William & Mary Business Law Review

Volume 10 | Issue 1 Article 2

How Google Perceives Customer Privacy, Cyber, E-Commerce, Political and Regulatory Compliance Risks

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HOW GOOGLE PERCEIVES CUSTOMER PRIVACY, CYBER, E-COMMERCE, POLITICAL AND REGULATORY COMPLIANCE RISKS

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ABSTRACT

By now, almost every business has an Internet presence. What are the major risks perceived by those engaged in the universe of Internet businesses? What potential risks, if they become reality, may cause substantial increases in operating costs or threaten the very survival of the enterprise?

This Article discusses the relevant annual report disclosures from Alphabet, Inc. (parent of Google), along with other Google documents, as a potentially powerful teaching device. Most of the descriptive language to follow is excerpted directly from Alphabet's (Google) regulatory filings. My additions about these entities include weaving their disclosure materials into a logical presentation and providing supplemental sources for those who desire a deeper look (usually in my footnotes) at any particular aspect. I have sought to present a roadmap with these materials that shows Google's struggle to optimize their business performance while navigating through a complicated maze of regulatory compliance concerns and issues involving governmental jurisdictions throughout the world. International cybercrime and risk issues follow, with an examination of anti–money laundering, counterterrorist, and other potential illegal activity laws.

The value proposition offered here is disarmingly simple—at no out-of-pocket cost, the reader has an opportunity to invest probably just a few hours to read and reflect upon the Alphabet,

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Inc. (Google) multiple-million-dollar research, investment and documentation of perceived Internet, e-commerce, cyber, IT, and electronic payment system risks. Hopefully, this will prove of value to those either interested in the rapidly changing dynamics of (1) electronic payment systems, (2) those engaged in Internet site operations, or (3) those engaged in fighting cybercrime activities.

TABLE OF CONTENTS

INTRODUCTION

This Article seeks to answer the questions facing all global businesses: "What are the major cyber risks perceived by those engaged in the universe of Internet businesses? What potential risks, if they become reality, may cause substantial increases in operating costs or threaten the very survival of the enterprise?"[1] In today's interconnected world, the relevant legal environment far exceeds those concerns and constraints of our home countries and has become truly worldwide in reach.[2] Interest shown towards my prior *PayPal* article, as demonstrated by the numerous downloads from the Social Sciences Research Network (SSRN),[3] is a source of pleasant surprise and delight.

A. Value Proposition

This Article provides a roadmap about how a reader may gain substantial traction toward understanding cyber risk within just a few additional hours.

"To survive, all successful entrepreneurs must become highly skillful at optimizing efficiency at every opportunity."[4] For any enterprise conducting global business, the "cost of accounting and legal fees and management time devoted to the discovery, examination and documentation of the perceived threat to the enterprise from cyber, e-commerce, information technology and electronic payment system risks" are considerable.[5] This value proposition to the reader is disarmingly simple—at no out-of-pocket cost, the reader has an opportunity to invest just a few hours to read and reflect upon

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[1] Lawrence J. Trautman, *E-Commerce and Electronic Payment System Risks: Lessons from PayPal*, 16 U.C. DAVIS BUS. L.J. 261, 263 (2016).

[2] *Id.* at 299 (citing Tabrez Ahmad, Information & Communication Technology Law (Dec. 7, 2011) (unpublished manuscript), http://ssrn.com/abstract=1969493 [https://perma.cc/QYP9-4T56].

[3] Lawrence J. Trautman, *E-Commerce, Cyber, and Electronic Payment System Risks: Lessons from Paypal,* 16 U.C. DAVIS BUS. L.J. 261 *(Spring 2016)*, SSRN (last revised Dec. 24, 2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2314119 [https://perma.cc/G7U7-VRWP].

[4] Lawrence J. Trautman, Anthony Luppino & Malika S. Simmons, *Some Key Things U.S. Entrepreneurs Need to Know About The Law and Lawyers*, 46 TEX. J. BUS. L. 155 (2016).

[5] Trautman, *supra* note 1, at 261.

the multimillion-dollar research, investment and documentation of perceived e-commerce, cyber, IT, and electronic payment system risk from one of the world's largest Internet-intensive enterprises.

"Words are powerful and have meaning."[6] As a basis for discussion and analysis about cyber risk, relevant annual report disclosures from Alphabet (corporate parent of Google), along with other Alphabet and Google documents, are used as a potentially powerful teaching device.[7] Descriptive language excerpted directly from Google's regulatory filings are utilized to show what management of these important economic companies perceive to be their major categories of risk exposure. Weaving these materials into a logical presentation and providing supplemental sources for those who desire a deeper look (usually in my footnotes) is the author's challenge. Hopefully, even the most seasoned Information Technology (IT) and cyber security executives benefit by examining Google's struggle to optimize its business performance while navigating through a complicated maze of regulatory compliance concerns and issues involving governmental jurisdictions throughout the world.

"The Internet, e-commerce, cyber threats, and new mobile platforms and technology are having a major impact on payment systems and entrepreneurial business."[8] Both Alphabet and Google incur considerable management and legal expense to examine, analyze, and describe their perceived information technology and e-commerce risk.[9] A close examination of the disclosure language from these two entities will hopefully prove of value to those readers interested in the rapidly changing dynamics of (1) electronic payment systems, (2) those engaged in Internet site operations, or (3) those engaged in fighting cybercrime activities.

> While a twenty-something-year-old MBA business school student in Washington, D.C., I was fortunate to have a part-time job abstracting and indexing [required corporate disclosure] filings (10-Ks, 8-Ks, etc.) under a contract with the U.S. Securities and Exchange Commission (SEC). This experience provided me with substantial practice in the review and analysis of corporate

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[6] *Id.* at 263

[7] *Id.* at 261.

[8] *Id.* at 264.

[9] *See id.* at 261 (describing Paypal's expenses related to their IT and e-commerce risks).

> financial statements. A few years later, my early career training as a securities analyst and later as an investment banker in New York City at Donaldson, Lufkin & Jenrette provided an intimate familiarity with the examination and analysis of corporate filings made by corporate securities issuers with the SEC.[10]

It was by virtue of conducting this financial securities analysis work many years ago that I came to realize the value of these massive U.S. disclosure documents (approximately 100 pages when financial statements are included) in the case of the Alphabet, Inc./Google LLC regulatory filings with the U.S. Securities and Exchange Commission on Form 10-K.[11] These documents provide an excellent insight for anyone interested in Internet platforms' considerations and new challenges facing Alphabet, Inc. and Google LLC as search and electronic commerce platforms attempt to accommodate rapid changes in mobile computing and device platforms.

For some readers, this Alphabet, Inc. and Google LLC article may appear to lack the customary structure, look and feel of the typical law or business school academic journal article. If this bothers you, then this Article was not written for you. In an earlier draft of my eBay article,[12] more than one commentator asked whether I could just paraphrase some of the heavy quotes of relevant eBay and PayPal disclosure language.[13] If this is your reaction, you entirely miss the point. The primary purpose in crafting these articles is to repackage PayPal's (or Google's) risk disclosure language (without my heavy paraphrasing) so that Internet and e-commerce entrepreneurs and other interested readers may benefit from the considerable thought and expense devoted by those closest to the situation (under penalty of disclosure liability) to telling their story. My goal has been to have meaningful scholarly impact by providing individuals who either now, or soon, will be actually creating jobs through their efforts in growing businesses with valuable lessons in cyber domain risks in a highly readable manner and at no out-of-pocket cost. Since cybercrime continues to be a highly lucrative activity of many international criminal syndicates, lessons

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[10] Trautman, *supra* note 1, at 264.
[11] *See* Alphabet, Inc., Annual Report (10-K) (Feb. 27, 2017).
[12] Trautman, *supra* note 1, at 263.
[13] *Id*. at 264.

to learn here from Google's perceived risk disclosures may also prove of interest to those engaged in law enforcement, criminal law, and anti-cybercrime activities.[14]

I. RECENT CHANGES IN THE CYBER THREAT LANDSCAPE

A. Recent Developments

Major disruptive cyber breaches continue at an alarming rate, many sanctioned by nation state actors, and new vulnerability warnings appear almost daily.[15] By the second quarter of 2017, an all-time high number of disclosed vulnerabilities had been reached.[16] If this trend continues, 2017 appears to be on a path to become a record-setting year in the total number of disclosed vulnerabilities.[17] Exhibit 1 provides a comparison of mid-year vulnerabilities over a five-year period.

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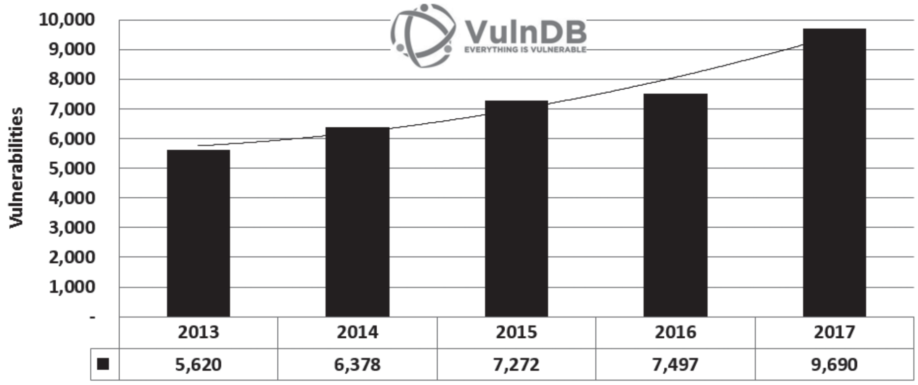
[14] *See* Lawrence J. Trautman & Alvin Harrell, *Bitcoin Versus Regulated Payment Systems: What Gives?*, 38 CARDOZO L. REV. 1041, 1050 (2017); *see also* Lawrence J. Trautman, *Is Disruptive Blockchain Technology the Future of Financial Services?*, 69 CONSUMER FIN. L. Q. REP. 234 (2016); Lawrence J. Trautman, *Virtual Currencies: Bitcoin & What Now After Liberty Reserve, Silk Road, and Mt. Gox?*, RICH. J.L. & TECH., Sept. 16, 2014, Article No. 13 at ¶1; *see generally* Lawrence J. Trautman & David D. Schein, The Dark Web and Employer Liability 10 (Sept. 18, 2018) (unpublished manuscript), http://ssrn.com/abstract=3251479 [https://perma.cc/QG7B-MKTL].

[15] *See* David Orozco, *The Knowledge Police*, 43 HOFSTRA L. REV. 417, 417–18 (2014); *see also* Lawrence J. Trautman, *Congressional Cybersecurity Oversight: Who's Who & How It Works*, 5 J.L. & CYBER WARFARE 147, 150–51 (2016); Lawrence J. Trautman, *Cybersecurity: What About U.S. Policy?,* 2015 U. ILL. J.L. TECH. & POL'Y 341, 349 (2015); Lawrence J. Trautman, *Following the Money: Lessons from the "Panama Papers," Part 1: Tip of the Iceberg*, 121 PENN ST. L. REV. 807, 859 (2017) (citing Nicole Hong & Robin Sidel, *Hackers Hit Cravath, Weil Gotshal*, WALL ST. J., Mar. 30, 2016, at C1) [hereinafter referred to as *Following the Money*]; Lawrence J. Trautman, *Is Cyberattack The Next Pearl Harbor?*, 18 N.C. J.L. & TECH. 232, 259–63 (2016); Lawrence J. Trautman, *The Board's Responsibility for Crisis Governance*, 13 HASTINGS BUS. L.J. 275, 277 (2017) (citing Business Roundtable, *Committed to Protecting America: CEO Guide to Security Challenges* (Feb. 2005), http://www.cj.msu.edu/~outreach/wdm/ceo_guide.pdf); Lawrence J. Trautman & Janet Ford, *Nonprofit Governance: The Basics*, 52 AKRON L. REV. (forthcoming 2018) (manuscript at 64–69), http://ssrn.com/abstract=3133818 [https://perma.cc/5JDS-RFQ4].

[16] Vulnerability Quick View, *Mid-Year 2017 Vulnerability Trends*, RISK BASED SECURITY, INC. 3 (July 2017).

[17] *Id.*

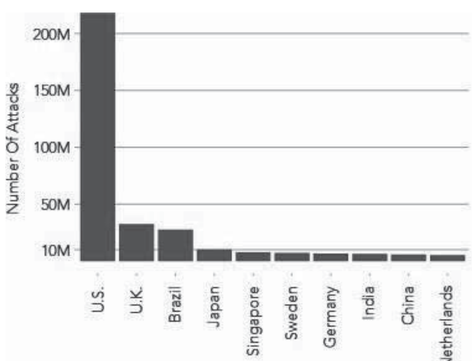
EXHIBIT 1
A COMPARISON OF MID-YEAR 2017 VULNERABILITIES
TO THE PAST FOUR YEARS[18]



Source: Risk Based Security, Inc.

Statistics for the second quarter of 2017 reveal that the largest target of attack traffic is the United States, with the United Kingdom in second place, Brazil in third place, Japan in fourth, followed by Singapore, Sweden, Germany, India, China and the Netherlands in that order.[19] Exhibit 2 depicts the Top 10 Target Countries for Web Application Attacks, Q2 2017.

EXHIBIT 2
TOP 10 TARGET COUNTRIES FOR WEB APPLICATION ATTACKS,
Q2 2017[20]



Target Country	Count
U.S.	218,121,167
United Kingdom	32,579,100
Brazil	27,799,775
Japan	10,312,912
Singapore	7,874,068
Sweden	7,192,377
Germany	6,613,665
India	6,510,759
China	5,929,543
Netherlands	5,326,137

Source: Akamai

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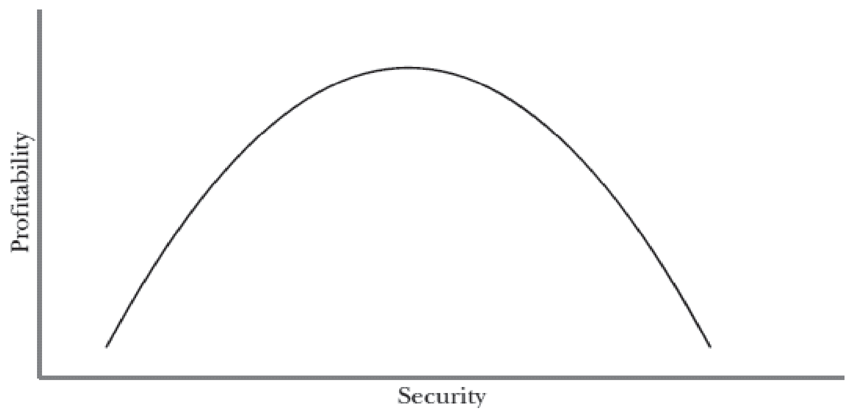
18 *Id.*

19 *[State of the Internet] / Security/Q2 2017 Report*, 17 AKAMAI TECH., INC. (2017).

20 *Id.*

B. The Yahoo! Breaches and Impact on U.S. Corporate Governance

EXHIBIT 3
THE ORMEROD-TRAUTMAN PROFIT-MAXIMIZING
MODEL OF CYBER SECURITY[21]



Source: Trautman & Ormerod

During 2016, U.S. Internet pioneer Yahoo! announced that personal information had been stolen from the accounts of over 500 million users during a 2014 digital systems breach.[22] Yahoo! announced that the stolen information "likely included names, birthdays, email addresses, hashed passwords (the vast majority with bcrypt), telephone numbers, and, in some cases, encrypted or unencrypted security questions and answers. At the time it was announced, this 2014 theft represented the largest data breach ever."[23] Then, during mid-December 2016, Yahoo! announced yet another one billion customer accounts were compromised during 2013, establishing a new record for the largest known data breach

[21] *Id.*

[22] Lawrence J. Trautman & Peter C. Ormerod, *Corporate Directors' and Officers' Cybersecurity Standard of Care: The Yahoo Data Breach*, 66 AM. U. L. REV. 1231, 1233 (2017).

