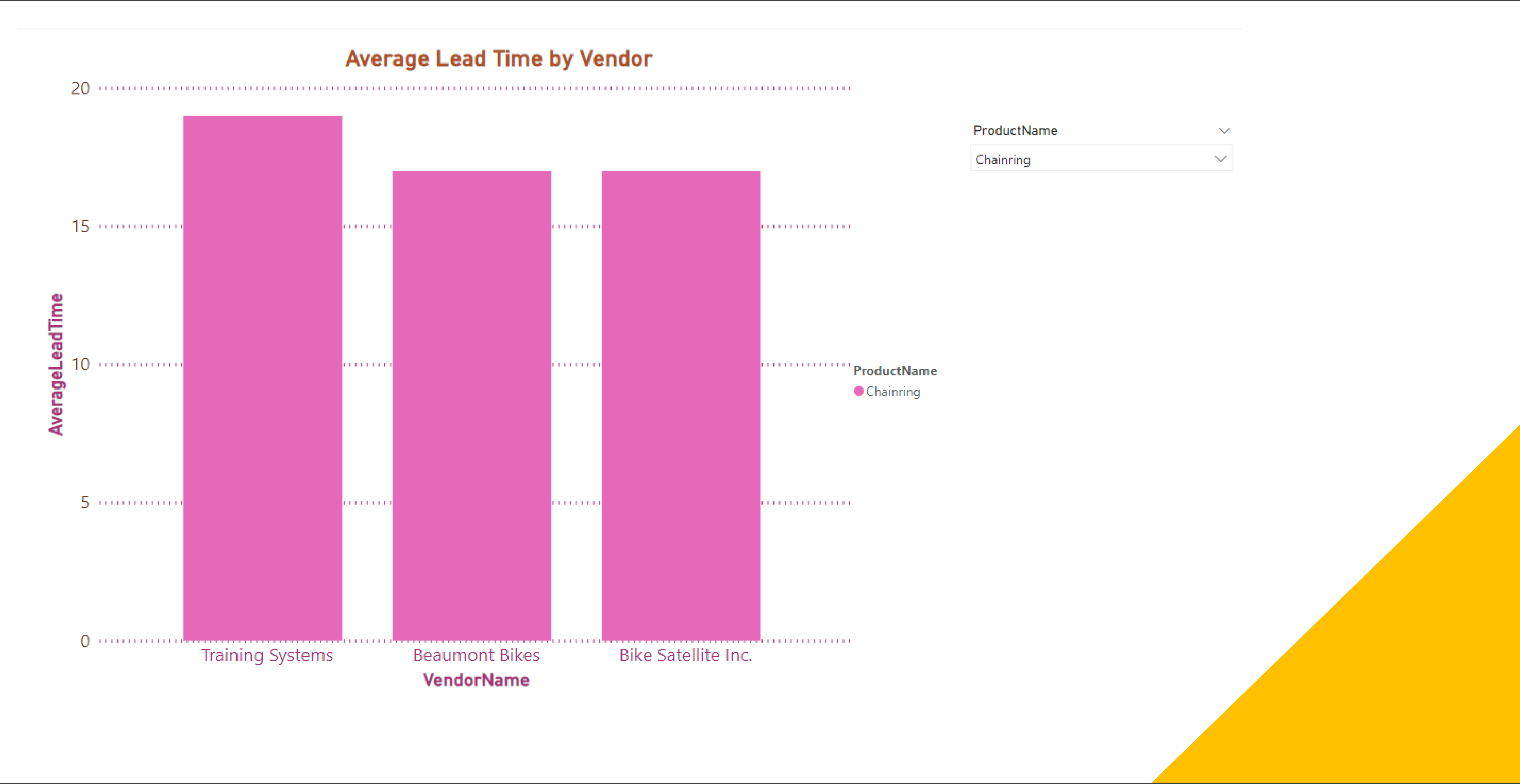
### *Status Expression:*

```
case when KPIVALUE("KPIShipMethod")/KPIGOAL("KPIShipMethod") >0.9 then -1
when KPIVALUE("KPIShipMethod")/KPIGOAL("KPIShipMethod") <=0.9
and KPIVALUE("KPIShipMethod")/KPIGOAL("KPIShipMethod") >0.8 then 0 else 1 end
```

