



**NUS**  
National University  
of Singapore

School of  
Computing

Leading The World With Asia's Best

# BT1101 Introduction to Business Analytics

## Lecture 2

### Value Generation with Business Analytics

*A/P Sharon Tan*

**19 Jan 2023**



**Any questions or comments on the lecture? Please post them here.**

**Top**

PollEv.com/**distans** (weblink)

Or Poll Everywhere App





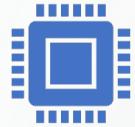
# Learning objectives

- Be able to translate business problems to analytic problems and discuss how analytics can help solve those problems
- Understand and be able to apply value generation perspective in analytics
- Know and be able to identify the challenges of implementing business analytics and the best practices for successful implementation

# Business Analytics is the use of:



data,



information  
technology,



statistical analysis,



quantitative  
methods, and



mathematical or  
computer-based  
models

To help managers gain improved insight about their business operations and make better, fact-based decisions.

# Amazon Go “No-Checkout” Grocery store



<https://www.youtube.com/watch?v=NrmMk1Myrxc&t=8s>

# Amazon Go Revolutionizing Grocery Shopping?



## Amazon's "Just Walk Out" technology

- Overhead cameras, weight sensors and deep learning technology to detect merchandise that shoppers take from or return to shelves and keep track of the items selected in a virtual cart
- Amazon Go mobile app used by customers to gain entry through a turnstile. When they exit the store, the Just Walk Out technology automatically debits their Amazon account for the items they take and then sends a receipt to the app.

## From customer perspective:

- Saves time since no need to queue to check out
- Particularly timely during covid-19 pandemic – cashless and contactless payment & checkout
- Purchase history

## From Amazon's perspective:

- Better understanding of customer purchasing and browsing behavior (time spent browsing each item, order in which items are browsed, items browsed but not purchased, items bought together) compared to traditional supermarket; that could help make better predictions on how many customers and who will come at different times of the day or week, which items are likely to be purchased, and to make decisions on optimal stock levels and marketing campaigns to help increase sales.
- Monetize "just walk out technology" and analytics capability

# Applications for BA



## Industries

- Agriculture
- Construction
- Defense
- Education
- Entertainment
- F&B
- Medical
- Hospitality
- Logistics
- Retail
- Infocomm & Technologies
- ⋮



## Business Functions

- Accounting & Finance
- Human Resource
- Marketing/ Sales
- Production/ Procurement
- Public Relations
- Operations



## Types of Analytics

- Descriptive
- Predictive
- Prescriptive

# Research shows...

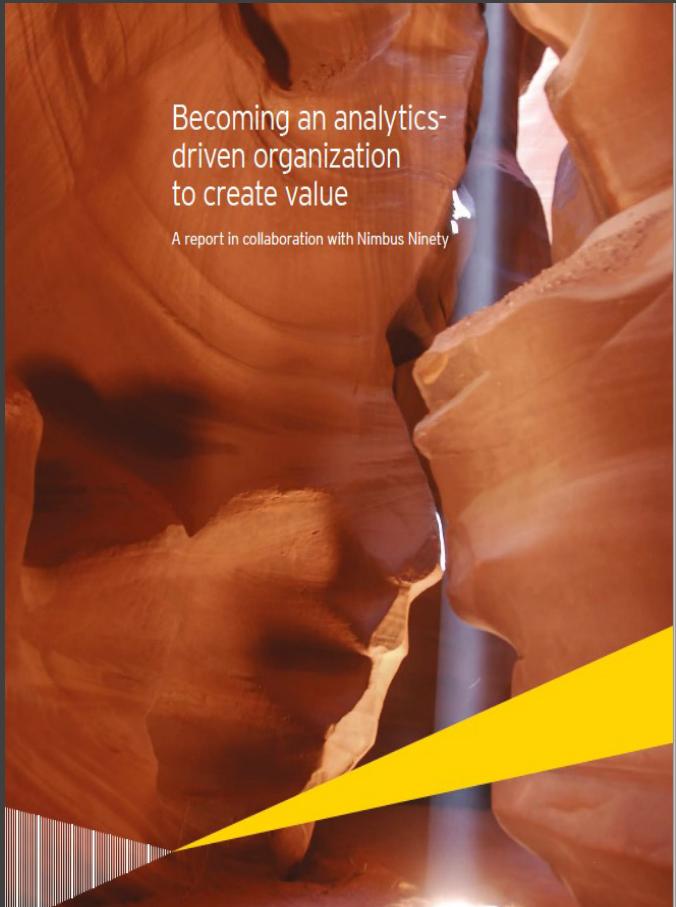
Strong relationships between use of analytics and company's performance in terms of profitability, revenue, shareholder return

