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Web Site Outages: Isn't It Time to Do More?

INTRODUCTION

The proliferation of the Internet has undoubtedly changed the way individuals all over the world work, shop, communicate, and even play. It should come as no surprise then that the Internet has also drastically influenced the way individuals invest in the world's securities markets. The development and growth of online trading has changed the landscape of investing in many positive ways. Like all new technology, however, the growth of online trading has not come without significant growing pains. The Securities and Exchange Commission (SEC) has had the difficult task of ensuring that online trading complies with statutes that are close to seventy years old.[1] Online broker-dealers[2] have struggled to utilize the new technology in a manner that balances the regulatory demands of the SEC while also taking advantage of the tremendous growth in online investing. Unfortunately, the general public has often been caught in the gray area where regulation and technology have not yet smoothly coalesced.

Although technology is constantly developing, it has been unable to keep pace with the ever-growing demand of consumers to access the securities markets from their personal computers. Consequently, online broker-dealers have been left with the difficult, and at times impossible, task of ensuring that their ability to provide adequate and reliable customer service is not dimin-

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[1] The principal laws governing the securities markets are The Securities Act of 1933 and the Securities Exchange Act of 1934. *See generally* The Securities Act of 1933, 15 U.S.C.A. §§ 77a-77aa (West 2001 & Supp. 2003) and The Securities Exchange Act of 1934, 15 U.S.C.A. §§ 78a-78mm (West 2001 & Supp. 2003).

[2] A broker is an individual or firm who is paid a commission for executing a customer's order. A dealer is an individual or firm acting as a principal in a securities transaction. Glossary, *at* http://www.1-2-3-online-trading.com (last visited June 14, 2003).

ished as their customer base continues to grow. Increased customer demand coupled with lack of sufficient technological systems has created frequent system outages and delays in broker-dealers' automated trading systems. Outages and delays have resulted in investors suffering extreme financial losses or missed investment opportunities.[3]

One of the most recent and well-publicized instances of repeated Web site outages involved the online broker-dealer TD Waterhouse. In January 2001, the New York Stock Exchange (NYSE) censured and fined TD Waterhouse for outages occurring on thirty-three different business days over a year and a half period.[4] The NYSE found TD Waterhouse's outages were the direct result of an expanding customer base and a lack of technological capacity to deal with the volume of trading activity they attracted.[5] Although TD Waterhouse had instructed customers who were unable to execute trades online to call the firm directly, TD Waterhouse lacked the personnel to deal with the volume of calls they received. The TD Waterhouse scenario is not an isolated example in the world of online trading.

While there are currently many issues being debated concerning the regulation of online trading, this Comment explores Web site outages, or operating failures—a specific aspect of online trading that has proven to be one of the most troublesome for regulators, broker-dealers, and investors alike. Part I will focus on the development and tremendous growth in the popularity of online trading. This exponential growth has proven to be the fundamental cause of Web site outages as broker-dealers have been unable to match operational capacity of their online trading systems with customer demand. Part II further explores the many reasons for Web site outages, including technological problems in broker-dealers' online trading systems. The current regulatory framework applicable to Web site outages and its inadequacy to the current situation of online trading will be discussed in Part III. Finally, Part IV will outline pre-emptive measures broker-dealers should take to protect online investors

[3] U.S. GEN. ACCOUNTING OFFICE, ON-LINE TRADING: BETTER INVESTOR PROTECTION INFORMATION NEEDED ON BROKERS' WEB SITES 2 (2000) [hereinafter GAO]; *see* Blake A. Bell, *An Analysis of Commissioner Unger's Online Trading Report*, WALLSTREETLAWYER.COM, Dec. 1999, at 5.

[4] Bruce H. Nielson & Ivan B. Knauer, *How Online Brokerages Can Avoid the Consequences of Web Site Outages*, WALLSTREETLAWYER.COM, June 2001, at 17.

[5] *Id.*

from Web site outages. The Securities and Exchange Commission and other regulatory bodies should enforce these measures through regulations requiring mandatory compliance by broker-dealers.

I

THE DEVELOPMENT AND GROWTH OF ONLINE TRADING

Historically, investors bought and sold securities by calling or meeting with representatives of registered broker-dealers who would then execute their orders. In the mid 1980s, broker-dealers began offering software and direct dial-up access to customers, allowing them to submit orders via personal computers.[6] In the early 1990s, investors had the ability to enter trades through broker-dealers' private computer networks.[7] The first Internet-based trading systems were introduced to the public in 1995.[8] Internet-based trading systems enabled investors to place orders directly into a brokerage firm's trading system, thereby circumventing the need for order entry by brokers. While these first Internet-based trading systems served as primarily order entry systems, within a few short years the Internet-based trading systems developed a myriad of online services and programs to help investors independently plan and track their investments. Today, online investors have access to services previously offered only by full-service brokers, such as opening mutual fund accounts, trading mutual fund shares, fixed income securities, and accessing initial public offerings (IPOs).[9]

The explosion of trading securities in cyberspace has been truly astonishing even for an e-commerce industry driven by cutting edge technology where today's latest development is tomorrow's old news. In 1994, not one person traded securities over the Internet.[10] By 1999, it was estimated that the number of online

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[6] LAURA S. UNGER, U.S. SEC. & EXCH. COMM'N, ONLINE BROKERAGE: KEEPING APACE OF CYBERSPACE 11 (1999), *available at* http://www.sec/gov/pdf/cybrtrnd.pdf (last visited Jan. 23, 2002) [hereinafter UNGER].

[7] *Id.*

[8] OFFICE OF COMPLIANCE INSPECTIONS AND EXAMINATIONS, U.S. SEC. & EXCH. COMM'N, EXAMINATIONS OF BROKER-DEALERS OFFERING ONLINE TRADING: SUMMARY OF FINDINGS AND RECOMMENDATIONS (2001), *available at* http://www.sec.gov/news/studies/online.htm (last visited June 15, 2003) [hereinafter OCIE].

[9] GAO, *supra* note 3, at 4.

[10] Arthur Levitt, SEC Chairman: Plain Talk About Online Investing, Address at

trading accounts ballooned to about 9.7 million,[11] with the number of firms offering online trading growing four-fold from about forty firms in 1997[12] to over 200 in the year 2000.[13] It is expected that in the next few years the number of online brokerage accounts will roughly equal the metropolitan populations of Seattle, San Francisco, Boston, Dallas, Denver, Miami, Atlanta, and Chicago combined,[14] and online brokerage assets will grow to $3 trillion by 2003.[15] Not surprisingly, the growth in online investing has also led to a growth in the volume of trading from under 100,000 trades a day in the first quarter of 1996[16] to an estimated 807,000 trades per day in the year 2000.[17]

A. Why Is Online Trading So Popular?

There is no single reason for the tremendous growth in popularity of online trading in the late 1990s and early 2000s. Several factors converged to attract both experienced and novice investors to online trading services offered by traditional brokerage firms like Merrill Lynch or Charles Schwab, and by new Internet-only services such as E*Trade or Ameritrade. Some of the most important factors contributing to the growth of online trading have been prosperous market conditions, the low cost of online trading, and the overall growth in access to the Internet.