### *Trend expression:*

```
case when IEMPTY(PARALLELPERIOD([Due Date].[Year].[Year],1, [Due Date].[Year] ))
THEN 0
when [Measures].[Ship Base] > (PARALLELPERIOD([Due Date].[Year].[Year],1, [Due
Date].[Year] ),[Measures].[Ship Base]) then 1 when [Measures].[Ship Base] =
(PARALLELPERIOD([Due Date].[Year].[Year],1, [Due Date].[Year] ),[Measures].[Ship
Base]) then 0 else -1 end
```

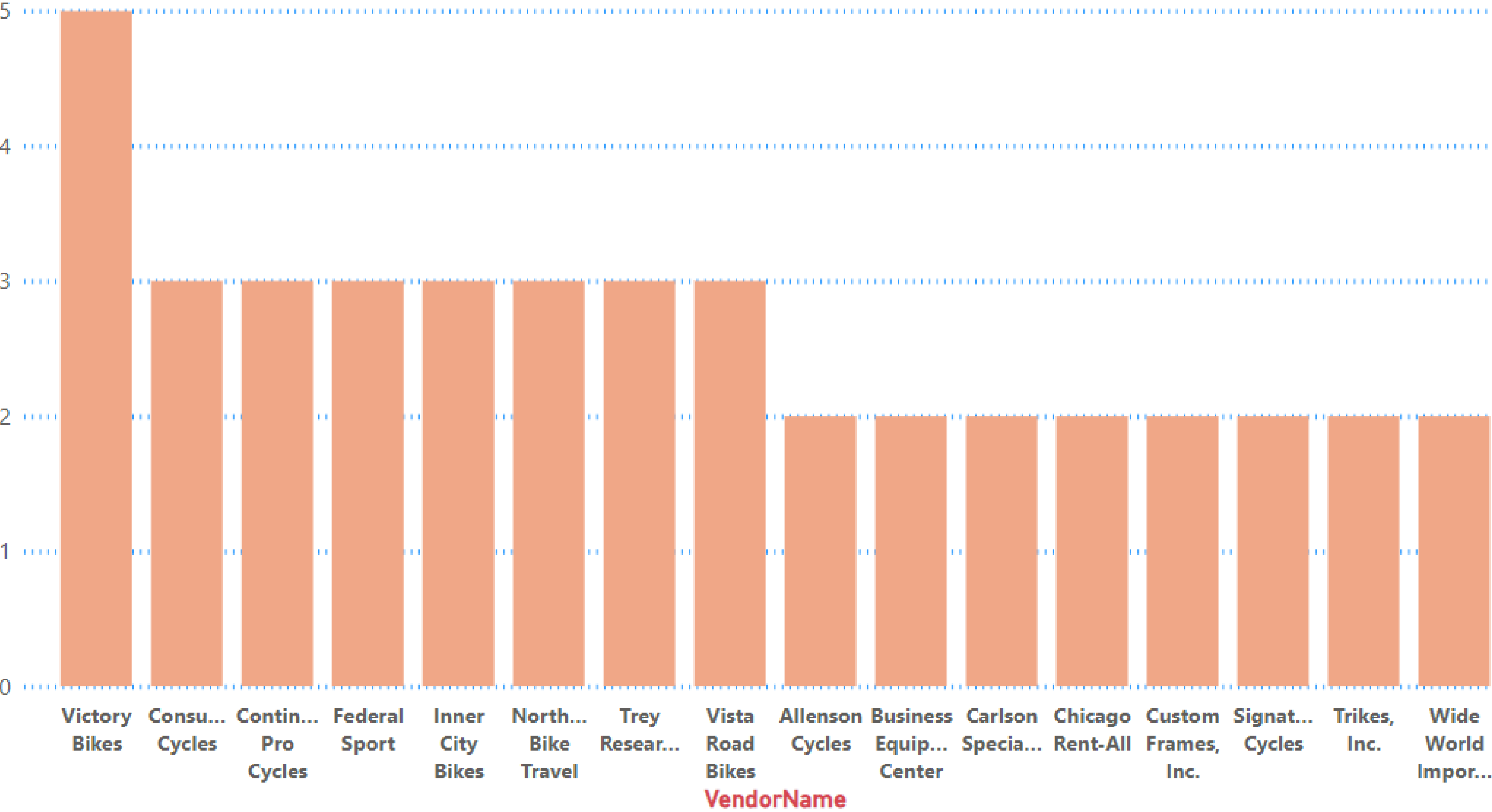






Credit Rating by Vendor

ActiveFlag 1



Quality Check by Rejected Quantity

VendorName

Chicago City Saddles

Percentage of RejectedQty

ProductName

- HL Road Seat/Saddle
- LL Mountain Seat/Saddle
- ML Mountain Seat/Saddle
- ML Road Seat/Saddle

