

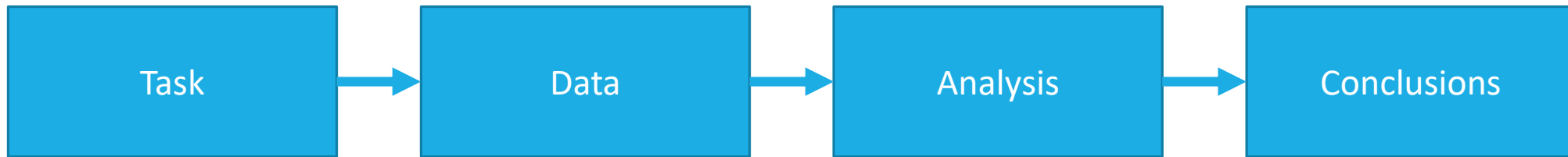
The market basket analysis of Nexus



COURSE: CAPSTONE: CREATE VALUE FROM OPEN DATA

STUDENT: NINO POŽAR

Executive summary



- Identify items that are frequently bought together
- Deliver value to Nexus by improving sales in terms of more items bought per purchase

- Dataset contains all relevant information in terms of date and time of purchase, items bought, customer ID, price of item, country of customer, invoice ID and quantity bought

- Market basket analysis was performed using apriori algorithm
- Market basket analysis provides us information on what items are most frequently bought together

- With successful market basket analysis, we found particularly interesting conclusions about the data
- We provided recommendations on which items should be connected or packaged together to improve sales
- We made basic recommendation of implementation of recommender system for Nexus

2.5 MIL. £ SALES
INCOME



nexus

112% ROI



15% MORE
SALES



Nexus is a UK-based and registered non-store online retail. The company mainly sells unique all-occasion gifts.

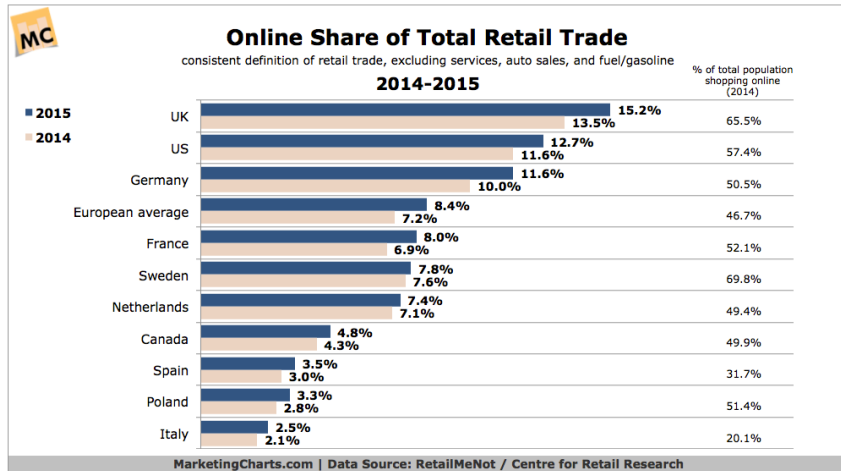
The management of company is not satisfied with current amount of sales and believe they can improve them by using analytics approach.

The company wants to improve it's sales and earnings by introducing recommender system that will group similar items together.

By introducing the system, Nexus wants to gain much needed competitive advantage.

At average, if online retail company successfully implements market-basket-based recommender systems, sales improve about 15%, with ROI at average of 112%.

THIS ISSUE IS EXTREMELY IMPORTANT FOR ALL ONLINE RETAIL COMPANIES

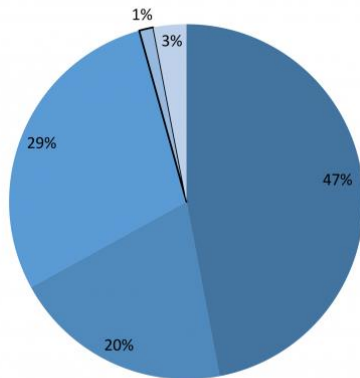


Available at: <https://www.marketingcharts.com/industries/retail-and-e-commerce-53439>

Market Share For Online Retailers

China, 2016

■ Alibaba ■ JD.com ■ Other Retailers ■ Amazon ■ VIP



Source: Euromonitor, The Wall Street Journal

BI INTELLIGENCE

Available at: <https://www.businessinsider.com/amazon-is-struggling-to-find-its-place-china-2017-8>

Market situation

The number of online share of total retail is growing, specially in the UK where in 2015 15.2% of retail happens online.

