Cloud Computing, AI, and Economics

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Preview

- Problem
  - Loss of Revenue
- Solution
  - Using Cloud’s AI tools
- Terms
- Step 1: Choosing the right Cloud service
- Step 2: AI to improve aspects of E-commerce

Problem

- Burlington is losing its revenue
  - **Retiring** their e-commerce platform (online shop)
    - CEO said it was **too high a cost**, esp. shipping and merchandising
    - However, this can be **offset** by maintaining an online shop *during a pandemic*
- Stakes: **Macy's - drop in sales** for almost 3 years until 2017, since its former CEO said that shoppers wanted in-person stores
  - Why? They refused an offer to advertise on **cable channels**
  - So if a company like Macy's didn't innovate without a pandemic… what does it mean for Burlington with a pandemic?
    - It could **go under** if it doesn't make the switch to e-commerce

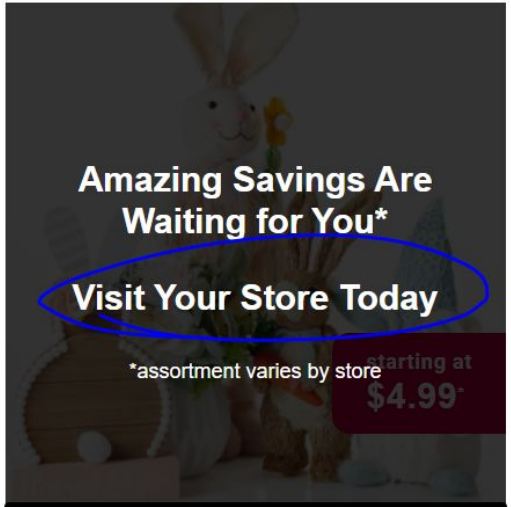
Spotted in Store: Great Deals

Act fast, they won't last

WOMENS | MENS | KIDS | BABY | HOME | ESSENTIALS

Ladies Fashion Watches & Sets

DEAL-TASTIC FINDS & ULTIMATE WOWS

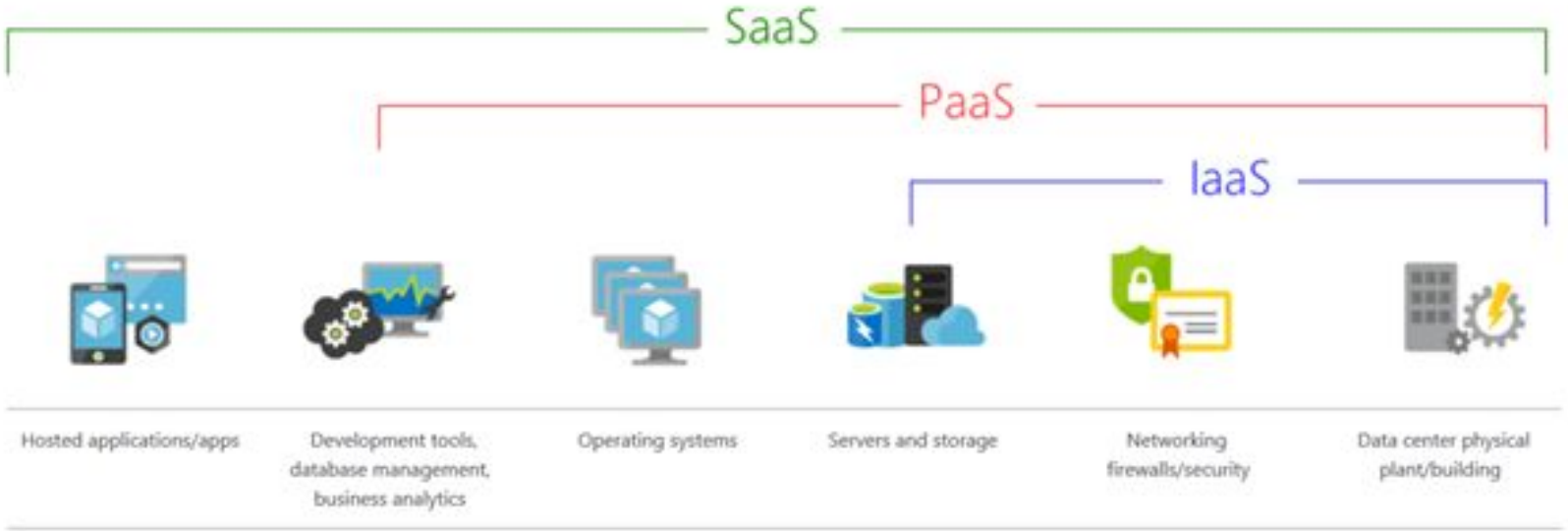


Easter Décor

Solution

- The way to stop losing revenue… is to **gain revenue**
- Step 1: **Relaunch** the website
  - Create the e-commerce platform, with the help of **Cloud services**
  - Will manage costs of e-commerce
- Step 2: After relaunch, **implement Cloud's AI features,** and use AI to:
  - Create **sales forecasts**
  - Set **optimal prices**
  - Manage **inventory** better

Terms (relating to Cloud)



- **IaaS (Infrastructure-as-a-Service)** → most **basic** Cloud service, you have to provide the OS, analytics and everything else
- **Paas (Platform-as-a-Service)** → bit more advanced, provides **everything except** hosted apps
