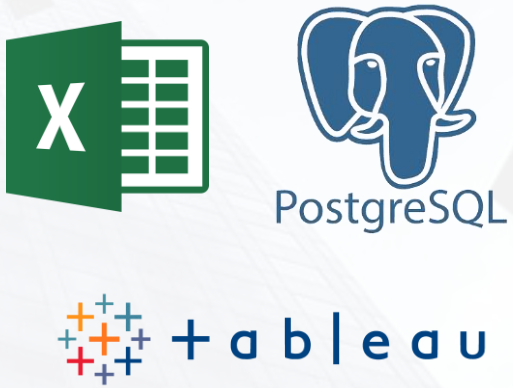
Rakamin Academy | Bank Muamalat

PROJECT BASED VIRTUAL INTERNSHIP FINAL PROJECT

COMPANY SALES ANALYSIS



BUSINESS INTELLIGENCE ANALYST

Brandon Savero Emirulhaq

Business Case

The company possesses a comprehensive sales dataset covering the period from 2020 to 2021. This dataset includes multiple tables detailing customer information, order data, product specifics, and product categories in CSV format, each containing numerous columns. As a preliminary step in strategizing for the upcoming year, the sales team needs to assess the current year's sales performance and compare it against the previous year's sales across various variables. The outcomes of this analysis will serve as a critical reference for the sales team to enhance their sales strategy.

Objective

- Create a comprehensive analysis report on this year's sales performance
- Develop a sales dashboard

Data Overview

We have 4 data consisting of order data, product data, product category data, and customer data, each of which is stored in CSV format.

Orders Data

order_id	date	customer_	product_n	quantity
1	01/01/2020	1866	EB514	2
2	01/01/2020	1567	RS706	3
3	01/01/2020	2064	TV804	6
4	01/01/2020	287	DK203	1
5	01/01/2020	422	EB517	5
6	01/01/2020	954	EB519	5
7	02/01/2020	726	RK604	2
8	02/01/2020	1740	TV810	1
9	02/01/2020	1652	TV804	2

Products Data

product_number	product_name	category	price
BP101	All Eyes Drone Blueprint	1	9.99
BP102	Bsquare Robot Blueprint	1	8.99
BP104	Cat Robot Blueprint	1	4.99
BP105	Creature Robot Arms Blueprint	1	12.00
BP106	Hexacopter Drone Blueprint	1	8.99
BP107	Ladybug Robot Blueprint	1	12.00
BP108	Panda Robot Blueprint	1	7.99
BP109	QuadroCopter Blueprint	1	10.99
BP110	Sleepy Eye Blueprint	1	11.99

Product Categories Data

category_id	category_name	category_abbreviation
1	Blueprints	BP
2	Drone Kits	DK
3	Drones	DS
4	eBooks	EB
5	Robot Kits	RK
6	Robots	RS
7	Training Videos	TV

Customers Data

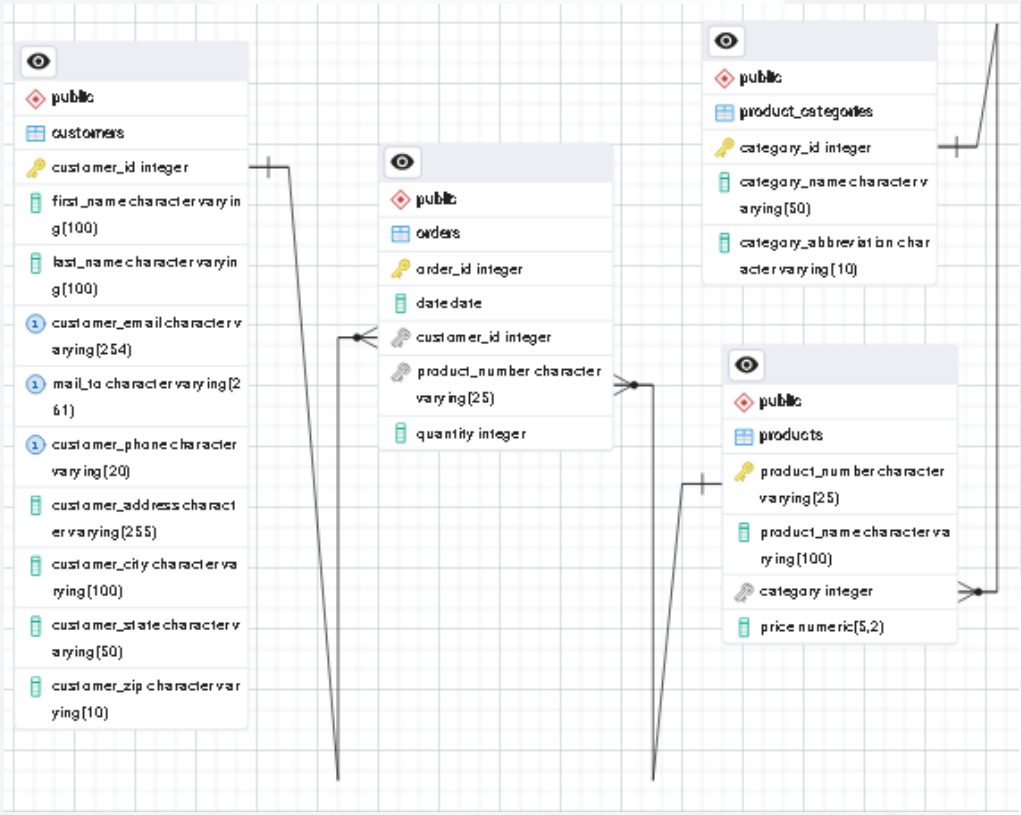
customer_id	first_name	last_name	customer_email	mail_to	customer_phone	customer_address	customer_city	customer_state	customer_zip
1	Grazia	Rasmus	grasmusas@i2i.jp	mailto:grasmusas@i2i.jp	202-577-2595	628 Buhler Junction	Washington	District of Columbia	20029
2	Bunny	Trevan	btrevanmj@wordpress.org	mailto:btrevanmj@wordpress.org	917-903-2827	52 Cascade Drive	Jamaica	New York	11436
3	Tracie	Grayston	tgrayston7k@pagesperso-orange.fr	mailto:tgrayston7k@pagesperso-orange.fr	404-868-2391	672 Comanche Way	Atlanta	Georgia	30343
4	Amerigo	Garrelts	agarrelts6e@oaic.gov.au	mailto:agarrelts6e@oaic.gov.au	415-190-3290	8252 Village Green Hill	San Francisco	California	94177
5	Shea	Stronghill	sstronghillc1@google.nl	mailto:sstronghillc1@google.nl	432-775-7828	542 3rd Point	Midland	Texas	79705
6	Geoffry	Bonde	gbonde90@vimeo.com	mailto:gbonde90@vimeo.com	415-176-9919	781 Larry Place	San Francisco	California	94159
7	Noelle	Carlile	ncarlile37@mit.edu	mailto:ncarlile37@mit.edu	405-745-9826	539 Crowley Parkway	Oklahoma City	Oklahoma	73114
8	Binny	Whetson	bwhetsonio@amazon.de	mailto:bwhetsonio@amazon.de	585-968-0566	579 Sugar Circle	Rochester	New York	14619
9	Curran	MacMichael	cmacmichael5y@businesswire.com	mailto:cmacmichael5y@businesswire.com	520-968-8763	4949 Hauk Road	Tucson	Arizona	85705