[23] *Id.* (citing Press Release, Yahoo! Inc., *An Important Message to Yahoo Users on Security* (Sept. 22, 2016), https://investor.yahoo.net/releasedetail.cfm?releaseid=990570; Nicole Perlroth, *Yahoo Says Hackers Stole Data on 500 Million Users in 2014*, N.Y. TIMES (Sept. 22, 2016), https://www.nytimes.com/2016/09/23/technology/yahoo-hackers.html?_r=0) [https://perma.cc/X3CR-43C3].

ever.[24] Then, following acquisition of Yahoo! on October 3, 2017, new corporate parent Verizon announced that, "during integration, the company recently obtained new intelligence and now believes, following an investigation with the assistance of outside forensic experts, that all Yahoo[!] user accounts were affected by the August 2013 theft."[25]

In our recent article about the Yahoo! breaches, along with my co-author Peter Ormerod, we explore what appears to be the profit-maximizing model of data security as depicted in Exhibit 3.[26]

From Exhibit 3, we see that at the leftmost point on the curve an enterprise's data security is so abysmal that few, if any, users will trust the company with their personal data and information.[27] Essentially, paying for zero data security measures result in zero users and zero profitability.[28] However:

> as the company's security improves, an increasing number of users trust the company with their personal information and the risk of action by the FTC decreases—both of which contribute to increased profitability. At some point—essentially, where the number of users is maximized—increased security measures begin limiting the usability of the company's electronic features, and thus begin decreasing profitability. Taken to an extreme, excessive security measures may, theoretically, drive usability to point of futility, rendering profit nonexistent.[29]

The Ormerod-Trautman theoretical profit-maximizing analytical framework assumes that users (both search and e-commerce customers) are in a position to ascertain the quality of cybersecurity provided.[30] As we have seen numerous times, and recently

[24] *Id.* (citing Robert McMillan, Ryan Knutson & Deepa Seetharaman, *Yahoo Discloses New Breach of 1 Billion User Accounts*, WALL ST. J. (Dec. 15, 2016), https://www.wsj.com/articles/yahoo-discloses-new-breach-of-1-billion-user-accounts-1481753131 [https://perma.cc/V6NT-AYND]).

[25] *Yahoo Provides Notice to Additional Users Affected by Previously Disclosed 2013 Data Theft*, OATH (Oct. 3, 2017), https://www.oath.com/press/yahoo-provides-notice-to-additional-users-affected-by-previously/ [https://perma.cc/6773-VTKT].

[26] Trautman & Ormerod, *supra* note 22, at 1290.

[27] *Id.*

[28] *Id.*

[29] *Id.* at 1291.

[30] *See id.* at 1290–91.

in the case of the Yahoo! breaches, considerable delay may occur before users become aware their data had been breached.[31]

C. Organized Crime and the Internet

In recent years, transnational organized crime has added new lines of business, including industrial espionage and cyber theft to their long-standing lines of business staples such as blackmail, the drug trade, and prostitution.[32] Former BBC journalist Misha Glenny attributes much of the growth in international organized crime to the downfall of the Soviet Union, which resulted in thousands of former KGB and Eastern European intelligence officers seeking new employment in rather unsavory occupations, primarily in the highly profitable illicit drug trade.[33] We will come back to the topic of organized transnational crime in a few minutes when we contemplate the impact on political stability caused by breaches of secrecy (think Snowden,[34] Wikileaks,[35] Chelsea Manning,[36] The Panama Papers,[37] and Russian hacking of elections in the United States and many other countries).[38]

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[31] *Yahoo Provides Notice to Additional Users Affected by Previously Disclosed 2013 Data Theft*, *supra* note 25.

[32] Misha Glenny, *Dark Market: Cyberthieves, Cybercops and You*, YOUTUBE (Jan. 13, 2012), https://www.youtube.com/watch?v=g9G3HLPHXPg [https://perma.cc/3QPK-Y5SM].

[33] Misha Glenny, *Misha Glenny Investigates Global Crime Networks*, YOUTUBE (Sept. 14, 2009), https://www.youtube.com/watch?v=XO1Me-MY-Q0 [https://perma.cc/9VNY-MYHA].

[34] *See* Jonah Force Hill, *The Growth of Data Localization Post-Snowden: Analysis and Recommendations for U.S. Policymakers and Business Leaders, The Hague Inst. for Global Just.*, The Hague Inst. For Global Just. (May 1, 2014), https://ssrn.com/abstract=2430275 [https://perma.cc/R5PM-PZGA].

[35] *See* David Pozen, *The Leaky Leviathan: Why the Government Condemns and Condones Unlawful Disclosures of Information*, 127 HARV. L. REV. 512, 514 (2013).

[36] *See* Margaret B. Kwoka, *Leaking and Legitimacy*, 48 U.C. DAVIS L. REV. 1387, 1389–90 (2015).

[37] *See* Trautman, *Following the Money*, *supra* note 15, at 809.

[38] *See* Jens David Ohlin, *Did Russian Cyber-Interference in the 2016 Election Violate International Law?*, 97 TEX. L. REV. (forthcoming) (manuscript at 5), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2934321 [https://perma.cc/6UUQ-X46D]; *see also* Richard L. Hasen, *The 2016 U.S. Voting Wars: From Bad to Worse*, 26 WM. & MARY BILL RTS. J. 629, 629 (2018).

II. GROWTH OF ONLINE COMMERCE AND SEARCH

It will come as no surprise that the global growth rate of online commerce is staggering.[39] Online commerce growth seems a likely proxy for search usage[40] and therefore a reasonable indicator of the potential for Google usage growth during the next few years.[41] According to Net Market Share, as of September 2018, global market share for desktop search engine is as follows: Google (78.05%); Baidu (9.82%); Bing (6.69%%); Yahoo! (2.81%); Yandex (1.44%); Ask (0.64%); and DuckDuckGo (0.26%).[42] Exhibit 4 illustrates global usage of the Internet and population statistics as of June 30, 2018.

EXHIBIT 4
WORLD INTERNET USAGE AND POPULATION STATISTICS, JUNE 30, 2018[43]

WORLD INTERNET USAGE AND POPULATION STATISTICS
JUNE 30, 2018 - Update

World Regions	Population (2018 Est.)	Population % of World	Internet Users 30 June 2018	Penetration Rate (% Pop.)	Growth 2000-2018	Internet Users %
Africa	1,287,914,329	16.9 %	464,923,169	36.1 %	10,199 %	11.0 %
Asia	4,207,588,157	55.1 %	2,062,197,366	49.0 %	1,704 %	49.0 %
Europe	827,650,849	10.8 %	705,064,923	85.2 %	570 %	16.8 %
Latin America / Caribbean	652,047,996	8.5 %	438,248,446	67.2 %	2,325 %	10.4 %
Middle East	254,438,981	3.3 %	164,037,259	64.5 %	4,894 %	3.9 %
North America	363,844,662	4.8 %	345,660,847	95.0 %	219 %	8.2 %
Oceania / Australia	41,273,454	0.6 %	28,439,277	68.9 %	273 %	0.7 %
WORLD TOTAL	7,634,758,428	100.0 %	4,208,571,287	55.1 %	1,066 %	100.0 %

NOTES: (1) Internet Usage and World Population Statistics estimates in June 30, 2018. (2) CLICK on each world region name for detailed regional usage information. (3) Demographic (Population) numbers are based on data from the United Nations Population Division. (4) Internet usage information comes from data published by Nielsen Online, by the International Telecommunications Union, by GfK, by local ICT Regulators and other reliable sources. (5) For definitions, navigation help and disclaimers, please refer to the Website Surfing Guide. (6) The information from this website may be cited, giving the due credit and placing a link back to www.internetworldstats.com. Copyright © 2018, Miniwatts Marketing Group. All rights reserved worldwide.

Source: Internet World Stats

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[39] Stefany Zaroban, *U.S. e-commerce sales grow 16.0% in 2017*, DIGITAL COMMERCE 360 (Feb. 16, 2018), https://www.digitalcommerce360.com/article/us-ecommerce-sales/ [https://perma.cc/PQ9H-47E9].

[40] *See id.*; Desktop Search Engine Market Share, Net Market Share (Nov. 7, 2017), https://www.netmarketshare.com/search-engine-market-share.aspx?qprid=4&qpcustomd=0 [https://perma.cc/GHF3-7SFR].

[41] Desktop Search Engine Market Share, *supra* note 40.

[42] *Id.*

[43] World Internet Users in the World by Regions, INTERNET WORLD STATS (June 30, 2018), https://www.internetworldstats.com/stats.htm [https://perma.cc/9ZPE-63BM].

"By now, everyone should understand that the continued growth of the Internet has resulted in commensurate growth in e-commerce."[44] eMarketer reports that during 2017, "2.46 billion individuals, or one-third of the global population and 71.0 [percent] of internet users, will access social networks at least once a month, up 8.2 [percent] from 2016.[45] Mobile phone adoption and expanding mobile coverage will drive that growth."[46]

III. DISCLOSURE OF MATERIAL RISKS

A. SEC Disclosure Mandate

In the United States, companies having publicly traded equities or debt are required to make disclosures of all material information in periodic filings with the U.S. Securities and Exchange Commission.[47]

"Mandatory disclosure," according to Professor Stephen Bainbridge, "is a—if not *the*—defining characteristic of U.S. securities regulation."[48] The U.S. "Congress intended the securities laws to 'substitute a philosophy of full disclosure for the philosophy of caveat emptor ....'"[49] "Since the Depression [of the 1930s], the [U.S.] Securities and Exchange Commission's totemic philosophy has been to promote a robust informational foundation for private decision makers, thereby furthering efficiency and corporate governance," states Professor Henry T.C. Hu, the first Director of the Division of Risk, Strategy, and Financial Innovation

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[44] Trautman, *supra* note 1, at 265.

[45] *eMarketer Updates Worldwide Social Network User Figures*, EMARKETER (July 17, 2017), https://www.emarketer.com/Article/eMarketer-Updates-Worldwide-Social-Network-User-Figures/1016178 [https://perma.cc/TY9Q-BZJ3].

[46] *Id.*

[47] *See* 15 U.S.C. § 78m(a) (2012).

[48] Stephen M. Bainbridge, *Mandatory Disclosure: A Behavioral Analysis*, 68 U. CIN. L. REV. 1023, 1023 (2000) (citing Europe & Overseas Commodity Traders, S.A. v. Banque Paribas London, 147 F.3d 118, 126 (2d Cir. 1998) ("Through mandatory disclosure, Congress sought to promote informed investing and to deter the kind of fraudulent salesmanship that was believed to have led to the market collapse of 1929.")); *see* Lawrence J. Trautman & George Michaely, *The SEC & The Internet: Regulating the Web of Deceit,* 68 CONSUMER FIN. L.Q. REP. 262 (2014).

[49] Bainbridge, *supra* note 48, at 1023 (citing SEC v. Capital Gains Research Bureau, Inc., 375 U.S. 180, 186 (1963)).

of the U.S. Securities and Exchange Commission (2009–2011).[50] Therefore, under the laws of the United States, disclosure of all material facts by issuers of securities offered or trading in the United States is the principle at the foundation of federal securities regulation enforced by the U.S. Securities and Exchange Commission by virtue of the Securities Act of 1933[51] (the Securities Act) and the Securities Exchange Act of 1934 (the Exchange Act).[52]

Beginning in 2005, the SEC "required all firms to include a new section in their annual filings (Section 1A of the Annual Report on Form 10-K) to discuss 'the most significant factors that make the company speculative or risky' (Regulation S-K, Item 305(c), SEC 2005)."[53] According to Professor Tom C.W. Lin:

> The objective of the Securities Act is to ensure full and fair disclosure of the character of securities sold in interstate and foreign commerce and through the mails, and to prevent frauds in the sale thereof…. Pursuant to its mandated registration process and its antifraud provisions, the Securities Act attempts to ensure that investors receive accurate and meaningful information about the offered securities and their issuing firms.[54]
>
> The Exchange Act, in turn, governs the subsequent trading of those securities in secondary markets.[55] Like the Securities Act, the Exchange Act attempts to ensure that investors in those secondary markets receive accurate and meaningful information about the offered securities and their issuing firms.[56]

The Exchange Act works to achieve this purpose by requiring periodic reporting filings and by imposing a broad antifraud provision in Section 10.[57]

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[50] Henry T.C. Hu, *Too Complex to Depict? Innovation, 'Pure Information,' and the SEC Disclosure Paradigm*, 90 TEX. L. REV. 1601, 1601 (2012).

[51] 15 U.S.C. § 77a–aa (2000).

[52] § 78a–mm; *see* John C. Coffee, *The Future as History: The Prospects for Global Convergence in Corporate Governance and Its Implications*, 93 Nw. U. L. Rev. 641, 683 (1999).

[53] John L. Campbell, Hsinchun Chen, Dan S. Dhaliwal, Hsin-min Lu, & Logan B. Steele, *The Information Content of Mandatory Risk Factor Disclosures in Corporate Filings*, 19 REV. ACCT. STUD. 396, 397 (2014).

[54] Trautman, *supra* note 1, at 269.

[55] *Id.*

[56] *Id.*

[57] *See* Stephen J. Brown, William N. Goetzmann, Bing Liang & Christopher Schwarz, *Mandatory Disclosure and Operational Risk: Evidence from Hedge*

Fast forward a few years and the United States undergoes a traumatic meltdown of its financial markets during 2008 and 2009.[58] Professor Hu contends that the SEC's disclosure philosophy:

> has always been substantially implemented through what can be conceptualized as an 'intermediary depiction' model. An intermediary—e.g., a corporation issuing shares—stands between the investor and an objective reality. The intermediary observes that reality, crafts a depiction of the reality's pertinent aspects, and transmits the depiction to investors. Securities law directs that depictions are to be accurate and complete. 'Information' is conceived of in terms of, if not equated to, such depictions.[59]

Professor Hu argues that "Modern financial innovation has resulted in objective realities that are far more complex than in the past, often beyond the capacity of the English language, accounting terminology, visual display, risk measurement, and other tools on which all depictions must primarily rely."[60] Of particular importance to this inquiry, Professor Lin observes that "*in theory, Risk Factors are intended to inform investors of each firm's deepest fears and gravest vulnerabilities*" [emphasis added].[61] How Internet powerhouse Google perceive their greatest threat of risk is the subject of this discussion.

Fund Registration, 63 J. FIN 2785, 2785–86 (2008); Todd D. Kravet & Volkan Muslu, *Textual Risk Disclosures and Investors' Risk Perceptions*, 18 REV. ACCT. STUD. 1088, 1089, 1091 (2013); Tom C. W. Lin, *A Behavioral Framework for Securities Risk*, 34 SEATTLE U. L. REV. 325, 326, 329–30 (2011); Scott E. Coull & Erin E. Kenneally*, A Qualitative Risk Assessment Framework for Sharing Computer Network Data* 2, 15–16 (March 31, 2012). 2012 TRPC. http://ssrn.com/abstract=2032315. *But see* Simon C.Y. Wong, *A Call to Reform US Disclosure-Based Regulation*, BUTTERWORTHS J. INT'L BANKING & FIN. L. 77, 78 (Feb. 2010).

[58] Trautman, *supra* note 1, at 269.

[59] Hu, *supra* note 50, at 1601.

[60] Trautman, *supra* note 1, at 270; *see* Joseph A. Grundfest, *The Future of United States Securities Regulation in an Age of Technological Uncertainty*, 75 ST. JOHN'S L. REV. 83, 84 (2001); Steven L. Schwarcz, *Rethinking the Disclosure Paradigm in a World of Complexity*, 2004 U. ILL. L. REV. 1, 37 (2004); Lawrence J. Trautman, *Bitcoin, Virtual Currencies and the Struggle of Law and Regulation to Keep Pace*, 102 MARQ L. REV. (forthcoming), http://ssrn.com/abstract=3182867 [https://perma.cc/78X9-N5G5].

[61] Lucian A. Bebchuk, Alma Cohen & Allen Ferrell, *What Matters in Corporate Governance?*, 22 REV. FIN. STUD. 783, 788 (2009); Lin, *supra* note 57, at 330.

IV. Lessons from Alphabet and Google

During October 2017, the market capitalization of Alphabet, Inc., Google's parent, rose above $700 billion for the first time, second only among the S&P 500 to Apple ($842.2 billion).[62] For perspective, it is interesting to note that Microsoft Corp. ranks third, having a market cap of $646.6 billion.[63] To understand the nature of Google's perceived risk regarding customer privacy, political and regulatory compliance, e-commerce, and cyber, let's first look at the fundamental nature of the businesses involved.

A. General: Alphabet and Google

Google LLC was incorporated under the laws of the State of California in 1998 and reincorporated as a Delaware corporation in 2003.[64] Google describes its primary core products or business as, "Search, Android, Maps, Chrome, YouTube, Google Play, and Gmail [with each having] over one billion monthly active users."[65] Google's stated mission is "to organize the world's

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[62] *See* Ben Eisen, *$713.2 Billion*, WALL ST. J., Oct. 30, 2017, at B9.

[63] *Id.*

[64] *See* Alphabet, Inc., Quarterly Rpt. to U.S. Securities and Exch. Comm. on Form 10-Q for the period ending Sept. 30, 2017 at 7.

