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Impact Of Data Science In Business

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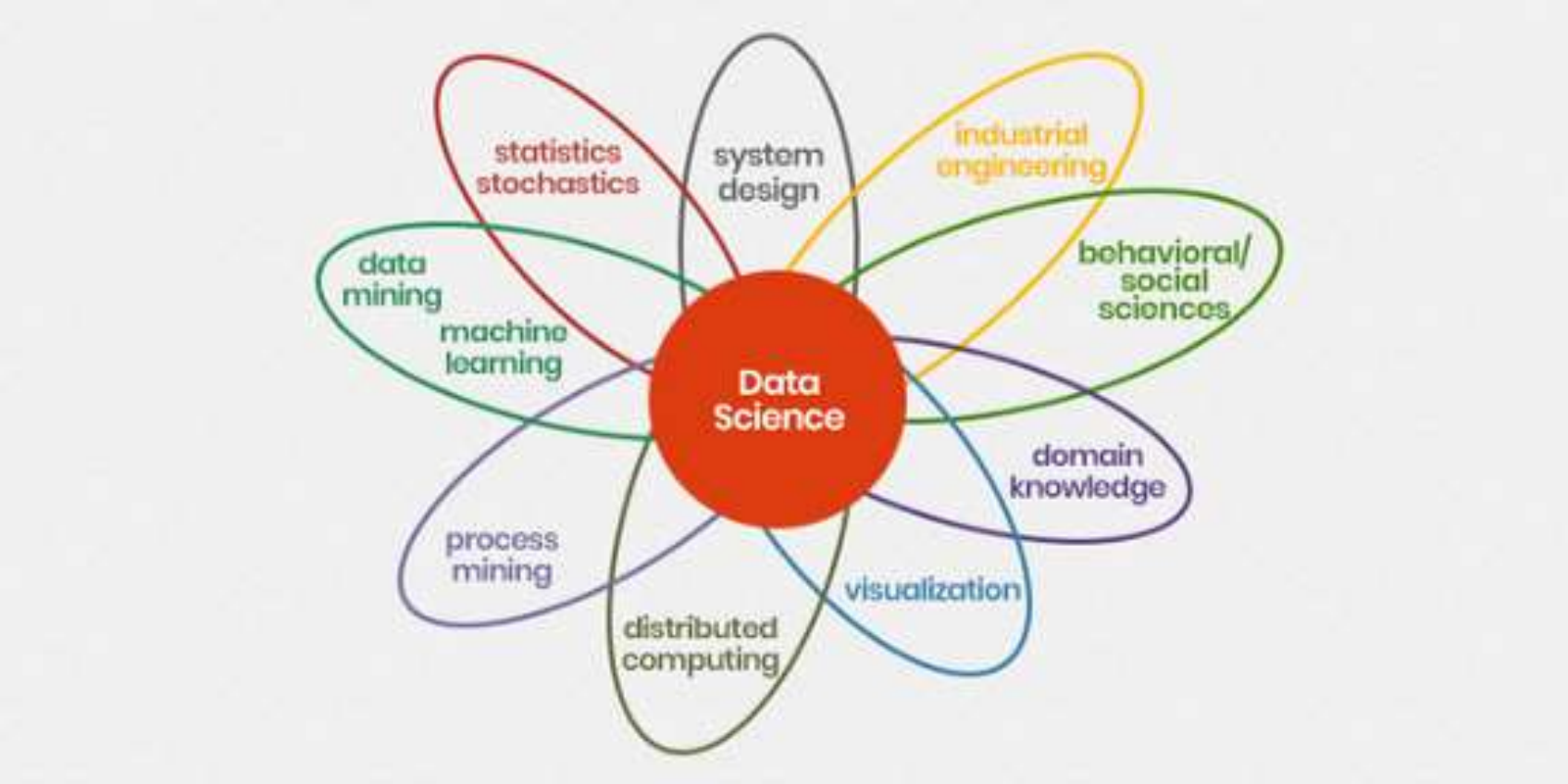
Impact Of Data Science In Business

By 2025, it's expected that 463 exabytes of data will be created every single day.