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the National Press Club (May 4, 1999), *at* http://www.sec.gov/news/speech/speecharchive/1999/spch274.htm (last visited June 15, 2003).

11 Jim Berns, *Serious Online Trading Disclosure: [ ] Is Coming/[ ] Has Arrived. Check Both.*, WALLSTREETLAWYER.COM, Feb. 2000, at 1:

> If the 4th quarter of 1998 was a record quarter for the online industry, then the 1st quarter of 1999 was quite simply a complete blowout. Surprising almost everyone in the industry (including most capacity planners at online trading firms), online trading volumes surged to an all-time record level of 499,476 trades/day. This represents an amazing 47% sequential growth rate, which comes on the heels of a record 34% sequential growth rate in [the fourth quarter of 1998] and is therefore the single highest sequential growth rate . . . ever recorded for the industry.

OFFICE OF N.Y. STATE ATTORNEY GENERAL ELIOT SPITZER, THE MARKET STORM OF 1999—THE OUTAGES AND CUSTOMER COMPLAINTS OF ONLINE TRADING, *available at* http://www.oag.state.ny.us/investors/1999_online_brokers/market_storm.htm1#1 (last visited July 14, 2003) (quoting CREDIT SUISSE FIRST BOSTON, ONLINE TRADING QUARTERLY: 1ST QUARTER 1999 (1999)).

12 Denise Callahan & Michael Burnett, *Trading in an Online Environment: Do Investors Know All There is to Know?*, WALLSTREETLAWYER.COM, Aug. 2000, at 1.

13 OCIE, *supra* note 8.

14 Levitt, *supra* note 10.

15 UNGER, *supra* note 6, at 1.

16 *Id.*

17 OCIE, *supra* note 8.

Arguably, the most influential force in the growth of online trading was the lengthy bull market,[18] which set record gains in the stock market through April 2000.[19] At a time when it appeared that everyone was making money, many new and overaggressive investors, who had not suffered through a prolonged bear market,[20] perceived online trading as an easy means to take part in the action.[21] For experienced investors, online trading was an attractive alternative to the traditional relationships they had with broker-dealers. Estimates from one study suggest that over half of the new accounts established in 1998 were opened by experienced investors who opted to convert from full-service or discount brokerage accounts to online accounts.[22] Many of these experienced investors were attracted to online investing due to dissatisfaction with traditional full-service broker-dealers.[23]

The low commission fees charged by online broker-dealers for online trades attracted some investors. Traditional full-service broker-dealers generally charge a commission based on the size of the order and the dollar value of the transaction, which could exceed $90.[24] In contrast, online broker-dealers charge their customers a commission that averages $15.75 a trade, for any number of shares less than a specified amount.[25] This disparity in commission fees makes online investing very attractive. Often, these relatively low fees also include access to free company research, market data, historical charts, industry or analyst reports, and investment tools, allowing individual investors to do much of the research previously done by full service broker-dealers.[26] Historically, full-service brokers provided this type of information only to wealthy individuals and institutional investors.[27]

The dramatic increase in the number of people with Internet access also contributed to the growth of online trading. The most

[18] A bull market is a market that shows a general up-trend for a long period of time. Glossary, *supra* note 2.

[19] Joseph M. Furey & Beth D. Kiesewetter, *On-line Broker-Dealers: Conducting Compliance Reviews in Cyberspace*, 56 BUS. LAW. 1461, 1467 (2001).

[20] A bear market is a prolonged period of falling stock prices, usually by 20% or more. Glossary, *supra* note 2.

[21] Gretchen Morgenson, *Call Off the Death Watch For Brokers*, N.Y. TIMES, June 6, 1999, § 3, at 1.

[22] GAO, *supra* note 3, at 6.

[23] Morgenson, *supra* note 21, at 2.

[24] GAO, *supra* note 3, at 3.

[25] *Id.*

[26] *Id.*

[27] *Id.*

recent estimates show that as of September 2002, 605.60 million people worldwide have access to the Internet in some form or other.[28] This unprecedented access coupled with aggressive, and at times misleading, marketing by online trading firms has led individuals to begin trading independent of professional advice. The multitude of sources of investing advice now available on television stations like CNBC, Web sites such as Morningstar.com, and Internet chat rooms has further emboldened investors into believing they are adequately qualified to make independent evaluations of stock performance.[29]

New investors as well as traditional experienced investors are attracted to online trading by the belief that clicking a button on their personal computers while sitting at home means that they are instantaneously executing trades. Online trading provides investors with the illusion of a direct connection to the securities markets.[30] Online trading enables investors to feel like they are participants in a high-stakes game that would be diluted by interjecting a broker in the action.[31] Online investors are attracted to the idea that they are in greater control of their own investments. While online trading does provide investors with the ability to execute trades more quickly than traditional forms of trading, execution is not instantaneous. A customer's order must still filter through both the broker-dealer's trading system and the designated securities market system before being executed. During this process, the customer's trade request can often be lost or delayed. Essentially, a customer "making a trade" with the click of a button on his or her personal computer is not simultaneously executing a trade.[32]

Whatever the reasons for the individual investor's attraction to

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[28] NUA Internet Surveys, *at* http://www.nua.ie/surveys/how_many_online/ (last visited Mar. 9, 2003). Access to the Internet is becoming widely available due to the increasing reliance on the Internet and the general availability of computers in all aspects of life including work, school, personal computers, libraries, and Internet cafes.

[29] OCIE, *supra* note 8, at 2.

[30] Berns, *supra* note 11, at 11. As former SEC Chairman Arthur Levitt warned, "[A]lthough the Internet makes it seem as if you have a direct connection to the securities markets, you don't." Levitt, *supra* note 10.

[31] As a reporter described, "[P]eople who frequent the craps tables in Las Vegas don't usually ask others to throw the dice for them." Morgenson, *supra* note 21, at 2.

[32] INVESTOR PROTECTION & SEC. BUREAU & INTERNET BUREAU, OFFICE OF N.Y. STATE ATTORNEY GENERAL ELIOT SPITZER, FROM WALL STREET TO WEB STREET: A REPORT ON THE PROBLEMS AND PROMISE OF THE ONLINE BROKERAGE

online trading, there is one thing that is certain: the increase in online trading has dramatically increased the volume of trades executed each day on the world's securities markets. It is also apparent that activity begets volatility, resulting in almost daily trading spikes attributable to the increased volume of online traders with access to the markets.[33] Increased demand dependent on innovative technology unfortunately has fostered an extremely error-prone system.[34] Too often, online broker-dealers' inability to match their system capacity for handling trades with customer demand has resulted in Web site outages and delays. Regulators have pinpointed trading system outages and delays as one of the most important issues facing online broker-dealers today.[35]

B. How Online Trading Works

To better understand the problems that arise from online trading and thus formulate possible solutions, it is important to first understand the basics of how online investing actually works. As noted earlier, many investors falsely believe that they are directly connected to the market and that clicking the mouse means they are executing a trade.[36] The distinction that often goes unrealized by investors, due in part to misleading advertising by online investment firms,[37] is that making a trade and executing a trade are two distinct and separate events.[38] When online investors click the button on their mouse, they are actually sending a re-

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INDUSTRY 35 (1999), *available at* http://www.oag.state.ny.us/investors/1999_online_brokers/brokers.html (last visited May 3, 2003) [hereinafter SPITZER].

