Monopoly[1] – Why is the medical technology market less competitive than it seems?

Related news article: The quiet monopolies driving up healthcare costs (*Medcity News*, December, 2025)

Summary of the article: The article analyzes the medical technology (medtech) market. Although there are several technology suppliers in the medtech industry, creating pressure for innovation and development of new products, as well as an impression of competition, most healthcare providers rely on only a few major producers of advanced devices used in cardiology, orthopedics, and other specialties. As a result, the market is less competitive than it seems, and often resembles a monopoly.

Clinicians and health systems rarely change technology providers. Doctors often learn about a specific brand during their training, develop relationships with sales representatives, become comfortable with the technology, and continue using the same company's devices throughout their careers even when alternatives exist. This leads to strong brand loyalty. When new products are introduced, physicians often adopt them without questioning whether the changes improve patients' outcomes enough to justify the higher price of the new product. Because newer technologies are usually more expensive, the higher cost to healthcare providers contributes to rising prices of healthcare services.

In addition, some medtech companies use practices such as kit-based marketing, in which multiple components are bundled together and cannot be purchased individually. This limits physicians' ability to combine components from different brands and can create inefficiencies if only one part of the kit fails during a procedure.

Finally, the dominance of large medtech firms and their established relationships with healthcare providers limit the ability of startups to enter the market and compete with established suppliers, even if they develop groundbreaking technologies.

Note to instructors: This worksheet could be used for in-class or homework practice. You could ask students to read the entire article, *or* the excerpts below, *or* the summary above. **One** of the three options is sufficient to answer the questions. **Answers are provided at the end of this document.**

Learning objectives: At the end of this worksheet, students will be able to:

- Analyze how the dominance of a few firms in the medtech industry could influence competition and entry into the market;
- Evaluate the claim that the medtech market resembles a monopoly;
- Identify the barriers to entry in the medtech market;
- Explain the effect of monopolistic practices on the level of competition and efficiency in the medtech market;
- Calculate the profit-maximizing quantity and price, and the profits of a company, given an equation of the demand curve and a total cost function.

[1] More worksheets are freely available on the author's Substack "*Choice: Economics Materials for Success*": https://econstefani.substack.com/. Author's webpage: https://www.smilovanska-farrington.com/

Economics concepts: Monopoly, Competition, Efficiency, Barrier to entry, Economies of scale, Total revenue, Total cost, Marginal revenue, Marginal cost, Profit, Profit maximization, Brand, Brand loyalty, Supply and demand model, Equilibrium price, Equilibrium quantity, Shifts of supply

Suggested excerpts:

"Every healthcare service line is dominated by a small number of technology suppliers."

"A half dozen suppliers in the same [medtech] market ensures competition and constant pressure to innovate, and these companies respond to this call with annual or semi-annual generations of new products. On the surface, there is a constant race to launch the better technology, which benefits the provider and the patient. In reality, though, these markets are not highly competitive environments that reliably drive down price, foster innovation, and reward choice."

"The orthopedic doctor is introduced to a brand during residency, develops a personal relationship with the sales representative, grows comfortable with the technology, and then sticks with that brand until retirement. Brand loyalty becomes a crutch — a means of reducing uncertainty and ensuring consistent performance. Despite the number of suppliers in these spaces, switching brands is rare."

"This relationship between technology brands and clinical practitioners is, in practice, monopolistic. Even if alternatives exist, they are often not considered."

"Here are four types of hidden costs we need to consider."

"Price. When doctors are deeply engaged with a preferred technology provider, they often adopt new generations of devices without asking hard questions. Each year, a company may launch products with appealing functional improvements, and the physician is impressed. But the more important questions are often asked less frequently: Does this improve patient outcomes? Does this increase patient safety?"

"Choice. A wide range of commercial practices across medtech limit true physician choice, even without explicit antitrust violations. One increasingly common tactic is kit-based marketing — bundling multiple components so they cannot be purchased individually."

"Clinical practice. The relationship a physician forms with technology during training invariably shapes their clinical approach."

"Innovation. […] market entry for these [startup] innovators is extremely difficult. Dominant medtech companies have well-established relationships with physicians and hospital value analysis committees. Startups often lack the salesforce, capital, and market access to compete, even when their technologies offer transformative potential. Real innovation typically reaches clinicians only after a startup is acquired by a major manufacturer — a process that slows adoption and increases cost."

Questions

A) How does the dominance of a few medtech companies in the market affect competition, healthcare costs, and the ability of new businesses to enter the market?

B) Although there are multiple medtech companies, the article claims that the medtech market resembles a monopoly. What are the main characteristics of a monopoly, and how do they apply to the market for medical technology?