As per EU business School



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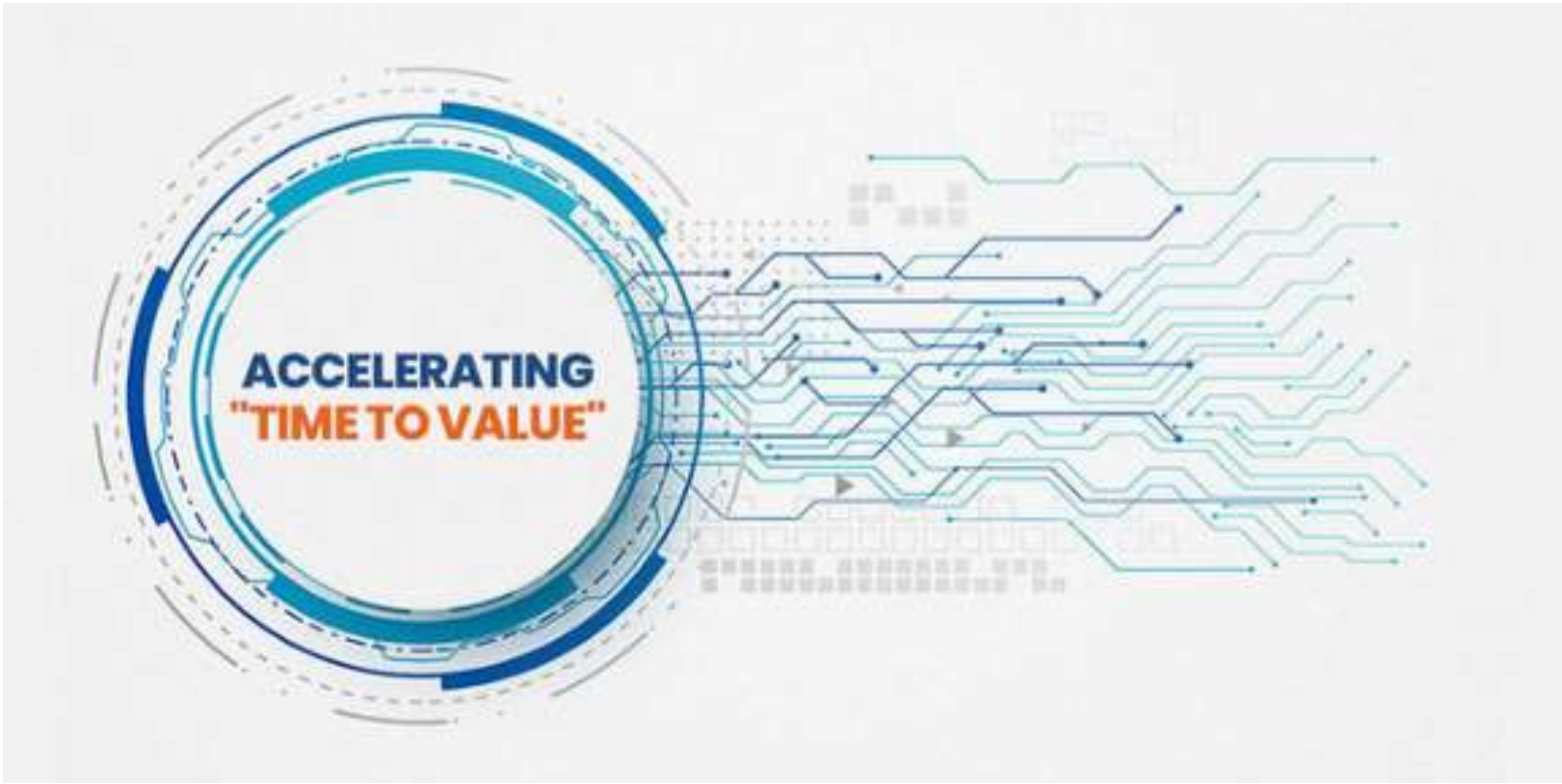

ACCELERATING
"TIME TO VALUE"

Reduces Inefficiencies

- Inefficiencies often cost businesses up to 30% of their revenue.
- Data scientists track a range of company-wide metrics – factory production times, delivery expenditure, employee productivity, and more – and pinpoint areas for improvement.
- **By limiting wasted resources, it's possible to lower overall costs and boost return-on-investment.** It's expected, for example, that big data will reduce healthcare costs in the US by 20%.

Predicts Trends and Customer Behavior

- Predictive models are essential business tools.
- Data scientists organize huge swathes of historical data and utilize it to inform planning processes, thus helping businesses make informed decisions about the future.
- **It's possible, for example, to determine peak customer shopping times and adjust staff levels accordingly**, or to identify early buyer trends and implement appropriate promotional campaigns.

Enables Competitor Research

- As much as companies value data that helps them understand their customers and internal processes, they're also eager to gain an edge over their competitors.
- **Data scientists are responsible for understanding and gleaning insights from data about competitors.**
- Effective competitor research helps businesses make competitive pricing decisions, reach new markets, and stay up to date with changes in consumer behavior.

