1.8 CASE STUDY

Uber:

Everything on Demand

If you were asked to pick iconic examples of e-commerce through the years since it began, it is likely that companies such as Amazon, Google, Apple, Facebook, and Netflix would be high on your list. But during the last decade or so, a different breed of e-commerce company, focused on the provision of on-demand services, has muscled its way into the mix.

Uber is perhaps the most well-known company that uses the on-demand service model. Uber's business model differs from traditional retail e-commerce business models. Uber doesn't sell goods. Instead, it created a smartphone app/Internet cloud-based platform that enables people who want taxi service—like hailing a taxi—to find a provider with the resources, such as a personal automobile and a driver with available time, to fill the demand. It's important to understand that although Uber and similar firms are often called "sharing economy" companies, this is a misnomer. Uber drivers are selling their services as drivers and the temporary use of their cars. Uber itself is not in the sharing business, either: It charges a 20% commission on every transaction on its platform. Uber is also not an example of true "peer-to-peer" e-commerce because Uber transactions involve an online intermediary: a third party that provides a platform for, and takes a cut of, all transactions.

Uber offers a compelling value proposition for both customers and drivers. Customers can download the Uber app for free. There is also a specialized app for drivers. To find a ride, the customer opens the app and enters a destination. The app shows an estimated, upfront price for the ride as well as options for vehicle size and estimated drop-off time. The customer then chooses the desired options and confirms the trip. Nearby drivers get an in-app notification on their Driver app and can choose whether to accept the ride request. The customer is automatically notified when the driver's vehicle is about a minute away, thus eliminating the need to stand on a street corner frantically waving, competing with others, or waiting endlessly for an available cab to drive by without knowing when that might happen. Uber provides a variety of payment options, including a stored credit or debit card, Uber Cash (a stored payment method), Apple Pay, Google Pay, PayPal, Venmo, and, in some areas, even cash. At the end of each ride, drivers and riders review the ride based on a five-star rating system. Drivers that fall below a certain rating (4.6/4.5) are warned that they may be dropped if they don't improve. Customers that have high ratings are likely to be prioritized by drivers, who can refuse to pick up customers with low ratings. Uber's value proposition for drivers is that it allows them to set their own hours, work when they like, and put their own cars to use generating revenue. Today Uber operates in around 10,000 cities in 72 countries around the world, with an estimated 4 million drivers and around 115 million riders per month.

Uber has disrupted the traditional taxi business model because it offers a superior, fast, convenient taxi-hailing service when compared to what traditional taxi companies provide. With a traditional taxi service, there is no guarantee that you will find a cab. Uber significantly reduces that uncertainty, although consumers can still sometimes be impacted by availability issues: During a rainstorm, a convention, or a sports event, when demand peaks, not enough drivers may be available at any price. Uber also charges prices that vary dynamically with demand: the higher the demand, the greater the price of a ride. Therefore, it is impossible using public information to know if Uber's prices are lower than traditional taxi prices. Clearly, in high-demand situations Uber's prices are higher, sometimes 10 times higher, than a regulated taxi's prices. However, there is no regulatory taxi commission setting uniform, per-mile fares.

Uber's business model is also much more efficient than a traditional taxi firm's. Uber has shifted the costs of running a taxi service entirely to the drivers. Uber does not own taxis and does not provide fuel, insurance, or maintenance for its drivers' cars, something that has become increasingly problematic in 2022 as fuel prices dramatically escalated. Although Uber began adding a fuel surcharge in March 2022 of between 35 to 55 cents per ride or delivery, drivers say that it is far from adequate. Drivers must also use their own smartphones and cell service. Uber classifies its drivers as independent contractors (often referred to as "gig workers"), not as employees; and rather than paying them a salary, Uber gives drivers a cut of each fare. Doing so enables Uber to avoid costs for social security, workers' compensation, minimum wage requirements, driver training, health insurance, and commercial licensing.

If Uber is the poster child for the on-demand service economy, it's also an iconic example of the social costs and conflicts associated with this kind of e-commerce. The classification of its drivers as independent contractors, which significantly reduces Uber's costs, is currently being challenged in courts, by legislators, and by government agencies in the United States and around the world. Uber is apparently so desperate to

maintain this classification of its drivers that it is backing bills that would classify its drivers as independent contractors in exchange for agreeing not to try to block their efforts to unionize. Uber has also been the target of numerous lawsuits filed on behalf of its drivers, accusing the company of mistreatment, lack of due process, underpayment, and violation of state employment laws.

Even governments find Uber to be a disruptive threat. Governments do not want to give up regulatory control over passenger safety, driver training, or the healthy revenue stream generated by charging taxi firms for a taxi license and sales taxes. Uber has been accused of violating public transportation laws and regulations throughout the world; abusing the personal information it has collected on users of the service; seeking to use personal information to intimidate journalists; failing to protect public safety by refusing to do adequate criminal, medical, and financial background checks on its drivers; taking clandestine actions against its chief U.S.-based competitor, Lyft, in order to disrupt its business; and being tone-deaf to the complaints of its own drivers against the firm's efforts to reduce driver fees. Uber has been banned in several European cities. For instance, in London, Transport for London, the regulatory body that governs taxi services in London, has repeatedly tried to revoke Uber's license to operate, based on concerns about user safety. Currently, Uber is operating under a 30-month license, after adding a number of safety features, such as an in-app panic button. More significantly, the Court of Justice of the European Union, the European Union's most powerful court, has ruled that Uber should be treated as a transportation service—and be subject to all of the existing laws and regulations that apply to such services in the EU member countries in which it operates—rather than as a digital platform not subject to such laws and regulations, as Uber had been attempting to assert.

Critics also fear the long-term impact of on-demand service firms because of their potential for creating a society of part-time, low-paid, temp work displacing traditionally full-time, secure jobs—the so-called "uberization" of work. As one critic put it, Uber is not the Uber for rides as much as it is the Uber for low-paid jobs. A study by the MIT Center for Energy and Environmental Policy Research found that after taking into account costs such as fuel, insurance, maintenance, and repairs, Uber drivers earn less than the minimum wage. Uber contends that it is lowering the cost of transportation, making better use of spare human and financial resources, expanding the demand for ride services, and expanding opportunities for car drivers, whose pay it claims is about the same as that of other taxi drivers. Uber has also taken some remediating steps. It enhanced its app to make it easier for drivers to take breaks while they are on the job. Drivers can now also be paid instantly for each ride they complete rather than weekly and see on the app's dashboard how much they have earned. In addition, Uber added an option to its app that allows passengers to tip its U.S. drivers.

Over the last several years, Uber has been hit by a series of continuing controversies and scandals, creating a public relations nightmare for the company and culminating in the resignation of a number of board members, senior executives, and finally its co-founder and CEO, Travis Kalanick. It was charged with corporate mismanagement and misconduct (including using a secret program known as Greyball to track and evade regulators and other law enforcement officials), workplace discrimination and sexual harassment, and violation of the privacy of its customers by using its mobile app to track the location of those customers at all times, even when the app was not in use.

In December 2021, its former chief security officer was charged with wire fraud in addition to a previous obstruction of justice charge related to his role in an alleged cover-up of a data breach at Uber that exposed approximately 57 million user and driver records. In July 2022, the *Washington Post* announced its participation in an international journalistic investigation into Uber's alleged use of stealth technology to thwart regulators and law enforcement in order to assist its expansion throughout the world. The project is based on more than 124,000 e-mails, text messages, memos, and other records. In a statement in response to the investigation, Uber admitted to "mistakes and missteps," but said it had been transformed under the leadership of its current chief executive, Dara Khosrowshahi.

Despite the controversy surrounding it, Uber continues to attract drivers, customers, and additional investors. In 2019, Uber went public, raising more than $8 billion at a valuation of about $82 billion, which although a staggering amount, was well below the $120 billion value initially floated by its investment bankers. During 2019, Uber's stock price declined significantly, losing almost half its value since the IPO. Then came the Covid-19 pandemic, which has had an adverse impact on Uber's business, drastically reducing the demand for ride services. In 2021, it recorded an operating loss of $3.8 billion, and it has accumulated a deficit of an astounding $23.6 billion. As of mid-2022, demand has not yet recovered to pre-pandemic levels, although its financial results for this segment improved compared to 2020's. It has also experienced a shortage of drivers as a result of the pandemic.

Although Uber began business solely as an alternative to traditional taxis, it has expanded its horizons to envisioning itself as a platform for a variety of different services associated with the movement of people and things from one point to another. While its flagship offering is still what it refers to as mobility services that provide rides for consumers in a variety of vehicles, it now also is almost as equally focused on restaurant food delivery services (Uber Eats) and freight services (Uber Freight). It sees itself as the "Amazon" of transportation, with the potential to become the dominant force in all forms of transportation. But Uber faces significant challenges in each of these areas.

In the wake of the pandemic, Uber turned to Uber Eats, its online food-ordering and delivery service, which became much more in demand. In December 2020, after an attempt to acquire food delivery service Grubhub failed to come to fruition, Uber instead acquired competitor Postmates for $2.65 billion, It had previously acquired Careem, a rival in the Middle East, for $3.1 billion. Uber's revenues from its food-delivery services now outpace its mobility segment, accounting for $8.3 billion in revenue, although it too continues to operate at a loss. Uber faces stiff competition in the delivery business, including from DoorDash, Deliveroo, Instacart, Grubhub, and many others. In a sign that Uber may be finding it hard to let go of its dreams of dominating all sorts of transportation-related services, it has recently announced a variety of new features for Uber Eats that expand its core value proposition. For instance, it has partnered with a direct-to-consumer telehealth company to deliver health and wellness products in 12 markets across the United States via the Uber Eats app. It has also teamed up with digital pharmacy startups to deliver prescription medications. In May 2022, it announced an expansion of its partnerships with Albertsons to include grocery delivery for more than 2,000 Albertsons stores.

One of Uber's newer lines of business is its Uber Freight segment, which it launched in 2017. Uber is aiming to revolutionize the logistics industry in much the same way it

SOURCES: "About the Uber Files Investigation," by *Washington Post* Staff, Washingtonpost.com, July 11, 2022; "'We Will Not Make Excuses': Uber Responds to Uber Files Leak," Theguardian.com, July 10, 2022; "Form 10-Q for the Quarterly Period Ended March 31, 2022," Uber Technologies, Inc., Sec.gov, May 5, 2022; "Uber Continues Its Recovery from the Pandemic Lull but Loses $5.6 Billion from Investments," by Kellen Browning, *New York Times*, May 4, 2022; "Uber Granted 30-Month License to Continue Operating in London," by Emma Roth, Theverge.com, March 26, 2022; "Uber Drivers Are Slamming the Company's Fuel Surcharge as 'Woefully Inadequate,'" by Gabrielle Bienasz, Businessinsider.com, March 16, 2022; "Gig Worker-focused Business Models Face a Host of Challenges," by Zak Stambor, Insider Intelligence/eMarketer, March 9, 2022; "Form 10-K for the Fiscal Year Ended December 31, 2021," Uber Technologies, Inc., Sec.gov, February 24, 2022; "Former Uber Security Officer to Face Wire Fraud Charges," by Rhea Patel, Justice.gov, December 22, 2021; "Uber Acquires Food Delivery Service Postmates for $2.65B," by Stephanie Mlot, Pcmag.com, July 6, 2020; "Uber Unveils New Safety Features Amid Scathing Report," Cbsnews.com, September 26, 2019; "Culture Crossover: Uber Impact: The Cost and Disruption and Monopoly," by Somrata Sarkar, Techworld.com, May 17, 2019; "How the Promise of a $120 Billion Uber IPO Evaporated," by Mike Isaac, Michael J. de la Merced, and Andrew Ross Sorkin, *New York Times*, May 15, 2019; Eliot Brown, "Uber Wants to Be the Uber of Everything—But Can It Make a Profit?" *Wall Street Journal*, May 4, 2019; "MIT Study Shows How Much Driving for Uber or Lyft Sucks," by Natasha Lomas, Yahoo.com, March 2, 2018; "Uber Dealt Setback after European Court Rules It Is a Taxi Service," by Liz Alderman, *New York Times*, December 20, 2017; "Here's All the Shady Stuff Uber's Been Accused of So Far," by Joe McGauley,

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revolutionized the ride-hailing business: by providing an on-demand platform to automate logistics transactions. The platform connects shippers with carriers and gives shippers upfront, transparent pricing; the ability to book a shipment with just a few clicks; and the ability to track shipments in real time from pickup to delivery. To date, Uber has invested heavily in its Freight segment, and in 2021, it acquired Transplace, a managed transportation and logistics network, for $2.25 billion. Like Uber's other lines of business, Uber Freight's revenue is growing, particularly as a result of its acquisition of Transplace, but it is still operating at a loss. Uber Freight also faces significant competition from a number of already-entrenched global and North American freight brokers.