Click here to access the dataset

Data Processing

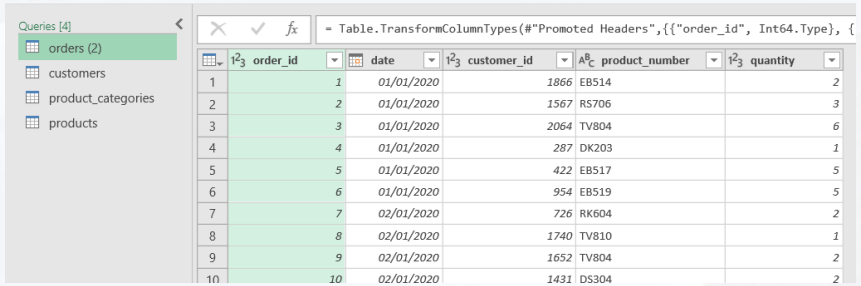
```sql
-- Create the customers table
CREATE TABLE customers (
    customer_id INT PRIMARY KEY,
    first_name VARCHAR(100) NOT NULL,
    last_name VARCHAR(100) NOT NULL,
    customer_email VARCHAR(254) UNIQUE CHECK (customer_email LIKE '%@%'),
    mail_to VARCHAR(261) UNIQUE,
    customer_phone VARCHAR(20) UNIQUE NOT NULL,
    customer_address VARCHAR(255) NOT NULL,
    customer_city VARCHAR(100) NOT NULL,
    customer_state VARCHAR(50) NOT NULL,
    customer_zip VARCHAR(10) NOT NULL
); -- Customers data will be imported using the import feature in the menu

-- Create the orders table
CREATE TABLE orders (
    order_id INT PRIMARY KEY,
    date DATE NOT NULL,
    customer_id INT NOT NULL,
    product_number VARCHAR(25) NOT NULL,
    quantity INT NOT NULL,
    FOREIGN KEY (customer_id) REFERENCES customers(customer_id),
    FOREIGN KEY (product_number) REFERENCES products(product_number)
); -- Orders data will be imported using the import feature in the menu

-- Create the products table
CREATE TABLE products (
    product_number VARCHAR(25) PRIMARY KEY,
    product_name VARCHAR(100) NOT NULL,
    category INT NOT NULL,
    price NUMERIC(5,2) NOT NULL,
    FOREIGN KEY (category) REFERENCES product_categories(category_id)
); -- Products data will be imported using the import feature in the menu

-- Create the product_categories table
CREATE TABLE product_categories (
    category_id INT PRIMARY KEY,
    category_name VARCHAR(50) NOT NULL,
    category_abbreviation VARCHAR(10) NOT NULL
); -- Product categories data will be imported using the import feature in the menu
```

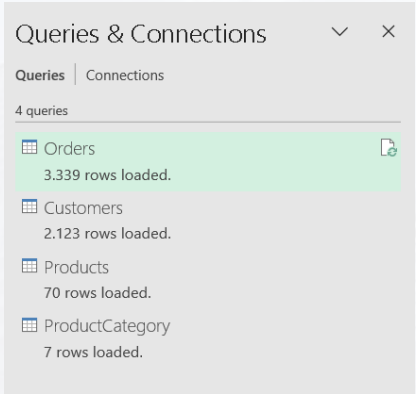
Because the data is still separated, I store the data in the SQL database by creating a table for each data, and connecting each data based on the primary key (pk) and foreign key (fk).

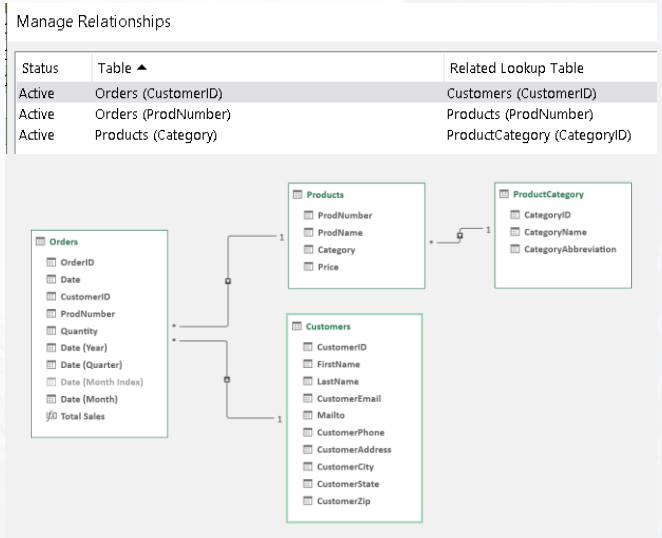


Data Analysis using Excel

Using Power Query to import data, perform data cleaning and formatting, and establish relationships between data by creating relationships.



