

# Interactive Objective Case

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## Probelie

*Probelie* is an online shopping store with a wide range of categories where customers can select items and make purchases online. As an online store, *Probelie* has been in continuous operation for five years. During the initial opening period, many new customers signed up every day, which led to rapid growth in sales. However, as the number of customers plateaued, new customer sign-ups decreased and sales and profit growth slowed.

To better understand customers' purchasing behaviors and tap into new business growth, *Probelie*'s managing director hired a project team to guide the business. She believes that understanding customers' purchasing motives can make their marketing more targeted and achieve better results. More than once in her meetings, she emphasized that the most valuable customers must have certain buying behaviors that they can identify. If marketing teams can take steps to encourage more customers to adopt these behaviors, then more and more of them will become more valuable, which can inject a new source of growth into their business.

The project team collected data on a sample of 500,000 customers who registered with *Probelie* in the past year, as shown in Exhibit 1.

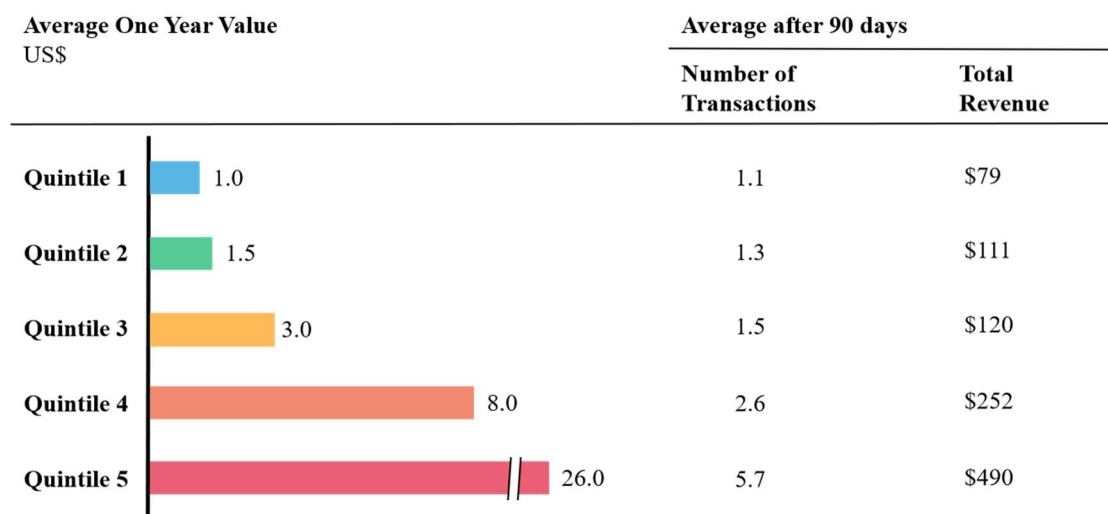


Exhibit 1

The customers are split into quintiles according to their one year customer value, from lowest to highest. ‘One year customer value’ is defined as the profit made by *Probelie* on purchases made by a customer in their first year since signing up. Also presented is data on purchasing by customers in each quintile in their first 90 days since signing up, namely the average number of purchase transactions and the total revenue received by *Probelie* from those transactions.

### Pilot test

In order to find the motivation that would drive the purchase behavior of the target customers, the project team decided to conduct a set of pilot tests with 100,000 new customers, who have made at least one purchase since joining. In this pilot, these new customers are split into two equal groups: a ‘pilot’ group and a ‘control’ group. The pilot group receives a specially designed email to encourage further purchasing, while the control group does not receive the email. Each email sent to the pilot group was specifically designed based on the customer's demographics and his or her prior purchasing behavior, thus each email was different. The emails of the pilot sites were sent at the same moment, and the results obtained are shown in Exhibit 2.

