

Implementation and Value Generation with Business Analytics

TBA2102: Tutorial 1





STRUCTURE OF TUTORIALS

Duration:

45 mins

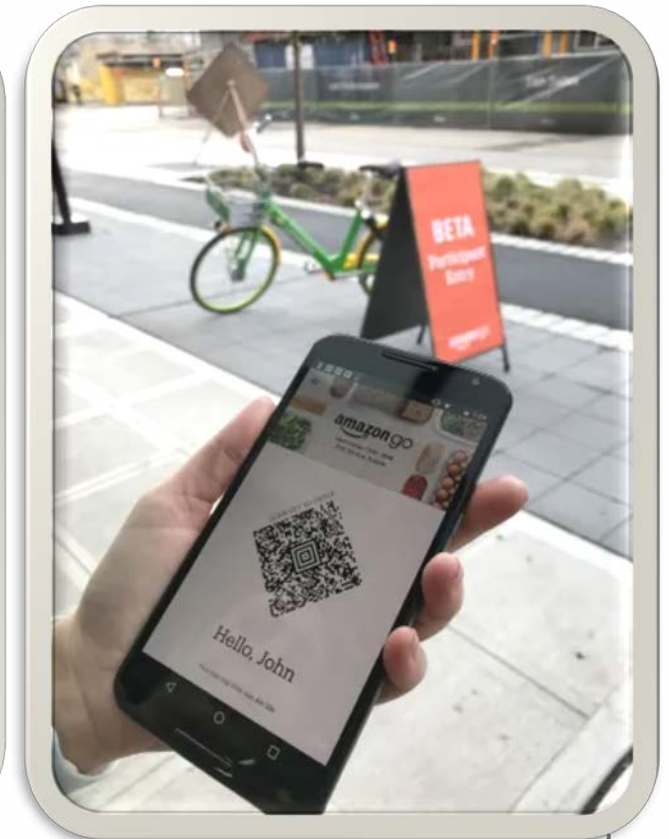
Content:

- Cover previous week's tutorial assignment
- Review some lecture contents
- Show how concepts taught in lectures are applied to actual problems

