

# **Retail stores stock inventory analytics**

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# Problem statement ¶

Prepare a prediction model for profit of 50\_startups data.

## Importing the libraries

In [1]:

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sn
from statsmodels.graphics.regressionplots import influence_plot
import statsmodels.formula.api as smf
import numpy as np
from sklearn.preprocessing import StandardScaler, MinMaxScaler
```

# Loading dataset

In [2]:

```
startups = pd.read_csv("/kaggle/input/startup-logistic-regression/50_Startups.csv")
```

In [3]:

```
startups.head()
```

Out[3]:

	R&D Spend	Administration	Marketing Spend	State
0	165349.20	136897.80	471784.10	New York
1	162597.70	151377.59	443898.53	California
2	153441.51	101145.55	407934.54	Florida
3	144372.41	118671.85	383199.62	New York
4	142107.34	91391.77	366168.42	Florida

## Observations :-

1. The dataset contains data about 50 startups. It has 5 columns: "R&D Spend", "Administration", "Marketing Spend", "State", "Profit".
2. The first 3 columns indicate how much each startup spends on Research and Development, how much they spend on Marketing, and how much they spend on Administration cost.
3. The state column indicates which state the startup is based in and the last column states the profit made by the startup.

In [6]:

```
startups.info()
```

```
<class 'pandas.core.frame.DataFrame'>
```

```
RangeIndex: 50 entries, 0 to 49
```

```
Data columns (total 5 columns):
```

#	Column	Non-Null Count	Dt
type			

```
---
```

```
-----
```

```

---
0    R&D Spend          50 non-null    fl
float64
1    Administration    50 non-null    fl
float64
2    Marketing Spend   50 non-null    fl
float64
3    State              50 non-null    ob
ject
4    Profit             50 non-null    fl
float64
dtypes: float64(4), object(1)
memory usage: 2.1+ KB

```

## Observations :-

1. We can see that R&D spend, Administration, Marketing Spend and Profit consists of floating point data type values and State has object type values.
2. We can also see that all 21 observations are non null and hence we don't have any missing values

In [7]:

```
startups[startups.duplicated()]
```

Out[7]:

R&D Spend	Administration	Marketing Spend	State	Profit
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We don't have any duplicate values in our dataset. If duplicates values would have been present we would have to delete it.

In [9]:

```
startups[ 'Profit' ].unique()
```

Out[9]:

```
array([192261.83, 191792.06, 191050.39,  
182901.99, 166187.94, 156991.12,  
156122.51, 155752.6 , 152211.77,  
149759.96, 146121.95, 144259.4 ,  
141585.52, 134307.35, 132602.65,  
129917.04, 126992.93, 125370.37,  
124266.9 , 122776.86, 118474.03,  
111313.02, 110352.25, 108733.99,  
108552.04, 107404.34, 105733.54,  
105008.31, 103282.38, 101004.64,  
99937.59, 97483.56, 97427.84,  
96778.92, 96712.8 , 96479.51,  
90708.19, 89949.14, 81229.06,  
81005.76, 78239.91, 77798.83,  
71498.49, 69758.98, 65200.33,  
64926.08, 49490.75, 42559.73,  
35673.41, 14681.4 ])
```

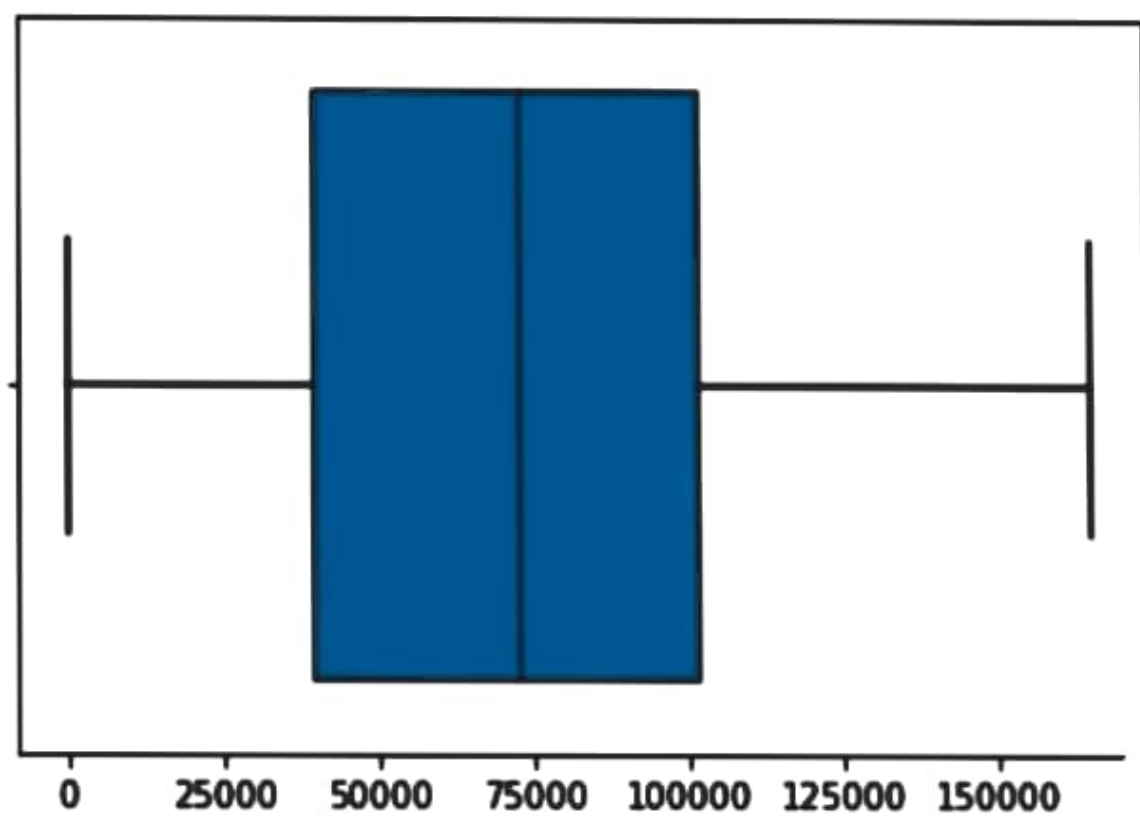
```
sn.boxplot(startups[ 'R&D Spend' ])
```