[33] "'You can't strap 10 planes together and fly to the moon,' Charles Schwab once said, in an attempt to describe the situation of Internet-based stock brokers. They are attempting to do what, in financial services terms, is the equivalent of flying to the moon for the first time." Orla O'Sullivan, *Too Popular for Their Own Good?*, U.S. BANKER, June 1999, at 49.

[34] Berns, *supra* note 11, at 14.

[35] *Id.* at 9.

[36] SPITZER, *supra* note 32, at 35.

[37] "Online brokers should not exaggerate customers' access to the markets by stating or implying that a customer can execute trades without reliance on a broker-dealer. Claims, such as that of E*Trade, that their technology 'connects you directly to the markets so you bypass brokers and high commissions,' are misleading." *Id.* at 41. *See also Advertising Regulation: Electronic Trading Advertisements Raise Investor Protection Concerns*, REG. & COMPLIANCE ALERT (Nat'l Ass'n of Sec. Dealers Regulation), Mar. 1999, *available at* http://www.nasdr.com/3070_9903.htm (last visited June 29, 2003) [hereinafter NASDR].

[38] SPITZER, *supra* note 32, at 35.

quest for a trade rather than immediately executing a trade.[39] An online broker-dealer receives the request and checks the order against the customer's account records to verify the customer's buying power and ensure that there are no trading restrictions placed on the customer's account.[40] The request is then routed to the appropriate marketplace where the trade is executed.[41] What many online investors fail to realize is that the execution of their request is often subject to delays and even failures depending upon market conditions and traders' system capacity in relation to demand at that particular moment.

Online brokerage-dealers typically use a three-tiered system to enable their customers to execute trades over the Internet.[42] The first tier of a broker-dealer's computer system is the front-end system, which handles the front-end interface with customers and is commonly referred to as a server or Web server.[43] The front-end system allows online investors to connect to a broker-dealer's Web site in order to place orders directly into a broker-dealer's trading system. The second tier, also known as the middleware, provides messaging, routing, and access to a firm's trading system by determining what the investor is requesting, such as quotes, research, or customer support. The middleware provides the routes that send requests to the appropriate part of the firm's computer system.[44] The final and most important tier of a firm's online trading system is the third tier, the back-end system, where actual trading functions occur.[45] The back-end system accepts the customer's order and relays that order to the designated market, such as the NYSE or Chicago Stock Exchange, based on either what market the security is listed on or what market the broker-dealer has established a relationship with.[46] After the order has been executed, a confirmation is sent to the back-end system, which ultimately relays the confirmation back

[39] *Id.* at 36.

[40] *Id.* at 62.

[41] *Id.* at 35.

[42] *Id.* at 56.

[43] *See id.*

[44] *Id.* at 57.

[45] *Id.* at 58.

[46] A firm may also internalize order flow by executing the orders out of the firms' own inventory, or route the order to a clearing firm which executes orders from its own inventory or that of another firm dealing in that particular security. GAO, *supra* note 3, at 23-24.

to the online investor through the middleware and to the front-end system.

II

WHAT IS AN OUTAGE AND WHY DO THEY OCCUR?

Despite the overwhelming popularity of online trading, there is still a considerable amount of hesitation among the public to open online trading accounts. While some of this hesitation is the product of unfamiliarity with computer systems generally, much of the hesitation can also be attributed to the public's insecurity about the reliability and security of online trading. Unfortunately, this insecurity can be justified by some of the glitches online broker-dealers have experienced with their online trading systems. One of the most common glitches in online trading systems, as demonstrated by customer complaints, has been the inability of customers to access broker-dealers' Web sites or execute trades due to system outages.[47]

A. Outages

An outage is a disruption in a broker-dealers' automated trading system, creating the inability for online customers to access its Web sites, or an inability for broker-dealers to process customers' trading orders.[48] These outages or delays can result in customers losing thousands of dollars due to the inability to execute a purchase or sale of stock.[49] Initially, online broker-dealers may have been able to compensate disgruntled clients for trade gains they would have made had their brokers' trading systems been functioning.[50] The sheer number of individuals now trading

[47] *See id.* at 36.

[48] *Id.* at 11.

[49] Press Release, Office of New York State Attorney General Eliot Spitzer, Online Trading Glitches Prompt State Investigation (Feb. 4, 1999), *available at* http://Rudyard.oag.state.ny.us/press/1999/feb/feb04b_99.html (last visited May 6, 2003).

[50] *See, e.g.*, Patrick McGeehan, *Merrill Lynch Has Trouble Processing Trading Orders*, N.Y. TIMES, Nov. 10, 1999, at C18; *see also* GAO, *supra* note 3, at 16 ("Officials from two on-line broker-dealers said they made efforts to compensate their customers for losses due to outages." Over one million dollars was reportedly credited.); Brian Riggs & Mary E. Thyfault, *Network Pressure—E-Commerce Has Made Network Availability the Highest Priority and Downtime More Costly than Ever*, INFORMATION WEEK, Aug. 16, 1999, at 3 ("Until now, we've been able to afford outages—we haven't liked them, but we could handle them. . . . Now it's absolutely critical to be up 100% of the time . . . just a five second delay can amount to a 15% profit or 15% loss.").

online is making this type of compensation financially impossible.[51]

Furthermore, the intense competition for market share among online broker-dealers is making guaranteed trade execution an increasingly important marketing distinction between online broker-dealers.[52] To prosper in the competition of the online market, now more than ever, it is crucial that online broker-dealers minimize Web site outages and delays to provide customers with the best possible service.

One of the most persistent problems in dealing with outages has been the industry's inability to clearly define when a system outage or delay has occurred. The inability for the industry to agree on what degree of system failure constitutes an outage is the first fundamental hurdle to dealing with the problem. Broker-dealers currently use various methods of measuring and reporting system outages and delays that frequently result in an under-reporting of the problem to minimize negative public attention.[53] While some broker-dealers tracked outages that lasted less than twenty-five minutes, another broker-dealer tracked only those outages that lasted twenty-five minutes or more and affected at least twenty-five percent of its customer base.[54] Without a clearly defined standard for quantifying outages, it is futile to regulate broker-dealers legislatively or administratively. Broker-dealers will continue to track and report outages in different ways, thereby leaving regulatory bodies unable to uniformly police the problem, and online investors will suffer the consequences of inconsistent regulation.

B. Causes of Web Site Outages and Delays in Each Tier

While online outages and delays may be caused by many specific technological shortcomings in broker-dealers' trading systems, at the foundation of all systems failures is the volume of

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[51] O'Sullivan, *supra* note 33, at 2.