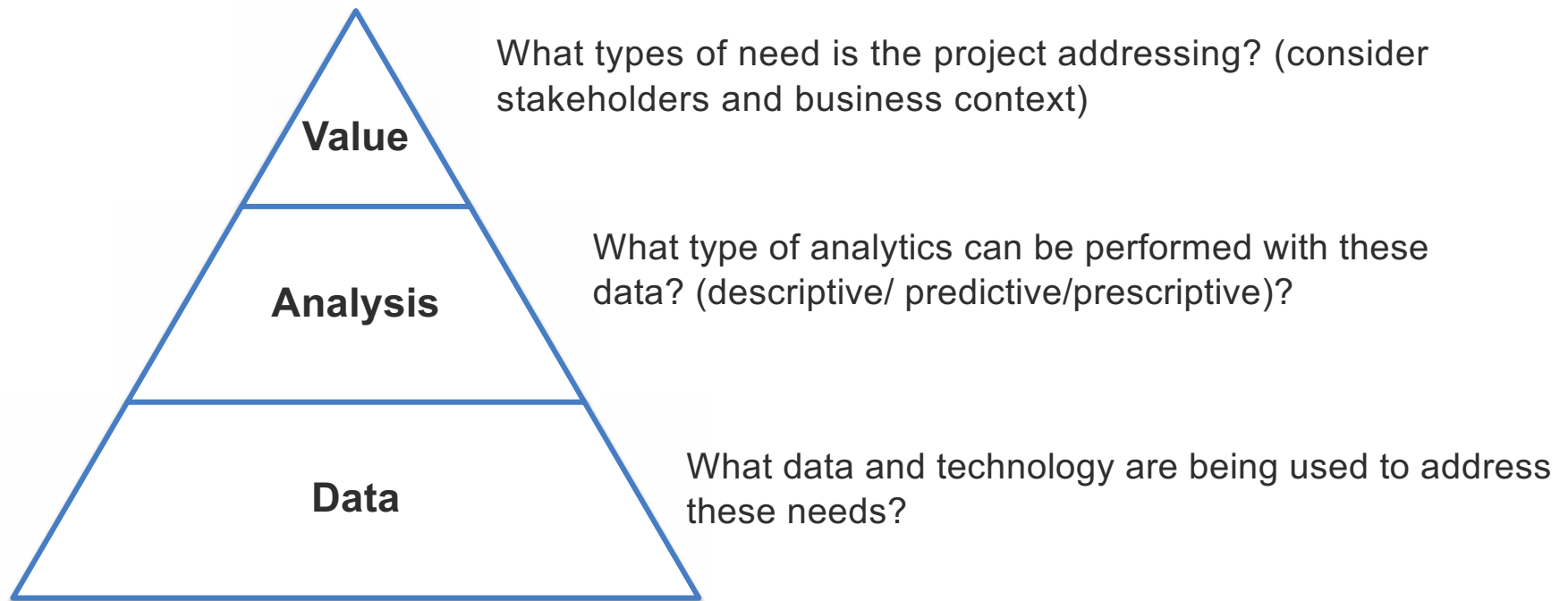


HOW TO GENERATE VALUE USING ANALYTICS?

AMAZON GO CASE



HOW DO WE GENERATE VALUE (LECTURE RECAP)