But, organizations also struggle to understand how to use data to achieve business results or how to use analytics to improve their businesses



# Value-Generation perspective

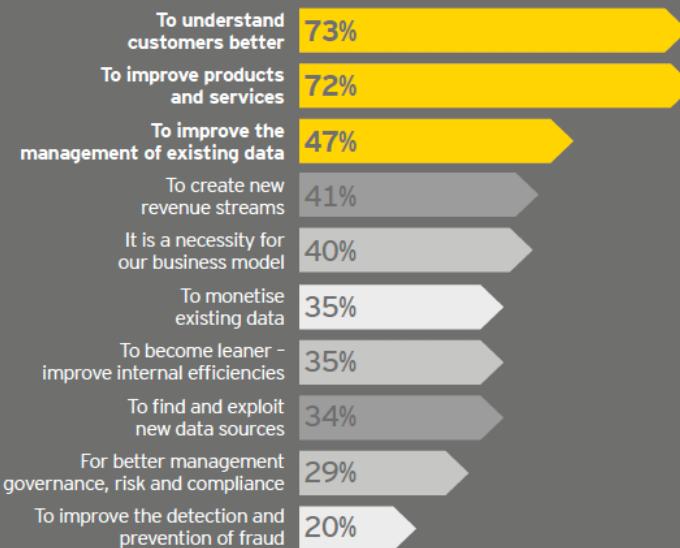
How to create or generate value through analytics?



To understand how many companies are currently using big data to measure, create and protect value across their businesses, EY commissioned new big data research from leading insight firm Nimbus Ninety.

A total of 270 senior executives responded to 27 questions on all aspects of their data strategy. Around 68% of respondents are active stakeholders in big data projects, and all departmental functions and industry sectors are represented, with the majority of respondents working in finance, marketing and IT, as well as in cross-departmental management roles.

## The top 10 drivers for your organisation to implement big data analytics



Source: "Becoming an analytics-driven organization to create value" by E&Y

# Generating value through analytics

**Measure**



**Protect**



**Create**

→ ⓘ 🔒 [dsanalytics.com/products/data-as-a-service](https://dsanalytics.com/products/data-as-a-service)

 DataSpark

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Mobility Genome™ framework  
Data-as-a-Service  
Mobility Intelligence Reports  
Data Science Consulting