```
/opt/conda/lib/python3.7/site-packages/s  
eaborn/_decorators.py:43: FutureWarning:  
Pass the following variable as a keyword  
arg: x. From version 0.12, the only vali  
d positional argument will be `data`, an  
d passing other arguments without an exp  
licit keyword will result in an error or  
misinterpretation.
```

FutureWarning

Out[11]:

<AxesSubplot:xlabel='R&D Spend'>





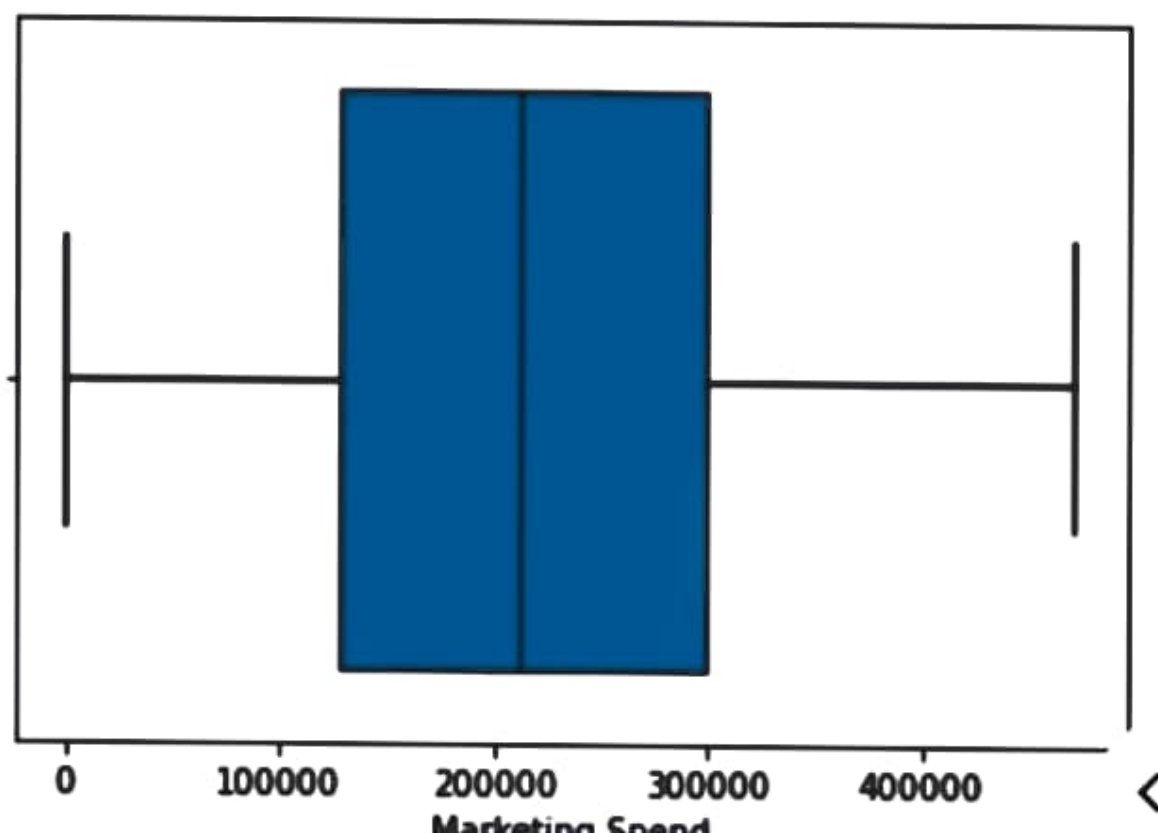
```
sn.boxplot(startups['Marketing Spend'])
```

