STRATEGIC BIG DATA NEEDS

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BIG DATA ANALYTICS AND VISUALISATION

The Power of Data

is not in the data itself!

It is in how the data is used.

It is about:
◦ The information you glean from the data.
◦ The processes you improve.
◦ The better decisions you can make.
◦ The business value you add.

Data for data's sake is meaningless.

Data Must:

1. address a specific business need,

2. help organization reach its strategic goals, or

3. generate real value.

NEVER A GOOD IDEA TO CAPTURE HUGE MOUNTAINS OF DATA THAT YOU DO NOT REALLY NEED.

COLLECT ONLY THE DATA THAT YOU REALLY NEED TO MEET YOUR GOALS.

It Does Not Matter

What data is out there, what data you are already collecting, what data your competitors are collecting, or what new forms of data are becoming available.

Whether your business has mountains of analysis-ready data at your disposal, or next to none.

INSTEAD OF STARTING WITH THE DATA,
IT IS VITAL TO **START WITH A STRATEGY** THAT FOCUSES ON THE DATA NEEDED TO ACHIEVE THE GOALS!

A Good Data Strategy

Is not determined by what data is readily or potentially available.

IT IS ABOUT WHAT YOUR BUSINESS WANTS TO ACHIEVE, AND HOW DATA CAN HELP YOU GET THERE.

Have a Clear Data Strategy

Because of the sheer volume of data.

Examples:
- Google
- Facebook
- Amazon

Without a smart plan of action to use the data to produce business insights, the data itself becomes a white elephant – expensive and useless.

Need to develop a smart strategy that focuses on the data they really need to achieve their goals.

How?

Defining the business-critical questions that need answering.

Collecting and analyzing only that data which will answer those questions.

Data is worth very little unless it can be turned into insights and action!

- ◦ Apply data analytics
- ◦ Apply data visualisation

Data Analytics

is the process of collecting, processing and analysing data to generate insights that help you improve the way you do business.

Analytics allows us to:

◦ learn new things,

◦ understand more about the world in which we operate, and

◦ make improvements across the organization.

Types of Data Analytics

1. Text analytics
2. Sentiment analytics
3. Image analytics
4. Video analytics
5. Voice analytics
6. Data mining
7. Business experiments

8. Visual analytics
9. Correlation analysis
10. Regression analysis
11. Scenario analysis
12. Forecasting/time series analysis
13. Cohort analysis
14. Neural network analysis

Advanced Data Analytics

Machine learning and deep learning involve feeding data into machines, which then decide the best course of action based on that data without human intervention.

This means that computers do not have to be explicitly programmed but can change and improve their algorithms by themselves.

Combining Data Analytics

Combine different types of data and analytics.

Example:

◦ Correlation analysis says sell more Pop-Tarts when there's a hurricane warning, but it won't tell you *why* that is so.

◦ To understand why people turned to Pop-Tarts specifically (say, if you wanted to target similar products), could carry out some text or sentiment analysis looking at what people say about Pop-Tarts on social media platforms.

Frosted Strawberry

S'mores

Data is Worth Very Little

unless it can be turned into insights and action!

What do you see?

I		II		III		IV	
X	**Y**	**X**	**Y**	**X**	**Y**	**X**	**Y**
10.0	8.04	10.0	9.14	10.0	7.46	8.0	6.58
8.0	6.95	8.0	8.14	8.0	6.77	8.0	5.76
13.0	7.58	13.0	8.74	13.0	12.74	8.0	7.71
9.0	8.81	9.0	8.77	9.0	7.11	8.0	8.84
11.0	8.33	11.0	9.26	11.0	7.81	8.0	8.47
14.0	9.96	14.0	8.10	14.0	8.84	8.0	7.04
6.0	7.24	6.0	6.13	6.0	6.08	8.0	5.25
4.0	4.26	4.0	3.10	4.0	5.39	19.0	12.50
12.0	10.84	12.0	9.13	12.0	8.15	8.0	5.56
7.0	4.82	7.0	7.26	7.0	6.42	8.0	7.91
5.0	5.68	5.0	4.74	5.0	5.73	8.0	6.89