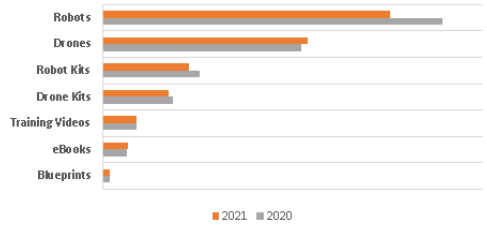


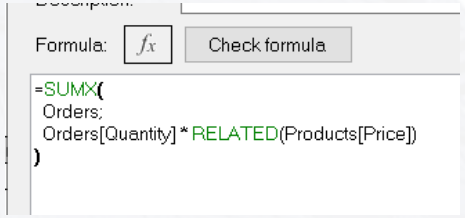


After the data is imported and connected, the next step is to use Pivot Tables, visualizations, and custom measures to analyze the data.

Sales by Product Category

Sales Prod Cat				
Prod Category	2020	2021	Share %	Growth
Robots	$402.835	$340.670	40,5%	-15,4%
Drones	$234.863	$242.584	28,8%	3,3%
Robot Kits	$114.675	$101.762	12,1%	-11,3%
Drone Kits	$83.033	$78.209	9,3%	-5,8%
Training Videos	$40.175	$40.541	4,8%	0,9%
eBooks	$28.876	$30.093	3,6%	4,2%
Blueprints	$8.753	$7.681	0,9%	-12,3%





Business Overview

Based in the United States, Future Tech Inc. is a retail company specializing in a wide range of technology products. Their primary offerings include Robots, Robot Kits, Drones, Drone Kits, along with supporting materials such as Training Videos, eBooks, and Blueprints. The company distributes its products across various regions in the United States through both physical stores and online platforms. As a technology-driven enterprise, Future Tech Inc. consistently employs a data-driven approach in all its business decisions.

Total Sales
$ 841.540

Total Product Category
7 Prod Category

Total Transactions
1646

Total Product Items
70 Prod Items

Total Customers
1646

Total Products Sold
5683

Total States
48

Total Cities
382

Business Performance by Metrics

Business Objective	Metrics
Assess sales performance	Total Revenue
	Avg Order Value
	Avg Revenue per Customer
	Order Frequency
	Avg Items per Order

Selected Metrics

Referring to the business objective to assess the company's sales performance, and considering the available data, the following metrics were selected to measure sales performance.

Performance

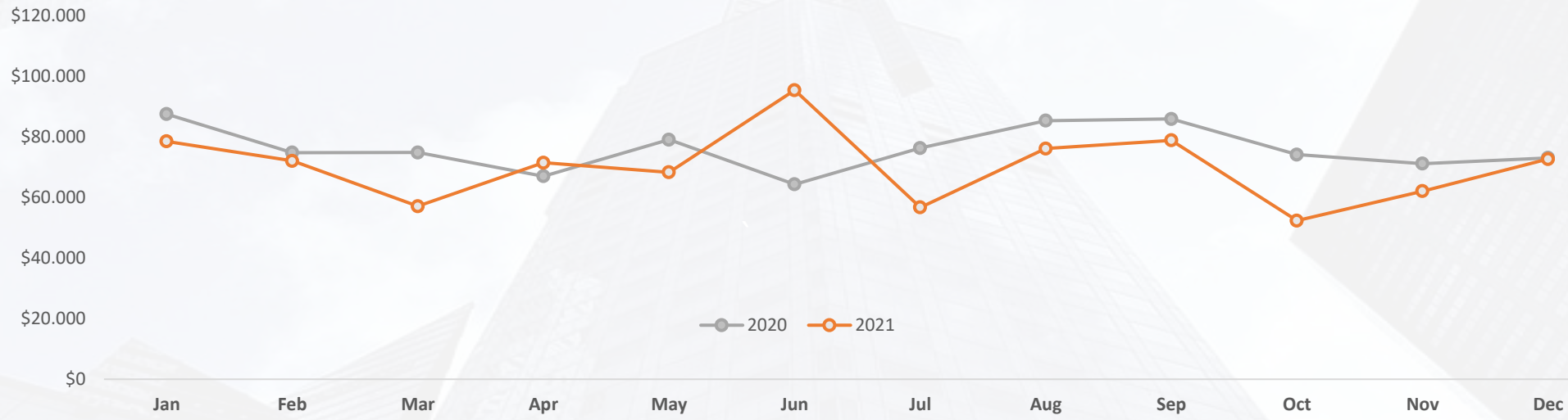
Metrics	2020	2021	Growth
Total Revenue	$ 913,210	$ 841,540	-7.85%
Avg Order Value	$ 539.40	$ 511.26	-5.22%
Avg Revenue per Customer	$793.41	$ 733.69	-7.53%
Order Frequency	1	1	0
Avg Items per Order	3	3	0

INSIGHTS

Total Revenue decreased by 7.85%, which was most likely **influenced by the decrease in average revenue per customer by 7.53%**. This indicates that while the number of customers may have remained stable, each customer spent less than the previous year. **The average items per order remained at 1** without change, indicating that the buying behavior per transaction has not changed.