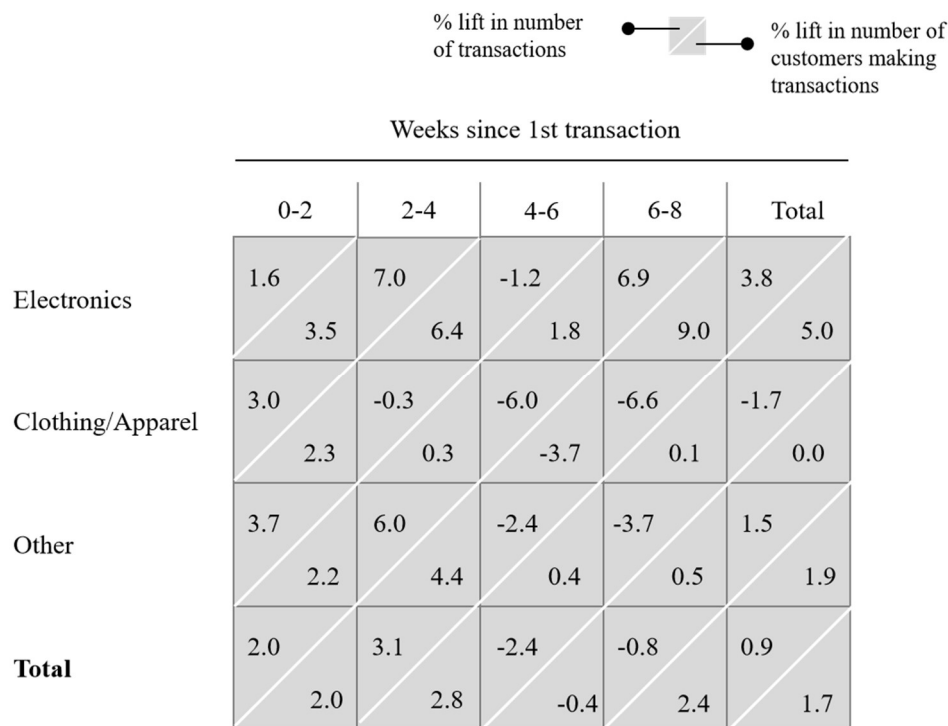


Exhibit 2

Comparing the pilot group with the control group, it can be seen that after sending the emails, the consumers in the pilot group showed the ‘lift’ in their purchasing behavior. In Exhibit 2, each gray box can be divided into an upper left portion and a lower right portion. The upper left portion shows the percentage lift in number of transactions while the lower right portion shows the percentage lift in number of customers making transactions. All data are counted from the first email sent to the pilot group. Horizontally, the information is divided according to how long ago the customer made

their first *Probelie* transaction. Vertically, the information is divided according to what kind of product was purchased in the customer's first *Probelie* transaction.

After the pilot test was completed, the project team held a meeting with the Managing Director of *Probelie* to update her on the results of the pilot. While presenting the results, one member of the team additionally mentioned that in terms of emails, all new customers were likely to receive emails from *Probelie* that were not related to the pilot.

**Questions:**

1. According to the first paragraph, which of the following is FALSE?
  - A. *Probelie* 's customers do not need to visit offline brick-and-mortar stores to make purchases.
  - B. *Probelie* has been in existence for five years.
  - C. In the past, there were many new customers signing up every day.
  - D. *Probelie* is operating at a loss.
  
2. What industry (sector) does *Probelie* belong to?
  - A. E-commerce industry
  - B. Financial Industry
  - C. Telecommunications industry
  - D. Advertising Industry
  
3. Which of the following options BEST describes the reason why the Managing Director of *Probelie* has hired a project team?
  - A. She believes that *Probelie* can become better at identifying customers who stop making purchases.
  - B. She believes that *Probelie* can become better at identifying ways to encourage customers to spend more.
  - C. She believes that, by focusing on the customers of greatest value, *Probelie* can drive renewed growth in their business.
  - D. She believes that *Probelie* can predict the purchasing behavior of its customers better.
  
4. Which of the following statements is an INVALID description?
  - A. The average one year value for customers whose average number of transactions equals 1.1 is \$1.
  - B. Quintile 3 generated \$120 total revenue in the first 90 days.
  - C. 'One year customer value' is defined as the profit made by *Probelie* on purchases made by a customer in the first 90 days.
  - D. All customers in the sample generated total revenue of \$1052 in the first 90 days.
  
5. Which of the following CANNOT be concluded from the information presented in Exhibit 1 regarding the sample of customers analyzed?
  - A. Purchasing by customers in their first 90 days is an indicator of their value to *Probelie* in

their first year.

