Managing Information and Innovation (EBMN212225)

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The Rise of the Useless Class

What should we do with all the superfluous people, once we have highly intelligent non-conscious algorithms that can do almost everything better than humans?

The rise of artificial intelligence (AI) is expected to transform society by automating many jobs, potentially rendering a large portion of the workforce unemployed. Historian Yuval Noah Harari refers to this displaced group as the "useless class," arguing that new economic, social, and educational systems must be established to address their needs. As AI continues to replace workers in various sectors—including manufacturing, healthcare, and law—society will become increasingly polarized between those who operate and innovate AI systems and those who struggle to find meaningful employment.

Automation will not only eliminate low-skilled jobs but also create high-skilled positions that many displaced workers may not be able to transition into. This could lead to severe economic disparities and social unrest. Unemployment also impacts psychological well-being, as individuals derive meaning and identity from work. Without a sense of purpose, the "useless class" may face issues such as depression and alienation, further exacerbating societal instability. Harari warns that if these problems are not addressed, the divide between the working class and the jobless may become unbridgeable.

Some experts propose Universal Basic Income (UBI) as a solution, where governments would tax corporations and the wealthy to provide all citizens with a financial safety net. Additionally, British commentator Paul Mason argues that capitalism is unsustainable in the digital age and that society must transition toward a new economic model where the state plays a larger role in regulating private finance and wealth distribution.

However, financial support alone will not be enough. The shift in societal structure will necessitate a complete overhaul of educational systems, emphasizing creativity and adaptability rather than traditional rote learning. Instead of merely imparting knowledge, education must focus on developing skills that cannot be easily replicated by AI, such as emotional intelligence, critical thinking, and artistic expression. As AI continues to reshape human roles, society must rethink its values, ensuring that individuals remain engaged and fulfilled in a world where work may no longer be the defining factor of identity and success.

1 Course Description

Managing digital technologies has become an essential requirement for any organization to remain competitive. Long-term sustainability for an organization may be determined by its ability to competently manage information, direct innovation resources, and navigate the evolving societal and economic impacts of artificial intelligence (AI) and automation. As AI revolutionizes industries, the ability to integrate technological innovation, knowledge, and information becomes crucial in addressing both opportunities and challenges, including the displacement of jobs and the emergence of the "useless class."

This course helps address these challenges by placing them within today's rapidly evolving technological and economic landscape. It focuses on three primary resources: people, information, and technological innovation. Rather than merely addressing technical aspects, the course takes a holistic approach, exploring how organizations can balance efficiency and innovation while considering the broader societal implications of AI-driven automation. Additionally, coding and programming will be introduced not only as technical skills but also as tools for developing critical thinking, problem-solving, and adaptability—qualities that are becoming increasingly valuable in an AI-dominated future. The course also emphasizes researching, strategizing, and implementing strategic changes to help organizations and individuals remain relevant in the digital economy.

This course provides an introduction to the nature of digital technologies, the driving forces behind organizational innovation, and the management of technological change. Topics include the characteristics of digital technology, standards and network effects, the adoption and diffusion of innovations, the rise of digital platforms, and advancements in emerging technologies such as financial technology, artificial intelligence, machine learning, and blockchain. The course will also explore the socio-economic impact of digital transformation, including discussions on economic inequality, post-truth and disinformation, as well as digital sustainability.

The course is taught through a combination of lectures and seminars. Seminars will focus on emerging topics and issues related to managing digital technologies, including ethical considerations and policy responses to AI-driven societal changes. The course will also involve coding and programming exercises in a laboratory setting, allowing students to gain hands-on experience with digital tools that foster innovation. A group project and presentation will complement the lecture topics, reinforcing theoretical concepts through practical application. There are no prerequisite courses, making this course accessible to all students interested in understanding and shaping the future of digital technology and innovation.

2 Course Perspective

The rapid advancement of digital technologies is reshaping industries, economies, and societies at an unprecedented pace. In an era where artificial intelligence (AI), automation, and digital platforms are transforming traditional business models, organizations must adapt to maintain competitiveness and long-term sustainability. This course is designed to equip undergraduate students with the foundational knowledge and strategic mindset needed to navigate this evolving digital landscape effectively.

Rather than focusing solely on technical skills, the course takes a multidisciplinary approach, integrating concepts from management, economics, technology, and ethics. It explores the intersection of three primary resources—people, information, and technological innovation—and how they collectively influence digital transformation. By understanding the underlying mechanisms of digital technologies, students will gain insight into the driving forces behind organizational innovation, the impact of automation on the workforce, and the societal implications of AI-driven decision-making.

Through a combination of lectures, seminars, and hands-on programming exercises, students will engage in discussions on topics such as digital platforms, network effects, and the role of emerging technologies like blockchain and machine learning. Additionally, the course addresses broader challenges, including economic inequality, misinformation in the digital age, and the ethics of AI. By tackling these pressing issues, students will develop critical thinking and problem-solving skills that are essential for future leaders in the digital economy.

The course is structured to be accessible to all undergraduate students, regardless of their prior technical background. By integrating coding and programming within a broader strategic and managerial framework, students will not only gain technical proficiency but also learn how to apply digital tools innovatively. The course culminates in a group project, allowing students to apply theoretical concepts to real-world scenarios and develop actionable strategies for digital transformation.

Ultimately, this course empowers students to become proactive contributors to the digital economy. By bridging the gap between technology and management, students will be better prepared to address both the opportunities and challenges posed by AI-driven automation, ensuring they remain relevant and adaptable in an ever-changing digital landscape.

3 Course Objectives and Outcomes

Course Objectives

Upon completion of this course, students will:

1. Develop a Strong Understanding of Digital Technologies
    - Recognize the characteristics and significance of digital technologies in various industries.
    - Identify key technological trends and their implications for organizations and society.
2. Cultivate Strategic Thinking in Technology Management
    - Understand how organizations leverage digital innovation for competitive advantage.
    - Develop frameworks for managing technological change within an enterprise.
3. Explore the Socio-Economic and Ethical Dimensions of Digital Transformation
    - Analyze the effects of AI, automation, and digital platforms on employment, inequality, and policy.
    - Evaluate ethical considerations and societal responsibilities associated with emerging technologies.
4. Enhance Technical Proficiency and Problem-Solving Skills
    - Gain hands-on experience with coding and data analysis to support digital decision-making.
    - Apply computational tools to address real-world business and technological challenges.
5. Strengthen Collaboration and Communication Abilities
    - Work effectively in teams to develop and present digital strategies.
    - Communicate technical and managerial insights clearly and persuasively in various formats.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Understand Digital Technologies and Innovation
    - Explain the fundamental characteristics of digital technologies and their role in shaping modern organizations.
    - Analyze the adoption, diffusion, and impact of emerging technologies, such as AI, blockchain, and machine learning.
2. Apply Digital Management Strategies
    - Develop strategies for managing technological innovation within an organization.
    - Assess the impact of digital platforms, network effects, and standards on business models.
3. Analyze Societal and Economic Implications
    - Evaluate the socio-economic effects of AI and automation, including economic inequality and job displacement.
    - Critically assess the role of digital transformation in shaping public policy and ethical considerations.
4. Develop Technical and Analytical Skills
    - Gain hands-on experience with coding and digital tools relevant to business and technology management.
    - Utilize data analytics and computational thinking to solve real-world problems.
5. Enhance Problem-Solving and Critical Thinking
    - Formulate solutions to challenges posed by digital disruption.
    - Demonstrate adaptability and innovation in managing digital transformation.
6. Communicate and Collaborate Effectively
    - Work collaboratively on group projects to develop digital strategies.
    - Present findings and recommendations effectively in written and oral formats.

Leading Indicators

To measure student progress and ensure learning outcomes are met, the following leading indicators will be monitored:

1. Engagement and Participation
    - Active involvement in class discussions, seminars, and group activities.
    - Consistent attendance and contribution to coding and laboratory sessions.
2. Assessment Performance

- Performance in quizzes, assignments, and examinations evaluating conceptual understanding.
- Application of theoretical knowledge in practical case studies and problem-solving exercises.

3. Project Development and Execution
    - Quality of research and innovation demonstrated in group projects.
    - Effectiveness of proposed digital transformation strategies.
4. Technical Skill Acquisition
    - Proficiency in coding exercises and ability to apply computational tools.
    - Demonstrated ability to analyze and interpret digital data.
5. Critical Analysis and Reflection
    - Depth of insights in written reflections and analytical essays.
    - Ability to critique technological trends and their societal impact.
6. Collaboration and Communication Skills
    - Effectiveness in teamwork and peer collaboration.
    - Clarity and persuasiveness in presentations and reports.

By tracking these indicators, the course ensures students acquire both theoretical understanding and practical skills, positioning them to thrive in the evolving digital economy.

To measure this level of accomplishment, the instructor will use a combination of metrics such as student participation, quizzes, assignments, group presentations, and examinations. At this stage of evaluation, the instructor will be able to determine whether the course is meeting its set objectives through well-designed content and an appropriate method of delivery.

4 Required Readings

There is no required textbook for this course, though a diverse and ambitious set of readings will be required. Instead, this course is designed to rely heavily on recent academic papers in the literature. However, you may consult the following books to gain a comprehensive understanding of the topic and/or explore specific topics in greater depth.

1. Passiante, G. (Eds.). (2025) *Digital Innovation Management: People, Process, Platforms and Policy*, Cham, Switzerland: Springer.
2. Lunevich, L. (2024). *Handbook of Engineering Management: The Digital Economy*, Boca Raton, FL: CRC Press.
3. Flew, T., Holt, J., & Thomas, J. (2023). *The SAGE Handbook of the Digital Media Economy*, London: Sage Publications Ltd.
4. Cantamessa, M., & Montagna, F. (2023). *Management of Innovation and Product Development: Integrating Business and Technological Perspectives*, 2nd edition, London: Springer-Verlag.

5. Brzozowska, A., Bubel, D., & Nekrasenko, L. (2022). *Organisation Management in the Digital Economy: Globalization Challenges*, Boca Raton, FL: CRC Press.

6. Laudon, K. C., & Laudon, J. P. (2022). Management Information System: Managing the Digital Firm, 17th edition, Essex: Pearson Education Ltd.

7. Schilling, M. (2021) *Strategic Management of Technological Innovation*, 7th edition, New York: McGraw-Hill.

8. Tidd, J. & Bessant, J. (2021) *Managing Innovation: Integrating Technological, Market and Organizational Change*, 7th edition, Hoboken, NJ: Wiley.

9. Jordan, T. (2019) *The Digital Economy*. Cambridge: Polity Press.

10. Dodgson, M., Gann, D. M., & Phillips, N. (Eds.). (2015) *The Oxford Handbook of Innovation Management*, Oxford: Oxford University Press.

11. Kleinman, D. L., & Moore, K. (Eds.). (2014). *Routledge Handbook of Science, Technology and Society*. New York: Routledge.

12. Tapscott, D. (2014) *The Digital Economy: Rethinking Promise and Peril in the Age of Networked Intelligence*. New York: McGraw-Hill Education.

13. Fagerberg, J., Mowery, D. C., & Nelson, R. R. (Eds.). (2005). *The Oxford Handbook of Innovation*. Oxford: Oxford University Press.

To broaden your insight, however, do not limit yourself to the resources listed in this syllabus. Several articles from research journals related to each topic may also be distributed throughout the course.

5 Course Grading

Grading Policy

- **10%** of your grade will be determined by your active and meaningful participation during normal class hours. Students should actively engage in class discussions by presenting their analysis of the reading materials, discussing them with their peers, and critically analyzing the theories and frameworks of digital innovation. Generally, ask questions, answer them, respect your colleagues, and enjoy the engagement activities.

- **20%** of your grade will be determined by your submitted assignments. Occasionally, there will be simple individual exercises that must be submitted to assess students' understanding of the course concepts, key frameworks in managing digital technologies, the logic of programming, and how it can be used to solve problems.

- **20%** of your grade will be determined by a group presentation. Every week, students should present assigned issues/topics in digital management. This presentation aims to test the students' ability to critically interpret and communicate the relevance of technological theories and relate them to contemporary cases and examples.

- **25%** of your grade will be determined by a midterm exam.

- **25%** of your grade will be determined by a final exam.

Grade Composition

Class Participation	10%
Quizzes and Assignment	20%
Group Presentation	20%
Midterm Exam	25%
Final Exam	25%

Letter Grade Distribution

>= 93.00	A	70.00 - 72.99	C+
90.00 - 92.99	A-	67.00 - 69.99	C
87.00 - 89.99	A/B	63.00 - 66.99	C-
83.00 - 86.99	B+	60.00 - 62.99	C/D
80.00 - 82.99	B	57.00 - 59.99	D+
77.00 - 79.99	B-	55.00 - 56.99	D
73.00 - 76.99	B/C	<= 54.99	E

Grades Interpretation

- Grades in the **A** range represent work that is **excellent**. It demonstrates substantial originality and understanding in identifying, producing, and communicating conflicting arguments, diverse perspectives, or problem-solving approaches. It also reflects the ability to critically evaluate the problem, its solutions, and its implications.
- Grades in the **B** range represent performance that is **substantially better** than expected. Students demonstrate an adequate understanding and application of basic concepts from the field of study, construct well-reasoned arguments or decisions with acceptable justification, and communicate information and ideas effectively in accordance with disciplinary conventions.
- Grades in the **C** range represent performance that **meets expectations**. However, it may reflect a superficial, partial, or erroneous understanding of basic concepts in information management and innovation, as well as a limited ability to apply these concepts. It suggests that students provide unsupported or improper arguments and communicate information or ideas with unclear or inconsistent adherence to disciplinary conventions.
- Grades in the **D** range indicate **significant shortcoming** in understanding and applying fundamental concepts. Students fail to demonstrate a major portion—or even the entirety—of the learning objectives.
- Grades **E** indicate that **no work** has been submitted or that the work cannot be graded.
- Grades **F** indicate that students have **violated** the code of conduct.

Class Participation

Each module will include one or more brief engagement activities related to the concepts discussed in the reading and listening materials and/or instructional videos. The goal of these engagement activities

is to give students a chance to activate and demonstrate the knowledge they have gained in class. Many of these activities will include opportunities for creative expression.[1]

The success of this course depends on students contributing to a thoughtful and sincere class discussion. During synchronous sessions, each student is expected to take an active role in creating a classroom atmosphere that is safe, engaged, and capable of bringing out the best in all students. Questions and relevant observations are strongly encouraged to enrich the students' learning experience. While hard work and determination form the foundation of academic progress and success, a positive attitude and humor will also be valuable. Indeed, students should not forget to have some fun.

When evaluating participation in class discussions, the instructor will consider how effectively students present their own arguments, as well as how well they listen to, understand, and build upon or refute the arguments of others. In all cases, the instructor will look for high-quality contributions (which, of course, is not the same as high quantity), including arguments, analyses, and questions that enhance the class's collective understanding of the issues. While students are encouraged to speak up at any time, redundant, tangential, irrelevant comments, or attempts to dominate discussions will negatively impact the participation grade.

In every session, students should respect their instructors and classmates, and this respect will be reciprocated. Respect includes creating an environment conducive to learning, which means being on time, turning off mobile phones, listening attentively, turning on cameras if requested, and actively contributing to the classroom. Students are encouraged to get to know their classmates, learn their names, and collaborate in a constructive and supportive manner.

Those who are unable to demonstrate respect for their peers and alternative perspectives may be asked to withdraw from the course.[2] However, if a student is struggling to participate in discussions or feels uncomfortable with anything that happens during class, they are encouraged to reach out to the instructor. The instructor will also make an effort to check in with students to ensure a supportive learning environment.

Student participation will be assessed based on the following criteria.

1. **Strong - 80-100**. Demonstrates excellent preparation and very active involvement. Contributes significantly to discussions and offers analysis, synthesis, and evaluation of the topic.

2. **Good - 60-80**. Demonstrates good preparation by offering interpretation and analysis of course material. Contributes consistently to discussions.

3. **Fair - 40-60**. Shows adequate preparation and demonstrates sporadic involvement. Offers straightforward information without elaboration or only participates infrequently when called on.

4. **Limited - below 40**. Attends class but demonstrates very little involvement in discussions.

Individual Assignments

It is expected that students complete all required readings and reflective questions prior to class. These have been structured to enable students to be informed and active participants in dialogue and debate. Students should be present and take notes with a pen and paper—this may be useful later. Respectful

[1] Whenever the class meets on Zoom/Google Meet, students should respect the privacy of their classmates, as these virtual meetings enter one another's homes.

[2] Professional courtesy and sensitivity are especially important when discussing topics related to differences in race, culture, religion, politics, sexual orientation, gender, and nationality.

listening and dialogue should be practiced at all times. Occasionally, the instructor may randomly cold-call students during class sessions.

Some modules will, from time to time, include a short quiz to evaluate comprehension of the material. These assignments will be a combination of multiple-choice, true/false, and short-answer questions. Some will require a short reflective essay responding to the concepts and their relevance to students' experiences. The instructor encourages students to use these assignments as an opportunity to assess their own understanding of the course material.

Individual assignments will be evaluated based on basic writing skills, demonstration of an understanding of fundamental concepts, the logic and strength of arguments presented, and the extent to which the work contributes to offering a broad and holistic perspective to the class.[3]

Please bear in mind that all information used in analysis must be publicly available and properly referenced. Students should clearly reference data sources using footnotes or endnotes. Web addresses and other publicly available sources may be cited, but every source must be properly referenced.

Group Presentations

This project is designed to provide an avenue for students to understand and apply general course concepts to a specific case of digital technologies and innovation. Students will be divided into several groups, and each group should prepare a presentation for the scheduled sessions. This project allows students to activate and demonstrate their understanding of course concepts in creative and (hopefully) meaningful ways.

The instructor strongly encourages students to incorporate the knowledge they gain about their topic as it relates to class discussions. However, there is a limited duration for these presentations—normally no more than 30 minutes. This time constraint is intentionally designed to encourage students to synthesize only the **most** important information. This approach reflects many real-world jobs in the field of digital innovation and technology management, where experts are expected to communicate key insights concisely. Therefore, every word, minute, and second should be used effectively.

Research materials should include academic journals, research papers, magazine and newspaper articles, personal interviews, web sources, and personal experiences. All information used in the analysis must be publicly available and properly referenced. Students should clearly cite data sources using footnotes or endnotes and ensure that all resources are appropriately referenced. This project is also an opportunity for students to express their hopes, ideas, critiques, and concerns about technology and digital innovation as they relate to their chosen subject. Students should not hesitate to present their findings and analysis confidently.

Each student enters this course with different levels of presentation and public speaking skills, which is entirely acceptable. This project should be seen as an opportunity to develop and enhance those skills over the semester. To ensure fairness to all classmates, students must clearly indicate which parts of the presentation are their own work, which parts were assisted by others, and which parts are based on available templates.

While students are expected to collaborate on weekly group presentations, simply dividing up the assignment is **not** acceptable (e.g., Adam introduces the presentation, Brenda answers question 1, Chiara answers question 2, and Dino compiles the parts). Each student must demonstrate an understanding of all learning objectives and actively contribute to the project. Each team member should come to

[3] The instructor and a colleague, Rocky Adiguna, have made an effort to help students improve their academic writing. Please download the manual at `http://s.id/bantu-nulis`.

group meetings having read all materials and developed their own ideas for the presentation. This mirrors professional teamwork expectations in real-world digital innovation and technology management environments.

During your presentation, you are **not allowed to check or peek at your phone**, as it looks unprofessional and gives the impression that you are unprepared. Since you created the presentation yourself, you should rehearse it thoroughly beforehand to ensure confidence and a smooth delivery. Relying on your phone suggests a lack of preparation, which affects both your credibility and audience engagement. If you are caught looking at your phone during the presentation, your score will be **cut in half**. Stay focused, be confident, and give your best performance!

Table 1: Group Members List

Group	Members
1	Andika Triandana Jaya Btari Edlyna Larasati Hanif Bagus Pratama Beryl Nur Hernanto
2	Zongger Zollander Fermuda Hopuntius Alfida' Imaddudin Jamilurohman Abiyyi Muhammad Alvin Azrofa Gibran Shery Haliza Putri
3	Mohammad Julius Zaki Shofiyya Qothrunnada Cindy Ameilia Hapsari Salsabila Dea Salma Putri Devon Otniel Del Frey
4	Saskia Dita Sokananda Muhammad Bagus Nardika Putra Harry Togi Valencia Rachela Irheine Putri Ferdyanto
5	Humam Naufal Akmal Muh. Dirga Ananta Firdaus Rizqi Alifsyahbana Brimantoro Siti Intan Nurasiyah
6	Sarah Nur'aini Fauziah Muhammad Lutfi Anshori Daniel Namora H Butarbutar Akbar Helmi Satryandira
7	Sultan Muhammad Hafidha Arbi Hasna Lulu Farhana Dhana Parahita Rizara Guni Laras

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Group	Members
	Aqmal Buditama Arismunandar Jr
8	Kholish Abdurrahman Putra Pranoto Rosaria Agnes Dewi Kumalasari Dwie Aurelia Devianti Rizka Nur Anggraeni
9	Ershendo Deska Christyawan Fadila Az Zahra Ananda Rahmah Christian Tampubolon
10	Dafa Nuradzika Rahman Rizal Daffa Saputra Sudrajat Sarah Dzakyya Azizah Nismara Dandi Tryan Algustaf
11	Christoffer Hasiholan Simamora Salsabilla Syafa Kamila Muhammad Fluorin Regar Fiqri Ariyanto Madina Aulia Zahra
12	Lanang Tsaqif Hakim Taufiq Surya Fitrian Fifi Nelvia Dharma Dhananjaya

In each group presentation, there will be designated discussant groups responsible for responding, providing feedback, offering critiques, and posing questions. The role of the discussants will rotate each week. For example, if Group 1 presents this week, then Groups 5 and 9 will serve as the discussants. In the following week, when Group 2 presents, Groups 6 and 10 will take on the discussant role. This pattern will continue throughout the course, ensuring that all groups have the opportunity to both present and critically engage with their peers' work.

Written Exams

The midterm exam will cover Sessions 1 to 7, including readings, discussions, and lectures. The final exam will be comprehensive, covering Sessions 8 to 14, including readings, discussions, and lectures. Areas of emphasis on the exams will be discussed in class throughout the semester. The exam structure will include short-answer and essay questions, as well as case-based analysis.

Exams (and quizzes, if any) are typically closed-book and closed-note. No makeup quizzes or exams will be provided. Students should **not** collaborate with others during the exam period. However, course materials may be consulted. The exams will be timed and require critical thinking, so it is essential that students understand the material thoroughly rather than relying on searching for each answer.