„Big guys” on market are still Alibaba, JD and Amazon.

Nexus must implement analytics to compete with top retailers.

Key to improve sales is to become customer centric, and by applying analytics, Nexus can achieve that.

Tasks and vision of analysis

Raw variables are InvoiceNo, StockCode, Description, Quantity, InvoiceDate, UnitPrice, Unit price, CustomerID, Country.

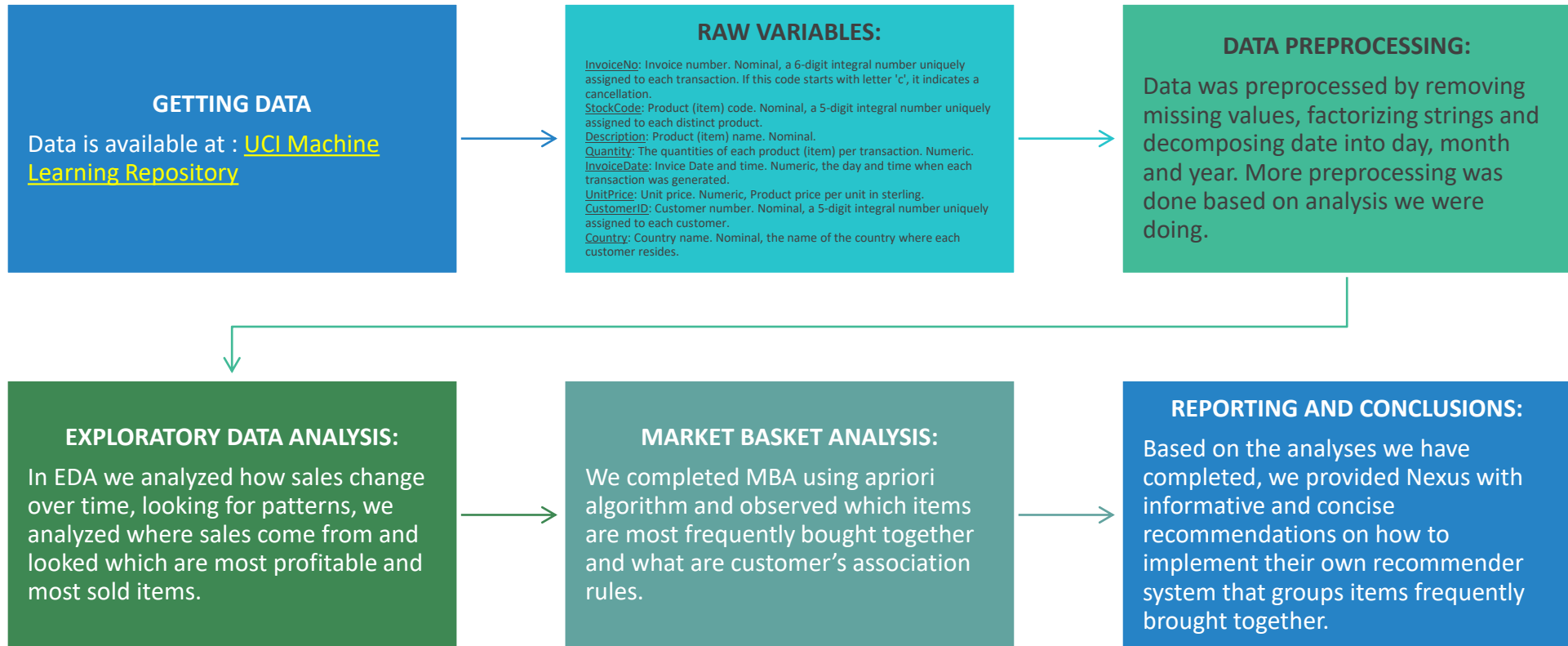
To complete analysis we will extract day, month, year and day-of-the-week values from InvoiceDate.

We will remove missing values.

We will use aggregate functions to group sales by day, weekday, customer, country and item; and look for it's summaries such as average earnings, sales, etc.

We will interpret the processed data to extract meaningful information such as IDs of items frequently bought together to drastically improve our business.