[52] "For instance, Schwab waives up to $500 in commission fees if consumers can't get online for five minutes or more, while DLJ Direct Inc. . . . charges no commission on a trade that takes more than a minute to execute." O'Sullivan, *supra* note 33, at 3.

[53] Letter from Rep. John D. Dingell, Ranking Member of House Committee on Commerce, to Arthur Levitt, Chairman, Securities and Exchange Commission (June 8, 2000), *available at* http://www.house.gov/commerce_democrats/press/1061tr121.htm (last visited May 6, 2003).

[54] Callahan & Burnett, *supra* note 12, at 24.

Internet traffic.[55] Compounding the problem of the overwhelming number of online investors is the fact that Internet activity is frequently concentrated into specific periods of high activity, such as before and during the opening of the securities markets and again before the markets close, or in a specific group of securities due to public announcements about a specific industry. Concentration of activity into short time intervals, or, on specific securities, places a tremendous amount of stress on a system's operational capacity.

Although each tier of a firm's online trading system performs a separate and distinct function, all three tiers must operate together to complete customers' orders. As a result, a problem or slowdown in one tier of the operating system will directly affect the efficiency of the trading system even if the other two tiers are functioning properly. Ultimately, this interdependency between tiers works as a detriment by tripling the chances that a customer's order cannot be executed fully and efficiently. While it is helpful to identify the problems that online brokerage firms suffer in each tier of their trading system, it must be remembered that a problem in one tier directly impacts the entire system.

As discussed earlier, the first tier of a broker-dealer's online trading system is the initial portal used by customers to access a broker-dealer's Web site and utilize the services offered. The front-end tier unquestionably receives the most volume because it serves two functions. The front-end tier deals with registered customers placing orders, conducting research, or receiving quotes. It also must accommodate the general public, members of which might be accessing the broker-dealer's site for a wide range of reasons other than to utilize an established account.[56]

Front-end systems are not only comprised of Web servers but are also comprised of various configurations of hardware and software,[57] which is designed to function together to meet the specific objectives of the broker-dealer. Antiquated hardware or software in the front-end system can result in the inability to handle large volumes of customer requests. Slow Web server software and Web access hardware can create a back-log of on-

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[55] *See* discussion *supra* Part I.

[56] The general public can usually log in to a firm's Web site to access financial news, delayed quotes, and certain research materials.

[57] Software varies by trading firm but Netscape is a common supplier of software. SPITZER, *supra* note 32, at 89.

line customers waiting to access a Web site.[58] The myriad of services now offered by online trading firms can also tax the available technology. While online trading firms are continually updating front-end systems to keep pace with customer volume, inevitably, firms have older hardware and software that slow their systems' performance and ability to handle spikes in trading volume, resulting in delays or outages.[59] As firms attempt to update their hardware and software, the inability to match their respective capabilities to deal with spikes in user volume can also be a frequent cause of delays or outages in executing customers' requests.[60]

The inability of front-end systems to handle spikes in volume also results in prolonged login times as the system attempts customer authentication.[61] If login times are too slow, a customer will be involuntarily logged out by a broker-dealer's trading system as it attempts to conserve system resources.[62] During periods of high trading volume, computer systems can slow dramatically and involuntary log-outs occur more frequently, severely restricting a customer's ability to access a firm's site or execute an order to completion.

The middleware acts as the crucial message routing capacity in an online trading system, funneling investor requests to the appropriate location and acting as the facilitator between the front-end and back-end systems. While the middleware may not deal with as much volume as the front-end system, all customer requests must pass through the middleware. Like the front-end system, the middleware can suffer from capacity-related problems at periods of high volume that create delays and outages when executing customer requests. Also like the front-end system, the middleware can suffer from software deficiencies. The message routing process is handled by complex software that

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[58] *See* DIV. OF MKT. REGULATION, SEC. & EXCH. COMM'N, STAFF LEGAL BULLETIN NO. 8 (Sept. 9, 1998), *at* http://www.sec.gov/interps/legal/slbmr8htm (last visited Apr. 7, 2003) [hereinafter BULLETIN].

[59] SPITZER, *supra* note 32, at 88-89.

[60] *See* GAO, *supra* note 3, at 3, 13-14 (providing examples of typical hardware and software problems).

[61] Any member of the public may enter a firm's Web site. In order to execute trades, a customer must access a firm's back-end system which can be done only by providing a personal account number and password. Customer authentication is the process by which the system checks to verify a customer's account number and password before allowing access to customer-only areas. SPITZER, *supra* note 32, at 90.

[62] *Id.* at 94.

is able to identify a customer request and direct it to the appropriate system for handling. Deficiencies in the software or the inability of the software to handle spikes in volume can slow or impede the message routing process resulting in certain instances where a customer request never reaches its intended destination.[63]

Like the front-end and middleware systems, the back-end system can also suffer from an inability to handle surges in volume. Many of the back-end systems were not designed for the purpose of direct interaction with online investors, but, rather, were designed to accept orders from broker-dealers who received a customer's orders over the phone or by mail and entered them into the system for execution.[64] The surge in volume created when more investors are given quicker and easier access to enter orders directly into the system is beyond what back-end systems can handle. When trading volume spikes and orders cannot be executed, they begin to stack on top of each other creating delays and often a complete system outage. Not only does the back-end system communicate with the markets, it also stores account information so that, as it becomes overburdened, there are delays in updating customer files and reporting results back to customers. Thus, an online customer may not know if his or her requests have been executed.

Delays and outages in the back-end system's functions can also be caused by deficiencies in the technology connecting a brokerage firm to a securities market. While a line connecting a brokerage firm to a market may be capable of carrying data at certain speeds, many brokerage firms are only capable of transmitting the data over those lines at a much slower speed.[65] Instead of operating back-end systems themselves, many online brokerage firms outsource these functions to other companies. Thus, still another party is involved in the process of executing an online trade. Like the connection between a brokerage firm and the securities markets, the lines connecting brokerage firms and the company they have outsourced their back-end system to can be inadequate for transmitting the volume of data required.[66]

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[63] *Id.* at 96-97.

[64] *Id.* at 97-98.

[65] *Id.* at 26.

[66] *Id.* at 107.

C. Other Causes of Web Site Outages and Delays

While trading systems used by broker-dealers can experience a variety of hardware and software problems, the most common of these technological problems is usually inadequate systems capacity. The technology used by online broker-dealers was not meant to deal with the levels of user capacity now being placed on it. In an attempt to rectify inadequate systems capacity or improve the capability of trading systems, online broker-dealers are continually upgrading to the newest hardware or software. Broker-dealers are discovering, however, due to the already heavy demands on their online trading systems, that they are unable to test system upgrades for problems before they go into use. Not only might the upgraded hardware or software itself be problematic, but many firms experience problems due to the impact a hardware or software upgrade has on other parts of the trading system.[67] It is not uncommon for system outages to occur shortly after upgrades intended to improve service are implemented.[68] Ultimately, the online investor is left to suffer the consequences of these system outages while the online trading firm attempts to fix problems as they arise in the normal course of business.

