Business Research and Data Analytics

Lecture 1: Introduction

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Agenda

1. Introduction
2. Syllabus & course roadmap
3. What Is Business Research & Data Analytics?

1. Introduction

Course Information

- **Course Title**: Business Research and Data Analytics (001)
- **Course Credit**: 3
- **Course Prerequisites**: None, provided that we have a computer classroom
- **Semester**: Spring 2024
- **Meeting Venue and Time**: W13 402 | Wednesday | 13:00 – 16:00

About me

Hello! My name is **Iegor**.

- Assistant Professor (link), Woosong University
- Ph.D. (Public Policy), KDIS (ROK, 2022)
- M.A. (Public Policy), KDIS (ROK, 2014)
- M.A. (International Economics), KNEU (Ukraine, 2009)
- B.A. (International Economics and Management), KNEU (Ukraine, 2008)
- Background: international finance & central banking
- Roles: Financial Analyst, Team-lead, Project manager
- Research interests: banking and central banking, computational data science

Some Info:

- email: ievysh@wsu.ac.kr
- office: W19 #223
- Google Scholar
- Linkedin
- ResearchGate
- GitHub

About you

- What's your preferred name?
- Where are you from?
- Any fun fact to share (e.g. hobbies or interests, favorite quote, e.t.c.)?
- Background survey link
- Expectation survey link

2. Syllabus & course roadmap

Course Description:

- This course designed to provide students with the knowledge and skills to conduct business research and data analytics.
- The course will cover the basic concepts and tools of data analytics, including data collection, data cleaning, data visualization, and data analysis.
- The course will also cover the practical implications of data analytics, including the application of data analytics tools and techniques to solve business problems.
- The course will also cover the communication of the results of data analytics to business stakeholders.

Course Objectives:

- to provide students with the knowledge and skills to conduct business research and data analytics
- to develop students' ability to apply data analytics tools and techniques to solve business problems
- to develop students' ability to communicate the results of data analytics & research to business stakeholders

Teaching method

- The course consists of lectures, in-class activities, and demonstrations that emphasize hands-on, practical tasks that give students the chance to put what they have learned to the test and improve their skills.
- Software is used to assist in how the information is presented.
- Students finish readings that have been assigned before the class, work on group projects, and take part in activities.
- All the materials will be posted on SMART.
- Students are expected to regularly check their message box and notice board on SMART.
- We use **DataCamp** (I'll need your email for this)

General things

- **Our Goals**:
  - to look through concepts and tools of BRDA to further apply in real-life practice
  - a **smart consumer** of data science
  - an **informed producer** of elementary data science product
  - see that Data Science is *fun* :-)
  - ~~become an R/Excel/Python/etc. expert~~
- **Our Principle**:
  - learning by doing
  - mutual respect
  - put one's efforts
- **My role**: to guide you through the course, i.e. **mentoring and facilitating**
- Your suggestions are welcomed (through **Keep/Start/Stop (KSS)** survey, etc.)!

General things

Our communication

- Check LMS regularly for materials and messages
- Feel free to approach me before or after class
- **Office hours**: *Wed 10-11 am* or by appointment. You are welcome to discuss course-related issues and questions, career plans, etc.
- Check / use **LMS** (incl. messages in-there)
- **Emailing policy**: email me to set up a one-to-one meeting or in the case of some urgent issues.
  - Please indicate the course name / section in the subject line and the issue (e.g., *[Business Research and Data Analytics (Sec 1)]* Meeting request)
  - Please write at least two times when you would like to meet and a brief description (1-2 sentence) why you want to meet up with me
  - I may not reply on time (so email me in advance)

2. Syllabus & course roadmap

The course in a nutshel

1. Business Research and Data Analytics basics
2. Business Research and Data Analytics tools:
    - Software (Excel, Tableau, R, Python) *will be adjusted base on the students background survey*
    - Functional (data collection, cleaning, visualization, analysis, etc.)
3. Practical implication (class assignments and a project)

Broad coverage

- **Formal/core curriculum**:
  - Concepts
  - Understanding
  - Real-life cases
  - Problem-solving
  - Application
- **Hidden curriculum**:
  - Values
  - Communication
  - Cooperation
  - Discussions
  - Standards

Logistics & materials

- Check out the syllabus
- A typical class will focus on concepts, tool and technique overviews, and practical exercises
- The lecture notes will be made available at least one day beforehand
- DataCamp assignments

Course materials:

- **Lecture notes**
- Abhay Singh (2022). R for Data Analytics
- Garrett Grolemund and Hadley Wickham (2016). R for Data Science
- Joel Grus (2020). Data Science from Scratch
- Wes McKinney (2022). Python for Data Analysis
- **DataCamp Classroom**

GRADING

- **Class Attendance**: 20%
- **In-class Assignments**: 30%
- **Midterm Examination (Week 8)**: 20%
- **Final Examination (Week 15)**: 30%
- **Total**: 100%

More details on each item you will get down the road.