I		II		III		IV	
X	Y	X	Y	X	Y	X	Y
10.0	8.04	10.0	9.14	10.0	7.46	8.0	6.58
8.0	6.95	8.0	8.14	8.0	6.77	8.0	5.76
13.0	7.58	13.0	8.74	13.0	12.74	8.0	7.71
9.0	8.81	9.0	8.77	9.0	7.11	8.0	8.84
11.0	8.33	11.0	9.26	11.0	7.81	8.0	8.47
14.0	9.96	14.0	8.10	14.0	8.84	8.0	7.04
6.0	7.24	6.0	6.13	6.0	6.08	8.0	5.25
4.0	4.26	4.0	3.10	4.0	5.39	19.0	12.50
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Anscombe's Quartet (1970s)
Because people tended to favour summarized statistics over visualisations, Francis Anscombe illustrated the importance of graphing your data.
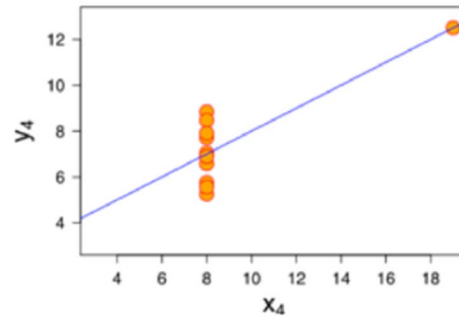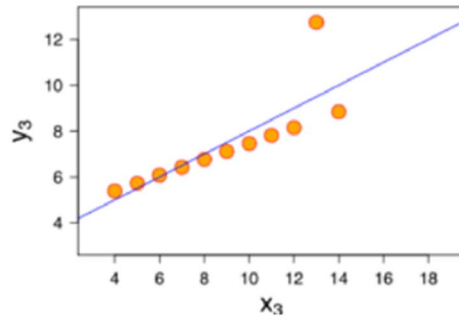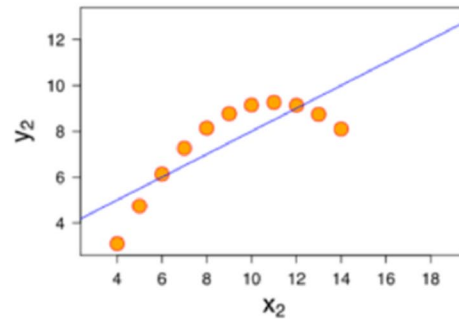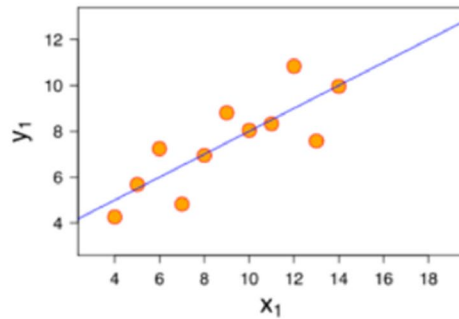
All 4 datasets have nearly identical descriptive statistics, but appear very differently when graphed visually:
- Mean of x: 9
- Sample variance of x: 11
- Mean of y: 7.50
- Sample variance of y: 4.125
- Correlation between x and y: 0.816
- Linear regression line: y = 3.00 + 0.500x

How to Communicate Data?

Through data visualization that make the data attractive and easy to understand.

Businesses can consider using Big Data to

IMPROVE BUSINESS DECISION MAKING

IMPROVE BUSINESS OPERATIONS

MONETIZE DATA

IMPROVE BUSINESS DECISION MAKING

Fashion Retail Company

No data other than their traditional sales data.

Wanted to increase sales but had no data to draw on to help them achieve that goal.

Questions needed to answer include:
- How many people pass our shops?
- How many stop to look in the window and for how long?
- How many of them then come into the shop?
- How many then buy?

What Were Done?

Installed a small, discreet device into the shop windows.

The sensors also measured how many people stopped to look at the window and for how long, and how many people then walked into the store.

Used ordinary sales data to record how many people bought something.

Outcome

Able to measure conversion ratio and test window displays and various offers to see which ones increased the conversion rate.

Understand what drew customers to stop and come into their stores.

Used the insights to make a significant saving by *closing one of their stores*.

Caesars Entertainment

Used data analytics to understand customer profiles and how money was being spent in their resorts.

Introduced Caesars Total Rewards

◦ Used to gather data on customers' behaviour as they move around the facilities and partake in the various entertainments and refreshments.

Result:

◦ The company went from being able to trace the journey of 58 per cent of the money spent in their casinos to 85 per cent.

Findings

Vast majority of the business's income did not come from high-rollers, holidaying super-rich or Hollywood stars.

It came from everyday visitors spending an average of US$100 to US$500 per visit.

By recognizing the lifetime value of its most loyal customers, and rewarding them on that basis, the business has been able to drive customer satisfaction, and repeat spending.

IMPROVE BUSINESS OPERATIONS

Optimized Pricing ..1/2

Stage Stores uses **predictive analytics** to determine the rise and fall of demand for a product.

◦ Beat traditional approach 90% of the time.

Macy changes pricing frequently to react to retail trends and demand.

◦ Save 26 hours every time it optimizes pricing for its 73 million products.

Optimized Pricing ..2/2

Walmart

◦ Has a refreshed database consisting of 200 billion rows of transactional data.

◦ It also pulls in data from 200 other sources.

◦ All of this data is used to determine which products people are most likely to want, and where, and what is the most competitive price.

MONETIZE DATA

IBM AND WEATHER ..1/2

In 2015, IBM acquired The Weather Company which owns Weather.com and Weather Underground for US$2B.

Why? For the company's weather-related data; gathered from: 3 billion weather forecast reference points, 50,000 flights and more than 40 million smartphones per day.

IBM AND WEATHER ..2/2

IBM can sell the data to other companies who need to know about the weather.

- ◦ Agriculture
- ◦ Transportation
- ◦ Retail shopping
- ◦ Construction
- ◦ Insurance
- ◦ Pharma (to predict demand for flu and cold medicines)

By combining weather forecasts with analytics, your insurance company could **text you a warning** before hail hits your area. Insurance companies pay

$1 billion

in claims every year for vehicles damaged by hail.*

*Insurance Information Institute, April 2012

ibm.com/ibmandweather

IBM. | The Weather Company

MICROSOFT AND LINKEDIN

Microsoft acquired LinkedIn for US$26.2B.

Microsoft has access to the professional network's more than 400 million users.

This allows great scope for personalization within Microsoft's tools.

Summary

The power of data

The need for a clear and robust data strategy

How?
- Apply data analytics
- Apply data visualisation

Businesses can consider using Big Data to:
- Improve business decision making
- Improve business operations
- Monetize data

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