## DATA-AS-A-SERVICE APIs

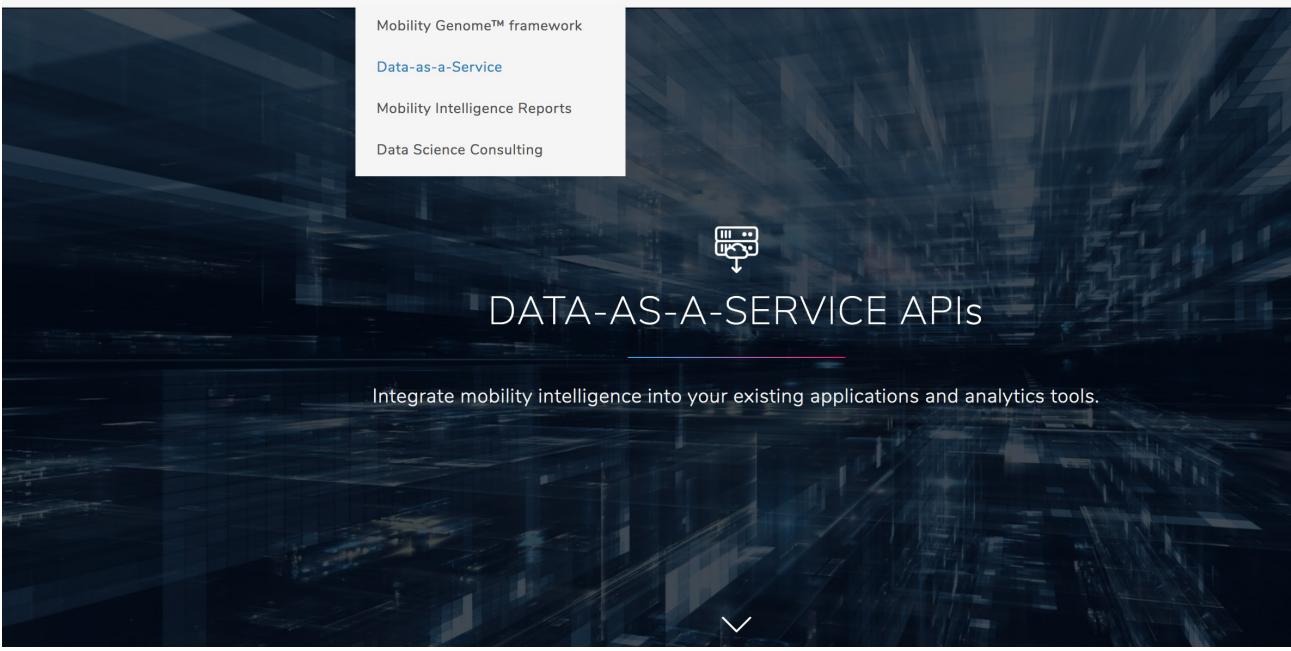
Integrate mobility intelligence into your existing applications and analytics tools.

### DATASPARK'S UNIQUE VALUE

At DataSpark, we have exclusive access to mobile network and GPS data, with over 1 billion location signals from 4.1 million mobile subscribers collected and processed throughout each day. We can also augment this with your own 1st party customer and location.

We transform this data into mobility intelligence through our proprietary Mobility Genome™ framework – to provide an unparalleled library of insights on people's mobility.

These insights can be integrated into your existing applications and analytics tools via an API.





SINGAPORE

All SCDF frontliners to get smart watch by 2022; can send heart rate, location and 'man-down' alerts

By Aqil Haziq Mahmud  
@AqilHaziqCNA

17 Aug 2020 05:00AM  
(Updated: 17 Aug 2020 09:44PM)



Bookmark



Singapore

## All SCDF frontliners to get smart watch by 2022; can send heart rate, location and 'man-down' alerts



Singapore Civil Defence Force officer cadets wearing the smart watch while climbing the "endless ladder". (Photo: Jeremy Long)

**SINGAPORE:** As part of their breathing apparatus proficiency test, Singapore Civil Defence Force (SCDF) officer cadets must wear 22kg of bunker gear and climb an "endless ladder" for a certain distance within three minutes.

More than a minute on that vertical treadmill and the cadets start breathing heavily through their bulky oxygen masks. The audible gasps quicken as a distance and time counter at the top of the machine ticks on. An instructor standing behind looks out for cadets who could be overexerting.

A cadet who passes out might eventually be given extended medical leave, affecting his training schedule and output. But the SCDF is looking to change this by introducing a smart watch that can measure a cadet's heart rate, improving training safety and efficiency.

With the smart watch, instructors monitor cadets' heart rate using a tablet on top of the usual visual cues, allowing them to intervene quicker when they see signs of overexertion. These cadets can then be sent for rehabilitation earlier, reducing any potential downtime.