In May 2022, Uber released its financial results for the first quarter of 2022. It was in many senses a promising report, as revenue for all of its segments grew to $6.9 billion. But it once again recorded a loss from operations. Will Uber ever be able to consistently turn a profit?

Case Study Questions

1. How does an on-demand services business model such as Uber's differ from a retail e-commerce business model?
2. What ethical and social issues are raised by Uber and its business model?
3. What unique features of e-commerce technology does Uber's business model rely on?

1.9 REVIEW

KEY CONCEPTS

■ **Understand why it is important to study e-commerce.**

- The next five years hold out exciting opportunities—as well as risks—for new and traditional businesses to exploit digital technology for market advantage. It is important to study e-commerce in order to be able to perceive and understand these opportunities and the risks that lie ahead.

■ **Define e-commerce, understand how e-commerce differs from e-business, identify the primary technological building blocks underlying e-commerce, and recognize major current themes in e-commerce.**

- E-commerce involves digitally enabled commercial transactions between and among organizations and individuals.
- E-business refers primarily to the digital enabling of transactions and processes within a firm, involving information systems under the control of the firm. For the most part, unlike e-commerce, e-business does not involve commercial transactions across organizational boundaries where value is exchanged.
- The technology juggernauts behind e-commerce are the Internet, the Web, and the mobile platform.
- From a business perspective, one of the most important trends to note is that all forms of e-commerce continue to show very strong growth. From a technology perspective, the mobile platform has finally arrived with a bang, driving growth in mobile advertising and making true mobile e-commerce a reality. At a societal level, major issues include privacy and government surveillance, protection of intellectual property, online security, and governance of the Internet.

2.6 CASE STUDY

Weathering the Storm:
Twitter's Uncertain Future

Twitter, the social network originally based on 140-character text messages, emerged seemingly out of nowhere to take the world by storm. Twitter's basic idea was to marry short text messaging on cellphones with the Web and its ability to create social groups. As the years passed, Twitter expanded beyond simple text messages to article previews, photographs, videos, and animated images, by 2022, it had almost 230 million daily active users worldwide. The 5,000 tweets a day that it began with in 2006 has turned into a deluge of around 10,000 tweets per second and more than 500 million per day worldwide. Special events, such as the Super Bowl and Academy Awards, tend to generate an explosion of tweets. Some celebrities, such as pop star Justin Bieber, have millions of followers (in Bieber's case, around 114 million).

Twitter has a number of important assets, such as user attention, significant audience size (unique visitors), and its searchable database of tweets, which contain real-time audience comments, observations, and opinions. Twitter has become a significant media platform for the distribution of news. However, Twitter has also struggled to develop a profitable business model and display consistent growth, and its financial results and stock price have not matched its popularity and influence on culture and politics. Its user base remains a fraction of the size of Facebook's, TikTok's, and Instagram's.

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In April 2022, Elon Musk, the controversial founder and CEO of electric car company Tesla and space exploration company SpaceX, entered into an agreement to acquire Twitter in a deal that valued the company at $44 billion. After many stops and starts, the purchase finally took place on October 27, 2022, but the drama surrounding Musk has thrown Twitter, its investors, its advertisers, and its users into turmoil, raising serious questions about what the future will bring for Twitter.

Before delving into the current chaos surrounding Twitter, it helps to have some basic background into its business model, revenue model, and evolution. Twitter derives the lion's share of its revenue from advertising, with 90% of its 2021 revenue coming from various advertising products and with more than 95% of them displayed on a mobile device. Twitter offers advertisers a variety of options, including Promoted Ads (formerly called Promoted Tweets), Follower Ads (formerly called Promoted Accounts), and Twitter Takeover (formerly called Promoted Trends). Companies pay to have their tweets and Twitter accounts appear higher in Twitter searches or to reserve a place within Twitter's Trends section, which shows the most-discussed topics of the day. They can also pay to show video advertisements that run prior to video clips and that are embedded within tweets using a product called Twitter Amplify. Video is Twitter's fastest growing advertising segment and has grown to comprise almost two-thirds of Twitter's advertising revenue. All of Twitter's advertising products can be geo-targeted both locally and nationally.

Twitter also continues to refine its data-mining capability, recognizing that its stockpile of customer sentiment about products, services, and marketing efforts is among its most valuable assets. Acquisitions of companies such as Lucky Sort, Topsy Labs, and Gnip have helped Twitter provide better information about user behavior. Twitter licenses its user data to companies seeking to improve their understanding of customer sentiment. The company's data licensing segment accounted for about 11% of its revenues in 2021.

Twitter became a publicly traded company in 2013, with a valuation at that time of about $14 billion. The public offering was viewed as a rousing success, with the stock price jumping almost 75% on its opening day, despite the company's lack of profits. However, its share price declined significantly from its high of more than $74 in December 2013 down to an all-time low of less than $14 in 2016, well below its IPO price. Analysts expressed serious concerns about Twitter's future beyond the obvious lack of profits. Twitter's growth rates were anemic because of unusually poor user retention—60% of new users failed to return to the site the following month. Twitter also had highly unbalanced user engagement, with the top 15% of users accounting for 85% of all tweets. Advertisers also complained that Twitter's advertising products simply were too costly for the sales they generated and that dummy accounts and trolls ran the risk of ruining the Twitter user experience. Acknowledging a need for a change in direction, Chief Executive Officer Dick Costolo stepped down in 2015, replaced by co-founder Jack Dorsey.

Dorsey vowed to narrow the company's focus on its core service, with particular emphasis on breaking news. Twitter moved away from products and features that didn't do enough to enhance the basic user experience. For example, Twitter had hoped that it would become a hub of social e-commerce and rolled out a Buy Now button in 2014 that allowed users to add products to their Amazon shopping carts. However, in 2016,

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development on the service halted because of users' lukewarm response, and it was then phased out. Other services that failed to take off, such as Twitter's #Music app, were shelved, and even popular features like its Vine app for short-form video were discontinued. Instead, Twitter made changes to bolster its ability to deliver the news, including increasing the character limit for tweets from 140 characters to 280 characters and showing more promoted news content in user timelines. Twitter redesigned the Explore tab within its app to improve ease of use, added breaking news alerts, and launched dedicated content hubs for significant events that allowed users to follow events the way they might follow a person. It also redesigned its desktop site, aiming to provide a more consistent experience across both its mobile and its web platforms. Twitter also focused on improving its streaming video capability, including livestreaming, highlight video clips, and video-on-demand agreements across a number of verticals including sports, news, gaming, and entertainment.

Developing machine learning capabilities has also been an important initiative for Twitter. It established an internal research group called Cortex that focuses on improving Twitter by enabling advanced artificial technologies. Twitter purchased several artificial intelligence startups, such as Magic Pony, Aiden, and Fabula AI, to bolster this effort. Using AI techniques has enabled Twitter to adjust the way it ranks tweets in users' feeds, emphasizing relevance to individual users instead of simple chronological order. Machine learning algorithms now decide what types of push notifications to deliver to users. Twitter has also eliminated its less effective advertising formats, focusing only on those that deliver the best engagement for advertisers. Twitter is additionally focusing on techniques to promote what it calls conversational health, adjusting its algorithm to ensure that low-quality tweets are less accessible in searches and conversations and changing its API to prohibit links and content from being shared from many accounts at once, which is a common technique used by Twitter bots (dummy accounts that are used to spread misinformation). Although Twitter continues to aggressively identify and remove these accounts, more continue to pop up in their place. Twitter has also tried to improve its handling of habitual abusers and hate groups using its platform by employing machine learning technology to detect network manipulation and online disinformation. Striking a balance between allowing free speech and policing unacceptable hate speech and deliberate misinformation has continued to be a difficult challenge for Twitter.

These changes, in addition to Dorsey's restructuring of Twitter's board and layoffs of 9% of Twitter's workforce, finally jumpstarted Twitter's stagnant growth. In the fourth quarter of 2017, Twitter recorded the first profitable quarter in the company's history, and the company continued that trajectory through the fourth quarter of 2019. Then the Covid-19 pandemic hit, severely impacting Twitter. Although total revenue increased by 7%, it recorded a net loss of $1.14 billion for the year. Adding to the turmoil, an activist investor group that acquired a significant chunk of Twitter's shares sought to have Dorsey removed as chief executive officer. While a truce was reached, leaving Dorsey in place for the time being, his future remained somewhat uncertain. In 2021, Twitter tried to regroup. It introduced several new products, such as Twitter Spaces, a new way to have live audio conversations on Twitter, and Communities, a new way to easily find and connect with people who have similar interests. Twitter also jumped on the creator bandwagon and introduced Ticketed Spaces, Super Follows, and Tips, which give people the ability to pay creators using a variety of payment methods. Twitter also introduced

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Twitter Blue, its first-ever consumer subscription offering. Twitter Blue allows users to pay for exclusive features and perks. Returning to the social e-commerce efforts it had previously abandoned, it also launched a pilot program of a shopping feature called Shop Module that allows businesses to showcase their products at the top of their profiles and allows users to purchase items without having to leave Twitter.

In November 2021, Dorsey resigned. Although Twitter's revenue in 2021 increased from that of 2020, it once again recorded a loss for 2021, this time in part because of the costs of settling a shareholder class action lawsuit for around $810 million. Twitter's stock price declined.

Enter Elon Musk. At the beginning of April 2022, regulatory filings revealed that Musk had personally purchased a 9.2% stake in Twitter, making him its largest shareholder. Musk had previously had a contentious relationship with Twitter, questioning the company's commitment to free speech and wondering if the company was even needed. Musk initially agreed to join Twitter's board but then abruptly reversed course and shortly thereafter offered to buy the rest of the company. Twitter initially moved to block Musk but then reconsidered, and on April 25, accepted his bid to take over the company for $44 billion and go private, giving him sole control.

But not long thereafter, the deal began to unravel. In mid-May 2022, Musk said he would not proceed with the deal unless Twitter could provide him with evidence that less than 5% of the company's user accounts were actually fake. In securities filings, Twitter has long estimated that false or spam accounts represent less than 5% of its total number of active users but has also said that the actual number could be higher than estimated. In early June Musk reiterated his position and accused Twitter of not complying with his request for data on the number of spam and fake accounts. At the end of June, Twitter provided Musk with access to historical tweet data as well as its so-called "fire hose" of tweets: a data dump of the full stream of all tweets made in near real time. Some analysts believed that Musk was using the issue as a way to renegotiate or even scuttle the deal in light of the stock market downturn. On July 8, 2022, Musk announced that he was terminating the deal. In return, Twitter sued Musk in an attempt to make him complete the purchase at the agreed-upon price. In the meantime, Twitter posted an unexpected drop in advertising revenue for the second quarter in 2022, which Twitter and many analysts attributed to Musk's chaotic acquisition attempt. Finally, in October 2022, Musk agreed to proceed with the purchase. However, that is not the end of the story. Twitter remains in turmoil, with its future uncertain.