Online brokerage firms attempting to increase operational capacity are typically faced with both physical and technological constraints on their ability to expand.[69] Physically, the hardware used to manage the tremendous amount of information required to be processed by online trading firms can occupy considerable space and require large amounts of electricity and cooling mechanisms.[70] It is not uncommon for online trading firms to outgrow storage and operation space for their hardware. In response, many firms have turned to off-site expansion of systems or have opted to outsource back-end functions to outside companies.[71]

Technologically, the back-end systems of online trading firms were originally comprised of mainframe systems or a bank of computer servers not originally designed for handling the volume

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[67] *Id.* at 23.

[68] Callahan & Burnett, *supra* note 12, at 27; "Most of the outages that have made headlines over the past year have been attributed to software or hardware upgrades. It's a catch-22: E-trade has to add capacity, but doing so involves risk." Megan Barnett, *Walking a Tightrope*, THE INDUSTRY STANDARD, May 17, 1999, at 2.

[69] The ability to expand is also known as "scalability."

[70] SPITZER, *supra* note 32, at 86.

[71] *Id.* at 82-83.

of online trading occurring today.[72] Some of these legacy systems are still in use today, and the ability of these older systems to expand operational capacity has been reached. However, as broker-dealers are able to upgrade these legacy systems, many of these technological capacity problems will be solved.[73] Outdated technology is frequently a problem for online customers as well. Investors using older personal computers with slower modems can experience prolonged login times resulting in involuntary log-outs. The speed at which personal computer systems evolve can leave the individual investor, unable to spend thousands of dollars every other year on a new personal computer, with a system inadequate for efficient online trading.

III

The Legislative Framework Governing Web Site Outages

Since 1933, the SEC has had the responsibility of maintaining fair and orderly markets to assure the execution of securities transactions. Pursuant to Sections 2 and 11A of the Securities Exchange Act of 1934, the SEC has the responsibility of ensuring the fair execution of securities transactions.[74] The current SEC regulation of the securities market is founded on law established in the 1930s and 1940s. Despite the innovative technology being used to trade securities, to this point the SEC has not yet enacted securities regulations specifically tailored to guard against online outages and delays.[75] The SEC has instead attempted to apply

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[72] These older computer systems are called "legacy systems."

[73] Spitzer, *supra* note 32, at 80.

[74] *See* Securities Exchange Act of 1934 § 2, 15 U.S.C. § 78b (1994):

> [T]ransactions in securities . . . are affected with a national public interest which makes it necessary to provide for regulation and control of such transactions . . . to require appropriate reports to remove impediments to and perfect the mechanisms of a national market system for securities . . . and to insure the maintenance of fair and honest markets in such transactions . . . .

Securities Exchange Act of 1934 § 11A, 15 U.S.C.A. § 78k-1(a)(1)(A) (West 2001): "The securities markets are an important national asset which must be preserved and strengthened."

[75] "Although some of the Internet fraud cases involve novel scenarios . . . they do not present novel securities laws interpretations. . . . While we do not have to rethink the foundation of the law, we face the challenging but exciting task of applying these principles in cyberspace." SEC Commissioner Laura S. Unger, Investing in the Internet Age: What You Should Know and What Your Computer May Not Tell You . . ., Address at the Association of Retired Persons National Legislative Council

laws enacted during the New Deal Era to the world of online trading, arguing most online trading violations involve yesterday's fraudulent activities perpetrated using today's new technology.[76]

A. Regulations, Current and Proposed

Section 15(b)(7) of the Securities Exchange Act of 1934 gives the SEC the authority to adopt standards of operational capability for broker-dealers.[77] While the SEC has issued policies specifically aimed at addressing operational capability requirements,[78] these regulations provide only for voluntary compliance. While there is no mandatory quantitative requirement for operational capacity imposed on online broker-dealers, they are required to maintain sufficient operational capacity to handle customer requests.[79] The SEC has defined sufficient operational capability requirements in two Automation Review Policy Statements.[80] These operational policy statements are not specifically applicable to broker-dealers but the SEC has encouraged broker-dealers to adhere to these policy statements.[81]

Automation Review Policy I (ARP I) encourages self-regula-

Annual Meeting (Feb. 3, 2000), *at* http://www.sec.gov/news/speech/spch342.htm (last visited May 12, 2003); *see also*, Levitt, *supra* note 10 (explaining that online investing may change the way Americans invest but does not yet require an entirely new regulatory framework tailored specifically for online investing). There are other debates involving the need for additional online legislation concerning issues such as suitability, best execution, portals, and privacy, but those issues are beyond the scope of this Comment.

76 Unger, *supra* note 75.

77 "No registered broker or dealer . . . shall effect any transaction in, or induce the purchase or sale of, any security unless such broker or dealer meets such standards of operational capability. . . ." Securities Exchange Act of 1934 § 15(b)(7), 15 U.S.C.A. § 78o(b)(7) (West 2001 & Supp. 2003).

78 *See* discussion *supra* at 168-70.

79 The obligation to maintain sufficient operational capability is not new. It has always been a violation of the anti-fraud provisions of the securities laws for broker-dealers to accept orders without having sufficient personnel and facilities to execute the transaction. It is a violation of anti-fraud provisions for a broker-dealer to accept or execute any order for the purchase or sale of a security—or to induce or attempt to induce such purchase or sale—if he does not have the personnel and facilities to enable him to promptly execute and consummate the transaction. *See* Exchange Act Release No. 8363, 33 Fed. Reg. 11,150 (July 29, 1968); *see also* BULLETIN, *supra* note 58.

80 *See* Automation Review Policy I, Exchange Act, Release No. 27,445, 54 Fed. Reg. 48,703 (Nov. 16, 1989) [hereinafter ARP I]; Automation Review Policy II, Exchange Act Release No. 29,185, 56 Fed. Reg. 22,490, 22,491 (May 9, 1991) [hereinafter ARP II].

81 Furey & Kiesewetter, *supra* note 19, at 1463.

tory organizations (SROs)[82] and broker-dealers to create current and future capacity estimates for their automated order routing and execution, market information and trade comparison systems, conduct periodic capacity stress tests under various circumstances, and have their systems independently assessed to determine if they can perform adequately at estimated capacity levels.[83] The SEC also encourages compliance with Automation Review Policy II (ARP II), though it is not specifically applicable to broker-dealers. ARP II suggests independent reviews of automated trading and information dissemination systems, and risk analyses of those systems to determine if further improvements are needed. It also recommends notice of significant changes to automated trading systems, as well as real-time notice of unusual events with their automated systems (such as outages).[84] While ARP I and II do address operational capability requirements, they were adopted in 1989 and 1991 respectively, well before online trading first began, and may be inadequate under the current online trading circumstances.

