



9/1/2025

# BI Assessment Task

Qlik Sense Dashboard Development



# BI Dashboard Summary

## 1. Key Performance Indicators (From provided Dataset)

Metric	Value
Total Sales (USD)	\$55,755,479.59
Total Sales (Local)	\$55,349,466.10
Gross Margin (USD)	\$32,662,688.38
Gross Margin %	58.58%
Distinct Products (sold)	2,492
Total Customers	15,266
Repeat Customers	7,272 (47.64%)
Total Orders	26,326
Delivered Orders	5,580 (21.20%)
Pending Orders	20,746 (78.80%)
Avg items per order	7.51
Avg order lines per order	2.39
Avg order value (Cost)	\$877.2
Avg order value (Price)	\$2,117.8
Peak month by sales	2019 - Dec (\$2,477,295.85)

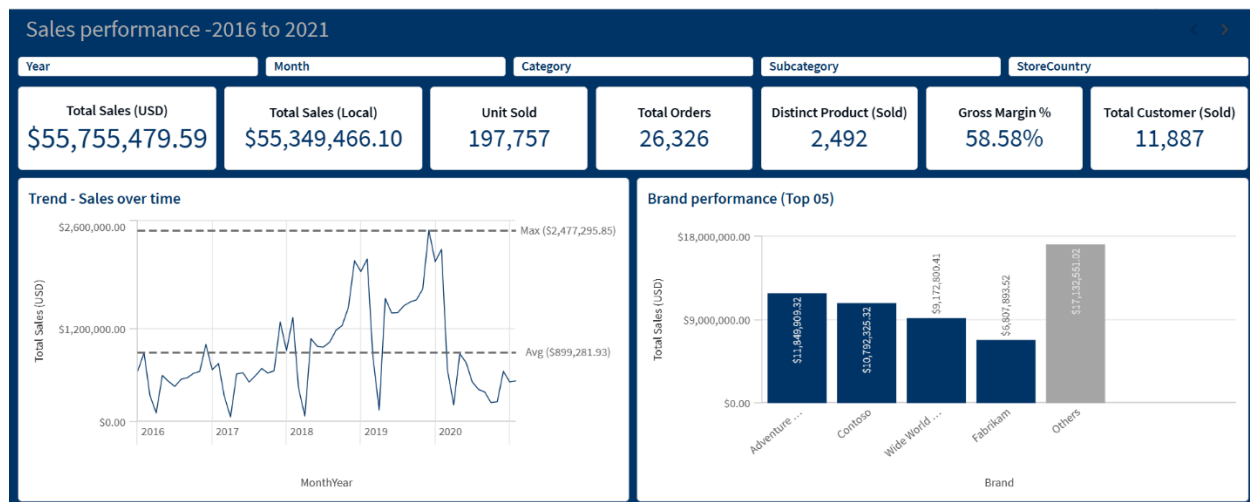
## 2. Insights

- Sales peaked in 2019 - December at \$2.47 Mn, followed by a decline in 2020–2021. Seasonal spikes suggest promotional campaigns drove higher volumes.
- Computers (34.62%) and Home Appliances (19.36%) drive over half of total sales.
- Top brands are dominated by Adventure Works, Contoso and Wide World Importers in terms of sales (USD).
- US stores (\$23.7 Mn) and Online channel (\$11.4 Mn) together account for 63% of sales. Europe (Germany, UK, and Canada) shows potential growth.
- With repeat customers at 47.64%, there is significant potential to strengthen customer loyalty.
- Gender split is nearly even (50.8% Male, 49.2% Female).
- The 65+ age group is the highest-spending segment, with strong contributions also from 25–44 age group.
- Orders average 7.51 items across 2.39 lines.
- Average Order Value is \$877.2 (cost-basis) or \$2,117.8 (price-basis).
- With 20,746 pending orders (78.8% of the total), fulfillment remains a critical challenge.

### 3. Recommendations

- Investigate the 2020 decline and focus on strategies to recover volumes post 2019, possibly using rolling for 3 or 12 months views since the dataset ends in Feb 2021.
- Prepare inventory and promotions for peak months, especially Nov–Dec annually (peak Dec 2019 is \$2.48 Mn).
- Focus promotions and inventory investment on top categories and rationalize low-performing SKUs. If margin analysis is allowed, monitor gross margin % to protect profitability.
- Diversify product mix beyond Computers & Appliances for resilience.
- Double down on US and Online, but also nurture growth in Germany and UK, which are scalable mid-tier markets. Expand stores and online penetration in Europe, UK and Germany are strong candidates.
- Launch loyalty programs for the over 65 segments, while tailoring campaigns to strengthen engagement among 25 to 44 customers for long term growth.
- Monitor pending vs delivered orders to ensure customer satisfaction. Upsell opportunities exist since most orders already contain multiple line items.
- Improve fulfillment processes to reduce pending orders (20,746) by establishing a Service Level Agreements (90% of orders delivered within a set number of days) and monitoring performance weekly.