Both the midterm and final exams will be graded based on the following criteria. The same rubric will also be used to evaluate written assignments:

Table 2: Rubric for Assessment

Category	Criteria
Content/Development (15%)	Responses should address each question and all its parts thoroughly, incorporating relevant course content and specific information from the case. **7-10**: The response presents a clear, well-stated central idea, demonstrating originality and focus. **4-6**: The central idea is somewhat vague, lacks focus, and does not fully support the topic. **2-3**: The response lacks supporting details and contains multiple informational errors. **0-1**: No clear central idea or supporting details are present.
Understanding and Application (30%)	Responses should demonstrate a deep understanding of course theories and their application in case analyses. **7-10**: The response is well-organized, structured, and demonstrates critical thinking. **4-6**: The response partially deviates from the central idea and theory, with ideas that do not logically connect. **2-3**: The response lacks a central point, is disorganized, and lacks continuity. **0-1**: The response is entirely unstructured, with no clear flow of ideas.
Original Thinking (25%)	Responses should demonstrate original thinking, adding insight and meaningful elaboration beyond the text, notes, and class discussions. **7-10**: The response carefully integrates researched information and introduces personal ideas to strengthen cohesiveness. **4-6**: Some original ideas are included but lack clarity or strong support. Cited information may be vague. **2-3**: Limited research is evident, and cited information is unclear. **0-1**: No meaningful literature or research is cited.
Style and Structure (15%)	Responses should be well-organized, clearly written, and demonstrate evidence of planning. **7-10**: Writing is smooth, coherent, and consistently aligned with the central idea. Sentences are varied, expressive, and well-structured. **4-6**: Sentences vary in quality and are somewhat inconsistent in relation to the central idea, theory, or vocabulary. **2-3**: The response lacks creativity and focus, with unrelated word choices and inconsistent diction.

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Category	Criteria
	0-1: Writing is confusing and difficult to follow, containing fragments, run-on sentences, and inappropriate diction.
Grammar and Mechanics (15%)	Responses should be free of mechanical and grammatical errors. **7-10**: No errors in word selection, sentence structure, spelling, punctuation, or capitalization. **4-6**: Minimal errors (1-3) in word selection, sentence structure, spelling, punctuation, or capitalization. **2-3**: Multiple errors (4-6) in word selection, sentence structure, spelling, punctuation, or capitalization. **0-1**: Frequent and serious errors (7 or more) that significantly impact readability.

Tutorial: Introduction to Python

What is Python?

Python (`https://python.org`) is an interpreted, high-level, general-purpose programming language. It is an excellent first language because it is concise and easy to read. It can be used for various applications, including web development, software development, and scientific computing. This session covers Python's basic functions and how to perform simple programming using PyCharm (`https://www.jetbrains.com/pycharm`). Students should bring their own laptops—whether Windows, Mac, or Linux—and practice using Python in the classroom.

Many students and faculty members in business and management fields have likely been exposed to SPSS for data analysis or SmartPLS for structural equation modeling, where users rely on a series of window-based options to "point-and-click" to select and run their analyses. However, in addition to the point-and-click method, users can alternatively rely on scripting, where commands are written based on the program's rules. This approach may seem intimidating for those with no prior experience in scripting or coding.[4]

To effectively learn Python, students must first understand the program's foundational rules, its capabilities, and its core functions. From there, the best approach is to work on actual problems, identifying necessary skills and concepts along the way. Over time, lessons will become internalized, knowledge will be consolidated, and further progress can be made. Some refer to this as the learning process. Indeed, proficiency in Python cannot be acquired instantly—it requires structured learning and practice.[5] Significant time and effort are needed.[6] Additionally, utilizing resources like Google can be highly beneficial in the learning process.

[4] Nevertheless, intimidating activities must be confronted at some point, so why worry? Now, sit back, relax, and enjoy the flight. Thank you.

[5] It takes nine months to have a baby. Warren Buffett famously said, "You can't produce a baby in one month by getting nine women pregnant."

[6] The Quran, which contains nearly 600 pages, was orally revealed by God to the Prophet Muhammad through the Archangel Jibril incrementally over approximately 23 years—beginning in the month of Ramadan, when Muhammad was 40, and concluding in 632, the year of his death.

Installing Python

For all lessons, Python will be used, and for most of them, PyCharm will serve as the primary integrated development environment (IDE). However, alternative environments such as Google Colab (`https://colab.google`) and Jupyter Notebook (`https://jupyter.org`) can also be used, depending on individual preferences. For those unfamiliar with these tools, they will soon become more familiar as the course progresses. Python is open-source and freely available, requiring no purchases. It is also compatible with multiple platforms, including Microsoft Windows, Apple macOS, Linux, and *BSD, among others.

Installing both Python and PyCharm (or alternatives like Jupyter Notebook and Google Colab) is a straightforward process. The installation instructions provided on their respective websites are clear and easy to follow. It is assumed that students will not encounter significant difficulty in completing this setup. The entire process can typically be completed in approximately five minutes of focused effort.

This tutorial assumes no prior knowledge of Python or coding—none at all. The lessons have been structured to accommodate absolute beginners. With a few hours of dedicated work, students will gain familiarity with Python and its development environments, learn how to read and manipulate data, import data from external sources, and perform basic analyses. While this will not provide deep expertise, it will establish a foundational understanding that can be built upon.

An instructional video is available at `https://youtu.be/rmZkAnWGQtE` (1:14:57), and it is highly recommended to watch it as early as possible. Programming exercises will be assessed based on the overall performance of the script/code and the creativity of the proposed solution.

6 Course Protocols

Teaching Methods

This course is delivered through a combination of seminars, discussions, and tutorials. Students are required to prepare and present a short review before each class session. A summary of the main ideas for each session will be included as part of the course assignments. The instructor will then lead the discussion and explain core concepts related to the topic. Each week, students will collaborate in groups to present the reading materials and their analysis. The underlying philosophy of this approach is that students should actively engage in the learning process rather than passively receiving information from the instructor.

This class is designed to encourage critical thinking about the complexities, contradictions, and challenges of innovation and information management. Therefore, it is essential for students to read the assigned materials thoroughly and attentively before each class.[7] A significant portion of the learning process will occur in real time during class discussions. Students should come prepared to participate actively, as long lectures will be infrequent.

A significant portion of the learning process relies on student engagement in the provided learning activities, including individual and group assignments. These activities and assignments are designed to enhance students' general skills, particularly oral and written communication, presentation techniques, information research, and teamwork.

It is essential for students to keep up with the assigned readings and exercises. The discussions on contemporary topics in innovation and information management will be more challenging to follow if

[7] Students experiencing difficulty in the course are encouraged to contact the instructor or attend office hours for assistance, as this often proves to be highly beneficial.

students have not completed the required readings. A recommended approach is to establish a consistent study schedule for this course each week and adhere to it.[8]

Learning Materials

Each module includes a selection of reading and/or listening materials, comprising videos, podcast episodes, news articles, and academic journal articles.[9] These materials have been carefully selected to illustrate key concepts that will be discussed during the synchronous sessions. Additionally, some materials may inform the engagement activities assigned as part of each module.

Students are expected to **complete all readings before class** and take time to reflect on them. Each session's syllabus includes a set of reflective questions to consider. Being prepared involves developing answers to these questions. Students should dedicate at least 30 minutes to writing responses in their notes and bring them to class. While these written responses will not be collected or graded, having them readily available will enhance participation during discussions.

Given the ever-evolving nature of technological innovation, course materials may be updated throughout the semester as needed. Students should be mindful of the publication date when analyzing readings. Keeping up with current events is highly recommended. For insights into innovation, reputable English-language sources include *CIO Magazine*, *MIT Technology Review*, and *Wired Magazine*. Additionally, general publications such as *The Guardian* and *The Economist* feature dedicated sections on technology and innovation.

Students who come across relevant articles or have questions related to course materials are encouraged to share them with the instructor via email for potential discussion in class.

Attendance and Absences

Attendance is expected and will be recorded in each class. Absences deprive classmates of the opportunity to learn from each student's unique insights and experiences. In accordance with university regulations, students are required to attend all course sessions. Absences will be excused only in cases of emergency (*force majeure*). Unexcused absences exceeding 25% of total course meetings may result in ineligibility to enroll in the final exam.

Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee's responsibility to obtain any missed notes or materials. A student with an excessive number of absences may be withdrawn from the course at the discretion of the instructor.

Laptops and Mobile Phones

Laptops and mobile phones are **not allowed** during class. The use of laptops is only permitted during lab exercises when necessary. To encourage focus and active participation, students should take notes using traditional pen and paper. This approach helps with better retention and minimizes distractions. Please respect this rule to maintain an engaging and productive learning environment.

Activities such as instant messaging, gaming, emailing, web browsing, or working on assignments for other courses are disruptive to both the student and the learning environment. Engaging in these activities constitutes inappropriate behavior and violates ethical classroom conduct. Any misuse of electronic

[8] Students are encouraged to write a short summary after each session, identifying the most important or interesting technical idea or concept from the assigned readings and explaining its significance. Reviewing and organizing these key ideas in personal notes can reinforce understanding.

[9] Students experiencing difficulty accessing certain reading materials or journal articles should inform the instructor.

devices—including laptops, tablets, or mobile phones—will result in a **50% deduction from the final grade per incident**.

Rules of Online Engagement

Whenever a class session is held online, active participation remains essential to the flow of discussion. Students attending remotely are expected to keep their **videos on at all times**, conduct themselves as if they were in a physical classroom, and actively engage in the session. This serves as valuable practice for developing online communication skills, which will likely be crucial in the new normal workplace.

To ensure a smooth learning experience, students should:

- Have a secure and stable internet connection.
- Use the best quality hardware available, including a large monitor if possible for better visibility of the class. Mobile phones should not be used.
- Ensure high-quality audio by using a headset rather than a speaker, which helps prevent echo, feedback, and unwanted noise.[10]
- Use a webcam with a resolution appropriate for their internet speed.
- Display their full name on their video feed.

During class, students should keep their videos on and microphones muted unless speaking. The instructor will monitor engagement through students' reactions and facilitate discussion by calling on participants as needed. It may take some time to find the right balance between active listening, meaningful participation, and avoiding unnecessary interruptions.

If a student wishes to contribute to the discussion, they should use the "Raise Hand" button in Zoom/Google Meet, and the instructor will acknowledge them accordingly. Online lessons require a different pacing and deeper concentration compared to in-person classes—students should be mindful of this adjustment.

Communications and Availability

The instructor strives to be available to students, provide prompt feedback, and accommodate all students' abilities and needs. Students are encouraged to reach out with any questions, concerns, or suggestions. The best way to contact the instructor is via email. Every effort will be made to respond to emails within 24 hours. If no response is received within 72 hours, students may send a follow-up email.

Emails should be professionally written and adhere to proper business communication standards. The subject line should clearly indicate the purpose of the email, and the body should be well-structured, with correct spelling, grammar, and punctuation. Professional language should be used in all course-related communications. When sending emails or messages related to the course, students should provide a clear subject line and include relevant details or attachments as needed.

Due to the institution's scheduling and administrative responsibilities, office hours will be held by appointment only, typically on Mondays from 12:00 to 13:00. Students who wish to schedule a meeting are encouraged to do so without hesitation, as regular engagement is highly encouraged. To arrange an appointment, students should email the instructor with a few preferred meeting times.

[10] A headset is strongly preferred to maintain sound clarity and minimize distractions.

Additionally, as students begin to apply for jobs, internships, or study abroad programs, they may require recommendation letters. The quality of such letters is greatly enhanced when instructors are familiar with students beyond their academic performance. Building professional relationships with faculty members can provide valuable support for future endeavors.

Assignments and Authorship

Students are expected to work independently. Offering or accepting solutions from others constitutes **plagiarism**, which is a serious academic offense. **All parties involved will be subject to penalties**. While discussion among students is encouraged, any uncertainties should be directed to the instructor. Late assignments will not be accepted under any circumstances.[11]

All submitted work must align with the instructor's intended purpose for each assignment. While the instructor will define the objectives, it is the student's responsibility to seek clarification if needed. Unauthorized or excessive assistance in the preparation of assignments is strictly prohibited. Any attempt to mislead a faculty member or to assist another student in doing so will be considered a violation of academic integrity.

Students must clearly establish authorship of their work. All sources, regardless of format or distribution, must be properly documented, cited, and attributed. Even materials licensed under public domain or Copyleft must be acknowledged to maintain academic integrity. In cases of group work, the roles and contributions of each member must also be clearly stated.

The online submission of an exam, assignment, or any course document, or the placement of a student's name on such materials, serves as a declaration of academic integrity. It affirms that the student has neither given nor received unauthorized assistance and has complied with all academic policies.

Academic Integrity Policy

Maintaining the highest standards of academic integrity is essential to preserving the reputation of the Faculty of Economics and Business, Universitas Gadjah Mada (FEB UGM) and the value of its degrees. As an institution responsible for developing future leaders, FEB UGM has a special obligation to uphold ethical standards that are beyond reproach. Any form of academic dishonesty undermines this trust. Lack of awareness of the academic integrity policy is not an acceptable justification for violations.

Honesty and integrity are fundamental to the academic process. Students are expected to conduct themselves ethically and with integrity at all times in pursuit of their academic goals, in accordance with the FEB UGM Student Code of Conduct. Academic dishonesty is a serious offense against the institution. Violations of this policy may include, but are not limited to, **cheating**, **aiding academic dishonesty**, **fabrication**, **falsification**, **bribery**, and **threatening behavior**.

Plagiarism is defined as the unacknowledged use of another person's words, ideas, or intellectual creations. The principal forms of plagiarism include:

- **Unacknowledged quotation**: Failure to properly credit direct quotations from another person's spoken or written words.
- **Unattributed borrowing**: Failure to credit another person's ideas, opinions, theories, graphs, or diagrams. This includes improper paraphrasing, where the original source is reworded slightly but not properly cited.

[11] Recognizing that personal circumstances may occasionally impact a student's ability to meet deadlines, students who anticipate difficulties should notify the instructor as early as possible to discuss potential alternative arrangements.

- **Cosmetic paraphrasing**: Even with acknowledgment, paraphrasing that closely mirrors the original text may still constitute plagiarism if it is not clearly marked as a modified quote.
- **Wrongly attributed borrowing**: Quoting an original source without having read it, while citing an intermediary work instead. This practice can misrepresent the extent of research conducted and may perpetuate misinformation.

Students are required to uphold academic integrity and adhere to the school's Code of Conduct and Honor Code. **All suspected cases of academic dishonesty will be reported.** The instructor reserves the right to assign a failing grade for the entire course in the event of a demonstrated violation.

Students who have any questions regarding academic conduct or plagiarism should seek clarification in advance. If in doubt, **do not cheat, do not misrepresent, and do not take credit for work that is not your own**.

The instructor may impose sanctions on a student based on the nature and severity of the academic dishonesty offense. Possible sanctions include, but are not limited to, the following:

- Requiring the student to redo the assignment.
- Requiring the student to complete an alternative assignment.
- Assigning a grade of **zero** to the assignment.
- Assigning a final grade of "**F**" for the course.
- Suspension or expulsion from the school for multiple academic dishonesty violations.

Students have the right to appeal these decisions to the Study Program. **Repeated violations of this policy may result in additional sanctions**.

Digital Devices

Students will need an internet-connected digital device (e.g., a laptop, tablet, or smartphone) to complete coursework. It is recognized that some students may face financial constraints in obtaining digital devices, while others may rely on older devices that are prone to technical issues. Additionally, technological difficulties can be a significant source of stress for students.

Students who do not have access to a reliable internet connection or a functional, internet-connected digital device are encouraged to contact the Students Office for assistance. The instructor is also available to help develop a plan for completing coursework under such circumstances.

If students experience persistent issues with their device or internet access that interfere with their ability to complete coursework, they should notify the instructor as soon as possible to explore potential solutions.

Student Wellness

College life can be complex and challenging, particularly during a pandemic. Students may feel overwhelmed, experience anxiety or depression, or struggle with personal, academic, or familial responsibilities. The Student Wellness and Personal Development Center (SWPDC) provides free, confidential support for students facing mental health and emotional challenges. The SWPDC is staffed by professional psychologists who are experienced in addressing the diverse needs of students.

Students are strongly encouraged to seek assistance whenever needed. **Do not hesitate to reach out—seeking help is a proactive and courageous step toward well-being**.

Disabilities Policy

The instructor is committed to fostering an inclusive learning environment. Students who anticipate or encounter barriers to learning in this course are encouraged to discuss their concerns as soon as possible.

Students with disabilities, or those who suspect they may have a disability, should arrange a meeting with the instructor to develop an appropriate implementation plan. Various accommodations and solutions may be explored to ensure accessibility while maintaining the integrity of course assessments and learning activities. The instructor is open to considering creative solutions, provided they do not compromise academic standards.

Disclosure

The results of in-class and out-of-class assignments, as well as examinations, may be used as anonymous data sources for research purposes or for measuring the **Assurance of Learning** (**AoL**) process. All data used for such purposes will remain strictly anonymous, ensuring that individual students cannot be identified.

7 Provisional Course Schedule

The weekly coverage of topics may be adjusted based on the progress of the class. The course structure is designed to accommodate students' learning pace and styles. However, students are expected to stay current with pre-course videos and reading assignments.[12]

Additionally, recorded lectures from previous semesters are available for review at: `https://youtube.com/playlist?list=PL8ePb5ABvPraWEVPNHnlBybE8ROTGKR2m`, `https://youtube.com/playlist?list=PL8ePb5ABvPrYXOdXT7yFQJ1PTnf0lwnG1`, and `https://www.youtube.com/playlist?list=PL8ePb5ABvPrbTn0RECHxSe5Pp5ceDq7kP`.

No.	Session	Topic	Presenter	Discussant
1	Monday 10-02-2025	Introduction to the Course	-	-
2	Monday 17-02-2025	Revisiting the Digital Economy	1	5, 9
3	Monday 24-02-2025	Digital Innovation and Organizational Transformation	2	6, 10
4	Monday 03-03-2025	Network Externalities, Competition, and Innovation	3	7, 11
5	Monday 10-03-2025	Innovation Diffusion Theories, Applications, and Challenges	4	8, 12
6	Monday 17-03-2025	Digital Business Strategy, Innovation, and Value Creation	5	9, 1
		Understanding Digital Platform	6	10, 2
7	Monday 24-03-2025	Python Programming Exercise	-	-
-	TBA	Midterm Exam	-	-
8	Monday 21-04-2025	Key Innovation and Digital Infrastructure	7	11, 3
9	Monday 28-04-2025	Financial Technology	8	12, 4
		AI, Big Data, and Business Intelligence	9	1, 5
10	Monday 05-05-2025	Surveillance Capitalism, Digitalization, and Privacy	10	2, 6
11	Monday 19-05-2025	Fake News, Disinformation, and the Post-Truth Era	11	3, 7
12	Monday 26-05-2025	Digital Sustainability and Green Economy	12	4, 8
		Concluding Remarks	-	-
-	TBA	Final Exam	-	-

Table 3: Session Schedule

[12] Most online resources available through the UGM Library can be accessed remotely via an internet connection. Off-campus access requires authentication through a Virtual Private Network (VPN) using a UGM Computing ID and password. This authentication grants access to journal articles, databases, and other online resources. For detailed instructions, visit: `https://dssdi.ugm.ac.id/rilis-berita/penggunaan-vpn-untuk-pembelajaran-daring.html`.

Session 1: Introduction to the Course

Session 1 establishes the foundation for exploring key concepts in this course. This introductory session is designed to present the core principles and fundamental ideas that will guide discussions throughout the semester. The session begins with an examination of the multidimensional nature of managing information and technological innovation—an increasingly critical aspect of organizational success in the digital era.

The primary objective of this session is to develop a comprehensive understanding of the complexities involved in fostering and sustaining digital innovation within an organization. While digital innovation serves as a powerful driver of growth and competitive advantage, leveraging its full potential requires a nuanced understanding of the interactions between technology, strategy, and organizational dynamics. By the end of this session, a strong conceptual foundation will be established, facilitating a deeper exploration in subsequent course modules.

Session 2: Revisiting the Digital Economy

This session revisits the complexities of the digital economy, a transformative paradigm reshaping industries and societies. At its core, the digital economy is driven by digitalization—the integration of information technology into all aspects of daily life. This process extends beyond the mere adoption of technology; it fosters extensive networking across economic sectors and requires all participants to adapt to the realities of a digitized environment. Digitalization influences communication, consumer behavior, and business operations, fundamentally altering traditional models and facilitating the emergence of new ones.

However, the transition to a digital economy presents significant challenges. Organizations seeking to leverage digital technologies often find that conventional methodologies and frameworks are insufficient. The digital economy demands a shift from routine, standardized processes to complex, non-routine activities, necessitating innovative strategies and adaptive approaches. Understanding these complexities is essential for navigating the evolving digital landscape and its implications across various organizational functions, including operations, marketing, human resources, and strategic planning.

This session seeks to dispel common misconceptions and critically examine prevailing narratives surrounding the digital economy. By addressing misconceptions and uncovering underlying realities, a clearer, more comprehensive understanding of digital transformation will emerge. Through the analysis of real-world case studies, this discussion aims to highlight both the opportunities and challenges that digitalization presents.

The digital economy refers to economic activities driven by digital technologies, data, and connectivity. It encompasses e-commerce, digital services, Industry 4.0, and the role of artificial intelligence (AI) and automation in transforming industries. Scholars and policymakers have debated how to conceptualize, measure, and harness the digital economy for productivity, innovation, and inclusive development.

Miao (2021) proposes a Digital Economy Value Chain (DEVC) model, highlighting the mechanisms through which digital value is created, distributed, and captured. The study emphasizes data as a core asset, forming the foundation for new business models. Digital platforms enable interactions among users, businesses, and governments, while AI and automation redefine productivity and efficiency. Similarly, Williams (2021) integrates digital economy concepts into Industry 4.0, where intelligent systems, IoT, and cyber-physical systems transform traditional industries. The study underscores the role of digital twins, real-time analytics, and blockchain in optimizing industrial operations.

Dahlman, Mealy, & Wermelinger (2016) discuss how developing nations can harness the digital economy to drive growth. They highlight access to digital infrastructure as a key challenge, noting that the digital divide can exacerbate inequalities. However, the study also explores the potential of digital financial services, such as mobile banking and fintech, in fostering financial inclusion and economic development in low-income economies.

Brynjolfsson & Kahin (2002) and Barefoot et al. (2018) address the difficulty of defining and measuring the digital economy, given its intangibility and fast evolution. One of the key measurement challenges is the exclusion of "free" digital goods and services, such as Google Search and social media, from GDP calculations. Additionally, Watanabe et al. (2018) discuss the concept of "uncaptured GDP," referring to the hidden value generated within digital ecosystems that traditional economic metrics fail to account for.

Pan et al. (2022) analyze how the digital economy acts as an innovation driver for total factor productivity (TFP). Digital tools optimize supply chains and improve efficiency, while AI and automation reduce operational costs and enhance decision-making. Furthermore, data-driven decision-making enables businesses to become more agile and competitive, ensuring that firms can swiftly adapt to market changes and emerging opportunities.

Tarakanov, Inshakova, & Dolinskaya (2019) examine the legal aspects of the digital economy, particularly in the areas of data privacy and security. They highlight the challenges posed by ubiquitous data collection and the need for robust regulatory frameworks governing digital transactions and cross-border trade. Ethical concerns surrounding AI and surveillance capitalism, as discussed by Zuboff (2015), add another layer of complexity, requiring careful policy considerations to balance innovation with consumer protection.

Iman (2016) explores the distortion effects of the digital economy in Indonesia, emphasizing how digital disruptions impact traditional business models. Ride-hailing apps, for instance, have significantly affected conventional taxi services. The study also underscores the need for adaptive regulation, particularly in debates surrounding digital taxation and platform governance. Additionally, digital literacy and skills development are crucial for ensuring that individuals and businesses can fully participate in and benefit from the digital economy.