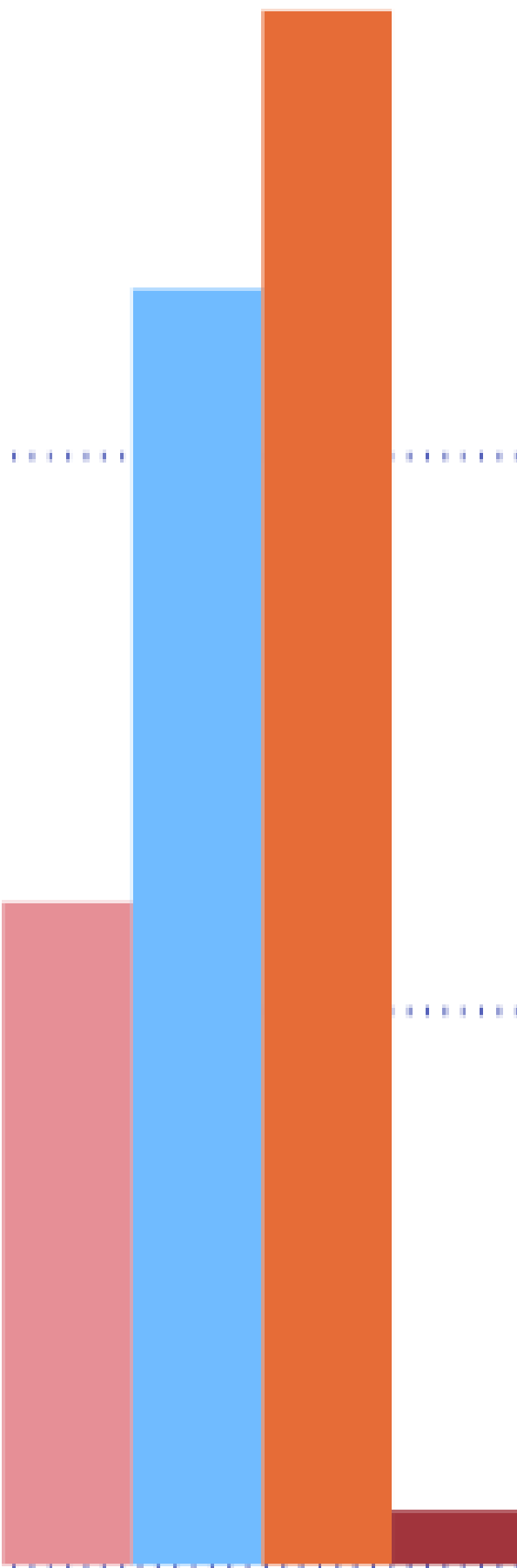
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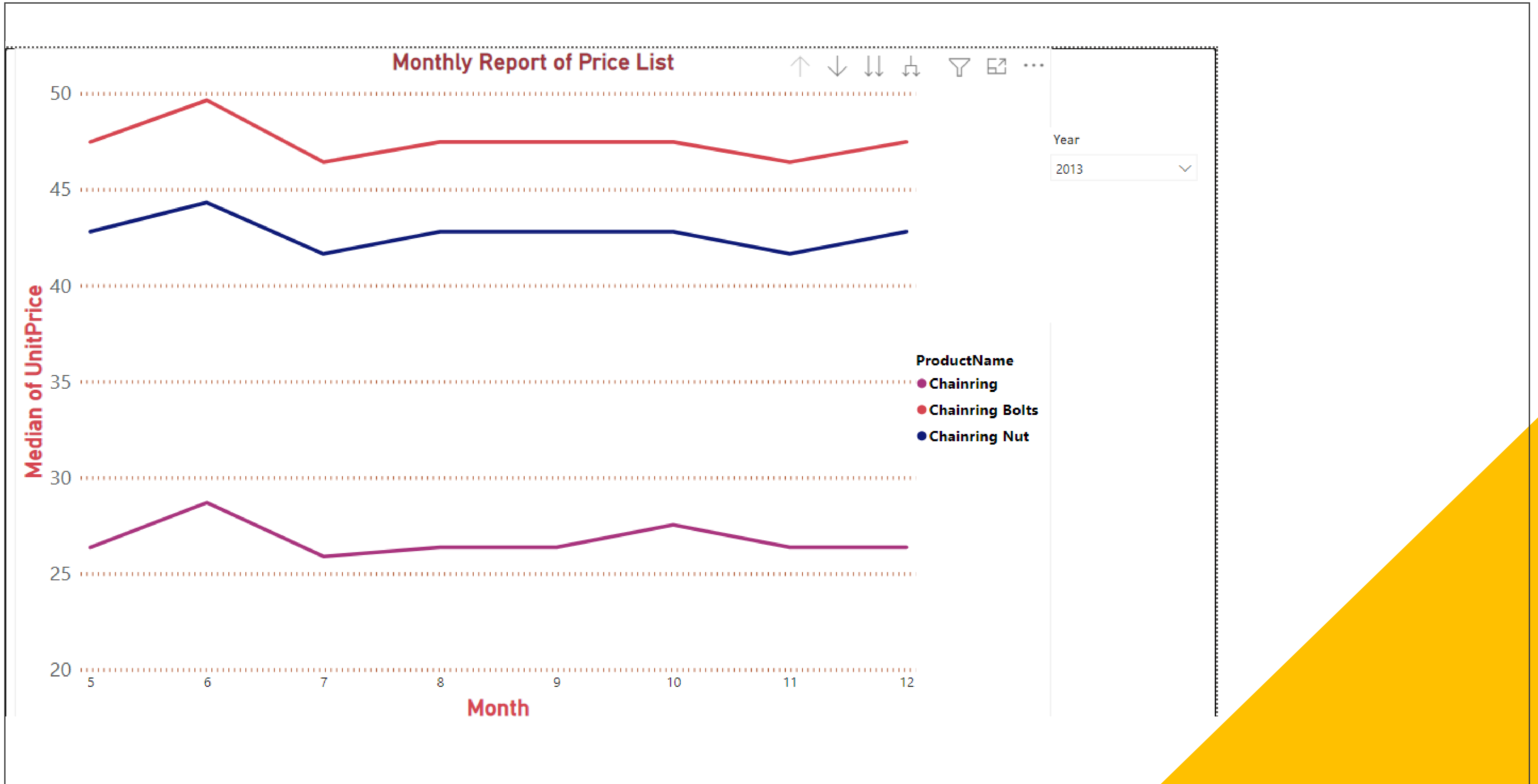