In March 1999, the SEC proposed Rule 15(b)(7-2), the Operational Capability Rule, which would have further clarified the obligation of broker-dealers to ensure adequate operational capacity under Section 15(b)(7).[85] The intense focus on ensuring that computer and trading systems were not affected by the year 2000, however, shifted attention from operational capacity concerns to operational capability concerns, and therefore the SEC

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[82] SROs include securities exchanges, national securities markets, and clearing agencies.

[83] ARP I, *supra* note 80.

[84] ARP II, *supra* note 80.

[85] Proposed Rule 15(b)(7-2) would have provided:

> This section applies to every broker or dealer registered pursuant to Section 15 of the Act (15 U.S.C. § 780). If you do not have the operational capability, taking into consideration the nature of your business, to assure the prompt and accurate order entry, execution, comparison, allocation, clearance and settlement of securities transactions, the maintenance of customer accounts, and the delivery of funds and securities, you may not:
>
> (1) Effect any transaction;
>
> (2) Induce the purchase or sale of securities; Receive or hold customer funds or securities; or
>
> (3) Carry customer accounts.
>
> For the purposes of this section, the term customer includes a broker or dealer.

Operational Capability Requirements of Registered Broker-Dealers and Transfer Agents and Year 2000 Compliance, Exchange Act Release No. 34-41,142, 64 Fed. Reg. 12,128, 12,137 (Mar. 11, 1999).

deferred taking action on the proposed rule.[86] Given the continued failure of online broker-dealers to maintain adequate system capacity, several independent studies have suggested that proposed Rule 15(b)(7-2) be reintroduced, or, in the alternative, other rules addressing system capacity be proposed.[87]

The SEC has also addressed the issue of broker-dealers' system capacity in Staff Legal Bulletin No. 8 (SLB No. 8), which emphasizes the need for broker-dealers to have adequate capacity to handle high volume or high volatility trading.[88] SLB No. 8 also reminds broker-dealers of the need to establish planning and assessment programs for determining, maintaining, and testing sufficient systems capacity to operate during periods of high customer volume.[89] Furthermore, the SEC maintains that the need for broker-dealers to ensure proper operational capacity is not new. The SEC has warned broker-dealers as far back as 1968 that accepting transaction requests without having the personnel and facilities to execute orders is a violation of the federal securities laws.[90] Again, however, none of these recommendations are specifically mandated or enforceable against broker-dealers and therefore may go unmet by online trading firms.

B. The Inadequacy of Applying Generalized Regulation

The lack of regulations specifically tailored to online trading has forced disgruntled customers to apply generalized anti-fraud provisions to attempt to collect damages from online broker-dealers for soliciting and accepting securities transactions without the facilities to execute them.[91] These general anti-fraud provisions are proving inadequate to protect investors in the online environment. In the recent TD Waterhouse case, customers filed a complaint alleging TD Waterhouse violated Section 10(b) of the Securities and Exchange Act of 1934 and Rules 10(b)(3) and 10(b)(5) of that section prohibiting fraud "in connection with the

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[86] Furey & Kiesewetter, *supra* note 19, at 1464.

[87] *See* SPITZER, *supra* note 32, at 183-91; *see also* UNGER, *supra* note 6, at 65.

[88] BULLETIN, *supra* note 58.

[89] *Id.* The NASD, a self-regulatory group that oversees its broker-dealer members, has also attempted to provide additional guidance to broker-dealers concerning systems capacity in "Notices to Members 99-11," which concerns educating investors about the limitations of online trading, and "99-12," which generally reiterates the guidance provided by SLB No. 8. SPITZER, *supra* note 32, at 28.

[90] Exchange Act Release No. 8363, 33 Fed. Reg. 11,150 (July 29, 1968).

[91] *Id.*

purchase or sale of any security."[92] The Second Circuit, however, has held that to be actionable, a misrepresentation "in connection with" a purchase or sale of a security must concern the value of securities purchased or the consideration received for the securities.[93] Under this standard, failures of broker-dealers' trading systems are not actionable and the case was dismissed.

Similarly, self-regulatory organizations have also applied generalized rules to fine broker-dealers for inadequate online service. In the TD Waterhouse case, the New York Stock Exchange (NYSE) fined TD Waterhouse for various infractions, including failing to maintain appropriate procedures for control of each office, department, or business activity due to the way the firm managed its Internet trading business.[94] None of the NYSE fines against TD Waterhouse were due directly to the inadequacy of their online trading system in relation to their customer base.

Not only are there inadequate regulatory safeguards imposed on online broker-dealers, but online broker-dealers have further attempted to limit their liability for system outages and delays in lengthy contracts that must be signed by new customers.[95] The risks of outages, delays, and other pitfalls of online trading are disclosed in these new account agreements or operating agreements via general disclaimers of liability.[96] It is not unusual for this information to be located at the end or in the middle of customer agreements where it is unlikely to draw the investor's attention.[97] Not only are the risks of online trading hidden in lengthy disclaimers of liability, they are also couched in complex and confusing legalistic language that customers are rarely willing to attempt to decipher.[98] At other times, this information may be disseminated, unbeknownst to customers, in various ways other than a firm's Web site, where it goes unnoticed.[99]

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[92] Hoffman v. TD Waterhouse Investor Servs., Inc., 148 F. Supp. 2d 289, 290, U.S. Dist. LEXIS 8203 (S.D.N.Y. 2001).

[93] Saxe v. E.F. Hutton & Co., 789 F.2d 105, 108 (2d Cir. 1986).

[94] Bruce H. Nielson & Ivan B. Knauer, *How Online Brokerages Can Avoid the Consequences of Web Site Outages*, WALLSTREETLAWYER.COM, June 2001, at 18.

[95] *See, e.g.*, Ameritrade Terms and Conditions, *available at* http://www.ameritrade.com/getting_started/index.html?startpage=getting_started.html (last visited July 29, 2003).

[96] OCIE, *supra* note 8, at 3.

[97] Berns, *supra* note 11, at 17 (giving examples of risk disclosure in the middle of agreements).

[98] Levitt, *supra* note 10 (explaining that few trading firms discuss the risks created by system capacity and outage problems).

[99] GAO, *supra* note 3, at 22 (stating this information can be disclosed on the

Broker-dealers might argue that their use of contractual provisions in new account agreements to limit their liability is adequate protection and the forces of the market will ultimately decide what firms prosper and what firms do not. While allowing market forces to prevail in e-commerce might prove functional for most business situations, the nature of the securities market is unique. When a normal e-commerce site "like eBay experiences service outages, a customer may be inconvenienced for an hour if they cannot bid on a tempting tchotcke or sell their family heirlooms for beer money. But when an online brokerage goes down, customers trading a volatile stock stand to lose tens of thousands of dollars in a matter of minutes."[100] The failure of online trading systems to operate properly and efficiently can result in both the inability for investors to take advantage of rapidly changing market conditions, or, even worse, extreme financial loss.