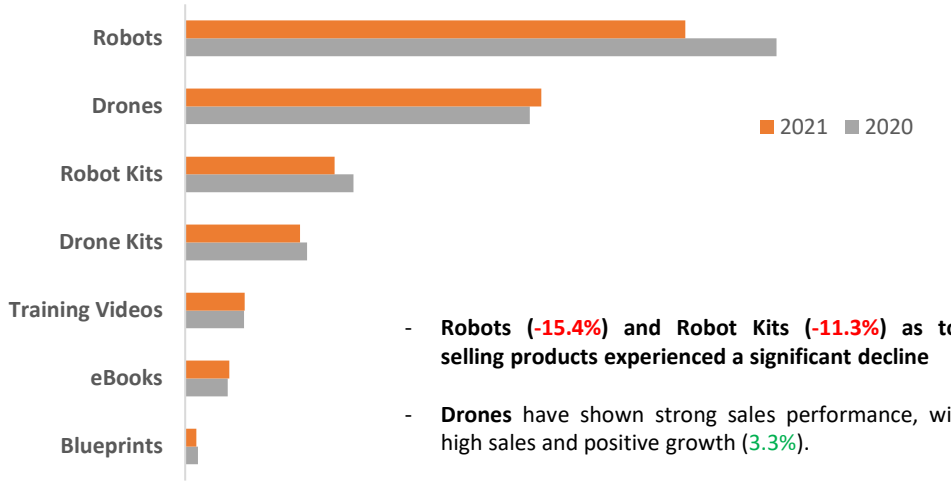
Sales Performance Decline

Sales in 2021 generally trended lower than in 2020, with sharp declines in March, July, and October. Despite occasional recoveries, such as the increase in April and June, the overall trend suggests a challenging year for sales in 2021.



Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	$87.478	$74.765	$74.808	$66.987	$79.072	$64.302	$76.300	$85.316	$85.871	$74.144	$71.137	$73.031
2021	$78.479	$72.040	$57.081	$71.467	$68.309	$95.402	$56.721	$76.127	$78.851	$52.348	$62.073	$72.642
Growth	-10,3%	-3,6%	-23,7%	6,7%	-13,6%	48,4%	-25,7%	-10,8%	-8,2%	-29,4%	-12,7%	-0,5%

Sales Decline in Top Selling Product



- **Robots (-15.4%) and Robot Kits (-11.3%) as top selling products experienced a significant decline**
- **Drones** have shown strong sales performance, with high sales and positive growth (3.3%).

Prod Category	2020	2021	Share %	Growth
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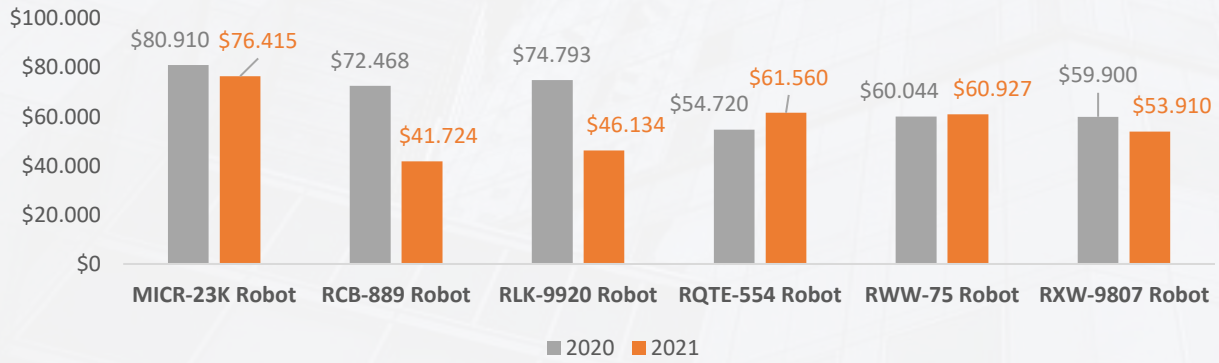
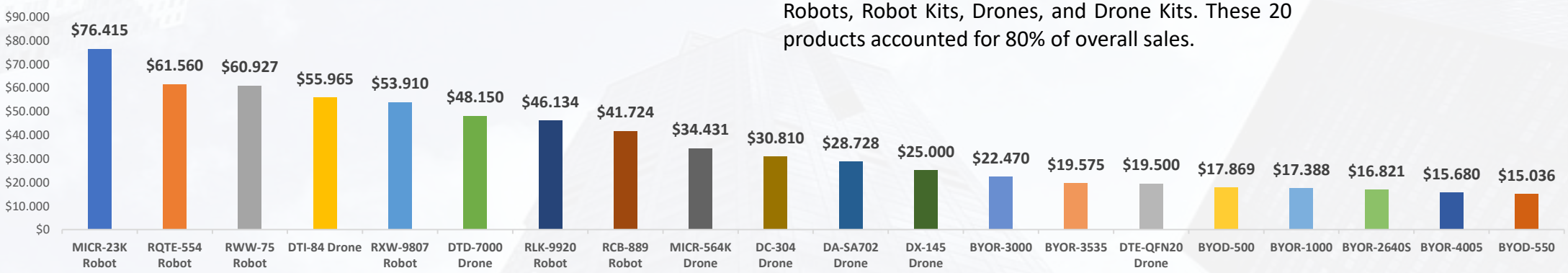
Robots Product Items (Year-over-Year)



The decline in sales of Robots products is assumed to be the cause of the decline in sales performance this year. Moreover, its supporting products (Robot Kits) also experienced a significant decline. These two products account for more than 50% of the company's sales, so the impact of a decline in each product will directly affect the company's overall sales.