Course roadmap

Week	Topic
Week 1	Overview of the course and logistics: Introduction and Overview.
Week 2	Data Collection and Mining (1)
Week 3	Data Collection and Mining (2)
Week 4	Data Exploration: Pre-processing, Transformation
Week 5	Data Visualization. Tableau
Week 6	Data Visualization. R
Week 7	Data Visualization. Python
Week 8	Mid-term
Week 9	Statistical Methods: inferences and regressions
Week 10	Text Analytics. R/Python
Week 11	Forecasting analytics. VaR Forecasting and GARCH models
Week 12	Machine Learning (Supervised). Python
Week 13	Machine Learning (Unsupervised). Python
Week 14	Final exam preparation
Week 15	Final Exam

Tentative schedule. It may be adjusted based on the class progress.

2024 Holidays and make-ups

Make-up class schedule

Holiday	Make-up class
10th, April (Wed.)	13th, April (Sat.)
1st, May (Wed.)	4th, May (Sat.)
6th, May (Mon.)	11th, May (Sat.)
15th, May (Wed.)	18th, May (Sat.)
6th, June (Thur.)	8th, June (Sat.)

Please remember about this.

Study Suggestions

1. Reading materials before class
2. Attend lectures (20% of your grade)
3. Be active in class (don't miss and perform in-class activities)
4. "The best way to learn ... is to stay on top of it as you go along. The worst way is to cram the night before exams." (c)

Based on Gaston Sanchez' lectures

Typical failer profiles

1. Couldn't care less
2. Struggle with English
3. Personal issues
4. Data science (computer) PTSD

Based on Gaston Sanchez' lectures

1. Couldn't care less

- Great indifference
- Missing lectures
- Coming/leaving late/early
- No in-class activities
- Doing something else in class
- Cheating / free riding

DROP IT

Based on Gaston Sanchez' lectures

2. Struggle with English

- Trouble with listening/reading comprehension
- Poor vocabulary
- Hard time with new terminology

It's okay, just push harder

No worries; it's not a language class.

Based on Gaston Sanchez' lectures

3. Personal issues

- Health
- Family
- Job
- Universe against you

Come talk to me asap

Based on Gaston Sanchez' lectures

4. Data science (computer) PTSD

- Traumatic data science experiences
- Mental blocked
- Electrical appliances turn off all around you

Just patience & work harder

Based on Gaston Sanchez' lectures

To remember

- Checking attendance is your own *responsibility.*
  - See the Attendance app guide for students here.
  - **Come with attendance issues right at the end of the class**, if any.
  - I will not be able to fix it later.
  - Excused absence (hospital visits, etc.) - go to talk to the TA.
- If you miss some in-class assignments, you may ask to take them later during office hours.
- Don't postpone any talks about your grades to the very end of the semester.

3. What Is Business Research and Data Analytics?

What Is Business Research and Data Analytics?

- **Business Research** is the systematic and objective process of gathering, recording, and analyzing data for aid in making business decisions.
- **Data Analytics** is the science of analyzing raw data in order to make conclusions about that information.

Academic Research vs Business Research

Source: What is the difference between academic research and professional research?]

Application of Business Research and Data Analytics

- **Market Analysis**: Businesses use research and data analytics to understand market trends, customer preferences, and competitive landscapes. This information helps in identifying new market opportunities, optimizing product offerings, and developing effective marketing strategies.
- **Customer Insights**: By analyzing customer data, businesses can gain valuable insights into customer behavior, preferences, and satisfaction levels. This knowledge enables personalized marketing campaigns, improved customer experiences, and better retention strategies.
- **Operational Efficiency**: Data analytics is employed to optimize operational processes, enhance supply chain management, and streamline resource allocation. Businesses can identify inefficiencies, reduce costs, and improve productivity by leveraging insights derived from data analysis.
- **Risk Management**: Research and analytics assist businesses in identifying and mitigating risks associated with market volatility, regulatory changes, and operational disruptions. By analyzing historical data and employing predictive modeling techniques, organizations can make informed decisions to minimize risks and maximize resilience.