[65] *See* Alphabet, Inc., *supra* note 11, at 3; *see also* Oren Bracha & Frank A. Pasquale, *Federal Search Commission? Access, Fairness and Accountability in the Law of Search*, 93 CORNELL L. REV. 1149, 1180, 1183 (2008); Yuxin Chen & Song Yao, *Sequential Search with Refinement: Model and Application with Click-Stream Data*, 63 MGMT. SCI. 4345, 4346 (2017); Zhi Da, Joseph Engelberg & Pengjie Gao, *In Search of Attention*, 66 J. FIN. 1461, 1462 (2011); Juan Feng, Hemant K. Bhargava & David M. Pennock, *Implementing Sponsored Search in Web Search Engines: Computational Evaluation of Alternative Mechanisms*, 19 INFORMS J. ON COMPUTING 137, 138 (2007); Anindya Ghose & Sha Yang, *An Empirical Analysis of Search Engine Advertising: Sponsored Search in Electronic Markets*, 55 MGMT. SCI. 1605, 1609, 1619 (2009); Avi Goldfarb & Catherine E. Tucker, *Search Engine Advertising: Channel Substitution when Pricing Ads to Context*, 57 MGMT. SCI. 458, 458, 460 (2011); Eric Goldman, *Revisiting Search Engine Bias*, 38 WM. MITCHELL L. REV. 96, 96–98 (2011); James Grimmelmann, *The Structure of Search Engine Law*, 93 IOWA L. REV. 1, 32, 49–50 (2007); James Grimmelmann, *Speech Engines*, 98 MINN. L. REV. 868, 878–79, 891 (2014); James Grimmelmann, *The Google Dilemma*, 53 N.Y.U. L. REV. 939, 942 (2009); Mingyu Joo, Kenneth C. Wilbur, Bo Cowgill & Yi Zhu, *Television Advertising and Online Search*, 60 MGMT. SCI. 56, 56 (2014); Kirthi Kalyanam, John McAteer, Jonathan Marek, James A. Hodges & Lifeng

Lin, *Cross Channel Effects of Search Engine Advertising on Brick & Mortar Retail Sales: Meta Analysis of Large Scale Field Experiments on Google.com*, 16 QUANTITATIVE MKTG. & ECON. 1, 2 (2018); Greg Lastowka, *Google's Law*, 73 BROOK. L. REV. 1327, 1329, 1331, 1340 (2008); De Liu, Jianqing Chen & Andrew B. Whinston, *Ex Ante Information and the Design of Keyword Auctions*, 21 INFO. SYS. RES. 133, 133–34 (2010); Astrid Mager, *Algorithmic Ideology: How Capitalist Society Shapes Search Engines,* 15 INFO., COMMC'N & SOC'Y 769, 772, 779 (2012); Geoffrey A. Manne & Joshua D. Wright, *If Search Neutrality is the Answer, What's the Question?*, 2012 COLUM. BUS. L. REV. 151, 179, 189, 197 (2012); Nathan Newman, *Search, Antitrust and the Economics of the Control of User Data*, 31 YALE J. REG. 401, 405, 407, 412 (2014); Nathan Newman, *The Costs of Lost Privacy: Consumer Harm and Rising Economic Inequality in the Age of Google*, 40 WM. MITCHELL L. REV. 849, 857, 859–60 (2014); Christopher Soghoian, *The Problem of Anonymous Vanity Searches*, 3 ISJLP 299, 303 (2007); Florence Thépot, *Market Power in Online Search and Social-Networking: A Matter of Two-Sided Markets*, 36 WORLD COMPETITION 195, 196, 201, 206 (2013); Sha Yang & Anindya Ghose, *Analyzing the Relationship between Organic and Sponsored Search Advertising: Positive, Negative or Zero Interdependence?*, 29 MKTG. SCI. 602, 610, 618 (2010); Chrysanthos Dellarocas, *The Impact of Performance-Based Advertising on the Prices of Advertised Goods* 2, 5 (B.U. Sch. of Mgmt., Research Paper No. 2009-12, 2009), https://ssrn.com/abstract=1489599; Michael Luca, Tim Wu, Sebastian Couvidat, Daniel Frank & William Seltzer, *Does Google Content Degrade Google Search? Experimental Evidence* 2, 10 (Harv. Bus. Sch., Working Paper No. 16-035, 2016), https://ssrn.com/abstract=2667143; Mark R. Patterson, *Google and Search Engine Market Power* 2, 4 (Fordham Law Legal Studies, Research Paper No. 2047047, 2012), https://ssrn.com/abstract=2047047; Eugene Volokh & Donald M. Falk, *First Amendment Protection for Search Engine Search Results* 11, 26 (UCLA Sch. of L., Research Paper No. 12-22, Apr. 20, 2012), https://ssrn.com/abstract=2055364; Joshua D. Wright, *Defining and Measuring Search Bias: Some Preliminary Evidence* 4, 14 (Geo. Mason L. & Econ., Research Paper No. 12-14, 2011), https://ssrn.com/abstract=2004649; Sabrina Chi & Devin M. Shanthikumar, The Geographic Dispersion of Google Search and the Market Reaction to Earnings Announcements 1 (Dec. 19, 2014) (unpublished manuscript) (https://ssrn.com/abstract=2324391); Anindya Ghose & Sha Yang, Modeling Cross-Category Purchases in Sponsored Search Advertising 24 (Jan. 25, 2010) (unpublished manuscript) (https://ssrn.com/abstract=1312864); Kinshuk Jerath & Amin Sayedi, Exclusive Display in Sponsored Search Advertising 1, 28 (Mar. 2015) (unpublished manuscript) (https://ssrn.com/abstract=1831744); De Liu, Jianqing Chen & Andrew B. Whinston, Current Issues in Keyword Auctions 8, 16 (Jan. 8, 2008) (unpublished manuscript) (https://ssrn.com/abstract=1008496); Alex Marthews & Catherine E. Tucker, Government Surveillance and Internet Search Behavior 7 (Feb. 17, 2017) (unpublished manuscript) (https://ssrn.com/abstract=2412564).

information and make it universally accessible and useful...."[66] There can be little doubt that Google is having a very positive impact on the lives of many worldwide.[67]

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[66] *See* Alphabet, Inc., *supra* note 11, at 3. *See also* JONATHAN L. ZITTRAIN, THE FUTURE OF THE INTERNET AND HOW TO STOP IT 52, 84 (Yale U. Press 2008); Tarleton L. Gillespie, *The Politics of 'Platforms'*, 12 NEW MEDIA & SOC'Y 347, 347 (2010); Richard L. Hasen, *Cheap Speech and What It Has Done (to American Democracy)*, 16 FIRST AMEND. L. REV. 200, 227 (2017); Peter S. Menell, *Knowledge Accessibility and Preservation Policy for the Digital Age*, 44 HOUSTON L. REV. 1013, 1017, 1040, 1054 (2007).

[67] *See* Matthias Bank, Martin Larch & Georg Peter, *Google Search Volume and its Influence on Liquidity and Returns of German Stocks*, 25 FIN. MKTS. & PORTFOLIO MGMT. 239, 240, 242, 262 (2011); Anupam Chander, *Googling Freedom,* 99 CALIF. L. REV. 1, 5–6, 28 (2011); WILLIAM H. DUTTON & MARK GRAHAM, SOCIETY AND THE INTERNET: HOW NETWORKS OF INFORMATION AND COMMUNICATION ARE CHANGING OUR LIVES 1–2 (M. Graham & W. H. Dutton eds., Oxford U. Press 2014); Jon Garon, *Digital Hollywood 2.0: Reimagining Film, Music, Television and Publishing Distribution as a Global Artist Collaborative*, 21 MICH. ST. INT'L L. REV. 563, 566, 577, 583–84 (2013); Edward L. Glaeser, Scott Duke Kominers, Michael Luca & Nikhil Naik, *Big Data and Big Cities: The Promises and Limitations of Improved Measures of Urban Life*, 56 ECON. INQUIRY 114, 123, 126, 133 (2018); Alison J. Head & Michael B. Eisenberg, Lessons Learned: How College Students Seek Information in the Digital Age 15, 32 (Dec. 1, 2009) (unpublished manuscript) (https://ssrn.com/abstract=2281478); Gary Lucas, Jr., *Measuring Scholarly Impact: A Guide for Law School Administrators and Legal Scholars*, 165 U. PA. L. REV. ONLINE 165, 171 (2017); Tracy Hresko Pearl, *Fast & Furious: The Misregulation of Driverless Cars*, 73 N.Y.U. ANNUAL SURV. OF AM. L. 19, 41–42 (2017); Patricia Salkin, *From Bricks and Mortar to Mega-Bytes and Mega-Pixels: The Changing Landscape of the Impact of Technology and Innovation on Urban Development*, 42/43 URB. L. 11, 12, 21–22 (2011); Harry Surden & Mary-Anne Williams, *Technological Opacity, Predictability, and Self-Driving Cars*, 38 CARDOZO L. REV. 121, 125, 138–39 (2016); Diane Leenheer Zimmerman, *Can our Culture be Saved? The Future of Digital Archiving*, 91 MINN. L. REV. 989, 994, 1019 (2007); Jonathan L. Zittrain, *Will the Web Break?* 1, 8 (Harv. Pub. L., Working Paper No. 12-08, 2010), https://ssrn.com/abstract=1995059; Jose Azar, Electric Cars and Oil Prices 1, 3 (Sept. 9, 2009) (unpublished manuscript) (https://ssrn.com/abstract=1474023); Vanja M. Dukic, Hedibert F. Lopes & Nick Polson, Tracking Flu Epidemics Using Google Flu Trends and Particle Learning 9, 23 (Nov. 25, 2009) (unpublished manuscript) (https://ssrn.com/abstract=1513705); Seth I. Stephens-Davidowitz, The Cost of Racial Animus on a Black Presidential Candidate: Using Google Search Data to Find What Surveys Miss 2, 4, 29 (Mar. 24, 2013) (unpublished manuscript) (https://ssrn.com/abstract=2238851). *See generally* ERIK BRYNJOLFSSON & ADAM SAUNDERS, WIRED FOR INNOVATION: HOW INFORMATION TECHNOLOGY IS RESHAPING THE ECONOMY 11, 13 (The MIT Press 2010); Bryan James Casey, *Amoral Machines, Or: How Roboticists Can Learn to Stop Worrying and Love the Law*, 111 NW. U. L.

During 2015, Alphabet, Inc. became successor to Google pursuant to a holding company reorganization.[68] Alphabet and Google are headquartered in Mountain View, California.[69] For Alphabet, Google is the only reportable segment, since no "other segments meet the quantitative thresholds to qualify as reportable segments; therefore, the other operating segments are combined and disclosed below as other bets."[70] Accordingly, reported segments are as follows:

> Google—Google includes our main internet products such as Search, Ads, Commerce, Maps, YouTube, Google Cloud, Android, Chrome, and Google Play as well as our hardware initiatives. Our technical infrastructure and some newer efforts like virtual reality are also included in Google. Google generates revenues primarily from advertising; sales of apps, in-app purchases, and digital content; services fees for cloud offerings; and sales of hardware products.
>
> Other Bets—Other Bets is a combination of multiple operating segments that are not individually material. Other Bets includes businesses such as Access, Calico, CapitalG, GV, Nest, Verily, Waymo, and X. Revenues from the Other Bets are derived primarily through the sales of internet and TV services through Google Fiber, sales of Nest products and services, and licensing and R&D services through Verily.[71]

As of September 30, 2017, total Alphabet employment headcount numbered 78,101 of which most are employed by Google.[72] As of December 31, 2016, full-time employees numbered 72,053, of which 27,169 worked in research and development; sales and marketing accounted for 20,902; operations employed 14,287; and

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REV. 231, 240 (2017); WILLIAM H. DUTTON & MARK GRAHAM, SOCIETY AND THE INTERNET: HOW NETWORKS OF INFORMATION AND COMMUNICATION ARE CHANGING OUR LIVES 1–2 (M. Graham & W. H. Dutton eds., Oxford U. Press 2014); David R Hansen, Kathryn Hashimoto, Gwen Hinze, Pamela Samuelson & Jennifer M. Urban, *Solving the Orphan Works Problem for the United States*, 37 COLUM. J. L. & ARTS 1, 3, 30 (2013); David Lazer, Ryan Kennedy, Gary King & Alessandro Vespignani, Google Flu Trends Still Appears Sick: An Evaluation of the 2013–2014 Flu Season 2 (2014) (unpublished manuscript) (https://ssrn.com/abstract=2408560).

[68] *See* Alphabet, Inc., *supra* note 11, at 7.

[69] *Id.* at 1.

[70] *Id.* at 28.

[71] *Id.*

[72] *Id.* at 31.

9,695 were involved in general and administrative positions.[73] Alphabet has also announced expectations that Google will be reorganized into a limited liability company.[74]

B. How Google Views Risk

Corporate risk is a topic that is receiving increased focus by management and boards of directors during recent years.[75] Reports of cyber threats and data security breaches continue to grow by alarming proportions.[76] Various forms of cybercrime listed by Pinguelo and Muller include: "economic or foreign espionage, malicious insiders, spamming, phishing, email extraction programs, and hacking."[77] In previous articles I have discussed how "few operational areas ... present as much inherent risk or prove as difficult [for boards of directors] to govern as Information Technology."[78]

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[73] *See* Alphabet, Inc., Annual Rpt. to U.S. Securities and Exch. Comm. on Form 10-K for the period ending Dec. 31, 2016, at 6.

[74] *Id.*

[75] *See* NAT'L ASSN. CORP. DIRS, Adv. Council on Risk Oversight: Summary of Proceedings 5–6 (2013); s*ee also* Lawrence J. Trautman, *Managing Cyberthreat*, 33 SANTA CLARA HIGH TECH. L. J. 230, 266–67 (2016); Lawrence J. Trautman, *The Matrix: The Board's Responsibility for Director Selection and Recruitment*, 11 FLA. ST. U. BUS. REV. 75, 166 (2012); Chris Bronk, Risk-Intelligent Governance in the Age of Cyberthreats (Apr. 29, 2013) (unpublished manuscript) (http://ssrn.com/abstract=2270853).

[76] *See* Trautman, *supra* note 1.

[77] Fernando M. Pinguelo & Bradford W. Muller, *Virtual Crimes, Real Damages: A Primer on Cybercrimes in the United States and Efforts to Combat Cybercriminals*, 16 VA. J. L. & TECH. 116, 121 (2011); Lawrence J. Trautman, Jason Triche & James C. Wetherbe, *Corporate Information Technology Governance Under Fire*, 8 J. STRAT. INT'L STUD. 105, 106 (2013).

[78] Lawrence J. Trautman & Kara Altenbaumer-Price, *The Board's Responsibility for Information Technology Governance*, 28 J. MARSHALL J. COMPUT. & INFO. L. 313, 313 (2011); *see* Peter Swire, *A Model for When Disclosure Helps Security: What is Different About Computer and Network Security?*, 2 J. TELECOMM. & HIGH TECH. L. 163, 172, 202 (2004); Lawrence J. Trautman, *Congressional Cybersecurity Oversight: Who's Who & How It Works*, 5 J. L. & CYBER WARFARE 147, 149, 172; Lawrence J. Trautman, *Corporate Boardroom Diversity: Why Are We Still Talking About This?*, 17 ST. MARY'S L. REV. RACE & SOC. JUST. 219, 246, 279 (2015); Lawrence J. Trautman, *Cybersecurity: What About U.S. Policy?*, 2015 U. ILL. J. L. TECH. & POL'Y 341, 357, 367 (2015); Lawrence J. Trautman, *Who Sits on Texas Corporate Boards? Texas Corporate Directors: Who They Are and What They Do*, 16 HOUSTON BUS. & TAX L. J. 44, 94, 97 (2016); Lawrence J. Trautman, The SONY Data Hack: Implications for World Order (unpublished paper) (on file with author).

All Internet centric enterprises must be concerned with issues of user privacy, cyber, e-commerce, political and regulatory compliance risks and are exposed to numerous potential risks, including: cybercrime,[79] cyberterrorism,[80] electronic crime, infrastructure security, intellectual property protection, Internet governance,[81] jurisdictional disputes, and legal restrictions and obligations (regulations and privacy laws).[82]

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[79] *See* David W. Opderbeck, *Cybersecurity, Data Breaches, and the Economic Loss Doctrine in the Payment Card Industry*, 75 MD. L. REV. 935, 938, 959 (2016); Trey Herr & Sasha Romanosky, *Cyber Crime: Security Under Scarce Resources* 2 (American Foreign Policy Council Defense Technology Program Brief, No. 11, 2015), http://ssrn.com/abstract=2622683.

