Managing Disruptive Technologies (MDT)

Learning objectives:

Students learn tools, concepts, and ideas to understand how to manage the dynamic aspects of marketplaces enabled by digital technologies. The course focuses on the diffusion of products in markets where consumers interact through social networks and where firms provide services to multiple markets simultaneously. Through several in-class competitive games, discussions, and simulations, students understand the dynamics of multi-sided pricing and winner-takes-all markets. The course focuses on the intuition behind the best managerial practices. It also provides models to study diffusion, network effects, seeding strategies, pricing, and competition in multi-sided platforms. Firms analyzed during the course include Airbnb, Netflix, Uber, Google, Facebook, and Twitter.

Course statement and motivation:

We live in a rapidly changing world dominated by a myriad of technology-enabled disruptions. Consequently, there is a strong need for individuals that understand the complex ways in which these innovations affect marketplaces over time. In line with this need, this course looks at how technology-based products diffuse across markets. We depart from the fundamental ideas of monopoly and competitive pricing and study markets in which consumers interact across social networks and firms offer products to several markets simultaneously. The former enables direct network effects, while the latter enables indirect network effects. Lectures cover the fundamental concepts of economics and management applied to technology-enabled markets, including diffusion and critical mass, network effects, multi-sided platforms, pricing strategies, winner-takes-all markets, versioning, bundling, and envelopment attacks. We study these concepts in theory and lively with in-class discussions, competitive games, and simulations. We analyze several markets to complement the theories and models discussed in class, such as content distribution networks, social networking, the sharing economy, and online marketplaces for both digital and physical products. Students learn how to manage disruptive technologies and are exposed to frameworks and tools to characterize their dynamics over time.

Prior knowledge: a course in economics is required (95710 – economic analysis or equivalent).

Key learning resources:

This course pulls materials from different sources to support the study of the dynamics of digital platforms. Appropriate readings are available from the course website. A related textbook (non-mandatory reading) is “Platform Revolution by Geoffrey Park and Marshall Alstyne,” W. W. Norton & Company.

Course activities: 1.5-hour biweekly lectures combining theoretical lectures with in-class discussions, competitive games, and simulations. There will be five weekly assignments and seven optional 5-min quizzes.

Course schedule: Tuesdays and Thursdays

Assessment structure:

Five weekly assignments are offered as part of this course. Each assignment counts 20% towards the final grade. Assignments ask students to replicate models and computations done in class and write short essays applying the concepts learned in class to describe firms of their choosing. Answers are at most two (2) pages long and submitted through gradescope.

Late assignments are received up to 48 hours after the deadline. A 20% penalty is applied in these cases. No assignments are received after 48 hours unless the delay is due to illness. Please contact the instructor in such cases ahead of the deadline. Assignments will be graded within a week. Pointers for answers will be uploaded to the course website when grades are given to students.

I urge students to look at the pointers for answers provided alongside the grades before asking for regrading. If questions subsist, please contact the TAs and ask for a regrading through gradescope. Discussing the answers with the TAs is a great way to learn further. If you and the TA agree on a change of grade, I will revise it and, usually, I confirm If you and the TA cannot agree on the grading, you should bring the case to me, and I will make a final determination.

Academic integrity:

Students must follow CMU's policies for academic integrity and plagiarism. Students should discuss homework questions with each other but then submit individual answers crafted by each student individually using her/his own words.

Course attendance:

This course offers several in-class exercises, including lively discussions, competitive games, and simulations. The livelihood of these classes depends highly on attendance and participation. Therefore, students are highly encouraged to attend all classes, ask questions, and engage with peers through the discussions, competitive games, and simulations used throughout the course. Homework questions will be directly addressed during the lectures. Optional quizzes will also be offered during the lectures, which may be used to improve final grades.

Contacts:

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