### 4. Business Intelligence dashboard



## Product & Margin Analysis

### Portfolio (Category by Sales)

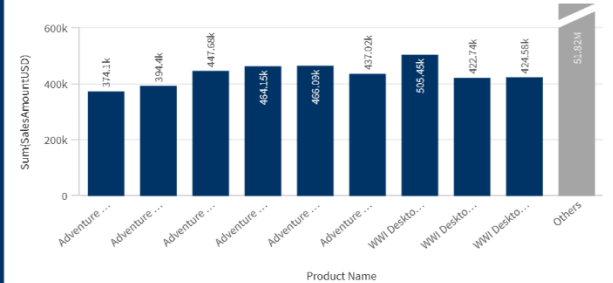
Computers 34.62%	Home Appliances 19.36%	Cell phones 11.09%	Audio 5.68%
	Cameras and camcorders 11.69%	TV and Video 10.63%	Music, Movies and Audio Books 5.62%

### Price Vs Sales



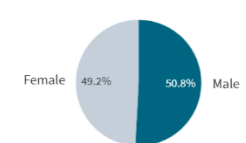
Year	Category	Subcategory
Gross Margin (USD) 32,662,688.38	Gross Margin % 58.58%	Avg Unit Cost (USD) 147.7

### Top 10 Product

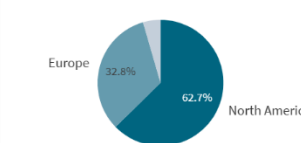


## Customer Insights

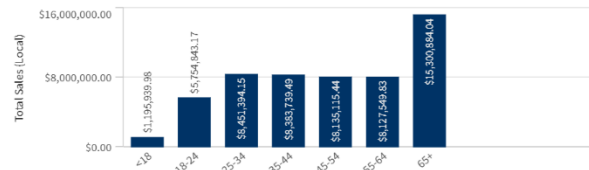
### Gender Split by Sales



### Continent by Orders

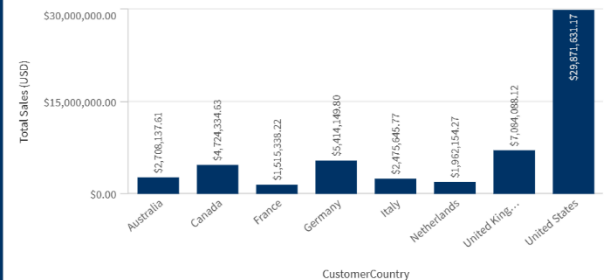


### Age Band by Sales



Gender	CustomerContinent	Age Band
Total Customer (Sold) 11,887	Repeat Customers 7,272	Repeat Customers% 47.64%
		Avg Customer Order 1.72

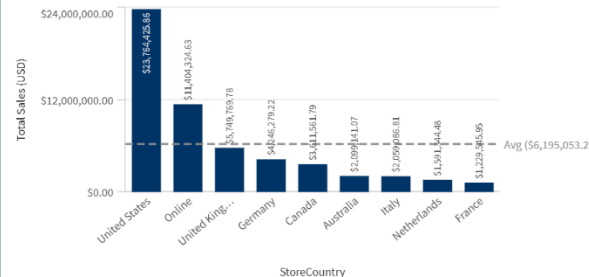
### Sales by Customer Country



## Stores & Geography

StoreCountry	StoreOpenYear	Mar 2005 - Mar 2019
Store Country 9	Sales per Square Meter 602.5	Total Store 67
		Total Store (Sold) 58