A BRIEF OVERVIEW OF AMAZON GO

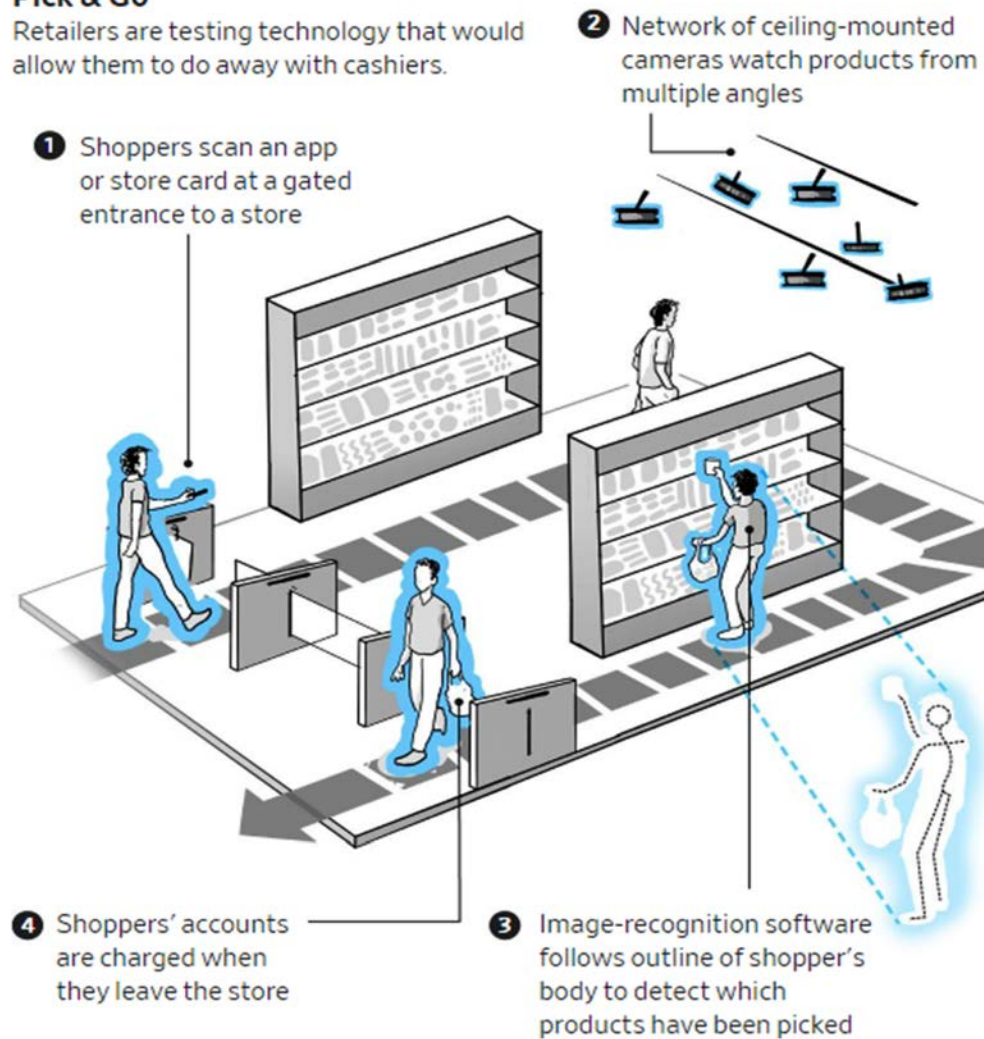


Amazon Go is a touted to be “the world’s most advanced shopping technology. No lines, no checkout – just grab and go!”

CUSTOMER JOURNEY

Pick & Go

Retailers are testing technology that would allow them to do away with cashiers.



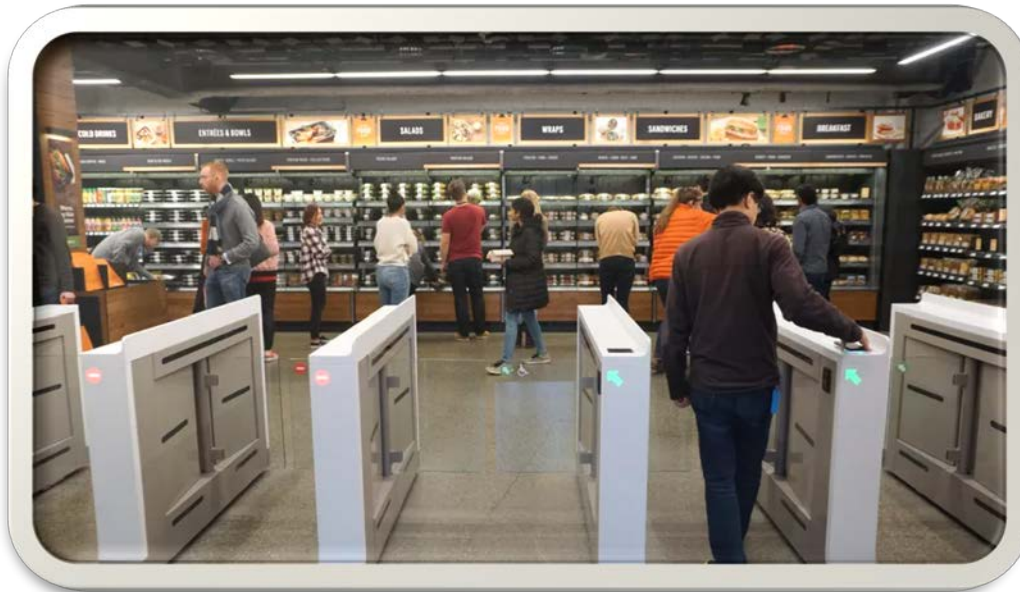
Source: people familiar with company trials

Dylan Moriarty/THE WALL STREET JOURNAL

QUESTION 1A

Comparing Amazon Go to traditional brick-and-mortar supermarket shopping (such as at Fairprice and Seng Siong), what are some raw data that can be collected about the customers that cannot be done before?

(4 marks – 1 marks for one type of data; in the discussion, try to explain the difference between raw data that is collected versus metrics that can be derived from the data.)





QUESTION 1A


Comparing Amazon Go to traditional brick-and-mortar supermarket shopping (such as at FairPrice), what are some raw data that can be collected about the customers that cannot be done before?