Application of Business Research and Data Analytics (cont)

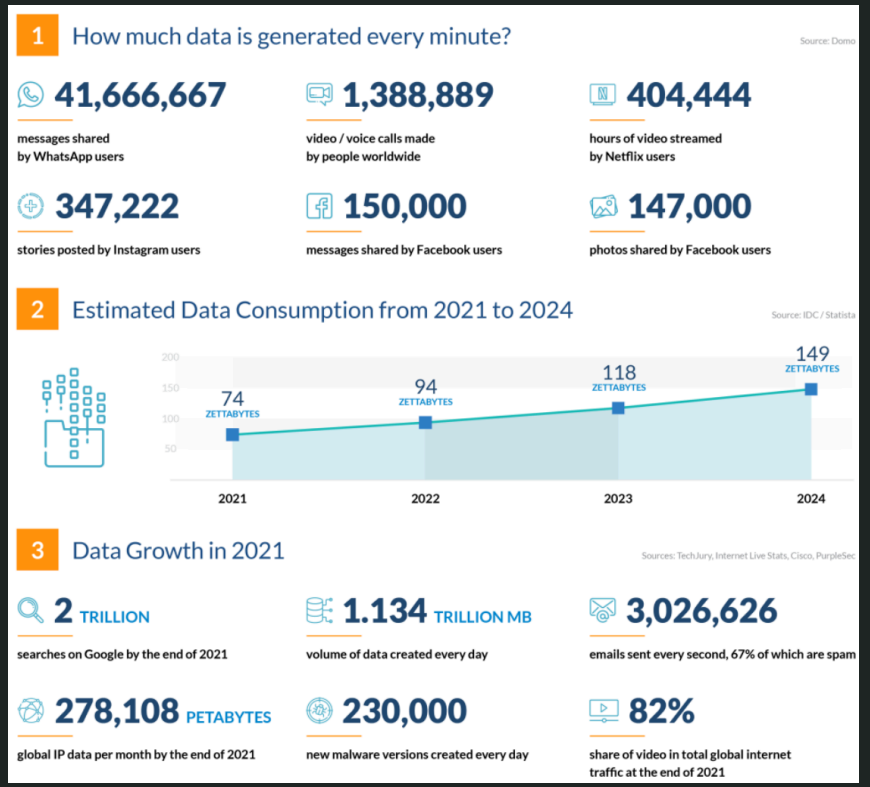
- **Performance Measurement**: Data analytics enables businesses to track key performance indicators (KPIs), evaluate business performance, and monitor progress towards organizational goals. This facilitates data-driven decision-making and allows for timely adjustments to strategies and tactics.
- **Strategic Planning**: Research findings and data-driven insights inform strategic decision-making processes such as market entry strategies, product development initiatives, and expansion plans. Businesses leverage research and analytics to assess market potential, evaluate competitive positioning, and allocate resources effectively.
- **Financial Analysis**: Data analytics is used in financial analysis to assess financial performance, conduct budgeting and forecasting, and optimize investment decisions. By analyzing financial data, businesses can identify trends, assess profitability, and manage financial risks more effectively.
- **Predictive Analytics**: Businesses employ predictive analytics to forecast future trends, anticipate customer behavior, and identify emerging opportunities or threats. By leveraging advanced statistical modeling and machine learning algorithms, organizations can make proactive decisions to stay ahead of the competition.

Why Study Business Research and Data Analytics?

- **In-Demand Skills**: Research and data analytics skills are highly sought after by employers across various industries. By acquiring these skills, you can enhance your employability and career prospects.
- **Data-Driven Decision-Making**: In today's business environment, data-driven decision-making is crucial for success. By understanding research and analytics, you can contribute to informed decision-making processes and drive business growth.
- **Competitive Advantage**: Businesses that leverage research and analytics effectively gain a competitive edge by identifying new opportunities, optimizing operations, and enhancing customer experiences.
- **Career Opportunities**: Proficiency in research and data analytics opens up diverse career opportunities in fields such as marketing, finance, operations, consulting, and entrepreneurship.
- **Personal Development**: Studying research and analytics can help you develop critical thinking, problem-solving, and analytical skills that are valuable in both professional and personal contexts.
- **Future-Proofing**: As technology continues to evolve, data analytics skills will become increasingly important. By studying research and analytics, you can future-proof your career and adapt to changing industry trends.