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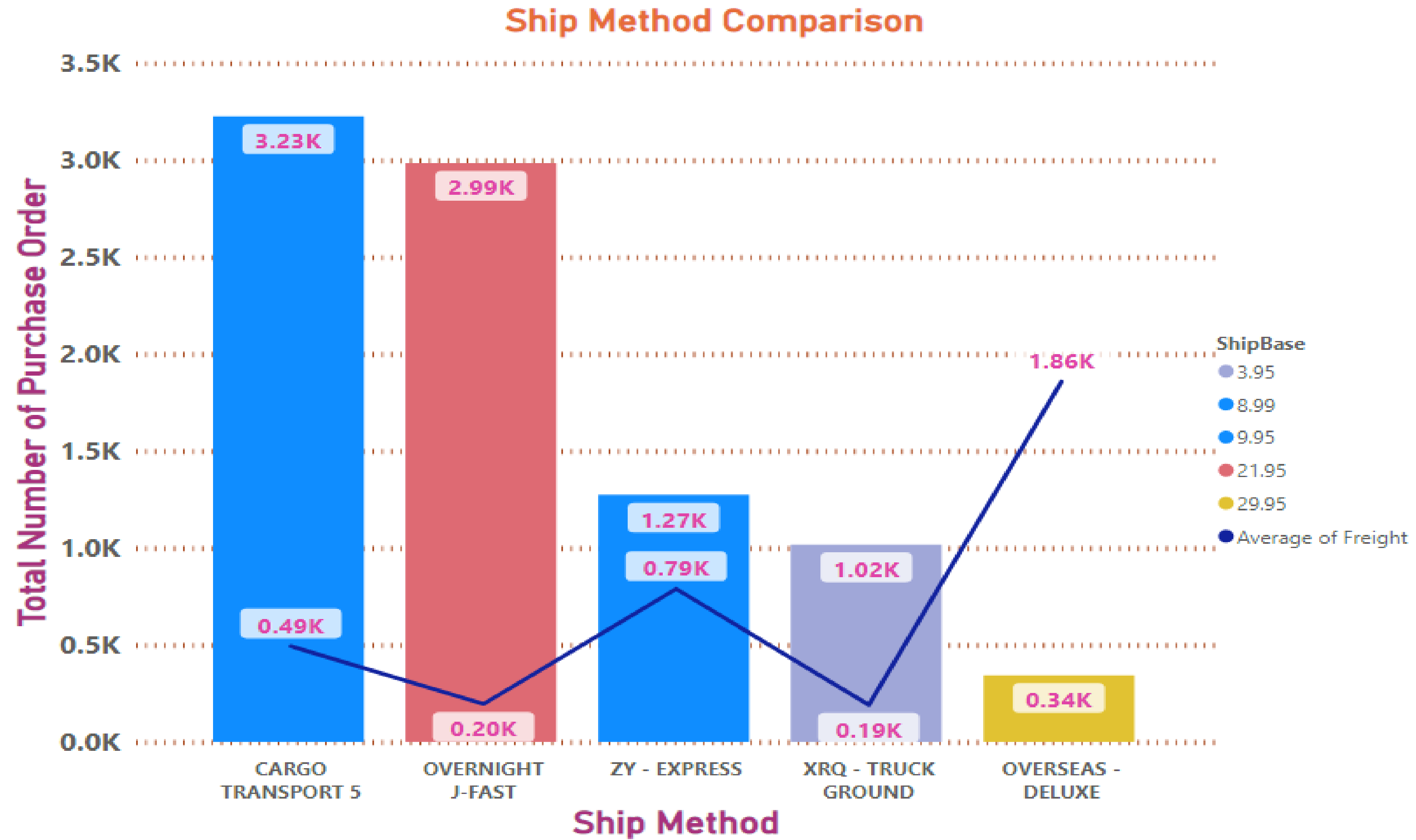
0.5

