

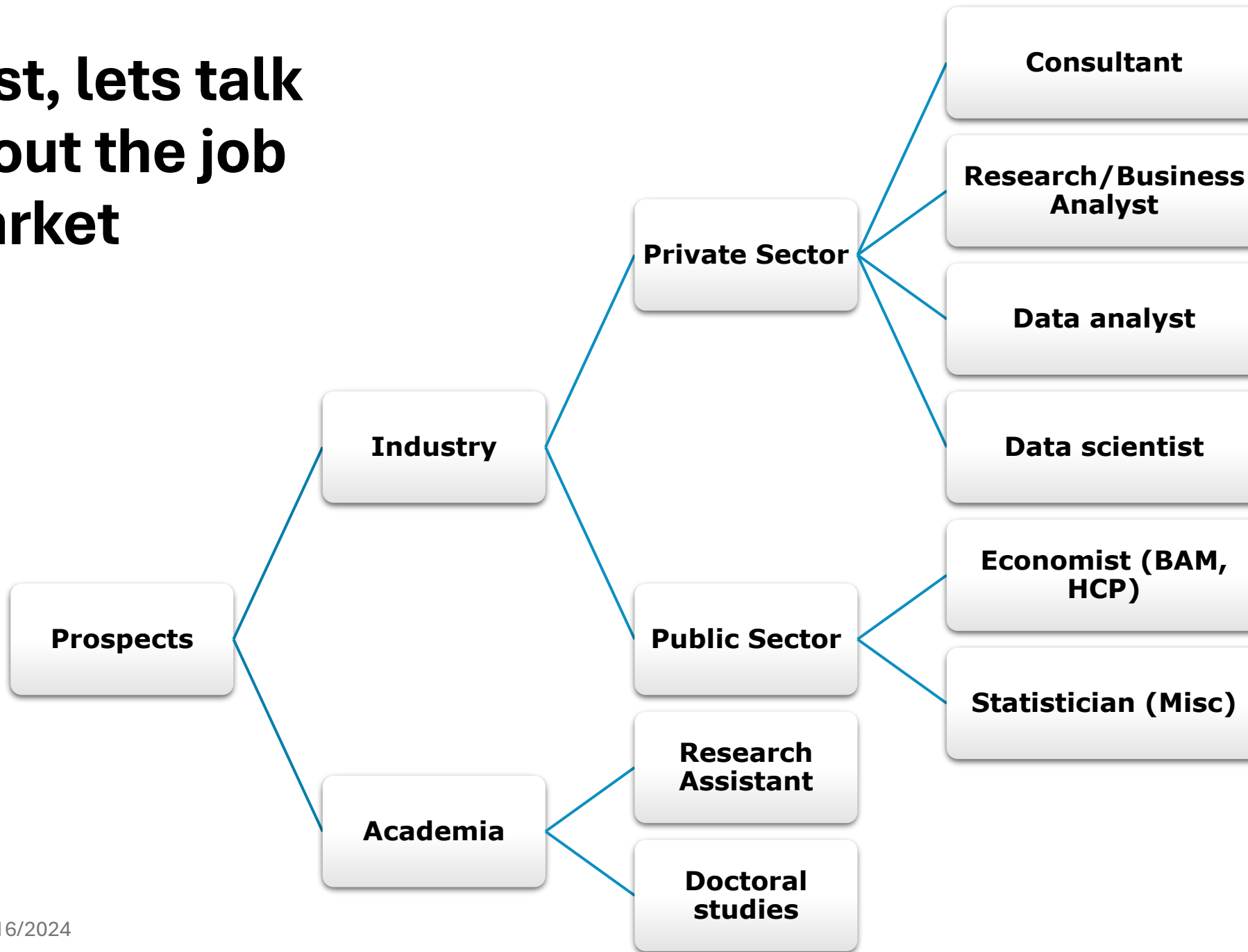
Applications in Computational Economics

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Applications in Computational Economics: An introduction

Jobs, methods, and tools

First, lets talk about the job market





Business Analytics

Data Analytics

Goal



Using business data to provide various types of information needed to implement change on an organisational level.

Using data to reveal patterns, trends, risks and opportunities, draw conclusions about hypotheses and support business decisions with data-driven insights

Approach



Defining the goals and project requirements. More retrospective and descriptive.