Why Study Business Research and Data Analytics? (cont)

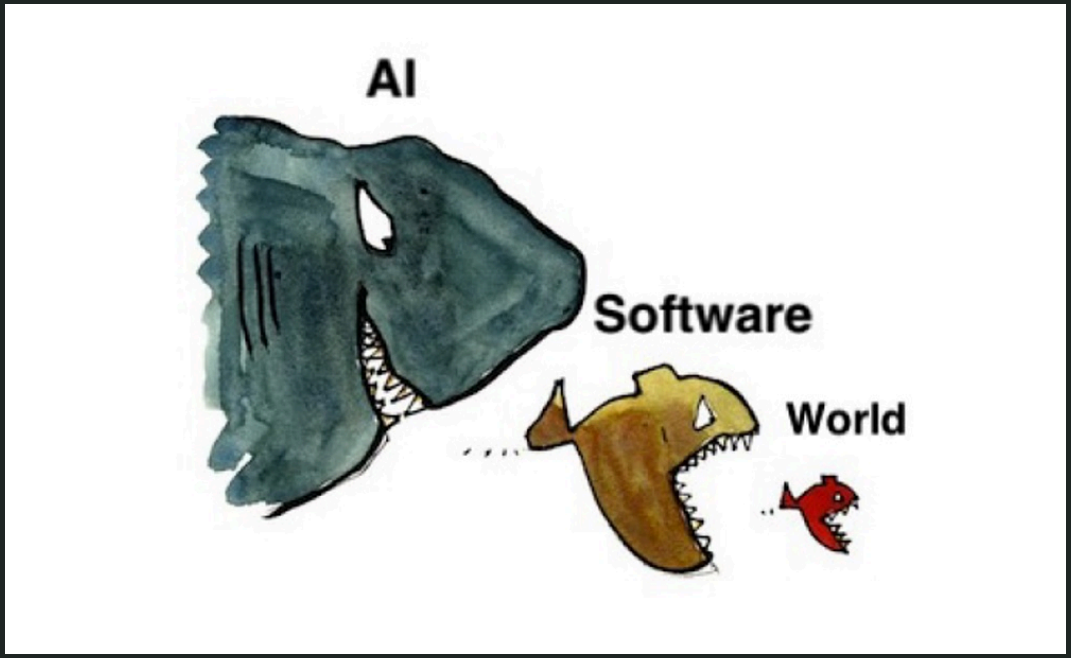
Data Is Created Every Day



Source: 53 Important Statistics About How Much Data Is Created Every Day in 2024]

Why Study Business Research and Data Analytics? (cont)

Why Data Science?



Source: Modeling and Artificial Intelligence: friends or foes?]

Why Study Business Research and Data Analytics? (cont)

The PYPL PopularitY of Programming Language Index

Worldwide, Mar 2024 :

Rank	Change	Language	Share	1-year trend
1		Python	28.59 %	+1.0 %
2		Java	15.79 %	-0.5 %
3		JavaScript	8.7 %	-0.8 %
4		C#	6.77 %	-0.0 %
5		C/C++	6.76 %	-0.0 %
6	↑	R	4.71 %	+0.5 %
7	↓	PHP	4.5 %	-0.7 %
8		TypeScript	2.86 %	+0.1 %
9		Swift	2.74 %	+0.5 %
10		Objective-C	2.4 %	+0.1 %

Source: PYPL PopularitY of Programming Language]

Conclusion

- Business research and data analytics are **essential components of modern business operations**.
- By studying research and analytics, you can **gain valuable skills, enhance your career prospects, and contribute** to data-driven decision-making processes.
- Whether you are interested in marketing, finance, operations, or entrepreneurship, research and analytics skills can provide you with a competitive advantage and open up diverse career opportunities.
- **This course will equip you with the knowledge and skills** to conduct business research and data analytics, enabling you to make informed decisions, solve complex problems, and drive business growth.

Any QUESTIONS?

Thank you!