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| CHAPTER LEARNING OBJECTIVE QUESTIONS |  |

3-1 How Do Organizations Use Business Intelligence (BI) Systems?

3-2 What Are the Three Primary Activities in the BI Process?

3-3 How Do Organizations Use Data Warehouses and Data Marts to

Acquire Data?

3-4 What Are Three Techniques for Processing BI Data?

3-5 What Are the Alternatives for Publishing BI?

Learning Catalytics™ is a student response tool that helps you generate class discussion, customize your lecture, and promote peer-to-peer learning based on real-time analytics. Learning Catalytics uses students’ smartphones, tablets, or laptops to engage them in more interactive tasks.

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| SO WHAT? |  |

## Geofencing for Business?

1. *The Internet of Things (IoT) and consumer products for smart homes have become extremely popular. How could geofencing be integrated with these products to create an even more efficient home ecosystem?*

Student’s ideas for integration with geofencing will vary. If geofencing was integrated in a home ecosystem, various devices in the home, such as exterior or interior lights, could be triggered once a family member enters the geofenced area.

1. *Develop a use case proposal that you could pitch to a company about how they could improve their marketing and increase their sales by using geofencing.*

Student answers will vary depending on the company selected. Assuming the student uses an example such as the shopping mall, the pitch could stress the success rates achieved by other companies who have used data about a customer’s shopping habits in the store to send a promo message and “lure” the customer into their store.

1. *How would you feel about receiving alert messages from a store or potential employer that is using geofencing? Would you consider it an annoyance and/or a privacy concern?*

Since this is an opinion question, student responses will vary. Most likely, students today find this a convenience and not annoying, nor are they typically too concerned with privacy. If you do find students on both sides of the fence (no pun intended), then you will likely be able to lead a lively discussion.

1. *How could a university leverage the benefits of geofencing on campus to improve student life and safety?*

Many uses of geofencing on campus come to mind. A few examples include sending students a reminder of an event that is occurring in a building on campus as they pass nearby. Shops in the student union could lure students in with coupons. Alerts could be sent out to on-campus students in the event that campus is closed due to severe weather or some other type of threat. Messages could be sent to campus visitors who are there for sporting events or fine arts events.

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| COLLABORATION EXERCISE 9 |  |

*Using the collaboration IS you built in Chapter 1 (pages 25–26), collaborate with a group of students to answer the following questions.*

*Read Case Study 3 (pages 78-80) if you have not already done so. Undeniably, third-party cookies offer advantages to online sellers. They also increase the likelihood that consumers will receive online ads that are close to their interests; thus, third-party cookies can provide a consumer service as well. But at what cost to personal privacy? And what should be done about them? Working with your team, answer the following questions:*

1. *Summarize the ways that third-party cookies are created and processed. Even though cookies are not supposed to contain personally identifying data, explain how such data can readily be obtained. (See question 3-14, page 80.)*

When a person visits a Web site that contains content (usually ads) from other organizations, those other organizations can instruct your browser to place a cookie on your computer. So, you end up with a cookie from the site you visited plus cookies from all other organizations that had contents (ads) on that site. This addition of third party cookies is done without your knowledge or permission. The first-party site you visited may know quite a bit about you because you may have an account, be a member, or have a subscription to that site. If the first-party site reveals to the ad server company who you are, you are now personally known to them and potentially to all of their client companies as well. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *Numerous browser features, add-ins, and other tools exist for blocking third-party cookies. Search the Web for* block third-party cookies for xxx*, and fill in the* xxx *with the name and version of your browser. Read the instructions and summarize the procedures that you need to take to view the cookies issued from a given site.*

A direct tracker-thwarting approach is to block third-party cookies in the first place.

To do so in Edge, click Settings > View Advanced Settings > Cookies. Select “Block all third party cookies” from the list of three choices. Restart the browser.

Firefox’s cookie settings are found under Tools > Options > Privacy. Uncheck “Accept third-party cookies” and click OK.

In Google Chrome, click the wrench icon in the top-right corner of the browser, choose Settings, then select Advanced Settings. In Privacy, click Content Settings and check “Block third-party cookies and site data.”

(LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Information Technology)

1. *In large measure, ads pay for the free use of Web content and even Web sites themselves. If, because of a fear of privacy, many people block third-party cookies, substantial ad revenue will be lost. Discuss with your group how such a movement would affect the valuation of Facebook and other ad-revenue-dependent companies. Discuss how it would affect the delivery of online content like that provided by* Forbes *or other providers of free online content.*

Students may have different opinions on the consequences of this. However, if blocking of third-party cookies became the norm, it could definitely affect ad-revenue dependent Web sites. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *Many companies have a conflict of interest with regard to third-party cookies. On the one hand, such cookies help generate revenue and pay for Internet content. On the other hand, trespassing on users’ privacy could turn out to be a PR disaster. As you learned in your answer to question 3-5, browsers include options to block third-party cookies. However, in most cases, those options are turned off in the default browser installation. Discuss why that might be so. If sites were required to obtain your permission before installing third-party cookies, how would you determine whether to grant it? List criteria that your team thinks you would actually use (as opposed to what the team thinks you* should *do). Assess the effectiveness of such a policy.*

The third-party cookie blocking settings are not the default in browsers because currently a great deal of the value proposition of commerce on the Internet depends on these cookies being created. If an opt-in model was used (as is currently done in European Union countries), the users would be confronted with making a decision about every third-party cookie request. Most users would not want to bother and would find a way to accept all cookies automatically. For those users who do care about potential privacy losses, a selection rule would have to be created that judges the potential value of the cookie to me personally (it is from a site that I am intensely interested in). (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *The processing of third-party cookies is hidden; we don’t know what is being done behind the scenes with the data about our own behavior. Because there is so much of it and so many parties involved, the possibilities are difficult to comprehend, even if the descriptions were available. And if your privacy is compromised by the interaction of seven different companies working independently, which is to be held accountable? Summarize consequences of these facts on consumers.*