Usually more predictive and prescriptive. Aims to answer specific questions and uncover insights for competitive advantage.

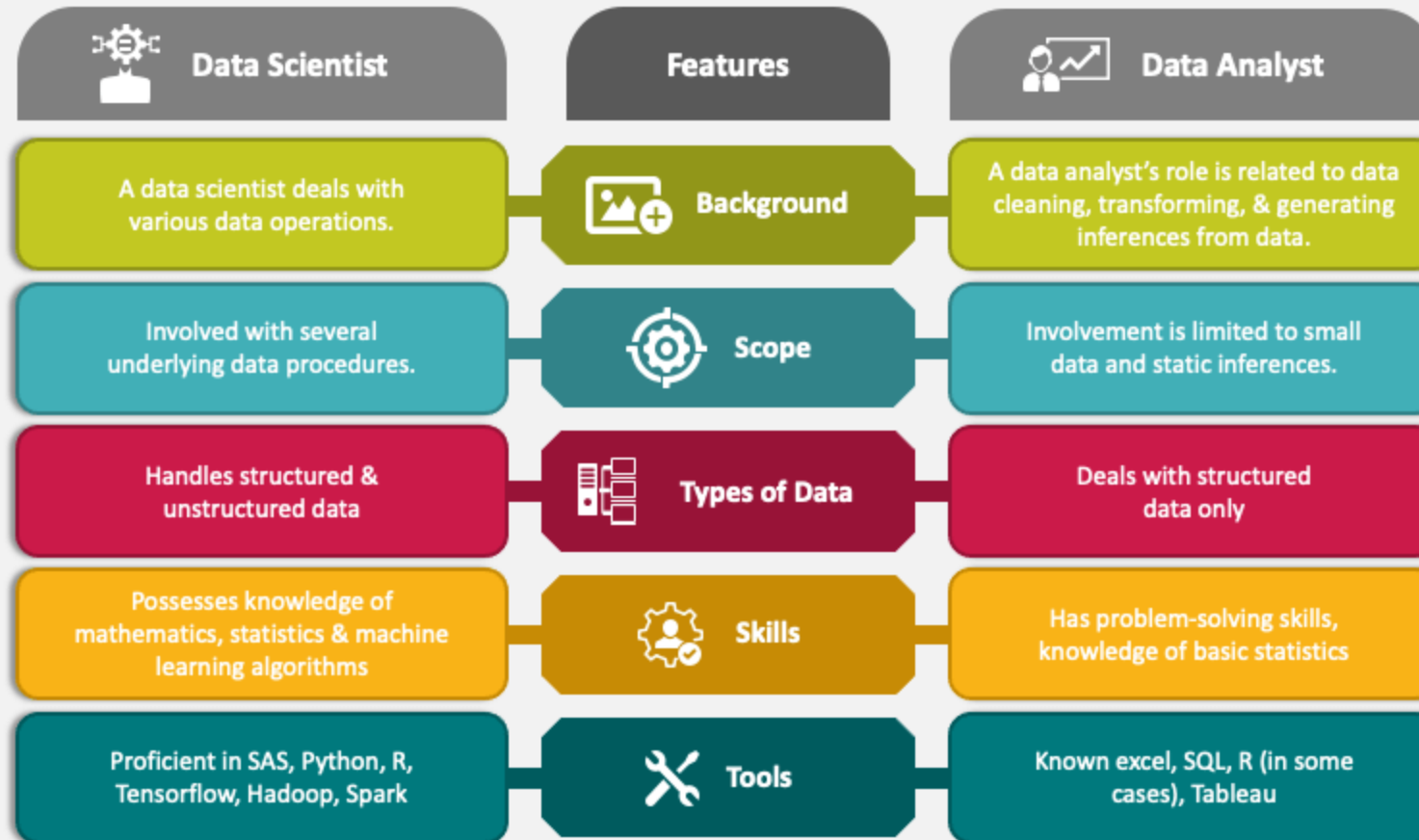
Required Skills



Stakeholder management, data research, Microsoft Office proficiency, SAP, project management