- B. Quintile 1 are the customers with the lowest profit margin for *Probelie*.
  - C. The average customer makes between 2 and 3 transactions in the first 90 days since signing up.
  - D. The average one year customer value is \$7.90.
6. What is the correct ranking of the five quintiles in Exhibit 1 according to the average transaction revenue, from lowest to highest?
- A. 1, 2, 4, 3, 5
  - B. 1, 2, 3, 4, 5
  - C. 1, 3, 2, 4, 5
  - D. 1, 3, 2, 5, 4
7. If *Probelie* had driven higher purchasing from the new customers in Exhibit 1 so that the one year value of customers in Quintiles 1 thru 4 were each to increase to the next highest quintile, how much greater would *Probelie*'s total one year customer value have been?
- A. \$250,000
  - B. \$650,000
  - C. \$2,500,000
  - D. \$6,500,000
8. Which of the following statements about the pilot test is FALSE?
- A. The pilot test is for new customers who have not made a purchase.
  - B. The pilot test divided the customers into two groups.
  - C. The emails sent to the pilot group were different for each one.
  - D. The emails sent to the pilot group were all sent at the same time.
9. Which of the following is NOT a pilot test?
- A. To explore whether extracurricular practices can promote students' academic performance, Mr. Benson leads 50 students out every Friday afternoon.
  - B. In the post-epidemic era, the school wanted to try online teaching, and to ensure the learning effect, it chose finance majors to try it first.
  - C. In order to implement the strategy of expanding openness, the state chose three cities to set up FTZ as pilots.
  - D. Steven is very interested in chemistry and often goes to the lab to do experiments in his free time.
10. Which of the following CANNOT be concluded from the information presented in Exhibit 2?
- A. The pilot had 3% lift in number of transactions for customers whose first choice was in Electronics 0-2 weeks before emails were sent.
  - B. The pilot had 6.9% lift in number of transactions for customers whose first choice was in Electronics 6-8 weeks before emails were sent.
  - C. The pilot had 3.7% lower in number of customers who purchased Clothing/ Apparel in 4-6 weeks before emails were sent.

- D. There is a relatively large lift in number of transactions for customers whose first choice was in Electronics.
11. When comparing the pilot group to the control group, which of the following CAN be determined from the information provided in Exhibit 2 for customers who purchased Electronics in their first transaction?
- A. Percentage difference in average number of transactions per customer.
  - B. Difference in number of customers making transactions.
  - C. Two week time segment which had the greatest difference in number of transactions.
  - D. Percentage of total lift in number of transactions represented by each two week time segment.
12. If 10% of customers in the control group made transactions during the pilot, how many of the customers in the pilot group made transactions during the pilot?
- A. 5,085
  - B. 5,850
  - C. 10,170
  - D. 11,700
13. Which of the following CANNOT be concluded from the information presented in Exhibit 2?
- A. The pilot had no overall impact on the likelihood of making further transactions among customers whose first purchase was in Clothing/ Apparel.
  - B. The pilot had a positive impact on the number of transactions per customer for customers who made their first transaction 4-6 weeks before emails were sent.
  - C. The pilot had greatest impact among customers whose first transaction was in Electronics.
  - D. Among customers whose first transaction was in 'Other', the pilot had greatest impact among those whose first transaction was more recent.
14. Which of the following data from the pilot period would be LEAST useful in further investigating the impact of the pilot on *Probelie's* business?
- A. Average transaction value for pilot group and control group customers.
  - B. Percentage of pilot group emails that were not delivered and bounced back.
  - C. Breakdown of data in 'Other' category to further levels of detail.
  - D. Breakdown of two week time periods into weekly time periods.
15. Which of the following is MOST LIKELY to be the reason for the statement by the team member to the Managing Director?
- A. The Managing Director is concerned that customers in the control group were neglected.
  - B. The team are concerned about how well *Probelie's* staff executed the pilot.
  - C. Customers who receive too many emails from the same company become less likely to open and read them.
  - D. Customers may discover that they were not selected for the pilot and may be unhappy about this.

