3RD RESEARCH & INFORMATION LITERACY SKILLS IN THE WORKPLACE SEMINAR

Keynote:

Creating Value using Big Data Analytics:
The Reality in Practice

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Creating value . . .

Outlines

- Challenges and barriers
- Value in context
- The concept of big data
- Understanding big data
- Differentiation of concepts
- A degree of knowledgeability

Creating value

- Value is a state of desirability within context, relevance, and impact, which must be achieved through:
  - ◆ Operational and strategic intents
  - ◆ Understanding the needs of the environment
  - ◆ Making informed decisions
  - ◆ Developed solutions for competitiveness
  - ◆ Improved support and enable solutions
 - ◆ Improved efficiency and effectiveness of services

Challenges of big data: You are not alone. . .

- Quality: Big data can be incomplete, inaccurate, or inconsistent, making it difficult to analyze and use

- Uniformity: lack of uniformity in validation, integration of data from diverse sources

- Infrastructure: incorrect evaluation and selection of big data technologies

- Transferability: easily transferred to other domains or organizations, due to differences in data formats, semantics or structures

The concept of Big Data

- Volume – unprecedented size and the scale

- Velocity – the speed at which data travels

- Veracity – complexity and uncertainty

- Variety – the multiplicity of different forms

- Value - importance
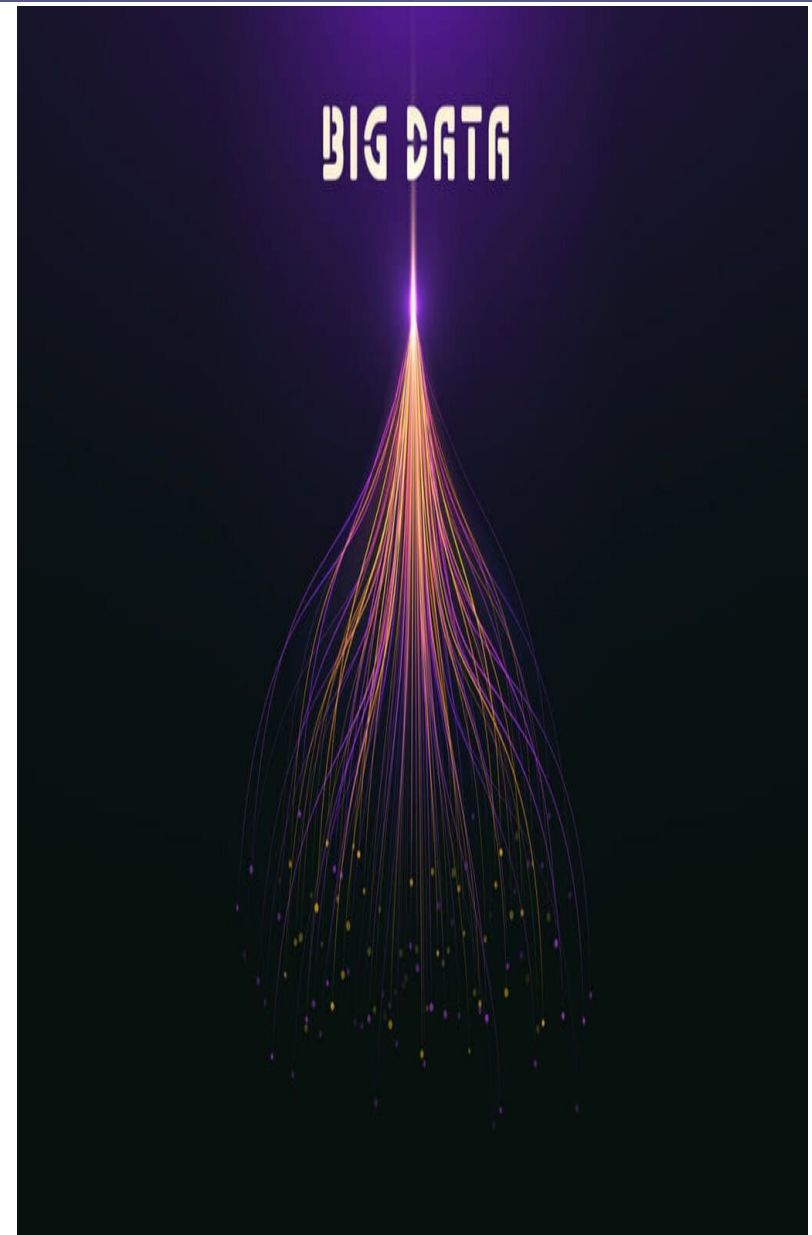
- The concept of big data is not new!
- What is new?
  - Differentiation of big data
    - Small data vs big data
  - Methods of gathering big data
  - Techniques for extracting value
    - Analytics vs Analysis

