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

Lawrence J. Trautman
HOW GOOGLE PERCEIVES CUSTOMER PRIVACY, CYBER, E-COMMERCE, POLITICAL AND REGULATORY COMPLIANCE RISKS

LAWRENCE J. TRAUTMAN*

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.
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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

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

10 Trautman, supra note 1, at 264.
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.


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

17 Id.
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. 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**

<table>
<thead>
<tr>
<th>Target Country</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>218,121,167</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>32,579,100</td>
</tr>
<tr>
<td>Brazil</td>
<td>17,799,175</td>
</tr>
<tr>
<td>Japan</td>
<td>6,312,912</td>
</tr>
<tr>
<td>Singapore</td>
<td>7,674,068</td>
</tr>
<tr>
<td>Sweden</td>
<td>7,192,397</td>
</tr>
<tr>
<td>Germany</td>
<td>6,613,665</td>
</tr>
<tr>
<td>India</td>
<td>6,310,759</td>
</tr>
<tr>
<td>China</td>
<td>5,999,543</td>
</tr>
<tr>
<td>Netherlands</td>
<td>5,321,137</td>
</tr>
</tbody>
</table>

Source: Akamai

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

EXHIBIT 3
THE ORMEROD-TRAUTMAN PROFIT-MAXIMIZING MODEL OF CYBER SECURITY\textsuperscript{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.\textsuperscript{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.”\textsuperscript{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

\textsuperscript{21} Id.


ever. 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.”

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. Essentially, paying for zero data security measures result in zero users and zero profitability. 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

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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.\footnote{Yahoo Provides Notice to Additional Users Affected by Previously Disclosed 2013 Data Theft, supra note 25.}

\section*{C. Organized Crime and the Internet}

II. GROWTH OF ONLINE COMMERCE AND SEARCH

It will come as no surprise that the global growth rate of online commerce is staggering. Online commerce growth seems a likely proxy for search usage and therefore a reasonable indicator of the potential for Google usage growth during the next few years. 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%). 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

<table>
<thead>
<tr>
<th>World Regions</th>
<th>Population (2018 Est.)</th>
<th>Population % of World</th>
<th>Internet Users 30 June 2018</th>
<th>Penetration Rate (% Pop.)</th>
<th>Growth 2008-2018</th>
<th>Internet Users %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>1,267,914,329</td>
<td>16.9 %</td>
<td>464,523,169</td>
<td>36.1%</td>
<td>10.19%</td>
<td>11.0 %</td>
</tr>
<tr>
<td>Asia</td>
<td>4,287,588,157</td>
<td>55.1 %</td>
<td>2,062,197,366</td>
<td>49.0 %</td>
<td>1.704%</td>
<td>49.0 %</td>
</tr>
<tr>
<td>Europe</td>
<td>827,650,049</td>
<td>10.8 %</td>
<td>705,664,923</td>
<td>85.2 %</td>
<td>570 %</td>
<td>16.8 %</td>
</tr>
<tr>
<td>Latin America/Caribbean</td>
<td>652,841,996</td>
<td>8.5 %</td>
<td>438,248,446</td>
<td>67.2 %</td>
<td>2.325 %</td>
<td>10.4 %</td>
</tr>
<tr>
<td>Middle East</td>
<td>254,436,981</td>
<td>3.3 %</td>
<td>164,637,258</td>
<td>64.6 %</td>
<td>4.654 %</td>
<td>3.9 %</td>
</tr>
<tr>
<td>North America</td>
<td>363,344,632</td>
<td>4.8 %</td>
<td>345,660,847</td>
<td>95.0 %</td>
<td>219 %</td>
<td>8.2 %</td>
</tr>
<tr>
<td>Oceania/Australia</td>
<td>41,273,454</td>
<td>0.6 %</td>
<td>28,426,277</td>
<td>60.9 %</td>
<td>273 %</td>
<td>0.7 %</td>
</tr>
<tr>
<td>WORLD TOTAL</td>
<td>7,634,758,426</td>
<td>100.0 %</td>
<td>4,208,571,257</td>
<td>55.5 %</td>
<td>1,066 %</td>
<td>100.0 %</td>
</tr>
</tbody>
</table>

NOTES: (1) Internet Usage and World Population Statistics estimates as of 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 © 2016, Miniwatts Marketing Group. All rights reserved worldwide.