Case Study Questions

1. What are Twitter's most important assts?
2. How has Twitter's business model evolved since it was founded?
3. Why is machine learning an important initiative for Twitter?
4. What steps did Twitter take to increase revenues in 2021?
5. Why is Twitter's future currently uncertain?

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3.7 CASE STUDY

Akamai:

Sharpening Internet Content Delivery with Edge Computing

In 2022, the amount of Internet traffic generated by YouTube alone is greater than the amount of traffic on the entire Internet in 2000. Video now comprises the majority of Internet traffic, with YouTube, Netflix, Facebook, and TikTok the top platforms. Internet traffic from mobile devices has also grown significantly, with the majority of such traffic now originating from mobile devices.

In today's broadband environment, the threshold of patience is very low. Most users will leave a page that takes more than three seconds to load. Increased customer expectations are bad news for anyone seeking to deliver high-definition video and other forms of interactive content and services online. Akamai is one of the Internet's major helpers. An overwhelming majority of top companies in various industries use Akamai's services to speed delivery of content.

Slowly loading web pages and content sometimes result from poor design, but more often than not, the problem stems from the underlying infrastructure of the Internet. The Internet is a collection of networks that has to pass information from one network to another. Sometimes the handoff is not smooth. The TCP protocol requires that every 1,500-byte packet of information sent over the Internet be verified by the receiving server

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and an acknowledgment sent to the sender. This not only slows down the distribution of video and audio content but also slows down interactive requests, such as purchases, that require the client computer to interact with an online shopping cart. Moreover, each packet may go through many different servers on its way to its final destination, multiplying by several orders of magnitude the number of acknowledgments required to move a packet from, say, New York City to San Francisco. The Internet today spends much of its time and capacity verifying packets, which contributes to a problem called "latency" or delay. For this reason, a single e-mail with a 1-megabyte PDF file attachment can create more than 50 megabytes of Internet traffic and data storage on servers, client hard drives, and network backup drives. Load times have also increased significantly as pages become laden with more content of various types, further complicating content distribution.

Akamai Technologies was founded by Tom Leighton, an MIT professor of applied mathematics, and Daniel Lewin, an MIT grad student, with the idea of expediting Internet traffic to overcome these limitations. Lewin's master's thesis was the theoretical starting point for the company. It described storing copies of web content such as pictures or video clips at many different locations around the Internet so that one location could always retrieve a nearby copy, making web pages load faster. This is the idea behind edge computing: locating computing and data storage in servers as close as possible to the location where they are needed in order to reduce latency, improve response time, and save bandwidth. Akamai was the first company to offer edge computing services to its customers.

Officially launched in August 1998, Akamai's current products are based on its Akamai Intelligent Edge Platform, a cloud platform made up of approximately 360,000 servers within 1,350 networks located in more than 135 countries around the world, all within a single network hop of 90% of all Internet users. In 2022, Akamai announced that traffic delivered across its network had hit a new peak of 250 terabits per second (Tbps). To put that number in perspective, at 250 Tbps you could download every feature film in the IMDb database in 37 seconds! Akamai typically delivers around 100 Tbps in daily web traffic and can support millions of concurrent viewers.

Akamai software allows the platform to optimize content delivery based on device-level detection, identify and block security threats, provide comprehensive knowledge of network conditions, route traffic away from trouble spots, as well as provide business, technical, and analytical insights to their customers' online operations. Accomplishing these daunting tasks requires Akamai to monitor the entire Internet, locating potentially sluggish areas and devising faster routes for information to travel. Frequently used portions of a client's website, or large video or audio files that would be difficult to send to users quickly, are stored on Akamai's servers. When a user requests an audio or a video file, the request is redirected to a nearby Akamai server, and the content is served from this local server. Akamai's servers are placed in Tier 1 backbone supplier networks, large ISPs, universities, and other networks. Akamai's software determines which server is optimal for the user and then transmits the content locally. For instance, someone in New York City who visits eBay's website will be served web pages from the New York metro area Akamai servers, while users who live in San Francisco will be served pages from Akamai servers in San Francisco. Websites that are "Akamaized" can be delivered anywhere from 4 to 10 times as quickly as non-Akamaized content. An Akamai Image Manager tool automates image conversion of large image files to speed load times on image-heavy web pages.

Akamai has a wide range of large corporate and government clients: 50% of Fortune 500 companies, 19 of the top 20 U.S. e-commerce retailers, 18 of the top 20 video streaming services, 9 of the top 10 brokerages, 7 of the top 10 banks, and all of the United States' military branches. Notable customers include Airbnb, Coca-Cola, eBay, FedEx, Fidelity, Marriott, NBCUniversal, PayPal, Riot Games, Spotify, Viacom, Warner Media, and the *Washington Post*, among many others.

Cloud computing, the mobile platform, and the popularity of streaming video all have provided Akamai with growth opportunities. However, the growth of streaming video also created new challenges for Akamai. Many companies that formerly were Akamai clients, including Apple, Facebook, Google, Microsoft, and Netflix, have shifted their content delivery operations away from Akamai's platforms and onto in-house CDNs. Other competitors in content delivery, such as Amazon's CloudFront, Cloudflare, Fastly, and StackPath, also represent threats to Akamai's continued dominance.

In 2022, Akamai took steps to bolster its edge computing business with the acquisition of Linode for $900 million. Linode, an infrastructure as a service (IaaS) provider, will enable Akamai to provide businesses with a developer-friendly platform to build, run, and secure cloud applications. Prior to its acquisition, Linode offered developers an affordable alternative to the "big three" cloud providers (Amazon Web Services, Microsoft Azure, and Google Cloud Platform). Akamai anticipates that in the future, customers will have a growing need for a continuum of computing services from the cloud to the edge in order to be closer to where billions of end users and tens of billions of connected devices will be, especially as the use of technologies such as 5G and IoT expands. Tom Leighton, co-founder of Akamai, believes that Akamai's presence at the edge provides Akamai with a unique competitive advantage and notes that, unlike Akamai's, the data centers of the major cloud providers and other CDNs are typically located closer to the core of the Internet and far from their users. Gartner estimates that by 2025, 75% of enterprise-generated data will be created and processed at the edge. Akamai believes its acquisition of Linode will enable Akamai to create the world's most distributed computing platform, with the global reach to enable any cloud application to deliver the best end-user experience no matter where the end user is located.

Akamai has also developed a number of other services. Chief among them is its security offerings, which now comprise an equally important part of its business as its content delivery and edge technology services. Cyberattacks, organized crime online, and state-sponsored cyberwarfare are all on the rise, not just against its clients but also against CDNs like Akamai itself. Akamai began providing security services to protect U.S. government websites in 2001 and expanded those services to businesses such as banks in 2012. Since then, it has continued to improve its offerings, and today its web app firewall solution (Web App and API Protector [WAAP], formerly known as Kona Site Defender) is the market leader. In 2021, Akamai bought network security firm Guardicore for $600 million, adding its micro-segmentation technology that blocks the spread of malware, particularly ransomware, to its portfolio. Going forward, Akamai believes that the unique combination of its various services (cloud computing services, edge computing, content delivery, and security) puts it in a very strong position vis-à-vis its competitors.

SOURCES: "Facts & Figures," Akamai.com, accessed June 8, 2022; ""Already on the Edge, Akamai Sets Its Sights on Cloud Computing and Security," by Donna Goodison, Protocol.com, June 8, 2022; "Oops, We Did It Again," by Akamai, Linkedin.com, May 5, 2022; "Why Linode+Akamai Is Transformational for How Developers Use the Cloud," by Tom Leighton, Akamai.com, April 12, 2022; "Akamai Inc. Form 10-K for the Fiscal Year Ended December 31, 2021, Sec.gov, February 28, 2022; "Share of Global Mobile Website Traffic 2015–2021," by J. Clement, Statista.com, February 18, 2022; "The Global Internet Phenomena Report 2022," Sandvine.com, January 2022; "How Akamai Evolved into a Security Vendor," by Michael Vizard, Securityboulevard.com, September 8, 2021; "Global Internet Traffic and Capacity Return to Regularly Scheduled Programming," by Alan Maudlin, Blog.telegeography.com, September 7, 2021; "Why Developers Are Writing Apps on Our Edge Platform," by Tom Leighton, Akamai.com, May 11, 2021.

Case Study Questions

1. Why does Akamai geographically disperse its servers to deliver its customers' web content?
2. How has Akamai evolved since it first began?
3. Why does Akamai believe that edge computing will become even more important than it is today?

3.8 REVIEW

KEY CONCEPTS

■ Discuss the origins of, and the key technology concepts behind, the Internet.

- The Internet has evolved from a collection of mainframe computers located on a few U.S. college campuses to an interconnected network of thousands of networks and millions of computers that is accessed by more than 4.5 billion people worldwide.
- The history of the Internet can be divided into three phases: the Innovation Phase (1961–1974), the Institutionalization Phase (1975–1995), and the Commercialization Phase (1995 to the present).
- Packet switching, the TCP/IP protocol suite, and client/server technology are key technology concepts behind the Internet.
- The mobile platform has become the primary means for accessing the Internet.
- Cloud computing refers to a model of computing in which firms and individuals obtain computing power and software applications over the Internet rather than purchase the hardware and software and install it on their own computers.
- Internet protocols such as HTTP, SMTP, POP, IMAP, FTP, SSL, and TLS enable various services on the Internet, such as the transfer of web pages, e-mail, file transfer, and security.

■ Explain the current structure of the Internet.

- The main elements of the Internet's infrastructure are the backbone (composed primarily of high-bandwidth fiber-optic cable networks, owned by various Tier 1 Internet Service Providers [ISPs]), Internet Exchange Points (IXPs), which are hubs that use high-speed switching computers to connect to the backbone, Tier 3 ISPs, which provide Internet access to homes and offices, and the mobile platform, which provides Internet access via cellular telephone networks and Wi-Fi networks.
- The Internet of Things (IoT) builds on a foundation of existing technologies—such as RFID tags, low-cost sensors, inexpensive data storage, big data analytics software, and IPv6—to power the development of a large number of smart connected "things."
- Governing bodies such as ICANN, IETF, IRTF, IESG, IAB, ISOC, IGF, and W3C have influence over the Internet and monitor its operations, although they do not control it.

■ Understand how the Web works.

- The Web was developed during 1989–1991 by Dr. Tim Berners-Lee, who created a computer program that allowed formatted pages stored on the Internet to be linked using keywords (hyperlinks). In 1993, Marc Andreessen created the first graphical web browser, which made it possible to view documents on the Web graphically and created the possibility of universal computing.

4.8 CASE STUDY

Dick's Sporting Goods:
Pivoting Pays Off

When the Covid-19 pandemic first struck the United States in March 2020, retail stores throughout the country shut their doors. Dick's Sporting Goods, a leading retailer of sporting goods and apparel, was no exception. But unlike many other retailers, Dick's was poised to pivot, in large part due to choices it had made years earlier.

Founded in 1948 by Dick Stack in Binghamton, New York, Dick's Sporting Goods has grown from a small, local business selling fishing and camping supplies into a Fortune 500 business with stores throughout the United States. Unlike some of its competitors, Dick's was quick to embrace the online channel. However, initially, Dick's relied on external vendors for its IT and e-commerce needs. An external vendor named GSI and then eBay (after it acquired GSI) handled most aspects of Dick's e-commerce presence for approximately 15 years.