- Precise store in-out timings
- Timing of items browsed/picked up/returned to shelves
- Customer movements across sections/shelves
- Demographic data through app

QUESTION 1B

Based on the data that can be collected (such as those you have mentioned in (a)), what are some metrics Amazon Go can create to understand shoppers' shopping behavior? Provide 3 metrics in the table below. For each metric, describe the data that needs to be collected to compute the metric. An example is given in the table.

| Metric | How is this measured? |
|-------------------------|---|
| Time Spent | Time upon exit – Time upon entry |
| Browsing Time | <ul style="list-style-type: none">• Time of item placed in basket - Time of the item initially picked up• Time of item returned to shelf- Time of the item initially picked up |
| Browsing Order | Sort the time of items picked up in an ascending order |
| Browsed but unpurchased | Check if item is placed back on shelf after being picked up. (Picked up = True; Placed back = True) |



What value do these metrics generate?

QUESTION 1B

Based on the data that can be collected (such as those you have mentioned in (a)), what are some metrics Amazon Go can create to understand shoppers' shopping behavior? Provide 3 metrics in the table below. For each metric, describe the data that needs to be collected to compute the metric.

| Metric | How is this measured? |
|------------------------------|---|
| Brand Choice | Items purchased > Items picked up but unpurchased > Items ignored |
| Spending Habits | <ul style="list-style-type: none"> Average payment per shopping trip Price of selected items (in-basket) – average price of item category |
| Number of Customers in-store | Sum number of customers who have tapped-in but not tapped-out (tapped-in = True; tapped-out = False) |





QUESTION 1C

Through the data that Amazon Go collects about its shoppers, briefly explain what are the different analytics (descriptive, predictive and prescriptive) that could be performed with such data. For each type of analytics, what are the decision(s) that can be made to improve customers' shopping experience.

Descriptive

- What is the total number of customers each day?

Predictive

- How many customers are we likely to have on a Monday?

Prescriptive

- How do we optimize the allocation of staff/resources to handle different volumes of customers?



QUESTION 1C

Through the data that Amazon Go collects about its shoppers, briefly explain what are the different analytics (descriptive, predictive and prescriptive) that could be performed with such data. For each type of analytics, what are the decision(s) that can be made to improve customers' shopping experience.

Descriptive

- Which are the popular brands among customers? (given an item category)

Predictive

- Given a particular brand and item category, how much sales do we expect to make over a certain time frame?

Prescriptive

- How many items should we stock to ensure a balance between supply and demand?



QUESTION 1C

Through the data that Amazon Go collects about its shoppers, briefly explain what are the different analytics (descriptive, predictive and prescriptive) that could be performed with such data. For each type of analytics, what are the decision(s) that can be made to improve customers' shopping experience.

Descriptive

- What are some items that are typically purchased together?

Predictive

- Based on customer profile and other factors (e.g. day of the year), what are the likely purchases or needs of the customer?

Prescriptive

- How do we optimize the arrangement of store products to create a smooth experience for customers?

QUESTION 1D

What are some challenges that Amazon Go might face in conducting these analytics?

