Analytics for Business Transformation

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AGENDA :

1. What is Analytics
2. Unleashing the Data
3. Data Analytics Framework
4. How Analytics Work
5. Tools & Applications
6. Case Studies

“Analytics for Business Transformation”

Source of Image: https://imarticus.org/what-are-the-benefits-of-business-analytics/

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"Analytics is the discovery, interpretation, and communication of meaningful patterns in data; and the process of applying those patterns towards effective decision making - Wikipedia"

Analytics System Framework

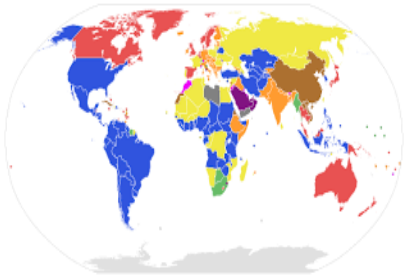
An effective analytics system is more than simply a reporting/BI tool layered on top of a data source.

Source: Google Search

ANALYTICAL TARGETS VARY BY INDUSTRY AND BUSINESS STRATEGY

FINANCIAL SERVICES
Credit Scoring
Fraud Detection
Pricing
Claims Analysis

RETAIL
Promotions
Shelf Management
Price
Merchandising Optimization



GOVERNMENT
Fraud Detection
Case Management
Crime Prevention
Revenue Optimization

HEALTH CARE
Drug Interaction
Preliminary Diagnosis
Disease Management

ONLINE
Web Metrics
Site Design
Recommendations

MANUFACTURING
Supply Chain
Product Customization

TRANSPORTATION
Scheduling
Routing

ENERGY
Trading & Supply
Compliance

HOSPITALITY
Pricing
Customer Loyalty

SERVICES
Call Center Staffing
Service/Profit Chain

Source: Google Search

IMPLEMENTING ANALYTICS IN ORGANIZATION

CLEAN , ACCESSIBLE & UNIQUE **DATA**

ENTERPRISE WISE FOCUS: ANALYTICS AVAILABLE FOR WHOLE FIRM

LEADERS AT ALL LEVEL TO CREATE AND PROMOTE ANALYTICS CULTURE

TARGETS FOR KEY BUSINESS AREAS WHICH CAN BENEFIT FROM ANALYTICS APPROACH

TALANTED **ANALYST** TO EXECUTIVE THE STRATEGY

Source : HBR - https://www.youtube.com/watch?v=jUFPFtU-564

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WHAT IS DATA?

Numbers , characters , symbols , voice, images etc. , which can be processed by a computer .