However, by 2015, Dick's had grown to a size where its agreement with eBay was costing the company a significant amount. Many bigger businesses were starting to move their e-commerce operations away from external vendors and back within the control of the company to avoid these types of expenses. Such businesses believed this change would allow them to differentiate their e-commerce presences more easily from competitors' and adjust their software and services to best suit their capabilities. It would also allow them to maintain easier access to their proprietary customer data. Dick's rapidly increasing online sales gave it both the incentive and the budget to undertake the transition, and in 2015, it made the decision to formulate a plan to take over its own e-commerce operations, committing at the same time to a company-wide digital transformation. As part of that transformation, Dick's began the process of moving much of its software development in-house, partnering with VMware's Pivotal Labs, which works with organizations to accelerate the delivery of software and modernize legacy apps

To carry out its strategy, Dick's began development of a proprietary e-commerce platform and worked on integrating it with its existing systems. Dick's selected IBM WebSphere Commerce Suite (now HCL Commerce) for its e-commerce technology stack because of its emphasis on omnichannel shopping and fulfillment capability. The platform was designed to run on Microsoft Azure. Core components of the stack also included Apache ServiceMix service-oriented architecture; Manhattan Associates Order Management System for supply chain management; JDA Software Group software for merchandising, allocation, and replenishment; Oracle PeopleSoft for human resource management; IBM hardware; and Cisco networking technology. A data warehouse allowed Dick's to access real-time information from any area of its business.

Dick's began by moving two of its lesser brands, Field & Stream and Golf Galaxy, onto the platform to ensure that there were no major issues with it. In 2017, the company completed the launch of the new platform and over the next two years, focused on finishing the transition to in-house software for all its e-commerce platforms. The process wasn't without risk, however. Installing a completely new e-commerce platform was no easy task. It involved integrating legacy systems and new systems without losing access to information, hiring a slew of new employees to manage the system, and preventing implementation delays, cost overruns, outages, and other delays.

Specific features of the e-commerce platform that Dick's prioritized include the ability to buy online and pick up items at a store (which later proved critical) and the ability to ship from or to a store. Shipping online orders from physical Dick's stores enables the stores to function not only as traditional retail showcases but also as miniature distribution centers. This increases efficiency and improves delivery times, turning its perceived weakness of excessive bricks-and-mortar infrastructure into a strength. Approximately 80% of Dicks' e-commerce orders are shipped within the geographical area of a physical store. Customizing its infrastructure and website capabilities to capitalize on this unusual arrangement was one of the reasons Dick's wanted to reclaim operation of its e-commerce platform.

The platform also features the ability to break down and test different pricing and marketing approaches by region, an improved search function, and better analytics capabilities. Dick's has found that multichannel customers spend three times as much as single-channel customers. That's why Dick's has focused so much on integrating omnichannel features into the platform. Bringing all of its e-commerce infrastructure

in-house also gave the company better control over development cycles and sped up its testing and implementation time frames.

Dick's has also used the mobile platform to drive brand loyalty and facilitate omnichannel shopping. It first launched a mobile app for both iOS and Android smartphones in 2012 and since then has released new versions with added functionality. For instance, the app can be integrated with popular fitness trackers like Fitbit and Apple Health to encourage its customers to live a healthy lifestyle, awarding rewards card points for consistent physical activity. The app is also linked to Dick's customer loyalty program, ScoreCard, which has more than 20 million active members who collectively account for more than 70% of Dick's total sales.

Flash forward to March 2020, when Covid-19 appeared in the United States. While some companies were caught flat-footed, the time and work Dick's had already invested in developing its e-commerce platform, responsive website, and mobile app created an easy path for new services. Dick's was able to launch curbside, contactless pickup functionality on its mobile app in less than 48 hours. It embraced the lean approach with a user-centered design that it had learned from its experience partnering with Pivotal Labs to create a product that, while not perfect, was functional. It then took an iterative approach, revising the app in response to customer feedback and business needs. For instance, one challenge was enabling customers to return items. While many retailers stopped taking returns, Dick's believed it was critical to ensure customer satisfaction. A two-engineer team was able to get a version of curbside return functionality added to the app within a few days, which they then continued to improve, based on feedback.

But Dick's is not resting on its laurels. It is continuing to build its omnichannel e-commerce capabilities. For instance, it realized that its lack of a single, secure login across all its digital and mobile touchpoints was making the login process more difficult for its customers. In 2021, it selected the Auth0 identity platform to help it consolidate the process. Taking a playcard from its previous efforts, Dick's chose to first launch the system with Golf Galaxy before implementing it on its main Dick's website and mobile app.

Another area for improvement was customer personalization. Although Dick's had amassed a database of 145 million customers, it had not previously directed too much effort toward customer personalization. To drive the next phase of its digital transformation in that area, in November 2021 it selected Adobe Experience Cloud, a collection of integrated online marketing and web analytics products. Using Adobe Experience Cloud will enable Dick's to create individual profiles for each customer in its database based on their e-commerce, mobile app, e-mail, and in-store activities. The data will serve as the backbone for a mass personalization effort. Adobe's real-time customer data platform will enable Dick's to gather customer insights across channels as the interaction itself is taking place. Dick's is also investing in AI-powered product recommendations to boost average order sizes.

Dick's digital transformation efforts are paying off. For its fiscal year ending January 29, 2022, Dick's reported record earnings of about $12.3 billion in net sales, up more than 28% from the previous year. E-commerce sales comprised 21% of total net sales, compared to 16% the previous year. Dick's management points to its investments in technology, its omnichannel platform, and data science, as well as significant improvements in personalization capabilities and digital marketing, as the sources of its improved results.

SOURCES: "How Dick's Moved Its Software Development In-House and Aced Omnichannel Retail," Tanzu.vmware.com, accessed April 9, 2022; "Dick's Sporting Goods, Inc. Form 10-K for the fiscal year ended January 29, 2022," Sec.gov, March 23, 2022; "Dick's Sporting Goods Reports Largest Sales Quarter," by Abbas Haleem, Digitalcommerce360.com, March 14, 2022; "Dick's Sporting Goods and Adobe Experience Cloud to Drive Mass Personalization," by Stephen Frieder, Blog.adobe.com, November 16, 2021; "Dick's Sporting Goods Is Using Its Loyalty Program to Better Target Customers," Modernretail.com, November 16, 2021; "Dick's Sporting Goods Centralizes Customer Identity," by Dan Berthiaume, Chainstoreage.com, June 30, 2021; "Building a Legacy of Customer-Centric Digital Innovation," by Blakely Thomas-Aguilar, News.vmware.com, June 28, 2021; "A Peek into Dick's Sporting Goods' Omnichannel Fulfillment Journey," by Katie Evans, Digitalcommerce360.com, June 7, 2021; "VMware Tanzu and Microsoft Azure Help Keep Dick's Sporting Goods in the Game during Covid-19 Lockdowns," Customers.microsoft.com, December 10, 2020; "Dick's Tech Chief Goes All Out on In-House Software," by Sara Castellanos, *Wall Street Journal*, March 26, 2019; "Dick's Digital Strategy Is on the Move," by C. D. Lewis, Risnews.com, October 17, 2016; "Why Dick's Sporting Goods Decided to Play Its Own Game in E-commerce," by Larry Dignan, Techrepublic.com, April 21, 2016; "Dick's Sporting Goods Aims to Control Its E-commerce Destiny," by Larry Dignan, Zdnet.com, May 21, 2015.

Case Study Questions

1. Why did Dick's Sporting Goods decide to take over its own e-commerce operations?
2. What is Dick's Sporting Goods' omnichannel strategy?
3. How did Dick's Sporting Goods' previous decisions help it when the Covid-19 pandemic struck?

4.9 REVIEW

KEY CONCEPTS

■ **Understand the questions you must ask and answer, and the steps you should take, when developing an e-commerce presence.**

- Questions you must ask and answer, and the steps you should take, when developing an e-commerce presence include:
  - What is your vision and how do you hope to accomplish it?
  - What are your business and revenue models?
  - Who and where is the target audience?
  - What are the characteristics of the marketplace?
  - Where is the content coming from?
  - Conduct a SWOT analysis.
  - Develop an e-commerce presence map.
  - Develop a timeline.
  - Develop a detailed budget.

■ **Explain the process that should be followed in building an e-commerce presence.**

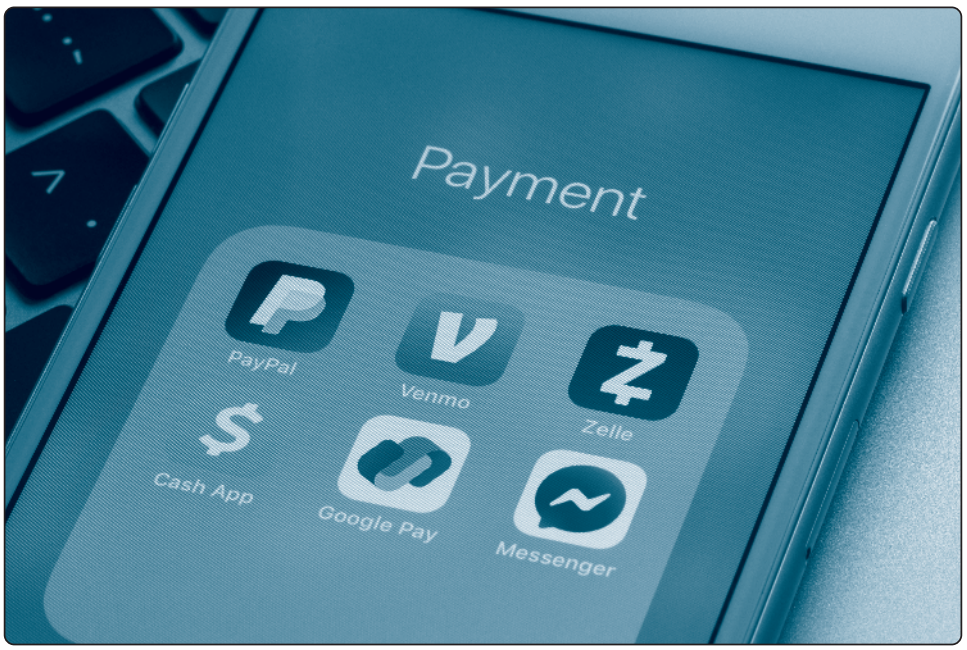
- Factors you must consider when building an e-commerce site include hardware, software, telecommunications capacity, website and mobile platform design, human resources, and organizational capabilities.
- The systems development life cycle (a methodology for understanding the business objectives of a system and designing an appropriate solution) for building an e-commerce website involves five major steps:
  - Identify the specific business objectives for the site, and then develop a list of system functionalities and information requirements. Basic business and system functionalities for an e-commerce site include a digital catalog, a product database, customer tracking, a shopping cart/payment system, an on-site blog, a customer database, an ad server, a site tracking and reporting system, and an inventory management system.
  - Develop a system design specification (both logical design and physical design).
  - Build the site, either by in-house personnel or by outsourcing all or part of the responsibility to outside contractors. Advantages of building in-house include the ability to change and adapt the site quickly as the market demands and the ability to build a site that does exactly what the company needs. Disadvantages include higher costs, greater risks of failure, a more time-consuming process, and a longer staff learning curve that delays time to market. Using design templates cuts development time, but preset templates can also limit functionality. A similar decision is also necessary regarding outsourcing the hosting of the site versus keeping it in-house
  - Test the system (unit testing, system testing, acceptance testing, A/B testing, and multivariate testing).
  - Implement and maintain the site.

5.7 CASE STUDY

Mobile Payments:
Fintech versus the Bank Giants

Nearly every day, it seems, a new mobile payment system is announced by tech startups, giant technology firms, national retail merchants, or banks. There are thousands of fintech (short for "financial technology") firms hoping to disrupt the existing financial services and payment marketplace, both online and offline, which is now dominated by traditional banking and credit card firms. Fintech firms want to become the user interface between the consumer and the banks, earning their revenue by taking a slice of the transaction. One way they hope to disrupt the traditional banking system is by using mobile apps to replace credit cards and enabling transfers among friends (P2P payments).

The term fintech originally was used to characterize startup technology firms that aimed to improve a variety of financial services from depositing and withdrawing funds to making investments, obtaining loans, and making payments, both to merchants and to individuals. In the last few years, traditional banks and credit card companies, as well as large national merchants, have developed their own apps for their customers, and the term fintech no longer applies just to startup tech companies.