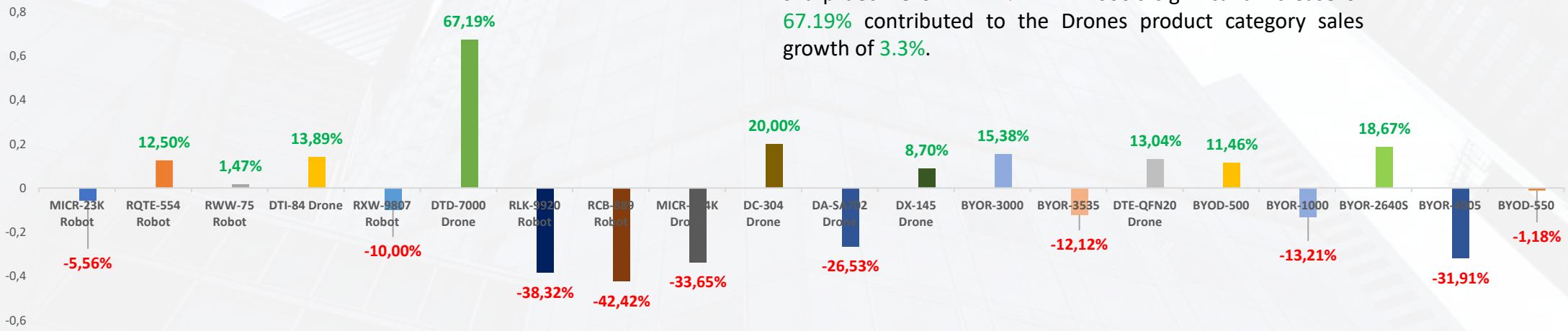
Sales Performance Fluctuation of Top Selling Product Items

Top 20 Product Items with Highest Sales



The top 20 product items in sales are dominated by Robots, Robot Kits, Drones, and Drone Kits. These 20 products accounted for 80% of overall sales.

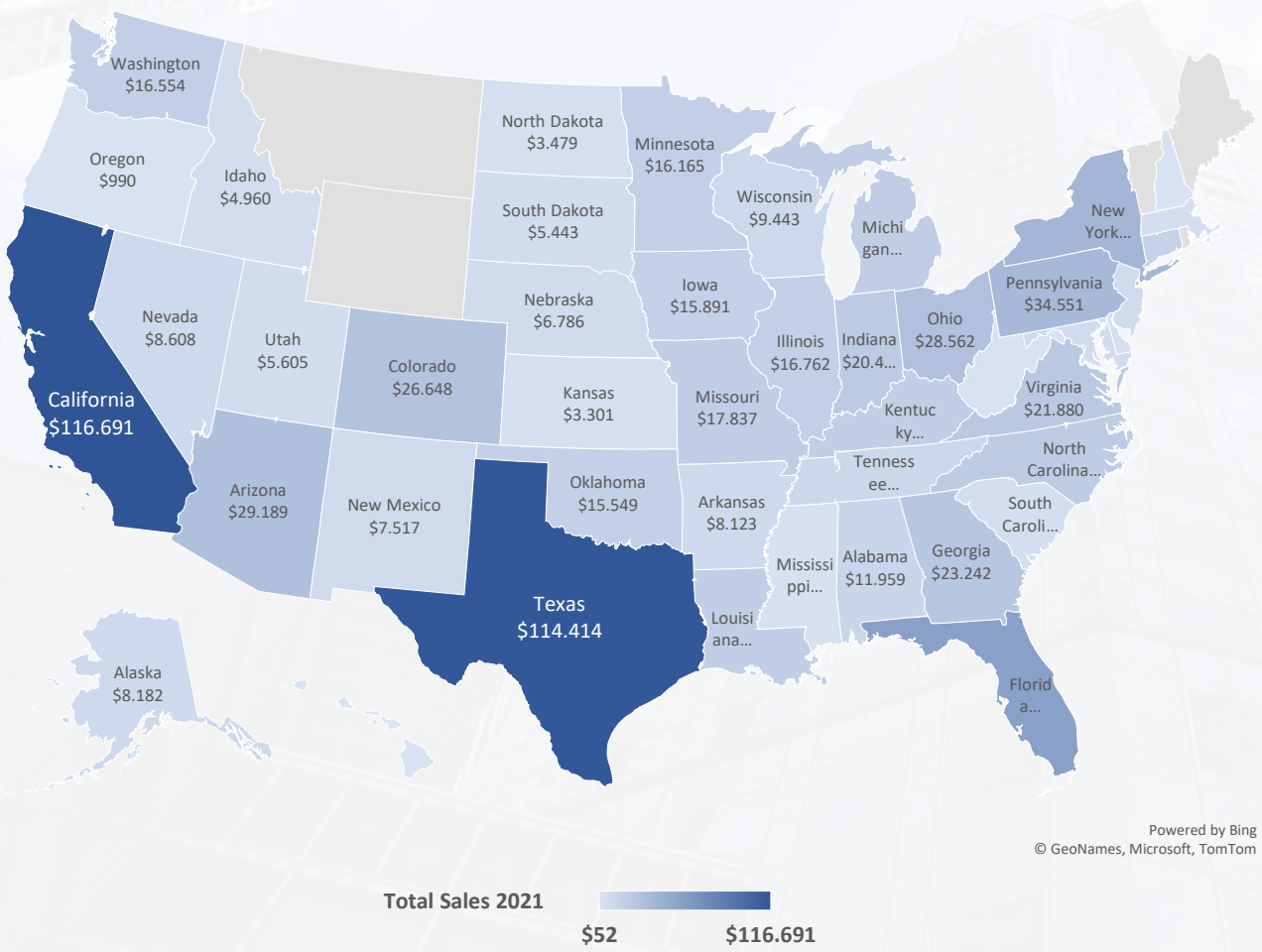
Growth YoY



Almost all Robots and Robot Kits products experienced a sharp decline of -42.42%. DTD-7000's significant increase of 67.19% contributed to the Drones product category sales growth of 3.3%.