Data mining expertise, machine learning, data frameworks, Python, SQL experience

DATA SCIENTIST VS DATA ANALYST



Sources: Data Flair

Dans le cadre du renforcement des effectifs de l'entité DIRECTION ETUDES ECONOMIQUES, Bank Al-Maghrib recrute :

9 ECONOMISTES (H/F)

(Poste(s) basé(s) à RABAT)

Compétences et Qualités :

Solides compétences théoriques et empiriques en macroéconomie et en économie monétaire ;

Maitrise des méthodes d'analyse quantitative appliquées (séries temporelles, modèles stochastiques d'équilibre générale et ou/ modèles macro-économétriques, etc.) ;

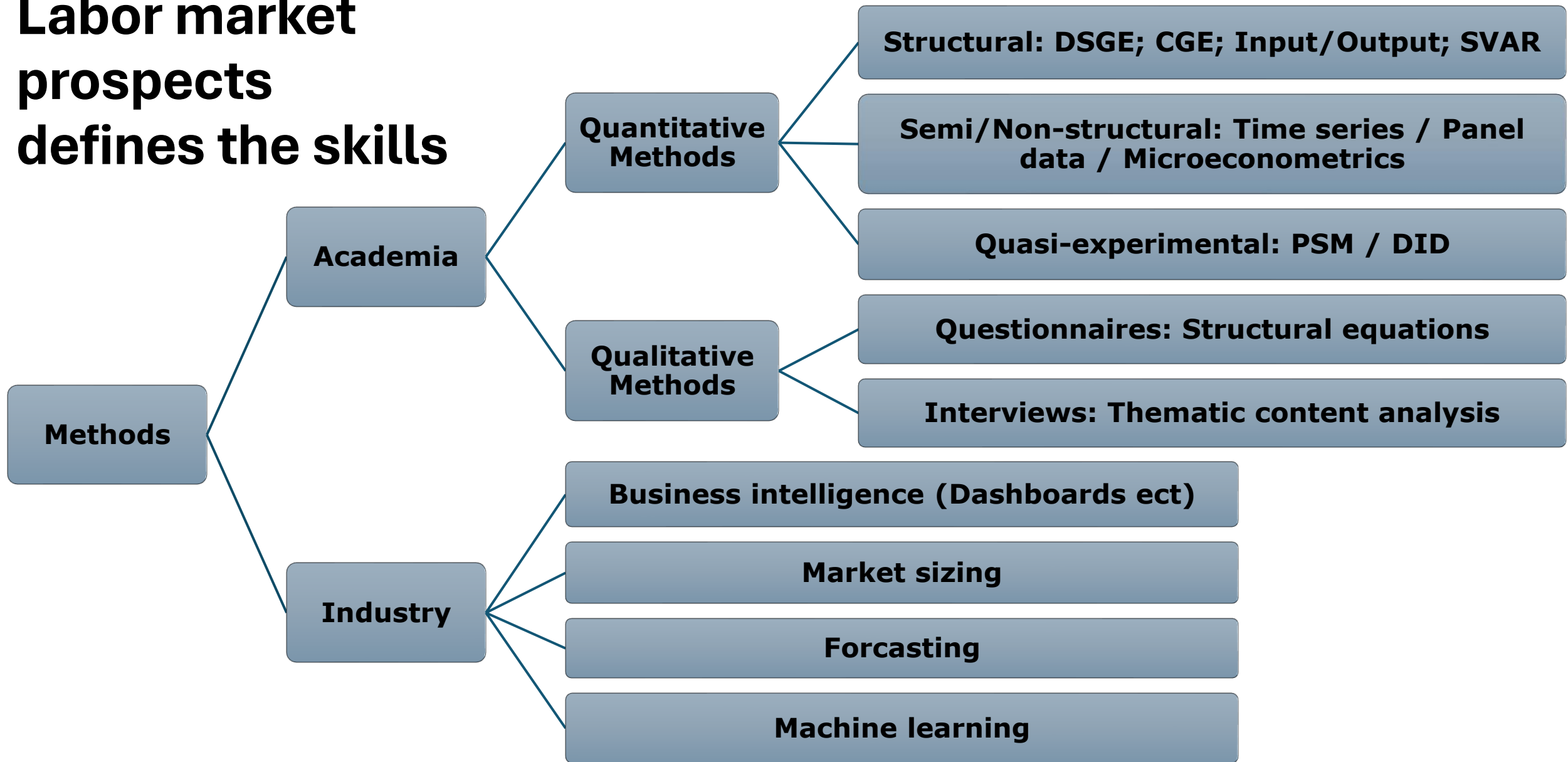
La modélisation économique avec le logiciel Matlab est un atout ;