Data is nothing but information - information converted to digital form

The Facts , statistics used for reference or analysis

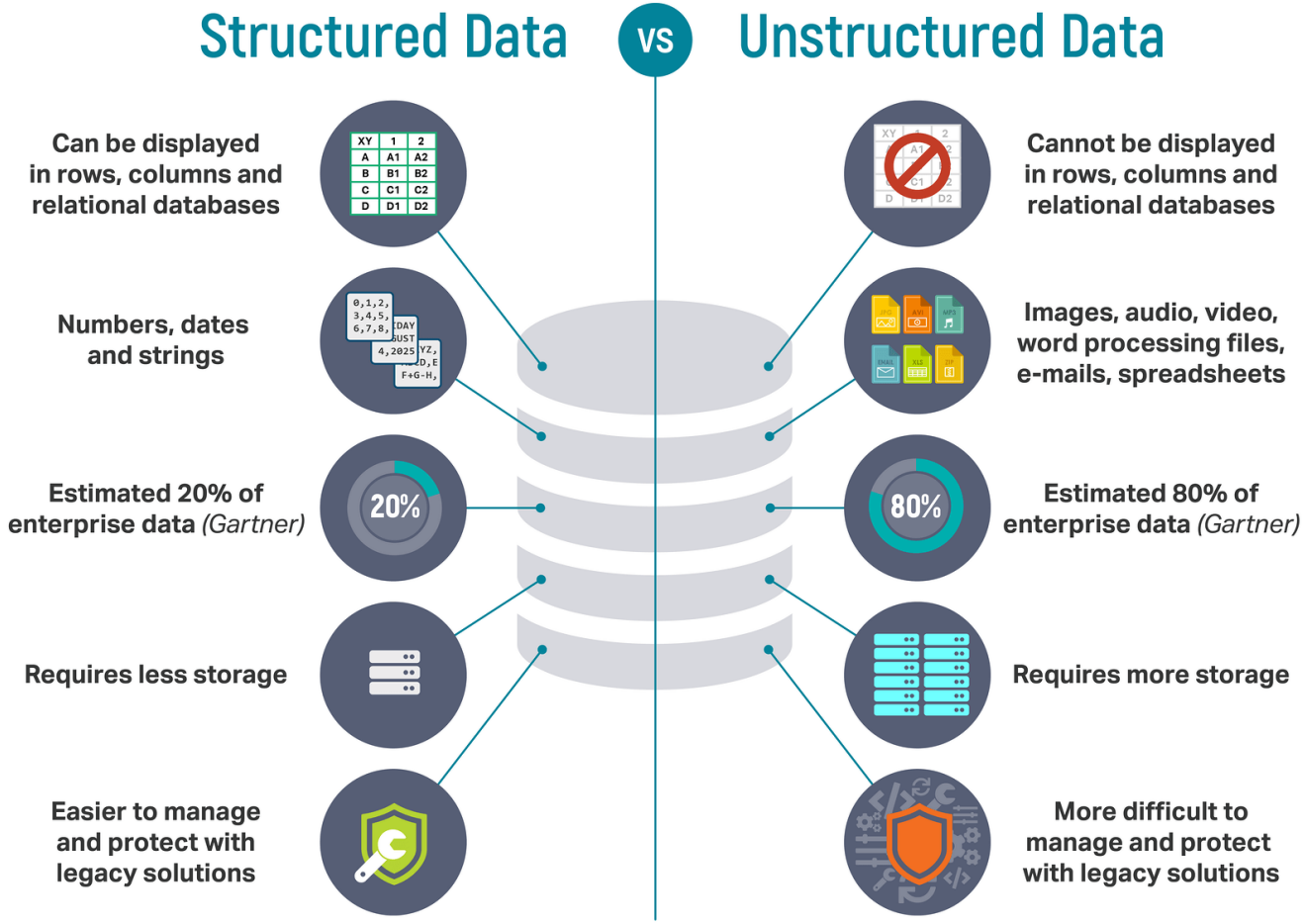
Sources of data

Data must be interpreted, by a human or machine, to derive meaning. By itself, data is meaningless.

Image Source: Google Search

TYPES OF DATA

- **Purposive data** – Collected based on defined objective
- **Existing data** – Collected without pre defined objective
- **Automatic Data** – Collected using other objective



Data that resides in a fixed field within a record or file is called structured data.

Structured data has the advantage of being easily entered, stored, queried and analyzed.

The phrase "unstructured data" usually refers to information that doesn't reside in a traditional row-column database. Unstructured data files often include text and multimedia content.

Source: Google Search

OTHER TERMS USED IN CURRENT SCENARIO – THE DATA GLOSSARY!