<https://www.channelnewsasia.com/news/singapore/all-scdf-frontliners-to-get-smart-watch-by-2022-13026118>

"What we envision to achieve is to reduce the occurrence and severity of training-related injuries and get them into the optimal training zones," said Major (Maj) Hasan Kuddoos, acting head of the responder performance centre at SCDF's Civil Defence Academy, at a media event on Wednesday (Aug 12).

In the bigger picture, the SCDF aims to use the smart watch to collect officers' physiological data, like maximum heart rates, to determine the optimal training intensity and tweak standards for different exercises and tests.

The Home Team Science and Technology Agency (HTX) is conducting a long-term study to assess an SCDF officer's training load based on the collected data. The data could also help design progressive training with personal targets.



An instructor will monitor officers' heart rate as they do strenuous exercises. (Photo: Jeremy Long)

# Value along different dimensions

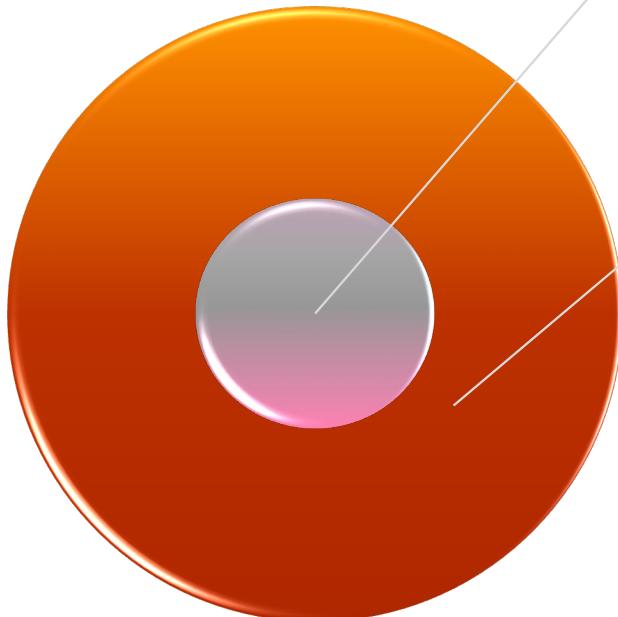
- Revenue Growth
- Profitability
- ROI
- Market Share
- Marketing Campaign Response Rates

Financial

- Customer Satisfaction
- Relationship Duration
- Health
- Quality of Life
- Employee learning

Non-financial

# Value to stakeholders



## Internal stakeholders

- Employees
- Business owners
- Executives/Mgt

## External stakeholders

- Shareholders
- Customers
- Suppliers
- Business partners
- Citizens

# Value at different levels

Levels	Individual	Group	Organizational	Population
<b>Internal</b>				
- Employees	Individual employees	Department/ business unit	Organization	Organizations within country
<b>External</b>				
- Shareholder				
- Customers				
- Suppliers				
- Business partners				
- Citizens	Individual citizen	Elderly, children	Organizations of citizen (e.g. constituencies, SACs)	Country population

## CASE STUDY

# Analytics through Internet Of Things for Home-Dwelling Elderly

# Business Analytics - Impacts and Challenges

## Benefits

- ...reduced costs, better risk management, faster decisions, better productivity and enhanced bottom-line performance such as profitability and customer satisfaction.