16. As an online store, store rent is an important item when calculating costs.
  - A. TRUE
  - B. FALSE
  
17. Advertising email marketing belongs to the 'Product' strategy in the 4Ps of marketing mix.
  - A. TRUE
  - B. FALSE
  
18. Based from the results of the pilot test, it can be seen that emails have a positive impact regardless of the category in which the customer first purchase.
  - A. TRUE
  - B. FALSE
  
19. For a customer who frequently purchases discounted items, the email sent to her may mention recent product specials.
  - A. TRUE
  - B. FALSE
  
20. According to the last paragraph, *Probelie* may screen the emails sent to customers in its future marketing strategy.
  - A. TRUE
  - B. FALSE

**Answer Keys:**

1. D
2. A
3. B
4. C
5. B
6. D
7. C
8. A
9. D
10. A
11. A
12. A
13. B
14. B
15. C
16. B
17. B
18. B
19. A
20. A

## Innovation Capital

International organizations are important parts of modern international life. They are various institutions established by two or more countries or their governments, people, or civil society for specific purposes in the form of certain agreements. Among them, the G8 is an important political organization. Its member countries include the United States, the United Kingdom, Canada, Germany, France, Italy, Japan, and Russia. The G8 holds regular meetings to discuss issues of importance to its member countries, usually economic issues.

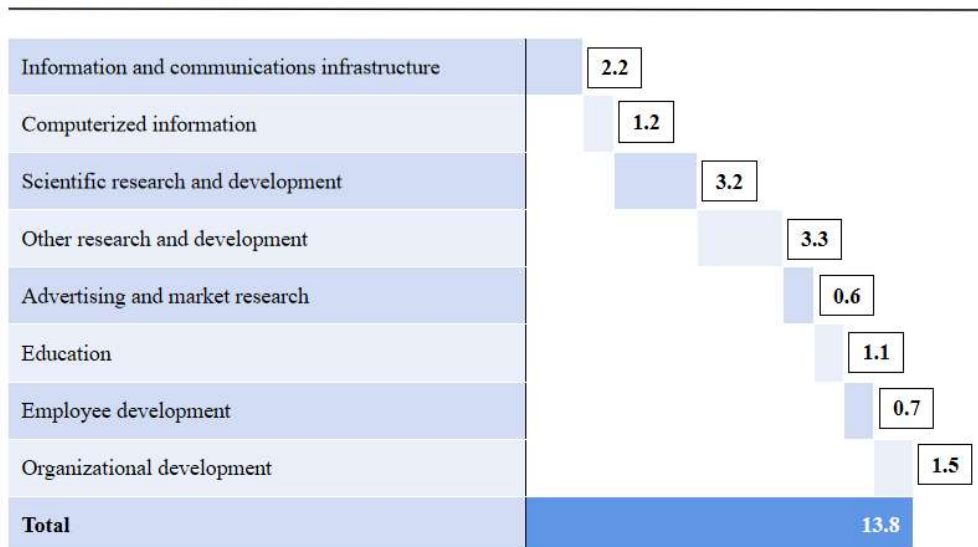
In recent years, countries have experienced slow economic growth, and the emergence of epidemics has created a significant headwind to economic development. Therefore, how to promote economic growth has become an important topic to be discussed at the next G8 meeting. For this meeting, a research institute has prepared a report on the importance of innovation for economic growth. The team intends to introduce to G8 delegates a concept known as "**Innovation Capital**," the value of all innovation-related assets that contribute to productivity growth in the economy.

According to the report, Innovation Capital can be divided into three types:

- **Physical Capital:** Investments in information and communication equipment
- **Knowledge Capital:** Investments that build the intellectual property and brand value of a company or organization
- **Human Capital:** Investments that build individual or group abilities and skills within companies or organizations

Exhibit 3 shows the main components of Innovation Capital and their total value across 16 countries that the team has been studying, including the members of the G8.

**Total innovation capital, (US\$ trillions)**



*Exhibit 3*

In addition, the research institute has examined changes in the growth of the total value of goods and services produced by the business sector in European countries.

The growth in the value of goods and services produced is closely related to two factors.

- **Working hours.** In general, the longer workers work, the more the total value of goods and services produced increases.
- **Productivity.** For the same amount of time worked, more productive workers will produce more goods and services.

Exhibit 4 shows the average contribution of these two factors to business sector growth in 10 European countries over the past 12 years. At the top of each bar is the average annual growth rate of the business sector. In each bar, the orange part represents the proportion of growth driven by changes in Productivity, while the blue part represents the proportion of growth driven by changes in Hours.