Sharp Increase and Decrease in several States

Several states saw sharp increases, but sharp decreases were also seen in the rest. These fluctuations occur in the 20 states with the highest sales which can have a direct impact on overall sales

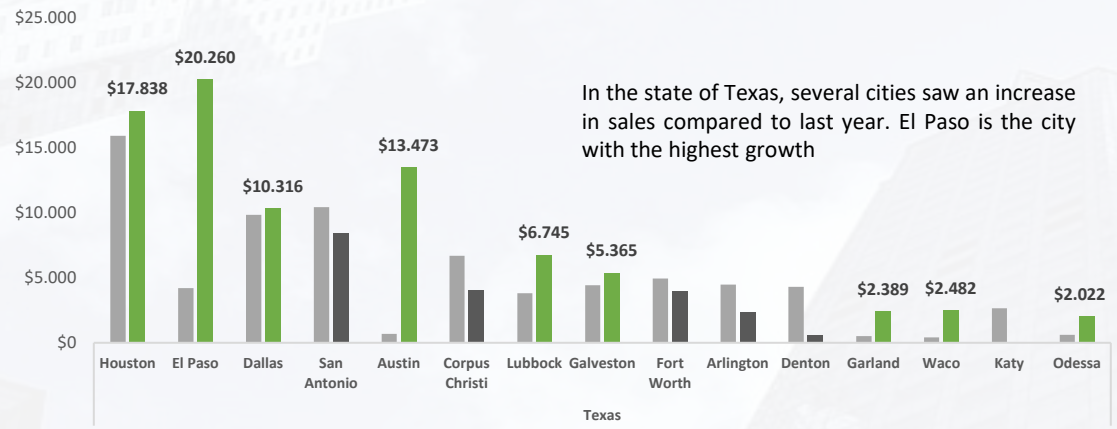


Top 20 States with Highest Sales

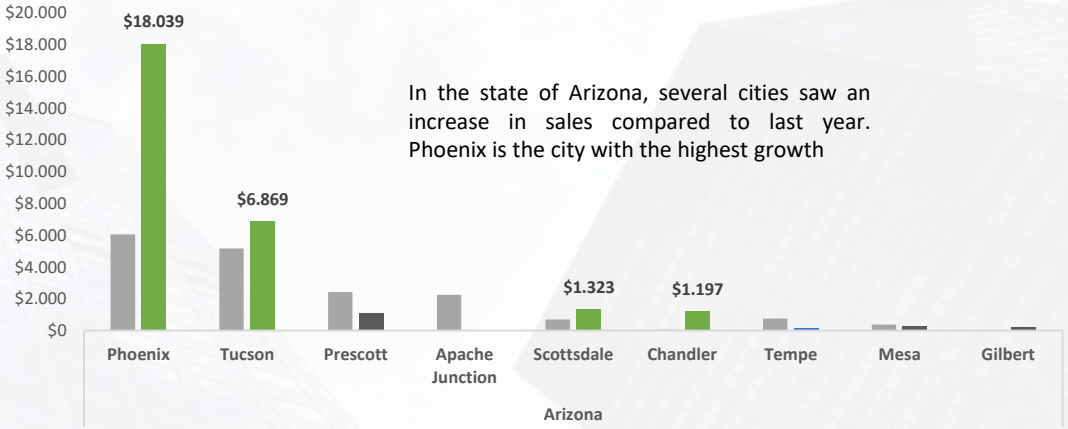
20 States with the highest sales, contributing up to 80% of overall sales

States	2020	2021	Share %	Growth %
California	$120.605	$116.691	18%	-3%
Texas	$81.814	$114.414	17%	40%
Florida	$65.916	$55.102	8%	-16%
New York	$55.783	$37.236	6%	-33%
Pennsylvania	$26.483	$34.551	5%	30%
Virginia	$36.432	$21.880	3%	-40%
Ohio	$27.014	$28.562	4%	6%
District of Columbia	$33.988	$21.394	3%	-37%
Illinois	$37.886	$16.762	3%	-56%
Colorado	$22.294	$26.648	4%	20%
Arizona	$17.791	$29.189	4%	64%
Georgia	$22.691	$23.242	4%	2%
Indiana	$22.463	$20.465	3%	-9%
Michigan	$24.673	$17.879	3%	-28%
Kentucky	$22.147	$17.250	3%	-22%
Alabama	$25.702	$11.959	2%	-53%
Minnesota	$19.336	$16.165	2%	-16%
Missouri	$16.796	$17.837	3%	6%
North Carolina	$12.047	$20.135	3%	67%
Washington	$13.380	$16.554	2%	24%

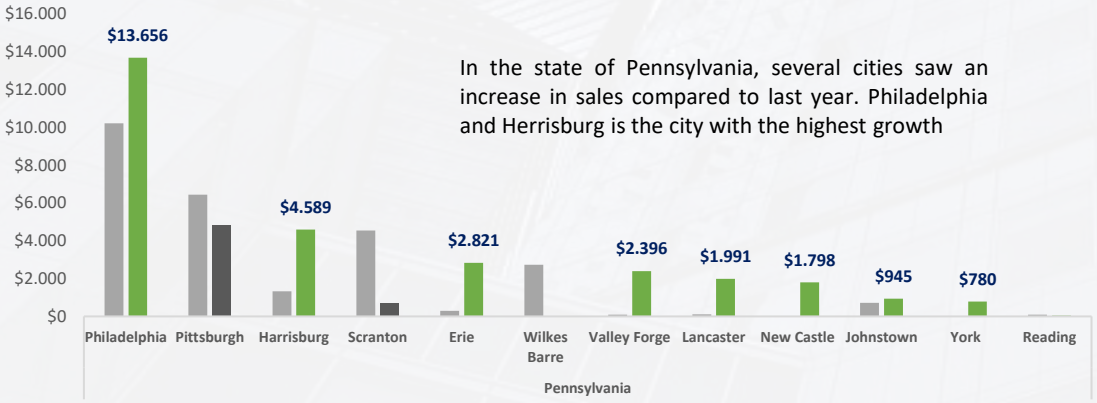
City-by-City Performance (YoY) for States with Growth Above 30%