The competition between fintech and traditional banking institutions is creating an explosion of innovative ideas, plans, and announcements, which one commentator has likened to a goat rodeo: a chaotic situation in which powerful players with different agendas compete with one another for public acceptance and, above all, huge potential revenues. The mobile payment market, for instance, is a battle among tech titans, such as PayPal, Google, Apple, Samsung, and startup tech companies backed by millions in venture capital, and the bank and credit card giants, who are building their own mobile payment systems and investing in startups to lead the charge. Large retailers like Walmart, Best Buy, and Target have also jumped into the fray by developing their own branded mobile payment apps.

The banks and credit card companies, after a number of years of inaction, decided they wanted to continue to be the customer interface to their banking services, both in terms of credit and debit cards and as the digital interface for their customers using mobile apps. After all, debit cards in the United States account for more than $3 trillion in transactions, while credit cards generate almost $4 trillion in transactions. The traditional bank and credit card companies want to hold onto this card interface with the consumer. But even if a tiny percentage of the $7 trillion card-transaction marketplace moves from plastic to mobile devices, the potential revenue is very large. On the other hand, moving consumers away from their credit and debit cards, which can be swiped at millions of merchants' physical locations and used online with ease and safety, is proving to be a difficult task. A Pew Research survey found that although younger people are more likely to use mobile payments, there is still much skepticism and concern about using financial technologies, and across all generations, people are still more likely to trust traditional methods, such as using credit and debit cards. The rosy future of mobile payments painted by fintech companies may be a long time coming.

As previously described in the chapter, there are three types of mobile payment apps. Universal proximity payment systems such as Apple Pay, Google Pay, and Samsung Pay can be used at participating merchants as a point-of-sale payment. Branded proximity payment systems, such as Walmart Pay, also use proximity technology but can be used only at a single merchant's stores. A third type involves payments among individuals, P2P payments, which can be used to transfer funds among users who have installed a proprietary app, such as Venmo, Zelle, or Square Cash.

In the United States, the total mobile payment market is expected to generate around $1.5 trillion in transaction volume in 2022, with mobile P2P payments accounting for almost $1.1 trillion of that amount and mobile proximity payments accounting for around $415 billion. Growth in payment transaction value skyrocketed between 2019 and 2021, in part because of the Covid-19 pandemic, but is expected to moderate in the coming years as the market becomes saturated. About 60% of smartphone users use mobile P2P payments, while about 40% use mobile proximity payments some of the time. The fastest growth in proximity point-of-sale payments has been in branded mobile payment systems such as Walmart Pay and those offered by other large national retailers.

Growth in newer forms of mobile payments is strongest among Millennials and Gen Z-ers, who have significantly decreased their use of checks and who, unlike their parents, are comfortable handling their financial transactions using a smartphone. For instance, more than 70% of Millennial smartphone users use P2P mobile payments in 2022, compared to just 38% of Baby Boomer mobile phone users.

Venmo is a good example of a pioneering mobile P2P fintech firm. Venmo is a social-mobile payment app that lets users transfer money to one another. It can also be used to pay at a small number of participating merchants. Venmo was founded in 2010 by two college students who wanted to send cash to one another for sharing restaurant tabs and paying small debts without the hassle of using cash or writing checks. Users sign up for a Venmo account and link their account to a bank account, a debit card, or a credit card. Users can also create a pre-paid Venmo balance by sending money to their Venmo account and then charge payments against that balance. There is no charge for the service when users have a Venmo balance or use a debit card but a 3% charge for using a credit card as the source of funds. There is a social aspect of Venmo that allows users to share their purchase events (but with the amount paid stripped from the notification). Users have the option to keep all transactions private as well. When they want to make a payment to another person, they enter the person's e-mail, and the funds are transferred when the recipient, who must also have a Venmo account, accepts the payment. Venmo relies on NFC technology to make in-person payments to individuals by tapping their phones possible. Venmo was purchased by PayPal in 2013, and its popularity has skyrocketed, especially among Millennials and Gen Z-ers; and in 2021, it processed more than $210 billion in transactions, a 43% increase over the previous year. In 2022, Venmo has more than 75 million users. PayPal has begun to monetize its investment in Venmo by expanding beyond small peer-to-peer payments and extending its use to merchants that accept PayPal payments, a much larger user base, which includes large retailers like Home Depot, Kohl's, Target, and OfficeMax. PayPal also offers instant transfers from Venmo accounts to a user's bank account for a small fee, a Venmo credit card, and cryptocurrency trading functionality. As a result, Venmo has significantly evolved from being just a P2P payment platform, and many analysts believe that PayPal will continue to morph Venmo into a digital wallet "super app" with many different functionalities and, thus, monetization options. Venmo's audience of primarily Millennial and Gen Z users is also very valuable to PayPal.

Fintech startups have had a tough time competing with the tech giants in the mobile payment market, as evidenced by Venmo's acquisition by PayPal. First in terms of subscribers are the technology companies like Apple, Google, Samsung, PayPal, and Square, all of which have major hardware and software mobile payment initiatives. Apple, Google, and Samsung own the hardware and software platforms of the ubiquitous smartphone, making their devices and services more useful to consumers, while PayPal and Square operate large-scale online payment-processing platforms and apps that can be used on all smartphones. Apple Pay is the leader in mobile proximity payment, with about 45 million users in 2022, followed by Google Pay, with around 25 million users, and Samsung Pay, with about 14 million.

Proximity point-of-sale systems are free to consumers, and the credit card companies charge their usual fee of 3% for each transaction when a credit card is used to pay for the purchase. Most charge a fee to support their systems. For instance, Apple collects 0.15% from the credit card companies and banks and, in return, guarantees that the transaction is valid. Apple Pay does not store any user funds and is solely a technology-based intermediary between consumers and banks, and, unlike Venmo, it is not subject to federal banking regulations because it does not store funds. Merchants'

point-of-sale terminals need to be NFC-enabled, and merchants need to install Apple software to accept payments. Apple Pay can be used by any consumer who has a credit card from a major issuer bank.

Proximity payment digital wallets are still a relatively small factor in mobile payments in 2022, and the growth in their usage is slower than originally anticipated. Although adoption rates are relatively high, primarily because anyone who buys a smartphone is encouraged to install the phone's associated payment app as part of the initialization of the phone, only a smaller percentage of those who "adopt" actually use the apps on a regular basis, in large part because merchants have been slow adopters of NFC equipment and because consumers still find credit and debit cards to be more convenient. However, usage of mobile payment apps surged during the pandemic, and analysts estimate that proximity mobile spending will reach more than $960 billion by 2026, more than doubling the spending in 2022.

The experience for branded merchant mobile payments has been quite different and was largely unexpected because retail merchants were perceived to be behind the technology curve. Merchants are loathe to give up their relationships with their own customers to tech companies or even credit card companies and prefer to offer their own, branded payments, from store credit cards to mobile payments. These branded mobile payment systems are used for loyalty rewards, local product promotion, and harvesting purchase data from their customers. Starbucks is the leader here, with almost 33 million of its customers using the app; Walmart, Dunkin', Target, Kohl's, Panera, Chipotle, and many other retailers also offer their own mobile payment systems.

Banks like JPMorgan Chase, Wells Fargo, Citi, and other money-center banks and, of course, the credit card companies Visa, Mastercard, and others are the third major players. These firms have the advantage of owning and operating the global banking and credit card systems, with hundreds of millions of trusting and loyal banking and credit card customers and the expertise to provide security and financial stability for their products. They are, however, late to the game and are just now entering the mobile payment marketplace.

Zelle is a leading example of how the traditional banking industry has responded to fintech. Zelle is a digital payment service that allows bank customers to make digital payments and transfers to other account holders using an app and to receive payments from others. Users need to know either the e-mail or the cellphone number of the recipients. The transfers are nearly instantaneous and are referred to as instant payments, in contrast to other digital payments systems, which typically require one business day or more to be completed. Originally founded in 2011 as ClearXchange by a consortium of the largest banks in the United States (JPMorgan Chase, Wells Fargo, and Bank of America), Zelle has grown to include more than 10,000 financial institutions and also works with Mastercard and Visa to support P2P payments with debit or credit cards. Transfers and payments among existing accounts are free and typically rely on customers' existing checking accounts.

Zelle is tightly integrated with banking services such as wire transfers, global wire services, depositing checks using image recognition, and ACH (Automated Clearing House) direct debit and deposit transactions, such as automatic payments of recurring bills from utility, telephone, rent, and even charitable contributions. ACH is a digital

clearinghouse and the primary means of direct money transfers in the United States. It is operated by the Federal Reserve and participating banks. In short, Zelle enables nearly the complete range of banking services using smartphones and PCs without having to use local branch banks, except for mortgages and personal loans. But Zelle currently is not useful as a point-of-sale payment device using NFC technology, and here is where the proximity and branded proximity payment systems like Apple Pay and Walmart Pay have an advantage. However, there is nothing preventing Zelle from adding a proximity payment capability in the future.

Not originally intended as a P2P payment service, Zelle introduced Zelle QuickPay in 2017 and rolled it out to mobile banking customers at 30 national banks. Payments are free, and funds transfer in a few minutes, rather than overnight, for Venmo, Square Cash, or others in this market. Within one year of its introduction, Zelle had attracted nearly 30 million users. In 2022, almost 62 million people in the United States use Zelle, more than 40% of all P2P mobile payment users. In 2021, Zelle processed more than $365 billion in payments, well ahead of Venmo's $210 billion.

However, mobile payment systems, especially P2P payments, are not without issues. Generally, P2P and mobile payments at online stores are not reversible. If users send funds to the wrong e-mail or phone number, there is no guarantee that the receiver will return the funds, and payments to online merchants cannot be retrieved if the merchant does not send out the goods. In addition, phishing and social engineering can be used to drain funds out of accounts.

Confused by all these mobile payment options? You're in good company: So are many consumers and retail merchants. The transition to mobile payments is going much more slowly than analysts initially anticipated, with millions of consumers trying the new methods once but then not using them again because not enough merchants accept them, because of a lack of familiarity with them, and because of concerns about their security and privacy. Although the P2P payment market has shown spectacular growth, especially among Millennials and Gen Z-ers, utilization growth has slowed, and in the scheme of things, this is a small market that is vulnerable to P2P bank products like Zelle. Clearly, the Zelle network of the largest banks in the United States has the advantage in mobile payments with a large installed base of loyal customers, financial heft, and the ability to buy whatever technology is needed to build an integrated mobile payment system. Even so, most consumers are still happy to swipe their cards for online and in-store purchases. It is quite likely that consumers will remain confused by all their payment options for some time to come.

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Case Study Questions

1. What are the three types of mobile payments, and how do they differ?
2. Which age groups are the most likely to adopt mobile payment apps? Why?
3. Why have fintech startups had a hard time competing with the tech giants?
4. What is Zelle, and why has it grown so quickly in the last few years?

5.8 REVIEW

KEY CONCEPTS

■ Understand the scope of e-commerce crime and security problems, the key dimensions of e-commerce security, and the tension between security and other values.

- While the overall size of cybercrime is unclear, cybercrime against e-commerce sites is growing rapidly, the amount of losses is growing, and the management of e-commerce sites must prepare for a variety of criminal assaults.
- There are six key dimensions to e-commerce security: integrity, nonrepudiation, authenticity, confidentiality, privacy, and availability.
- Although computer security is considered necessary to protect e-commerce activities, it is not without a downside. The more security measures that are added to an e-commerce site, the more difficult it is to use and the slower the site becomes, hampering ease of use. Security is purchased at the price of slowing down processors and adding significantly to data storage demands. Too much security can harm profitability, while not enough can potentially put a company out of business.

■ Identify the key security threats in the e-commerce environment.