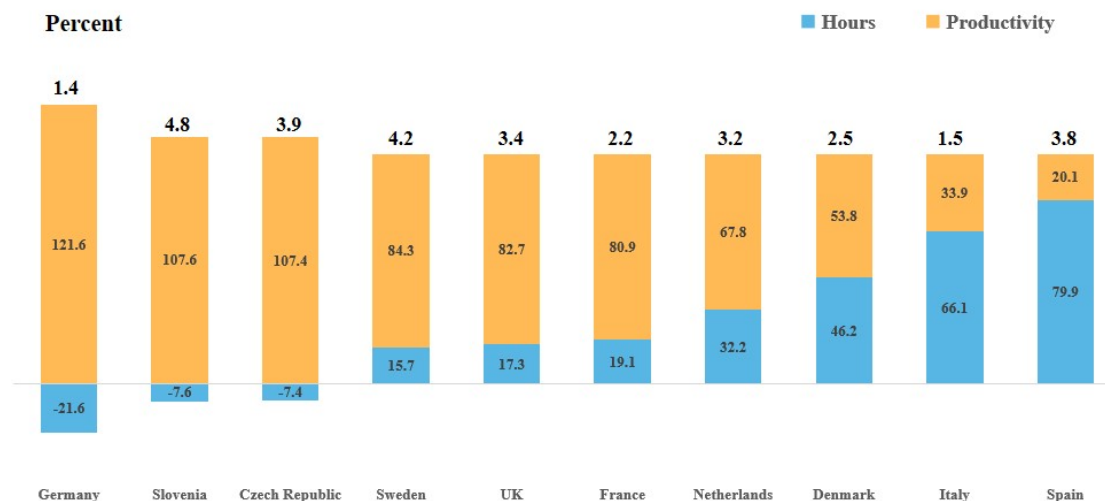


Exhibit 4

To further illustrate the importance of Innovation Capital, the research organization decided to use some specific examples of major innovations to supplement the explanation.

One team member thought of the *ipod* music player developed by Apple many years ago which is an excellent example of early Innovation Capital. This proposal was unanimously approved by the team members. They argued that the development of the *ipod* music player not only illustrated all three types of Innovation Capital, but also showed how investments in innovation capital can provide investors with a long-term cumulative follow-on advantage.

#### Notes on ipod:

*The iPod is a series of portable, multifunctional digital multimedia players designed and marketed by Apple Inc. The first generation of iPod was a sensation at the time, not only for its beauty, but also for its unique and user-friendly operation and huge capacity. iPod brought a whole new way*



*of thinking about MP3 players, and since then there have been many similar products on the market, but iPod is still always sought after because of its unique style.*

**Questions:**

1. Which of the following organizations is not a international organization that plays an important role in global economics?
  - A. World Trade Organization
  - B. The World Bank
  - C. International Monetary Fund
  - D. Food and Drug Administration
  
2. Which of the following MOST accurately describes the reason for the research institute's work in preparing for the G8 meeting?
  - A. The research institute has discovered a new economic measure known as Innovation Capital and wants to introduce it.
  - B. The research institute wants to explain how Innovation can drive economic growth.
  - C. The research institute wants to explain how Innovation can represent a large proportion of an economy's size.
  - D. The research institute wants to convince the group to invest more in Innovation Capital in the future.
  
3. Which of the following is NOT a type of Innovation Capital?
  - A. Physical Capital
  - B. Knowledge Capital
  - C. Human Capital
  - D. Liquid Capital
  
4. Which of the following analyses would be LEAST appropriate in better understanding the size of investments in Innovation Capital in the countries the research institute has been studying?
  - A. Analysis of expenditure by organizations on training programs for their employees.
  - B. Analysis of expenditure by organizations on activities which build awareness of their aims and purpose.
  - C. Analysis of expenditure by organizations on networking and socialization meetings and events.
  - D. Analysis of expenditure by organizations on the management of their databases and information systems.
  
5. Which of the following can NOT be concluded based on the information provided in Exhibit 3 regarding the countries being studied?
  - A. Of all Innovation Capital invested, 'Advertising and market research' were the least invested.
  - B. Of all Innovation Capital invested, 'Other research and development' was the most heavily invested.