- **SaaS (Software-as-a-Service)** → provides everything, **most cost-efficient**; ex.) MS OneDrive; Google Drive

Terms (relating to Economics)

- **E-commerce conversion rate** → the **ratio** of consumers who **visit a website** to consumers who **buy from the website**
- **Inventory** → any sort of item held by the company that's used to **sell/produce/build**
  - Could be bricks for building the store, or shirts to sell to people
  - Let's consider inventory as only **what company wants to sell**
- **Unplanned inventory** → difference between **predicted sales** and **actual sales**
  - A number that's +/-, or 0
- **Sales forecast** → prediction of a store's future revenue, based on past revenue data

Step 1: Choosing the right Cloud Service

Which service to choose?

- What is Burlington **worried** about?
  - "The **costs are too high** for e-commerce" - CEO
  - So, **reduce the hosting costs** by leveraging SaaS

Criterion	IaaS [1]	PaaS [2]	SaaS [3]
Compute power	Yes, IaaS has option of limitless compute power	Same as IaaS compute power	Same as IaaS compute power
AI capabilities	No; provided by client since IaaS doesn't support business analytics	Yes, AI solutions provided by CSP, as PaaS supports analytics and data management	Same as PaaS AI capabilities

Sources:
[1] "IaaS (Infrastructure-as-a-Service)." IBM Cloud Learn Hub. 12 July 2019. Web. 04 Mar. 2021.
[2] Bui, An. "The Big Data Stack: Powering Data Lakes, Data Warehouses And Beyond." Panoply. 12 Jun. 2018. Web. 04 Mar. 2021.
[3] "Big data as a service (BDaaS) solutions: comparing IaaS, PaaS and SaaS." Packt. 28 Aug. 2018. Web. 04 Mar. 2021.

Step 2: Use AI to improve e-commerce factors

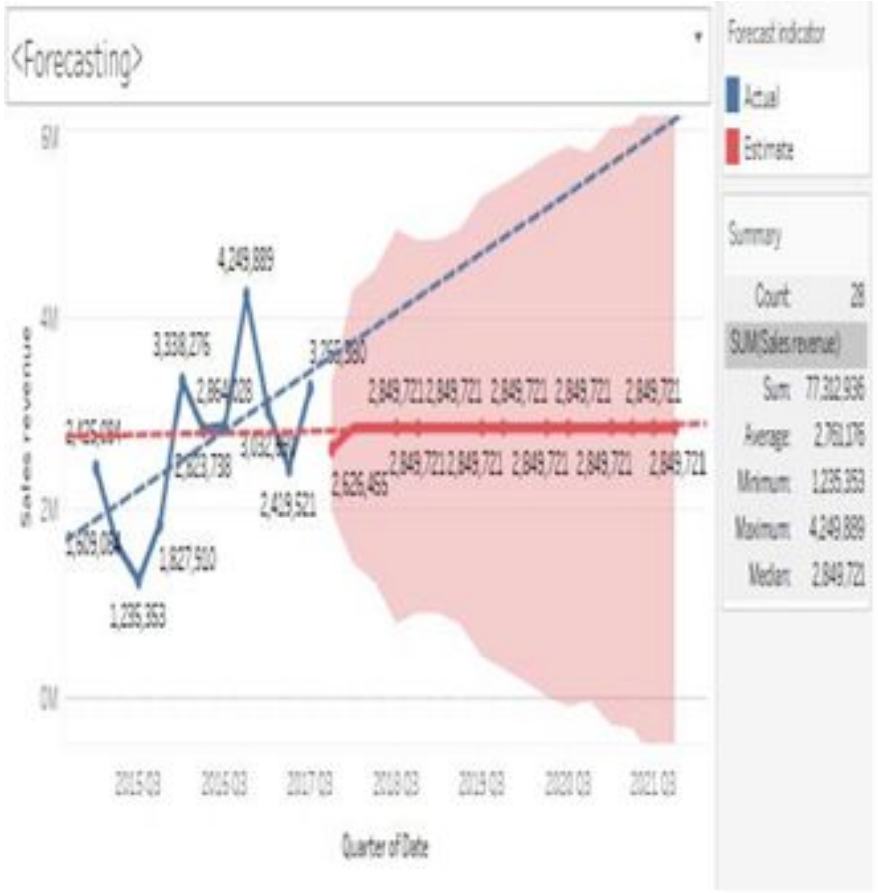
(Post-Site launch)