Differentiation of the concepts

- **Differentiation between Small data and big data**
  - Meaning associated with the concepts
  - The distinction between the concepts is not understood, distinctively
  - Clarification of the taxonomies
  - Classification of Nomenclature

Some Consequences

- Some challenges resulting from lack of differentiation:
  - Tools for big data analysis are purchased for small data purposes
  - Prohibitive cost of purchasing the tools for analysis or analytics
  - Inappropriate tool is employed, which yields undesirable results
  - Analysis or interpretation increases in complexity

Big Data: Analytics vs Analysis

- Analytics of big data
  - Specific to task and systematic examination of data
  - A computational process
  - Analytic is a thing from a practical front
- Analysis of big data
  - It is general, therefore, broader
  - Action humans carry out in building a narrative
- From a practical front, both analytics and analysis are employed as tools, to develop scenarios of value

Big data Analytics

- Descriptive analytics - offer insights into the patterns, trends, and key features of a dataset
- Diagnostic analytics - identify the root causes of events, behaviours, and outcomes
- Predictive analytics - identify patterns in data and generate forecasts
- Prescriptive analytics - evaluating multiple possible actions and their impact

- Through Artificial intelligence (AI); Machine learning; and Visualisation technologies, the analytics tools are used to deliver actionable insights

Big Data Analysis
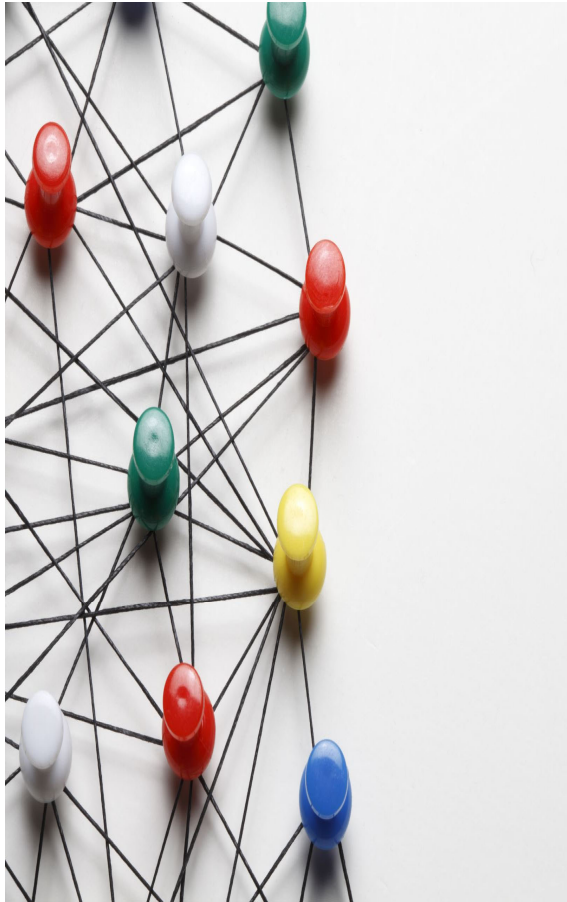
- Focuses on associating meaning and usefulness to entities.