[80] Derek E. Bambauer, *Ghost in the Network*, 162 U. PA. L. REV. 1011, 1031, 1081 (2014); Susan W. Brenner, *Cyber-Threats and the Limits of Bureaucratic Control*, 14 MINN. J. L. SCI. & TECH. 137, 165 (2013); Kelly Gable, *Cyber-Apocalypse Now: Securing the Internet Against Cyberterrorism and Using Universal Jurisdiction as a Deterrent*, 43 VAND. J. TRANSNAT'L L. 57, 60, 84 (2010); Jack Landman Goldsmith, *The Internet and the Legitimacy of Remote Cross-Border Searches*, U. CHI. LEGAL F. 103, 105 (2001); Oren Gross, *Cyber Responsibility to Protect: Legal Obligations of States Directly Affected by Cyber-Incidents*, 48 CORNELL INT'L L. J. 481, 505 (2015); Lene Hansen & Helen Nissenbaum, *Digital Disaster, Cyber Security and the Copenhagen School*, 53 INT'L STUD. Q. 1155, 1161 (2009); Duncan B. Hollis, *An e-SOS for Cyberspace*, 52 HARV. INT'L L. J. 373, 377, 390 (2011); Gregory S. McNeal, *Cyber Embargo: Countering the Internet Jihad,* 39 CASE W. RES. J. INT'L L. 789, 793, 794 (2008); David W. Opderbeck, *Cybersecurity and Executive Power*, 89 WASH. U. L. REV. 795, 797, 801 (2012); Fernando M. Pinguelo & Bradford W. Muller, *Virtual Crimes Real Damages: A Primer on Cybercrimes in the United States and Efforts to Combat Cybercriminals*, 16 VA. J. L. & TECH. 116, 123 (2011); Yaroslav Shiryaev, *Cyberterrorism in the Context of Contemporary International Law*, 14 SAN DIEGO INT'L L. J. 139, 146, 149 (2012); Paul Stockton & Michele Golabek-Goldman, *Prosecuting Cyberterrorists: Applying Traditional Jurisdictional Frameworks to a Modern Threat*, 25 STAN. L. & POL'Y REV. 211, 218, 235 (2014); Asaf Wiener, *Virtual Crimes, Actual Threats: Deterring National Security Offenses Committed Through Cyberspace*, 4 J. L. CYBER WARFARE 108, 111–12, 146 (2015); Joel P. Trachtman, Global Cyberterrorism, Jurisdiction, and International Organization 3, 7 (July 20, 2004) (unpublished manuscript) (http://ssrn.com/abstract=566361).

[81] *See generally* Scott J. Shackelford, *Protecting Intellectual Property and Privacy in the Digital Age: The Use of National Cybersecurity Strategies to Mitigate Cyber Risk*, 19 CHAPMAN L. REV. 445 (2016); Peter Swire, *Of Elephants, Mice, and Privacy: International Choice of Law and the Internet: A Canadian Perspective*, 32 INT'L L. 991 (1998); Trautman & Altenbaumer-Price, *supra* note 78; Lawrence J. Trautman & Kara Altenbaumer-Price, *D&O Insurance: A Primer*, 1 AM. U. BUS. L. REV. 337 (2012); Lawrence J. Trautman, *Who Qualifies as an*

Google discusses the following categories of risk factors that may impact operating results, including: risks related to Google's businesses and industries; intense competition; revenues; investment in new businesses and products; evolution in search devices; future pressure on operating margins; increased regulatory scrutiny;[83] new and existing laws;[84] claims, suits, and government investigations; online services or content liability; privacy concerns; user data security; intellectual property liability; loss of intellectual property; acquisition risk; importance of brands; supply chain and manufacturing; web spam; information technology; fluctuation of operating results; key personnel; Internet access;[85] other technological risk; investments; tax liabilities; and international risk.[86] Accordingly, Google provides the following risk disclosures and states that:

Audit Committee Financial Expert Under SEC Regulations and NYSE Rules?, 11 DEPAUL BUS. & COMM. L. J. 205 (2013); Peter Swire, Privacy and Self-Regulation in the Information Age: Markets, Self-Regulation, and Government Enforcement in the Protection of Personal Information (June 1997) (unpublished manuscript) (http://ssrn.com/abstract=11472).

[82] Gregory E. Maggs, *Regulating Electronic Commerce*, 50 AM. J. COMP. L. 665, 671–73 (2002).

[83] *Id.*

[84] *See* Stephen M. Bainbridge, *Dodd-Frank: Quack Federal Corporate Governance Round II*, 95 MINN. L. REV. 1779, 1782, 1785, 1795 (2011); Lissa L. Broome, *The Dodd-Frank Act: Tarp Bailout Backlash and Too Big to Fail*, 15 N.C. BANKING INST. 69, 70 (2011); John C. Coffee, *The Political Economy of Dodd-Frank: Why Financial Reform Tends to be Frustrated and Systemic Risk Perpetuated*, 97 CORNELL L. REV. 1019, 1033 (2012); Roberta Romano, *Regulating in the Dark and a Postscript Assessment of the Iron Law of Financial Regulation*, 43 HOFSTRA L. REV. 25, 26, 28, 35 (2014); Arthur E. Wilmarth, *The Dodd-Frank Act: A Flawed and Inadequate Response to the Too-Big-To-Fail Problem*, 89 OR. L. REV. 951, 954 (2011); David A. Skeel, *The New Financial Deal: Understanding the Dodd-Frank Act and its (Unintended) Consequences* 1, 5 (Univ. of Pa. L. Sch. Inst. for L. & Econ., Research Paper No. 10-21, Oct. 2010), http://ssrn.com/abstract=1690979; Andrew Verstein & Roberta Romano, *Assessing Dodd-Frank* 2, 29 (Yale Law & Econ., Research Paper No. 434., July 19, 2011), http://ssrn.com/abstract=1884290.

[85] Shackelford, *supra* note 81; *see also* Elizabeth Eraker, Colin Hector & Chris Jay Hoofnagle, *Mobile Payments: The Challenge of Protecting Consumers and Innovation*, 10 PRIV. & SEC. L. RPT. 212 (2011); Kevin V. Tu & Michael W. Meredith, *Rethinking Virtual Currency Regulation in the Bitcoin Age,* 90 WASH. L. REV. 271, 289, 298, 333 (2015).

[86] Shackelford, *supra* note 81.

operations and financial results are subject to various risks and uncertainties, including but not limited to those described below, which could adversely affect our business, financial condition, results of operations, cash flows, and the trading price of our common and capital stock.[87]

C. Risks Related to Google's Businesses and Industries

1. Intense Competition

We face intense competition. If we do not continue to innovate and provide products and services that are useful to users, we may not remain competitive, and our revenues and operating results could be adversely affected.

Our businesses are rapidly evolving, intensely competitive, and subject to changing technologies, shifting user needs, and frequent introductions of new products and services. Competing successfully depends heavily on our ability to accurately anticipate technology developments and deliver innovative products and technologies to the marketplace rapidly and, for Google, provide products and services that make our search results and ads relevant and useful for our users. As our businesses evolve, the competitive pressure to innovate will encompass a wider range of products and services, including products and services that may be outside of our historical core business. As a result, we must continue to invest significant resources in research and development, including through acquisitions, in order to enhance our search technology and our existing products and services, and introduce new products and services that people can easily and effectively use.

We have many competitors in different industries, including general purpose search engines and information services; vertical search engines and e-commerce websites; social networks; other forms of advertising and online advertising platforms and networks; companies that design, manufacture, and market consumer electronic products; providers of enterprise cloud services and digital video services; and digital assistant providers. Our current and potential domestic and international competitors range from large and established companies to emerging start-ups. Some large companies have longer operating histories and more established relationships with customers and users, and they can use their experiences and resources in ways that could affect our competitive position, including by making acquisitions,

[87] *See* Alphabet, Inc., *supra* note 11, at 7.

> continuing to invest research and development, aggressively initiating intellectual property claims (whether or not meritorious), and continuing to compete aggressively for advertisers and websites. Emerging start-ups may be able to innovate and provide products and services faster than we can or may foresee the consumer need for products and services before us.
>
> In addition, new products and services can sometimes present new and difficult technological and legal challenges, which may negatively impact our brands and demand for our products and services and adversely impact our revenues and operating results. Our operating results would also suffer if our innovations are not responsive to the needs of our users, advertisers, and Google Network Members; are not appropriately timed with market opportunities; or are not effectively brought to market. As technology continues to develop, our competitors may be able to offer user experiences that are, or that are seen to be, substantially similar to or better than ours. This may force us to compete in different ways and expend significant resources in order to remain competitive. If our competitors are more successful than we are in developing compelling products or in attracting and retaining users, advertisers, and content providers, our revenues and operating results could be adversely affected.[88]

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[88] *See* Alphabet, Inc., *supra* note 11, at 7; *see also* Maurice E. Stucke & Allen P. Grunes, *Introduction: Big Data and Competition Policy, in* BIG DATA AND COMPETITION POLICY 2–3, 10 (Oxford Univ. Press, Oct. 6, 2016); Sébastien Broos & Jorge Marcos Ramos, *Google, Google Shopping and Amazon: The Importance of Competing Business Models and Two-Sided Intermediaries in Defining Relevant Markets*, 62 ANTITRUST BULL. 1, 12 (2015); David S. Evans, *Competition and Regulatory Policy for Multi-Sided Platforms with Applications to the Web Economy*, 2 CONCURRENCES 57, 59 (2008); Jerry A. Hausman & J. Gregory Sidak, *Google and the Proper Antitrust Scrutiny of Orphan Books,* 5 J. COMPETITION L. & ECON. 411, 416, 430 (2009); James D. Ratliff & Daniel L. Rubinfeld, *Is There a Market for Organic Search Engine Results and Can Their Manipulation Give Rise to Antitrust Liability?*, 10 J. COMPETITION L. & ECON. 517, 519–20 (2014); Maurice E. Stucke & Ariel Ezrachi, *How Your Digital Helper May Undermine Your Welfare, and Our Democracy*, 32 BERKELEY TECH. L. J. 1239, 1241, 1254, 1260, 1263 (2017); Konstantinos Stylianou, *Systemic Efficiencies in Competition Law: Evidence from the ICT Industry*, 12 J. COMPETITION L. & ECON. 557, 573, 579 (2016); Tim Wu, *Blind Spot: The Attention Economy and the Law*, 82 ANTITRUST L.J. (forthcoming 2018) (manuscript at 3, 30) (available at https://ssrn.com/abstract=2941094); Josef Drexl, *Economic Efficiency versus Democracy: On the Potential Role of Competition Policy in Regulating Digital Markets in Times of Post-Truth Politics* 2–3, 12, 18 (Max Planck Inst. For Innovation & Competition, Research Paper No. 16-16, Dec. 6, 2016), https://ssrn.com/abstract=2881191; Gintare Surblyte, *Competition Law at the Crossroads in the Digital Economy: Is it All About Google?* 3, 5 (Max

2. Revenues

> We generate substantially all of our revenues from advertising, and reduced spending by advertisers or a loss of partners could harm our business.
>
> We generated 88 [percent] of total revenues from advertising in 2016. Many of our advertisers, companies that distribute our products and services, digital publishers, and content partners can terminate their contracts with us at any time. Those partners may not continue to do business with us if we do not create more value (such as increased numbers of users or customers, new sales leads, increased brand awareness, or more effective monetization) than their available alternatives. If we do not provide superior value or deliver advertisements efficiently and competitively, we could see a decrease in revenue and other adverse impacts to our business. In addition, expenditures by advertisers tend to be cyclical, reflecting overall economic conditions and budgeting and buying patterns. Adverse macroeconomic conditions can also have a material negative impact on user activity and the demand for advertising and cause our advertisers to reduce the amounts they spend on advertising, which could adversely affect our revenues and business.[89]

3. Investment in New Businesses and Products

> Our ongoing investment in new businesses and new products, services, and technologies is inherently risky, and could disrupt our current operations.
>
> We have invested and expect to continue to invest in new businesses, products, services and technologies. The creation of Alphabet as a new holding company in 2015 and the investments that we are making across various areas in Google and Other Bets are a reflection of our ongoing efforts to innovate and provide products and services that are useful to users. Such endeavors may involve significant risks and uncertainties, including insufficient revenues from such investments to offset any new liabilities assumed and expenses associated with these

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Planck Inst. For Innovation & Competition, Research Paper No. 15-13, Dec. 7, 2015), https://ssrn.com/abstract=2701847; Fernando Diez, Promoting Competition in Digital Markets; A Case Against the Google Case, and the Futile Search of ‘Neutrality’ in On-Line Searches 10, 15–16 (2015) (unpublished manuscript) (https://ssrn.com/abstract=2691058); Rufus Pollock, Is Google the Next Microsoft? Competition, Welfare and Regulation in Internet Search 3, 25 (Apr. 2009) (unpublished manuscript) (https://ssrn.com/abstract=1265521).

[89] *See* Alphabet, Inc., *supra* note 11, at 7.

new investments, inadequate return of capital on our investments, distraction of management from current operations, use of alternative investment or compensation structures, and unidentified issues not discovered in our due diligence of such strategies and offerings that could cause us to fail to realize the anticipated benefits of such investments and incur unanticipated liabilities. Because these new ventures are inherently risky, no assurance can be given that such strategies and offerings will be successful and will not adversely affect our reputation, financial condition, and operating results.[90]

4. Evolution in Search Devices

More people are using devices other than desktop computers to access the Internet and accessing new devices to make search queries. If manufacturers and users do not widely adopt versions of our search technology, products, or operating systems developed for these devices, our business could be adversely affected.

The number of people who access the Internet through devices other than desktop computers, including mobile phones, smartphones, handheld computers such as laptops and tablets, video game consoles, digital assistants, and television set-top devices, is increasing dramatically. The functionality and user experience associated with some alternative devices may make the use of our products and services through such devices more difficult (or just different) and the versions of our products and services developed for these devices may not be compelling to users, manufacturers, or distributors of alternative devices. Each manufacturer or distributor may establish unique technical standards for its devices, and our products and services may not work or be viewable on these devices as a result. Some manufacturers may also elect not to include our products on their devices. In addition, search queries are increasingly being undertaken via "apps" tailored to particular devices or social media platforms, which could affect our search and advertising business over time. As new devices and platforms are continually being released, it is difficult to predict the problems we may encounter in adapting our products and services and developing competitive new products and services. We expect to continue to devote significant resources to the creation, support, and maintenance of products and services across multiple platforms and devices. If we are unable to attract and retain a substantial number of alternative device manufacturers, suppliers, distributors, developers, and users to our products and services, or if we are slow to develop products and technologies

[90] *See id.* at 8.

> that are more compatible with alternative devices and platforms, we will fail to capture the opportunities available as consumers and advertisers continue to exist in a dynamic, multi-screen environment.[91]

5. Future Pressure on Operating Margins

> Our revenue growth rate could decline over time, and we anticipate downward pressure on our operating margin in the future.
>
> Our revenue growth rate could decline over time as a result of a number of factors, including:
>
> - increasing competition, changes in property mix, platform mix, device mix, and geographical mix,
> - the challenges in maintaining our growth rate as our revenues increase to higher levels,
> - the evolution of the online advertising market, including the increasing variety of online platforms for advertising, and the other markets in which we participate, and

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[91] *See* Alphabet, Inc., *supra* note 11, at 8; *see also* Anindya Ghose & Sang Pil Han, *Estimating Demand for Mobile Applications in the New Economy*, 60 MGMT SCI. 1470, 1470–71, 1480 (2014); Christian Levis, *Smartphone, Dumb Regulations: Mixed Signals in Mobile Privacy,* 22 FORDHAM INTELL. PROP., MEDIA & ENT. L.J. 191, 196 (2011); Daryl Lim, *Standard Essential Patents, Trolls and the Smartphone Wars: Triangulating the End Game*, 119 PENN ST. L. REV. 1, 15–16, 65 (2014); Kevin V. Tu, *Regulating the New Cashless World,* 65 ALA. L. REV. 77, 80, 106 (2013); Timothy Bresnahan, Jason P. Davis & Pai-Ling Yin, *Economic Value Creation in Mobile Applications*, 6–7 (Stanford Univ. Graduate Sch. of Bus., Research Paper No. 14-08, March 2, 2014), https://ssrn.com/abstract=2403601; Thomas W. Hazlett, David Teece & Leonard Waverman, *Walled Garden Rivalry: The Creation of Mobile Network Ecosystems* 2, 10 (Geo. Mason L. & Econ., Research Paper No. 11-50, Nov. 21, 2011), https://ssrn.com/abstract=1963427; Bar Ifrach & Ramesh Johari, The Impact of Visibility on Demand in the Market for Mobile Apps 5 (Feb. 11, 2014) (unpublished manuscript) (https://ssrn.com/abstract=2444542); Anca D. Chirita, *The Rise of Big Data and the Loss of Privacy* 10, 14 (Durham L. Sch., Research Paper, June 15, 2016), https://ssrn.com/abstract=2795992; Martin Kenney & Bryan Pon, Structuring the Smartphone Industry: Is the Mobile Internet OS Platform the Key 242, 244 (Jan. 27, 2011) (unpublished manuscript) (https://ssrn.com/abstract=1851686); Philip M. Napoli & Robyn Caplan, When Media Companies Insist They're Not Media Companies and Why It Matters for Communications Policy 8, 13, 17 (Mar. 18, 2016) (unpublished manuscript) (https://ssrn.com/abstract=2750148).

- the rate of user adoption of our products, services, and technologies.