Brynjolfsson & Collis (2019) propose new methods for measuring digital contributions, while Bukht & Heeks (2017) argue for a broader framework that includes various aspects of the digital economy. These include the platform economy, where companies like Google, Amazon, and Alibaba dominate, the gig economy, which transforms employment structures and labor rights, and decentralized digital models, such as blockchain-based economies. As digitalization continues to evolve, these emerging trends will shape the future landscape of economic activity.

To sum up, the digital economy is rapidly evolving, offering opportunities for economic growth, innovation, and social transformation. However, it also presents challenges in terms of regulation, measurement, and inequality. By critically engaging with these readings, we can better understand how digitalization reshapes industries, governance, and global competition.

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1. How do different digital economy models account for the changing nature of work and production in the 21st century?

2. What strategies can developing countries use to bridge the digital divide and ensure equitable participation in the digital economy?

3. How should policymakers adjust GDP measurement to better reflect digital contributions?

4. Are productivity gains from digitalization equally distributed across industries and regions?
5. What are the main regulatory challenges governments face when overseeing digital economic activities?
6. How should policymakers in Indonesia balance digital innovation with protecting traditional industries and workers?
7. How will decentralization and Web3 technologies reshape the power dynamics of the digital economy?

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Session 3: Digital Innovation and Organizational Transformation

Session 3 provides an in-depth examination of digital innovation, a dynamic process that extends beyond the mere application of technology. Digital innovation emerges from the convergence of physical and digital materiality, driving transformative changes in market offerings, business processes, and models. The pervasive influence of digital technologies not only enables the creation of new products and services but also fundamentally reshapes industry structures and competitive landscapes.

A diverse array of digital tools and infrastructure supports this evolution, including 3D printing, data analytics, and mobile computing. Each of these technologies contributes uniquely to the innovation landscape. For instance, 3D printing is revolutionizing manufacturing by enabling the efficient production of complex designs. Data analytics provides unprecedented insights into consumer behavior and preferences, facilitating the personalization of products and services. Meanwhile, mobile computing enhances accessibility, driving the emergence of new business models in sectors such as transportation and food delivery.

Effectively managing digital innovation requires a comprehensive understanding of these technological advancements and their strategic applications in creating business value. This session will explore key principles for managing digital innovation and introduce a foundational framework for digital transformation. The discussion will focus on strategies for guiding and implementing digital initiatives to enhance organizational performance and competitiveness. The far-reaching impacts of digital transformation include improved customer experiences, increased operational efficiency, and the development of new revenue streams—critical factors for businesses seeking to adapt and thrive in an increasingly digital environment.

Digital innovation has transformed the way organizations develop new products, services, and business models.

Yoo et al. (2012) argue that digital technologies have redefined innovation processes, shifting from traditional linear models to open, platform-based, and distributed innovation ecosystems. Digital innovation is characterized by reprogrammability and data homogenization, where software-driven innovations can be continuously updated. The role of digital platforms has become central, enabling rapid experimentation and scalability. Furthermore, increased interconnectivity fosters ecosystem-based innovations, where multiple stakeholders contribute to the development and diffusion of new digital solutions.

Nambisan et al. (2017) and Nylén & Holmström (2015) highlight the need for new approaches to innovation management and strategy in the digital era. Agile experimentation has become crucial, as digital innovations evolve through iterative improvements. The presence of boundary resources, such as APIs, allows third-party developers to contribute to innovation, facilitating a more open and collaborative

approach. Moreover, there has been a significant shift from traditional pipeline models to platform strategies, where value is co-created across digital ecosystems rather than being generated solely within firms.

Ciriello et al. (2018) and Kohli & Melville (2019) emphasize that digital innovation is not merely a technological process but also a socio-technical phenomenon. Its success depends on organizational culture, leadership, and user engagement. User-driven innovation is particularly significant, as digital products often evolve based on continuous feedback and interaction with users. Additionally, cross-disciplinary collaboration is necessary, integrating expertise from IT, business, and design to ensure holistic and effective innovation.

At the turn of the millennium, Yoo et al. (2024) posit that digital innovation was heralded as a transformative force, with digital technologies enabling individuals to become creators of novel products and experiences. The concept of Layered Modular Architecture (LMA) emerged, highlighting the recombination of digital components across various layers to foster innovation. However, over time, it became evident that control over these architectures became more centralized than initially anticipated, leading to uneven value distribution among participants. They identify three primary limitations in the current landscape of digital innovation:

- Centralized Control in Recombination: While LMA was designed to promote flexibility through modularity, control over key digital resources has become centralized, leading to uneven value distribution.
- Negative Externalities and Market Concentration: The focus on supply-side growth has often overshadowed demand-side issues, resulting in negative externalities such as overcrowding, privacy concerns, and gatekeeping, which contribute to market concentration.
- Data as a Central Element: Data has become a critical frontier in digital innovation, with its homogenization and recombination enabling platforms to create and capture value. However, this centrality of data also raises concerns about privacy and data exploitation.

Hinings, Gegenhuber, & Greenwood (2018) apply institutional theory to digital transformation, arguing that institutional pressures, including regulatory changes and industry norms, play a crucial role in shaping digital strategies. Organizations must strike a balance between stability and flexibility to navigate the challenges of digital disruption. Furthermore, digital platforms introduce new institutional logics, where power dynamics shift from individual firms to broader ecosystems, redefining how industries function.

Demirkan, Spohrer, & Welser (2016) explore how digital innovation drives strategic transformation, particularly through the rise of "as-a-service" models such as Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS), and Infrastructure-as-a-Service (IaaS). The increasing integration of AI and big data enhances decision-making processes, allowing organizations to optimize operations in real-time. Additionally, the use of digital twins and predictive analytics enables companies to improve efficiency, simulate business scenarios, and anticipate future trends.

Di Vaio et al. (2021) examine how digital innovation enhances knowledge management systems (KMS), facilitating real-time knowledge sharing through cloud-based systems. AI-driven insights play a critical role, enabling organizations to analyze vast amounts of data for better decision-making. Furthermore, decentralized knowledge networks reduce reliance on hierarchical structures, promoting more agile and responsive organizational learning.

Finally, Iman (2019) warns about the potential risks associated with digital innovation. Technological disruption poses a challenge to established industries, as firms struggle to adapt to rapid changes.

Cybersecurity vulnerabilities also emerge, as digital infrastructures become attractive targets for cyber-attacks. Additionally, ethical dilemmas, particularly regarding privacy and AI-driven decision-making, require careful consideration to ensure that innovation aligns with societal values and norms.

To sum up, digital innovation is reshaping industries, organizational structures, and competitive dynamics. To remain relevant, firms must embrace agile strategies, foster a culture of continuous learning, and navigate institutional and ethical challenges.

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1. How does the shift from product-centric to platform-based innovation influence organizational structures?
2. How can traditional firms adapt their innovation strategies to compete with digital-native companies?
3. What cultural and organizational barriers hinder the adoption of digital innovation?
4. How do regulatory and institutional factors shape digital innovation strategies?
5. What are the key factors that determine whether a company successfully undergoes digital transformation?
6. How can organizations leverage digital innovation to improve knowledge-sharing and collaboration?
7. How can firms mitigate the unintended negative consequences of digital innovation?

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Session 4: Network Externalities, Competition, and Innovation

This session explores two fundamental concepts in innovation and information management: externalities and standards. An externality refers to a cost or benefit imposed on a party that did not choose to incur it. Externalities can be either positive or negative, reflecting a misalignment between individual and societal costs or benefits. In the context of digital innovation, a positive externality may arise when the widespread adoption of a technology generates network effects, enhancing its overall value. Conversely, a negative externality might manifest in unintended consequences such as privacy concerns, cybersecurity risks, or job displacement due to automation.

By contrast, standards establish widely accepted technical specifications that enable compatibility and interoperability across products and technologies. They function as a common language that allows different systems to operate together, fostering innovation and expanding technological possibilities. Standards are particularly critical in industries where seamless integration between technologies is essential, ensuring consistency, safety, and quality across digital products and services. In the realm of digital innovation, standards facilitate the interaction of diverse technologies and systems, accelerating innovation and broadening its impact.

Both externalities and standards have profound implications for the management of innovation and information. Network externalities, in particular, play a crucial role in the adoption and success of digital technologies. For instance, the value of a social media platform increases as more users join and contribute, creating a positive feedback loop that enhances engagement and reach. Meanwhile, standards ensure that innovations remain compatible and can effectively interact, enabling the smooth integration of complex digital ecosystems. Understanding the interplay between externalities and standards is therefore essential for organizations navigating the digital landscape, driving innovation, and optimizing information management.

Network externalities—where the value of a product or service increases as more people use it—play a central role in shaping digital markets, competitive dynamics, and innovation.

Liebowitz and Margolis (1994) challenge the common assumption that network externalities inherently lead to market inefficiencies or "tragedies." They argue that network externalities do not necessarily create lock-in, as markets often correct inefficiencies over time. While path dependency exists, it does not always result in suboptimal outcomes. Furthermore, firms strategically exploit network effects through pricing and compatibility decisions to strengthen their market positions.

Tirole (2022) explores the competition challenges unique to digital markets, highlighting winner-takes-all dynamics, where dominant platforms maintain control due to strong network externalities. Market tipping plays a crucial role, as early adopters often determine long-term market dominance. These factors raise significant antitrust implications, with regulators struggling to balance incentives for innovation while ensuring fair competition.

Shapiro and Varian (1999) analyze how competition over technological standards influences market outcomes. Battles between proprietary and open standards, such as VHS vs. Betamax and Windows vs. Mac, demonstrate how market dominance is often determined by penetration pricing, strategic alliances, and preemptive technology launches. Lock-in effects further reinforce these competitive advantages, as switching costs discourage users from migrating to alternative technologies. Expanding on this, Windrum (2004) examines Microsoft's tactics in the browser wars, emphasizing the impact of pre-installed software on user adoption and the ways dominant firms enforce proprietary standards to maintain control.

Hoffmann (2021) discusses the limitations of traditional antitrust laws in addressing digital market dynamics. Unlike traditional markets, where competition is primarily price-based, digital competition often revolves around data and network effects. Regulating the appropriation of network externalities is a major challenge, as firms derive significant advantages from user data. Additionally, ensuring interoperability between platforms remains a contentious issue, as dominant firms may resist compatibility to prevent competition.

Windrum and Birchenhall (2005) propose a co-evolutionary model of technological succession, emphasizing how new technologies emerge through a complex interplay of market forces and network effects. Structural changes in industries are influenced not only by market mechanisms but also by early adopters and institutional forces. The establishment of standards plays a pivotal role in shaping long-term market outcomes, determining which technologies become dominant.

Tang et al. (2021) explore the relationship between high-speed rail networks and urban innovation, demonstrating how agglomeration externalities foster knowledge spillovers between connected cities. Network externalities enhance innovation performance by expanding firms' access to larger talent pools and more diverse business networks. Furthermore, infrastructure investments create synergies between digital and physical connectivity, amplifying economic and technological growth.

Wu et al. (2017) analyze the role of network effects in wearable device markets, showing that product compatibility significantly influences consumer adoption. The degree of interoperability between devices can either strengthen or weaken network externalities, depending on market conditions. Consequently, companies must strategically manage their ecosystems, weighing the advantages of proprietary control against the benefits of open innovation.

Parry and Kawakami (2017) examine how network externalities impact the adoption speed of disruptive innovations, using e-readers as a case study. They argue that indirect network effects, such as the availability of complementary content (e.g., e-books), play a crucial role in accelerating adoption. New market entrants must quickly build ecosystem support to challenge incumbents, though market inertia often slows down the diffusion of potentially superior innovations.

Qasim and Abu-Shanab (2016), along with Ewe, Yap, and Lee (2015), study network externalities in mobile payment adoption, finding that consumer perception of innovation characteristics—such as ease of use and security—interacts with network effects to shape adoption patterns. Achieving a critical mass of users is essential for widespread adoption, as network effects become more pronounced at scale. Furthermore, interoperability between different payment systems can accelerate market penetration, making it easier for users to transition to digital payment solutions.

To conclude, network externalities shape market dynamics, technological evolution, competition strategies, and regulatory policies in the digital age. While they can drive efficiency and innovation, they also create challenges related to market dominance, standard wars, and regulatory intervention.

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1. How do firms balance the benefits of network effects with the risk of consumer lock-in?

2. What regulatory measures can prevent monopolization while still encouraging digital innovation?
3. How should firms strategize when entering markets dominated by strong incumbents with established standards?
4. How should policymakers define market power in the age of digital platforms?
5. How do technological successions differ in networked industries compared to traditional sectors?
6. How can policymakers design transportation networks to maximize economic and innovation benefits?
7. How do firms decide whether to prioritize closed ecosystems or open standards in consumer tech markets?
8. How can disruptive innovators overcome incumbents' network advantages?
9. What strategies should digital payment providers use to achieve rapid market penetration?

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Session 5: Innovation Diffusion Theories, Applications, and Challenges

Session 5 explores the dynamics of innovation diffusion, examining how, why, and at what rate new ideas and technologies spread within society. The diffusion of innovation explores how new ideas, products, and technologies spread across societies, markets, and industries. The diffusion process varies significantly across different domains—some innovations achieve rapid adoption and widespread influence, while others fail to reach a critical tipping point. The spread of an innovation, whether a product, service, or process, is not random but follows a discernible pattern influenced by multiple factors, including the intrinsic attributes of the innovation and the social, cultural, and economic contexts in which it is introduced.

A fundamental aspect of innovation diffusion is adoption, the process by which individuals, organizations, or entire societies begin utilizing a new idea or technology. The rate of adoption is a key indicator of how quickly an innovation gains traction. Understanding this process is essential for organizations seeking to ensure successful market penetration. Several factors influence adoption rates, including perceived usefulness, ease of use, and social influence—each playing a critical role in determining whether an innovation gains widespread acceptance or remains niche.

A key concept within innovation diffusion is critical mass, the threshold at which the adoption of an innovation becomes self-sustaining. Once this tipping point is reached, further adoption occurs not solely due to the efforts of early adopters but through the momentum generated within the network of users. Achieving critical mass is often a decisive factor in an innovation's success or failure. Organizations seeking to introduce new technologies must carefully navigate this process, leveraging an understanding of diffusion dynamics to develop effective strategies for innovation deployment and management. A nuanced grasp of these principles enables organizations to maximize impact, optimize resource allocation, and drive sustained value creation.

Everett Rogers (1995, 2002) provides a foundational framework for understanding how innovations spread. According to Rogers, adopters of innovation can be categorized into five groups: Innovators, who are risk-takers and the first to adopt; Early Adopters, who serve as opinion leaders and drive wider acceptance; Early Majority, who are more cautious but willing to adopt once benefits are evident; Late Majority, who are skeptical and adopt due to social or economic pressure; and Laggards, who resist change until absolutely necessary. The rate of adoption is influenced by five key attributes of innovation: Relative Advantage (is it better than existing solutions?), Compatibility (does it fit current needs?), Complexity (is it easy to understand?), Trialability (can users experiment with it?), and Observability (can others see its benefits?). Policymakers and businesses must target different adopter groups with tailored strategies to accelerate adoption, such as pilot programs for early adopters and incentives for the late majority.

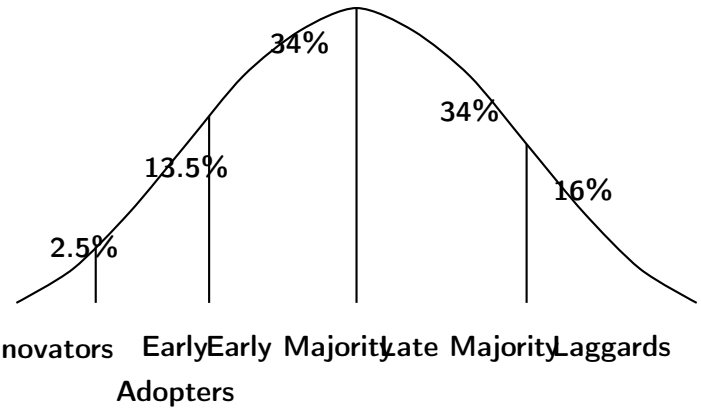

Figure 1: Technology Adoption Curve based on the Diffusion of Innovations Theory

David (1985) introduces the concept of path dependence through the "QWERTY phenomenon," explaining how historical choices create lock-in effects even when superior alternatives exist. Network externalities, where more users lead to greater value, reinforce this effect, while switching costs make it difficult to adopt new innovations. Furthermore, dominant technologies are often determined by historical accidents rather than efficiency. A key example is the persistence of QWERTY keyboards despite alternatives like Dvorak.

Berry & Berry (2018) explore how policy innovations spread across governments through horizontal diffusion (between states or regions, such as environmental laws) and vertical diffusion (from federal to local levels, such as healthcare policies). Political and economic conditions influence the speed of adoption. A notable example is the rapid global diffusion of carbon pricing policies in response to climate concerns.

Reinganum (1989) examines how firms decide when to invest in innovation based on factors like market competition (first-mover vs. fast-follower strategies), technological uncertainty (waiting for improvements before investing), and regulatory environment (patent laws affecting incentives). The pharmaceutical industry provides a clear example, where firms must decide whether to launch a drug early or wait for a more refined version.

Furthermore, Utterback (1974) and Dearing & Cox (2018) highlight that industrial and healthcare innovations diffuse differently. Technology diffusion in industry often follows S-curves, with a slow start, rapid adoption, and eventual plateau. Preventive innovations, such as vaccines or cybersecurity tools, face greater resistance due to a lack of immediate benefits. Governments can play a crucial role by subsidizing preventive innovations to overcome slow adoption.

Talebian & Mishra (2018) study the adoption of autonomous vehicles (AVs) through diffusion theory, finding that perceived risk and lack of regulation slow adoption. Early adopters tend to be tech-savvy urban users, while infrastructure and legal frameworks are critical for mass adoption. An example is Tesla's Full Self-Driving (FSD) feature, which has faced slow adoption due to safety concerns and regulatory challenges.

Soule (1999) analyzes failed innovations, showing that media hype does not guarantee success—market timing and usability matter more than novelty. A prime example is Google Glass, which failed due to privacy concerns and an unclear value proposition. Schmid (2018) explores military technology diffusion, noting that national security concerns slow international diffusion, while alliances accelerate shared technology adoption. Drones and AI in warfare illustrate how the U.S. and its allies share technology, while

adversaries develop alternatives.

Hall (2004) and Benhabib et al. (2021) provide macroeconomic perspectives, emphasizing that innovation drives productivity growth but diffusion rates vary by sector. Technology frontiers expand faster when knowledge spillovers occur, such as through international trade and talent mobility. China's AI growth exemplifies this, benefiting from global research collaborations but also facing challenges due to trade restrictions.

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1. How can policymakers and firms break path dependence to enable better technologies to succeed?
2. What factors cause some governments to adopt digital transformation policies faster than others?
3. How does digital transformation impact the timing of innovation investments?
4. What strategies help overcome public resistance to preventive innovations like AI-driven fraud detection?
5. How can policymakers accelerate AV adoption while ensuring public trust?
6. How does security impact diffusion in emerging technologies like quantum computing?
7. How can developing economies accelerate technology diffusion for industrial growth?
8. How does digital technology influence long-standing cultural norms through diffusion?

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Session 6: Digital Business Strategy, Innovation, and Value Creation

Session 6 explores the domain of Digital Business Strategy, a critical component in today's increasingly digitized business environment. A digital business strategy extends beyond the mere integration of technology into organizational processes; it involves leveraging digital resources to generate unique value and establish a sustainable competitive advantage. This strategic approach influences all levels of an organization, shaping its objectives, direction, and methods for achieving success. Whether through the development of innovative digital products or the enhancement of existing processes through digitization, the essence of digital business strategy lies in its capacity to transform and elevate business performance through technology.

At the core of a digital business strategy is the strategic use of emerging technologies to drive business growth and success. Technologies such as artificial intelligence (AI), machine learning, data analytics, and cloud computing enable organizations to reimagine product offerings, optimize operations, and enhance decision-making processes. This approach extends beyond traditional digitization; it entails a fundamental transformation of business models, activities, and core competencies to seize the opportunities presented by digital advancements. The ultimate goal is to enhance operational efficiency, deliver superior customer value, and achieve a long-term competitive edge.

A digital business strategy is inherently dynamic and must be tailored to the unique circumstances, industry landscape, and strategic objectives of an organization. It defines the pathway through which an organization cultivates new competitive advantages using digital technology and specifies the tactics required to implement these changes. This may involve initiatives such as the development of new digital services, data-driven personalization strategies, or internal digital transformation efforts aimed at improving efficiency and agility.

This session will examine the principles, frameworks, and best practices of digital business strategy, providing a comprehensive understanding of how organizations can effectively navigate and thrive in an increasingly digital world.

Bharadwaj et al. (2013) argue that digital business strategy is no longer separate from corporate strategy. Instead, it requires a fusion of IT and business strategy, where digital capabilities must be

embedded into overall business goals. Digital transformation must accelerate market responsiveness by optimizing scale, scope, and speed. Additionally, new competitive frameworks are emerging as traditional industry boundaries dissolve due to digital platforms. Amazon serves as an example, integrating AI, cloud computing, and logistics into a seamless business strategy, thereby disrupting traditional retail.

Pagani (2013) extends this perspective by introducing control points in digital business models, emphasizing platform dominance as a key factor in extracting value. Firms that control essential digital infrastructure, such as app stores and payment systems, gain a competitive advantage. Network effects and lock-in strategies further strengthen this position, as companies use data and AI to reinforce customer dependency. Apple's App Store, for instance, functions as a control point, ensuring that both developers and consumers remain within its ecosystem.

Teece (2018, 2017) explores how firms extract value from innovation, emphasizing that complementary assets matter more than patents. Owning infrastructure, standards, and platforms is often more profitable than simply inventing new technologies. Firms must also develop dynamic capabilities, allowing them to continuously sense, seize, and reconfigure their digital strategies. Google exemplifies this approach by securing profits through its dominance in search, mobile OS (Android), and AI, even when its core algorithms are open-source.

King, Covin, & Hegarty (2003) argue that technological innovation alone is insufficient; firms need complementary resources such as brand equity, distribution channels, and partnerships. First-mover disadvantages can arise when firms lack these complementary assets, while strategic alliances enhance innovation success. Tesla provides a case study in this regard, leveraging partnerships with battery suppliers like Panasonic and charging infrastructure to strengthen its competitive edge.

Tumelero et al. (2018) highlight that firms in technology-based industries develop capabilities more rapidly by leveraging external networks. Collaboration with universities, research labs, and startups accelerates learning and innovation cycles. Inter-firm alliances also help mitigate technological uncertainty, as demonstrated in the semiconductor industry, where global R&D consortia play a critical role in maintaining advancements in line with Moore's Law.

Alaimo & Kallinikos (2020) explore how data-driven algorithms reshape management practices. Algorithmic categories influence decision-making by prioritizing AI-driven insights. Organizations are shifting toward continuous optimization, where traditional long-term planning is increasingly replaced by real-time data adaptation. Netflix illustrates this shift by leveraging AI-driven content recommendations to redefine the entertainment business model.