0.0

Chicago City  
Saddles  
VendorName









# CONCLUSION



## Project Results

What are the deliverables of the project?



## Limitations

What problems do we face during the implementation?



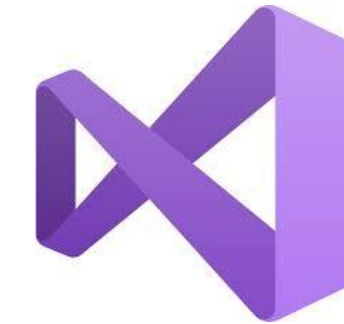
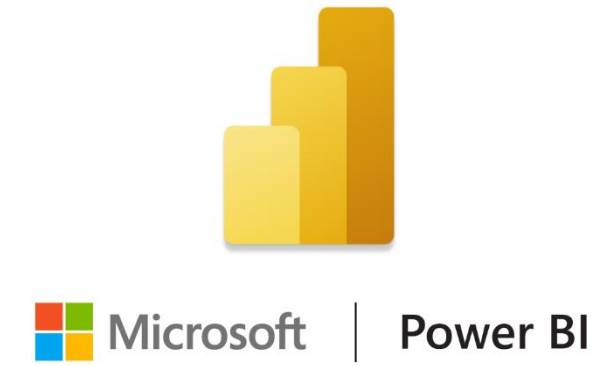
## Future works

What are we going to do in the future to develop the project?