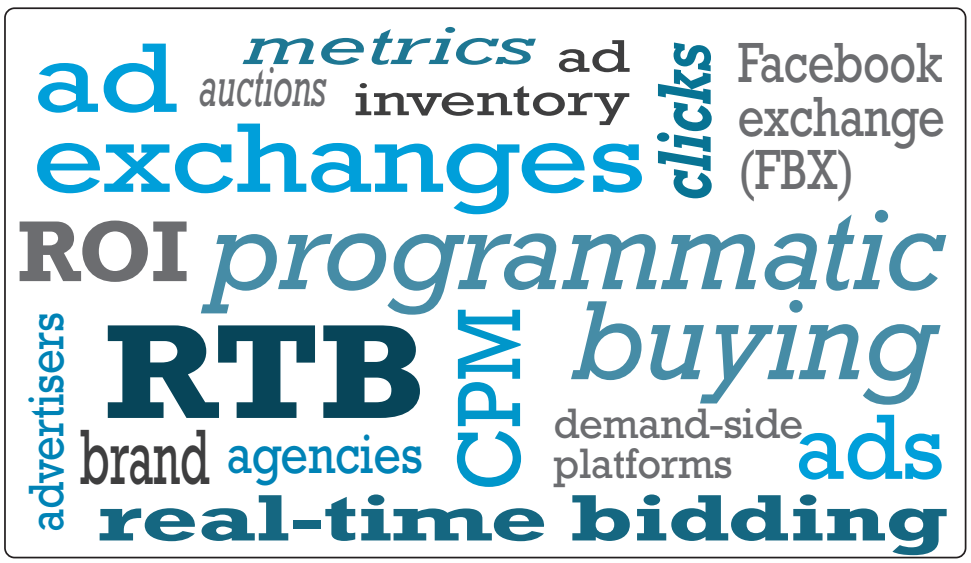
- The most common and most damaging forms of security threats to e-commerce sites include:
  - *Malicious code*—viruses, worms, ransomware, Trojan horses, and bot networks are a threat to a system's integrity and continued operation, often changing how a system functions or altering documents created using the system.
  - *Potentially unwanted programs (adware, browser parasites, spyware, etc.)*—a kind of security threat that arises when programs are surreptitiously installed on your computer or computer network without your consent.
  - *Phishing*—any deceptive, online attempt by a third party to obtain confidential information for financial gain.
  - *Hacking, cybervandalism, and hacktivism*—intentionally disrupting, defacing, or even destroying a site.
  - *Data breaches*—the loss of control over corporate information, including the personal information of customers and employees, to outsiders.
  - *Credit card fraud/theft*—one of the most-feared occurrences and one of the main reasons more consumers do not participate in e-commerce. The most common cause of credit card fraud is a the systematic hacking and looting of a corporate server where the information on millions of credit card purchases is stored.
  - *Identity fraud*—involves the unauthorized use of another person's personal data, such as social security, driver's license, and/or credit card numbers, as well as usernames and passwords, for illegal financial benefit.
  - *Spoofing*—occurs when hackers attempt to hide their true identities or misrepresent themselves by using fake e-mail addresses or masquerading as someone else.
  - *Pharming*—involves redirecting a web link to an address different from the intended one, with the site masquerading as the intended destination.
  - *Spam (junk) websites (link farms)*—sites that promise to offer some product or service but, in fact, are just a collection of advertisements for other sites, some of which contain malicious code.

6.6 CASE STUDY

Programmatic Advertising:
Real-Time Marketing

The holy grail of advertising and marketing is delivering the right message to the right person at the right time. If doing so were possible, no one would receive ads they did not want to see, and no advertising dollars would be wasted, reducing the costs to end users and increasing the efficiency of each ad dollar. In the physical world, only a very rough approximation of this ideal is possible. Advertisers buy television and radio spots, newspaper ads, and billboards based on broad demographics and on the context in which the ads will be shown.

The Internet promised to change this traditional method of buying ad space by allowing advertisers to gather personal information on consumers through the use of cookies placed on the user's browser, which tracked behavior and purchases online and could be matched with offline information as well. Advertisers could then use this information to target ads to just the desired individuals they were seeking based on personal characteristics, interests, and recent clickstream behavior. From the beginning, e-commerce was a trade-off for consumers between privacy and efficiency: Let us know more about you, and we will show you only the advertising and products you are interested in seeing and would be likely to respond to. For brands, the promise was scale and cost: Let us know whom you are looking for, and we will find millions of people on thousands of websites that fit your criteria. E-commerce was supposed to end the mass



advertising that began in nineteenth-century newspapers, expanded with twentieth-century radio, and then exploded with the growth of television.

The latest rendition of these promises from the ad tech industry is programmatic advertising, which it touts as an automated algorithmic platform that allows large brands to bid for ad space (web pages) on hundreds of thousands, and even millions, of websites in coordinated campaigns, to measure the results, and to extend brands to tens of millions of consumers with unprecedented scale. In 2022, various kinds of programmatic digital display advertising spending (including video, native advertisements, and social network advertising) on all platforms is expected to amount to almost $130 billion, accounting for more than 90% of total digital display advertising spending. But in the past few years, it has become clear that the promise of programmatic advertising has not been realized and has many risks for brands. In fact, this kind of advertising has injured many brands, and the ad tech industry is reeling from advertiser criticism that the existing online ad ecosystem lacks transparency, fails to protect brands, is rife with fraudulent clicks by bots, and lacks metrics for judging the cost effectiveness of ads.

Contrary to the rosy promises of the online ad industry, most notably those of the ad giants Google, Meta, and Twitter, most of the display ads shown to website visitors are irrelevant, sometimes hilariously so, to visitors' interests. For this reason, the click-through rate for banner advertising is stunningly low, around 0.05%, and the price of generic display ads is only about $1.50 per thousand views because of their low response rate. Try this out: Visit Yahoo (one of the largest display advertisers on Earth) on any device, look at the prominent ads on screen, and ask yourself whether you are really interested in the ad content at that moment in time. Often, it is an ad for something you have recently searched for on Google or even already purchased at Amazon or other sites. These ads will follow you for days as you are re-targeted across the Web and on mobile devices. Researchers have found that only 20% of Internet users find that display ads on websites are relevant to their interests, and depending on the type of ad (sidebar, native inline, pre-roll video, or video and display ads) are viewed unfavorably by 50% to 78% of visitors. How many times a day do you click the X to stop a video roll on the top of the screen?

To understand how we ended up in this situation, it's useful to review briefly how the Internet ad industry evolved. Digital display advertising has progressed through three eras. In the early 2000s, a firm with a website interested in ad revenue (a "publisher") would sell space on its site to other firms (advertisers), usually through an ad agency or via a direct relationship. The process was primarily manual. By 2005, ad networks emerged. These networks allowed advertisers to buy ad space on thousands of participating sites in a single purchase and allowed publishers to sell to advertisers more efficiently. Prices were negotiated among the parties. This process was very similar to the manner in which ads on cable TV were sold. By 2011, even larger ad exchanges emerged and began using automated real-time bidding for ad space, which provided advertisers with access to an even larger pool of publisher ad spaces that numbered up to the millions of websites. Prices and ad placement were automated by algorithms and adjusted based on real-time open auctions, in which advertising firms and brands indicated what they were willing to pay to advertise to consumers meeting specific criteria. Google, Meta, Twitter, and others developed their own proprietary automated bidding platforms. Collectively, these are called real-time bidding (RTB) programmatic advertising platforms. The result today is an extraordinarily complex ecosystem of players and sophisticated technologies (called the ad technology stack).

In programmatic ad platforms, scale has increased dramatically. Today, there are thousands of advertisers and millions of web pages where ads can be placed. The ads are chosen and generated based on the user's browser cookie history and information about the web page so that ads can supposedly target the right consumers. The content of the web page and the ad location on the page are also important. Millions of website pages have content injurious to brands (fake news, hate language, or violence), just very poor content, or even no content. All programmatic advertising platforms use big data repositories that contain personal information on thousands to millions of online shoppers and consumers; analytic software to classify and search the database for shoppers with the desired characteristics; and machine learning techniques to test out combinations of consumer characteristics that optimize the chance of a purchase resulting from exposure to an ad. All of this technology is designed to lower the cost and increase the speed and scale of advertising in an environment in which there are hundreds of millions of web pages to fill with ads and millions of online consumers looking to buy at any given moment.

Programmatic ad platforms have since evolved into three different types: traditional auction-based real-time bidding (RTB) "open exchange," which is a marketplace open to all advertisers and publishers of website pages; private marketplace (PMP), which also uses real-time bidding in which publishers invite selected advertisers to bid on their inventory; and programmatic direct (PD), in which advertisers deal directly with well-established publishers who have developed their own supply-side platforms (an automated inventory of available ad space). Currently, about 75% of programmatic digital display advertising is programmatic direct; about 10.5% is open exchange RTB, and 15% is PMP. The rate of growth of open exchange RTB has slowed significantly. The trend is toward publishers, especially well-known brands with large budgets, to reduce their dependence on the operators of the platforms and exert much more control over where their ads appear, how visible they are, and what content they are associated with. To find out why, continue reading.

Currently, less than 10% of online display advertising in the United States, the United Kingdom, Canada, France, and Germany is still done in a non-automated, traditional environment that involves marketers using e-mail, fax, phone, and text messaging in direct relationships with publishers. Traditional methods are often used for high-value, premium ads, say, at the top of the screen with a video; expanding ads seen at major newspapers, magazines, and portal sites; and native ads appearing alongside or interwoven with native content. This is the world of the traditional insertion order: If you want to advertise on a specific newspaper or magazine website, call the ad department and fill out an insertion order. For instance, if you are a brand selling biking accessories, you can tell your ad agency to place ads in biking magazine websites and on social networks, targeting the readers of those magazines. In this environment, firms who want to sell products and services online hire advertising agencies to develop a marketing plan, and the agency directly contracts with the ad department of the publishers.

This traditional environment is expensive, imprecise, and slow, in part because of the number of people involved in the decision about where to place ads. Also, the technology used is slow, and the process of learning which of several ads is optimal could take weeks or months. Real-time so-called A/B testing is difficult. The ads could be targeted to a more precise group of potential customers, and to a much larger group of

potential customers. Although context advertising on sites dedicated to a niche product is very effective, there are many other websites or social network pages visited by bikers that might be equally effective and cost much less.

The process is very different in a programmatic direct (PD) environment. Ad agencies have access to programmatic ad platforms offered by Google, Yahoo, AOL, Meta, Twitter, and many other pure ad platforms. Working with their clients, the ad agency more precisely defines the target audience to include individuals, ages 24–35, who live in zip codes where mountain biking is a popular activity, have mentioned biking topics on social networks, have e-mails in which mountain biking is discussed, make more than $70,000 a year, and currently do not own a mountain bike. The ad agency enters a bid expressed in dollars per thousand impressions for 200,000 impressions to people who meet most or all of the characteristics being sought. The platform returns a quote for access to this population of 200,000 people who meet the characteristics required. The quote is based on what other advertisers are willing to pay for that demographic and characteristics. The quote is accepted or denied. If accepted, the ads are shown in real time to people as they move about the Web. As people visit various websites, the automated program assesses whether they meet the desired characteristics and displays the mountain bike ad within milliseconds to those people. The programmatic direct platforms also track the responses to the ads in real time and can change to different ads and test for effectiveness based on the platform's experience in near real time. The programmatic direct platforms claim they use algorithms and machine learning programs that can identify over time the most effective ads on the most productive websites. At least this is the promise. Increasingly, large advertisers do not use agencies but deal directly with the ad platforms like Google, Meta, and most recently Amazon (now the third-largest display ad platform).