- To understand why things happen in the ways they do. From this perspective, sociotechnical theories offer explanations:

  ◆ Activity theory – historical account, mediated interactions

  ◆ Actor-network theory – translation, actor-network, 'follow the actors'

  ◆ Diffusion of innovation – adoption stages, communication channels

  ◆ Structuration theory – the interplay between structure and agency, dualism

  ◆ Others

Big Data for Education

- Provides new insights into teaching and learning activities:
    - improve educational content
    - foster collaboration
    - improve online learning experiences
    - better understanding of behavioural patterns
- Incorporates Artificial Intelligence (AI), the Internet of Things (IoT), and virtual and augmented reality into curricula.
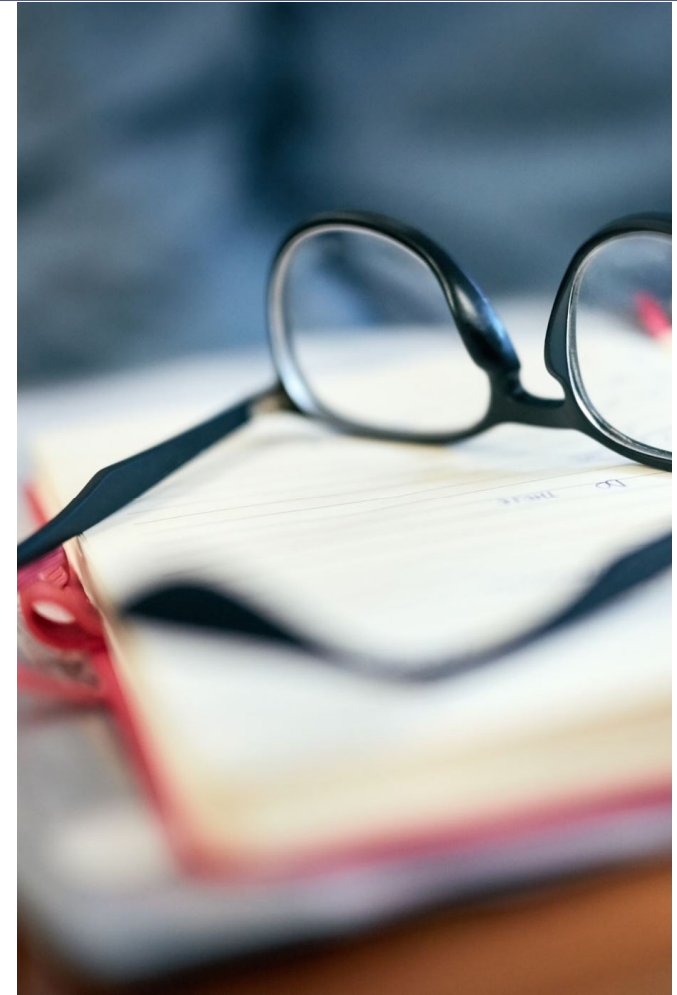
Big Data for Healthcare