```
/opt/conda/lib/python3.7/site-packages/seaborn/_decorators.py:43: FutureWarning:  
Pass the following variable as a keyword  
arg: x. From version 0.12, the only valid  
positional argument will be `data`, and  
passing other arguments without an explicit  
keyword will result in an error or  
misinterpretation.
```

FutureWarning

Out[13]:

<AxesSubplot:xlabel='Marketing Spend'>



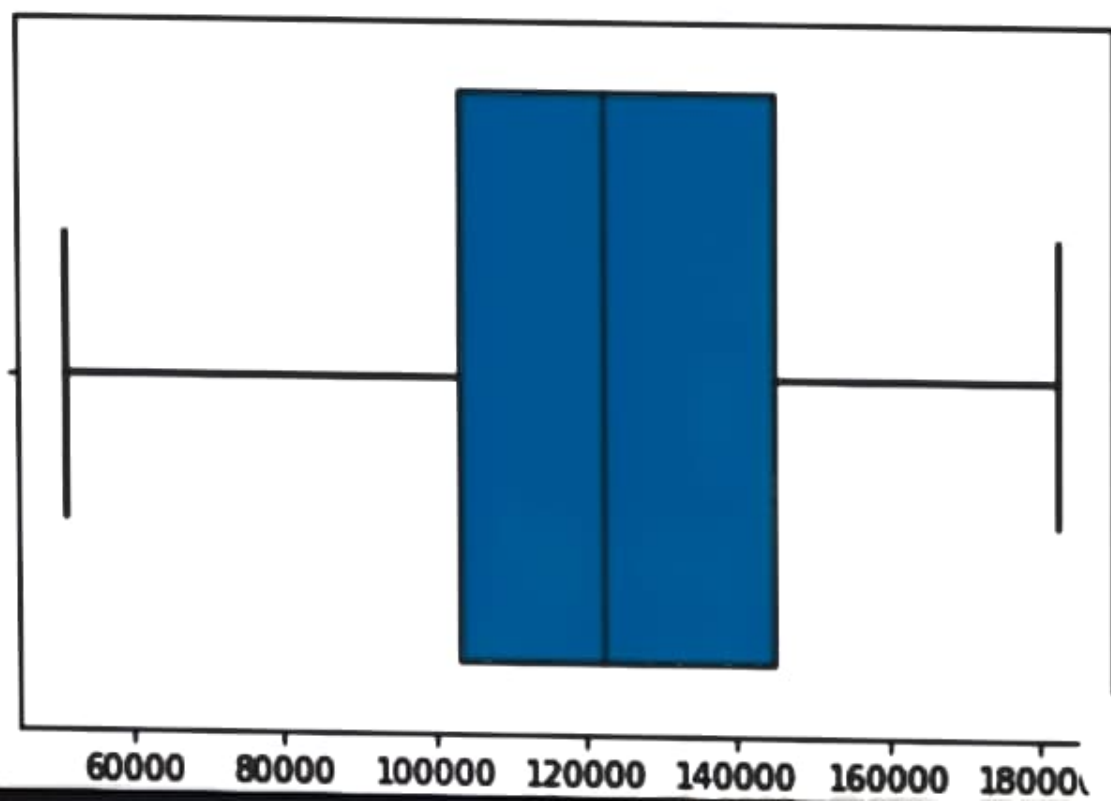
```
sn.boxplot(startups[ 'Administration' ])
```