The securities markets are an integral part of the nation's economy and businesses are dependent on the infusion capital investors provide. Research reports estimate that by the year 2003 there will be roughly $3 trillion in online brokerage assets.[101] Given the popularity of online trading and the money invested in the securities markets, a loss of investor confidence in the process could prove extremely costly to the nation's businesses.[102] Fining and censuring online broker-dealers based on general provisions in the securities laws may serve as penalties but only subsequent to the impact on investors' confidence and wallets. Furthermore, leaving contract agreements to govern the customer and broker-dealer relationship has already proven inadequate and resulted in countless dissatisfied customers. A continued lack of regulatory oversight will cause investors' confidence, crucial to the success and stability of the securities markets, to become more unsteady.

Given the intense competition for market share, it appears many online broker-dealers, while acknowledging traditional se-

firm's own Web site, in the fine print at the bottom of the Web site, in a Web site maintained by securities regulators, by mail, or not disclosed at all).

[100] Jesse Angelo, *E*Trade Crashes Into Lawsuit*, N.Y. POST, October 28, 1999, at 43.

[101] UNGER, *supra* note 6, at 1.

[102] The recent Enron events and the subsequent slip in investor confidence is a good example of what can happen when investors become wary of the securities markets.

curities regulations, have chosen to risk incurring legal action by aggressively courting new online customers when they may not have the operational capacity to handle the volume.[103] It appears that the reward of securing countless new online investors far outweighs the potential risk of incurring legal action for inadequate systems to handle these new accounts. Rather than continue to attempt to apply laws penalizing online broker-dealers for infractions already committed, or, leaving the success and failure of online broker-dealers to the free market, pre-emptive measures aimed at rectifying deficiencies in the system would better maintain the stability and integrity of the securities market.

IV

Further Measures to Protect Investors Against Outages

Recently, there may be slight decreases in the numbers of online investors, or, at the very least, a reduction in the growth rate of new online investors. This reduction is due in part to the bear market and in part to the end of the dot-com frenzy in which stocks fluctuated wildly in short periods of time. It appears, however, that the popularity of Internet investing is here to stay. As technology becomes increasingly sophisticated and trading systems are able to deploy hardware and software capable of dealing with customer volume, the occurrences of online trading system outages and delays will decrease. Until the inequality between technology and investor demand can be reconciled, it is important that regulators, trading firms, and online investors take pre-emptive steps to mitigate the effects of potential outages and delays.

Furthermore, to suggest that online trading system failures can be completely eradicated, even with the most advanced technology, is wholly unrealistic.[104] There will continue to be trading system failures, outages, and delays for a myriad of reasons, such as hardware or software glitches, outdated technology, computer

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[103] *See N.Y. Eyes First Enforcement Action Over Online Capacity*, Compliance Reporter, Aug. 16, 1999 (stating that due to the intense competition for order flow in online brokerage, at least one state regulator considered taking action against firms that solicit new online accounts without devoting sufficient resources to update systems capacity).

[104] Barnett, *supra* note 68.

viruses,[105] and in the post-September 11 era, outside terrorist threats.[106] Given the inevitability of online trading systems failures, it is important that broker-dealers take steps to educate customers about online trading and risks of potential outages and delays. It is also important that broker-dealers take pre-emptive measures such as capacity and contingency planning and testing to minimize the occurrences of outages while also developing means to diminish their impact when they do occur. If online broker-dealers fail to take appropriate measures to protect customers, the SEC and other regulatory bodies should take a more active role in the regulation of Web site outages. Regulatory bodies should consider codifying some of the measures suggested below to require mandatory compliance by broker-dealers. The importance of the securities markets requires that regulatory bodies take the next step to ensure the integrity of online trading for investors.

A. Education

Former SEC Chairman Arthur Levitt said it best when he stated, "Investor protection, at its most basic and effective level, starts with the investor."[107] The bull market of the late 1990s, the access to the markets provided by technology, and stories about booming initial public offering stock lured many investors into believing they could get rich quick, regardless of their investment strategies and decisions.[108] Many investors have complained that, because they did not understand how online trading worked, they either lost money or missed financial opportunities.[109] In order for investors to adequately protect themselves from the potential pit-falls of online investing, they must take a proactive role in educating themselves about the world of online trading before they invest. When put in common-sense terms, it seems obvious that most investors would not wager $5,000 in a game of poker without first knowing how to play. As many on-

[105] *See Hamstrung Over Access*, SYDNEY MORNING HERALD, Sept. 29, 2001, at 8.

[106] *See* Susanna Brennan, *The Regulation of Online Brokers and Dealers*, *in* SECURITIES LAW AND PRACTICE IN THE INTERNET AGE: PAPERS PRESENTED B-1, B-19 n. 91 (2001); Jeordan Legon, *FBI Seeks to Trace Massive Net Attack*, *at* http://www.in-vancouver.com/members/news_item.php?record_num=10 (Oct. 24, 2002).

[107] Levitt, *supra* note 10.

[108] Unger, *supra* note 75.

[109] GAO, *supra* note 3, at 17.

line investors have discovered, learning while trading can result in costly financial losses.

Not only must investors be willing to educate themselves about online trading, but trading firms must also assume the responsibility of providing customers with reasonable access to comprehendible educational information. This access might consist of hyperlinks on trading firms' Web sites routing customers directly to information provided by independent regulators such as the SEC, NYSE, or NASDR.[110] Alternatively, as customer complaints continue to rise, some firms are offering educational material on their own Web sites, such as glossaries to explain investing terms, answers to frequently asked questions, and letters and speeches by industry insiders.[111] When offering their own educational information, broker-dealers should, however, guard against overwhelming investors with too much information.[112] Broker-dealers should also make educational material easily accessible to investors.[113] Making educational material easily accessible will not only reduce investors' frustrations in having to conduct prolonged searches, it will also decrease the amount of time an individual spends logged into the system, thus lessening the burden placed on a trading system and possibly decreasing the chances of an outage.

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[110] *See* U.S. SEC. & EXCH. COMM'N, TIPS FOR ONLINE INVESTING, *at* www.sec.gov/investor/pubs/onlinetips.htm (last visited Aug. 1, 2003); www.nyse.com (New York Stock Exchange home page) (last visited Aug. 1, 2003); *Online Trading Q & A*, *at* www.nasdr.com/2500_online.htm (last visited Aug. 1, 2003); SEC Commissioner Arthur Levitt, Common Sense Investing in the 21st Century Marketplace, Address at the Los Angeles Times 3rd Annual Investment Strategies Conference (May 23, 1999), *available at* http://www.sec.gov/news/speech/speecharchive/1999/spch280.htm (last visited May 13, 2003) (discussing the amount of investing information available on the Internet).

[111] OCIE, *supra* note 8, at 3 (providing examples of key investing terms and concepts that can be included in these glossaries, including the differences between the various types of orders that may be placed; notice that a market order may be executed at a price higher or lower than the quote displayed on the Web site at the time of order entry; an explanation of how the customers' orders are executed; any situations in which customers may not receive an execution; any restrictions on the types of orders that customers can place; the possibility of systems' delays or outages affecting execution of orders; any alternative means of placing orders; and how market volatility can affect customers' orders.).

[112] *See* UNGER, *supra* note 6, at 67 (suggesting that too much investment information leaves investors confused).