> We believe our margins could experience downward pressure as a result of increasing competition and increased costs for many aspects of our business as well as the continuing shift to mobile, changes in device mix, and the contribution of new businesses to overall revenue. For instance, the margin on revenues we generate from our Google Network Members is significantly less than the margin on revenues we generate from advertising on Google properties. Consequently, our margins will experience downward pressure if a greater percentage of our revenues comes from ads placed on our Google Network Members' properties compared to revenues generated through ads placed on Google properties. Additionally, the margin we earn on revenues generated from our Google Network Members could decrease in the future if we pay an even larger percentage of advertising fees to our Google Network Members.
>
> Furthermore, in our multi-device world, we generate our advertising revenues increasingly from mobile and newer advertising formats, and the margins from the advertising revenues from these sources have generally been lower than those from traditional desktop search. We also expect our traffic acquisition costs (TAC) paid to our distribution partners to increase due to changes in device mix between mobile, desktop, and tablet, partner mix, partner agreement terms, and the percentage of queries channeled through paid access points.
>
> Additionally, our margins could experience downward pressure because the margin on the sale of digital content, hardware products, and cloud-based services have generally been lower than those from traditional desktop search. Further, our margins could be impacted adversely if we spend a proportionately larger amount to promote new products and services or distribute certain products or if we invest more heavily in our innovation efforts across the Company (such as other Bets businesses) than we have historically.[92]

6. Increased Regulatory Scrutiny

Regulatory considerations and fines continue to have a material impact on Google's operations and financial results.[93] For

[92] *See* Alphabet, Inc., *supra* note 11, at 8.
[93] *Id.*

example, Google discloses that "on June 27, 2017, the EC announced its decision that certain actions taken by Google regarding its display and ranking of shopping search results and ads infringed European competition law."[94] This EC decision proves very costly for Google, with a fine of €2.42 billion (equal to approximately $2.74 billion as of June 27, 2017).[95] As a result of pushing the intersection of technology and consumer protection as it relates to new product demands, Google finds itself having become a licensed money transmitter under state law and is likely to be a power in future payment systems[96]:

> We are subject to increasing regulatory scrutiny that may negatively impact our business. Additionally, changes in policies governing a wide range of topics may adversely affect our business.
>
> The growth of our company and our expansion into a variety of new fields involves a variety of new regulatory issues, and we have experienced increased regulatory scrutiny as we have grown. For instance, various regulatory agencies are reviewing aspects of our search and other businesses. We continue to cooperate with the European Commission and other regulatory authorities around the world in investigations they are conducting with respect to our business.[97]
>
> Legislators and regulators may make legal and regulatory changes, or interpret and apply existing laws or policies in ways that make our products and services less useful to our users, require us to incur substantial costs, expose us to unanticipated civil or criminal liability, or cause us to change our business practices. Additionally, changes in social, political, and regulatory conditions or in laws and policies governing a wide range of topics may disrupt our business practices. These changes could negatively impact our business and results of operations in material ways.[98]

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[94] *See* Alphabet, Inc., Quarterly Rpt. to U.S. Securities and Exch. Comm. on Form 10-Q for the period ending Sept. 30, 2017 at 41.

[95] *Id.*

[96] *See* Tu, *supra* note 91, at 77, 106.

[97] *See* Alphabet, Inc., *supra* note 11, at 8.

[98] *Id.* at 20 (Feb. 27, 2017); *see* Derek E. Bambauer, *Against Jawboning,* 100 MINN. L. REV. 51, 65 (2015); Amir Hassanabadi, Viacom v. YouTube*: All Eyes Blind—The Limits of the DMCA in a Web 2.0 World,* 26 BERKELEY

D. New and Existing Laws

A variety of new and existing laws could subject us to claims or otherwise harm our business.

We are subject to numerous U.S. and foreign laws and regulations covering a wide variety of subject matters. New laws and regulations (or new interpretations of existing laws and regulations) may also impact our business. For example, current and new patent laws such as U.S. patent laws and European patent laws may affect the ability of companies, including us, to protect their innovations and defend against claims of patent infringement. Similarly, changes to copyright laws being considered in Europe and elsewhere may increase costs or require companies, including us, to change or cease offering certain existing services. The costs of compliance with these laws and regulations are high and are likely to increase in the future.

Claims have been, or may be, threatened and filed against us under both U.S. and foreign laws for defamation, invasion of privacy and other tort claims, unlawful activity, patent, copyright and trademark infringement, product liability, or other theories based on the nature and content of the materials searched and the ads posted by our users, our products and services, or content generated by our users. Furthermore, many of these laws do not contemplate or address the unique issues raised by a number of our new businesses, products, services and technologies. In addition, the applicability and scope of these laws, as interpreted by the courts, remain uncertain. For example, the laws relating to the liability of providers of online services are currently unsettled both within the U.S. and abroad.

In addition, other laws that could subject us to claims or otherwise harm our business include, among others:

TECH. L.J. 405, 432 (2011); Chris Jay Hoofnagle, *Assessing the Federal Trade Commission's Privacy Assessments*, 14(2) IEEE SEC. & PRIV. 58, 59 (Mar./Apr. 2016); Mark A. Jamison, *Should Google Search Be Regulated as a Public Utility?*, 9 J.L. ECON. & POL'Y 223, 245–46 (2013); K. Sabeel Rahman, *Private Power, Public Values: Regulating Social Infrastructure in a Changing Economy*, 39 CARDOZO L. REV. 101, 116, 165 (forthcoming 2018); Robert E. Litan & Hal J. Singer, Are Google's Search Results Unfair or Deceptive Under Section 5 of the FTC Act? (May 8, 2012) (unpublished manuscript) (https://ssrn.com /abstract=2054751); Joshua Mitts, Predictive Regulation 10, 15 (Mar. 20, 2014) (unpublished manuscript) (https://ssrn.com/abstract=2411816).

- We rely on statutory safe harbors, as set forth in the Digital Millennium Copyright Act in the United States and the E-Commerce Directive in Europe, against copyright liability for various linking, caching, and hosting activities. Any legislation or court rulings impacting these safe harbors may adversely impact us.

- The General Data Protection Regulation, coming into effect in Europe in May of 2018, which creates a range of new compliance obligations, and increases financial penalties for noncompliance significantly.

- Court decisions such as the 'right to be forgotten' ruling issued by the European court, which allows individuals to demand that Google remove search results about them in certain instances, may limit the content we can show to our users and impose significant operational burdens.[99]

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[99] *See* Stefan Kulk & Frederik J. Zuiderveen Borgesius, *Privacy, Freedom of Expression, and the Right to Be Forgotten in Europe*, *in* CAMBRIDGE HANDBOOK OF CONSUMER PRIVACY (Jules Polonetsky, Omer Tene & Evan Selinger eds., Cambridge Univ. Press 2017); Ignacio N. Cofone, *Google v. Spain: A Right to Be Forgotten?,* 15 CHI.-KENT J. INT'L & COMP. L. 1, 8–10 (2015); Michael Douglas, *Questioning the Right to be Forgotten*, 40 ALT. L.J. 109, 109 (2015); Meg Leta (Ambrose) Jones, *You are What Google Says You are: The Right to Be Forgotten and Information Stewardship,* 17 INT'L REV. INFO. ETHICS 20, 22–23 (2012); Stefan Kulk & Frederik J. Zuiderveen Borgesius, *Freedom of Expression and 'Right to Be Forgotten' Cases in the Netherlands after Google Spain,* 1 EUR. DATA PROT. L. REV. 113, 116 (2015); Edward Lee, *The Right to Be Forgotten v. Free Speech*, 12 J.L. & POL'Y INFO. SOC'Y 85, 90, 108; Miquel Peguera, *The Shaky Ground of the Right to Be Delisted*, 18 VAND. J. ENT. & TECH. L. 507, 509 (2016); Michael L. Rustad & Sanna Kulevska, *Reconceptualizing the Right to Be Forgotten to Enable Transatlantic Data Flow,* 28 HARV. J.L. & TECH. 349, 353–54 (2015); Emily Shoor, *Narrowing the Right to Be Forgotten: Why the European Union Needs to Amend the Proposed Data Protection Regulation,* 39 BROOK. J. INT'L L. 487, 487–88 (2014); Gregory Voss, *The Right to Be Forgotten in the European Union: Enforcement in the Court of Justice and Amendment to the Proposed General Data Protection Regulation*, 18 J. INTERNET L. 3, 4 (2014); Viktor Mayer-Schoenberger, *Useful Void: The Art of Forgetting in the Age of Ubiquitous Computing* 7 (KSG Working Paper No. RWP07-022, 2007); Brendan van Alsenoy & Marieke Koekkoek, *The Extra-Territorial Reach of the EU's 'Right to Be Forgotten'* (CiTiP Working Paper 20/2015); Geert van Calster, Regulating the Internet: Prescriptive and Jurisdic-tional Boundaries to the EU's 'Right to Be Forgotten' (Nov. 5, 2015) (unpublished manuscript) (https://ssrn.com/abstract=2686111).

- Various U.S. and international laws that restrict the distribution of materials considered harmful to children and impose additional restrictions on the ability of online services to collect information from minors.

- Data protection laws passed by many states and by certain countries outside the U.S. that require notification to users when there is a security breach for personal data, such as California's Information Practices Act.

- Data localization laws, which generally mandate that certain types of data collected in a particular country be stored and/or processed within that country.

- We face risks and costs overseas as our products and services are offered in international markets and may be subject to additional regulations.[100] Any failure on our part to comply with these laws and regulations can result in negative publicity and diversion of management time and effort and may subject us to significant liabilities and other penalties.[101]

E. Claims, Suits, and Government Investigations

We are regularly subject to claims, suits, government investigations, and other proceedings that may result in adverse outcomes.

We are regularly subject to claims, suits, and government investigations involving competition, intellectual property, privacy, consumer protection, tax, labor and employment, commercial disputes, content generated by our users, goods and services offered by advertisers or publishers using our platforms, and other matters. The manufacturing and sale of an expanded suite of hardware products further exposes us to the risk of product liability and other litigation as well as consumer protection concerns related to product defects, as well as health and safety, hazardous materials usage, and other environmental concerns. We may also be subject to claims, including product warranty claims, if users experience service disruptions, failures, or other issues. In addition, our businesses face intellectual

[100] Alphabet, Inc., *supra* note 11, at 20.
[101] *Id.*

property litigation, as further discussed later, that exposes us to the risk of exclusion and cease and desist orders, which could limit our ability to sell products and services.

Such claims, suits, and government investigations are inherently uncertain and their results cannot be predicted with certainty of the outcome, any of these types of legal proceedings can have an adverse impact on us because of legal costs, diversion of management resources, and other factors. Determining reserves for our pending litigation is a complex, fact-intensive process that requires significant judgment. It is possible that a resolution of one or more such proceedings could result in substantial fines and penalties that could adversely affect our business, consolidated financial position, results of operations, or cash flows in a particular period. These proceedings could also result in reputational harm, criminal sanctions, consent decrees, or orders preventing us from offering certain features, functionalities, products, or services, requiring a change in our business practices or product recalls or corrections, or requiring development of non-infringing or otherwise altered products or technologies. Any of these con-sequences could adversely affect our business and results of operations.[102]

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[102] *Id.* at 22; *see* Adam Candeub, *Behavioral Economics, Internet Search, and Antitrust*, 9 J.L. & POL'Y INFO. SOC'Y 407, 407, 424 (2014); Michael A. Carrier, *Google and Antitrust: Five Approaches to an Evolving Issue*, HARV. J.L. & TECH. OCCASIONAL PAPER SERIES 2, 6–7 (July 2013); Ronald A. Cass, *Antitrust for High-Tech and Low: Regulation, Innovation, and Risk*, 9 J.L. ECON. & POL'Y 169, 169, 177–78 (2013); Anca D. Chirita, *Google's Anti-Competitive and Unfair Practices in Digital Leisure Markets,* 11 COMPETITION L. REV. 109, 109, 111, 121, 130 (2015); Daniel A. Crane, *Search Neutrality as an Antitrust Principle*, 19 GEO. MASON L. REV. 1199, 1208–09 (2012); Kristine Laudadio Devine, *Preserving Competition in Multi-Sided Innovative Markets: How Do You Solve a Problem Like Google?*, 10 N.C. J.L. & TECH. 59, 60, 108–09 (2008); Benjamin G. Edelman, *Does Google Leverage Market Power Through Tying and Bundling?,* 11 J. COMPETITION L. & ECON. 365, 367, 397 (2015); David S. Evans, *Attention Rivalry Among Online Platforms*, 9 J. COMPETITION L. & ECON. 313, 353 (2013); Herbert J. Hovenkamp, *Antitrust and Information Technologies*, 68 FLA. L. REV. 419, 422, 435 (2015); David Hyman & David J. Franklyn, *Search Bias and the Limits of Antitrust: An Empirical Perspective on Remedies*, 55 JURIMETRICS 339, 340, 344–45 (2015); Marina Lao, *Search, Essential Facilities, and the Antitrust Duty to Deal,* 11 NW. J. TECH. & INTELL. PROP. 275, 276–77, 311 (2013); Geoffrey A. Manne & Joshua D. Wright, *Google and the Limits of Antitrust: The Case Against the Antitrust Case Against Google,* 34 HARV. J.L. & PUB. POL'Y 171, 189–90 (2011); John M. Newman, *Antitrust in Zero-Price Markets: Foundations,* 164 U. PA. L. REV. 149, 161–62 (2015); John M. Newman, *The Myth of Free*, 86 GEO. WASH. L. REV. 513, 575–77 (2018); D. Daniel Sokol, *The Strategic Use of Public and*

F. Online Services or Content Liability

> We may be subject to legal liability associated with providing online services or content.
>
> We host and provide a wide variety of services and products that enable users to exchange information, advertise products and services, conduct business, and engage in various online activities both domestically and internationally. The law relating to the liability of providers of these online services and products for activities of their users is still somewhat unsettled both within the U.S. and internationally. Claims have been threatened and have been brought against us for defama-tion, negligence, breaches of contract, copyright or trademark infringement, unfair competition, unlawful activity, tort, including personal injury, fraud, or other theories based on the nature and content of information that we publish or to which we provide links or that may be posted online or generated by us or by third parties, including our users. In addition, we are and have been and may again in the future be subject to domestic or international actions alleging that certain content we have generated or third-party content that we have made available within our services violates U.S. and non-U.S. law.
>
> We also place advertisements which are displayed on third-party publishers and advertising networks properties, and we offer third-party party products, services, or content. We may be subject to claims concerning these products, services, or

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Private Litigation in Antitrust as Business Strategy, 85 S. CALIF. L. REV. 689, 697, 699, 703 (2012); Maurice E. Stucke, *Behavioral Antitrust and Monopolization,* 8 J. COMPETITION L. & ECON. 545, 548, 556 (2012); Spencer Weber Waller, *Antitrust and Social Networking,* 90 N.C. L. REV. 1771, 1793–95 (2012); Einer Elhauge, *Framing the Antitrust Issues in the Google Books Settlement* 4 (Harv. Pub. Law & Legal Theory, Working Paper No. 10-24, 2009); Damien Geradin & Monika Kuschewsky, Competition Law and Personal Data: Preliminary Thoughts on a Complex Issue 7, 10, 13 (February 12, 2013) (unpublished manuscript) (https://ssrn.com/abstract=2216088); Herbert J. Hovenkamp, Innovation and Competition Policy, Ch. 5 (2d ed.): Competition and Innovation in Copyright and the DMCA (Nov. 25, 2012) (unpublished manuscript) (https://ssrn.com/abstract=1940685); Elena Perotti, Google's Antitrust Woes Around the World 1–2, 13–14, 16–17 (July 27, 2017) https://ssrn.com/abstract=3060298; Daniel H. O'Connor, *Understanding Online Platform Competition: Common Misunderstandings, Internet Competition and Regulation of Online Platforms*, COMPETITION POL'Y INT'L (July 26, 2016), https://www.competitionpolicyinternational.com/understanding-online-platform-competition-commonmisunderstandings/ [https://perma.cc/VD4U-HU3X].

content by virtue of our involvement in marketing, branding, broadcasting, or providing access to access to them, even if we do not ourselves host, operate, provide, or provide access to these products, services, or content. Defense of any such actions could be costly and involve significant time and attention of our management and other /resources, may result in monetary liabilities or penalties, and may require us to change our business in an adverse manner.[103]

G. Privacy Concerns

Privacy concerns relating to our technology could damage our reputation and deter current and potential users from using our products and services.

From time to time, concerns have been expressed about whether our products, services, or processes compromise the privacy of users and others. Concerns about our practices with regard to the collection, use, disclosure, or security of personal information or other privacy related matters, even if unfounded, could damage our reputation and adversely affect our operating results.[104]

In addition, as nearly all of our products and services are web-based, the amount of data we store for our users on our servers (including personal information) has been increasing. Any systems failure or compromise of our security that results in the release of our users' data could seriously harm our reputation and brand and, therefore, our business, and impair our ability to attract and retain users. We expect to continue to expend significant resources to create world-class security protections that shield against theft and security breaches. The risk that these types of events could seriously harm our business is likely to increase as we expand the number of web-based products and services we offer and operate in more countries, and as cyber-attacks by third parties become more sophisticated and targeted. Regulatory authorities around the world are considering a number of legislative and regulatory proposals concerning data protection, including measures to ensure that our encryption of users' data does not hinder law enforcement agencies' access to that data. In addition, the interpretation and application of consumer and data protection laws in the

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[103] Alphabet, Inc., *supra* note 11, at 22.