/opt/conda/lib/python3.7/site-packages/seaborn/\_decorators.py:43: FutureWarning: Pass the following variable as a keyword arg: x. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.

FutureWarning

Out[12]:

<AxesSubplot:xlabel='Administration'>



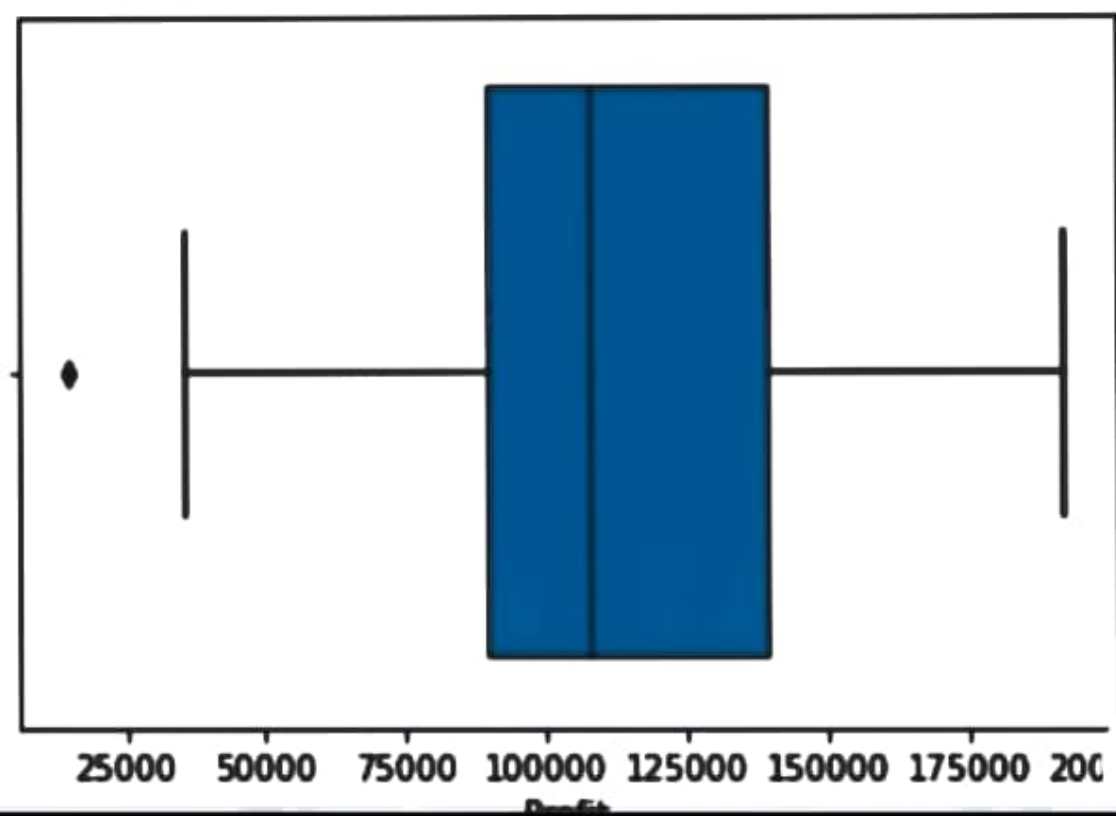
```
sn.boxplot(startups['Profit'])
```

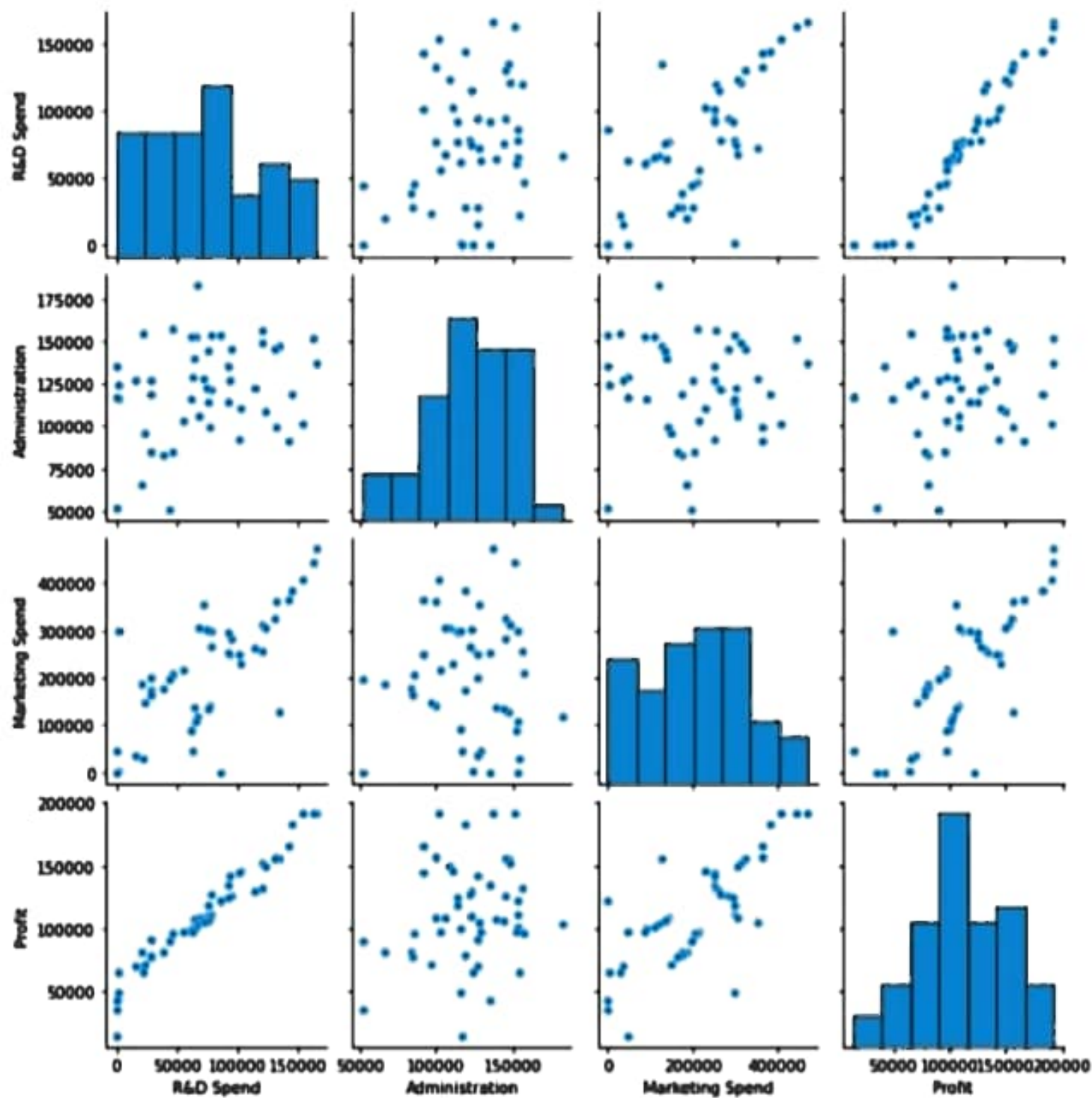
/opt/conda/lib/python3.7/site-packages/seaborn/\_decorators.py:43: FutureWarning: Pass the following variable as a keyword arg: x. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.