Amit & Zott (2001) provide a framework for value creation in digital businesses, highlighting efficiency, complementarities, and lock-in effects. Digital platforms reduce transaction costs while integrating multiple services, such as Amazon's marketplace, AWS, and Prime. Lock-in effects further enhance competitive advantage by increasing user engagement and switching costs. Uber's platform model exemplifies this strategy by optimizing interactions between drivers, passengers, and pricing algorithms.

Mithas et al. (2013) examine how competitive environments shape firms' digital strategies. In dynamic markets, firms must adopt flexible digital strategies, as data-driven firms tend to outperform competitors in volatile environments. Microsoft's transition from a software-licensing model to a cloud-based subscription strategy, exemplified by Azure and Office 365, illustrates how companies can adapt their digital strategies to remain competitive.

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1. How should legacy firms restructure their digital strategies to compete with digital-native companies?

2. What risks do companies face if they fail to establish control points in digital markets?
3. How can firms without strong digital assets compete in a platform-dominated world?
4. How can firms identify and develop the right complementary resources for digital innovation?
5. How can firms structure collaborations to maximize technological capability development?
6. How can firms balance algorithmic decision-making with human judgment?
7. Which digital business models are most resilient to disruption?
8. How should firms balance long-term digital transformation with short-term market pressures?

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Session 7: Understanding Digital Platform

Session 7 explores the transformative impact of digital platforms, a phenomenon reshaping industries across the globe. At their core, digital platforms function as multi-sided interfaces that facilitate interactions among diverse participants, including consumers, producers, and third-party service providers. Enabled by advanced technologies, these platforms integrate data, organizations, and processes to create new operational models that transcend traditional business structures. They represent a fundamental shift from conventional organizational frameworks, challenging existing silos, policies, and technological investments while fostering new pathways for value creation.

As digital platforms continue to evolve, businesses are experiencing the "platformization" of their models—a transformation that fundamentally alters the way value is generated, exchanged, and captured. Unlike traditional business models that focus on the direct provision of goods or services, platform-based models prioritize facilitating interactions between user groups. These platforms leverage network effects, where the value of participation increases as more users join, creating a self-reinforcing cycle that drives exponential growth. This dynamic explains the success of platform-driven enterprises such as Amazon, Uber, and Airbnb, which have redefined their respective industries by optimizing interaction-driven value creation.

Another key component of digital platforms is the development of ecosystems that support and enhance their operations. These ecosystems comprise a diverse array of stakeholders, including developers, users, and complementary service providers, all of whom contribute to the platform's growth and sustainability. A well-functioning ecosystem fosters innovation, collaboration, and value exchange, reinforcing the platform's competitive edge. Understanding the mechanics of platform ecosystems, their interdependencies, and their strategic implications is essential for navigating the platform economy effectively.

This session will examine the underlying principles, business models, and strategic considerations of digital platforms, providing insights into how organizations can leverage platform dynamics to drive innovation and sustain competitive advantage in the digital age.

Gawer and Cusumano (2008, 2014) define platform leadership as the ability to control the architecture by setting industry-wide technological standards, balance openness and control to avoid either stifling adoption or losing competitive advantage, and drive innovation through ecosystems by encouraging third-party developers to enhance platform value. A key example is Microsoft Windows, which became dominant by fostering a developer ecosystem and complementary software, securing its leadership in the operating system market.

Gawer (2021) explores how platform boundaries evolve along three dimensions. First, firm scope expands beyond original industries, as seen in Amazon's growth from e-commerce to cloud computing. Second, platform sides evolve to accommodate new user groups, such as Airbnb extending services to business travelers. Third, digital interfaces, including APIs and AI-driven algorithms, influence platform governance and user engagement. Google exemplifies this expansion, continually extending its reach from search to Android, YouTube, and cloud services, strengthening its ecosystem in the process.

Bonina et al. (2021) argue that platforms can contribute to inclusive economic development if they lower transaction costs for small and medium enterprises (SMEs), improve digital infrastructure for underserved communities, and facilitate financial inclusion through digital payment systems. In emerging markets, platforms such as Gojek and Grab have created super-app ecosystems that integrate transport, payments, and local commerce, demonstrating how platform-based businesses can drive economic growth.

Rietveld and Schilling (2021) provide a systematic review of platform competition, highlighting the prevalence of winner-takes-all dynamics, where network effects favor first movers. Users, however, often

engage in multi-homing strategies, participating in multiple platforms, such as using both Uber and Lyft. Some platforms differentiate themselves by offering specialized services, as seen with Etsy, which focuses on handmade goods rather than competing directly with mass-market e-commerce giants. Apple and Android illustrate the ongoing competition between closed and open ecosystems, shaping the broader digital marketplace.

Parker and Van Alstyne (2018) argue that platform openness influences innovation outcomes. Open platforms attract more developers and encourage collaboration but can struggle with monetization, as seen with Wikipedia. In contrast, closed platforms maintain control and profitability but may limit ecosystem growth, as Apple's strict App Store policies demonstrate. Tesla provides an interesting hybrid approach, making its electric vehicle patents open-source to foster industry-wide innovation while maintaining a core proprietary advantage.

Eisenmann, Parker, and Van Alstyne (2011) introduce the concept of platform envelopment, where firms expand into adjacent markets by leveraging existing user bases. Facebook's acquisition of Instagram and WhatsApp exemplifies this strategy, helping it maintain dominance in social networking. Similarly, Google's acquisition of YouTube strengthened its video advertising business. However, increasing regulatory scrutiny has made platform envelopment a contentious issue, particularly in tech mergers and acquisitions.

Nooren et al. (2018) propose a framework for regulating digital platforms, focusing on market power and anti-competitive behavior, data privacy and consumer protection, and fairness in digital labor markets. The European Union's Digital Markets Act (DMA) represents a significant step in addressing platform dominance by enforcing interoperability and fair competition measures. Policymakers continue to grapple with the challenge of regulating digital giants without stifling innovation.

Stallkamp and Schotter (2021) discuss the challenges digital platforms face when expanding internationally. Regulatory hurdles, such as China's Great Firewall, have limited the global reach of companies like Google and Facebook. Cultural adaptation also plays a role, as seen in Uber's struggles in Southeast Asia, which led to its merger with Grab. Meanwhile, localized partnerships have helped firms like Alibaba thrive by integrating with regional logistics and payment providers.

Kretschmer et al. (2022) define platforms as meta-organizations, meaning they coordinate activity without direct ownership, govern through algorithms rather than traditional management structures, and evolve dynamically as user and developer needs change. Decentralized blockchain platforms, such as Ethereum, challenge conventional governance models, demonstrating how digital ecosystems can function with minimal centralized control.

Jovanovic et al. (2021) examine how industrial platforms, such as Siemens MindSphere and GE Predix, balance platform architecture, value-added services, and governance models to drive innovation in enterprise settings. Meanwhile, Fang, Wu, and Clough (2021) explore temporary platform diffusion, where digital platforms emerge to serve short-term events, such as ticketing apps for the Olympics or networking tools for conferences like SXSW. Salesforce illustrates how a platform can evolve from a niche service—customer relationship management (CRM) software—into a broader enterprise ecosystem that integrates artificial intelligence and analytics.

Lastly, Iman (2019) provides a critical perspective on the regulation of digital platforms, discussing the trade-offs between innovation, market competition, and consumer protection. He provides a nuanced discussion on the regulatory challenges of digital platforms in Indonesia, including (1) digital platforms require balanced regulation to ensure fair competition, consumer protection, and data privacy, (2) Indonesia must learn from global regulatory experiences while customizing policies to fit its local digital ecosystem, and (3) collaboration between the government, industry, and civil society is critical for effective digital

platform governance.

To sum up, platform success depends on strategic positioning, governance, and competition dynamics. Platform leadership requires firms to balance openness, control, and ecosystem incentives. Regulation is an increasingly significant factor influencing business models and expansion strategies. International growth demands adaptability to local markets and policies. Additionally, multi-sided platforms must continuously innovate to maintain a competitive edge.

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1. How can emerging platforms challenge incumbents in network-driven industries?
2. How do platform firms decide which markets to enter next?
3. What policies can governments implement to support homegrown digital platforms?
4. How can smaller platforms survive in markets dominated by tech giants?
5. How should firms balance openness with competitive control?
6. What are the risks and rewards of platform envelopment strategies?
7. What is the optimal balance between platform innovation and regulation?
8. How can platforms scale globally while navigating diverse regulatory landscapes?
9. What governance models will dominate the next phase of platform evolution?
10. How do industrial platforms differ from consumer-oriented platforms in strategy and governance?

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Midterm Exam

The midterm exam covers all topics discussed from Session 1 to Session 7, assessing comprehension of key concepts including technology fundamentals, digital infrastructures, characteristics of innovation, innovation paradoxes, types of innovation, standards and externalities, and the diffusion of innovation.

This exam is not designed to test memorization. In an era where factual information is readily accessible, rote memorization holds limited value. Instead, the focus is on **demonstrating a deep understanding** of core concepts and the **ability to apply theoretical frameworks** to real-world scenarios. Responses should reflect critical thinking, analytical reasoning, and the practical application of course materials.

Session 8: Key Innovation and Digital Infrastructure

Innovation is the driving force behind progress, particularly in the realm of technology. However, technological innovation is not a singular concept; it manifests in multiple forms, each with distinct characteristics, implications, and challenges. This session explores the diverse types of technological innovation, providing a comprehensive understanding of its multifaceted nature.

A key focus will be on hard and soft infrastructures, which serve as the foundation for technological advancement. Hard infrastructure encompasses the physical networks and systems essential for modern industries, while soft infrastructure refers to the institutions, regulations, and policies that uphold economic, health, and cultural standards. Both play a crucial role in fostering and sustaining innovation.

Additionally, the session examines technological convergence, the process by which separate technological systems integrate to deliver unified outcomes. This phenomenon is reshaping interactions with technology by dissolving traditional boundaries between media, devices, and industries. A prime example is the smartphone, which consolidates communication, entertainment, and productivity into a single device. Understanding this dynamic enables better anticipation of emerging opportunities in converging technologies.

Finally, the discussion will extend to architectures, which serve as the structural foundation for innovation and information management. In this context, architecture refers to the organizational frameworks and systems that facilitate innovation by integrating processes, technologies, and information to achieve strategic goals. By analyzing different architectural strategies, organizations can optimize their approach to innovation management.

Through this exploration of innovation types, infrastructure, convergence, and architectures, this session aims to equip participants with the knowledge necessary to navigate and harness the ongoing technological revolution.

Henderson and Clark (1990) introduced the concept of architectural innovation, which occurs when existing technologies are reconfigured in novel ways, leading to major competitive shifts. They argue that firms fail not only due to disruptive technologies, as Christensen later explored, but also because they struggle to recognize and adapt to changes in product architecture. A key distinction is made between component knowledge, where firms excel at incremental improvements, and architectural knowledge, which requires rethinking how components interact. Large incumbents often fail because their rigid organizational structures prevent them from adapting to architectural shifts. A classic example is Kodak's dominance in film technology but its failure to transition to digital imaging, despite having early access to digital technology.

Building on the idea of architectural innovation, Christensen (1997) introduced the "Innovator's Dilemma," explaining why market leaders often fail when faced with disruptive innovation. He differentiates between sustaining innovations, which improve existing products for current markets, and disruptive innovations, which introduce simpler, cheaper, and more accessible alternatives that initially serve niche markets before overtaking incumbents. Market leaders tend to focus on existing customers and dismiss disruptive technologies until it is too late. Netflix's rise over Blockbuster illustrates this dilemma, as Blockbuster remained focused on store rentals while Netflix pioneered streaming, a technology that reshaped the entertainment industry.

Alijani and Wintjes (2017) expand innovation theory by integrating social innovation, emphasizing that technological advancements must align with societal needs to maximize impact. They argue that technological innovation alone is insufficient because social dimensions, such as acceptance, ethics, and policy, shape how innovations are adopted and scaled. The co-evolution of technology and society requires

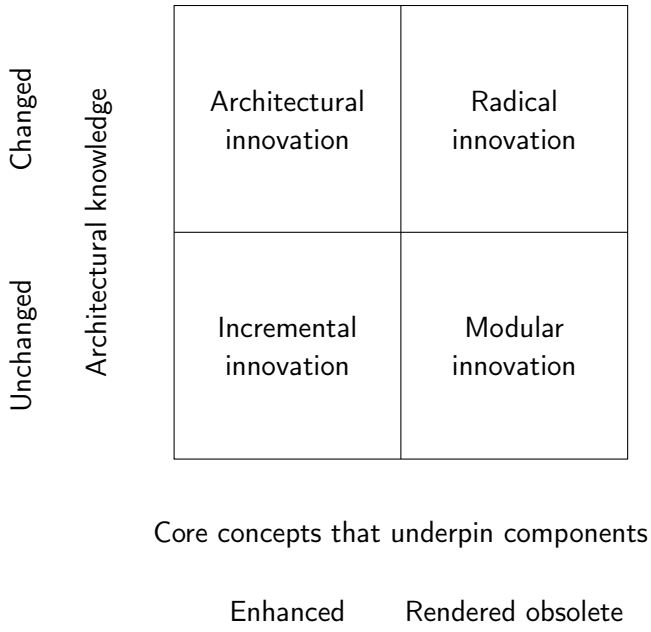

Figure 2: Model of Innovation

inclusive and context-sensitive innovation. A notable case is financial technology (fintech) and financial inclusion, where mobile money platforms like M-Pesa in Kenya have combined digital innovation with social impact, providing banking services to previously unbanked populations.

Gallouj et al. (2018) explore how service industries drive social innovation, demonstrating that value creation extends beyond economic gains to societal benefits. Service innovation is often less visible than product innovation but can be transformative, particularly in sectors like education, healthcare, and digital platforms. A key insight is that users play an active role in shaping service innovation, making it a highly participatory process. Technology acts as an enabler of social innovation, facilitating collaboration, transparency, and accessibility. The rise of telemedicine exemplifies this shift, with platforms like Halodoc in Indonesia improving healthcare access through teleconsultation, particularly in regions with limited medical infrastructure.

Tilson, Lyytinen, and Sørensen (2010), along with Henfridsson and Bygstad (2013), discuss digital infrastructure as the foundation of modern innovation ecosystems. Unlike traditional IT systems, digital infrastructures are evolving and modular, continuously shaped by new technologies and user demands. They are also open and generative, meaning they enable new applications and innovations rather than being static systems. Henfridsson and Bygstad introduce the concept of generative mechanisms, explaining that digital infrastructures evolve through innovation mechanisms, where platforms create new opportunities such as APIs; adoption mechanisms, where users drive ecosystem growth; and scaling mechanisms, where network effects expand the infrastructure. Cloud computing exemplifies this evolution, with platforms like Amazon AWS, Google Cloud, and Microsoft Azure continuously growing and enabling countless businesses to innovate.

To conclude, innovation is multi-dimensional, requiring firms to navigate architectural, disruptive, and social innovation challenges. Digital infrastructure plays a foundational role in shaping platform-based economies and service innovations. To remain competitive in an increasingly digital and interconnected world, firms must develop strategic adaptability and dynamic capabilities to respond to innovation-driven disruptions effectively.

1. How can established firms overcome architectural inertia and adapt to new product architectures?
2. How can firms identify and invest in potentially disruptive technologies early?
3. How can businesses incorporate social innovation into their technological strategies?
4. What policies can support social innovation in service industries?
5. How can firms strategically manage digital infrastructure to remain competitive?

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Session 9: Financial Technology

Financial technology (fintech or FinTech) represents a fundamental shift in the financial sector, driven by technological innovation. It challenges traditional financial services by introducing tech-driven alternatives that enhance efficiency, accessibility, and affordability. More than just a trend, fintech signifies a structural transformation, reshaping how financial services are delivered and consumed. From digital payments to robo-advisors, fintech is revolutionizing a historically resistant industry.

As an emerging field, fintech leverages advanced technologies—including artificial intelligence, blockchain, and data analytics—to streamline and enhance financial activities. These innovations have led to disruptive solutions across lending, insurance, asset management, and payments, democratizing access to financial services in ways previously unimaginable.

This session explores the rise of fintech and its impact on traditional banking and financial services. While fintech presents new opportunities, it also introduces significant challenges for established institutions, compelling them to reassess their models and embrace digital transformation. This evolution is

not just altering competitive dynamics but redefining the future of finance—a transformation that will be examined in depth.

Iman (2020) explores how financial technology (FinTech) has revolutionized financial services by enhancing efficiency, promoting financial inclusion, and driving innovation. Digital banking and mobile payments have provided access to financial services for previously underserved populations, while automation has significantly reduced operational costs for banks and businesses. However, FinTech also introduces challenges, particularly in regulation and cybersecurity. Traditional financial regulations struggle to keep pace with rapid technological advancements, creating gaps that can lead to instability. Additionally, as financial transactions increasingly shift online, exposure to hacking and fraud rises. FinTech presents both opportunities and risks, necessitating adaptive regulation and collaboration between startups, banks, and governments. Indonesia's FinTech boom, led by platforms like OVO, GoPay, and Dana, has expanded financial access but also raised concerns regarding consumer protection and regulatory oversight.

Puschmann (2017) provides a structured definition of FinTech, identifying five key domains that shape the industry: payments, wealth management, crowdfunding, lending, and insurance. Payments involve digital wallets and blockchain-based transactions, while wealth management is being transformed by robo-advisors such as Betterment. Crowdfunding platforms like Kickstarter and GoFundMe enable new forms of capital raising, while peer-to-peer (P2P) lending platforms, such as Indonesia's KoinWorks, provide alternatives to traditional bank loans. InsurTech startups, like Lemonade, are also reshaping the insurance industry through digital-first models. Each of these domains holds potential for disruption, particularly in developing economies where traditional financial services are often limited or inefficient.

Gai, Qiu, and Sun (2018) explore the key technologies driving FinTech innovation. Blockchain enables secure, decentralized transactions, reducing reliance on intermediaries. Artificial intelligence (AI) powers services like robo-advisors and fraud detection systems, enhancing the efficiency and accuracy of financial decision-making. Meanwhile, big data and analytics improve risk assessment in lending and credit scoring, allowing for more personalized financial services. AI-powered chatbots, such as Bank of America's Erica, exemplify how AI is transforming customer service in banking, providing real-time financial advice and support. Despite these advancements, challenges such as data privacy, regulatory uncertainty, and resistance to AI adoption remain barriers to widespread implementation.

Goldstein, Jiang, and Karolyi (2019) discuss how FinTech is reshaping financial markets by increasing competition and reducing inefficiencies, though it also introduces new financial stability concerns. The rise of non-bank FinTech firms operating outside traditional regulatory frameworks presents risks similar to shadow banking. Digital lending platforms and algorithmic trading may amplify liquidity risks, making financial markets more vulnerable to shocks. Thakor (2020) examines the evolving relationship between banks and FinTech, outlining three potential scenarios. In one scenario, FinTech replaces traditional banks, though regulatory constraints make this unlikely. A more plausible outcome is aggressive competition between traditional and digital banks, while an increasingly common trend is collaboration, where banks partner with or acquire FinTech firms. Leading global banks, such as JPMorgan and HSBC, have chosen to invest in blockchain technology rather than compete with it directly.

Janssen et al. (2020) present a framework for analyzing blockchain adoption, highlighting institutional, market, and technical factors that influence its growth. Trust, regulation, and interoperability remain critical for blockchain adoption. The development of smart contracts and decentralized finance (DeFi) could eliminate the need for intermediaries, disrupting traditional financial models. A major development in this space is the emergence of Central Bank Digital Currencies (CBDCs), which represent a government-backed response to the rise of decentralized cryptocurrencies. These digital currencies

have the potential to transform monetary systems while addressing concerns about financial stability and regulatory oversight.

Iman (2018) provides an in-depth analysis of Indonesia's rapidly evolving FinTech landscape. The country has seen a surge in mobile payments, largely driven by the expansion of e-commerce and ride-hailing platforms. However, regulatory challenges and low levels of financial literacy remain significant barriers to sustainable growth. Many consumers lack awareness of the risks associated with digital financial services, making regulatory interventions crucial. The Indonesian government has introduced regulatory sandboxes to test new FinTech innovations while ensuring consumer protection. One notable initiative is QRIS (Quick Response Code Indonesian Standard), which has standardized QR payments to promote interoperability between digital wallets and improve payment efficiency.

Iman (2024) explores the institutional challenges faced by FinTech platforms, particularly in balancing regulatory compliance with innovation. Many firms experience "decoupling," where they appear to comply with regulations but maintain hidden risks that could later surface as financial threats. Navigating institutional pressures is essential for long-term stability, as demonstrated by China's crackdown on Ant Group's IPO. This event highlights the tension between rapid FinTech growth and the regulatory need to maintain financial stability and consumer protection.

All in all, FinTech is reshaping financial services by increasing efficiency, enhancing financial inclusion, and fostering innovation. However, regulatory and cybersecurity risks remain significant challenges. Traditional banks and FinTech firms are likely to find more value in collaboration rather than direct competition, as seen in the strategic partnerships and acquisitions shaping the industry. Emerging markets, particularly Indonesia, offer significant opportunities for FinTech growth, though financial literacy and regulatory frameworks must continue evolving. The future of financial services will be heavily influenced by blockchain and AI, with the potential to redefine traditional banking and investment models.

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1. How should regulators balance innovation with financial stability?
2. Which FinTech domain has the most potential for disruption in developing economies?
3. What are the key barriers to AI adoption in FinTech?
4. Should banks treat FinTech as a competitor or a strategic partner?
5. Will blockchain technology eventually replace traditional banking systems?
6. What policy interventions are needed to ensure the sustainable growth of FinTech in emerging markets?
7. How can FinTech firms maintain regulatory compliance without stifling innovation?

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Session 10: AI, Big Data, and Business Intelligence

Session 10 explores the transformative impact of Artificial Intelligence (AI) and Machine Learning (ML), two rapidly evolving fields reshaping industries and technological landscapes. AI aims to develop intelligent systems capable of problem-solving, a trait traditionally considered uniquely human. However, advancements in AI are increasingly blurring this distinction, enabling machines to perform complex tasks that once required human cognition. From autonomous driving to healthcare, AI applications are revolutionizing the way technology integrates with daily life.

Machine Learning, a subset of AI, enhances these capabilities by enabling systems to learn and improve autonomously without explicit programming. Through adaptive algorithms, including neural networks, ML enables pattern recognition and data-driven decision-making, translating vast amounts of information into actionable insights. This self-learning ability allows systems to continuously refine their performance, making them indispensable in fields such as finance, healthcare, and supply chain management.

This session examines the profound impact of AI and ML on business and industry, highlighting their role in enhancing efficiency, driving automation, and fostering innovation. By automating routine tasks and enabling intelligent decision-making, these technologies are fundamentally altering competitive landscapes. Understanding these developments is crucial for organizations seeking to strategically integrate AI and ML, optimize performance, and maintain a competitive edge in an increasingly digital world.

Duan, Edwards, and Dwivedi (2019) explore the evolution of AI as a decision-making tool in the era of big data. Early AI systems were primarily rule-based expert systems, while modern AI relies on machine learning (ML) and deep learning (DL) to analyze vast datasets. Despite its advancements, AI faces several challenges. Data quality and bias remain critical issues since AI models require clean, unbiased data for accurate decision-making. Explainability is another major challenge, as black-box AI

models make it difficult to understand decision logic. Additionally, ethical concerns arise when AI-based decisions lead to unintended social consequences. For instance, AI-driven credit scoring models used by fintech firms can result in discriminatory lending if trained on biased data.