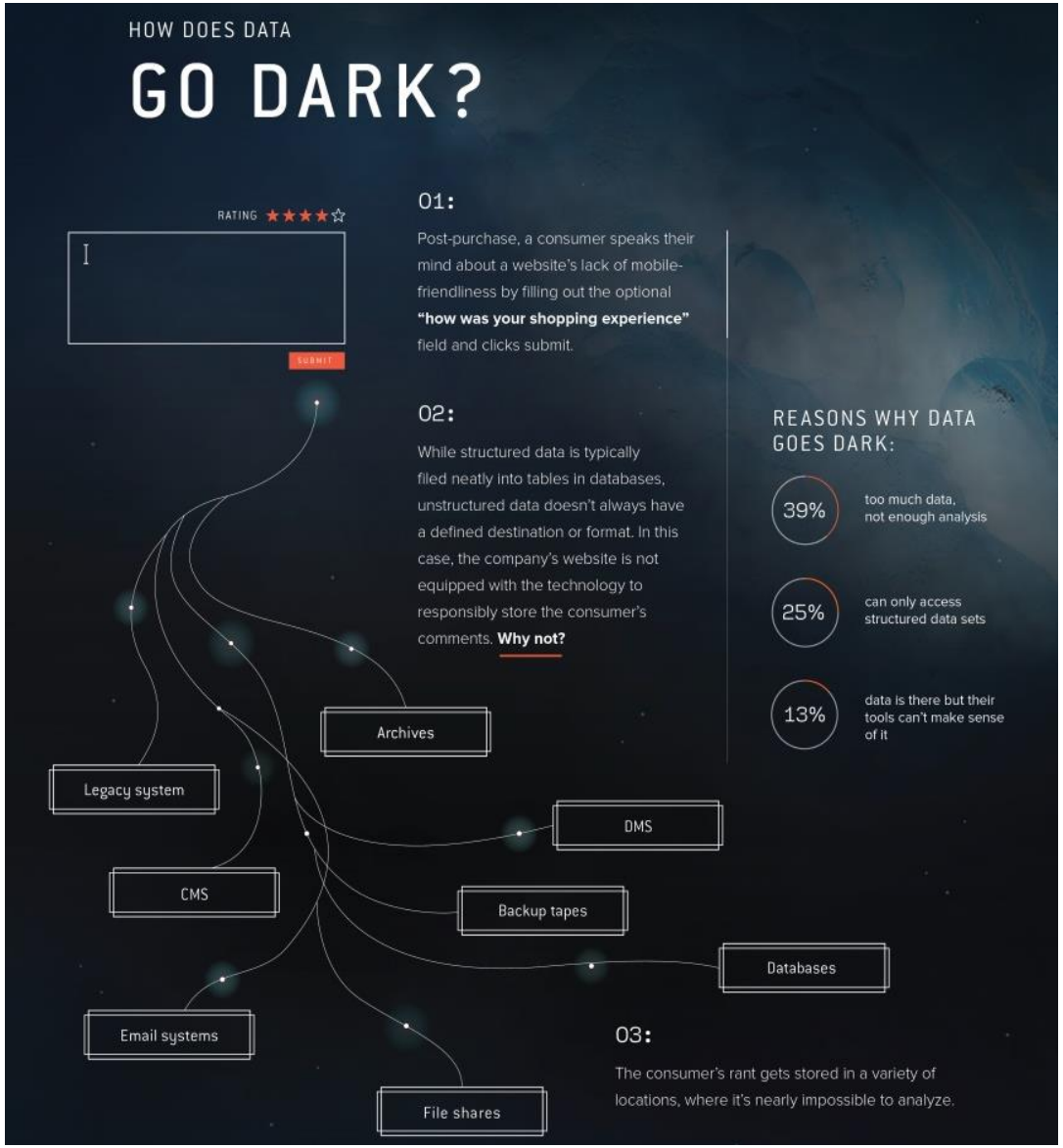
Dark Data

Gartner Inc. describes dark data as “information assets that organizations collect, process and store in the course of their regular business activity, but fail to use for other purposes.”

For travel companies with a strong online presence, dark data represents a sizable portion of all data stored.

Such examples might include:

- How many times a user resets their password
- IP address when a user logs into your website/app
- Last email communication date to your customers
- Mobile handset type, or web browser version
- Free text feedback on a hotel stay or recent flight
- Additional passengers or guest names on a ticket or hotel room



Source: Google Search

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Source: Google Search

ANALYZING DATA TO IDENTIFY BUSINESS OPPORTUNITIES

- ***It is always better to start from the outcomes and the hypothesis, as opposed to the available data*** *to generate the best value from data and analytics*

https://medium.com/next-thoughts/pwc-approach-the-data-and-analytics-framework-6ff5c8a72dd9

ANALYZING DATA TO IDENTIFY BUSINESS OPPORTUNITIES

- **If you build an analytical capability, you will:**
  - Make better strategic, tactical and operational decisions
  - Better ability to solve problems
  - Better business processes
  - Make faster decisions and get more consistent (and predictable) results.
  - Able to anticipate shifting trends and market conditions.
  - Better business results

- **An analytical capability will NOT:**
  - Ensure that every decision will be right every time
  - Be the only thing you need to make good decisions
  - Be the only way to be successful.
  - Prevent (or insulate you from) changing market conditions
  - Necessarily make you a big movie star
  - Be built in a day (but neither is any other sustainable competitive advantage)