Allows Testing of Business Initiatives

- Consistent, long-term testing enables companies to drive incremental revenue gains.
- **Data scientists are responsible for conducting extensive tests to guarantee successful marketing campaigns, product launches, employee satisfaction, website optimization, and more.**
- Testing is one of the most exciting areas of data science. New, innovative alternatives are posed against existing features, often with unexpected results. What's more, businesses like Amazon adopt an indefinite approach to testing, trialing new changes and implementing them as part of a long-term strategy, rather than 'one-off' optimization campaigns.

Improving operationalization

Develops Market Understanding

- By ensuring a ready stream of actionable insights about customer psychology, behavior, and satisfaction, **data science enables businesses to consistently reshape their products and services to fit with a shifting marketplace.**
- Data about customers is available from a variety of sources, and mining information from third-party platforms, like social media, search engines, and purchased datasets, presents a unique challenge.

Informs Hiring Decisions

- One of the big problems faced by businesses when searching for new employees is the disconnect between prospects that look good on paper and perform well in practice.
- **Data science seeks to bridge this gap by using evidence to improve hiring practices.**
- By combining and analyzing a variety of data-points about candidates, it's possible to move towards an ideal 'company-employee fit'.

Transparency for business users

- One of the biggest barriers to the adoption of data science applications is a lack of trust on the part of business users.
- Although machine learning models can be very useful, many business users don’t rely on processes they don’t understand.
- Data science needs to find different ways to build machine learning models to convince business users and to make users easier to trust.

Case Study:
The big-data revolution in US health care: Accelerating value and innovation

Case Study continue…
A new value framework

- **Right living.**
  - Patients must be encouraged to play an active role in their own health by making the right choices about diet, exercise, preventive care, and other lifestyle factors.
- **Right care.**
  - Patients must receive the most timely, appropriate treatment available. In addition to relying heavily on protocols, right care requires a coordinated approach, with all caregivers having access to the same information and working toward the same goal to avoid duplication of effort and suboptimal treatment strategies.

- **Right provider.** Any professionals who treat patients must have strong performance records and be capable of achieving the best outcomes. They should also be selected based on their skill sets and abilities rather than their job titles. For instance, nurses or physicians' assistants may perform many tasks that do not require a doctor.
- **Right value.** Providers and payors should continually look for ways to improve value while preserving or improving health-care quality. For example, they could develop a system in which provider reimbursement is tied to patient outcomes or undertake programs designed to eliminate wasteful spending.

- **Right innovation.** Stakeholders must focus on identifying new therapies and approaches to health-care delivery. They should also try to improve the innovation engines themselves—for instance, by advancing medicine and boosting R&D productivity.

Case Study continue…
The pathways in action

- **Kaiser Permanente** has fully implemented a new computer system, HealthConnect, to ensure data exchange across all medical facilities and promote the use of electronic health records.
- The integrated system has **improved outcomes** in cardiovascular disease and achieved an estimated **$1 billion in savings** from reduced office visits and lab tests.

Case Study continue…
The pathways in action

- **Blue Shield** of California, in partnership with NantHealth, is **improving health-care** delivery and patient outcomes by developing an integrated technology system that will allow doctors, hospitals, and health plans to deliver evidence-based care that is more coordinated and personalized.
- This will help improve performance in a number of areas, including prevention and care coordination.

- **AstraZeneca** established a four-year partnership with WellPoint's data and analytics subsidiary, HealthCore, to conduct real-world studies to determine the most effective and economical treatments for some chronic illnesses and common diseases.
- AstraZeneca will use HealthCore data, together with its own clinical-trial data, to guide R&D investment decisions.
- The company is also in talks with payors about providing coverage for drugs already on the market, again using HealthCore data as evidence.

- Since 2010, more than 200 new businesses have developed innovative health-care applications. About 40 percent of these were aimed at direct health interventions or predictive capabilities.

- Asthmapolis has created a GPS-enabled tracker that records inhaler usage by asthmatics.
  - The information is ported to a central database and used to identify individual, group, and population-based trends.
  - The data are then merged with Centers for Disease Control and Prevention information about known asthma catalysts (such as high pollen counts in the Northeast or volcanic fog in Hawaii).
  - Together, the information helps physicians develop personalized treatment plans and spot prevention opportunities.

- Ginger.io, offers a mobile application in which patients with select conditions agree, in conjunction with their providers, to be tracked through their mobile phones and assisted with behavioral-health therapies.
- The app records data about calls, texts, geographic location, and even physical movements.
- Patients also respond to surveys delivered over their smartphones.
- The Ginger.io application integrates patient data with public research on behavioral health from the National Institutes of Health and other sources.
- The insights obtained can be revealing—for instance, a lack of movement or other activity could signal that a patient feels physically unwell, and irregular sleep patterns (revealed through late-night calls or texts) may signal that an anxiety attack is imminent.