[104] *Id.*; *see* Lawrence J. Trautman & Peter C. Ormerod, *A Descriptive Analysis of the Fourth Amendment and the Third-Party Doctrine in the Digital Age*, 28 ALB. L.J. SCI. & TECH. 73, 146–48 (2018).

> U.S., Europe and elsewhere are often uncertain and in flux. It is possible that these laws may be interpreted and applied in a manner that is inconsistent with our data practices. If so, in addition to the possibility of fines, this could result in an order requiring that we change our data practices, which could have an adverse effect on our business and results of operations. Complying with these various laws could cause us to incur substantial costs or require us to change our business practices in a manner adverse to our business.
>
> Recent legal developments in Europe have created compliance uncertainty regarding certain transfers of information from Europe to the U.S. For example, the European Union and U.S. Privacy Shield framework was designed to allow for legal certainty regarding transfers of data. However, the agreement itself faces a number of legal challenges and is subject to annual review. This has resulted in some uncertainty, and compliance obligations could cause us to incur costs or require us to change our business practices in a manner adverse to our business.[105]

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[105] Alphabet, Inc., *supra* note 11, at 22–24; *see* DANIEL J. SOLOVE, THE FUTURE OF REPUTATION: GOSSIP, RUMOR, AND PRIVACY ON THE INTERNET, 310–12 (Yale Univ. Press 2007); Anita L. Allen, *Protecting One's Own Privacy in a Big Data Economy*, 130 HARV. L. REV. F. 71, 72–74 (2016); Josh Blackman, *Omniveillance*, *Google, Privacy in Public, and the Right to Your Digital Identity: A Tort for Recording and Disseminating an Individual's Image over the Internet*, 49 SANTA CLARA L. REV. 313, 315, 330, 342, 348, 361 (2009); Matthew T. Bodie, Miriam A. Cherry, Marcia L. McCormick & Jintong Tang, *The Law and Policy of People Analytics,* 88 U. COLO. L. REV. 961, 1002–03, 1006 (2017); Chris Jay Hoofnagle, *Beyond Google and Evil: How Policy Makers, Journalists and Consumers Should Talk Differently About Google and Privacy*, 14 FIRST MONDAY (April 2009), http://firstmonday.org/article/view/2326/2156 [https://perma.cc/KEY8-UPWU]; Mary Leary, *The Missed Opportunity of* United States v. Jones—*Commercial Erosion of Fourth Amendment Protection in a Post-Google Earth World,* 15 U. PA. J. CONST. L. 331, 333, 367–70 (2012); Randal C. Picker, *Competition and Privacy in Web 2.0 and the Cloud*, 103 NW. REV. COLLOQUY 1, 10 (2008); George H. Pike, *Google, YouTube, Copyright, and Privacy*, 24 INFO. TODAY 15, 16 (2007); Ira Rubinstein & Nathan Good, *Privacy by Design: A Counterfactual Analysis of Google and Facebook Privacy Incidents,* 28 BERKELEY TECH. L.J. 1333, 1333, 1346, 1357, 1364 (2013); Ira Rubinstein & Joris van Hoboken, *Privacy and Security in the Cloud: Some Realism About Technical Solutions to Transnational Surveillance in the Post-Snowden Era,* 66 ME. L. REV. 487, 499–500, 509–10 (2014); Sherry Denise Sanders, *Privacy is Dead: The Birth of Social Media Background Checks*, 39 S.U. L. REV. 243, 263 (2012); Giovanni Sartor & Mario Viola de Azevedo Cunha, *The Italian Google-Case: Privacy, Freedom of Speech and Responsibility of*

H. User Data Security

> If our security measures are breached resulting in the improper use and disclosure of user data, or if our services are subject to attacks that degrade or deny the ability of users to access our products and services, our products and services may be perceived as not being secure, users and customers may curtail or stop using our products and services, and we may incur significant legal and financial exposure.
>
> Our products and services involve the storage and transmission of users' and customers' proprietary information, and theft and security breaches expose us to a risk of loss of this information, improper use and disclosure of such information, litigation, and potential liability. We experience cyber-attacks of varying degrees on a regular basis. Our security measures may also be breached due to employee error, malfeasance, system errors or vulnerabilities, including vulnerabilities of our vendors, or otherwise. Such breach or unauthorized access, increased government surveillance, or attempts by outside parties to fraudulently induce employees, users, or customers to disclose sensitive information in order to gain access to our data or our users' or customers' data could result in significant legal and financial exposure, damage to our reputation, and a

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Providers for User-Generated Contents, 18 INT'L. J.L. & INFO. TECH. 356, 363–64 368, 372, 376 (2010); Christopher Soghoian, *Caught in the Cloud: Privacy, Encryption, and Government Back Doors in the Web 2.0 Era,* 8 J. TELECOMM. & HIGH TECH. L. 359, 365–87, 390–91, 396–97 (2010); Lior Strahilevitz & Matthew B. Kugler, *Is Privacy Policy Language Irrelevant to Consumers?,* 45 J. LEG. STUD. 69, 88–89 (2016); Omer Tene, *Privacy: The New Generations, International Data Privacy Law*, 1 INT'L DATA PRIV. L. 15, 15–16, 18, 23, 25–26 (2011); Omer Tene, *What Google Knows: Privacy and Internet Search Engines*, UTAH L. REV. 1433, 1458–60, 1462, 1491 (2008); Shoshana Zuboff, *Big Other: Surveillance Capitalism and the Prospects of an Information Civilization*, 30 J. INFO. TECH. 75, 75, 85 (2015); Joan Denoncour et al., *Google and Internet Privacy (a)*. (Darden Case No. UVA-E-0344, 2009), https://ssrn.com/abstract=1417206; Bernard E. Harcourt, *Digital Security in the Expository Society: Spectacle, Surveillance, and Exhibition in the Neoliberal Age of Big Data* 116 (Colum. Pub. L. & Legal Theory Working Paper Group, Research Paper No. 14-404, 2014); Jenny Mead et al., *Google and Internet Privacy (B)*. (Darden Case No. UVA-E-0345, 2009), https://ssrn.com/abstract=1417207; Randal C. Picker, *Online Advertising, Identity and Privacy* x (Coase-Sandor Working Paper Series in L. and Econ., Working Paper No. 475, 2009); James C. Cooper, Anonymity, Autonomy, and the Collection of Personal Data: Measuring the Privacy Impact of Google's 2012 Privacy Policy Change 25 (Geo. Mason L. & Econ., Research Paper No. 17-06, 2017), https://ssrn.com/abstract=2909148.

> loss of confidence in the security of our products and services that could potentially have an adverse effect on our business. Because the techniques used to obtain unauthorized access, disable or degrade service, or sabotage systems change frequently and often are not recognized until launched against a target, we may be unable to anticipate these techniques or to implement adequate preventative measures. If an actual or perceived breach of our security occurs, the market perception of the effectiveness of our security measures could be harmed and we could lose users and customers.[106]

I. Intellectual Property Liability

> We are, and may in the future be, subject to intellectual property or other claims, which are costly to defend, could result in significant damage awards, and could limit our ability to use certain technologies in the future.
>
> Internet, technology, media, and other companies own large numbers of patents, copyrights, trademarks, and trade secrets and frequently enter into litigation based on allegations of infringement or other violations of intellectual property rights. In addition, patent holding companies may continue to seek to monetize patents they have purchased or otherwise obtained. As we have grown, the intellectual property rights claims against us have increased and may continue to increase as we develop new products, services, and technologies.
>
> We have had patent, copyright, and trademark infringement lawsuits filed against us claiming that certain of our products, services, and technologies infringe the intellectual property rights of others. Third parties have also sought broad injunctive relief against us by filing claims in U.S. and international courts and the U.S. International Trade Commission (ITC) for exclusion and cease and desist orders, which could limit our ability to sell our products or services in the U.S. or elsewhere if our products or services or those of our customers or suppliers are found to infringe the intellectual property subject to the claims. Adverse results in any of these lawsuits may include awards of substantial monetary damages, costly royalty or licensing agreements (if licenses are available at all), or orders preventing us from offering certain features, functionalities, products, or services, and may also cause us to change our business practices, and require development of non-infringing products or technologies, which could result in a loss of revenues for us and otherwise harm our business.

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[106] Alphabet, Inc., *supra* note 11, at 24.

> Many of our agreements with our customers and partners, including certain suppliers, require us to indemnify them for certain intellectual property infringement claims against them, which could increase our costs as a result of defending such claims, and may require that we pay significant damages if there were an adverse ruling in any such claims.[107] Such customers and partners may also discontinue the use of our products, services, and technologies, as a result of injunctions or otherwise, which could result in loss of revenues and adversely impact our business. Moreover, intellectual property indemnities provided to us by our suppliers, when obtainable, may not cover all damages and losses suffered by us and our customers from covered products. Furthermore, in connection with our divestitures, we have agreed, and may in the future agree, to provide indemnification for certain potential liabilities.
>
> Regardless of the merits of the claims, intellectual property claims are often time consuming, expensive to litigate or settle, and cause significant diversion of management attention. To the extent such intellectual property infringement claims are successful, they may have an adverse effect on our business, consolidated financial position, results of operations, or cash flows.[108]

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[107] *Id.*; *see* Anne S. Y. Cheung, *Defaming by Suggestion: Searching for Search Engine Liability in the Autocomplete Era*, *in* COMPARATIVE PERSPECTIVES ON THE FUNDAMENTALS OF FREEDOM OF EXPRESSION (Andras Koltay, ed., 2015) (https://ssrn.com/abstract=2611074).

[108] Alphabet, Inc., *supra* note 11, at 24; *see* Brief of Software Innovators, Start-Ups, and Investors as Amici Curiae Supporting Affirmance at 14, Oracle America, Inc. v. Google, Inc., 750. F.3d 1339 (2014) (No. 2013-1021); Mark Bartholomew, *Cops, Robbers, and Search Engines: The Questionable Role of Criminal Law in Contributory Infringement Doctrine,* 2009 BYU L. REV. 783, 826 (2009); Oren Bracha, *Standing Copyright Law on its Head? The Googlization of Everything and the Many Faces of Property*, 85 TEX. L. REV. 1799, 1819 (2007); Anthony J. Casey & Andres Sawicki, *The Problem of Creative Collaboration*, 58 WM. & MARY L. REV. 1793, 1830–31 (2017); Deven R. Desai, *The New Steam: On Digitization, Decentralization, and Disruption,* 65 HASTINGS L.J. 1469, 1472, 1481 (2014); Angel Siegfried Diaz, *Fair Use & Mass Digitization: The Future of Copy-Dependent Technologies after* Authors Guild v. HathiTrust, 23 BERKELEY TECH. L.J. 683, 686 (2013); Peter C. DiCola & Matthew Sag, *An Information-Gathering Approach to Copyright Policy*, 34 CARDOZO L. REV. 173, 182, 221, 242 (2012); Stacey L. Dogan, *Beyond Trademark Use,* 8 J. TELECOMM. & HIGH TECH. L. 135, 149 (2010); Robin Feldman & Thomas Ewing, *The Giants Among Us*, 1 STAN. TECH. L. REV. 1, 30, 41 (2012); Brad A. Greenberg, *More Than Just a Formality: Instant Authorship and Copyright's Opt-Out Future in the Digital Age*, 59 UCLA L. REV. 1028, 1048, 1050 (2012); Laura A. Heymann, *The Grammar of Trademarks*, 14 LEWIS & CLARK L. REV. 1313, 1315 (2010); David A. Hyman & David J. Franklyn, *Trademarks as Search Engine Keywords:*

1. Loss of Intellectual Property

> Our intellectual property rights are valuable, and any inability to protect them could reduce the value of our products, services, and brand.
>
> Our patents, trademarks, trade secrets, copyrights, and other intellectual property rights are important assets for us. Various events outside of our control pose a threat to our intellectual property rights, as well as to our products, services and technologies. For example, effective intellectual property protection may not be available in every country in which our products and services are distributed or made available through the Internet. Also, the efforts we have taken to protect our proprietary rights may not be sufficient or effective. Although we seek to obtain patent protection for our innovations, it is possible we may not be able to protect some of these innovations. Moreover, we may not have adequate patent or copyright protection for certain innovations that later turn out to be important. Furthermore, there is always the possibility, despite our efforts, that the scope of the protection gained will be insufficient or that an issued patent may be deemed invalid or unenforceable.
>
> We also seek to maintain certain intellectual property as trade secrets. The secrecy could be compromised by outside parties, or by our employees, which could cause us to lose the competitive advantage resulting from these trade secrets. We also face risks associated with our trademarks. For example, there is a risk that the word "Google" could become so commonly used that it becomes synonymous with the word "search." If this happens, we could lose protection for this trademark,

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Who, What, When?, 92 TEX. L. REV. 2117, 2121, 2145 (2014); Edward Lee, *Technological Fair Use*, 83 S. CAL. L. REV. 797, 797, 810, 816 (2010); Michael Mattioli, *Opting Out: Procedural Fair Use*, 12 VA. J.L. & TECH. 1, 19–21 (2007); Peter S. Menell, *Rise of the API Copyright Dead?: An Updated Epitaph for Copyright Protection of Network and Functional Features of Computer Software*, 31 HARV. J.L. & TECH. 305, 416 (2018); Mira T. Sundara Rajan, *Creative Commons: America's Moral Rights?*, 21 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 905, 925–26 (2011); Margo E. K. Reder & Christine Neylon O'Brien, *Managing the Risk of Trade Secret Loss Due to Job Mobility in an Innovation Economy with the Theory of Inevitable Disclosure,* 12 J. HIGH TECH. L. 373, 433 (2012); Zohar Efroni, Keywording in Search Engines as Trademark Infringement: Issues Arising from *Matim Li v. Crazy Line* 2–3 (2006) (unpublished manuscript) (https://ssrn.com/abstract=946927); Peter S. Menell, *Google, PageRank, and Symbiotic Technological Change*, THE MEDIA INST. (Aug. 24, 2012), https://www.mediainstitute.org/2012/08/24/google-pagerank-and-symbiotic-technological-change/ [https://perma.cc/LJD6-DMBB].

which could result in other people using the word "Google" to refer to their own products, thus diminishing our brand.

Any significant impairment of our intellectual property rights could harm our business and our ability to compete. Also, protecting our intellectual property rights is costly and time consuming. Any increase in the unauthorized use of our intellectual property could make it more expensive to do business and harm our operating results.[109]

J. Acquisition Risk

Acquisitions, joint ventures, investments, and divestitures could result in operating difficulties, dilution, and other consequences that may adversely impact our business and results of operations.

Acquisitions, joint ventures, investments and divestitures, are important elements of our overall corporate strategy and use of capital, and these transactions could be material to our financial condition and results of operations. We expect to continue to evaluate and enter into discussions regarding a wide array of potential strategic transactions. Effecting these potential strategic transactions could create unforeseen operating difficulties and expenditures. The areas where we face risks include:

- Diversion of management time and focus from operating our business to challenges related to acquisitions and other strategic transactions.

- Failure to successfully further develop the acquired business or technology.

- Implementation or remediation of controls, procedures, and policies at the acquired company.

- Integration of the acquired company's accounting, human resource, and other administrative systems, and coordination of product, engineering, and sales and marketing functions.

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[109] Alphabet, Inc., *supra* note 11, at 25–26; *see* Kevin J. Fandl, *Theft of Foreign-Owned Intellectual Property in Latin America: A New Strategy*, 49 GEO. WASH. INT'L L. REV. 299, 304 (2016) (discussing the weak enforcement regime for intellectual property evident in most developing countries, which causes hardships for developed country exporters of IP-intensive goods and services).

- Transition of operations, users, and customers onto our existing platforms.

- Failure to obtain required approvals on a timely basis, if at all, from governmental authorities, or conditions placed upon approval that could, among other things, delay or prevent us from completing a transaction, or otherwise restrict our ability to realize the expected financial or strategic goals of an acquisition or other strategic transaction.

- In the case of foreign acquisitions, the need to integrate operations across different cultures and languages and to address the particular economic, currency, political, and regulatory risks associated with specific countries.

- Cultural challenges associated with integrating employees from the acquired company into our organization, and retention of employees from the businesses we acquire.

- Liability for activities of the acquired company before the acquisition, including patent and trademark infringement claims, privacy issues, violations of laws, commercial disputes, tax liabilities, and other known and unknown liabilities.

- Litigation or other claims in connection with the acquired company, including claims from terminated employees, customers, former stockholders, or other third parties.

Our failure to address these risks or other problems encountered in connection with our past or future acquisitions and other strategic transactions could cause us to fail to realize their anticipated benefits, incur unanticipated liabilities, and harm our business generally.