Blohm et al. (2022) compare human investors, particularly business angels, with AI-driven investment algorithms. Their study concludes that AI outperforms human investors in identifying profitable investments based on historical patterns. However, human investors excel in intuition-based decisions, particularly in uncertain environments where AI may struggle. Hybrid models that combine human expertise with AI capabilities tend to outperform both standalone AI and human decision-making. Hedge funds, such as Bridgewater Associates, illustrate this trend by using quantitative trading algorithms alongside human oversight to optimize investment decisions.

Sun, Sun, and Strang (2016), along with Yafooz et al. (2020), highlight how big data analytics (BDA) is transforming business intelligence (BI). BDA enables predictive analytics, allowing businesses to anticipate trends using AI models. Real-time decision-making is another advantage, as companies can react instantly to data-driven insights. Additionally, AI-powered sentiment analysis helps businesses personalize customer services and improve user experiences. A prime example is Amazon's recommendation engine, which leverages big data and AI to tailor product suggestions to individual consumers.

Bohanec, Borštnar, and Robnik-Šikonja (2017) examine the critical issue of explainability in AI-driven decision-making. Most ML models, particularly deep learning, function as "black boxes," making it difficult for businesses to trust and adopt them. However, interpretable AI models, such as decision trees and SHAP values, are gaining traction due to their transparency. Businesses require explainability not only for internal decision-making but also to comply with regulatory requirements, such as the EU's GDPR and AI Act. The EU's "Right to Explanation" law, for example, mandates that AI-based loan approvals must be interpretable and justifiable.

The concept of sociomateriality emphasizes the inseparability of the social and material aspects in organizational contexts. Orlikowski and Scott (2025) have been pivotal in advancing this perspective, arguing that technology and human actions are deeply intertwined, co-constituting each other in practice. They contend that digitalization processes are not only transforming technological infrastructures but also reshaping core institutional values, norms, and rules. Building upon this foundation, they move beyond viewing AI as a mere tool, instead positioning it as an active participant in the performative enactment of organizational routines and strategies.

The term "genealogies" suggests a historical and evolutionary analysis of AI's role within organizations. By tracing the development and integration of AI systems, the authors may reveal how historical contexts, power dynamics, and material conditions have shaped AI's performative roles. This approach aligns with recent scholarship that situates AI within broader socio-political and economic trajectories, challenging conventional origin myths and highlighting AI as a diffuse set of technologies embedded in systems of epistemic and political power.

David J. Chalmers (2025) argues that understanding AI's internal states through *propositional interpretability*—interpreting AI's mechanisms in terms of propositional attitudes like beliefs, desires, and probabilities—is essential for AI safety, ethics, and cognitive science. He introduces *thought logging* as a major challenge, aiming to track AI's propositional attitudes over time. While Chalmers makes a strong case, a key concern is whether AI genuinely has propositional attitudes or whether human-like frameworks of cognition fully apply to non-human intelligence. He differentiates interpretability from explainability and further classifies interpretability into behavioral (analyzing input/output), mechanistic (understanding internal structures), algorithmic (examining AI's computational logic), and representational (decoding how AI encodes concepts and propositions). However, these categories may be more

theoretical than practical, as real-world AI often blends multiple forms of interpretability. He also explores psychosemantics—theories of how mental states acquire meaning—and applies them to AI, though this assumes that AI systems follow human-like semantic structures, which remains debatable.

Chalmers reviews four major interpretability methods: *causal tracing* (identifying internal representations of AI's "beliefs"), *probing with classifiers* (training external models to decode AI's internal states), *sparse auto-encoders* (discovering interpretable features in neural networks), and *chain-of-thought reasoning* (where AI explicitly articulates its reasoning). While promising, these methods have limitations—causal tracing is fragile, probing is constrained by supervision, and chain-of-thought reasoning often fails to reflect actual internal reasoning processes. Chalmers addresses key objections, such as whether AI truly has propositional attitudes, whether such interpretability is necessary, and how external factors may complicate meaning in AI systems. His approach assumes AI must be understood using human cognitive models, but some researchers suggest alternative paradigms that better align with AI's unique architecture. While propositional interpretability is an intriguing avenue, its practicality and generalizability remain open to debate.

Bostrom (2019) and Armstrong, Sandberg, and Bostrom (2012) discuss long-term AI risks, including the existential threat posed by superintelligent AI. Such AI systems could surpass human control, leading to unpredictable consequences. One proposed solution is the concept of "Oracle AI," which limits AI functionality to answering questions rather than acting autonomously. OpenAI's ChatGPT serves as an example of a limited-purpose AI, whereas autonomous AI agents like AutoGPT raise concerns about safety and governance.

Truby and Brown (2021) explore the concept of AI-driven "digital twins," which replicate human decision-making processes. These AI models raise ethical dilemmas, particularly regarding ownership and employment displacement. Companies like Replika AI are already developing AI-based human personality clones for applications such as customer service. The prospect of AI fully replicating human cognition introduces significant ethical and legal questions.

Krarup and Horst (2023) analyze the European Union's AI regulations, particularly the AI Act. The EU has adopted a risk-based regulatory model, which bans high-risk AI applications such as social scoring. The focus of these policies is on ethics, transparency, and data sovereignty. However, there is an ongoing debate regarding the tension between innovation and regulation, as stricter policies could potentially slow AI progress. The GDPR's impact on AI development exemplifies these challenges, as companies must navigate stringent data privacy laws while leveraging AI for business growth.

Deepa and Prabadevi (2020) explore the intersection of AI and the Internet of Things (IoT) in enterprise applications. AI-powered IoT enables predictive maintenance, smart automation, and real-time monitoring. Businesses are leveraging AI-driven IoT solutions for supply chain optimization and the development of smart factories. A notable example is Tesla's self-learning vehicles, which integrate AI and IoT to enable autonomous driving capabilities.

Iman (2016) discusses the potential integration of blockchain and AI. This combination could address data security and transparency challenges in AI-driven decision-making. Decentralized AI models, facilitated by blockchain technology, may reduce corporate control over AI, leading to more democratized innovation. Platforms such as SingularityNET exemplify this trend by enabling global collaboration on AI training and deployment.

Nevertheless, AI and big data are significantly transforming business intelligence and decision-making processes, but explainability remains a critical challenge. Human-AI hybrid models tend to outperform standalone AI or human decision-making, highlighting the need for a balanced approach. Regulatory frameworks, such as the EU AI Act, are shaping the ethical use of AI, though debates on innovation

versus regulation persist. Finally, the integration of blockchain with AI holds promise for enhancing transparency and security in AI governance.

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1. How can we make AI decision-making more transparent and fair?
2. Should AI fully replace human decision-makers in investment?
3. How can businesses ensure the ethical use of big data analytics?
4. Should regulations mandate explainability in all AI-driven decisions?
5. Should AI development be regulated globally to prevent existential risks?
6. Should AI be allowed to fully replicate human cognition?
7. How can policymakers balance AI innovation with ethical concerns?
8. What are the biggest cybersecurity risks in AI-powered IoT systems?
9. Can blockchain ensure more ethical AI governance?

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Session 11: Surveillance Capitalism, Digitalization, and Privacy

Data surveillance, once a tool primarily used by marketers to refine advertising strategies, has evolved into an omnipresent aspect of modern life, growing increasingly invasive as technology advances at an unprecedented rate. Initially, surveillance was limited to tracking online behavior to personalize marketing messages and optimize targeted campaigns. This practice created an intricate web of data, profiling individual preferences and behaviors while ushering in an era of unprecedented digital transparency.

However, with the rise of the Internet of Things (IoT), data surveillance extends far beyond the digital realm. IoT-enabled devices, powered by advancements in data storage, transmission, and analytics, are embedding surveillance into the physical world. Everyday objects—smart home appliances, connected vehicles, and wearable devices—are now equipped with sensors that continuously monitor and transmit real-time data. From smart refrigerators to fitness trackers, these technologies compile vast amounts of information, creating a comprehensive, multi-dimensional profile of individual lifestyles.

The expansion of embedded computing is pushing surveillance even further, encroaching on the final frontier of privacy—the human body. Biometric data collection, facilitated by wearable technology and implanted devices, introduces an even deeper level of surveillance. Metrics such as heart rate, sleep patterns, and even genetic information are now tracked and stored, representing some of the most intimate forms of personal data.

This session explores the far-reaching implications of pervasive data surveillance, examining its ethical, societal, and security ramifications in an era where the concept of privacy is becoming increasingly obsolete.

Shoshana Zuboff (2015) introduces the concept of "surveillance capitalism," a system where companies collect and monetize personal data to predict and influence human behavior. Unlike traditional capitalism, which revolves around the exchange of goods and services, surveillance capitalism thrives on

extracting behavioral data from users, often without their explicit consent. Zuboff describes the "Big Other," a digital ecosystem where data collection and analysis become dominant forces shaping human decision-making. This raises concerns about the loss of autonomy, as digital platforms like Google and Facebook deploy AI-driven nudges to subtly manipulate user behavior. For instance, Google continuously tracks user searches, locations, and interactions to refine its predictive models and sell highly targeted advertisements. This data-driven business model fuels corporate profits but raises ethical questions about user agency and privacy.

While digital transformation is often celebrated for its efficiency and convenience, Trittin-Ulbrich et al. (2020) argue that it also brings unintended negative consequences. Digital labor platforms, such as Uber and Deliveroo, promise economic opportunities but often increase worker precarity by treating employees as independent contractors with minimal rights. Algorithmic discrimination is another critical issue, as AI-driven hiring systems can perpetuate biases against marginalized groups. The erosion of democratic values is also a growing concern, as digital platforms prioritize profit-driven content that amplifies misinformation and polarizes public discourse. A striking example is Amazon's AI-powered recruitment tool, which was found to favor male candidates over women due to biased training data. These issues highlight the need for a more critical approach to digitalization—one that considers both its benefits and its social costs.

Cloarec (2020) explores the tension between data-driven personalization and user privacy, known as the personalization-privacy paradox. While users enjoy personalized experiences, such as Netflix recommendations and tailored advertisements, they also express discomfort with the level of data collection required to enable these services. This paradox creates a trust dilemma for businesses, as consumers simultaneously demand personalized services and greater control over their personal data. Companies must navigate this challenge carefully, as excessive data collection can lead to regulatory scrutiny and consumer backlash. Apple's introduction of App Tracking Transparency (ATT) is an example of a shift toward privacy-first policies, forcing companies like Meta to rethink their ad-driven revenue models. However, the broader question remains—can businesses offer personalized services without compromising user privacy?

Ajunwa (2020) examines the rise of AI-driven workplace surveillance and its impact on employee autonomy and fairness. Many organizations now rely on "black box" algorithms to make hiring and performance-related decisions, often without transparency or clear justification. Workplace monitoring technologies, including keystroke tracking, facial recognition, and AI-driven productivity assessments, have become increasingly common, raising concerns about employee stress and job satisfaction. Companies like Amazon, for example, use AI-powered surveillance cameras to monitor warehouse workers, creating high-pressure environments with little room for human discretion. Legal and ethical gaps in labor laws mean that many AI-driven surveillance practices remain unregulated, leaving workers vulnerable to excessive monitoring and automated decision-making.

In their 2023 article, Paparova et al. examine the evolution of data governance over a decade within Norway's national digital health service. They introduce the concept of "data governance spaces," defined as authorized relationships among multiple actors that delineate decision-making authority, rights, roles, and responsibilities in data processing. The study distinguishes between two dynamics: "authority multiplication," where data is shared among actors for diverse purposes, leading to horizontal governance structures; and "actor subordination," where a central authority delegates data handling for uniform purposes, resulting in vertical governance structures. This research highlights the complex interplay of data governance beyond traditional organizational boundaries, emphasizing the pivotal role of data and its varied applications across multiple stakeholders.

On the other hand, Roberts and Oosterom (2024) methodically analyze existing literature to construct a nuanced understanding of digital authoritarianism. They explore how state and non-state actors employ digital technologies—such as surveillance systems, internet censorship, and data analytics—to monitor, control, and repress populations. The review highlights the multifaceted nature of digital authoritarianism, noting its application in various political regimes, including both overtly authoritarian states and democracies exhibiting authoritarian tendencies.

The authors discuss the exportation of digital authoritarian tools and strategies, particularly by countries like China and Russia, to other nations, thereby facilitating a global diffusion of repressive technologies. They also examine the role of private technology companies in either abetting or resisting these practices, underscoring the complex interplay between technological advancement and human rights. This resonates with broader concerns about the erosion of digital freedoms in the contemporary era. Their work underscores the imperative for robust international frameworks and policies to counteract the spread of digital authoritarianism. It also calls for greater accountability and ethical standards within the technology sector to prevent the misuse of digital tools for repressive purposes.

All in all, surveillance capitalism, algorithmic bias, and AI-driven workplace monitoring reveal the ethical dilemmas embedded in digital transformation. While digitalization enhances efficiency and convenience, it also raises fundamental questions about autonomy, privacy, and labor rights. The personalization-privacy paradox remains an ongoing challenge for businesses, as they attempt to balance data-driven customization with consumer trust. Meanwhile, AI-driven workplace surveillance threatens employee rights and job security, highlighting the need for updated labor regulations. Addressing these concerns requires a broader discussion on ethical technology governance, ensuring that digital innovation serves society rather than exploiting it.

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1. How can individuals regain control over their data in the age of surveillance capitalism?
2. How can we ensure digitalization benefits workers rather than exploiting them?
3. Can businesses achieve both personalization and privacy without violating consumer trust?
4. Should governments regulate AI-driven workplace surveillance to protect workers?

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Session 12: Fake News, Disinformation, and the Post-Truth Era

Session 12 explores the often-overlooked consequences of the digital economy, highlighting the challenges that accompany rapid technological advancements. As emerging technologies drive unprecedented economic growth, they also reshape societal structures, institutions, businesses, and individual interactions at an accelerating pace. However, the enthusiasm surrounding digital innovation often obscures its potential downsides, creating a blind spot in our understanding of its broader impact.

This session aims to recalibrate that perspective by examining the hidden costs and unintended consequences of digital transformation. While these innovations offer immense benefits, failing to acknowledge their risks could allow them to overshadow progress. From the spread of misinformation and digital manipulation to concerns about market monopolization and unchecked corporate power, the digital age presents a complex set of challenges that demand critical analysis.

Among these concerns, disinformation stands out as a particularly pressing issue. The deliberate spread of false information—often driven by political, financial, or ideological motives—has profound implications for public discourse, decision-making, and social cohesion. Additionally, the rise of digital monopolies raises questions about competition, power concentration, and regulatory oversight in an increasingly data-driven world.

Through this session, we will critically examine these systemic risks, exploring strategies to mitigate their impact and build a more transparent, equitable, and resilient digital ecosystem.

The growing prevalence of disinformation poses a significant threat to democratic institutions, eroding public trust in journalism and governance. The London School of Economics (2019) report, *Tackling the Information Crisis: A Policy Framework for Media System Resilience*, outlines strategies to counteract misinformation. It emphasizes the importance of media literacy programs that equip citizens with the skills to critically assess online information. Additionally, stronger regulations are needed to hold digital platforms accountable for the spread of false content, while independent journalism must be supported through alternative funding models to reduce reliance on advertising-driven clickbait. An example of this approach is the European Union's Code of Practice on Disinformation, which encourages tech platforms to take active measures against fake news. However, a key challenge remains: how to balance stricter regulations with the preservation of free speech.

Fake news and disinformation have a long history, evolving from Cold War propaganda tactics to modern social media-driven manipulation. Posetti and Matthews (2018) trace this evolution, showing how misinformation has been used for political and economic gain. While traditional propaganda was often state-controlled, digital technologies have accelerated its spread, enabling individuals and interest groups to influence public perception on an unprecedented scale. Social media platforms play a central role in this phenomenon, as their algorithms prioritize sensational and emotionally charged content over factual reporting. For instance, during the 2016 U.S. elections, Facebook's algorithm inadvertently amplified misleading political content, illustrating the platform's role in fueling disinformation. Addressing this issue requires social media companies to take responsibility for preventing their platforms from being

exploited for fake news dissemination.

Marwick and Lewis (2017, 2020) examine the mechanisms behind digital media manipulation, revealing how misinformation is systematically spread online. Troll farms and bot networks artificially amplify misleading content, making it appear more credible and widespread than it actually is. The rise of deepfake technology further complicates information verification, as AI-generated synthetic media blurs the line between truth and falsehood. Moreover, a misinformation economy has emerged, where fake news websites generate revenue through advertising by exploiting engagement-driven algorithms. A notable case occurred in 2018, when a Macedonian fake news factory made significant profits by fabricating political stories designed to generate high levels of online interaction. Given the growing sophistication of these tactics, there is a pressing debate on whether governments should regulate AI-generated misinformation like deepfakes.

The widespread belief in fake news is driven by cognitive biases and emotional triggers, as explored by Lewandowsky, Ecker, and Cook (2017), along with Rochlin (2017). Confirmation bias plays a crucial role, as individuals tend to accept information that aligns with their preexisting views while dismissing contradictory evidence. Similarly, the illusory truth effect—where repeated exposure to falsehoods increases belief in them—contributes to the persistence of misinformation. Emotional manipulation is another key factor; fake news often spreads rapidly because it evokes strong feelings such as fear or outrage. The "Pizzagate" conspiracy is a prime example, where baseless claims were widely shared and believed due to psychological reinforcement within online echo chambers. To combat these tendencies, individuals must develop greater resistance to psychological manipulation through media literacy and critical thinking.

Iyengar and Massey (2019) highlight the challenges of scientific communication in a post-truth society, where anti-science rhetoric is often used for political gain. Politicians and influencers have increasingly undermined scientific consensus on critical issues such as climate change and public health, fostering distrust in experts. Social media algorithms further exacerbate this problem by prioritizing engagement over accuracy, allowing pseudo-science and conspiracy theories to thrive. A recent example is the widespread misinformation surrounding COVID-19 vaccines, which contributed to public skepticism and hesitancy despite overwhelming scientific evidence supporting vaccine safety and effectiveness. This raises an important question: should tech companies be responsible for fact-checking and limiting the spread of scientific misinformation on their platforms?

Indonesia has experienced a surge in political disinformation, particularly during elections. Iman (2016, 2019) illustrate how misinformation campaigns exploit religious and ethnic divisions to manipulate public opinion. WhatsApp and Facebook are the primary channels for spreading hoaxes, given their widespread use in the country. During the 2019 Indonesian elections, for example, numerous false claims targeted political candidates, shaping voter perceptions in misleading ways. Strengthening digital literacy among the population is a crucial step in combating misinformation, ensuring that citizens can critically evaluate the content they consume.

To counter the growing disinformation crisis, a multi-pronged approach is necessary. Strengthening media literacy programs can empower individuals to distinguish between credible news and manipulated narratives. Regulatory frameworks must be updated to ensure that digital platforms prioritize accuracy over engagement-driven content amplification. Fact-checking initiatives and increased transparency in news reporting are essential to rebuilding public trust in journalism. Finally, widespread public awareness campaigns can help reduce susceptibility to misinformation, fostering a more informed and resilient society.

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1. Can stricter regulations balance free speech and misinformation control?

2. How can social media companies prevent their platforms from being exploited for fake news?
3. Should governments regulate AI-generated misinformation like deepfakes?
4. How can people become more resistant to psychological manipulation by fake news?
5. Should tech companies be responsible for fact-checking scientific misinformation?
6. How can Indonesia strengthen digital literacy to combat misinformation?

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Session 13: Digital Sustainability and Green Economy

Digital sustainability is the practice of leveraging technology in ways that meet present needs without compromising future generations' ability to do the same. Rooted in broader sustainability principles, it encompasses social, economic, and environmental dimensions within the digital realm.

The concept varies by context. It can refer to preserving digital assets (e.g., databases, documents, and multimedia), leveraging technology for sustainable development (e.g., data-driven resource optimization, virtual meetings reducing carbon emissions), or ensuring the responsible lifecycle of digital devices (e.g., minimizing energy consumption, reducing e-waste, and addressing conflict mineral use).

In education, fostering digital sustainability awareness prepares students to navigate and contribute responsibly to the digital economy. Equipped with this knowledge, they can drive sustainable innovation and change within their future organizations.

As digital technologies become more pervasive, the question arises: Can digital innovation drive sustainability and a green economy? The concept of digital sustainability explores the environmental, social, and economic implications of digital transformation.

Digital sustainability refers to the responsible development and use of digital technologies to ensure long-term environmental and societal well-being. As highlighted by Iman (2023) and Stuermer et al. (2017), digital sustainability encompasses the creation of sustainable digital artifacts such as energy-efficient software and green data centers, which help reduce the environmental footprint of digitalization. Furthermore, integrating digital sustainability with circular economy models contributes to a green economy by minimizing waste, optimizing resource use, and lowering carbon emissions. A notable example is Google's carbon-neutral data centers, which leverage AI to optimize energy consumption, demonstrating how technology can drive sustainability efforts. However, developing countries face the challenge of balancing digital growth with sustainability goals, raising questions about how to achieve both economic progress and environmental responsibility.

Digital technologies play a crucial role in achieving the United Nations Sustainable Development Goals (SDGs). Anadon et al. (2016) emphasize how innovations such as smart grids, IoT sensors, and AI-driven analytics enhance sustainability by improving energy distribution, optimizing resource efficiency, and advancing environmental monitoring. For instance, precision farming, which relies on IoT and AI, has been instrumental in reducing water and fertilizer usage, thereby lowering the agricultural sector's carbon footprint. These technological advancements illustrate how digital innovation can support sustainable development, but there is still a need for policies that incentivize the widespread adoption of green digital technologies.

The ethical and social dimensions of digital sustainability are complex, involving multiple stakeholders, including governments, businesses, civil society, and consumers. Arogyaswamy (2020) and Lock & Seele (2017) argue that Big Tech companies have a responsibility to uphold sustainability principles by ensuring ethical AI, responsible resource use, and data privacy. However, significant challenges persist, including

the growing problem of e-waste and digital pollution due to rapid technological consumption, as well as the digital divide, where unequal access to green technology exacerbates global inequalities. Companies like Apple and Dell have responded by implementing device recycling programs to tackle e-waste, but the broader question remains whether governments should impose stricter regulations on Big Tech to enforce sustainability standards.

Digital sustainability is also influenced by individual behavior, particularly in how people use digital media. Görland and Kannengießer (2021) highlight the importance of sustainable digital behavior, which includes reducing unnecessary data consumption—such as excessive cloud storage or high-definition video streaming—to lower carbon emissions. Digital minimalism, a movement promoting responsible technology use, encourages individuals to be more conscious of their digital habits to balance efficiency with sustainability. Platforms like Netflix and YouTube have responded by optimizing video compression to reduce the energy consumption associated with streaming. The question now is whether digital platforms should actively provide users with energy-efficient options, such as lower-quality streaming settings for sustainability purposes.

Blockchain technology has emerged as a powerful tool for enhancing sustainability in supply chains. Kouhizadeh et al. (2021) and Esmaeilian et al. (2020) explore how blockchain enables greater transparency, traceability, and accountability, which are crucial for ethical sourcing and reducing fraud in sustainable product certification. Companies like Walmart and IBM have already adopted blockchain to track food supply chains, ensuring sustainability while minimizing waste. By optimizing supply chain logistics, blockchain can improve efficiency and reduce environmental impact. However, a key challenge is whether blockchain adoption can become cost-effective for small businesses, enabling them to participate in sustainable supply chains without financial barriers.