Data and analysis framework



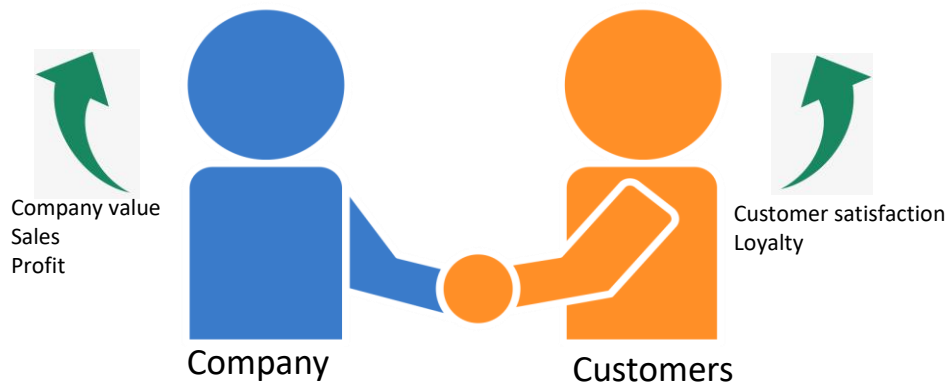
Ⓜ craigslist

ebay

amazon

Market basket analysis

- MBA is one of the key techniques used by large retailers to uncover associations between items.
- Association rules are widely used to analyze retail basket or transaction data, and are intended to identify strong rules discovered in transaction data using measures of interestingness, based on the concept of strong rules.
- For a online retail company such as Nexus, this kind of analysis is of utmost importance. Companies that understand it's customers and their online behavior have big competitive advantage.
- Online retail companies such as Craigslist, E-Bay and Amazon are great examples of companies that utilized MBA to become leaders in the field.
- MBA can be conducted in R using apriori algorithm.
- Both stakeholders, the company and customer gain value from the implementation of MBA findings.

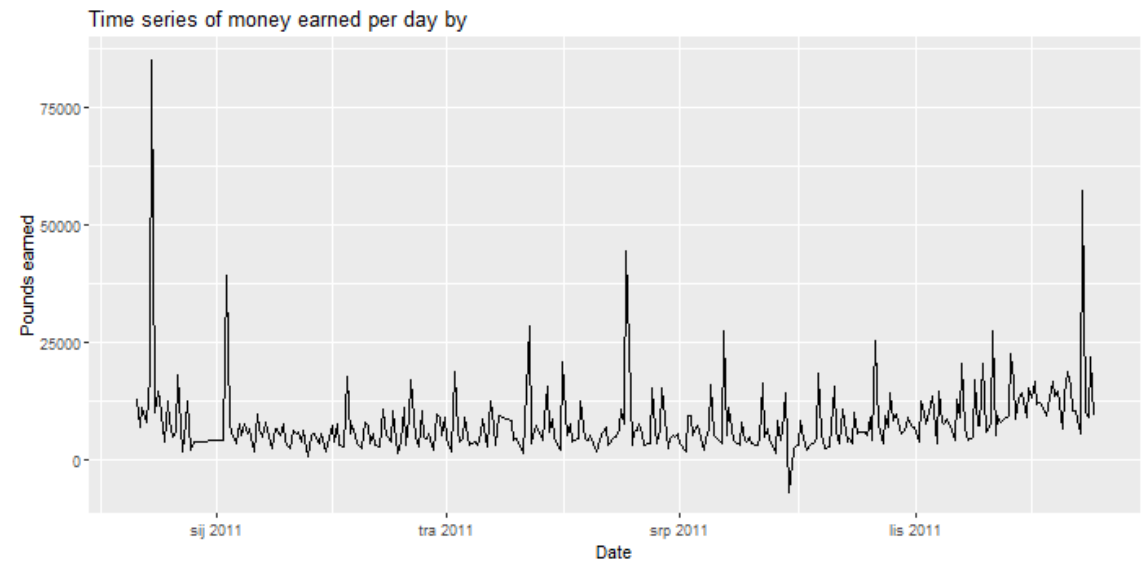


Overall sales of Nexus

As mentioned, management is not satisfied with current sales.

CONCLUSIONS ABOUT DAILY SALES

- Sales are pretty much static over the year
- There are clear patterns of increased sales, specially around hollidays in December
- There is lower amount of sales on weekends, which is expected since Nexus does not accept orders on Saturdays or Sunday mornings



THE GOAL IS TO IMPROVE SALES AND GAIN PROFIT!

Table 1. Amount of sales par day of the week

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
94933	101516	94246	103550	81835	0	64375