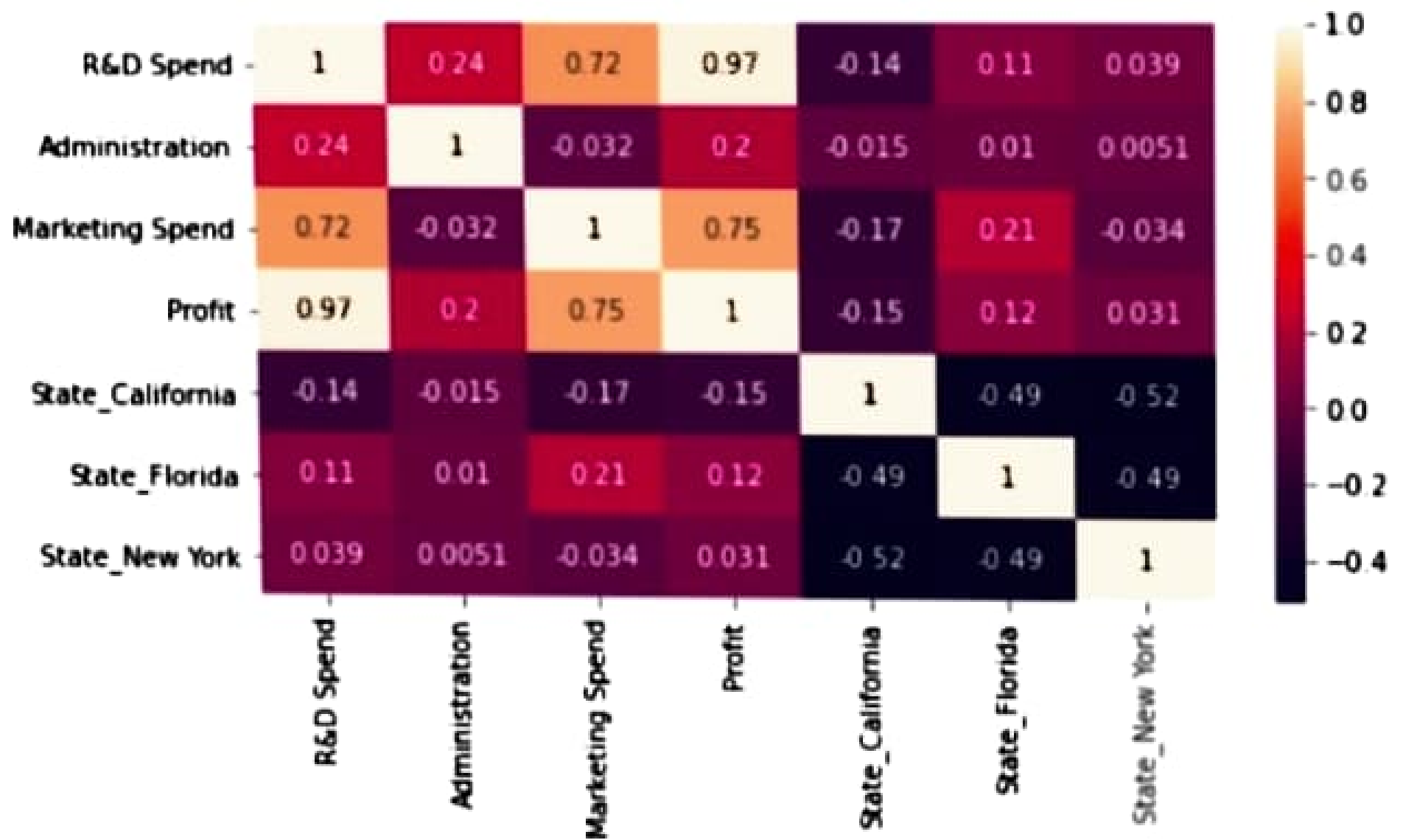
FutureWarning

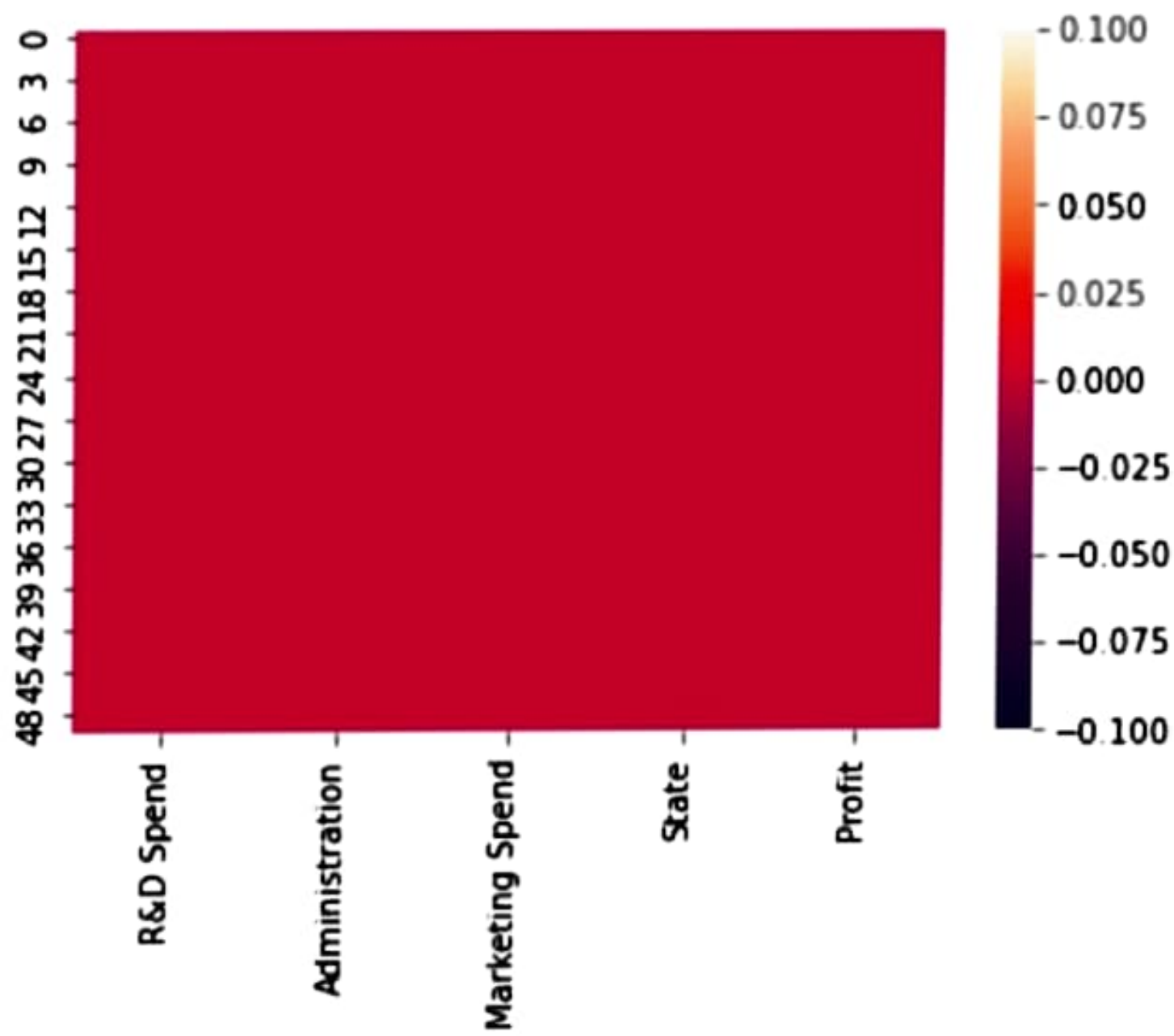
Out[14]:

<AxesSubplot:xlabel='Profit'>









# Sales Dashboard

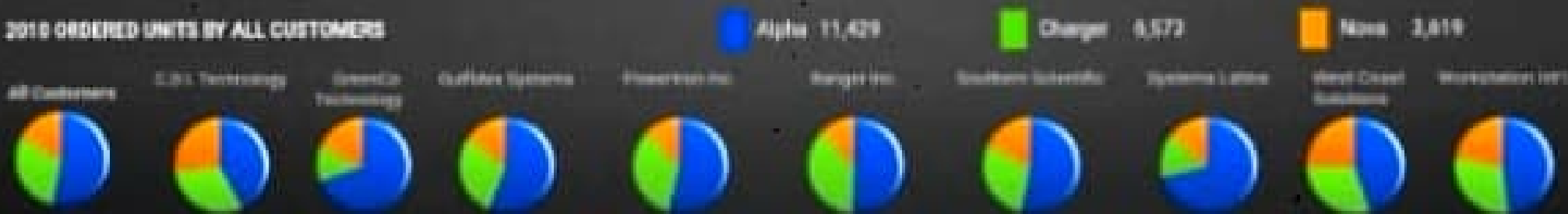
Introduction

Overview

Market Analysis

Product Shipments

## 2010 ORDERED UNITS BY ALL CUSTOMERS



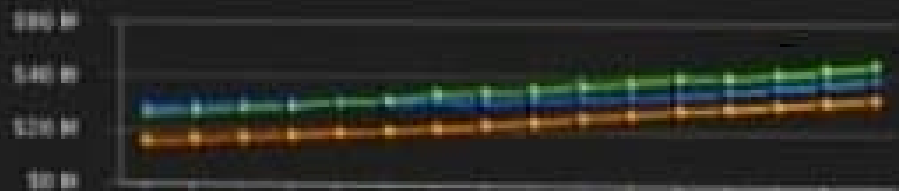
## CUSTOMER REVENUE BY STATE



## ORDER REVENUE TREND (2007-2010)



## MARKET REVENUE TREND (2007-2010)



## CUSTOMER DETAILS

Customer	Inquiry Revenue	Order Revenue	Growth	List Price	Net Price	Order Units	Sales Growth %
DATA Systems	\$101,250,014	\$79,760,025	5.1%	\$13,709	\$14,000	2,208	30.3%
Speed Inc.	\$74,350,019	\$44,355,019	4.0%	\$14,450	\$14,001	2,144	27.5%
STAR Systems Ltd	\$80,060,075	\$75,060,340	1.8%	\$15,049	\$15,147	2,001	17.3%
Summary	\$815,707,385	\$113,075,008	3.3%	\$43,290	\$43,478	8,353	25.4%

# Sales Dashboard

Introduction

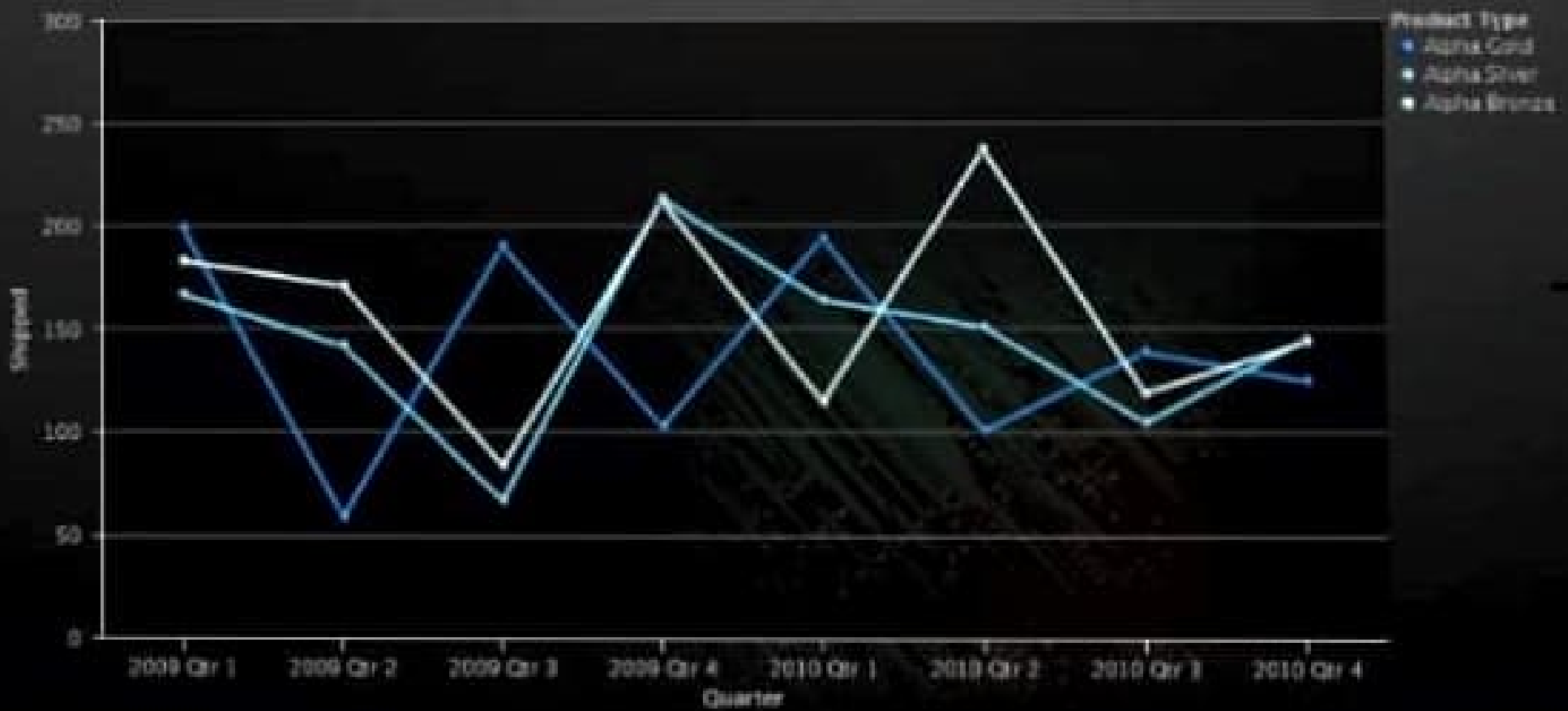