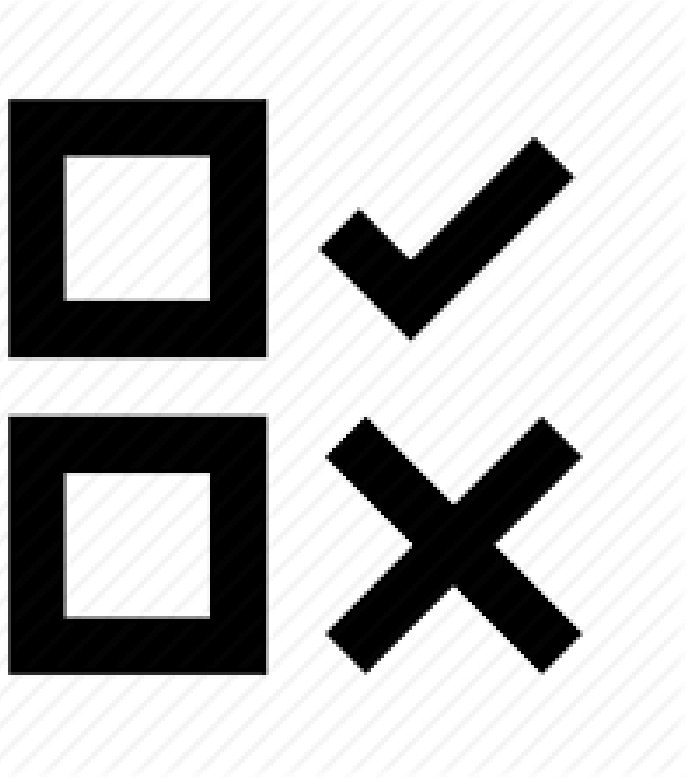


Image Source: Google Search

MAJOR ANALYTICS DONE ON DATA

https://www.weirdgeek.com/2018/11/types-of-analytics/

DATA ANALYTICS FRAMEWORK : TOOLS & TECHNIQUES

Descriptive — What happened?

Examples of descriptive analytics:

Sales pattern Customer behavior Customer profitability Past competition actions

Diagnostic — Why did it happened?

Diagnostic analytics helps you understand why it happened. It provides the reasons for what happened in the past. This type of analytics typically tries to go deeper into a specific reason or hypotheses based on the descriptive analytics. Diagnostic analytics goes deep, probing into the costs of issues.

Predictive — What could happen?

What are my customers likely to do in the future？

What are my competitors likely to do?

What will the market look like? /How will the future impact my product or service?

Prescriptive — What should be done?