C) The fact that “despite the number of [medtech] suppliers […], switching brands is rare” provides evidence of which of the following?

a. Kit-based marketing.
b. Brand loyalty.
c. Perfectly competitive market.
d. Product differentiation.

D) The article states that “new medical technologies almost always enter the market at higher prices.” How does this affect the production costs of healthcare providers? What is the effect on the price of healthcare services? Use the supply and demand model to justify your answer.

E) Based on the article, which of the following barriers to entry is *not* relevant to the medtech market?

a. Bundling multiple products or components of a product.
b. Building relationships between healthcare providers and sales representatives of medtech companies.
c. Establishing brand loyalty.
d. Experiencing high economies of scale.

F) Compared to a competitive medtech market, monopolistic practices _____ (increase/ decrease/ have no effect on) the level of competition in the industry, and _____ (increase/ decrease/ have no effect on) efficiency.

Use the following information to answer parts (G) and (H).

Suppose that a medtech company supplies imaging devices. The following is an equation of its demand curve: P = 1,200 – 2*Q. Its total cost is given by the equation: TC = 2,000 + 200*Q.

G) (Challenging question) What are the profit-maximizing quantity and price of these imaging devices for this company?

H) What is the profit this company makes from its imaging devices?

Answers

A) How does the dominance of a few medtech companies in the market affect competition, healthcare costs, and the ability of new businesses to enter the market?

Answer: Although there seem to be many competitors, medtech companies that have already established relationships with healthcare providers dominate the market. As a result, in reality, competition is limited. It is also challenging for new firms to successfully enter the market. As the prices of new medical technologies increase over time, the cost of healthcare providers rises, which contributes to higher prices for medical services.

B) Although there are multiple medtech companies, the article claims that the medtech market resembles a monopoly. What are the main characteristics of a monopoly, and how do they apply to the market for medical technology?

Answer: A monopoly is characterized by a single firm that provides a unique product. There are barriers to entry that prevent other companies from entering the market. In the medtech market, there is limited competition because most healthcare providers rely only on a few major producers of advanced devices used in cardiology, orthopedics, and other specialties. The relationships between healthcare providers and sales representatives, as well as physicians' familiarity with specific technologies, create barriers that make it difficult for startups to enter the market.

C) The fact that "despite the number of [medtech] suppliers […], switching brands is rare" provides evidence of which of the following?

a. Kit-based marketing.
b. Brand loyalty.
c. Perfectly competitive market.
d. Product differentiation.

Answer: B. Brand loyalty refers to a consumer's commitment to a particular brand.

D) The article states that "new medical technologies almost always enter the market at higher prices." How does this affect the production costs of healthcare providers? What is the effect on the price of healthcare services? Use the supply and demand model to justify your answer.

Answer: More expensive medical technology increases the production costs faced by healthcare providers. When the costs of production increase, the supply of healthcare services decreases, that is, the supply curve shifts to the left. As a result, the equilibrium price of healthcare services increases.

E) Based on the article, which of the following barriers to entry is *not* relevant to the medtech market?

a. Bundling multiple products or components of a product.
b. Building relationships between healthcare providers and sales representatives of medtech companies.
c. Establishing brand loyalty.
d. Experiencing high economies of scale.

Answer: D. Although all of the options listed could serve as barriers to entry, high economies of scale are not mentioned in the article as a factor that prevents competitors from entering the medtech market.

F) Compared to a competitive medtech market, monopolistic practices _____ (increase/ decrease/ have no effect on) the level of competition in the industry, and _____ (increase/ decrease/ have no effect on) efficiency.

Answer: Decrease, decrease. Monopolistic practices decrease the level of competition, and decrease efficiency compared with a perfectly competitive market.

Use the following information to answer parts (G) and (H).

Suppose that a medtech company supplies imaging devices. The following is an equation of its demand curve: P = 1,200 – 2*Q. Its total cost is given by the equation: TC = 2,000 + 200*Q.

G) (Challenging question) What are the profit-maximizing quantity and price of these imaging devices for this company?

Answer: The rule for profit maximization is marginal revenue (MR) = marginal cost (MC).

MR = change in total revenue/change in quantity. Total revenue (TR) = P*Q = (1,200 – 2*Q)*Q = 1,200Q – 2Q^2.

The marginal revenue (MR) is the first derivative of TR with respect to Q, that is, MR = 1,200 – 4Q.

The marginal cost (MC) is the first derivative of TC with respect to Q, that is, MC = 200.

Setting MR = MC implies that 1,200 – 4Q = 200, or Q = 1,000/4 = 250 devices.

Therefore, P = 1,200 – 500 = $700 per device.

H) What is the profit this company makes from its imaging devices?

Answer: Profit = TR – TC = P*Q – TC = 700*250 – (2,000 + 200*250) = 175,000 – (2,000 + 50,000) = 175,000 – 52,000 = $123,000.