

# Information Economics, Spring 2018 (106-2)

## Case Study 1

Instructor: Ling-Chieh Kung  
Department of Information Management  
National Taiwan University

### 1 The problem

*Information goods*, such as software, music, videos, and e-books, are different from physical goods in many ways. When it is stored and distributed in the digital format, it is also called digital goods. In this case, after a huge development cost is spent, the marginal cost is almost zero. It also has high versioning potential, as generating various versions of different quality level typically requires only the cost of developing the highest-quality one. It also introduces issues such as network externality, piracy, privacy, lock-in, compatibility, intellectual rights, etc.

Smartphone app is a certain kind of information good. Interestingly, we observe that many apps are *free*. This is in contrast to most physical goods/services. If an app developer want to make money, is there a reason to offer a product/service for free? We may easily find several intuitive explanations. For example, maybe there is in-app purchase; maybe the developer offers multiple versions of an app, and the free trial version may induce more people to purchase the more expensive one; maybe that is to create positive network externality. Note that not all developers do this: Some developers still offer just one version of app that is not free. How should a developer determine whether to adopt the *free-app strategy*?

In this case study, we invite (actually, force) you to build a model to explain the above observation of the free-app strategy in the app business. The key question you need to answer is why a profit-maximizing app developer may adopt this strategy. You should also address some related issues: Under what condition should one adopt this strategy? Is it affected by the type of the app (game, tool, social networking, information retriever, etc.)? Is it affected by the intensity of competition? Is it affected by the platform's strategy? Is it more or less likely to happen when the product quality is endogenous?

At this moment, you certainly have some explanations in mind. Try to build a game-theoretic model to demonstrate your ideas. Ideally, your model should contain (at least) one app developer and a group of potential consumers heterogeneous in some aspect(s). The company's optimal strategy should be contingent to some exogenous parameters: Under this condition, the free-app strategy is good, otherwise it is not. Try to find such a condition (or conditions) to explain the observation and provide suggestions to decision makers in practice.

### 2 Teams, submissions, and grading

Students should form teams to do the case study. Each team should have **three to four** students. There is no need to sign up. Please just indicate the names and student IDs of your members on your report.

Each team needs to submit one report. Please **type** your report; hand-written reports are not accepted. You are strongly encouraged to use  $\text{\LaTeX}$  to type your report. Limit your report to **eight pages**, including everything. You may write your report in English or Chinese. In either case, please make sure that it is easy to read. As a researcher, you should write professional reports. Some general suggestions for formatting your report can be found on the course website.

The due time of reports is **8:00 AM, April 20**. Please submit an electronic copy as a PDF file to CEIBA by the due time. Only one student in each team should do the submission.

The report will be graded with the following grade breakdown: 40% for the correctness of the model and analysis, 30% for the economic intuitions and managerial implications of the analytical results, and 30% for the readability and format.