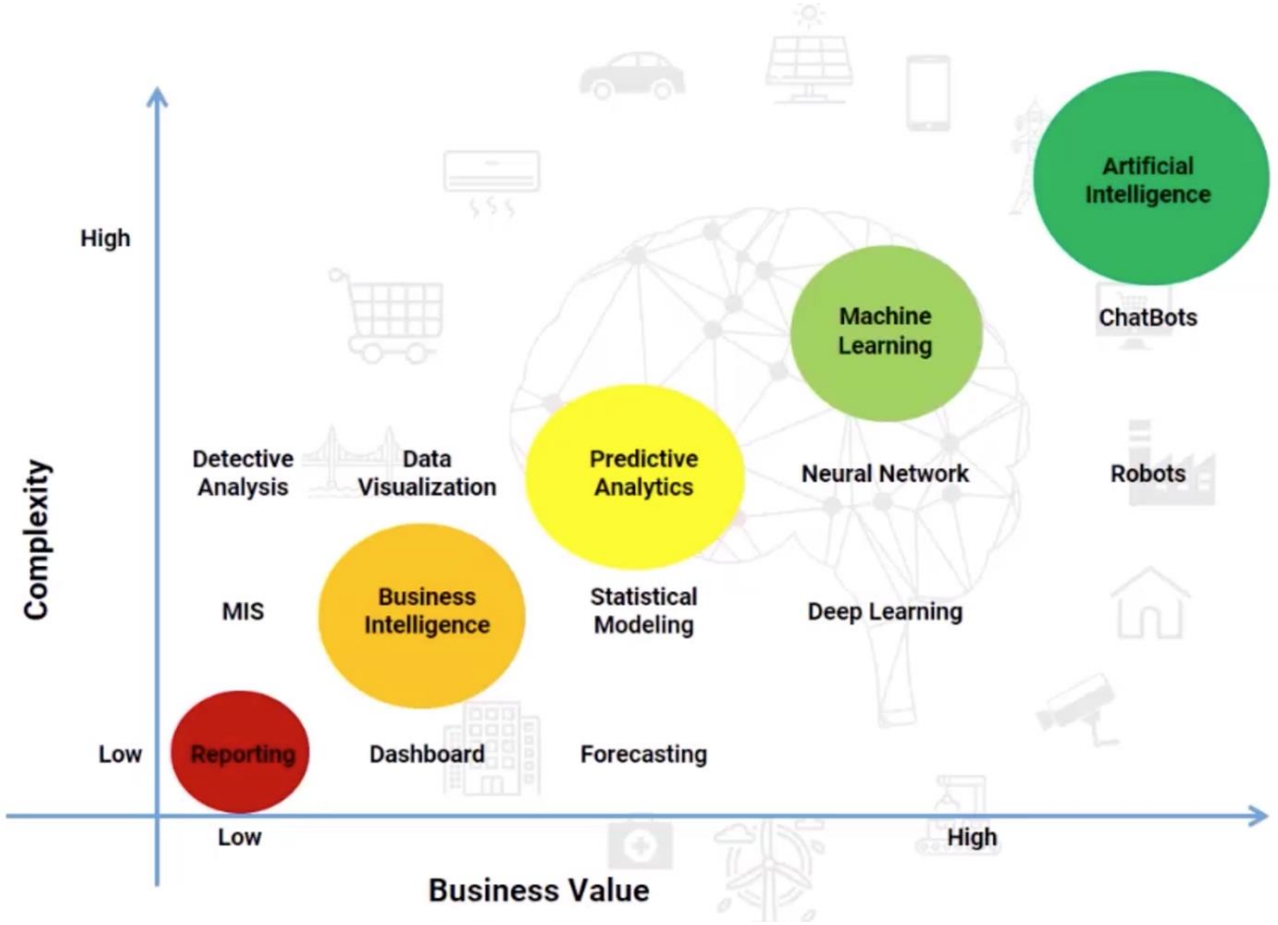
Prescriptive analytics showcases viable solutions to a problem and the impact of considering a solution on future trend. The prescriptive analysis is still an evolving technique and there are limited applications for it in business.

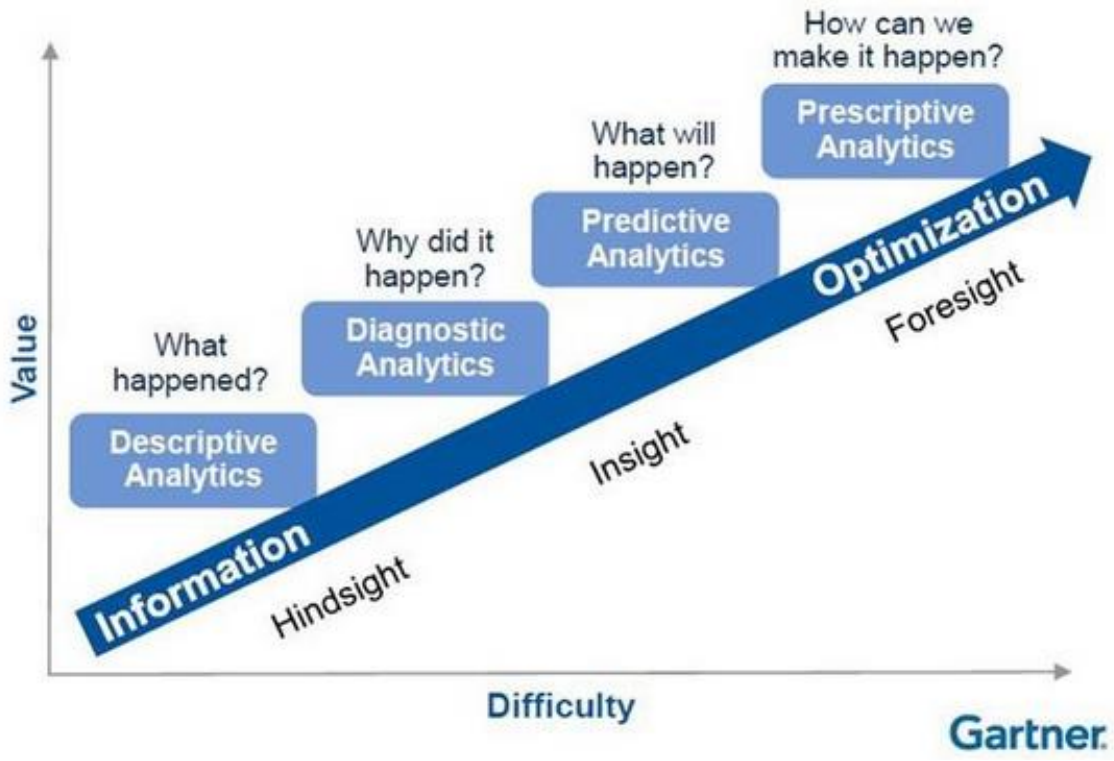
Examples: Analytics Decision Model & Optimization,