In private marketplace (PMP) transactions, a group of publishers invite selected advertisers to bid on ad space, often using the publishers' own customer data. Generally, the publishers know more about their customers than the ad platforms' algorithms and databases can provide. For instance, the leading online newspapers might combine their inventory of ad space (web pages) and invite premium big-budget brands to bid on the space. This gives the publishers much more control over who advertises on their pages and gives advertisers a shot at getting premium ad space, better page placement, and better results from more precise knowledge of the consumer. This is reflected in higher costs for the advertisers. In the PMP model, a single publisher directly contracts with selected brands and advertisers for guaranteed placement of ads, and like PMP methods, offers both parties more control and precision. Brands and ad agencies bid for this space in a semi-automated environment. In some cases, prices are negotiated directly between the publisher and the brands or their ad agencies. Real-time bidding is not used.

The risks of RTB in open exchanges are that brands lose a great deal, if not all, of their control over the presentation of ads, including what websites they appear on, where on the screen they appear (above or below the "fold" or scroll), how long the ad is present on screen, who is doing the clicking on the ads (real interested persons or bots or fake people), and the content of the website.

For instance, JPMorgan Chase at one point had ads appearing on an estimated 400,000 websites a month using programmatic RTB open exchange auctions. The company became suspicious when only 12,000 sites produced any clicks. An intern was

assigned to visit each site to see whether it was appropriate for the bank. The intern discovered that 7,000 were not, leaving only 5,000 acceptable as pre-approved websites. JPMorgan Chase has not experienced any fall-off in the visibility of its ads on the Internet since it eliminated 355,000 websites from its ad campaign. JPMorgan Chase has since winnowed the list to only 1,000 approved sites. One of the non-approved sites advertising the JPMorgan Chase's private client services turned out to be a website that advocated violence.

In the past, YouTube came under intense fire from leading brands because their YouTube ads were appearing next to offensive material that promoted racism, hate, and terrorism. As a result, JPMorgan Chase, Verizon, Gerber, AT&T, Johnson & Johnson, Lyft, and Procter & Gamble (the world's largest advertiser) all pulled ads from YouTube. In response, YouTube hired thousands of employees to monitor websites and teach machine learning algorithms what is an acceptable website for ads. However, despite YouTube's efforts, the problem has continued. For instance, in 2022, major advertisers such as Disney, Vodafone, and others pulled advertising from YouTube after their ads were shown in connection with offensive content.

In addition to malicious sites, there are millions of fake sites on the Web that are set up for the sole purpose of displaying ads and generating revenue. Many of the fake sites are bots that generate clicks but have no real people viewing the ads. Although RTB open exchange platforms try to prevent this behavior, they can easily be defeated. The result is large ad expenditures but fewer legitimate clicks and fewer conversions. Analysts estimate that the top 50 online media publishers account for only 5% of all ads shown on the Web. This means that 95% of the ads are being shown on niche websites with small audiences or on completely fake sites with fake visitors. In general, ad platforms have little idea, if any, of where the ads are appearing, the content of the websites, or who is clicking. Top brands with large budgets no longer believe the ad platforms' claims that they use algorithms and machine learning to weed out fake sites, hate sites, and sites that feature porn. As a result, many large companies now employ brand safety firms to track their ad campaigns and prevent the firm's ads from appearing on certain sites.

SOURCES: "Fundamentals of Programmatic Advertising," by Evelyn Mitchell, Insider Intelligence/eMarketer, July 27, 2022; "Programmatic Advertising Explainer," by Evelyn Mitchell, Insider Intelligence/eMarketer, July 19, 2022; "Big Brands Pull Ads as YouTube Battles Conspiracy and Misinformation," by Chris Sutcliffe, Thedrum.com, February 14, 2022; "YouTube Confronts New Brand Safety Issues," by Lucia Moses, Businessinsider.com, March 24, 2021; "To Show How Easy It Is for Plagiarized News Sites to Get Ad Revenue, I Made My Own," by Megan Graham, Cnbc.com, May 17, 2020; "YouTube Hiring More Humans to Train Computers to Police the Site," by Daisuke Wakabayashi, *New York Times*, December 4, 2017; "Chase Had Ads on 400,000 Sites. Then on Just 5,000. Same Results," by Sapna Maheswari, *New York Times*, March 29, 2017; "Consumer Attitude Towards Website Advertising Formats: A Comparative Study of Banner, Pop-up and In-Line Display Advertisements," by Tri de Le, *Journal of Internet Marketing and Advertising*, January 13, 2017.

Case Study Questions

1. Pay a visit to your favorite portal, and count the total ads on the opening page. Count how many of these ads are (a) immediately of interest and relevant to you, (b) sort of interesting or relevant but not now, and (c) not interesting or relevant. Do this 10 times and calculate the percentage of the three kinds of situations. Describe what you find, and explain the results using this case.
2. Advertisers use different kinds of "profiles" in the decision to display ads to customers. Identify the different kinds of profiles described in this case, and explain why they are relevant to online display advertising.
3. How can display ads achieve search-engine–like results?
4. Do you think instant display ads based on your immediately prior clickstream will be as effective as search engine marketing techniques? Why or why not?

6.7 REVIEW

KEY CONCEPTS

■ Understand the key features of the online audience, the basic concepts of consumer behavior and purchasing, and how consumers behave online.

- Key features of the online audience include the number of users online, the intensity and scope of use, demographics and aspects, the type of Internet connection, and community effects.
- Models of consumer behavior attempt to predict or explain what consumers purchase and where, when, how much, and why they buy. Factors that impact buying behavior include cultural, social, and psychological factors.
- There are five stages in the consumer decision process: awareness of need, search for more information, evaluation of alternatives, the actual purchase decision, and post-purchase contact with the firm.
- The online consumer decision process is basically the same, with the addition of two new factors: website and mobile platform capabilities and consumer clickstream behavior.

■ Identify and describe the basic digital commerce marketing and advertising strategies and tools.

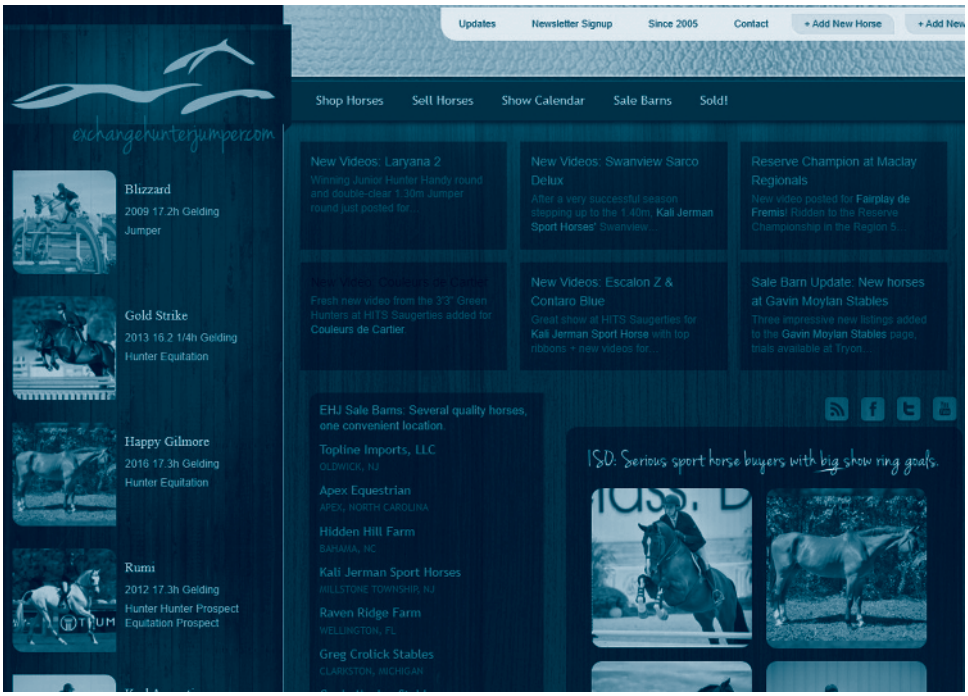
- *A website* is the major tool for establishing the initial relationship with the customer.
- *Search engine marketing and advertising* involve the use of search engines to build and sustain brand as well as to support direct sales of products and services.
- *Display ads* include banner ads, rich media, video ads, sponsorships, native advertising, and content marketing. Today, almost all display advertising is served by advertising networks that use programmatic advertising and real-time bidding.
- *E-mail marketing* sends e-mail directly to interested users and has proven to be one of the most effective forms of marketing communications.
- *Lead generation marketing* uses multiple e-commerce presences to generate leads for businesses who later can be contacted and converted into customers.
- *Affiliate marketing* is a form of marketing in which a firm pays a commission when visitors to a different website, blog, or social media page click the firm's link on that website or page and visit the firm's website and/or make a purchase there.
- *Social marketing and advertising* involve using the social media to communicate brand images as well as to directly promote sales of products and services.
- *Mobile and local marketing and advertising* involve using display ads, search engine advertising, video ads, and mobile messaging on mobile devices such as smartphones and tablet computers, often using the geographic location of the user.
- *Multi-channel marketing (combining offline and online marketing efforts)* is typically the most effective type of marketing. Although many e-commerce ventures want to rely heavily on online communications, marketing communications campaigns that are the most successful at driving traffic incorporate both online and offline tactics.
- *Customer retention techniques* for strengthening customer relationships include personalization, one-to-one marketing, and interest-based advertising, customization and customer co-production, and customer service (such as FAQs, live chat, intelligent agents, and automated response systems).
- *Online pricing strategies* include offering products and services for free, versioning, bundling, and dynamic pricing.

7.6 CASE STUDY

Exchangehunterjumper.com: Building a Brand with Social Marketing

The Internet and Web have enabled thousands of business ideas to become online realities. The Internet has reduced the costs of starting a small business and has allowed small players to effectively use the same marketing and selling tools as major corporations use. Small businesses usually occupy a market niche that is not occupied by big players or corporations. One such market niche in the United States, comprising about 10,000 to 30,000 players, is the high-end horse show circuit. These are people who are willing to drop $200,000 on a horse that can jump a five-foot fence with ease. This may be a very small market, but its members are highly motivated to both buy and sell horses, and they are willing to spend a lot of money in the process. ExchangeHunterJumper.com is one example of how a small business focusing on a tiny niche market was able to successfully build an online brand.

According to Dagny Amber Aslin, founder and owner of ExchangeHunterJumper.com ("The Exchange"), a website created to help owners and professional trainers sell high-end competition horses, it's hard to "get rich" or even make money on the Internet. She adds, "There are a lot of preconceived notions.... I beat down a path previously



unplowed. It cost us a lot of money and we suffered many setbacks from our mistakes." Yet the site is still growing and has succeeded where others failed. How did Aslin break through and develop a site that works for professionals buying and selling alike? How did she build trust? How did she market her services?

Experience helped. Aslin started with applicable experience—in the horse world and in the world of Internet marketing. In addition to riding and competing as a child, Aslin spent several years working as a professional trainer. Working six-day weeks, including weekends, and spending most of her time outdoors riding, teaching, and competing, she saw first-hand the challenges facing professional horsemen, and she gained valuable credibility with those who would become her audience.

While working in the horse business, she took a part-time job as an assistant to a top California real estate agent, helping him market and sell high-end real estate in the Santa Barbara area. Among other activities, she helped him develop and expand his website. Because of that experience, she realized that "selling six-figure horses and seven-figure houses are ridiculously similar—both tend to be overpriced, have emotional strings attached, require vettings and exhaustive negotiations, involve agents, and the list goes on." In 2005, when she moved from California back to the Midwest, where she had spent her childhood, The Exchange was born. Thirteen years later, the equine marketing model she has built is a customized version of the real estate program she assisted with in Santa Barbara.

Aslin knew that busy horse professionals needed a high-quality, reliable source of suitable mounts for their clients and that their day-to-day business lives left them little time to thoroughly search the market; they often also lacked a good grasp of modern media technology. The same dilemma applied when it came to selling high-end horses. In response, she created an organized, professional process for preparing online horse sale advertisements. It included detailed forms for sellers to fill out, and she insisted that quality photos and videos be provided for each horse advertised, thus enabling her to turn the descriptions into accurate portrayals of each animal and its capabilities. She created a fee structure that was reasonable and affordable, and she developed a multi-channel marketing program.