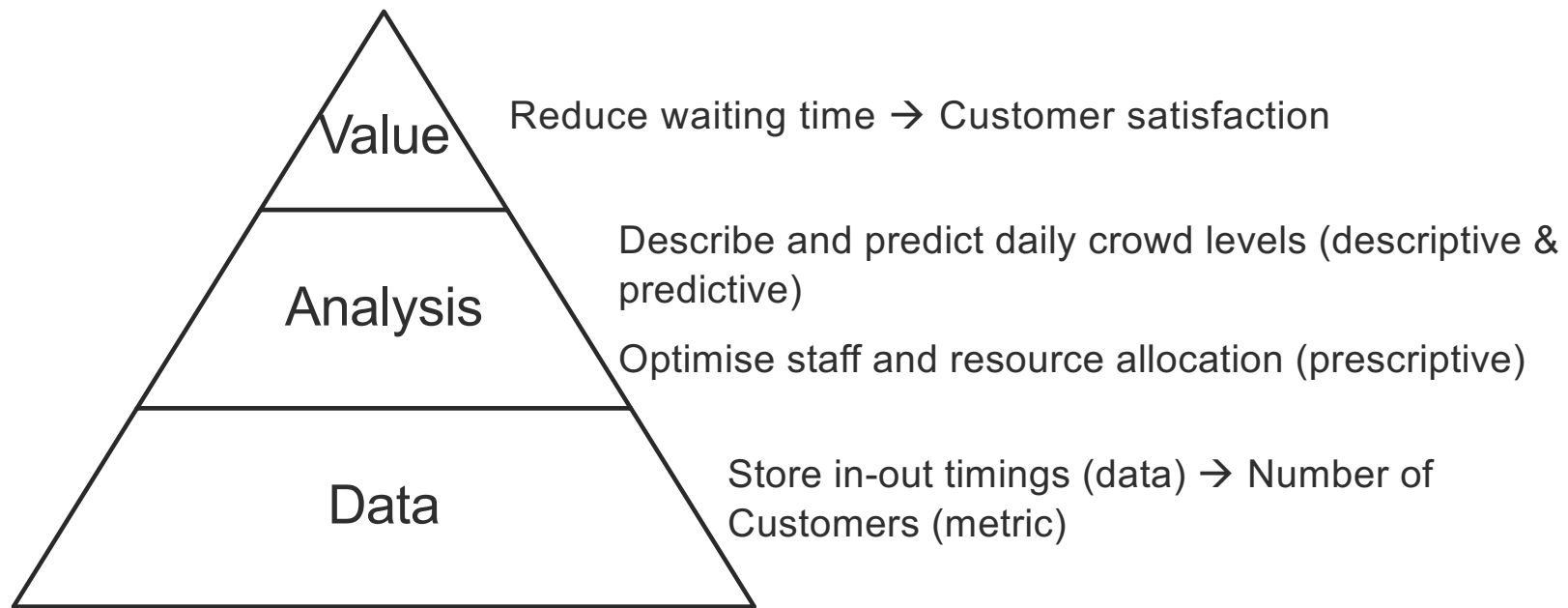
Analytical Challenges

- **Variety** of data (multiple data types)
- **Volume** and **Velocity** of incoming data
- **Accuracy** of identification matching → concerns about overcharging and undercharging

Business Challenges

- Possible **privacy** concerns → How should analysts handle sensitive data?
- High **investment** in technology

ILLUSTRATION OF VALUE-GENERATION FOR AMAZON GO



Can you do this for other business problems?

QUESTION 2: DISCUSSED DURING TUTORIAL 2 IN WEEK 4

Files > Tutorial Assignments

| File Name | Last Modified By | Last Modified | Created | Size |
|---|----------------------|----------------------|----------------------|----------|
| TBA2102AY2021S2-Tutorial 1.pdf Tutorial 1 Assignment | Tan Swee Lin, Sharon | 19 Jan 2021 11:16 am | 19 Jan 2021 11:16 am | 67.62 KB |

"A new study by the Scripps Research Translational Institute suggests Fitbits could be used to detect the flu. By tracking resting heart rate and activity levels, researchers said Fitbits could improve detection of outbreaks at the state level." More details about the study can be found in the news links below.