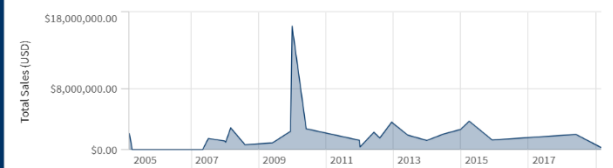
### Sales by Store Country

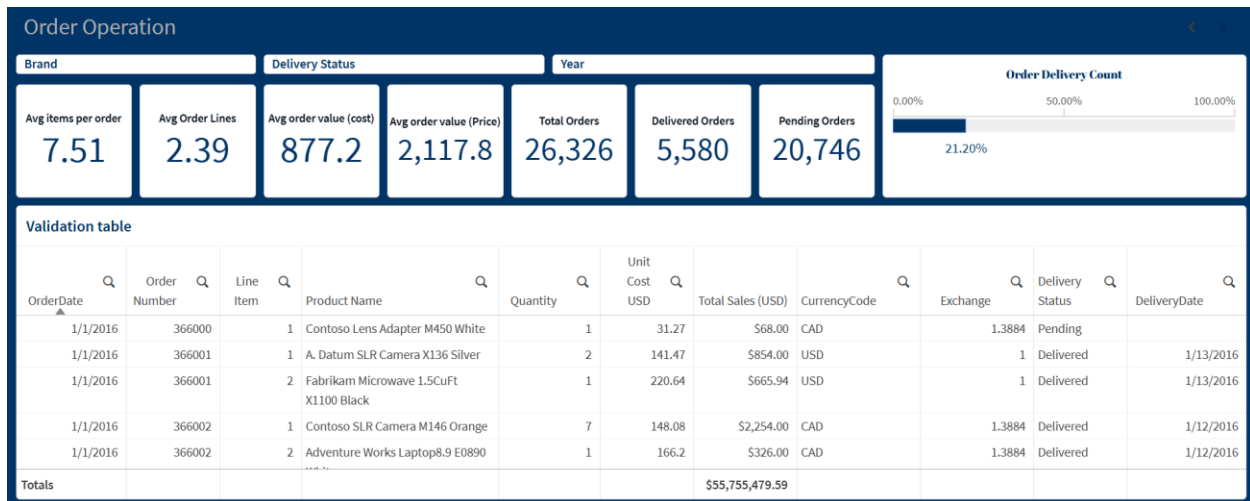


### Store State (Map)



### Store Open Date vs Sales





## 5. ETL Process

- Data was extracted from five CSV files such as Sales, Customers, Products, Stores, Exchange Rates. Cleansing steps include as follows,
  - Converting date fields (Order Date, Delivery Date, Birthday, Store Open Date) into proper datetime format.
  - Cleaning unit cost and price values (removing \$ and converting to numeric).
  - Handling null values (Delivery Date used to derive Delivery Status).
  - Removing duplicates and aligning keys (Customer Key, Product Key, Store Key).

```

SET ThousandSep=',';
SET DecimalSep='.';
SET MoneyThousandSep=',';
SET MoneyDecimalSep='.';
SET MoneyFormat='$#,##0.00;-$$,##0.00';
SET DateFormat='M/D/YYYY';
SET TimestampFormat='M/D/YYYY hh:mm:ss[.fff]';

Customers:
LOAD
CustomerKey,
Gender,
Name,
City,
[State Code] AS CustomerStateCode,
State AS CustomerState,
[Zip Code] AS CustomerZip,
Country AS CustomerCountry,
Continent AS CustomerContinent,
Date([Birthday], 'M/D/YYYY') AS CustomerBirthday
FROM [lib://DataFiles/Customers.csv]
(txt, codepage is 1252, embedded labels, delimiter is ',', msq);

Stores:
LOAD
StoreKey,
Country AS StoreCountry,
State AS StoreState,
[Square Meters],
Date([Open Date], 'M/D/YYYY') AS StoreOpenDate
FROM [lib://DataFiles/Stores.csv]
(txt, embedded labels, delimiter is ',', msq);

Products:
LOAD
ProductKey,
[Product Name],
Brand,
Color,
Num([Unit Cost USD]) AS [Unit Cost USD],
Num([Unit Price USD]) AS [Unit Price USD],
Subcategory,
Category
FROM [lib://DataFiles/Products.csv]
(txt, embedded labels, delimiter is ',', msq);

CostMap:
MAPPING
LOAD
ProductKey,
[Unit Price USD]
RESIDENT Products;

Sales:
LOAD
[Order Number],
[Line Item],
Date(Date([Order Date], 'M/D/YYYY')) AS OrderDate,
Date([Delivery Date], 'M/D/YYYY') AS DeliveryDate,
CustomerKey,
StoreKey,
ProductKey,
Num([Quantity]) AS Quantity,
[Currency Code] AS CurrencyCode,
Num([Quantity] * Num(ApplyMap('CostMap', ProductKey, 0))) AS SalesAmountUSD
FROM [lib://DataFiles/Sales.csv]
(txt, embedded labels, delimiter is ',', msq);

Exchange_Rates:
LOAD
Date([Date], 'M/D/YYYY') AS FxDate,
Currency,
Num([Exchange]) AS Exchange
FROM [lib://DataFiles/Exchange_Rates.csv]
(txt, embedded labels, delimiter is ',', msq);

LEFT JOIN (Sales)
LOAD
FxDate AS OrderDate,
Currency AS CurrencyCode,
Exchange
RESIDENT Exchange_Rates;

Sales_Enriched:
LOAD
*,
Num(SalesAmountUSD * Alt(Exchange, 1)) AS SalesAmountLocal
RESIDENT Sales;

DROP TABLE Sales;
RENAME TABLE Sales_Enriched TO Sales;

Calendar:
LOAD DISTINCT
Date(OrderDate) AS OrderDate,
Year(OrderDate) AS Year,
Month(OrderDate) AS Month,
MonthName(OrderDate) AS MonthYear,
Week(OrderDate) AS Week
RESIDENT Sales
WHERE NOT ISNull(OrderDate);

```

## 6. Data Modeling – Star Schema

A star schema was used to optimize performance and simplicity in Qlik Sense. The central Fact table is Sales, with four connected Dimension tables such as Customers, Products, Stores and Exchange Rates.