Our acquisitions could also result in dilutive issuances of our equity securities, the incurrence of debt, contingent liabilities, or amortization expenses, or impairment of goodwill and/or purchased long-lived assets, and restructuring charges, any of which could harm our financial condition or results. Also, the anticipated benefits or value of our acquisitions and other strategic transactions may not materialize. In connection with our divestitures, we have agreed, and may in the future agree, to

> provide indemnification for certain potential liabilities, which may adversely impact our financial condition or results.[110]

K. Importance of Brands

> Our business depends on strong brands, and failing to maintain and enhance our brands would hurt our ability to expand our base of users, advertisers, Google Network Members, and other partners.
>
> Our strong brands have significantly contributed to the success of our business. Maintaining and enhancing the brands of both Google and Other Bets increases our ability to enter new categories and launch new and innovative products that better serve the needs of our users. Our brands may be negatively impacted by a number of factors, including, among others, reputational issues and product/technical performance failures. Further, if we fail to maintain and enhance equity in equity in the Google brand, our business, operating results, and financial condition may be materially and adversely affected. Maintaining and enhancing our brands will depend largely on our ability to remain a technology leader and continue to provide high-quality, innovative products and services that are truly useful and play a meaningful role in people's everyday lives.[111]

L. Supply Chain and Manufacturing

> We face a number of manufacturing and supply chain risks that, if not properly managed, could adversely impact our financial results and prospects.

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[110] Alphabet, Inc., *supra* note 11, at 26–27; *see* Johannes M. Bauer, *Bundling, Differentiation, Alliances and Mergers: Convergence Strategies in U.S. Communication Markets*, 60 COMM. & STRATEGIES 59, 67 (2005); Patrick Beschorner, *Do Consumers Benefit from Concentration in the New Economy?—A Review of Google's Mergers, Acquisitions, and Arrangements* (ZEW—Centre for European Econ. Res. Discussion Paper No. 08-121, 2008), https://ssrn.com/abstract=1338760; Ahreum Hong, Debadutta Bhattacharyya & George T. Geis, The Role of M&A in Market Convergence: Amazon, Apple, Google and Microsoft, Proceedings of 18th International Business Research Conference 17 (Oct. 22, 2012) (unpublished manuscript) (https://ssrn.com/abstract=2165444); Christina T. Trotta, The Google-Doubleclick Merger, the FTC, and the Future of Transactional Privacy Inquiries in the United States 4 (Dec. 16, 2007) (unpublished manuscript) (https://ssrn.com/abstract=1071823).

[111] Alphabet, Inc., *supra* note 11, at 28; *see* Deven R. Desai & Spencer Weber Waller, *Brands, Competition and the Law,* 2010 BYU. L. REV. 1425, 1498.

We face a number of risks related to manufacturing and supply chain management. We may enter into long term contracts that commit us to significant terms and conditions of supply. We may be liable for material and product that is not consumed due to market acceptance, technological change, obsolescence, quality, product recalls, and warranty issues. For instance, the products we sell may have quality issues resulting from the design or manufacture of the product, or from the software used in the product. Sometimes, these issues may be caused by components we purchase from other manufacturers or suppliers. If the quality of our products does not meet our customers' expectations or our products are found to be defective, then our sales and operating earnings, and ultimately our reputation, could be negatively impacted.

We rely on third parties to manufacture many of our assemblies and finished products, and we have third-party arrangements for the design of some components and parts. Our business could be negatively affected if we are not able to engage third parties with the necessary capabilities or capacity on reasonable terms, or if those we engage fail to meet their obligations (whether due to financial difficulties or other reasons), or make adverse changes in the pricing or other material terms of our arrangements with them.

We have in the past, and may experience in the future, supply shortages and price increases driven by raw material availability, manufacturing capacity, labor shortages, industry allocations, natural disasters and significant changes in the financial or business condition of our suppliers. We may experience shortages or other supply chain disruptions in the future that could negatively impact our operations. In addition, some of the components we use in our products are available only from a single source or limited sources, and we may not be able to find replacement vendors on favorable terms or at all in the event of a supply chain disruption.

Additionally, because many of our supply contracts have volume-based pricing or minimum purchase requirements, if the volume of our hardware sales decreases or does not reach projected targets, we could face increased materials and manufacturing costs or other financial liabilities that could make our products more costly per unit to manufacture and therefore less competitive and negatively impact our financial results. Further, certain of our competitors may negotiate more favorable contractual terms based on volume and other commitments that may provide them with competitive advantages and may impact our supply.

> We also require our suppliers and business partners to comply with law and company policies regarding workplace and employment practices, data security, environmental compliance and intellectual property licensing, but we do not control them or their practices. If any of them violates laws or implements practices regarded as unethical, we could experience supply chain disruptions, canceled orders, terminations of or damage to key relationships, and damage to our reputation. If any of them fails to procure necessary license rights to third-party intellectual property, legal action could ensue that could impact the salability of our products and expose us to financial obligations to third parties.
>
> The Dodd-Frank Wall Street Reform and Consumer Protection Act includes disclosure requirements regarding the use of certain minerals mined from the Democratic Republic of Congo and adjoining countries (DRC) and procedures pertaining to a manufacturer's efforts regarding the source of such minerals. SEC rules implementing these requirements may have the effect of reducing the pool of suppliers who can supply DRC "conflict free" components and parts, and we may not be able to obtain DRC conflict free products or supplies in sufficient quantities for our operations. Since our supply chain is complex, we may face reputational challenges with our customers, stockholders and other stakeholders if we are unable to sufficiently verify the origins for the minerals used in our products.[112]

M. Web Spam

> Web spam and content farms could decrease our search quality, which could damage our reputation and deter our current and potential users from using our products and services.
>
> "Web spam" refers to websites that attempt to violate a search engine's quality guidelines or that otherwise seek to rank higher in search results than a search engine's assessment of their relevance and utility would rank them.
>
> Although English-language web spam in our search results has been significantly reduced, and web spam in most other languages is limited, we expect web spammers will continue to seek ways to improve their rankings inappropriately. We continuously combat web spam, including through indexing technology that makes it harder for spam-like, less useful web content to rank highly. We face challenges from low-quality

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[112] Alphabet, Inc., *supra* note 11, at 28–29.

> and irrelevant content websites, including "content farms", which are websites that generate large quantities of low-quality content to help them improve their search rankings. We are continually launching algorithmic changes focused on low-quality websites. If our search results display an increasing number of web spam and content farms, this could hurt our reputation for delivering relevant information or reduce user traffic to our websites. In addition, as we continue to take actions to improve our search quality and reduce low-quality content, this may in the short run reduce our AdSense revenues, since some of these websites are AdSense partners.[113]

N. Information Technology

> Interruption or failure of our information technology and communications systems could hurt our ability to effectively provide our products and services, which could damage our reputation and harm our operating results.
>
> The availability of our products and services depends on the continuing operation of our information technology and communications systems. Our systems are vulnerable to damage or interruption from earthquakes, terrorist attacks, natural disasters, the effects of climate change (such as sea level rise, drought, flooding, wildfires, and increased storm severity), power loss, telecommunications failures, computer viruses, computer denial of service attacks, or other attempts to harm our systems. Some of our data centers are located in areas with a high risk of major earthquakes. Our data centers are also subject to break-ins, sabotage, and intentional acts of vandalism, and to potential disruptions if the operators of certain of these facilities have financial difficulties. Some of our systems are not fully redundant, and our disaster recovery planning cannot account for all eventualities. The occurrence of a natural disaster, a decision to close a facility we are using, or other unanticipated problems at our data centers could result in lengthy interruptions in our service. In addition, our products and services are highly technical and complex and may contain errors or vulnerabilities, which could result in interruptions in our services or the failure of our systems.[114]

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[113] *Id.* at 29–30.

[114] *Id.* at 30; *see* Hannibal Travis, *The Future According to Google: Technology Policy from the Standpoint of America's Fastest-Growing Technology Company*, 11 YALE J.L. & TECH. 209, 226 (2008).

O. Fluctuation of Operating Results

> Our operating results may fluctuate, which makes our results difficult to predict and could cause our results to fall short of expectations.
>
> Our operating results may fluctuate as a result of a number of factors, many outside of our control. As a result, comparing our operating results on a period-to-period basis may not be meaningful, and you should not rely on our past results as an indication of our future performance. Our quarterly, year-to-date, and annual expenses as a percentage of our revenues may differ significantly from our historical or projected rates. Our operating results in future quarters may fall below expectations. Any of these events could cause our stock price to fall. Each of the risk factors listed in this section in addition to the following factors may affect our operating results:
>
> - Our ability to continue to attract users to our websites and retain existing users on our websites.
> - Our ability to monetize (or generate revenues from) traffic on Google properties and our Google Network Members' properties across various devices.
> - Advertising revenue fluctuations caused by changes in property mix, platform mix, device mix, and geographical mix.
> - The amount of revenues and expenses generated and incurred in currencies other than U.S. dollars, and our ability to manage the resulting risk through our foreign exchange risk management program.
> - The amount and timing of operating costs and expenses and capital expenditures related to the maintenance and expansion of our businesses, operations, and infrastructure.
> - Our focus on long-term goals over short-term results.
> - The results of our acquisitions, divestitures, and our investments in risky projects, including new businesses, products, services, and technologies.
> - Our ability to keep our websites operational at a reasonable cost and without service interruptions

- Our ability to generate significant revenues from new products and services in which we have invested considerable time and resources.

Because our businesses are changing and evolving, our historical operating results may not be useful to you in predicting our future operating results. In addition, advertising spending has historically been cyclical in nature, reflecting overall economic conditions, as well as well as budgeting and buying patterns. Also, user traffic tends to be seasonal. Our rapid growth has tended to mask the cyclicality and seasonality of our business. As our growth rate has slowed, the cyclicality and seasonality in our business has become more pronounced and caused our operating results to fluctuate.[115]

P. Key Personnel

If we were to lose the services of Larry, Sergey, Eric, Sundar, or other key personnel, we may not be able to execute our business strategy.

Our future success depends in a large part upon the continued service of key members of our senior management team. In particular, Larry Page and Sergey Brin are critical to the overall management of Alphabet and its subsidiaries, and they, along with Sundar Pichai, the Chief Executive Officer of Google, play an important role in the development of our technology. Along with our Executive Chairman Eric E. Schmidt, they also play a key role in maintaining our culture and setting our strategic direction. All of our executive officers and key employees are at-will employees, and we do not maintain any key-person life insurance policies. The loss of key personnel could seriously harm our business.

We rely on highly skilled personnel and, if we are unable to retain or motivate key personnel, hire qualified personnel, or maintain our corporate culture, we may not be able to grow effectively.

Our performance largely depends on the talents and efforts of highly skilled individuals. Our future success depends on our continuing ability to identify, hire, develop, motivate, and retain highly skilled personnel for all areas of our organization. Competition in our industry for qualified employees is intense, and certain of our competitors have directly targeted

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[115] Alphabet, Inc., *supra* note 11, at 32.

our employees. In addition, our compensation arrangements, such as our equity award programs, may not always be successful in attracting new employees and retaining and motivating our existing employees. Our continued ability to compete effectively depends on our ability to attract new employees and to retain and motivate our existing employees.

In addition, we believe that our corporate culture fosters innovation, creativity, and teamwork. As our organization grows, and we are required to implement more complex organizational management structures, particularly in light of our holding company structure, we may find it increasingly difficult to maintain the beneficial aspects of our corporate culture. This could negatively impact our future success.[116]

Q. Internet Access

Our business depends on continued and unimpeded access to the Internet by us and our users. Internet access providers may be able to restrict, block, degrade, or charge for access to certain of our products and services, which could lead to additional expenses and the loss of users and advertisers.

Our products and services depend on the ability of our users to access the Internet, and certain of our products require significant bandwidth to work effectively. Currently, this access is provided by companies that have significant market power in the broadband and internet access marketplace, including incumbent telephone companies, cable companies, mobile communications companies, and government-owned service providers. Some of these providers have taken, or have stated that they may take measures, including legal actions, that could degrade, disrupt, or increase the cost of user access to certain of our products by restricting or prohibiting the use of their infrastructure to support or facilitate our offerings, or by charging increased fees to us or our users to provide our offerings. In addition, in some jurisdictions, our products and services have been subject to government-initiated restrictions or blockages. Such interference could result in a loss of existing users and advertisers, and increased costs, and could impair our ability to attract new users and advertisers, thereby harming our revenues and growth.[117]

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[116] *Id.* at 32–33.
[117] *Id.* at 34.

R. Other Technological Risk

New and existing technologies could block ads online, which would harm our business.

Technologies have been developed that can block the display of ads online and that provide tools to users to opt out of seeing ads online. Most of our Google revenues are derived from fees paid to us in connection with the display of ads online. As a result, such technologies and tools could adversely affect our operating results.[118]

S. Investments

We are exposed to fluctuations in the market values of our investments.

Given the global nature of our business, we have investments both domestically and internationally. Credit ratings and market values of these investments can be negatively impacted by liquidity, credit deterioration or losses, financial results, foreign exchange rates, changes in interest rates, or other factors. As a result, the value or liquidity of our cash equivalents and marketable securities could decline and result in a material impairment, which could materially adversely affect our financial condition and operating results.[119]

T. Tax Liabilities

We could be subject to changes in tax rates, the adoption of new U.S. or international tax legislation, or exposure to additional tax liabilities.

Our future income taxes could be adversely affected by earnings being lower than anticipated in jurisdictions that have lower statutory tax rates and higher than anticipated in jurisdictions that have higher statutory tax rates, the net gains and losses recognized by legal entities on certain hedges and related hedged intercompany and other transactions under our foreign exchange risk management program, changes in the valuation of our deferred tax assets or liabilities, or changes in tax laws, regulations, or accounting principles, as well as certain discrete items. Due to shifting economic and political conditions, tax policies or rates in various jurisdictions may be subject to significant change.

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[118] *Id.*
[119] *Id.*

> In addition, we are subject to regular review and audit by both domestic and foreign tax authorities. As a result, we have received, and may in the future receive, assessments in multiple jurisdictions on various tax-related assertions, including transfer pricing adjustments or permanent establishment. Any adverse outcome of such a review or audit could have a negative effect on our operating results and financial condition. In addition, the determination of our worldwide provision for income taxes and other tax liabilities requires significant judgment, and there are many transactions and calculations where the ultimate tax determination is uncertain. Although we believe our estimates are reasonable, the ultimate tax outcome may differ from the amounts recorded in our financial statements and may materially affect our financial results in the period or periods for which such determination is made.[120]

V. International Expansion

Many, if not most businesses located anywhere in the world today derive over half of their total revenues from outside their home jurisdictions.[121] For any enterprise, worldwide expansion brings increased cost of doing business by virtue of increased internal control challenges and because of being subjected to numerous and often conflicting laws and regulations including: conflicting local values,[122] data privacy and filtering rules;[123]

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[120] *Id.*; *see* Bret N. Bogenschneider & Ruth Heilmeier, *Google's 'Alphabet Soup' in Delaware*, 16 HOUS. BUS. & TAX L.J. 1, 15, 26 (2016); Edward D. Kleinbard, *Stateless Income*, 11 FLA. TAX REV. 699, 720–21, 745 (2011); Assaf Y. Prussak, Note, *The Income of the 21st Century: Online Advertising as a Case Study for the Implications of Technology for Source-Based Taxation*, 16 TUL. J. TECH. & INTELL. PROP. 39, 59, 71 (2013); Calvin H. Johnson, *The Effective Tax Ratio and the Undertaxation of Intangible Investments* (U. Tex. L. and Econ., Research Paper No. 135, 2008); Daniel Shaviro, *The Crossroads versus the Seesaw: Getting a 'Fix' on Recent International Tax Policy Developments* 8, 15, 18, 21 (N.Y.U. L. & Econ., Working Papers, 2015).

[121] Lawrence J. Trautman, How Law Operates in a Wired Global Society: Cyber and E-Commerce Risk (Sept. 22, 2017) (unpublished manuscript) (https://ssrn.com/abstract=3033776).

[122] *Id.*; *see* Olufunmilayo B. Arewa, *Measuring and Representing the Knowledge Economy: Accounting for Economic Reality Under the Intangibles Paradigm*, 54 BUFF. L. REV. 1, 101 (2006); Christoph Engel & Kenneth H. Keller, Global Networks and Local Values (Apr. 8, 2003) (unpublished manuscript) (http://ssrn.com/abstract=307039).

[123] Trautman, *supra* note 121; *see* Christopher Kuner, *Data Protection Law and International Jurisdiction on the Internet (Part 1),* 18 INT'L J.L. & INFO.

disclosure and internal control rules;[124] anti-corruption laws such as the Foreign Corrupt Practices Act (FCPA) and U.K. Bribery Act 2010;[125] intellectual property considerations,[126] and business practices or laws favoring local competitors.[127] Professor Tabrez Ahmad observes:

TECH., 176, 176–77 (2010); Christopher Kuner, *Data Protection Law and International Jurisdiction on the Internet (Part 2),* 118 INT'L J.L. & INFO. TECH., 227, 228, 230 (2010); Derek E. Bambauer, *Censorship V3.1*, 17 IEEE INTERNET COMPUTING 26, 31 (2013); Derek E. Bambauer, *Cybersieves*, 59 DUKE L.J. 377, 380–81 (2009); Derek E. Bambauer, *Filtering in Oz: Australia's Foray into Internet Censorship*, 31 U. PA. J. INT'L L. 493, 494 (2009); Derek E. Bambauer, *Orwell's Armchair,* 79 U. CHI. L. REV. 863, 909, 936–37, 943 (2012); Derek E. Bambauer et al., *Internet Filtering in China in 2004–2005: A Country Study* 20–21 (Berkman Ctr. for Internet & Soc'y at Harv. L. Sch., Research Publication No. 2005-10, Apr. 15, 2005); Mary C. Rundle & Ben Laurie, *Identity Management as a Cybersecurity Case Study* 12 (Berkman Ctr. Research, Publ'n No. 2006-01, 2005), http://ssrn.com/abstract=881107.