- C. The investment in 'Education' was half of the investment in 'Information and communications infrastructure'.
  - D. The total innovation capital investment is 13.8 million USD.
6. Which of the following can be concluded based on the information provided in Exhibit 3 regarding the countries being studied?
- A. 45% of all Human Capital is invested in Organizational Development.
  - B. 51% of all Innovation Capital is Knowledge Capital.
  - C. More than 10% of Innovation Capital is invested in Computerized Information.
  - D. More than a quarter of Innovation Capital is Scientific Research & Development.
7. If total Innovation Capital in Exhibit 1 were to grow by 5% per year in the future, which of the following would be the MINIMUM required annual growth in Human Capital that would see it represent more than half of total Innovation Capital in 10 years?
- A. 10%
  - B. 15%
  - C. 20%
  - D. 25%
8. Which of the following statements may be FALSE?
- A. In addition to hours worked and productivity, there are many factors that can affect the increase in the value of goods and services produced.
  - B. In general, Jason produces more goods and services when he works 8 hours than when he works 4 hours.
  - C. John can produce 20 parts in an hour while Simon can produce 40 parts. The capitalist will prefer Simon because he can produce more value.
  - D. Capitalists can do anything to squeeze workers in order to produce more value of goods and services.
9. Which of the following statements, if true, would BEST explain why the information in Exhibit 4 is important?
- A. Most of the countries in Exhibit 4 have experienced negative economic growth in the last 4 years.
  - B. In most countries, the business sector is the biggest contributor towards Innovation Capital.
  - C. Growth in Hours is mostly driven by growth in the size of the working population.
  - D. Growth in Productivity is mostly driven by growth in Innovation.
10. Which of the following statements is TRUE based on the information provided in Exhibit 4?
- A. Hours grew by 24% across all ten countries over the last 12 years.
  - B. Slovenia had the greatest growth in Productivity over the last 12 years.
  - C. Spain had the least growth in Productivity over the last 12 years.
  - D. Germany had the least growth in Hours over the last 12 years.
11. Which of the following statements is TRUE based on the information provided in Exhibit 4?

- A. Hours in the Czech Republic have had a positive impact on growth over the last 12 years.
  - B. France's growth has been driven more by hours worked than by the economy over the last 12 years.
  - C. Italy's growth has been driven more by hours worked than by the economy over the last 12 years.
  - D. Spain has the longest working hours of the ten countries over the last 12 years.
12. To the nearest tenth of a percentage point, what is the difference between Germany's and Spain's average annual business sector growth due to productivity over the last 12 years?
- A. 0.1 percentage points
  - B. 0.5 percentage points
  - C. 0.9 percentage points
  - D. 1.3 percentage points
13. Which of the following, if true, LEAST explains the data for Slovenia and Czech Republic in Exhibit 4?
- A. Over the last 20 years, the average age of the population in these countries has been steadily increasing.
  - B. Prior to the period in Exhibit 4, these countries were emerging from Communist economies with comparatively poor infrastructure and productivity.
  - C. Net migration into these countries has been negative over the last 12 years.
  - D. Changes in employment laws in these countries have led to greater flexibility for employers in setting working hours for their employees.
14. Which of the following statements LEAST illustrates the Innovation Capital underlying the development of Apple's iPod?
- A. New software and technology was required to allow the distribution of music through online channels.
  - B. New pricing was negotiated with the music industry to encourage online music purchasing.
  - C. New design concepts were developed that gave the product an appealing look and feel.
  - D. A new way of working with the music industry was developed to allow rapid distribution of new music to iPod users.
15. Which of the following analyses would BEST illustrate the research institute's beliefs regarding Apple's iPod?
- A. An analysis of the market share achieved by Apple for its products subsequent to the iPod.
  - B. An estimate of the size of the investment made by Apple in the development of the iPod.
  - C. An estimate of the profit margins of the music industry subsequent to the launch of the iPod.
  - D. An analysis of the reactions of technology experts to the iPod and subsequent Apple products.
16. In the context of economic globalization, international organizations have an important impact on the development of cross-border trade.

- A. TRUE
- B. FALSE

17. The investment in R&D for 5G Networks belongs to the investment in Knowledge Capital. (*R&D, Research and Development*)

- A. TRUE
- B. FALSE

18. Companies spend lot of time and money training their employees but hardly achieve tangible results so employee training is not necessary.

- A. TRUE
- B. FALSE

19. Regulations and restrictions on workers' normal working hours are a form of protection for workers

- A. TRUE
- B. FALSE

20. The example of Apple Inc. shows us that companies need to continue innovating if they want to maintain a competitive advantage

- A. TRUE
- B. FALSE

Answers:

- 1. D
- 2. B
- 3. D
- 4. C
- 5. D
- 6. A
- 7. B
- 8. D
- 9. D
- 10. B
- 11. C
- 12. C
- 13. D
- 14. B
- 15. A
- 16. A
- 17. B
- 18. B
- 19. A
- 20. A