The use of big data for sustainability presents both opportunities and risks. Seele (2016) introduces the concept of the "Digital Sustainability Panopticon," where large-scale data collection enables real-time monitoring of sustainability practices. On the positive side, governments can track corporate environmental impact, and consumers can access sustainability ratings for products and services, fostering greater accountability. However, this level of monitoring also raises concerns about privacy and data monopolies, where large corporations could control sustainability metrics to their advantage. Smart cities, which utilize big data analytics for traffic flow optimization, waste management, and energy conservation, exemplify how data-driven insights can enhance sustainability. The challenge, however, lies in striking a balance between leveraging big data for sustainability and protecting individuals' privacy rights.

Moreover, Madon and Masiero (2025) argue that digital connectivity is a cornerstone for sustainable development, influencing various sectors such as education, healthcare, and economic growth. By applying an institutional resilience lens, they assess how robust digital systems can help societies withstand and adapt to challenges like economic downturns, health crises, and environmental disasters. This perspective shifts the focus from mere access to technology toward the quality and resilience of digital institutions.

The authors emphasize that achieving the SDGs requires more than just technological solutions; it necessitates strengthening the institutions that govern and manage digital resources. They highlight the importance of policies that promote equitable access, data security, and the integration of digital tools into public services. This approach ensures that digital advancements contribute meaningfully to sustainable development.

All in all, green digital transformation is essential for achieving a balance between economic growth and environmental sustainability. Key strategies include investing in energy-efficient digital infrastructure, implementing ethical and transparent AI systems, and leveraging blockchain for sustainable supply chains. However, success in digital sustainability requires collaboration between governments, businesses, and civil

society to ensure that digital technologies contribute to a more sustainable future.

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1. How can developing countries balance digital growth with sustainability goals?
2. What policies can incentivize the adoption of green digital technologies?
3. Should governments regulate Big Tech more strictly to ensure digital sustainability?
4. Should digital platforms provide users with energy-efficient options (e.g., lower-quality streaming for sustainability)?
5. Can blockchain adoption become cost-effective for small businesses in sustainable supply chains?
6. How can we balance big data-driven sustainability with privacy rights?

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Session 14: Concluding Remarks

The final session provides an opportunity to review and consolidate key concepts explored throughout the course. This session serves as a comprehensive summary, emphasizing the frameworks for understanding and managing technological innovation and information within the digital economy.

Rather than simply revisiting topics, this session focuses on deeper analysis, highlighting key connections and insights that reinforce learning. It also considers the real-world implications of the course material and explores potential future research directions in the field.

The objective is to facilitate a structured reflection on the topics covered, encouraging a broader understanding of digital innovation. This concluding session aims to provide a strong foundation for further exploration and critical engagement with the evolving digital landscape.

Final-Exam

Final-exam covers materials discussed in Session 8 to Session 14. This exam tests the students' understanding of digital platform, financial technology, artificial intelligence and machine learning, data and surveillance, including post-truth and disinformation, as well as digital sustainability.

As with the midterm exam, the focus is not on memorization but on **demonstrating comprehension** of fundamental concepts and their **practical applications**. The exam will evaluate the ability to analyze, interpret, and apply course materials within real-world contexts.

8 Frequently Asked Questions:

Q: Is this a difficult class?

A: This class is rigorous and fairly demanding. I have high expectations for you. I have carefully designed your experience in this class to be interesting and engaging, and we will cover a lot of material. It is critical that you do not fall behind. You should email me the moment you feel you are struggling in this class.

Q: How can I make the most of lectures?

A: Lectures are commonly used to provide an overview of a subject and/or deliver detailed information about it. In the first case, you need to fill in the details, while in the second case, you need to provide the background. Lectures usually offer valuable resources by synthesizing the views of multiple researchers and complementing them with new and unpublished information.

To make the most of lectures, you should familiarize yourself with the course material and read before attending. During the lecture, listen actively and focus on the structure of the content. Your ability to listen effectively will improve with experience. At the same time, take notes in your own words and keep them concise. Avoid writing excessively detailed notes. Use your own style—such as abbreviations, spacing, highlighting, colors, images, and handouts—and organize them to your liking.

Sometimes you might miss key points because your attention strays, but do not fall behind. Do not be shy or afraid to follow up after lectures. Use seminars to clarify and discuss material. Review your notes if necessary and compare them with another student's. Reading assigned materials and watching course videos will help you keep up.

Q: How to make this course enjoyable?

A: Get obsessed with a topic and start asking questions. This is probably the best time in your life to accumulate as much knowledge as possible before work and family commitments begin to take priority. Find something that excites you. Discover ideas that make you so enthusiastic you cannot sleep. If a field does not yet exist around an idea you are drawn to, that might be a very good sign.[13]

Learn to think original thoughts. Nurture your curiosity. Most people do not fully understand how things are defined or how they work, and many commonly accepted answers fall apart under closer scrutiny.[14] The obvious is often unnoticed until someone expresses it simply.[15] Be skeptical when people talk about something as if it is obvious—few things in science are, at their core.

Q: What if my team has dysfunctional membership?

A: I may collect peer feedback on team members' relative performance. **Warning**: In extreme cases where I determine that a team member contributed very little, I reserve the right to assign an "**E**" on

[13] Isaac Newton's Cambridge notebooks from his *Annus Mirabilis* are excellent in this regard. He has a page filled with seemingly silly questions. At the age of 21, alone in his college dormitory, he obsessively covered notebooks with questions like "What is heat?", "Why do things stick together?", and "What is light?".

[14] To test this hypothesis, try asking an adult why the government prints money or how the banking system works.

[15] Alexander Grothendieck, one of the most influential mathematicians of the 20th century, was famously confused in college by the concept of volume. Though it is a simple idea taught in high school, he struggled with the conventional explanations that most students accept without question. He later made some of the most important mathematical advances of the 20th century.

the project to that person.

Q: Will we have quizzes?

A: We will have quizzes only if I determine that students are not keeping up with the class or are not participating and contributing enough. If I do give a quiz, it will become part of the class participation grade.

Q: Will I have to do homework not mentioned in this syllabus?

A: Probably not. If I do assign and collect homework, it will become part of the participation grade. You may also be asked to speak on the topic in the weekly group assignment. There will be readings most nights, as well as some videos to watch.

Q: I am interested in coding and want to learn more. What should I do?

A: Build something excellent. Since you have more time now than you ever will, start working on a side project. Write a script. Create a website. Whatever it is, just start. You are currently in college.[16] You have at least one or two years of freedom to do something meaningful. Use this time to pick a significant project and make real progress. Since we are mostly studying from home, your time is even (almost) completely your own. You can spend 40+ hours a week learning and doing original research, uninterrupted. When you start working or have a family, you may lose this free time.

Pick one project and work on it for at least a year. Distinguish between projects "**for show**" and work that you truly find meaningful and original. To get started quickly, focus on subjects that do not require spending money or buying expensive equipment, such as writing, design, coding, and programming. Be persistent, and do not be afraid to **show off** your work. Remember, the time you have now is incredibly valuable.

The best people are often somewhat embarrassed by their own successes and immediately refocus on the next goal, driven by a desire not to dwell on past achievements. Be that person. Do something significant with your life. Significance does not come from collecting badges on your LinkedIn profile or gaining thousands of new followers on social media. True significance comes from making a meaningful, positive impact.

Learn to get work done, even when you do not feel like it at first. Identify which actions create a **flywheel effect** (such as positive reinforcement from others or the successful completion of enjoyable tasks) that will motivate you to pursue your path. Carefully design systems for yourself. If there is an important goal you want to achieve, ensure that the clear-eyed version of yourself sets up a system so that a later, less motivated version of yourself will still follow through.[17]

Q: How do I deal with lots of the hard stuff?

A: At times, college can feel quite torturous. You may experience depression, anxiety, or loneliness—especially during this pandemic. You are not alone. Find friends. Seek out places where you can meet people who are as driven as you are. Being around optimistic, motivated, intelligent peers is like intellectual rocket

[16] Appreciate that you are in such a privileged situation. People will not expect too much from you. Instead, they will likely give you many excuses and permissions to explore different things.

[17] You may feel extreme motivation after watching movies or some random Korean drama, but at the 11th hour, you may get bored and frustrated chasing down an abstract programming bug.

fuel. Read about people you admire and relate to. Biographies are a great way to journey through life with some of the most interesting people in history. In almost all cases, things will get better, and you will make it through. **It always gets darkest before dawn**.

Build a network of people you will work with for the rest of your life. This will be especially useful after you graduate and return to your hometown. Read about the X Club[18] and the PayPal Mafia[19]. Optimism, ambition, and genuine kindness are valuable attributes in these types of groups. A great way to start is by setting up a recurring dinner club with 5-6 people or a chat group. Have fun with your friends. Go to the beach together, light a bonfire, and talk about ideas. Camp and hike together. Share life stories. Bake cookies and watch movies in your room. Build something together. Conduct experiments at home. Living with a great group can be truly life-changing.

Do not rely too much on being young or being a student. **This is a finite resource**. People may be kind to you because you are at a particularly vulnerable stage of life, but if you depend on this, you may find yourself psychologically unprepared when you are an adult and/or realize you are no longer a student. On the other hand, you live in the 21st century, and the Internet is at your fingertips. Let that be a reminder of what is possible and how little effort it takes to ignite success in your own life. Do not worry too much. Focus on finding meaningful work, mentors who value your contributions, books that inspire you, and peers who challenge and motivate you. There has never been a better time to be an ambitious student.

Q: Why this syllabus is so long?

A: I want to be as transparent as possible with my students. From the beginning of the semester, I want to clearly communicate almost everything— from the course's core concepts and philosophy to the expectations I set for my students. Due to its length, I suggest printing this syllabus and keeping it as a guide throughout the semester.

Q: Are there opportunities for bonus points in this class?

A: We may have bonus opportunities in this class if your submitted work is truly top-notch and exceeds expectations.

Q: I have completed the class. What's next?

A: I have developed a series of videos to provide you with a conceptual framework and a starting point for understanding and managing innovation in the digital economy. These videos cover topics such as how to build an intelligent society, how to raise awareness of digital innovation, and, more importantly, how to make us more educated and empowered.

However, this does not mean we should stop here. Instead, it should raise more questions than answers. For example: What defines a human being? If reverse engineering is possible, should we "create" (or recreate) humans? We realize AI has some form of immortality—should we "kill" them? Who determines the fate of humanity and the universe? Or... are we becoming God?

[18] Take a look at `https://hekint.org/2020/01/08/the-x-club/`.

[19] Read the story at `https://www.businessinsider.com/meet-the-paypal-mafia-the-richest-group-of-men-in-silicon-valley-2014-9`.

The Wisdom of Imam Malik

Knowledge does not consist in narrating much. Knowledge is but a light which Allah places in the heart

At its core, Imam Malik distinguishes between *ilm al-zahir* (external knowledge) and *ilm al-batin* (inner knowledge). The external accumulation of facts, narrations, and textual knowledge does not, in itself, constitute true wisdom. Instead, real knowledge is an experiential and transformative reality, one that is not merely retained in the intellect but is illuminated within the heart.

From a modern epistemological perspective, this aligns with the distinction between propositional knowledge (knowledge that something is the case) and experiential knowledge (knowledge gained through direct experience). Imam Malik implies that knowledge must be internalized, shaping the essence of a person rather than just existing as an external repository of information. He suggests that true knowledge is a divine light—an awakening within the soul rather than just an accumulation of texts and traditions.

This statement resonates deeply with transcendentalist thought: knowledge is not merely an academic pursuit but a spiritual unveiling—a *nur* (light) that God bestows upon those who are spiritually receptive. This aligns with Sufi thought, where knowledge (*ma'rifa*) is not acquired solely through books or scholars but through divine inspiration and purification of the soul.[a]

Imam Malik's distinction between mere narration and true knowledge underscores a fundamental flaw in purely empirical or memorization-based learning. A person may memorize thousands of narrations, laws, or facts, yet remain ignorant of their deeper meaning. Logical reasoning suggests that data alone is insufficient for true understanding. For example, a vast library of books does not make one wise—it is the ability to synthesize, internalize, and apply that makes knowledge meaningful. Similarly, artificial intelligence can process enormous amounts of information, yet it lacks true comprehension—because it does not experience the enlightenment of knowledge.

Imam Malik's words suggest that knowledge is not solely acquired through human effort but is ultimately a gift from God. This view resonates with Islamic theology, where guidance (*hidayah*) and understanding are bestowed by Allah upon those who seek truth sincerely.

The Quran states: "*And We have taught him knowledge from Us.*" (18:65) This indicates that divine wisdom is not merely acquired but granted by God. The Prophet Muhammad (peace be upon him) also emphasized this when he said: "*Whoever acts upon what he knows, Allah will grant him knowledge of what he does not know.*" (Hadith)

Thus, in an age of overwhelming information but limited wisdom, Imam Malik's wisdom serves as a call to seek knowledge not just intellectually but spiritually, morally, and transcendently. His words offer several lessons:

- True education should focus on wisdom, not just information.
- Knowledge should transform character, not just fill memory.
- Divine guidance plays a crucial role in deep understanding.
- A humble and purified heart is more important than sheer academic achievement.

[a] Al-Ghazali, one of the greatest Islamic philosophers, argued that rational knowledge is limited without divine illumination. In *Ihya Ulum al-Din*, he states that real understanding comes when the heart is cleansed from worldly distractions, allowing divine wisdom to enter.

Instructor Bio

I am a lecturer and faculty member at the Department of Management, Faculty of Economics and Business, Universitas Gadjah Mada. I joined the school in July 2016, and since then, I have worked with other lecturers and faculty members, both within the Department of Management and in other departments or faculties/schools, in various capacities.

I earned my PhD in Management from the London School of Economics and Political Science and an MSc in the Management of Science, Technology, and Innovation from the University of Manchester. I lived in the UK for more than five years. Previously, I was a lecturer and researcher at Prasetiya Mulya Business School, Jakarta.

My scholarly work primarily focuses on technological innovation and dynamic corporate strategy. I have published numerous papers in key international journals, including *Electronic Commerce Research and Applications*, *International Journal of Bank Marketing*, *Journal of Science and Technology Policy Management*, *International Journal of Quality and Service Sciences*, and *Journal of Islamic Marketing*, among others. I have been a member of the Academy of Management (AOM) and the British Academy of Management (BAM) since 2016, as well as the Association for Information Systems (AIS) and the Strategic Management Society (SMS).

I have been involved in numerous research and consulting projects at the strategic level, including for the Ministry of Communication and Information Technology, the Indonesia Investment Coordinating Board (BKPM), PT Angkasa Pura Services (APS), PT Bank Pembangunan Daerah Jawa Tengah (Bank Jateng), and PT Kereta Commuter Indonesia (KCI), among others. I also regularly write for newspapers and magazines—such as *Bisnis Indonesia*, *Jawa Pos*, *Kontan*, *Republika*, *SWA*, and *The Jakarta Post*—and have published several books on international business and R programming.

I recently completed my assignment as an expert staff member for the Minister of Transportation, focusing on digital transformation in the transportation sector. Previously, I also worked at the Quality Assurance Unit, Faculty of Economics and Business, Universitas Gadjah Mada.

Beyond teaching and research, I am an avid mid-handicap golfer and a passionate runner.

Teaching Philosophy

I do not like to teach. Even when I do, I do not.

One thing that annoys me is when I am presenting a difficult concept, and someone raises their hand. Their question is not about clarification. Instead, they want to know if it will be on the exam. It seems to me that most students are suffering from **bulimic learning**—they study for exams just to pass, get a diploma, secure a good job, and hopefully, someday, have a decent life—only to find, in middle age, that it was all a waste of time and their life is still miserable.

Instead of learning to provide the right answers, students should cultivate genuine humility and curiosity for life and become grounded in their deepest identity. This, in my opinion, is a priceless quality of education—one that is often lacking in today's factory-like education systems. Education should develop human qualities and curiosity that prepare students for future work and life—far better than purely transactional training.

I also believe that students should study things because they are difficult. They should experience epiphanies. Their education should be a process of broadening their horizons rather than walking a narrow path. They should learn because knowledge is worth acquiring, not because it is merely a hurdle to clear. Everyone's education should be an ongoing, lifelong process. As Victor Weisskopf once said, "It is not important what we cover in class; what matters is what you discover."

The role of the instructor is no longer to lecture students for hours. Instead, the instructor should provide direction and guidance and ensure that help is available. Students will face various problems to solve and learn the relevant skills and knowledge necessary to solve these problems creatively. I fully expect this approach to lead to a high independent success rate without excessive instruction. Using this approach, course objectives and learning goals must still be met, but how they are achieved should be flexible.

More importantly, students need to make a plan, act on it, write their own journals, analyze whether the plan worked, and report their findings. Then, the lessons learned should be shared with the rest of the class. If learning remains localized, teaching remains localized. Every student should have the opportunity to become a teacher—at least for themselves. "If you truly want to master something," Richard Feynman said, "teach it." The more you teach, the better you learn. Teaching is indeed a powerful tool for learning.

By doing so, I hope that you will eventually experience the complex pleasure of finally understanding something you once assumed was beyond you. There is probably no greater pleasure than the ability to read between the lines and grasp hidden meanings. And that is just the beginning.

I wish you all the best and hope that you enjoy the course.
I am excited to offer you this unique course and thrilled that you are taking advantage of this great opportunity—one that is certain to give you a competitive advantage in the future.

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Foundational Concepts on Digital Management[20]

Debates on Organization, Past and Present

Adam Smith's The Wealth of Nations (1776) introduces the division of labor as a fundamental principle of economic progress. He argues that breaking down production into specialized tasks increases efficiency, productivity, and economic growth. His famous example of a pin factory illustrates how specialization enhances output through:

- Improved dexterity of workers
- Time saved in switching tasks
- The development of specialized tools and machinery

Smith sees the division of labor as a driver of prosperity, but he also acknowledges its downsides, such as the potential for monotonous and intellectually stultifying work. Nevertheless, his framework laid the foundation for modern management and industrial organization, influencing later theories on productivity and efficiency.

On the other hand, Karl Marx, in Capital, Volume One (1867), critiques Smith's idealized view of the division of labor. While acknowledging its efficiency, he argues that it leads to worker alienation and exploitation in capitalist societies. In the chapters "Co-operation" and "Division of Labor and Manufacture," Marx highlights that:

- Workers lose autonomy and control over their labor, becoming mere appendages of machines.
- Capitalists benefit disproportionately, as they extract surplus value from labor.
- The division of labor reinforces class divisions, as workers are separated from the means of production.

Unlike Smith, who saw specialization as a path to wealth, Marx viewed it as a mechanism for deepening social inequalities. His critique remains relevant in contemporary discussions on labor relations, workplace power dynamics, and economic structures.

Fast forward to today, Fleming (2019) revisits the debate on labor and organization by examining how automation and robotics affect contemporary workplaces. His main arguments include:

- Robots do not inherently "steal" jobs but reshape labor relations and organizational structures.
- Automation can reinforce managerial control rather than liberate workers from drudgery, echoing Marx's concerns.
- The rise of AI-driven decision-making shifts power dynamics, potentially making organizations less democratic.
- Workers may face new forms of alienation, not just from their labor but also from decision-making processes, as machines take over cognitive and managerial tasks.

[20]The following reading materials were taken from Daniel Beunza's SMM745 Digital Management course.

Fleming challenges the optimistic narrative that technology will always create new opportunities, arguing that organizations must critically assess the implications of automation. This aligns with Marx's concerns about capitalist control, while also acknowledging Smith's insights into efficiency and technological advancement.

By comparing these perspectives, we see recurring tensions in organizational theory:

- Efficiency vs. Alienation – Smith's efficiency-focused view vs. Marx's critique of worker alienation.
- Technological Progress vs. Power Dynamics – Both historical and modern debates recognize that technology can increase productivity while also consolidating power in the hands of elites.
- Control vs. Autonomy – Whether in 19th-century factories or 21st-century AI-driven firms, organizations shape how workers experience autonomy, creativity, and economic security.

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1. How do Adam Smith's and Karl Marx's views on the division of labor compare, and how are their ideas still relevant in today's digital economy?
2. In what ways does automation challenge or reinforce historical theories of cooperation and labor division?
3. Fleming (2019) suggests that robots might not replace jobs but transform them. How do you see this playing out in different industries?

- Marx, Karl 1947 [1867] "Co-operation" and "Division of Labor and Manufacture," chapters XIII and XIV in *Capital, Volume One*, reprinted in The Marx Engels Reader, pp. 385-402, 2nd edition. New York: W.W. Norton & Company.
- Smith, A. (1991) [1779]. "Of the Division of Labor" and "Of the Principle Which Gives Occasion to the Division of Labor," chapters I and II in Book I, *The Wealth of Nations*.
- Fleming, P. (2019). Robots and organization studies: Why robots might not want to steal your job. *Organization Studies, 40(1)*, 23-38.

Hierarchy and Its Role in a Digital Context

Hierarchy has long been a defining feature of organizational structures, with Max Weber's concept of bureaucracy providing a foundational understanding of its function. However, in a digital context, the role of hierarchy is evolving due to technological advancements, changing workplace cultures, and the rise of online communities.

Max Weber (1921) conceptualized bureaucracy as the most efficient form of hierarchical organization, characterized by:

- Formal rules and procedures ensuring consistency and predictability.
- A clear chain of command where authority is distributed through a structured hierarchy.

- Merit-based advancement to promote efficiency and rational decision-making.

Weber's model remains influential in traditional corporate structures, government institutions, and even digital enterprises. However, in a digital era marked by decentralized technologies, remote work, and agile management, Weberian hierarchy faces challenges.

On the other hand, Gideon Kunda (2006) explores how hierarchy operates within high-tech corporations, where formal structures often coexist with strong corporate cultures. His key observations include:

- Culture as a form of control – Rather than relying solely on rigid hierarchies, high-tech firms foster an internal culture that subtly enforces commitment and conformity. High-tech firms cultivate a strong internal culture that shapes employee behavior and commitment without relying on rigid top-down control.

  For example: Google's "Do What You Love" Culture. Google promotes an open and innovative workplace, with perks such as free meals, wellness programs, and flexible work arrangements. However, this culture also reinforces long working hours and deep commitment to the company, as employees feel personally invested in the mission. The idea of being part of an elite, high-performance culture encourages self-discipline, reducing the need for direct managerial oversight. Thus, control is exercised through cultural expectations rather than strict rules.

- Fluid hierarchies – While digital firms often appear less hierarchical, authority is still exercised through cultural norms and informal power structures. While many digital firms claim to have flat structures, informal hierarchies persist through expertise, networks, and influence rather than formal job titles.

  For example: Open-Source Software Development (e.g., Linux, GitHub Projects). Open-source communities often claim to be decentralized and democratic. However, authority is still exercised by core contributors or project maintainers who have more influence over key decisions. While anyone can contribute code, a small group of long-term contributors ultimately decides what gets merged or rejected. Thus, hierarchy exists but is based on reputation, technical expertise, and influence rather than formal positions.