[124] Trautman, *supra* note 121; *see* Paola Musile Tanzi, et al., *The Evolution of Compliance Function and Compliance Risk in Investment Services* 13 (SDA Bocconi, Research Report, June 2009), http://ssrn.com/abstract=1446759.

[125] Trautman, *supra* note 121; *see* Lawrence J. Trautman & Kara Altenbaumer-Price, *Lawyers, Guns and Money—The Bribery Problem and U.K. Bribery Act,* 47 INT'L L. 481, 481–82 (2013); Lawrence J. Trautman & Kara Altenbaumer-Price, *The Foreign Corrupt Practices Act: Minefield for Directors*, 6 VA. L. & BUS. REV. 145, 158 (2011); Lawrence J. Trautman, U.S. Entrepreneurial Risk in International Markets: Focus on Bribery and Corruption 1, 12, 22, 29–30 (Feb. 5, 2017) (unpublished manuscript) (https://ssrn.com/abstract=2912072); Lawrence J. Trautman & Joanna Kimbell, *The COSO Framework, FCPA, and U.K. Bribery Act*, 30 FLA. J. INT'L L. (forthcoming 2018), http://ssrn.com/abstract=3239193.

[126] Trautman, *supra* note 121; *see* Frederick M. Abbott, *Intellectual Property Rights in World Trade, in* RESEARCH HANDBOOK IN INTERNATIONAL ECONOMIC LAW, 444 (A. Guzman & A. Sykes, eds., 2007); Frederick M. Abbott, *Intellectual Property, International Protection* 1 (Max Planck Encyclopedia of Pub. Int'l L.), http://ssrn.com/abstract=2080214; Olufunmilayo B. Arewa, *Piracy, Biopiracy and Borrowing: Culture, Cultural Heritage and the Globalization of Intellectual Property* 5 (Case Legal Stud. Research Paper Series, Research Paper No. 04-19, 2006); Derek Slater, Urs Gasser, Meg Smith, Derek E. Bambauer & John G. Palfrey, *Content and Control: Assessing the Impact of Policy Choices on Potential Online Business Models in the Music and Film Industries* (Berkman Publ'n Series Paper No. 2005-01).

[127] Trautman, *supra* note 121; *see* John E. Selby & Christopher J. Manning, *eBay's Paypal: Balancing Marketplace and Regulatory Regimes,* 6 COMPUTER L. REV. INT'L 168, 173 (2008).

> ... That the internet is a worldwide application. It involves international protocols and conventions as well as state and national legislation....
>
> In addition to the international sale of goods, there is a blossoming of electronic services that were previously only available through hard-line links to service providers. Internet retailing, banking, and data exchange now flow over computer grids and satellite systems. Deals are closed not with a handshake, but with an exchange of private keys.
>
> Cyberspace is the complete value chain that links suppliers, producers, retailers, and customers. Companies that do not plan to enter the e-Commerce arena themselves, still have to deal with clients and customers whose only presence will be in the form of full-service electronic storefronts. These companies will have to adjust their strategic plan to include electronic media in their businesses. Understanding the novel legal issues that arise in relation to, the Internet, electronic commerce and online services, as well as the laws and jurisdictional matters that apply to e-commerce applications, will be the instrument of success in positioning a business in the electronic marketplace.[128]

A. Google on International Risk

International risk proves to be demanding for such a high-profile enterprise such as Google.[129] In particular, Google's difficulties in navigating operations and political considerations in China are the subject of considerable note.[130]

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[128] Tabrez Ahmad, Information & Communication Technology Law 1–3 (Dec. 7, 2011) (unpublished manuscript) (http://ssrn.com/abstract=1969493).

[129] *See* RICHARD SCHAFFER, FILIBERTO AGUSTI & LUCIEN J. DHOOGE, INTERNATIONAL BUSINESS LAW AND ITS ENVIRONMENT (Cengage 2015).

[130] *See* Derek E. Bambauer, *Censorship V3.1*, 17 IEEE INTERNET COMPUTING 26, 31 (2013); Henry S. Gao, *Google's China Problem: A Case Study on Trade, Technology and Human Rights Under the GATS*, 6 ASIAN J. WTO & INT'L HEALTH L. & POL'Y 349, 351, 358 (2011); Min Jiang, *Authoritarian Informationalism: China's Approach to Internet Sovereignty*, 30 SAIS REV. INT'L AFFAIRS 71, 71, 83–84 (2010); Min Jiang, *The Business and Politics of Search Engines: A Comparative Study of Baidu and Google's Search Results of Internet Events From China,* 16 NEW MEDIA & SOC'Y 212, 212, 221 (2014); Min Jiang, *Internet companies in China: Dancing between the Party line and the bottom line,* 47 ASIE VISIONS 4, 17–19 (2012); Jyh-An Lee, Ching-Yi Liu & Weiping Li, *Searching for Internet Freedom in China: A Case Study on Google's China*

Our international operations expose us to additional risks that could harm our business, operating results, and financial condition.

Our international operations are significant to our revenues and net income, and we plan to continue to grow internationally. International revenues accounted for approximately 53 [percent] of our consolidated revenues in 2016. In certain international markets, we have limited operating experience and may not benefit from any first-to-market advantages or otherwise succeed.

In addition to risks described elsewhere in this section, our international operations expose us to other risks, including the following:

- Restrictions on foreign ownership and investments, and stringent foreign exchange controls that might prevent us from repatriating cash earned in countries outside the U.S.

- Import and export requirements, tariffs, trade disputes and barriers, and customs classifications that may prevent us from offering products or providing services to a particular market and may increase our operating costs.

- Longer payment cycles in some countries, increased credit risk, and higher levels of payment fraud.

- Still developing foreign laws and legal systems.

Experience, 31 CARDOZO ARTS & ENT. L.J. 405, 406–07 (2013); Marisa Anne Pagnattaro, *"The Google Challenge": Enforcement of Noncompete and Trade Secret Agreements for Employees Working in China,* 44 AM. BUS. L.J. 603, 603–04 (2007); Marisa Anne Pagnattaro, *Protecting Trade Secrets in China: Update on Employee Disclosures and the Limitations of the Law,* 45 AM. BUS. L.J 399, 401, 415 (2008); Lawrence J. Trautman, *American Entrepreneur in China: Potholes on the Silk Road to Prosperity,* 12 WAKE FOREST J. BUS. & INTELL. PROP. L. 425, 427 (2012); Shen Wei, *Will the Door Open Wider in the Aftermath of Alibaba?—Placing (or Misplacing) Foreign Investment in a Chinese Public Law Frame,* 42 H.K.L.J. 275, 275 (2012); Paul Watters, Mainstream Advertising on Rogue Websites in Hong Kong: A Comparison of Chinese and Western Titles 21 (July 21, 2014) (unpublished manuscript) (https://ssrn.com/abstract=2468700).

- Uncertainty regarding liability for services and content, including uncertainty as a result of local laws and lack of legal precedent.

Different employee/employer relationships, existence of workers' councils and labor unions, and other challenges caused by distance, language, and cultural differences, making it harder to do business in certain jurisdictions.

Additionally, changes in international local political, economic, regulatory, tax, social, and labor conditions may adversely harm our business and compliance with complex foreign and U.S. laws and regulations that apply to our international operations increases our cost of doing business. These numerous and sometimes conflicting laws and regulations include, among others, internal control and disclosure rules, privacy and data protection requirements, anti-corruption laws, such as the U.S. Foreign Corrupt Practices Act, and other local laws prohibiting corrupt payments to governmental officials, and competition regulations, among others. Violations of these laws and regulations could result in fines and penalties, criminal sanctions against us, our officers, or our employees, prohibitions on the conduct of our business and on our ability to offer our products and services in one or more countries, and could also materially affect our brand, our international growth efforts, our ability to attract and retain employees, our business, and our operating results. Although we have implemented policies and procedures designed to ensure compliance with these laws and regulations, there can be no assurance that our employees, contractors, or agents will not violate our policies.

Finally, since we conduct business in currencies other than U.S. dollars but report our financial results in U.S. dollars, we face exposure to fluctuations in currency exchange rates. Although we hedge a portion of our international currency exposure, significant fluctuations in exchange rates between the U.S. dollar and foreign currencies may adversely affect our revenues and earnings. Additionally, hedging programs are inherently risky and could expose us to additional risks that could adversely affect our financial condition and results of operations.[131]

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[131] Alphabet, Inc., *supra* note 11, at 30–32; *see* Damien Geradin, *European Union Competition Law, Intellectual Property Law and Standardization*, *in* CAMBRIDGE HANDBOOK OF TECHNICAL STANDARDIZATION LAW (Jorge L. Contreras, ed. 2016); Martin Husovec, *The End of (Meta) Search Engines in Europe?,* 14 CHI.-KENT J. INT'L PROP. 145, 147, 151 (2014); Lassi Jyrkkiö, *"But I Still Haven't Found What I'm Looking For"—The ECJ and the Use of*

B. Anti-Corruption

Corruption in any of its various forms is a problem for any business. Previously, many have documented numerous examples of how the potential for significant exposure to international corruption and anti-bribery laws increases with expanding U.S. business operations around the globe.[132]

Competitor's Trademark in Search Engine Keyword Advertising, 1 HELSINKI L. REV. (2011), https://ssrn.com/abstract=1847975; Massimiliano Kadar, *European Union Competition Law in the Digital Era*, 4 Zeitschrift für Wettbewerbsrecht 342, 343, 365 (2015); Aleksandra Kuczerawy & Jef Ausloos, *From Notice-and-Takedown to Notice-and-Delist: Implementing* Google Spain*,* 14 COLO. TECH. L.J. 219, 230 (2016); Ioanna Tourkochoriti, *Speech, Privacy and Dignity in France and in the U.S.A.: A Comparative Analysis,* 38 LOY. L.A. INT'L & COMP. L. REV. 217, 217–18 (2016); W. Gregory Voss, *After Google Spain and Charlie Hebdo: The Continuing Evolution of European Union Data Privacy Law in a Time of Change*, 71 BUS. L. 281, 281, 292 (2015); W. Gregory Voss, *European Union Data Privacy Law Reform: General Data Protection Regulation, Privacy Shield, and the Right to Delisting,* 72 BUS. L. 221, 228 (2016); Christopher Kuner, *The Court of Justice of the EU Judgment on Data Protection and Internet Search Engines* 15, 19 (London Sch. Econ. L., Society and Econ. Working Papers, Sept. 15, 2014); Hannibal Travis, *YouTube from Afghanistan to Zimbabwe: Tyrannize Locally, Censor Globally* 21 (Fla. Int'l U. Legal Studies, Research Paper No. 11-10, 2011); Joan Calzada & Ricard Gil, What Do News Aggregators Do? Evidence from Google News in Spain and Germany 2, 21–22 (June 20, 2017) (unpublished manuscript) (https://ssrn.com/abstract=2837553); Angela Daly & Benjamin Farrand, The Regulation of New Media in Europe 8–11, 51 (Oct. 31, 2011) (unpublished manuscript) (https://ssrn.com/abstract=1911038).

[132] *See* Trautman & Altenbaumer-Price, *supra* note 78; Lawrence J. Trautman & Kara Altenbaumer-Price, *Foreign Corrupt Practices Act: An Update on Enforcement and SEC and DOJ Guidance,* 41 SEC. REG. L.J. 241, 241 (2013); Lawrence J. Trautman & Kara Altenbaumer-Price, *The Foreign Corrupt Practices Act: Minefield for Directors*, 6 VA. L. & BUS. REV. 145, 148, 177 (2011); *see* Norman D. Bishara, *Governance and Corruption Constraints in the Middle-East: Overcoming the Business Ethics Glass Ceiling,* 48 AM. BUS. L.J. 227, 227–29 (2011); Mike Koehler, *A Foreign Corrupt Practices Act Narrative,* 22 MICH. ST. INT'L L. REV. 961, 1086 (2014); Mike Koehler, *Ten Seldom Discussed Foreign Corrupt Practices Act Facts That You Need to Know,* 10 BLOOMBERG BNA WHITE COLLAR CRIME REP. 347, 349 (May 1, 2015); Gideon Mark, *Private FCPA Enforcement,* 49 AM. BUS. L.J. 419, 422; Virginia G. Maurer & Ralph E. Maurer, *Uncharted Boundaries of the U.S. Foreign Corrupt Practices Act,* 20 J. FIN. CRIME 355, 359 (2013); Philip M. Nichols, *The Business Case for Complying with Bribery Laws,* 49 AM. BUS. L.J. 325, 328, 331 (2012); Peter R. Reilly, *Incentivizing Corporate America to*

VI. COUNTERTERRORIST LAWS & POTENTIALLY ILLEGAL ACTIVITY

A. Focus on Potentially Illegal Activity

It is worth mentioning the increased instances of unauthorized disclosure of highly confidential, national intelligence, and personal financial information, including a large amount of highly sensitive data pursuant to the Edward Snowden[133] and The Panama Papers disclosures.[134] By now it is obvious that even the nation state intelligence services with the largest budgets have been unsuccessful in keeping their most highly confidential information safe.[135] The 2016 disclosures known as The Panama Papers revealed personal offshore accounts of many sovereign leaders holding funds in many cases intended to be kept secret from the citizens they lead.[136] In other instances, it appears that the motivation was to avoid taxing authorities.[137] It is reasonable to expect that prosecutions from The Panama Papers disclosures may continue for years to come.[138]

Another disturbing trend that I want to mention is the impact of Stuxnet and its progeny, a malware that functions to

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Eradicate Transnational Bribery Worldwide: Federal Transparency and Voluntary Disclosure Under the Foreign Corrupt Practices Act, FLA. L. REV. 1683, 1721 (2015).

133 *See* Hill, *supra* note 34.

134 *See* Lawrence J. Trautman, *Following the Money: Lessons from the "Panama Papers," Part 1: Tip of the Iceberg*, 121 PENN. ST. L. REV. 807, 807 (2017).

135 *See* Brendan I. Koerner, *Inside the Cyberattack That Shocked the U.S. Government,* WIRED (Oct. 23, 2016, 5:00 PM), https://www.wired.com/2016/10/inside-cyberattack-shocked-us-government/ [https://perma.cc/J94D-ECK4]; Laura K. Donohue, *High Technology, Consumer Privacy, and U.S. National Security,* 4 AM. U. BUS. L. REV. 11, 15–16, 18 (2015); Alan Z. Rozenshtein, *Surveillance Intermediaries,* 70 STAN. L. REV. 99, 115, 118 (2018); David Barnhizer, *Through a PRISM Darkly: Surveillance and Speech Suppression in the 'Post-Democracy Electronic State'* 24, 37 (Cleveland-Marshall, Legal Studies Paper No. 13-258, 2013); Dakota S. Rudesill, James Caverlee & Daniel Sui, *The Deep Web and the Darknet: A Look Inside the Internet's Massive Black Box* 12 (Wilson Center Science and Technology Innovation Program, October 2015), https://ssrn.com/abstract=2676615.

136 *See* Trautman, *supra* note 1.

137 *Id.*

138 *See* Lawrence J. Trautman, Disclosures Continue: Lessons from the "Panama Papers," Part 2 (unpublished manuscript) (on file with author).

disrupt industrial control systems.[139] And next, we should all be aware of the increasing frequency of ransomware, as evidenced by the numerous disclosed attacks within recent months.[140]

CONCLUSION

E-commerce, the Internet, rapidly growing new technologies such as the Internet of Things (IoT) and virtual reality, and mobile platforms are having a major impact on those engaged in e-commerce and electronic payment systems.[141] Early recognition of relevant risks may prove helpful in avoiding increases in operating costs and reduce the risks of falling victim to threats involving the very survival of the enterprise. An examination of financial and regulatory disclosures by Alphabet and Google, as filed with the U.S. Securities and Exchange Commission, is helpful to the understanding of risks faced by most participants in the e-commerce and electronic payment systems arena.

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[139] *See* Lawrence J. Trautman & Peter C. Ormerod, *Industrial Cyber Vulnerabilities: Lessons from Stuxnet and the Internet of Things*, 72 U. MIAMI L. REV. 761, 761, 789 (2018).

[140] *See* Lawrence J. Trautman & Peter C. Ormerod, WannaCry, Ransomware, and the Emerging Threat to Corporations 14 (unpublished manuscript) (on file with author).

[141] Trautman & Ormerod, *supra* note 139, at 761, 789.