Overview

Market Analysis

Product Shipments

## PRODUCT SHIPMENTS

Alpha





# Sales Dashboard

Introduction

Overview

Market Analysis

Product Shipments

## KEY METRICS SUMMARY

26.1%

Market Share

\$110 M

Inquiry Revenue

\$882 M

Market Revenue

\$50 M

Order Revenue

32%

Sales Growth

22.3%

Win / Loss

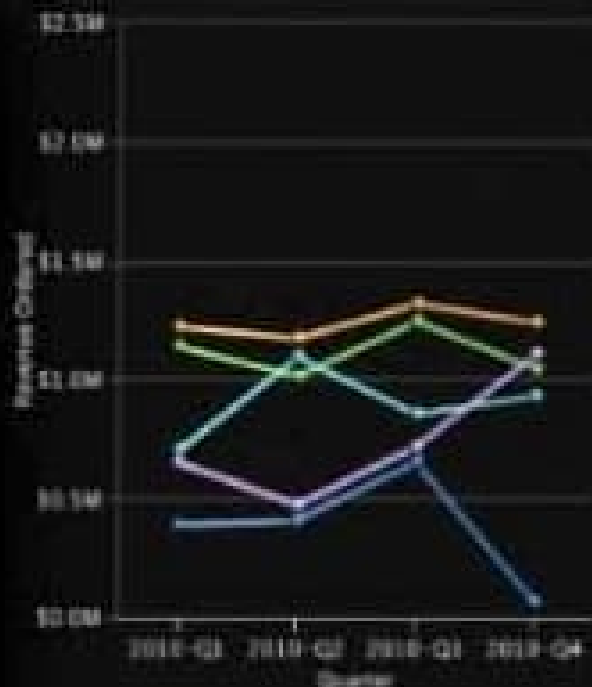
## REVENUE ORDERED



Alpha Revenue: \$17,502,304



## REVENUE ORDERED - Alpha



All Customers

CDL Technology

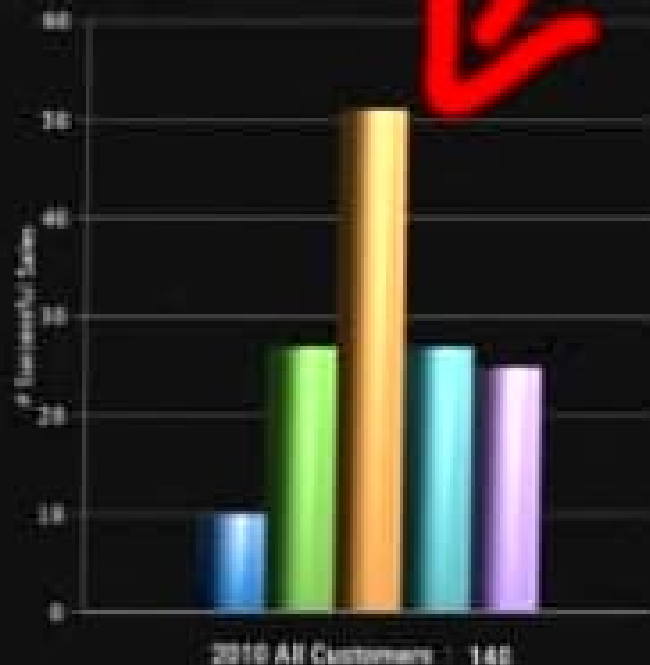