- Potentially, to yield new insights to better care and into risk factors that lead to better care and diagnosis of diseases
    - The fusion of heterogeneous data
    - Structuralisation of social media, genomic and pharmaceutical details
    - Visualisation of diagnosis technologies
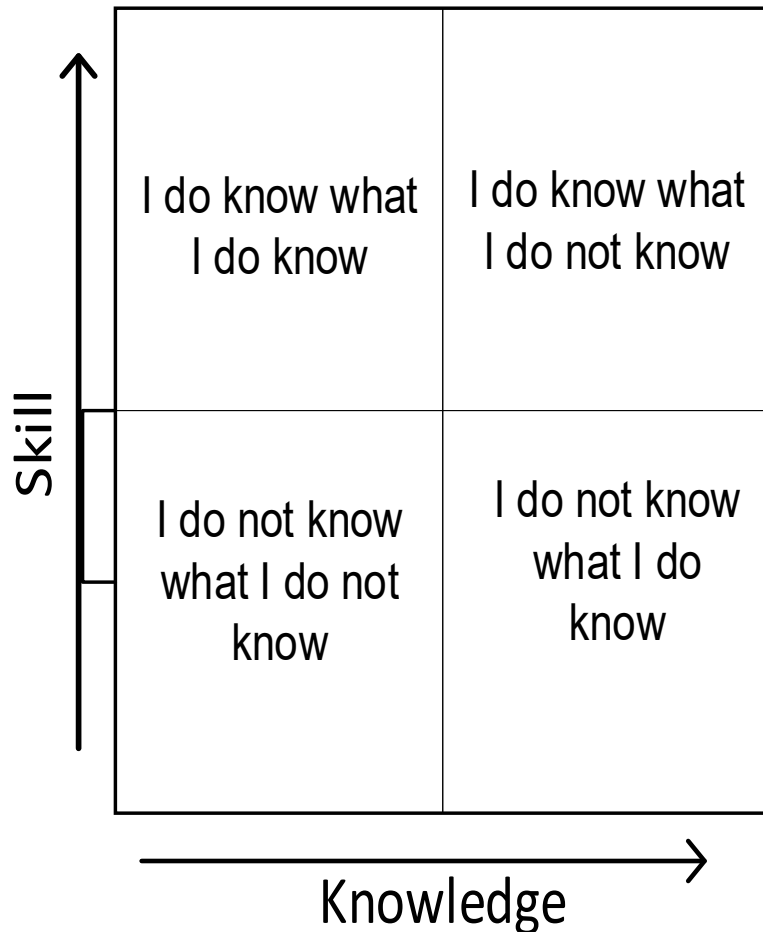- Facilitates and Transforms decision-making and services
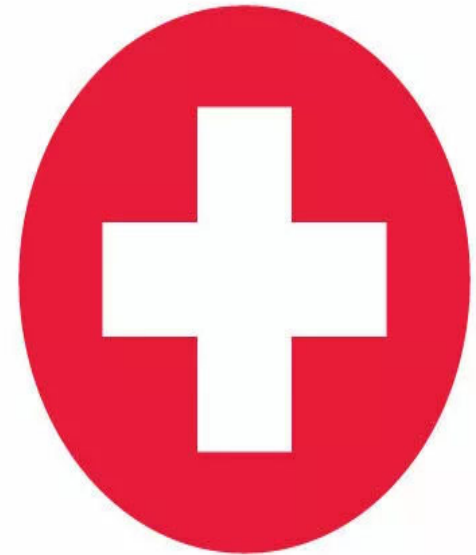
Big Data for Safety and Security

- Identify in Motion, at Rest, in Use, and in the Cloud

- Unique identifier
  - ◆ Closed-Circuit Television (CCTV)
  - ◆ Intrusion detection systems (IDS),
  - ◆ Intrusion prevention systems (IDS)

Creating value: Degree of Knowledge

I do know what I do know	I do know what I do not know
I do not know what I do not know	I do not know what I do know

Skill (vertical axis)

Knowledge (horizontal axis)

- Knowing what you do know is a level of knowledge certainty.
  - To predict futuristic states of big data
  - Its usefulness in business and environmental trends.
- Knowing what you do not know is contextual and circumstantial
  - Irrespective of knowledge and experience, some of us cannot define the boundaries.
  - There are different layers of definition, development, and implementation involved in big data.
- I do not know what I do know
  - The level of knowledge and awareness can only be assessed through its use for value
  - Not knowing the extent of usefulness in the quest to enable and support an organisation
- The *'unknown unknowns'* is paradoxical
  - an act of knowing that there are certain things that you do not know, to some degree, means that you in fact knows about it.

"It's not the strongest of the species
that survives, nor the most intelligent;
but the one most responsive to change."

—Charles Darwin

Thank you for listening!

Question?