Cognitive Computing

Cognitive computing describes technology platform that combines machine learning, reasoning, natural language processing, speech, vision, human computer interaction, that mimics the function of the human brain and helps to improve human decision making.

THE DATA SCIENCE SPECTRUM





Source: Google Search

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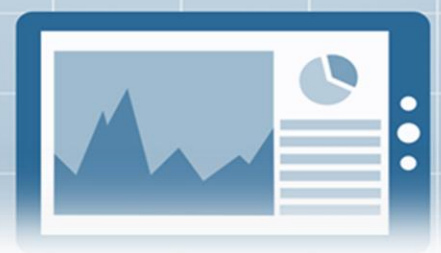
SOME EXAMPLES OF DATA ANALYSIS TOOLS & TECHNIQUES

Frequency Counts (Number & Percentages)	Cross-tabulations	Classification	Mean, Median, Mode, SD	Association
Correlation	Cluster Analysis	Factor Analysis	Regression	Anomaly Detection
Conjoint Analysis	Social Media Analytics	Sentiment Analysis	Text Analytics	Decision Tree



STORAGE TOOLS

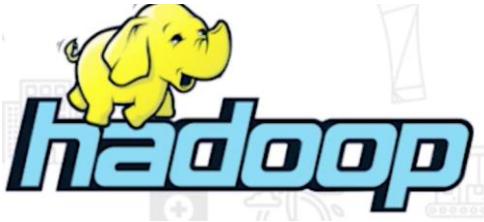
Volume

Refers to the scale and amount of data


Microsoft Excel


Microsoft Access


SQL



Variety

Structured data

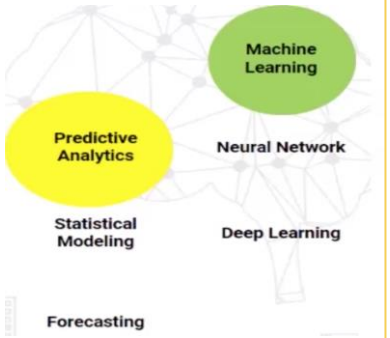
Unstructured data

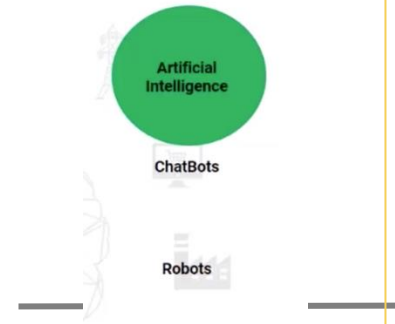
Velocity

Refers to the speed at which data is captured

Source: Google Search

PROCESSING TOOLS





Power BI

tableau

Qlik

MicroStrategy

Google Analytics

python

APACHE Spark

sas

SPSS

TensorFlow

PyTorch

jupyter

R

julia

MATLAB

Caffe

Keras

AUTO KERAS

H2O.ai DRIVERLESSAI

DataRobot

Amazon Lex

Google Cloud Platform

Source: Google Search

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PROACTIVE INSIGHTS IN TRUCK MANUFACTURING – DAIMLER TRUCK ASIA(DTA)

- Identifying quality and safety issues, investigating them and coming to a resolution could take up to two years
- The time is translated into lost profits.
- *The faster we are in detecting quality issues and addressing customer complaints, the less damage will be done to the brand's image and its financials.* - Michael Moebius (Head of Quality Management)
- Data from all last 45 major recall was analyzed.
- This included structured data like metrics correlated with their vehicles to unstructured data, such as call center records, warranty claims, dealer and technician comments and social media engagement.
- Discovery made that eighty-percent of these recalls could've been detected in advance based on the historical data patterns.
- The opportunity to look even further into the future became possible with the introduction of live data through DTA's launch of Fuso Super Great, the first connected truck they produce and sell, and their first foray into the Internet of Things (IoT).
- As the truck is driving, geographical data and data from the vehicle's system like oil pressure, coolant temperature and battery voltage is combined with the historical data, providing DTA with the insight to see the overall health situation of a truck.