Source: Internet World Stats


41 Desktop Search Engine Market Share, supra note 40.

42 Id.

“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

44 Trautman, supra note 1, at 265.
46 Id.
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).\textsuperscript{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\textsuperscript{51} (the Securities Act) and the Securities Exchange Act of 1934 (the Exchange Act).\textsuperscript{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).”\textsuperscript{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.\textsuperscript{54}

The Exchange Act, in turn, governs the subsequent trading of those securities in secondary markets.\textsuperscript{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.\textsuperscript{56}

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

\textsuperscript{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).
\textsuperscript{54} Trautman, supra note 1, at 269.
\textsuperscript{55} Id.
\textsuperscript{56} Id.
\textsuperscript{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.\footnote{Trautman, \textit{supra} note 1, at 269.} 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.\footnote{Hu, \textit{supra} note 50, at 1601.}

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.”\footnote{Trautman, \textit{supra} note 1, at 270; see Joseph A. Grundfest, \textit{The Future of United States Securities Regulation in an Age of Technological Uncertainty}, 75 \textit{St. John's L. Rev.} 83, 84 (2001); Steven L. Schwarcz, \textit{Rethinking the Disclosure Paradigm in a World of Complexity}, 2004 \textit{U. Ill. L. Rev.} 1, 37 (2004); Lawrence J. Trautman, \textit{Bitcoin, Virtual Currencies and the Struggle of Law and Regulation to Keep Pace}, 102 \textit{Marq L. Rev.} (forthcoming), http://ssrn.com/abstract=3182867 [https://perma.cc/78X9-N5G5].} 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].\footnote{Lucian A. Bebchuk, Alma Cohen & Allen Ferrell, \textit{What Matters in Corporate Governance?}, 22 \textit{Rev. Fin. Stud.} 783, 788 (2009); Lin, \textit{supra} note 57, at 330.} How Internet powerhouse Google perceive their greatest threat of risk is the subject of this discussion.
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).\(^6^2\) For perspective, it is interesting to note that Microsoft Corp. ranks third, having a market cap of $646.6 billion.\(^6^3\) 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.\(^6^4\) 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.”\(^6^5\) Google’s stated mission is “to organize the world’s

\(^{63}\) Id.
There can be little doubt that Google is having a very positive impact on the lives of many worldwide.67


During 2015, Alphabet, Inc. became successor to Google pursuant to a holding company reorganization. Alphabet and Google are headquartered in Mountain View, California. 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.” 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.

As of September 30, 2017, total Alphabet employment headcount numbered 78,101 of which most are employed by Google. 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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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. Alphabet has also announced expectations that Google will be reorganized into a limited liability company.

B. How Google Views Risk

Corporate risk is a topic that is receiving increased focus by management and boards of directors during recent years. Reports of cyber threats and data security breaches continue to grow by alarming proportions. Various forms of cybercrime listed by Pinguelo and Muller include: “economic or foreign espionage, malicious insiders, spamming, phishing, email extraction programs, and hacking.” 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.”

74 Id.
76 See Trautman, supra note 1.
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,\textsuperscript{79} cyberterrorism,\textsuperscript{80} electronic crime, infrastructure security, intellectual property protection, Internet governance,\textsuperscript{81} jurisdictional disputes, and legal restrictions and obligations (regulations and privacy laws).\textsuperscript{82}


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; new and existing laws; 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; other technological risk; investments; tax liabilities; and international risk. Accordingly, Google provides the following risk disclosures and states that:


83 Id.


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

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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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.\(^1\)

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

• 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

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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 systems96:

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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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:

• 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

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. 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.

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

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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 consequences could adversely affect our business and results of operations.102

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 defamation, 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 products, services, or content. We may be subject to claims concerning these products, services, or content.

content by virtue of our involvement in marketing, branding, broadcasting, or providing 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.  

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.  

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

103 Alphabet, Inc., supra note 11, at 22.
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

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

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.\textsuperscript{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.

\textsuperscript{106} Alphabet, Inc., \textit{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. 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.


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.

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.

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 dispositions, 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.\textsuperscript{110}

\textbf{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.\textsuperscript{111}

\textbf{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.


\textsuperscript{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

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.\textsuperscript{113}

\section*{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.\textsuperscript{114}

\textsuperscript{113} Id. at 29–30.
\textsuperscript{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 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.\textsuperscript{115}

\textit{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

\textsuperscript{115} Alphabet, Inc., \textit{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

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.

\(^{118}\) *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.\textsuperscript{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.\textsuperscript{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,\textsuperscript{122} data privacy and filtering rules;\textsuperscript{123}
disclosure and internal control rules;\textsuperscript{124} anti-corruption laws such as the Foreign Corrupt Practices Act (FCPA) and U.K. Bribery Act 2010;\textsuperscript{125} intellectual property considerations,\textsuperscript{126} and business practices or laws favoring local competitors.\textsuperscript{127} Professor Tabrez Ahmad observes:


... 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

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

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• 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

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

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\(^\text{133}\) and The Panama Papers disclosures.\(^\text{134}\) 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.\(^\text{135}\) 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.\(^\text{136}\) In other instances, it appears that the motivation was to avoid taxing authorities.\(^\text{137}\) It is reasonable to expect that prosecutions from The Panama Papers disclosures may continue for years to come.\(^\text{138}\)

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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\(^{133}\) See Hill, supra note 34.


\(^{136}\) See Trautman, supra note 1.

\(^{137}\) Id.

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

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