- The paradox of autonomy – Employees in high-tech environments are given creative freedom but are also subtly disciplined through expectations of loyalty and innovation. Employees in high-tech firms are given freedom to innovate but are also subtly disciplined through cultural and organizational expectations.

  For instance: Tesla's "Hardcore" Work Culture. Tesla employees are encouraged to be independent problem-solvers and take ownership of projects. However, Elon Musk has openly stated that he expects extreme dedication, long hours, and a "hardcore" work ethic from employees. Employees may feel empowered, but they also experience pressure to overwork and align with Musk's vision to be seen as valuable contributors.

This perspective suggests that even in seemingly flat organizations, hierarchy persists in more nuanced forms, often embedded within corporate culture rather than formal structures.

Not too long ago, Robert Kozinets (2002) introduces netnography, a research method for studying online communities, revealing how hierarchy operates in digital spaces. Key insights include:

- User-generated hierarchies – Online communities, despite their open nature, develop informal leadership structures based on reputation, expertise, and influence.
- Algorithmic power – Platforms like social media and e-commerce sites introduce new forms of hierarchy through recommendation algorithms, content moderation, and digital visibility.
- Decentralization with control – While digital platforms appear decentralized, power is concentrated among moderators, influencers, and platform owners, demonstrating that hierarchy has not disappeared but rather transformed.

Kozinets' findings indicate that digital interactions are not purely egalitarian but are shaped by emerging forms of hierarchy driven by both human and algorithmic control.

Given these perspectives, hierarchy in the digital age takes on new forms:

- Hybrid structures – Companies blend traditional Weberian bureaucracy with cultural and algorithmic forms of control.
- Soft hierarchies – High-tech firms maintain authority through culture and shared values, as described by Kunda.
- Algorithmic governance – Digital platforms introduce new power structures that influence user behavior and visibility, as Kozinets' work illustrates.

Far from being obsolete, in the digital context, hierarchy persists but is less overtly bureaucratic and more embedded within corporate culture, digital platforms, and algorithmic control. While Weber's traditional bureaucracy still exists in many organizations, Kunda and Kozinets show that power and influence are now also exercised through corporate culture, community norms, and digital algorithms. Understanding these shifts is crucial for managing organizations, designing digital platforms, and navigating the complexities of authority in the digital age.

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1. How does Weber's concept of bureaucracy apply to digital organizations, especially those that claim to be "flat" or non-hierarchical?
2. Can "flat" organizations truly exist, or do informal power structures always emerge?
3. Kunda (2006) describes organizational culture as a form of control. How does this manifest in tech companies and digital startups today?
4. In what ways do high-tech firms use organizational culture to ensure commitment and control, rather than formal hierarchy?
5. How does netnography (Kozinets, 2002) reshape our understanding of authority and influence in online communities?

- Weber, Max. 1968 [1921]. "Bureaucracy." Pp. 956- 963 in *Economy and Society, Vol. 1*. Berkeley, CA: University California Press.

- Kunda, G. 2006. Ch. 1 "Culture and Organization" in *Engineering Culture: Control and Commitment in a High-Tech Corporation*. Philadelphia, PA: Temple University Press.
- Kozinets, R.V., 2002. The field behind the screen: Using netnography for marketing research in online communities. *Journal of Marketing Research, 39(1)*, pp.61-72.

The Human Relations School and Start-Up Culture

The Human Relations School emerged as a response to the rigid, efficiency-driven approaches of classical management theory. It emphasized the importance of social factors, employee well-being, and motivation in organizational success. This perspective is particularly relevant in the context of start-up culture, where collaboration, adaptability, and a sense of shared purpose are often prioritized.

Charles Perrow (1986) describes the Human Relations School as a shift away from Taylorism's mechanical view of work. Instead of seeing employees as mere extensions of machines, this model recognizes that:

- Social relations influence productivity – Informal networks and team dynamics matter as much as formal structures.
- Job satisfaction drives performance – Workers are more productive when they feel valued, engaged, and included.
- Leadership is about facilitation – Effective leaders focus on motivation, communication, and fostering a positive work environment rather than strict supervision.

Application in Start-Up Culture

- Flat organizational structures – Many start-ups minimize hierarchical barriers, encouraging open communication and collaboration.
- Team bonding and shared mission – Companies like Airbnb and Spotify emphasize creating a strong, value-driven culture to enhance motivation.
- Flexible work environments – Many start-ups adopt policies like remote work, casual office settings, and flexible hours to boost well-being and creativity.

However, Perrow also critiques the Human Relations Model for romanticizing workplace harmony and underestimating power dynamics. While start-ups promote collaboration, founders and investors often retain significant control, and employees may face hidden pressures despite the informal atmosphere.

Axel Bruns (2008) introduces the idea of "produsage", which describes the blending of production and consumption in digital environments. In online communities like Wikipedia and open-source projects, users are both creators and consumers, challenging traditional organizational roles.

Relevance to Start-Ups

- Crowdsourcing and open innovation – Companies like GitHub and Reddit rely on user contributions for value creation, aligning with the produsage model.
- Decentralized decision-making – Many start-ups adopt agile methodologies, where employees contribute beyond rigid job descriptions, mirroring the fluid roles in produsage communities.

- Community-driven product development – Platforms like YouTube and TikTok depend on user-generated content, much like Bruns' description of produsage in digital spaces.

Yet, despite these decentralized and collaborative ideals, corporate interests still dominate. Even in start-ups that embrace open participation, venture capital funding, investor expectations, and monetization strategies ultimately dictate decision-making.

Both the Human Relations Model and Bruns' produsage concept highlight the evolving nature of work in start-ups:

- Empowerment and autonomy – Employees and users have more creative control than in traditional firms.
- Blurred organizational boundaries – The rise of remote teams, gig workers, and user-driven platforms challenges traditional employment structures.
- Challenges of hidden control – Despite appearing decentralized, start-ups often concentrate power among founders, investors, and key decision-makers.

Start-ups often embrace Human Relations principles by fostering collaboration and well-being, while also integrating produsage elements through open innovation and user-driven content. However, power and control remain central—despite the emphasis on autonomy, decision-making is often guided by leadership and financial imperatives rather than pure employee or community contributions. This creates a tension between the ideal of flat, collaborative workplaces and the reality of hierarchical, profit-driven structures.

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1. How do the principles of the Human Relations School apply to modern startup culture?
2. Bruns (2008) introduces the idea of "produsage" in digital spaces. How does this change traditional employer-employee dynamics?
3. What are the potential downsides of a culture that prioritizes employee happiness and engagement above all else?
4. How does the paradox of autonomy in digital firms shape employee motivation and job satisfaction?

- Perrow, C. (1986). "The Human Relations Model," Chapter 3 in *Complex Organizations*. New York: McGraw-Hill.
- Bruns, A. (2008). *Blogs, Wikipedia, Second Life, and Beyond: From Production to Produsage* (pp. 9-36). New York: Peter Land.

Innovation and Organizational Structure

The relationship between innovation and organizational structure has long been debated in management and organizational theory. Different structures enable or constrain innovation in unique ways, influencing how firms adapt to technological change and competitive environments.

Mechanistic Structures (Stable Environments)	Organic Structures (Dynamic Environments)
Rigid hierarchy and formal rules Clearly defined roles, centralized decision-making.	**Decentralized decision-making** Encourages autonomy and collaboration.
Emphasis on efficiency and predictability Works best in stable, slow-changing industries like manufacturing.	**Flexible roles and communication** Employees adapt and innovate as needed.
Limited flexibility for innovation Employees follow procedures rather than experimenting with new ideas.	**Better suited for uncertain, fast-changing industries** Works well in sectors like technology and biotechnology.
Example: Legacy Car Manufacturers Companies like Ford and General Motors historically operated with strict hierarchical structures, ensuring mass production efficiency but struggling to adapt quickly to disruptive innovations like electric vehicles.	**Example: Tech Startups (Google, Spotify, Tesla)** Firms like Google and Spotify adopt organic structures, using cross-functional teams, agile workflows, and an open culture to foster rapid innovation. Tesla, though more hierarchical, encourages cross-departmental collaboration for technological breakthroughs.

Table 4: Comparison of Mechanistic and Organic Organizational Structures

Burns and Stalker (1961) argue that an organization's structure should align with its environmental conditions to enable innovation. They distinguish between:

Burns and Stalker argue that organic structures are better for innovation, as they allow companies to quickly respond to new opportunities and encourage knowledge-sharing across teams.

On the other hand Catherine Turco's The Conversational Firm (2016) explores how modern companies, particularly in the digital economy, rethink bureaucratic structures while still maintaining some level of hierarchy.

- Flattened hierarchies, but not entirely "flat" – Digital firms claim to have open, participatory cultures but still maintain strategic decision-making authority at the top.
- Social media-inspired communication – Internal platforms like Slack, Yammer, and company-wide Q&A sessions allow employees to engage with leadership more openly.
- Transparency vs. managerial control – While conversations are encouraged, ultimate decisions are still centralized.

For example, Twitter and the role of internal transparency. Twitter's corporate culture (pre-Musk era) encouraged employees to openly question leadership and propose ideas in company-wide Slack channels and town halls. However, while this created a sense of openness, executives still had the final say, demonstrating a balance between open communication and centralized authority.

Aspect	Burns & Stalker (1961)	Turco (2016)
Core Idea	Structure influences innovation	Social media reshapes organizational communication
Mechanistic vs. Organic	Mechanistic = rigid, Organic = flexible	Modern firms blend hierarchy with participatory communication
Decision-Making	Decentralized in organic structures	Centralized but with open conversations
Best Fit for Innovation?	Organic structures allow for faster adaptation	Digital-era firms mix openness with control

Table 5: Comparison of Organizational Theories

As shown in Table 5, Turco's work updates Burns & Stalker's framework by showing how even firms that claim to be "organic" still retain elements of hierarchy, especially when making strategic decisions.

Implications for Innovation in Organizations

- Traditional firms in stable industries may still benefit from mechanistic structures, but they risk falling behind in fast-moving markets.
- Start-ups and digital firms need organic structures, but they also rely on a "conversational" approach to maintain alignment as they scale.
- Hierarchy is not disappearing, but evolving – even the most innovative firms balance openness with executive decision-making authority.

For example, hybrid structures at Amazon. Amazon operates both mechanistically and organically. Warehouse operations are rigid, mechanistic, and efficiency-driven. AWS (Amazon Web Services) and innovation teams function with more autonomy and flexibility. Internal platforms allow employees to challenge ideas, but Jeff Bezos and leadership ultimately drive decisions.

Burns and Stalker's organic model remains a strong framework for innovation, but as Turco shows, firms today use "conversational" methods to blend openness with hierarchy. Instead of completely abandoning bureaucracy, modern organizations strategically use digital tools to flatten hierarchies while maintaining centralized control over key decisions—too rigid, and they stifle creativity; too open, and they risk inefficiency.

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1. Burns and Stalker (1961) describe mechanistic vs. organic structures. How do modern tech firms balance these two approaches?
2. How does social media-driven decision-making (Turco, 2016) impact traditional notions of bureaucracy?
3. What role does company structure play in fostering or hindering innovation?

- Burns, T., & Stalker, G. (1961) *The Management of Innovation*, chapters 1 and 2. London: Tavistock.
- Turco, C. (2016). *The Conversational Firm: Rethinking Bureaucracy in the Age of Social Media* (pp. ix-27). New York: Columbia University Press.

Institutional Theory and Digital Culture

Institutional theory explains how organizations become similar over time due to pressures from their environment. In their foundational work, DiMaggio and Powell (1983) introduce institutional isomorphism, describing how organizations conform to industry norms and expectations (see Table 6). In the digital age, Barberá-Tomás et al. (2019) extend this idea by exploring how organizations use digital media—particularly visuals and emotional-symbolic work—to shape institutional change.

DiMaggio and Powell (1983) argue that organizations in the same field tend to become increasingly similar due to three types of isomorphic pressures:

Isomorphism Type	Definition	Example in Digital Culture
Coercive	Pressure from regulations, laws, or dominant organizations	Tech firms adopt **GDPR compliance** due to European regulations
Mimetic	Organizations copy industry leaders in uncertain environments	Start-ups imitate **Google's open-office culture** and free meals
Normative	Professional norms and education create shared industry practices	Digital marketers adopt **SEO best practices** taught in business schools

Table 6: Types of Isomorphism in Digital Culture

How Isomorphism Manifests in Digital Culture

- Tech Startups and Venture Capital Pressure (Coercive) – Many startups adopt Silicon Valley norms (e.g., rapid scaling, pivoting) because investors expect them to.
- The Rise of Remote Work (Mimetic) – Companies like Twitter and Airbnb went fully remote, leading others to follow.
- Digital Platform Design (Normative) – Apps follow a standardized UX design, influenced by Apple, Google, and industry conferences.

Digital culture does not eliminate institutional pressures; instead, it accelerates organizational conformity by spreading norms and expectations faster.

On the other hand, Barberá-Tomás et al. (2019) explore how organizations use visuals and emotions to challenge or reinforce institutional norms, especially in social entrepreneurship.

- Social Movements on Social Media – Companies use hashtags, infographics, and viral videos to drive institutional change (e.g., #MeToo, Black Lives Matter). Tesla & Elon Musk's Twitter

Presence – Musk uses memes and provocative tweets to influence public perception and disrupt industry norms.

- Brand Activism (e.g., Patagonia, Nike) – Firms use storytelling and imagery to position themselves as socially responsible. Airbnb's Visual Marketing for "Belonging" – Their advertising uses emotional storytelling and aspirational imagery to promote a sense of global community.
- Crypto and Web3 Narratives – Visuals (e.g., futuristic branding, decentralized logos) convey a counter-institutional message to challenge traditional finance. Apple's Iconic Product Reveals – Apple uses cinematic product launches to reinforce its status as an industry leader.

In the digital era, organizations use visuals, storytelling, and emotions to shape institutional legitimacy, reinforcing or challenging dominant norms.

Concept	Traditional Institutional Theory	Digital Culture Evolution
Conformity (Isomorphism)	Organizations copy each other due to industry pressures	Digital platforms spread **best practices instantly**, making conformity even faster
Institutional Change	Organizations challenge norms through activism and lobbying	Digital culture enables **viral movements** that disrupt institutions (e.g., GameStop & Reddit's WallStreetBets)
Symbolic Power	Physical symbols (e.g., office buildings, formal attire) shape legitimacy	Digital firms use **memes, branding, and viral content** to establish influence

Table 7: Traditional Institutional Theory vs. Digital Culture Evolution

Institutional theory still applies in the digital age, but the mechanisms of influence have evolved (see Table 7). Digital culture accelerates isomorphism, as companies quickly adopt tech norms. Organizations use visuals and emotions to build legitimacy, reshape industries, and challenge traditional power structures. While traditional institutions (e.g., regulations, industry standards) still exert control, social media, viral content, and digital branding offer new ways to influence institutional change.

Thus, institutions are not disappearing in the digital age—they are transforming, adapting, and sometimes being disrupted in unprecedented ways.

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1. How does institutional isomorphism (DiMaggio & Powell, 1983) influence how digital companies evolve?
2. How do social entrepreneurs use visuals and emotion (Barberá-Tomás et al., 2019) to legitimize their missions?
3. To what extent does digital culture enable or resist institutional pressures?

- DiMaggio, Paul J. and Walter W. Powell. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields, *American Sociological Review, 48*, 147-160.
- Barberá-Tomás, D., Castelló, I., De Bakker, F.G. and Zietsma, C., (2019). Energizing through visuals: How social entrepreneurs use emotionsymbolic work for social change. *Academy of Management Journal, 62(6)*, pp.1789-1817.

New Industry Emergence and Organizational Ecology

The emergence of new industries is a complex process influenced by both ecological selection mechanisms and social networks that shape organizational survival.

Hannan and Freeman (1977) propose that organizations exist in a competitive "population ecology", where survival depends on environmental fit and adaptation (Table 8).

Concept	Definition	Example in New Industries
Variation	Many different organizations emerge in a new industry	Startups experimenting with **AI, blockchain, electric vehicles**
Selection	The environment favors certain organizational forms	Google & Facebook outcompeted early search engines and social networks
Retention	Successful firms shape industry norms and become dominant	Apple's App Store created **mobile platform standards**

Table 8: Key Concepts in Organizational Ecology

Implications for New Industry Emergence

- High failure rates – Most startups fail early, as the market selects only a few dominant players.
- Market niches – Some firms survive by specializing in untapped niches (e.g., DuckDuckGo in privacy-focused search engines).
- Institutionalization – Over time, dominant firms set industry standards and shape market rules.

For example, the digital streaming industry (Netflix, Hulu, Disney+) evolved through selection pressures. Stage 1 or early variation: Many companies entered (Blockbuster, RealNetworks, Netflix, etc.). Stage 2 or market selection: Streaming technology, licensing models, and customer preferences determined winners. Stage 3 or retention: Netflix set industry standards for content distribution, leading competitors to adopt similar models.

While Hannan and Freeman emphasize survival through environmental selection, Neff (2005) argues that social networks shape industry emergence, especially in creative and digital sectors.

- Networking is key – Success in digital industries depends more on social capital and collaboration than traditional corporate hierarchy.
- Project-based work dominates – Instead of permanent firms, industries evolve through freelance projects, partnerships, and temporary teams (e.g., film production, game development).

- Cultural production shifts locations – Creative industries are no longer confined to traditional hubs (e.g., Hollywood) but are distributed across digital platforms.

For instance, YouTube, TikTok, and Twitch allow content creators to bypass traditional gatekeepers (TV networks, film studios). Social capital (followers, collaborations) matters more than formal business structures. This resulted in distributed cultural production – A creator in Jakarta or Lagos can reach a global audience without relocating to New York or Los Angeles.

Theory	**Hannan & Freeman (1977) – Organizational Ecology**	**Neff (2005) – Social Networks in Digital Media**
Key Focus	Survival of firms through environmental selection	Industry evolution through relationships and collaborations
Drivers of Success	Fit with market forces and competition	Strong network ties and collaborative opportunities
Industry Type	Traditional industries (manufacturing, retail)	Digital and creative industries (media, content, startups)
Example	Tesla surviving in the EV market due to **market selection**	YouTube influencers thriving due to **network effects**

Table 9: Comparison of Industry Evolution Theories

Implications for New Industries Today

- Tech Startups Need Both Ecology & Networks – Firms must adapt to selection pressures while also leveraging network-driven opportunities.
- The Gig Economy & Project-Based Work is Expanding – Companies rely more on freelancers and collaborative networks rather than traditional employment structures.
- Digital Platforms Create New Power Structures – While decentralization allows new players to emerge, platforms like Google, Amazon, and TikTok still exert strong selective pressures over smaller firms and creators.

Example: Early AI startups varied widely (organizational ecology), but big tech firms (Google, OpenAI, Microsoft) now dominate. Smaller AI startups succeed by leveraging partnerships and open-source collaborations (social networks).

To conclude, both organizational ecology and social networks play critical roles in new industry emergence:

- Traditional survival models still apply – New firms compete, and only a few survive based on market forces.
- Digital networks reshape industry structure – Collaboration, platform ecosystems, and decentralized production influence success.
- Hybrid models dominate – Modern industries combine competitive selection pressures with network-driven opportunities, shaping the future of innovation.

New industries are not just about who has the best product—success depends on navigating both environmental selection and digital social networks.

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1. Hannan and Freeman (1977) describe organizations in terms of population ecology. How does this apply to digital startups today?
2. Neff (2005) discusses how cultural production is changing in the digital age. How do you see this shift affecting industries like journalism or music?
3. What are the key survival factors for organizations in rapidly changing industries?

- Hannan, M.T., & Freeman, J. (1977). The population ecology of organizations. *American Journal of Sociology, 82(5)*, 929-964.
- Neff, G. (2005). The changing place of cultural production: The location of social networks in a digital media industry. *The Annals of the American Academy of Political and Social Science, 597(1)*, 134-152.

Sensemaking and New Technology

Understanding new technology is not just about technical specifications—it involves sensemaking, the process by which individuals and organizations interpret and integrate technology into their work.

Karl Weick (1991) argues that new technologies create uncertainty (equivoque) and require ongoing interpretation. Unlike stable, well-understood tools, emerging technologies (e.g., AI, blockchain, IoT) are ambiguous—people do not immediately understand how to use them or what their impact will be.

Concept	Definition	Example in New Technology
Equivoque (Ambiguity)	New technologies don't have fixed meanings; they must be interpreted	Blockchain started as a financial system (Bitcoin) but evolved into NFTs and smart contracts
Enactment	Users shape technology's meaning by interacting with it	AI in business: first used for automation, then personalized customer service
Retrospective Sensemaking	People understand technology **after** they use it	The internet was initially seen as an academic tool but later became essential for commerce and communication

Table 10: Key Concepts in Weick's Sensemaking Approach

Implications for Technology Adoption

- Tech failures often come from misinterpretation – Companies misunderstand how to integrate new tools (e.g., failed blockchain projects).

- Users redefine technology through experimentation – TikTok was originally a music app (Musical.ly) but became a global social media powerhouse due to user innovation.
- Organizations that encourage sensemaking adapt faster – Firms that invest in continuous learning outperform rigid, top-down adopters.

For example, initially, AI tools like ChatGPT and DALL·E were seen as experimental novelties. Businesses later made sense of their value: customer service, creative work, and productivity automation. Later on, companies that actively experimented (e.g., integrating AI into workflows) gained a competitive advantage.

Bruno Latour (1990) extends Weick's ideas by arguing that technology is not just a tool—it embodies social structures, power relations, and institutional norms. He argues that technology is not neutral—it reflects and reinforces social structures, power dynamics, and institutional norms. Technology embeds societal choices and values, making them "durable" over time.

Concept	Definition	Example in New Technology
Technology as Socially Constructed	Tech is shaped by human values, biases, and historical context	AI algorithms reflect the biases of their creators (e.g., racial bias in facial recognition)
Actor-Network Theory (ANT)	Technology and humans co-shape each other in networks	Social media platforms **influence and are influenced by** user behavior
Technology as Politics	Tech is embedded with power relations	Big Tech firms control digital infrastructure, shaping global policies

Table 11: Key Ideas from Latour's Work

Implications for Technology and Society

- Tech adoption is not just about efficiency—it involves power – Governments regulating Big Tech shows how digital tools shape society.
- Infrastructure choices have lasting effects – The dominance of iOS/Android defines how digital ecosystems operate.
- Bias in AI and automation reflects human biases – If unchecked, these technologies reinforce existing inequalities.

For example, platforms like Facebook, Twitter, and TikTok do not just connect people—they shape political discourse, public opinion, and economic opportunity. Algorithmic biases amplify certain narratives over others, creating echo chambers and influencing elections. Governments and regulators increasingly see platform governance as a societal issue, not just a business decision.

Implications for Today's Technology Landscape

- Organizations need structured sensemaking processes – Firms that foster internal discussions, experimentation, and adaptive strategies succeed in technological transformation.