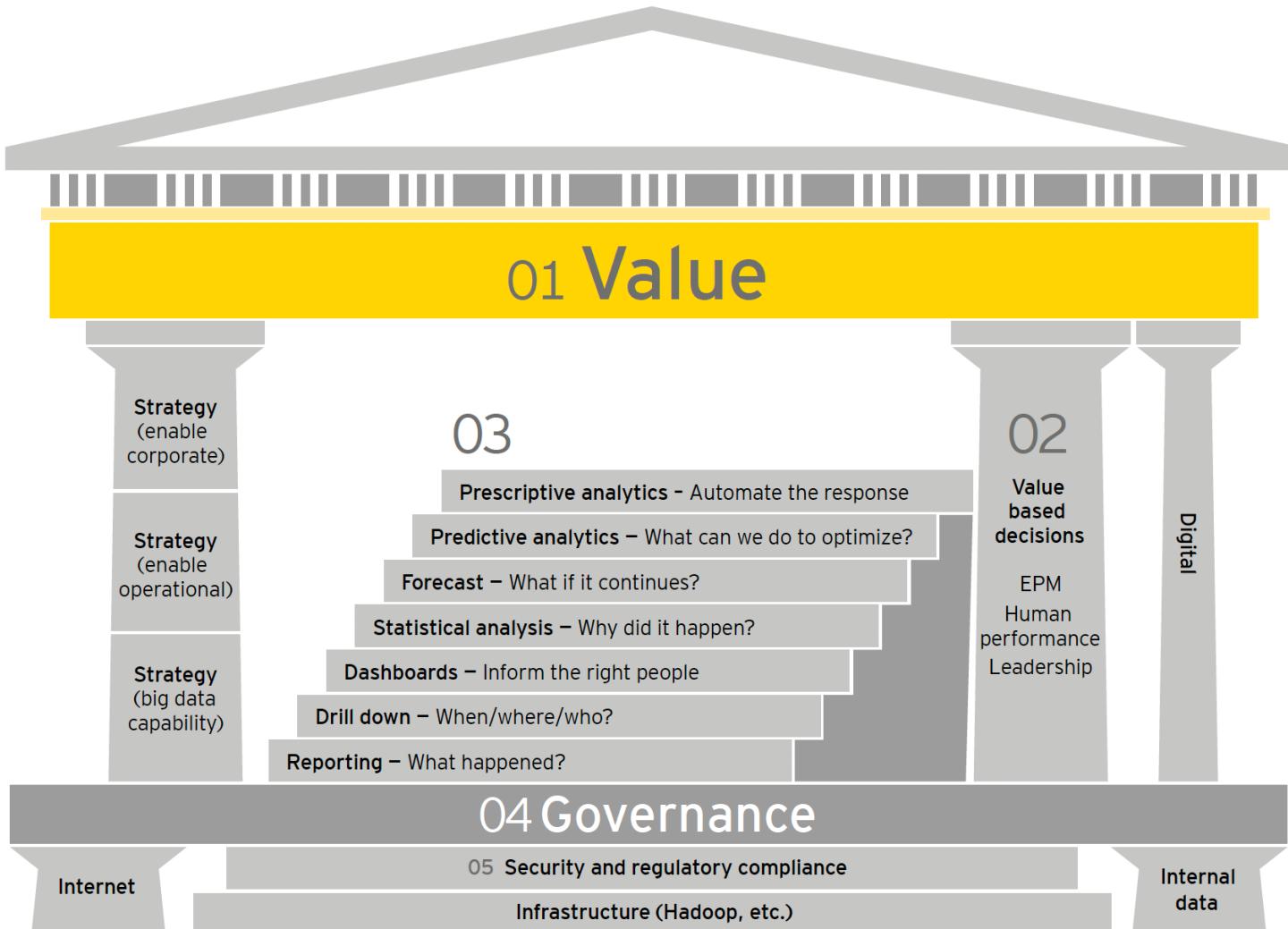
## Challenges

- ...lack of understanding of how to use analytics, insufficient analytical skills,
- difficulty in getting good data and sharing information,
- data privacy, security and compliance
- building the right governance and organizational structure

# Having the right tools is important...

- But people and organizational components are just as, and if not, more important to build a successful BA function





Source: "Becoming an analytics-driven organization to create value" by E&Y

# Next 2 Weeks

## Tutorial Session (starts next week, 27 Jan)

- Friday
- Tutorial 1 Part 1

## Lab Session (start week after, 30-31 Jan)

- Bring your laptop; install R and R studio
- Tutorial 2 Part 1

## Reminders

- Check Piazza regularly for announcements and class discussions

## Coaching sessions (starts next week)

- Book through NUS wiki link in CANVAS

**THE END!**

*Thank You for Your Participation!*