Many consumers are concerned about privacy issues but too quickly become overwhelmed at the complexity of the Internet environment. It is so hard for the average consumer to comprehend everything that is going on or could be going on behind the scenes. As a result, many consumers just have a “whatever happens, happens” kind of attitude. It is not that privacy doesn’t matter, just that many people don’t really know what to do about it. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Ethical Understanding and Reasoning)

1. *Summarize the benefits of third-party cookies to consumers.*

Most Web users realize that the ads they see on sites are targeted specifically to them based on the knowledge the sites and their advertising partners have collected about them. The companies claim they don't collect personally identifiable information—or at least most of them state so. The success of their ads finances the "free" services on the Web. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *Given all you have learned about third-party cookies, what does your team think should be done about them? Possible answers are (a) nothing, (b) require Web sites to ask users before installing third-party cookies, (c) require browsers to block third-party cookies, (d) require browsers to block third-party cookies by default but enable them at the users’ option, and (e) something else. Discuss these alternatives among your team and recommend one. Justify your recommendation.*

Student answers will vary. This question should generate some lively discussion. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Ethical Understanding and Reasoning)

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| CASE STUDY 3 |  |

## Hadoop the Cookie Cutter

1. *Using your own words, explain how third-party cookies are created.*

When a person visits a Web site that contains content (usually ads) from other organizations, those other organizations can instruct your browser to place a cookie on your computer. So you end up with a cookie from the site you visited plus cookies from all other organizations that had contents (ads) on that site. This addition of third-party cookies is done without your knowledge or permission. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *Suppose you are an ad-serving company and you maintain a log of cookie data for ads you serve to Web pages for a particular vendor (say Amazon).*
2. *How can you use this data to determine which are the best ads?*

The best ads are those that result in clicks, so I would want to know the click rate of the ads that have been served. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *How can you use this data to determine which are the best ad formats?*

I would compare the click rate of ads that have been displayed in various formats to determine which ad format resulted in the most clicks. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *How could you use records of past ads and ad clicks to determine which ads to send to a given IP address?*

Summarize the ads delivered and clicked by IP address. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *How could you use this data to determine how well the technique you used in your answer to part c was working?*

Evaluate the ads delivered and clicked on by that IP address over time and see if there has been any pattern change. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *How could you use this data to determine that a given IP address is used by more than one person?*

Evaluate the click rate on ads by ad type. If there is a cluster of ads for hunting/fishing, a cluster for recipes, and cluster for a teenage heart-throb, there are probably two parents with a teenage daughter in the household. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *How does having this data give you a competitive advantage vis-à-vis other ad-serving companies?*

If I can demonstrate my success at placing ads that are clicked on my customers’ pages, I should be able to get more customers for my ad-placement services and charge a higher rate for my services than my competitors who cannot show these results. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *Suppose you are an ad-serving company, and you have a log of cookie data for ads served to Web pages of all your customers (Amazon, Facebook, etc.).*
2. *Describe, in general terms, how you can process the cookie data to associate log entries for a particular IP address.*

I could summarize my log entries by IP address across all my ad sites rather than just by a single ad site. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *Explain how your answers to question 3-12 change given that you have this additional data.*

By having the data for all ad sites, I not only can look at the items described in question 3-12, but can also compare across the ad sites and look for differences. Does a particular ad format have a different click rate when displayed on an Amazon page as compared to a Facebook page, for example? (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *Describe how you can use this log data to determine users who consistently seek the lowest price.*

Since I can summarize my ad clicks by IP address, I can evaluate ad clicks for similar products from different competing vendors. For example, if a particular IP address clicks on an HP laptop ad, a Dell laptop ad, and a [NewEgg.com](file:///\\integrafs5\prs\6-Reports\CSE-PME\Pearson\Pearson-PM-StatusReport\FSV\Gowtham\Kroenke_Supplements\IM\To_IRC\EMIS_9e_IRM\NewEgg.com) ad, that pattern suggests a user who is price shopping for a laptop. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *Describe how you can use this log data to determine users who consistently seek the latest fashion.*

Since I can summarize my ad clicks by IP address, I can evaluate ad clicks for ads grouped by type. When an IP address is clicking on a number of ads that are part of my high fashion ad group, the pattern suggests a user who is interested in the latest fashions. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *Explain why uses like those in parts c and d are only possible with MapReduce or similar technique.*

The massive quantity of data that must be analyzed to produce results for parts c and d are really only computationally possible with MapReduce type parallel processing techniques. (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Analytical Thinking)

1. *As stated, third-party cookies usually do not contain, in themselves, data that identifies you as a particular person. However, Amazon, Facebook, and other first-party cookie vendors know who you are because you signed in. Only one of them needs to reveal your identity to the ad server and your identity can be correlated with your IP address. At that point, the ad server and potentially all of its clients know who you are. Are you concerned about the invasion of your privacy that third-party cookies enable? Explain your answer.*

Students’ opinions will vary on this question. In general, I have found that students are not particularly concerned about loss of privacy. To generate discussion about this topic, ask your students what information could be revealed about their private lives once a name is actually linked to ad-clicking behavior. Would their behavior on the computer change once they knew their name was known? (LO: 4, Learning Outcome: Compare and contrast different business intelligence systems, AACSB: Ethical Understanding and Reasoning Abilities)

For an example illustrating the concepts found in this chapter, view the videos in [mymislab.com](http://mymislab.com/).