Context

- Even before pandemic, Burlington said its e-commerce **conversion rate was not good**
  - Burlington rate = **0.5%**, while **average was 2.57%** (5 times as high)
- To increase this rate:
  - Increase **number of consumers visiting** online store
  - Increase **number of consumers buying** from online store
- Cloud AI can **help with both** of these things

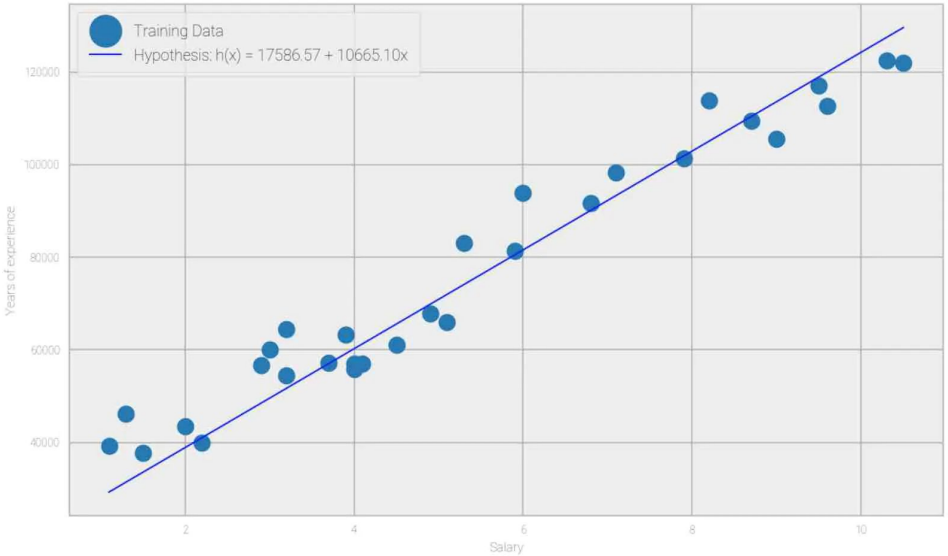
AI to Create Sales Forecasts

- Benefit: gives a firm idea of **what to expect** in future revenue; **how much** of items to buy; where to put costs
- Burlington should use this to determine whether there is a **drop or increase in sales**; plan on **how much cash** to spend



AI to Optimize Prices

- Burlington's main goal is to maximize revenue, so they should **set their prices to maximize revenue**
- **Consumer behavior changes rapidly**, sometimes hourly
- Use AI's data collection (and **regression models**) to help set optimal prices quickly and **dynamically**



AI to Manage Inventory

- Suppose Burlington **buys 50 shirts** to sell in 1 day, but **40 customers** come in and buy one shirt each. Burlington has **10 extra shirts** by end of day.
  - They **wasted money** on those extra shirts → **Positive unplanned inventory**
  - Opposite: if **60 customers** come in, Burlington **runs out** of shirts - **negative unplanned inventory** → stock up on shirts
- Cloud's AI features can help make the **unplanned inventory as close to 0** as possible
  - **Reinforcement Learning** technique → **reward** AI for managing inventory well, **punish** AI otherwise
  - Led to a **32% reduction in costs** for one AI studio (Remi AI)

Questions?