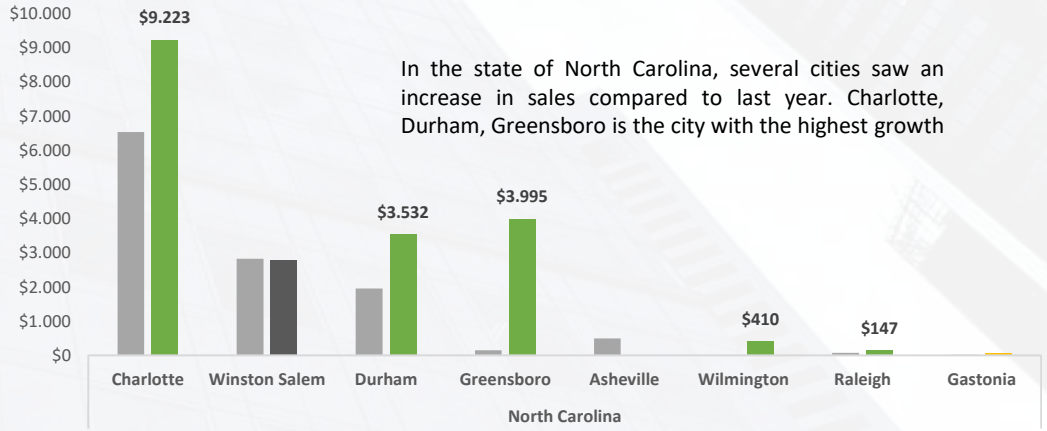
In the state of Texas, several cities saw an increase in sales compared to last year. El Paso is the city with the highest growth



In the state of Arizona, several cities saw an increase in sales compared to last year. Phoenix is the city with the highest growth



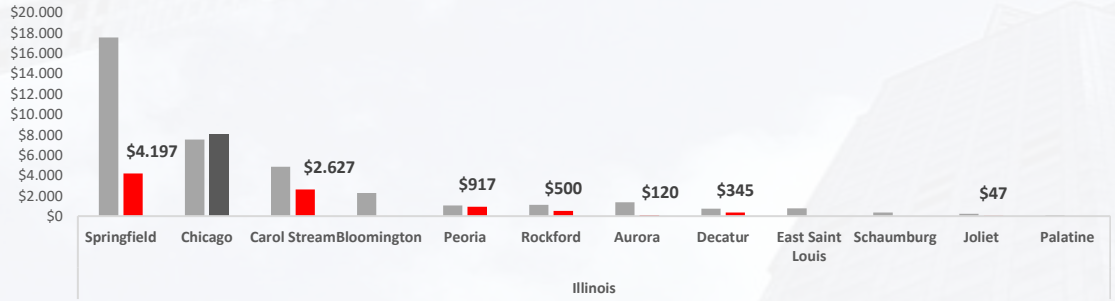
In the state of Pennsylvania, several cities saw an increase in sales compared to last year. Philadelphia and Herrisburg is the city with the highest growth

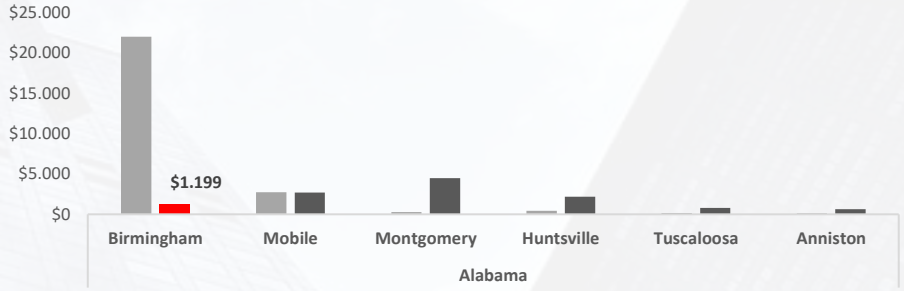


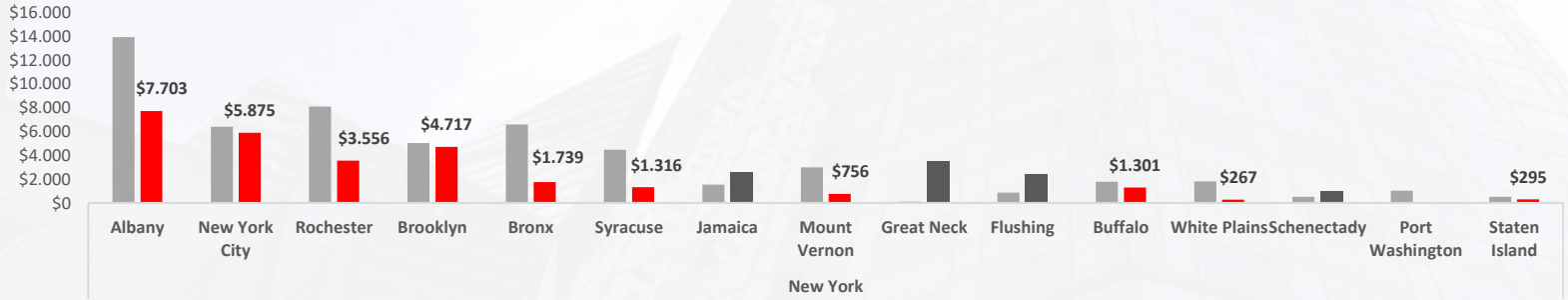
In the state of North Carolina, several cities saw an increase in sales compared to last year. Charlotte, Durham, Greensboro is the city with the highest growth

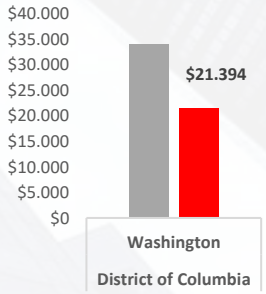
City-by-City Performance (YoY) for States with Growth Above - 30%