# “PROJECT RESULT”



Microsoft Excel

Analytics



Business Analytics



BI solution for Purchasing



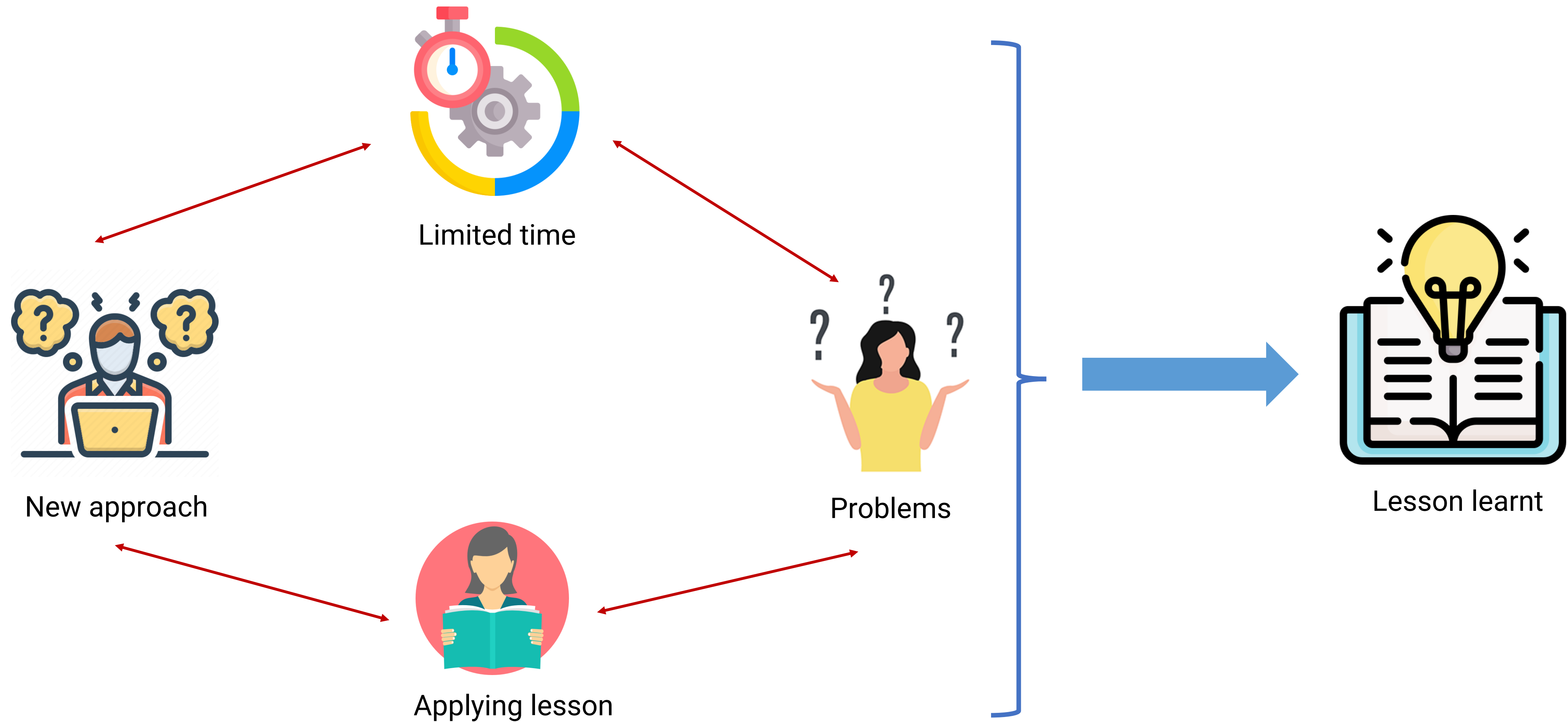
DATA WAREHOUSE

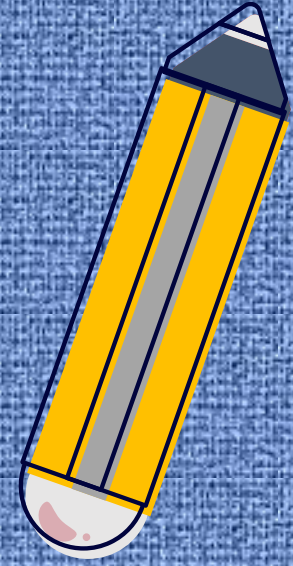
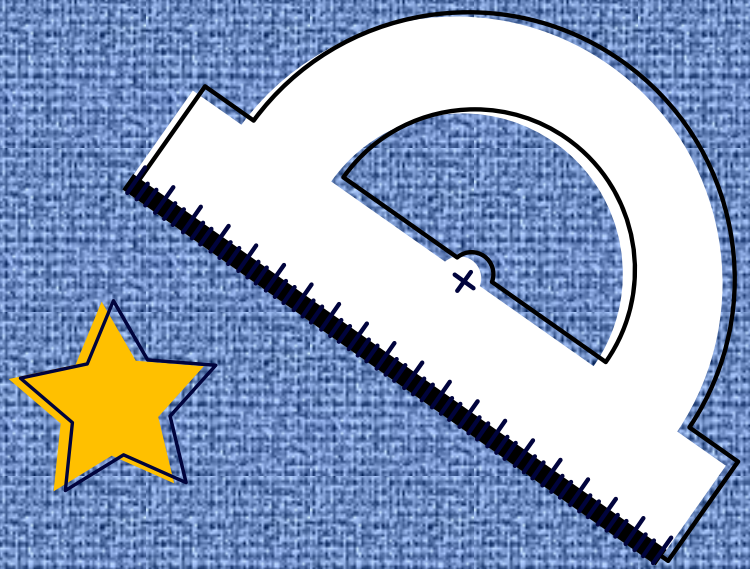