Source - https://www2.deloitte.com/us/en/pages/about-deloitte/articles/daimler-truck-manufacturing-case-study.html

PROACTIVE INSIGHTS IN TRUCK MANUFACTURING – CONT..

+ IMPACT

The proactive sensing project is expected to save DTA $8 million in warranty costs during the first 24 months and even more in recall costs.

+ IMPACT

Refinement of insights from the IoT, DTA connected trucks and Deloitte's cognitive system could enable a 6-12-month future view into the lifetime of a vehicle.

+ IMPACT

DTA averted thousands of trucks from being produced with a faulty part, thanks to smart, proactive insights.

Source - https://www2.deloitte.com/us/en/pages/about-deloitte/articles/daimler-truck-manufacturing-case-study.html

CORNERSTONE

- Employees are a both a business's greatest asset and its greatest expense. So hitting on the right formula for selecting them, and keeping them in place, is absolutely essential.

- Cornerstone is a software tool which helps assess and understand employees and candidates by crunching half a billion data points on everything from gas prices, unemployment rates and social media use.

- Clients such as Xerox use it to predict, for example, how long an employee is likely to stay in his or her job, and remarkable insights gleaned include the fact that in some careers, such as call centre work, employees with criminal records perform better than those without.

- The "data points" are measurements taken from employees working across 18 industries in 13 different countries, providing information on everything from how long they take to travel to work, to how often they speak to their managers.

Source - https://www.bernardmarr.com/img/bigdata-case-studybook_final.pdf

CORNERSTONE - CONT...

- Data collection methods include “smart badges” that monitor employee movements and track which employees interact with each other.
- Bank of America reportedly improved performance metrics by 23% and decreased stress levels (measured by analysing worker’s voices) by 19%, simply by allowing more staff to take their breaks together.

Source - https://www.bernardmarr.com/img/bigdata-case-studybook_final.pdf

GENERAL ELECTRIC

- IoT - all the separate machines and tools which make an industry possible shall be “smart” – connected, data-enabled and constantly reporting their status to each other in ways as creative as their engineers and data scientists can devise.
- This will increase efficiency by allowing every aspect of an industrial operation to be monitored and tweaked for optimal performance, and reduce down-time.
- Machinery will break down less often if we know exactly the best time to replace a worn part.
- Sensors embedded in their power turbines, jet engines and hospital scanners will collect the data.
- it’s estimated that one typical gas turbine will generate 500Gb of data every day. And if that data can be used to improve efficiency by just 1% across five of their key sectors that they sell to, those sectors stand to make combined savings of $300 billion

Source - https://www.bernardmarr.com/img/bigdata-case-studybook_final.pdf

GENERAL ELECTRIC - CONT..

- In aviation, they are aiming to improve fuel economy, maintenance costs, reduction in delays and cancellations and optimize flight scheduling – while also improving safety
- Huge amounts of data are recorded from every aircraft and every aspect of ground operations, which is reported in real-time and targeted specifically to recovering from disruption, and returning to regular schedule.
- Green industries are benefitting too – its 22,000 wind turbines across the globe are rigged with sensors which stream constant data to the cloud, which operators can use to remotely fine-tune the pitch, speed, and direction the blades are facing, to capture as much of the energy from the wind as possible.
- Each turbine will speak to others around it, too – allowing automated responses such as adapting their behaviour to mimic more efficient neighbours, and pooling of resources (i.e wind speed monitors) if the device on one turbine should fail.

Source - https://www.bernardmarr.com/img/bigdata-case-studybook_final.pdf

ANALYTICS FOR IMPROVING HR PROCESS

Source: Google Search

Questions?

Thank You!

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