Excellentes capacités de rédaction et de communication orale ;

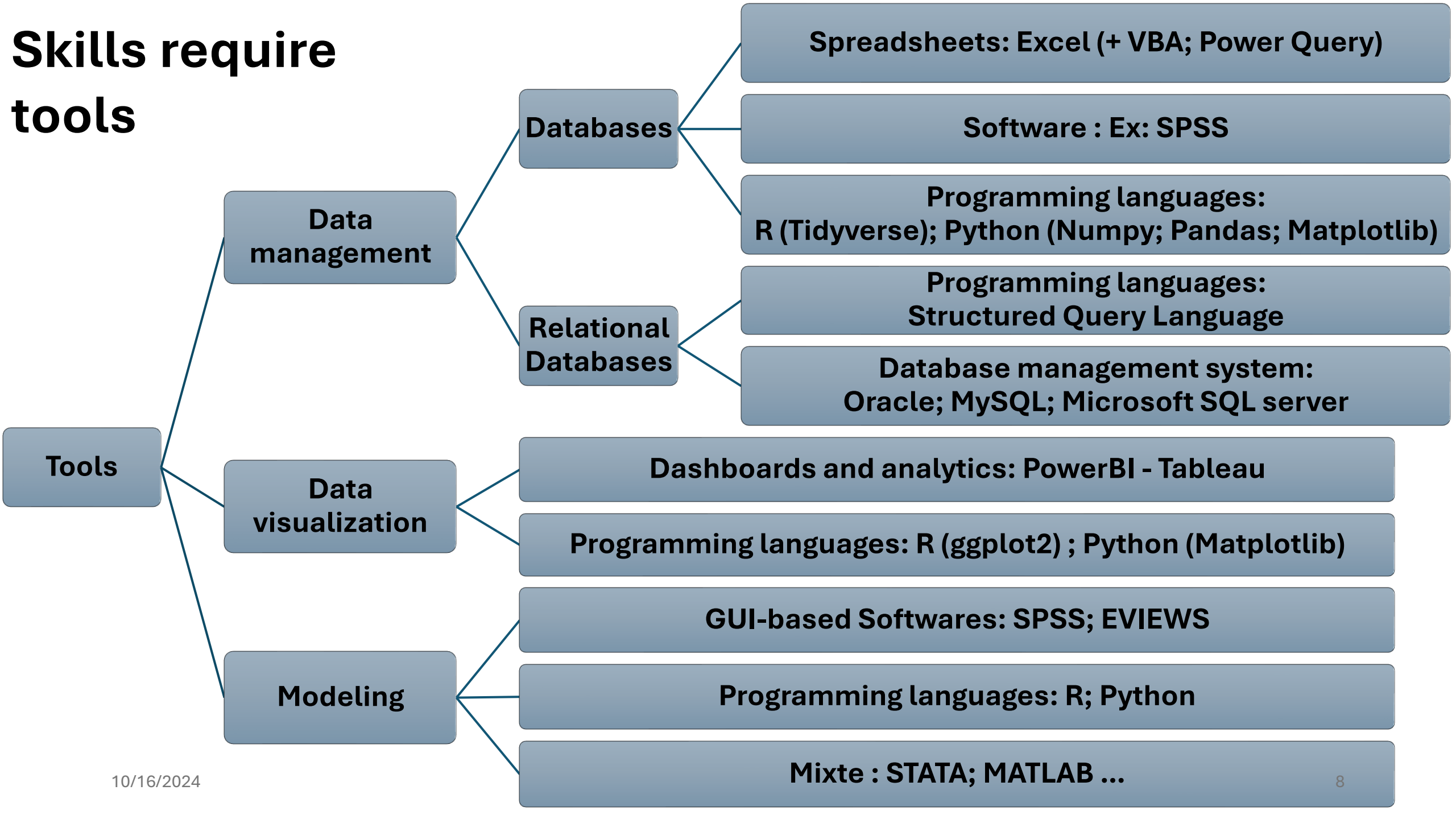
Forte aptitude à travailler en équipe ;

Rigueur et respect des délais.