# LIMITATIONS



06





**“EVERYTHING YOU  
DON'T KNOW IS  
SOMETHING YOU  
CAN LEARN”**



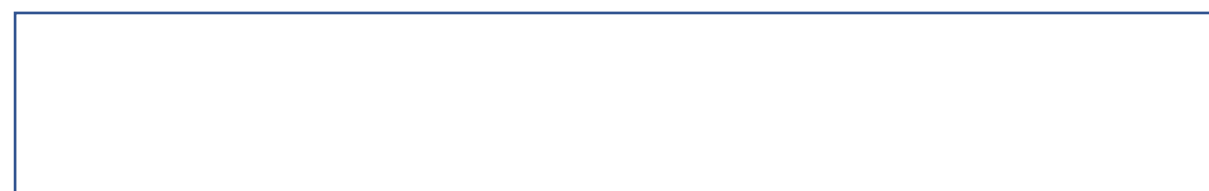
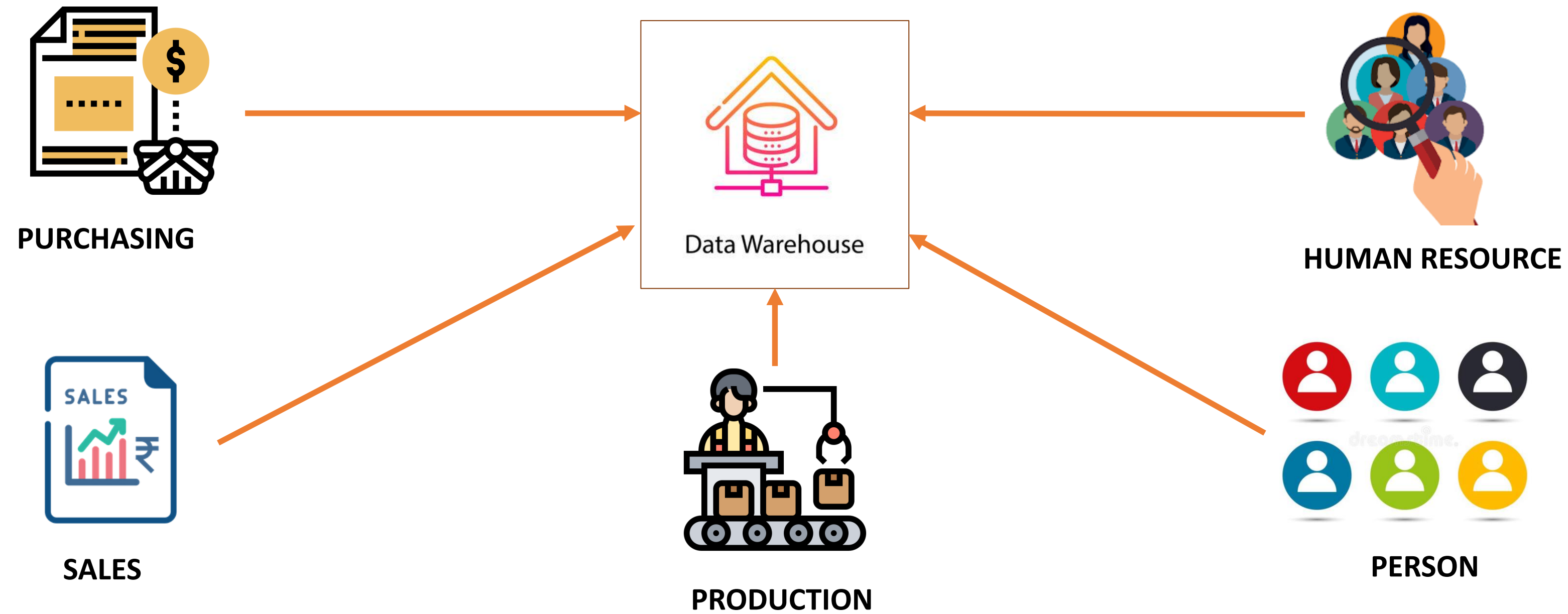




# FUTURE WORKS



06





# THE END

Thanks for listening



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