Gartner Report by Director **Erick Brethenoux**

- **Innovation: Foster new thinking and business disruptions based on data science**

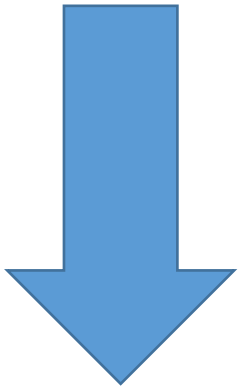
“ Data scientists hold the key to unveiling better solutions to old problems”

- One example, popularized by the film and book ***Moneyball***, showed how old ways of evaluating performance in baseball were outperformed by the application of data science.
- One baseball team used data science techniques to overcome its financial disadvantage.
- It achieved this by using analytics to identify high-performing players who other teams had overlooked using traditional methods, and therefore acquired their services at a relatively low cost.
- The result was that the team regularly beat higher-spending competitors in their league.

- A multinational package delivery company, UPS.
  - Its On-Road Integrated Optimization and Navigation (ORION) system used data science to figure out how to significantly change the routing of its delivery trucks using many new data sources.
  - The impact was hundreds of millions of dollars of savings and an improved customer experience.

Exploration: Explore unknown transformative patterns in data

- Data scientists should be encouraged to make "big data expeditions" where there is no clear objective other than to explore the data for previously undiscovered value.



- A Data scientists at a Japanese maritime services provider realized that when providing their traditional services for ship classification, they were collecting a valuable store of data that had great potential in other areas. Applying the right analysis to this data meant that ship operators could reduce equipment failures and lifetime maintenance costs by 10%. This allowed the organization to quickly increase its market share by 20% when offering this value-added service to customers.

Prototyping: Challenge the status quo with radical new solutions

- Human decision making is increasingly inadequate in a new digital world with an ever-expanding universe of data.
- Data science and especially machine learning excel in solving the kind of highly complex data-rich problems that overwhelm even the smartest person.
- The list of business or government challenges that data science can tackle is potentially endless.

- “ Data science is already changing lives for the better — or even saving them”

- A U.S.-based police department that needed an efficient automated way to pull actionable insights from a huge volume of crime data.
- The predictive analytics solution put in place generated crime "forecasts" that optimized deployment of police forces, reducing the murder rate by 35% and robberies by 20% year over year.
- The estimated ROI of these impacts was 863%.
- Automated analysis of various disease symptoms and medical test data is another common area where the application of data science is already changing lives for the better — or even saving them.

Refinement: Continuously improve existing processes and products

- Most data scientists work in the production part of their business and have established models for refining processes and products according to the data their organization collects.
- Common examples would be marketing segmentation, retailers tweaking dynamic pricing models or banks adjusting their financial risk models.

- “ A deeper dive by a data science team can uncover something interesting about what is really happening

- Zurich Insurance, which reduced the inefficiencies around handling injury claims by using an **artificial intelligence (AI)** solution to fully automate injury report assessments.
- It leveraged AI to fully automate the medical report evaluation so that human agents could focus on value-added activities such as negotiating with the counterparty.
- The time to assess a medical report was cut from one hour to just a few seconds, saving $5 million per year.

Firefighting: Identify the drivers of certain undesirable situations

- Similar to the exploration category in terms of its methods, but is applied in a different context.
- Organizations trigger a data science initiative in response to crises where the symptoms are obvious — for
  - example, a rise in customer complaints or a rapid drop in profitability. In these narrow cases, the data science team has to identify only the cause, which limits the range of datasets it needs to analyze.

- Basic data discovery or **self-service business intelligence (BI)** is enough, but often a deeper dive by a data science team can uncover something interesting about what is really happening.
- Common examples include online retailers investigating why customers return goods despite prices being unmatched, deliveries being on time and quality being good, or manufacturers running open investigations into quality fluctuations.

Helping the world to see

- One of the health issues currently being addressed by the world's data scientists is visual impairment.
- According to the World Health Organization, we're on the verge of a blindness epidemic, with an estimated 1.8 billion people currently living with some form of visual impairment. In poorer countries, where access to healthcare is scarce, even preventable conditions can lead to permanent blindness.
- To combat this, Microsoft has shared its cloud technology and machine learning techniques with the L V Prasad Eye Institute in India – a country where over 55 million people suffer from reduced vision or blindness. Similarly, in the US, AI is being used to identify signs of diabetic retinopathy – a preventable condition which is rarely caught early enough.
- Using a vast trove of data, an AI system called IDx-DR can now identify serious cases of this condition in a matter of minutes, without the need for a clinician. Similar systems have also been developed to identify age-related macular degeneration and glaucoma.

Question ?