Gulfstream Systems

Procter & Gamble

Boeing Inc.

Southern Company

## SUCCESSFUL SALES - Alpha



# Product inventory overview by organization, with prior year comparative data

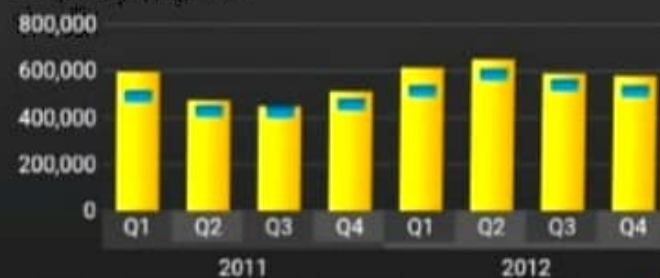
## Product revenue



## GO Americas

Quantity shipped vs. Expected Opening vs. Closing inventory

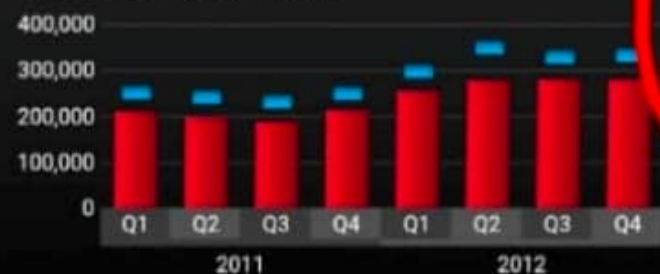
### Camping Equipment



### Golf Equipment



### Mountaineering Equipment



### Outdoor Protection



Thank You!