Aslin understood that her business plan needed to be a living document that evolved over time based on what the market was telling her. This helped her make inroads into a traditional industry that is very resistant to change. Most horse professionals spend their days outside and tend to do business only with those they know personally: The level of trust is very low. Most existing horse sale websites were little more than online classifieds cluttered with unreliable information. Although professional horsemen were slow to use computers and the Internet, the rise of smartphones and tablet computers has helped increase their comfort level with technology and has been a huge factor in the increased online involvement of horse professionals.

The Exchange took all of these things into account, and Aslin went further. In order to remain true to her business goal of providing a reliable service to professionals in the horse industry that would become a source of good horses described accurately, Aslin personally reviewed all potential advertisers. In some cases, she went back to sellers and insisted that they provide higher-quality photographs and videos, and in cases in which she determined that the horse was not as represented, she turned down their business. The initial business plan process involved strict screening, and it meant turning away money and valuing quality over quantity in every area—horses, buyers, traffic, and ads.

It was a hard and expensive premise to adhere to when building a reputation from scratch, but her persistence and dedication worked, and today, The Exchange's reputation and "brand" have become two of its most valuable assets.

In discussing some of the obstacles she faced in getting The Exchange up and running, Aslin starts with education—her own or lack thereof—specifically in the areas of graphic design and web technology. Although she knew what professional horsemen needed, she did not know how to translate those needs into graphic design or onto the Web. She says that looking back on the original logo and print designs is "a painful exercise," but she is happy with the current direction of her business.

The budget was also an initial obstacle, as there wasn't a lot of money to spend up front. However, in hindsight, she believes that the lack of money gave her an advantage because she had to learn what her market wanted and was able to do so without breaking the bank. Conversely, her main competitor took an opposite track, spent big money up front, missed the mark with customers, and is now defunct.

In addition, she faced the negative perception among industry professionals and prospective buyers that equine Internet advertising was "worthless." Further, much of her target audience barely knew how to use a computer, didn't have e-mail addresses, and had been doing business in the same old-school manner for decades. For a few key players, doing business that way worked very well, but it left a void for those outside that inner circle to move horses. Through a combination of knowledge of the marketplace, on-the-job training, perseverance, and listening to what the market was telling her, The Exchange has successfully begun to fill that void. Today, The Exchange typically manages the marketing of 160–180 horses at any given time and anticipates that this number will likely increase to more than 200 horses in the near future.

Here's how it works: The Exchange handles advertising for sellers and trainers across the country. In 2022, the prices of show horses advertised on The Exchange range from $25,000 to $250,000. The Exchange specializes in hunter-jumper show horses and, specifically, those suited for high-level competition.

Trainers/sellers who sign up for a premium listing pay a flat $250 fee for the initial advertisement and a subscription fee of $35 per month (less for multiple horses), which includes a listing on The Exchange's website featuring the horse's details, photos, show record, lineage, and videos. The Exchange provides copywriting services and professionally edits all videos supplied by sellers, hosting the videos on its private server and making them available to download, embed, and share. Each listing typically takes 8–10 hours to prepare. The Exchange also offers a second listing alternative—a Sale Barn listing for $300 a month that allows for listings of up to 10 horses. A three-month commitment is required, but there are no initial or other fees. As soon as the commitment is fulfilled, sellers can deactivate and then reactivate their Sale Barn page as needed at any time and without any further charge. Aimed at high-volume operations with frequent turnover, the Sale Barn page can link to the seller's website, YouTube, Facebook, and Twitter feeds, if available, with the goal of increasing overall brand awareness for the seller's business. Aslin designed the Sale Barn as an affordable option for professionals who might otherwise be reluctant to spend on marketing. The Sale Barn page provides sellers with a mini website and social media advertising, including three sidebar Facebook ads each week. These ads have the advantage of promoting not only the sellers but also the Sale Barn package itself because those who click on the ad end up on the ExchangeHunterJumper.com website and are able to see its

services first-hand and in depth. International sellers are given a slight additional discount. The Sale Barn program has proven to be a major success, with 11 different sale barns listed.

Statistics show that a horse's first month online is the most successful one in terms of the number of web page visits. With the addition of monthly campaign management, The Exchange helps keep each horse's marketing fresh and up to date. Updates can immediately escalate a horse's popularity and attract new potential buyers. Sellers are encouraged to provide updates as frequently as possible. Online videos add to the brand of the horse for sale and are especially important for young horses or those "growing into" their price tags. Updates are added to the website and promoted through various media outlets including Facebook and e-mail campaigns.

Sellers currently fill out two separate forms: a credit card registration form and an equine fact sheet. The fact sheet includes a long series of checkboxes from which sellers select preworded traits and is coupled with space for additional written descriptions. This saves some production time, although writing the actual copy is still a major part of the value that The Exchange provides. To implement this option, Aslin spent time investigating form-building tools. Custom-built form solutions were likely to be too expensive, so she played with numerous online form generators and ultimately was able to find some that offered great functionality at a relatively low cost. So, for example, after a seller indicates that the horse is a "jumper," questions specific to jumpers will be displayed.

The Exchange develops a specific marketing strategy for each horse listed. This strategy includes reviewing the information submitted, combing through a horse's official show record, considering impartial impressions, and identifying the most likely buyers. If The Exchange thinks that the photos or videos don't help to sell the horse, the seller is advised on how to improve them. This advice stems from experience in marketing all types of horses from coast to coast and from an understanding of the various buyer profiles and geographic trends that exist in the market.

Social marketing forms the core of The Exchange's marketing efforts. Starting in 2009, The Exchange began experimenting with social media, including YouTube, Facebook, Twitter, and Instagram. Aslin notes that when she began The Exchange, social media was not yet the phenomenon that it is today but that when its significance started to become apparent, she had no choice but to jump in and begin using it, learning as she went.

In the past, Facebook was The Exchange's primary social media platform, but in 2021, the Exchange's Facebook page was hacked, and as a result, Facebook shut the page down. Aslin now relies on her personal Facebook page (she has more than 3,000 friends and followers) as well as on marketing through various Facebook Groups that are focused on sales of the types of horses marketed on The Exchange.

ExchangeHunterJumper.com also has loyal followers on Instagram and Twitter, which tend to attract a younger demographic than Facebook. The Exchange's Instagram feed has more than 9,000 followers. The Exchange's Twitter account has about 2,000 followers. Aslin is trying to improve The Exchange's Twitter "voice" to be more conversational and consumer-centric because she has noticed that anything that resembles an "ad" is not effective. Although Aslin doubts that many of these followers are actual buyers or sellers at this time, she notes that in the future, they probably will be. Her site has grown up along with her clientele, and children who once drooled over the ponies on her site are now soon-to-be adults and, possibly, young professionals.

Developing the actual social media content, which needs to be presented in such a way as to attract attention, is another challenge, as is determining the optimal amount and timing of new content to post each day. Aslin notes that if she posts too many times a day or posts too much content too close together, the reach of her posts seems to drop off. Content creation for all of the different social media channels has become a full-time job in and of itself and poses some not-inconsequential pitfalls for the layperson. If done incorrectly, it can take up an inordinate amount of time with only a low return on investment, and one social media misstep can unleash a major image crisis that can unravel years of branding work.

Because every business is different, The Exchange's experience suggests that it's important for e-commerce sites to experiment with social media in order to determine which outlets are most effective in reaching the target audiences. To track the effectiveness of her social marketing efforts, Aslin uses various tracking systems. For instance, Google Analytics allows her to track exactly how many people are on the ExchangeHunterJumper site in real time and how they got there. Aslin has found that focusing solely on Likes is not sufficient. For example, she notes that a photo she posted advertising a horse on Facebook generated only 10 Likes but that almost 150 people followed the link associated with the photo to the ExchangeHunterJumper website. She also uses a short URL service, Bitly, to create unique URLs associated with Facebook and other social media posts that have built-in click trackers. This enables her to quickly see the collective success of her social marketing efforts; in a good month, bit.ly stats show around 8,000 click-throughs to the ExchangeHunterJumper site.

The firm's website is also a key element of its e-commerce presence. Aslin continually reviews the design of the website with an eye toward making it the most effective marketing tool possible. She built the original site herself in 2005 and updated it almost yearly in response to her target market's needs. In 2012, Aslin relaunched the site for a fifth time, and for the first time ever, she hired a professional web development team to convert the static HTML site into a dynamically driven content management system on the Expression Engine platform. Although she was able to keep costs low by designing and developing the site's CSS layout, the advanced functionality that she desired, such as the sale horse filter that enables shoppers to sort horses based on price, location, gender, type, and size, still required a hefty five-figure investment. Aslin believes that the abilities to get to know the market and to update the site accordingly has kept The Exchange fresh and innovative. Every iteration of the website has been focused on meeting the target market's needs. For instance, she has also spent considerable time and expense to make sure that The Exchange's website, including videos, works just as well on mobile devices as it does on a traditional laptop or desktop computer. However, given the changes in Google's search algorithms with respect to mobile sites, which has had the effect of pushing The Exchange down in search results, Aslin is once again considering a redesign. She notes that although users in the past were relatively easy to impress and satisfy, today's users have high expectations for website quality and performance.

In addition to the website, The Exchange uses a variety of other marketing strategies, including e-mail campaigns, magazine advertising, and word of mouth. It ceased distributing its four-color, printed National Sales List booklet because of its high cost and now relies almost totally on various types of online marketing. Aslin has found it to be extremely helpful to have the web development experience that she has honed over the years. Here are some of her words of wisdom: She feels that entrepreneurs don't

necessarily have to know how to build sites, but they do need to be familiar with what is and what is not possible in site construction. It is important to understand which functions are complicated and which are not so that overly complicated add-ons that don't really add to the user experience can be eliminated from tight budgets. It's also important to know what technology is popular now and what technology is just around the corner. Even if you think you are proficient in all the tasks that you will need in order to launch your business, with the rapid pace of technology you will inevitably spend much of your time learning something totally new, whether you want to or not.

By paying attention to these words of wisdom as well as to the details at every step of the marketing process, The Exchange has managed to build a successful brand, one that the horse community has come to rely upon.

Sources: ExchangeHunterJumper.com, accessed September 2022; Interview with Amber Aslin, founder of ExchangeHunterJumper, August 2020, November 2018, October 2017, November 2016, September 2014, September 2013, and September 2012.

Case Study Questions

1. Find a site on the Web that offers classified ads for horses. Compare this site to ExchangeHunterJumper.com in terms of the services offered (the customer value proposition). What does The Exchange offer that the other site does not?
2. In what ways was social media effective in promoting The Exchange brand? Which media led to the highest increase in sales and inquiries? Why?
3. Make a list of all the ways that The Exchange attempts to personalize its services to both buyers and sellers.

7.7 REVIEW

KEY CONCEPTS

■ **Understand the difference between traditional online marketing and social-mobile-local marketing platforms and the relationships among social, mobile, and local marketing.**

- Social, mobile, and local marketing have transformed the online marketing landscape. The major trends and concepts include:
  - The emphasis in online marketing has shifted from exposing consumers to messages toward engaging them in conversations about your brand.
  - Social marketing means all things social: listening, discussing, interacting, empathizing, and engaging the consumer.
  - Social marketing and advertising is not simply another "ad channel" but, rather, a collection of technology-based tools for communicating with shoppers.
  - In the past, businesses could tightly control their brand messaging and lead consumers down a funnel of cues that ended in a purchase. However, today, businesses can no longer exercise such tight control. Instead, consumer purchase decisions are increasingly driven by the conversations, choices, tastes, and opinions of the consumer's social network.
- Social, mobile, and local marketing are the fastest-growing forms of online marketing.
- Social, mobile, and local digital marketing are self-reinforcing and connected.