<https://medcitynews.com/2020/01/scripps-study-can-your-fitbit-track-the-flu/>

<https://www.fiercebiotech.com/medtech/fitbit-for-flu-researchers-show-fitness-wearables-can-help-track-outbreaks>

<https://www.health.com/condition/cold-flu-sinus/fitbit-flu-outbreaks>

(Note: Those who are interested in knowing more about the study may read the original paper published in LANCET but you are not expected to read and understand the methodology and data analyses portions of the original research paper in answering this question)

- Based on the news articles, what was the data the researchers with the Scripps Research Translational Institute collected in their study? How is this data different from the raw data that Fitbit collects from its device wearers? What type of analytics did they perform with the data? [4 marks]
- How does the approach taken by this research team add value to current methods of flu outbreak detection and response? [3 marks]
- What are the limitations of their approach and what challenges might they face in implementing their approach of flu outbreak detection and prediction? [3 marks – 1 mark per limitation or challenge]

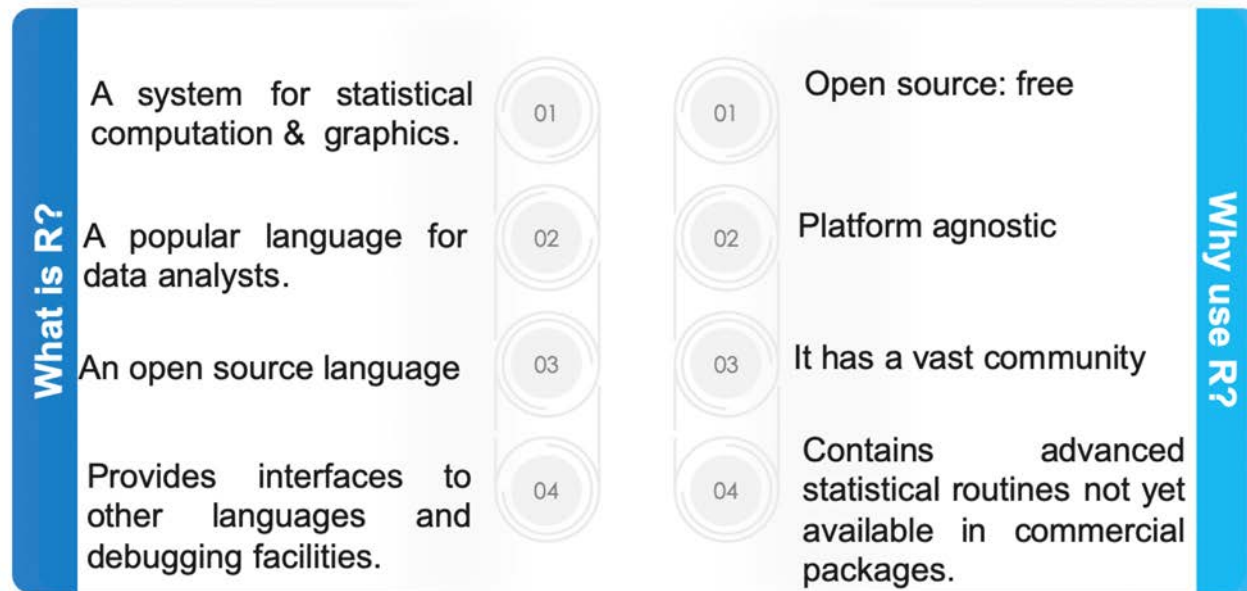
Please note that your answers should not be in point form and one or two worded answers. Do elaborate and explain your answers, referencing facts stated in the articles where appropriate. If you wish, you may also make reference to facts outside of the news articles provided (e.g. other research or market reports) to support your answers.



SETTING UP FOR R

- **PREPARE FOR NEXT WEEK!**

WHAT IS R? WHY USE IT?



Main resources to learn R in this course:

- Datacamp
- Business Analytics Using R - A Practical Approach by Umesh R. Hodeghatta, Umesh Nayak. Berkeley, CA: Apress : Imprint: Apress, 2017. Available at NUS library



GETTING STARTED WITH R

Download and install R and Rstudio

- <https://courses.edx.org/courses/UTAustinX/UT.7.01x/3T2014/56c5437b88fa43cf828bff5371c6a924/>

How to use Rstudio's interface for basic operations

- http://ncss-tech.github.io/stats_for_soil_survey/chapters/1_introduction/1_introduction.html

See you next week!

THANK YOU!