Labor market prospects defines the skills



Skills require tools





Data Analyst - X Delivery

Boston Consulting Group (BCG) · Casablanca, Casablanca-Settat, Morocco

provide analytical advice where required.

Technical Skills (Must have):

- Overall fluency in either of Python or R: ability to read, create, debug and package code, being comfortable using either of Pycharm, R-Studio, Visual Studio or any other IDE
- SQL scripting, ability to collect data from relational databases, e.g. PostgreSQL, MySQL, MSSQL etc.)
- Data wrangling with Python (pandas) or R
- Hands on statistical inference using Python, R as well as MS Excel extensions
- Experience in data visualization and presentation using either of Tableau, PowerBI, QlikView, Dash, ...
- Self-learning and quick ramping in previously unfamiliar technological stack if needed



Data Analyst

ALTEN MAROC · Fez, Fès-Meknès, Morocco (Hybrid)

Des événements réguliers pour combiner bien être et performance.

Description du poste

Détail de la mission

- Développement des rapports Power BI
- Réalisation des recettes des évolutions des outils (VBA)
- Test et validation des données (lancement des jobs, ...)
- Support et animation de la résolution des incidents en VBA
- Réaliser un accompagnement méthodologique des utilisateurs
- Rédaction de gammes de support, de méthodes de base et de gamme de recette

Qualifications

Compétences requises :

- Bon niveau en français et en Anglais (Parler & écrit)
- Connaissance de bases de données structurées
- Maîtrise Power BI (Dax, Power Query, Reporting)
- Développement en VBA/macros/Fonctions avancées
- Maîtrise des langages de requêtes de type SQL
- MAJ les bases en ajoutant les données manquantes et en supprimant les erreurs
- Avoir des connaissances de base en : Snowflake/SAP/Data lake
- Habilité à acquérir de nouvelles connaissances.



Business Intelligence Specialist

Yakeey · Casablanca Metropolitan Area (On-site)

Responsabilités :

- Collecter, analyser et interpréter les données provenant de différentes sources
- Concevoir et développer des tableaux de bord et des rapports BI interactifs
- Créer, améliorer et maintenir des pipelines de données
- Collaborer avec les équipes pour identifier les besoins en matière de données et proposer des solutions adaptées
- Mettre en place des indicateurs de performance (KPI) pour suivre l'évolution des activités
- Assurer la qualité et l'intégrité des données
- Participer à des projets d'amélioration continue et d'optimisation des processus

Profil :

- Diplôme en informatique, statistiques, économie ou domaine connexe
- Expérience de 2 à 5 ans dans un rôle similaire en Business Intelligence ou Data Analysis
- Maîtrise des outils BI (ex : Metabase, Tableau, Power BI)
- Compétences avancées en SQL et en manipulation de données
- Expérience avec la création et la maintenance de pipelines de données (dbt, Prefect) est un plus
- Connaissance des langages de programmation (ex : Python, R) est un plus
- Excellentes compétences analytiques et capacité à résoudre des problèmes complexes
- Bonnes compétences en communication et capacité à travailler en équipe

Applications in Computational Economics: An introduction

Economic Modeling

Theory Versus Reality:

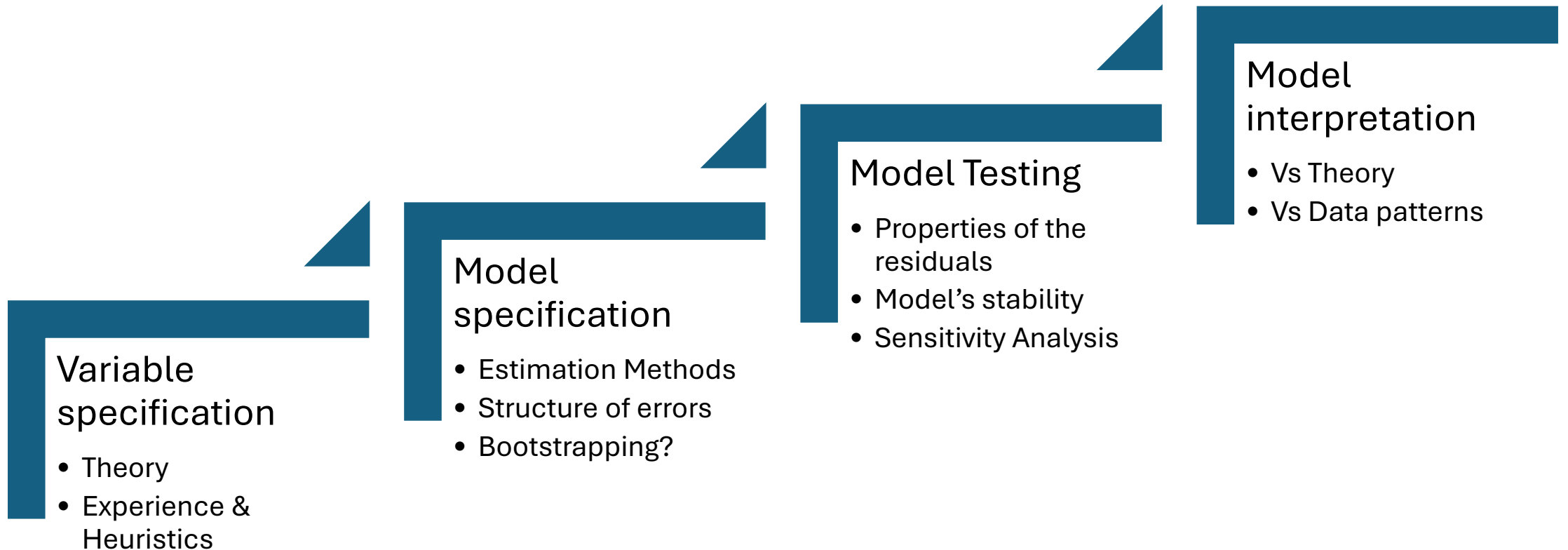
The goal of economics

- **Prediction** focuses on forecasting future outcomes based on current or past data.
 - The goal is to anticipate changes in economic variables (e.g., inflation, GDP growth) without necessarily understanding the underlying causes.
 - Predictive models prioritize accuracy in projecting trends or events.
- **Explanation** Aims to understand and explain the underlying relationships between economic variables.
 - The goal is to uncover why certain outcomes occur, providing a deeper theoretical understanding of economic phenomena (e.g., explaining the causes of unemployment or inflation).

Theory Versus Reality: Theory-Driven vs. Data-Driven Economic Analysis

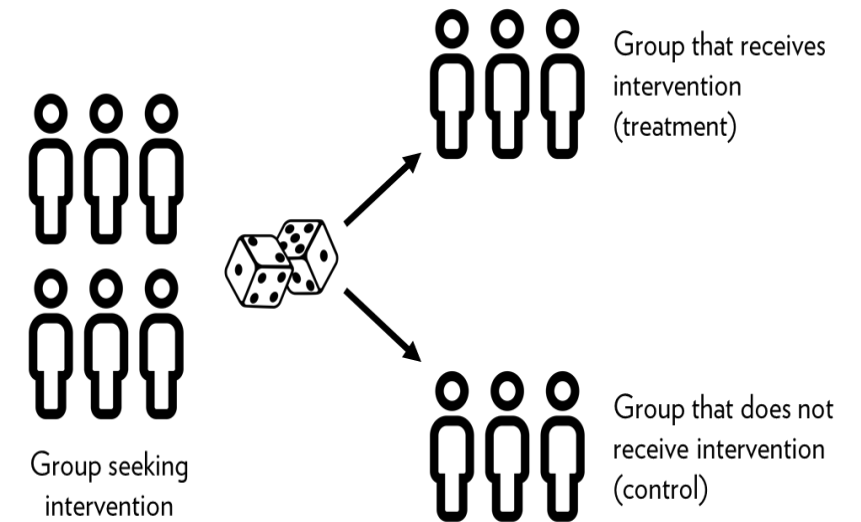
- **Theory-Driven models** begins with a mathematical representation of the economy that posits specific relationships between variables, based on economic hypothesizes.
 - Example: Using DSGE models to explain macroeconomic phenomena such as economic growth, inflation, and the effects of monetary or fiscal policy
- **Data-Driven models** focuses on discovering patterns, trends, or relationships in the data without strong initial reliance on existing theory.
 - Example: Employing machine learning techniques to detect patterns in consumer/investor behavior.