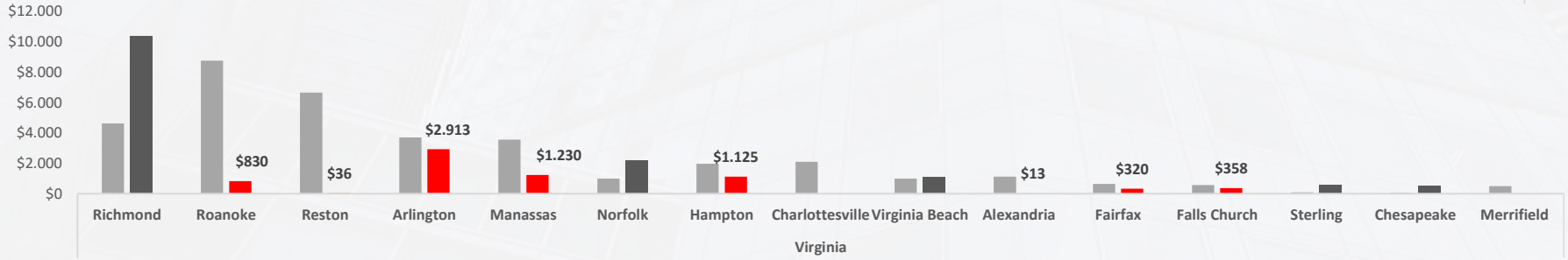
Illnois, Alabama, New York, District of Colombia, and Virginia are the states with the lowest growth (>30%). The decline is due to the significantly declining performance of several cities in each of these states.









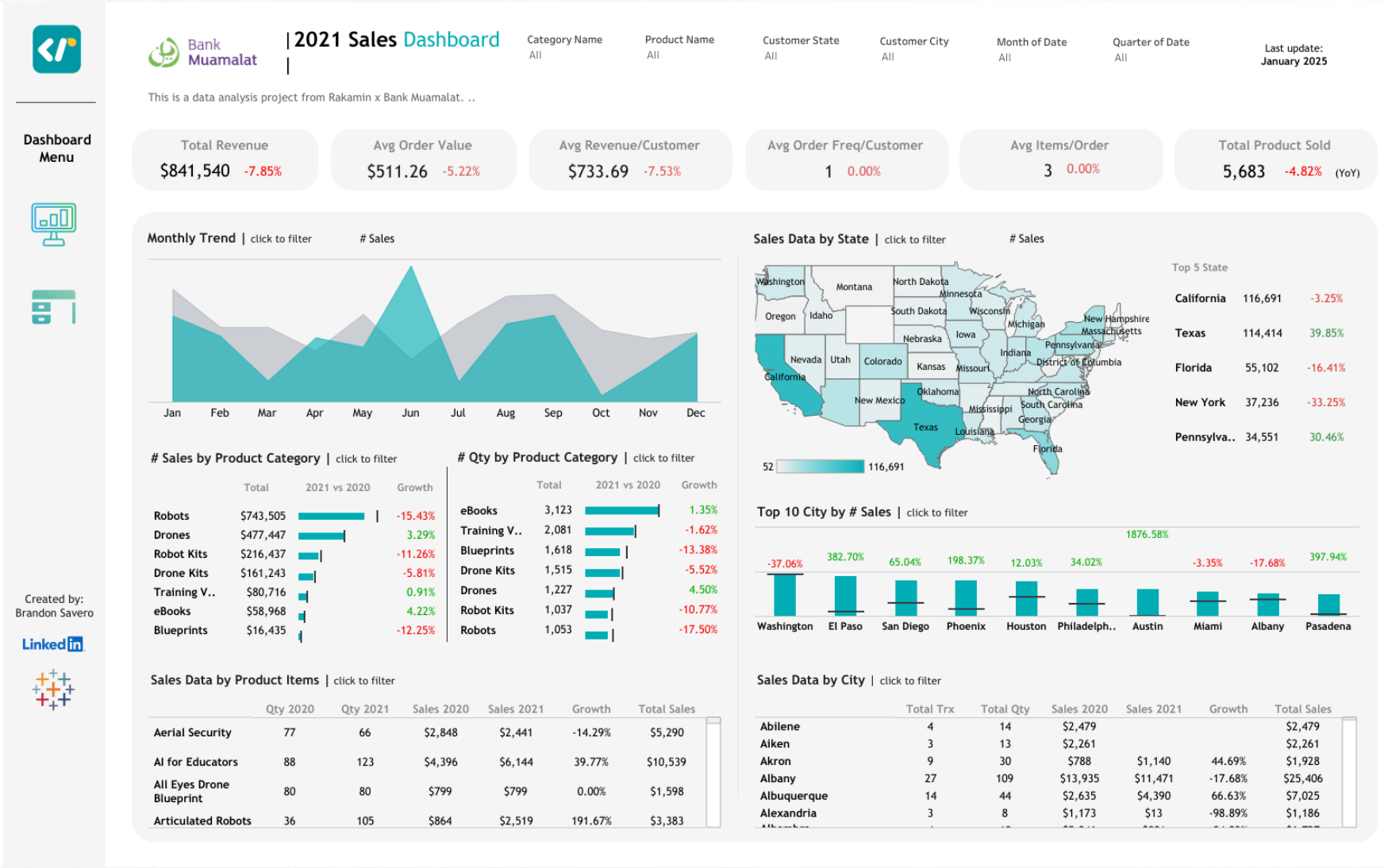


Next Step Recommendations

- Conduct a detailed analysis of the factors influencing sales trend fluctuations, particularly during the highest sales peak in June and the lowest in October. This analysis could include examining seasonality, promotions, market conditions, or any external events that may have impacted these fluctuations.
- Investigate the causes behind the declining performance of the Robots category, as it is a key sales contributor. This should include analyzing market trends, competitive landscape, and other relevant factors.
- Perform growth forecasting for the Drones category to strengthen product lines and marketing strategies based on the projections.
- Analyze and test cross-selling and up-selling strategies for low-contributing products (Training Videos, eBooks, Blueprints) alongside top-performing products. The goal is to increase transaction value and reduce costs.
- Perform a deeper analysis of the factors driving significant sales increases or decreases in the identified states.
- Expand the analysis to a city-level scope to identify cities with potential growth opportunities.

Dashboard

Link to Dashboard: Click



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THANK YOU

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