Aspect	Weick (1991) – Sensemaking	Latour (1990) – Technology as Durable Society
How we understand tech	Tech is ambiguous and requires interpretation	Tech is shaped by societal values and structures
Who influences adoption?	Users and organizations experiment and redefine tech	Institutional forces (governments, corporations) embed power in tech
Example	People learned to use the internet as it evolved	The dominance of Big Tech reflects political and economic power
Key Insight	Organizations must engage in continuous learning to adapt to new tech	Technology is never neutral; it carries societal choices and biases

Table 12: Connecting Sensemaking (Weick) and Societal Durability (Latour)

- Regulating tech means understanding its social power – As AI and automation advance, governments and corporations must recognize their broader societal implications.
- Technology adoption must consider ethics and inclusivity – Biased tech design leads to exclusion, discrimination, and social inequalities (e.g., biased hiring algorithms).

For example, the ethical dilemmas of AI and surveillance. On one hand, there is a sensemaking challenge (Weick) – People struggle to grasp the implications of mass surveillance technology. On the other hand, there are power structures (Latour) – Governments and corporations embed AI surveillance in everyday life, normalizing privacy erosion. Hence, regulatory response – Societies debate how to balance security, innovation, and human rights.

Sensemaking and organizational adaptation are essential for navigating technological ambiguity, but we must also recognize that technology reinforces societal structures.

To thrive in the digital age, businesses and policymakers must approach new technology as both a learning process and a social responsibility. First, organizations must actively interpret and experiment with new tech rather than passively adopting it (Weick, 1991). Second, technology is not neutral—it reflects social, political, and economic power structures (Latour, 1990).

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1. Weick (1991) argues that technology is "equivocal." How do organizations interpret and make sense of emerging technologies?
2. How does Latour's (1990) perspective on technology as "society made durable" help us understand resistance to technological change?
3. Can organizations truly prepare for technological disruptions, or is sensemaking always reactive?

- Weick, K. (1991). 'Technology as equivoque: Sensemaking in new technologies'. In P. Goodman & L. Sproull (Eds.), *Technology and Organization* (pp. 1-44). San Francisco: Jossey-Bass.
- Latour, B. (1990). Technology is society made durable. *The Sociological Review, 38(1_suppl)*, 103-131.

Social Networks and Their Role in Competition and Society

Social networks shape how individuals, organizations, and societies function. Ronald Burt's (1992) theory of structural holes explains how network gaps create opportunities for brokerage and influence.

Concept	Definition	Example in Business & Society
Structural Hole	A gap between two disconnected groups in a network	A venture capitalist connects unrelated startups, creating new opportunities
Brokerage	A person or firm that connects unlinked groups, gaining access to diverse information	A consultant linking government and private sector for smart city projects
Network Constraint	The extent to which a person's connections limit access to new information	A manager in a closed corporate network misses external innovation
Competitive Advantage	Those who bridge structural holes gain power and opportunities	LinkedIn's founder (Reid Hoffman) leveraged diverse social ties to create a dominant professional network

Table 13: Key Concepts in Structural Holes Theory

Implications for Organizations and Individuals

- Brokers have more influence – People or firms connecting different industries, sectors, or social circles control valuable information flows.
- Innovation thrives at network intersections – Diverse, unconnected groups spark creative solutions (e.g., biotech firms collaborating with AI startups).
- Closed networks limit growth – Over-reliance on internal connections reduces exposure to new ideas, leading to stagnation.

For example: Silicon Valley's venture capital ecosystem. Investors like Andreessen Horowitz and Sequoia Capital act as brokers, linking startups to talent, funding, and partnerships. Structural holes between tech innovators, business leaders, and policymakers enable rapid commercialization of new technologies.

Manuel Castells (1996) expands Burt's perspective by introducing the network society, arguing that digital technologies have transformed how power and information flow globally. He argues that modern society is structured around digital networks, where power, wealth, and information are shaped by global connectivity.

Implications for Business and Society

- Traditional hierarchies are being replaced by networks – Companies must build ecosystems, not just rigid organizational structures.
- Digital power is concentrated – A few companies control data flows, raising ethical concerns about monopolies and privacy.

Concept	Definition	Example in Digital Society
Network Society	A society where social structures and power are organized around digital networks	The dominance of social media platforms in shaping global communication
Timeless Time	Digital networks collapse traditional time constraints, enabling instant transactions	24/7 global stock trading, real-time collaboration tools
Space of Flows	Economic, political, and social activities occur across decentralized digital spaces	Remote work, global e-commerce, decentralized finance (DeFi)
Power in Networks	Those who control digital infrastructures hold societal power	Google, Meta, and Amazon shape information flows and commerce

Table 14: Key Concepts in the Network Society

- Economic success depends on network position – Being well-connected in a global digital ecosystem is crucial for businesses and individuals.

For example: the rise of decentralized platforms. Blockchain-based ecosystems (Ethereum, Solana) challenge traditional financial institutions by creating decentralized financial networks. Open-source projects (Linux, GitHub) succeed through distributed collaboration, bypassing traditional corporate hierarchies.

Aspect	Burt (1992) – Structural Holes	Castells (1996) – Network Society
Focus	Individual competitive advantage through network gaps	How digital networks shape power and society
Key Idea	Brokers gain influence by bridging disconnected groups	Digital networks redefine time, space, and power structures
Who Benefits?	Individuals and firms who position themselves strategically in networks	Those who control digital infrastructure (Big Tech, platform owners)
Example	A startup founder who connects AI research with healthcare	Social media platforms influencing global elections and activism

Table 15: Comparison of Burt's and Castells' Network Theories

For Business Strategy

- Firms should position themselves as brokers – Companies that connect different industries create new markets (e.g., Tesla bridging automotive and software).
- Building network effects is key – Platforms like Airbnb, Uber, and TikTok succeed because they connect diverse user groups at scale.

For Digital Society

- Monopoly power in digital networks raises concerns – Governments debate how to regulate Big Tech without stifling innovation.

- Social movements leverage digital networks – Activism spreads faster (e.g., #MeToo, Arab Spring) but is also vulnerable to misinformation and manipulation.

To sum up, social networks shape competition, power, and innovation in both business and society. According to Burt (1992), individuals and firms can gain competitive advantages by bridging disconnected groups (structural holes). Digital influencers connect brands with niche audiences, creating new marketing channels.

Meanwhile, according to Castells (1996), the network society transforms power dynamics, concentrating influence in digital infrastructures. Influencers gain societal influence through digital platforms, often more than traditional media figures.

To succeed in the digital era, companies, individuals, and governments must strategically navigate and shape social networks—both offline and online.

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1. Burt (1992) introduces the concept of structural holes. How do these influence power and competition in digital industries?
2. Castells (1996) argues that we are in a "network society." How does this impact organizational strategy and leadership?
3. In what ways do social networks within organizations facilitate or hinder innovation?

- Burt R. (1992). *Structural Holes: The Social Structure of Competition*, Harvard University Press. Chapter 1 (The Social Structure of Competition), pp. 8-34
- Castells, M. (1996). 'Materials for an exploratory theory of the network society'. *British Journal of Sociology, 51(1)*, 5-24.

The Limits of Digital Management

As organizations increasingly rely on digital technologies for decision-making, coordination, and control, there are growing concerns about the ethical, social, and operational limits of digital management.

Shoshana Zuboff (2015) argues that digital platforms have shifted from data-driven optimization to surveillance capitalism, where firms exploit user behavior for economic and political control. She warns that surveillance capitalism—where corporations extract, analyze, and monetize personal data—creates risks for privacy, autonomy, and democratic institutions.

Implications for Digital Management

- Employee surveillance grows – Companies increasingly use AI, biometric tracking, and workplace analytics to monitor performance (e.g., Amazon warehouse tracking).
- Data asymmetry creates power imbalances – Tech firms control vast amounts of behavioral data, limiting transparency.
- Algorithmic management leads to unintended consequences – Uber and DoorDash use algorithms to manage workers, sometimes causing unfair pay distribution and burnout.

Concept	Definition	Example in Digital Management
Surveillance Capitalism	The extraction and monetization of personal data for corporate profits	Google, Meta (Facebook), and Amazon tracking user behavior for targeted advertising
Big Other	A system of mass data collection and algorithmic control that influences behavior	AI-driven hiring tools that rank candidates based on behavioral analytics
Prediction Products	Digital firms use data to predict and shape consumer behavior	Netflix and Spotify recommending content to **steer user preferences**
Loss of Autonomy	Digital surveillance limits individual freedom and decision-making	Chinese social credit systems controlling access to services based on behavior

Table 16: Key Concepts in Surveillance Capitalism

For example, companies like Amazon, Walmart, and Goldman Sachs use AI to track employee productivity. Such automated performance tracking can increase stress, discourage creativity, and erode trust in management. Surveillance tools like Microsoft's "Productivity Score" sparked backlash for monitoring keystrokes, meetings, and communication patterns.

On the other hand, Daniel Beunza (2019) examines how financial models shape behavior in Wall Street trading rooms, showing that digital management systems do not eliminate human biases, social dynamics, and ethical dilemmas.

Concept	Definition	Example in Digital Management
The Myth of Pure Objectivity	Digital models are shaped by human assumptions and biases	Financial risk models that underestimated the 2008 crisis
Moral Disengagement	Digital systems can create a false sense of detachment from ethical consequences	Traders relying on AI to make high-frequency trades without ethical oversight
Social Influence in Digital Decision-Making	Even in data-driven environments, human relationships shape outcomes	Traders adjusting strategies based on peer influence, not just algorithms
Algorithmic Fallibility	Digital models often oversimplify complex realities	AI-driven lending systems discriminating against minority groups

Table 17: Key Insights from Beunza's Work

Implications for Digital Management

- Over-reliance on models can obscure human judgment – The 2008 financial crisis was exacerbated by traders trusting flawed risk models.
- Ethical concerns arise when decisions are automated – AI-driven layoffs, performance rankings, and hiring decisions can appear "neutral" but embed biases.
- Organizational culture still matters in digital environments – Despite algorithmic tools, workplace

dynamics influence risk-taking, strategy, and ethical behavior.

For example, in 2010, there was a flash crashes, where high-frequency trading algorithms triggered a market collapse within minutes, showing the fragility of automated decision-making. Similarly, in 2021, there was a Meme Stock Mania (GameStop, 2021) – Algorithmic trading systems initially dismissed retail investors' power, misjudging the impact of social media-driven trading.

Both the 2010 Flash Crash and the 2021 Meme Stock Mania serve as stark reminders of the vulnerabilities and unintended consequences of algorithmic trading in financial markets.[21]

Aspect	Zuboff (2015) – Surveillance Capitalism	Beunza (2019) – Limits of Digital Models
Core Concern	Data-driven corporate control over individuals	The limits of financial and organizational models in digital management
Key Risk	Loss of autonomy and privacy	Over-reliance on algorithms without ethical oversight
Example	AI-based hiring tools shaping job markets	Financial risk models leading to global economic crises
Implication	Digital management must balance efficiency with ethical responsibility	Organizational culture and human judgment remain crucial despite AI-driven systems

Table 18: Comparing Zuboff (2015) and Beunza (2019)

For business leaders, ethical data governance is essential – Firms must ensure transparent AI and data practices to avoid privacy violations and algorithmic discrimination. Digital systems should augment—not replace—human judgment – AI-driven management must incorporate ethical and social considerations.

For policymakers and society, undoubtedly, regulations must address digital surveillance – The EU's GDPR and proposed AI Act aim to curb abusive data practices and algorithmic biases. Workers need protection from digital control – Discussions around algorithmic transparency, gig worker rights, and AI governance are growing.

For example, the Biden administration's AI Bill of Rights calls for greater transparency in automated hiring, credit scoring, and surveillance systems. In the same spirit, EU AI Act (2024) aims to regulate high-risk AI applications, particularly in biometric surveillance and employment decisions.

To conclude, the expansion of digital management and algorithmic control has clear benefits (efficiency, scalability) but also ethical and operational limits. According to Zuboff (2015), surveillance capitalism enables mass data exploitation, creating risks for privacy, autonomy, and democracy. Meanwhile, Beunza (2019) reminds us that digital models and algorithmic management are not infallible, as human biases, moral disengagement, and organizational dynamics still play a role.

[21] On May 6, 2010, the U.S. stock market experienced an unprecedented Flash Crash, where the Dow Jones Industrial Average (DJIA) plunged nearly 1,000 points (approximately 9%) in just minutes, before rebounding almost as quickly. This was one of the most extreme intraday market drops in history, driven largely by high-frequency trading (HFT) algorithms. Similarly, in January 2021, a group of retail investors, coordinated primarily through Reddit's r/WallStreetBets, initiated a historic short squeeze on GameStop (GME) and other meme stocks like AMC and BlackBerry. Hedge funds and algorithmic trading models, which typically relied on historical trading patterns and fundamentals, failed to anticipate the impact of social media-driven trading.

1. Zuboff (2015) critiques "surveillance capitalism." How do companies balance data-driven efficiency with ethical concerns?
2. Beunza (2019) examines Wall Street's use of models in decision-making. What parallels do you see in tech firms' reliance on AI?
3. To what extent should employees have control over their digital footprint in the workplace?

- Zuboff, S. (2015). Big other: surveillance capitalism and the prospects of an information civilization. *Journal of Information Technology, 30(1)*, 75-89.
- Beunza, D. (2019). *Taking the Floor: Models, Morals and Management in a Wall Street Trading Room*, Ch. 11, pp. 215-243.

The Future of Digital Organizing

In Chapter 11 of Digital Organizing: Revisiting Themes in Organization Studies, Plesner and Husted (2019) explore how digital technologies reshape organizational structures, work processes, and power dynamics. Their key argument is that while digitalization brings efficiency and flexibility, it also raises new challenges in hierarchy, control, and identity within organizations.

Theme	Key Insights	Future Directions
Hybrid Organizations	Digitalization blurs the lines between traditional hierarchies and network-based collaboration	Organizations will need to balance **flexibility with structure** to remain effective
Algorithmic Management	AI-driven decision-making automates control and coordination	The role of **human judgment and ethics in AI management** will be increasingly debated
Workplace Surveillance	Digital tools enhance productivity tracking but raise ethical concerns	Regulations and **worker rights in digital surveillance** will be critical topics
New Forms of Control	Power is exercised through **platforms, data ownership, and digital norms** rather than direct supervision	Future organizations may shift from **bureaucratic control to algorithmic governance**
Identity and Culture	Remote work and digital collaboration redefine professional identity	Organizations must manage **digital work culture and employee engagement**

Table 19: Key Themes and Future Implications of Digital Organizing

Traditional bureaucracies are evolving into hybrid organizations that integrate hierarchical structures with digital networks.

- Decentralized decision-making – Teams use platforms like Slack, Trello, and Zoom to collaborate across hierarchies.

- Flexible work structures – Digital platforms enable remote work, gig-based employment, and open innovation ecosystems.
- Blended authority – Leadership is not just formal (managers) but also informal and algorithmic (AI-driven performance tracking).

For example, Spotify combines hierarchical leadership with decentralized squads, tribes, and chapters to manage innovation. Employees work in cross-functional teams that self-organize while aligning with corporate strategy.

In the future, organizations will need new leadership models that balance autonomy with strategic alignment.

Furthermore, AI and machine learning are transforming management, creating algorithmic decision-making systems that replace traditional human oversight.

Aspect	Opportunities	Challenges
Efficiency	AI automates routine tasks, reducing bureaucracy	Employees may feel **disempowered** when decisions are made by algorithms
Performance Monitoring	Real-time tracking improves productivity and accountability	Excessive surveillance can create **stress and resistance**
Decision-Making	AI helps optimize resource allocation and reduce bias	Lack of transparency in **algorithmic decisions raises fairness concerns**
Scalability	AI-driven processes scale quickly across global teams	Over-reliance on AI can **reduce human creativity and judgment**

Table 20: Opportunities and Challenges of Algorithmic Management

For example, Amazon's Warehouse Management System, which is AI-driven algorithms, assign tasks, monitor performance, and automate hiring/firing based on productivity scores. While this system enhances efficiency, it has been criticized for dehumanizing work and increasing stress levels.

In the future, the debate will continue on how to integrate AI into management while maintaining fairness, ethics, and worker well-being.

As digital tools enable real-time monitoring, organizations must also navigate the fine line between efficiency and ethical concerns.

- Keystroke logging and screen monitoring – Companies track digital activity for productivity analysis.
- Biometric tracking and wearables – Used in logistics and healthcare to monitor employee movements and health.
- Data-driven performance reviews – AI evaluates emails, Slack messages, and Zoom meetings to assess productivity.

For example, Microsoft introduced a "Productivity Score" tool that measured how often employees used email, Teams, and other apps. After backlash over privacy concerns, Microsoft revised the tool to focus on organizational insights rather than individual monitoring.

In the future, we may expect stricter regulations on workplace surveillance (e.g., EU's AI Act, GDPR, and data privacy laws). Companies will also need clearer policies on digital monitoring and employee rights.

Moreover, digital organizations do not eliminate control—they transform how it operates. Instead of traditional supervision, control now happens through:

- Data ownership – Those who control data (Google, Amazon, Facebook) shape decision-making.
- Algorithmic power – AI and recommendation systems subtly influence behavior (e.g., Uber's dynamic pricing, YouTube's content curation).
- Social norms in digital spaces – Workplace culture is increasingly influenced by platform algorithms and virtual interactions.

For instance, Uber drivers technically work as independent contractors, but algorithmic incentives, pricing adjustments, and performance tracking function as hidden management tools. Drivers might have autonomy, but algorithmic nudges (e.g., surge pricing, ride acceptance rates) shape their behavior.

In the future, the shift from traditional HR policies to AI-driven employment governance will require greater transparency and worker protections.

As digital work becomes the norm, employees struggle with:

- The loss of physical workspaces – How do remote workers maintain professional identity and social bonds?
- Digital burnout – Always-on cultures make it hard to separate work from personal life.
- New leadership expectations – Managers must develop digital-first leadership skills to engage remote teams.

For example, Twitter and Facebook adopted permanent remote work policies, but employees reported weaker team cohesion, increased isolation, as well as blurred work-life boundaries. Thus, companies must actively design digital work cultures that foster engagement, inclusion, and well-being.

Key Trend	Future Considerations
AI in Decision-Making	Will AI replace middle management or augment human leaders?
Hybrid Work Environments	How will companies maintain culture and collaboration in remote work settings?
Regulating Digital Control	What legal frameworks will emerge to govern **algorithmic management and workplace surveillance**?
Digital Leadership	How will managers develop skills for leading in **data-driven, remote-first organizations**?

Table 21: The Future of Digital Organizing

The future of digital organizing will require balancing efficiency, control, and human-centered work cultures.

Plesner and Husted (2019) highlight that digitalization transforms hierarchies, management practices, and professional identities. Organizations must navigate the paradox of digital control—leveraging technology for productivity without undermining worker autonomy and ethical standards.

As we move forward, the challenge will be ensuring that digital transformation enhances, rather than diminishes, human agency in organizations.

1. How do hybrid organizations balance hierarchy with digital networks?
2. What ethical considerations should guide the use of algorithmic management in organizations?
3. How can organizations foster a digital work culture that prioritizes both efficiency and employee well-being?

- Plesner, U. & Husted, E. (2019). *Digital Organizing: Revisiting Themes in Organization Studies*, Ch. 11 "Implications of Digital Organizing", pp. 240-258

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Appendices

Ownership, Vertical Integration, and Authenticity: Taylor's Version

Taylor Swift is not just a talented musician; she is also a brilliant business strategist who has reshaped the music industry on her own terms. Her decision to re-record her albums and take full control of her career has propelled her to extraordinary financial success and established a new model for artists navigating the industry.

Re-recording Albums: A Solution to Ownership Disputes

Master ownership has long been a contentious issue in the music industry. Typically, record labels retain the rights to master recordings, limiting an artist's ability to fully control or monetize their own work. In Swift's case, when she was unable to buy back her original masters, she took a bold and strategic step—re-recording her albums under "Taylor's Version." This approach offered two major advantages:

- Financial and Artistic Control – By owning new versions of her songs, Swift could direct fans and listeners toward her re-recordings rather than the originals, ensuring that streaming revenue and sales benefited her directly.
- Devaluing the Original Masters – As fans deliberately chose to listen only to "Taylor's Version," the market value of her old masters—owned by others—declined.

This strategy has been immensely profitable. An estimated 75% of Swift's $1.3 billion fortune has been generated in the past five years, largely driven by album sales, re-recordings, and touring. Her success also demonstrates that artists can find alternative ways to reclaim ownership of their work, even when bound by restrictive contracts.

Vertical Integration: The "Taylor Inc." Model

Another defining aspect of Swift's business approach is her control over every aspect of her career. Unlike artists such as Billie Eilish, Ariana Grande, or Olivia Rodrigo, who rely on management companies and record labels to handle business affairs, Swift has built an in-house team that operates like a fully integrated corporation—what we can call "Taylor Inc." The benefits of this model include:

- Complete Control – Swift ensures that all business decisions align with her vision, without having to conform to the priorities of a record label or management company handling multiple artists.
- Loyalty and Dedication – Her team's financial success is directly tied to hers, fostering long-term commitment and loyalty. Unlike traditional management firms that juggle multiple artists, Swift's team is focused entirely on her career.
- Narrative Control – Without reliance on major record labels or external agencies, Swift can carefully manage her public image and career trajectory, which is crucial in an era where social media can rapidly shape public perception.

Authenticity as a New Currency

One of the biggest factors behind Swift's success is her intimate relationship with her fan base. In business terms, her fans are her customers, and she understands the importance of strong engagement. Some of her key fan strategies include:

- Direct Interaction – Swift actively communicates with fans on social media, fostering a deep sense of connection.
- Exclusivity and Personal Engagement – She invites select fans to her home for secret album listening sessions and even bakes cookies for them. This isn't just marketing; it creates an emotional bond that strengthens fan loyalty.
- Fan-driven Economic Power – Her fans not only ensure they stream only "Taylor's Version," but they are also willing to pay premium prices for concert tickets, merchandise, and exclusive experiences.

This level of fan engagement has been made possible by social media and streaming platforms like Spotify, which allow artists to interact directly with audiences without intermediaries. Before the digital era, this kind of relationship with fans would have been far more difficult to maintain.

Why Does the Music Industry Maintain Its Traditional Structure?

While Swift's business model has been highly successful, the traditional structure of the music industry still exists for a reason. Most artists continue to work within the established system because it provides several advantages:

- Risk Management – Record labels function like venture capital firms, investing in a large number of artists in hopes that a few will achieve major success. Not every artist has the financial backing or industry leverage to take the risks that Swift has taken.
- Operational Efficiency – Labels and management firms provide the infrastructure for recording, distribution, and marketing, allowing artists to focus solely on their music without managing business operations.
- Creative Focus – Many musicians prefer to concentrate on their art rather than deal with contract negotiations, financial management, or promotional strategy.
- High Barriers to Entry – Swift's model works because she already had financial resources, industry experience, and an established fan base. For emerging artists, building such an empire from scratch is nearly impossible without the support of a record label.

The Future of the Music Industry: Will It Change?

Swift's success may inspire more artists to demand greater control over their work or explore more independent business models. However, her model is not easily replicable for most artists. The traditional industry structure still provides significant benefits in terms of production, promotion, and distribution, especially for newer musicians.

What is undeniable is that Swift has shifted the conversation on artist rights, ownership, and control in the music industry. The "Taylor Inc." model could become a blueprint for major artists in the future,

but the conventional industry structure is likely to persist because it continues to serve the needs of most artists.

The big question remains: Is Swift's strategy sustainable in the long run, or is her success a unique result of her talent, timing, and strategic decisions?