The Modeling pipeline



Quasi-experimental methods: True experiments

- A true experiment requires key elements to ensure rigorous testing of hypotheses:
 - **Random Assignment:** Participants are randomly assigned to treatment and control groups, ensuring no systematic differences between them.
 - **Controlled Conditions:** Researchers manipulate one or more independent variables while keeping other conditions constant to isolate cause-and-effect relationships.
 - **Causal Inference:** The randomization allows for strong claims about causality since differences in outcomes can be attributed to the treatment
- *Example: Clinical trials in medicine where one group receives a drug and the other a placebo.*

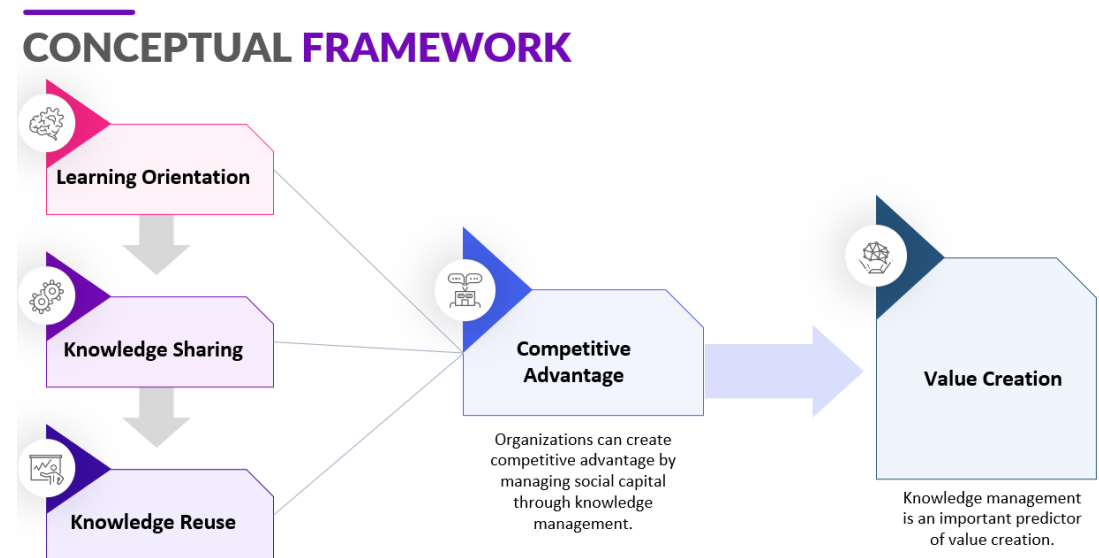


Quasi-experimental methods in economics

- Randomization is often not feasible in economics due to Ethical Concerns and Practical Constraints
- Quasi-experimental methods estimate causal effects when randomization is not feasible.
- Quasi-experimental methods are used to evaluate policy impacts, interventions, or treatments in real-world settings.
 - Examples : Labor market reforms, education policy, public health interventions.
- Some methods:
 - Difference-in-Differences (DiD)
 - Propensity Score Matching (PSM)

Qualitative methods in economics

- **A conceptual framework** is a structured representation of key concepts, variables, and their relationships that guide a research study, helping to clarify how the research problem will be explored.
- **Latent variables are** unobserved variables that cannot be directly measured but are inferred from observed variables (indicators). They represent abstract concepts like intelligence, satisfaction, or mental health.



Qualitative methods in economics

- **Structural Equation Modeling** is a statistical technique that models complex relationships between observed variables (measured through surveys questions, called items) and latent (unobserved) variables. It allows for the simultaneous estimation of multiple relationships (regression paths) while accounting for measurement error, making it ideal for testing theories involving abstract concepts like attitudes or abilities.
- **Thematic content analysis** is a qualitative research method used to identify, analyze, and report patterns (themes) within qualitative data, such as interviews, open-ended survey responses, or textual documents.