[113] OCIE, *supra* note 8, at 3 (stating that glossaries and educational materials are often difficult to locate because they are at the bottom of a menu labeled "research").

B. Disclosure

Essential to the investing public's understanding of online trading is the necessity of online trading firms to communicate openly and effectively with the public about the risks and rewards of online trading.[114] As a result of a firm's failure to adequately disclose the risks of online investing in plain terms, many investors establish online trading accounts with unrealistic expectations that go unfulfilled. Online trading firms should strive to fully disclose, in plain terms, the limits and risks as well as the potential of online trading. Complete disclosure should include explanations of how and why trading systems fail, including the effect of trading volume on order execution. The consequences of potential outages and delays should also be disclosed to the online investor. It would be helpful for firms to adopt a uniform location or procedure for disseminating this information to investors. If online investors are educated as to the times at which outages may occur or orders be delayed, they can respond by adjusting their investment strategy.[115] Also, better disclosure will cause investor expectations to be on par with technological capabilities resulting in less resentment if systems do fail.[116] Legislation has already been proposed that would require online broker-dealers to make disclosures on their Web sites, and to disclose to the SEC details concerning system outages, steps taken to address and prevent outages, and information enabling online investors to limit the risk of online investing.[117] While initially

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[114] "[R]egulators view candid and far-reaching disclosure . . . as the safety net needed to make trading truly viable." Berns, *supra* note 11, at 15; "In a recent letter to House Appropriations Committee Chairman C.W. Bill Young (R-Fla.), [SEC Chairman] Pitt said the most significant weakness noted by his agency in a recent review of the public Web sites of twenty-seven broker-dealers offering online service was 'the failure of most broker-dealers sampled [seventy-four percent] to disclose to customers online the possibility of systems delays and outages.'" Amy Winn, *Business Online*, THE ATLANTA J. & CONST., Nov. 6, 2001, at 2D.

[115] SPITZER, *supra* note 32, at 4.

[116] GAO, *supra* note 3, at 16; *see also* SPITZER, *supra* note 32, at 31 (discussing the "expectation gap").

[117] The proposed legislation would require:

> (1) the date, time and duration of any system outage or other event that prevented or materially delayed the execution of online securities transactions during the preceding quarter; (2) any steps taken to address or prevent such outages or events; and (3) information regarding limiting risk of loss to securities investors that is unique to online trading, as required by the Commission, by rule or order.

Online Investor Protection Act of 1999, S. 1015, 106th Cong. § 35B (1999).

trading firms may be unhappy with the added burden of improved disclosure in regards to system outages and delays, ultimately they will be repaid by increased market share due to customer satisfaction.[118]

The responsibility of online trading firms to practice open and effective disclosure should not begin and end with the initial customer operating agreement. Adequate disclosure should be practiced by trading firms throughout their relationship with the customer. Trading firms should implement procedures to keep online investors continually updated concerning disruptions in their trading systems as such disruptions occur. While some outages are highly publicized in investment circles, many outages go unannounced.[119] Real-time disclosure of delays and outages as they occur will protect investors from spending the time to carry out the order entry process only to learn afterwards that their order will not be executed or will be significantly delayed. Trading firms could disseminate outage information via splash screens or pop-up messages on customers' Web pages, or, at the very least, e-mails to customers. Furthermore, after the occurrence of an outage it might be useful for trading firms to make available to customers post-incident summaries of system failures[120] to keep them informed as well as to let the customer know trading firms are adequately tracking and addressing the problems.

C. Advertising

One of the most important measures online trading firms can take to address problems with system outages and delays and customer dissatisfaction is to bring their advertising material into accordance with trading systems capabilities and the realities of trading in the securities markets. The intense competition among online trading firms to attract customers has resulted in firms investing heavily in aggressive advertising campaigns.[121] These ag-

118 Bell, *supra* note 3, at 6.

119 Ruth Simon & Rebecca Buckman, *E-Broker Outages Are Difficult to Track*, WALL ST. J., Nov. 15, 1999, at C1.

120 SPITZER, *supra* note 32, at 188.

121 *See* Furey & Kiesewetter, *supra* note 19, at 1465-66 n.28. (explaining that Ameritrade Holding Corporation and TD Waterhouse Group, Inc. spent $44.6 million for advertising in October 2000, which was down from $52.8 million from October 1999); *see also* Sally Beatty, *As Economy Sags, So Do Ratings for Some Once-Hot TV Business Shows*, WALL ST. J., Jan. 30, 2001, at B1; Walter Hamilton, *Market Savvy; Savvy Confidential: A Briefing for Investors; Brokers Beef Up Their Ad Budgets*, L.A. TIMES, June 10, 1999, at 5.

gressive advertising campaigns often result in trading firms establishing so many new user accounts that they ultimately do not have the systems capacity to handle the increased volume of activity.[122] Online trading firms should take it upon themselves to insure there is parity between their respective advertising campaigns and the capabilities of their trading systems. Ensuring parity may require broker-dealers to spend fewer dollars on advertising campaigns and instead redirect would-be advertising money to perform system upgrades and improvements. Ultimately, customer satisfaction with a broker-dealer's trading system will result in increased market share for the broker-dealer.

While excessive advertising may create operational capacity issues for trading systems, misleading advertising can also be a serious problem for the customers. Misleading advertising results in both an increased volume of customers and also unrealistic expectations about the potential of online investing that, if unmet, exacerbate customer frustration with the process.[123] Online trading advertisements, although improving, have historically conveyed images of extensive wealth while implying it is a direct result of online trading.[124] What most of these investors are not aware of are the possibilities of outages or delays causing financial losses. It is important that online trading firms temper their ads by properly balancing the potential risks, such as outages and delays, along with the rewards of online trading so investors are not misled. With potential risks in mind through representative advertising, investors' frustrations can be minimized. Again, if the various trading firms fail to address these problems sufficiently, regulators will be forced to enact regulations requiring mandatory compliance so that investors are not misled.[125]

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[122] David S. Jackson, *AOL Buys Some Time*, TIME, Feb. 10, 1997, at 50; Jared Sandberg, *AOL to Pay Refunds to Its Customers*, WALL. ST. J., Jan. 30, 1997, at A3 (explaining that AOL ultimately settled with thirty-six state attorneys general seeking to require AOL to stop advertising for a period until they were able to increase systems capacity).

[123] *See* Levitt, *supra* note 10.

[124] GAO, *supra* note 3, at 28-29.

[125] In March 1999, NASDR addressed some of these issues by announcing an advertising regulatory alert in which member firms must "balance discussions of the speed, accessibility, or reliability of electronic trading services with disclosure that market volatility and volume may delay system access and trade execution . . . [and] must ensure that it is communicated clearly and prominently." NASDR, *supra* note 37.

D. Capacity and Contingency Planning and Testing

At the very heart of system outages and delays is the lack of operational capacity many firms possess to deal with spikes in the volume of customers that is typical of online trading. Typically, most firms have more than adequate operational capacity to handle the normal flow of customer requests. However, average daily trading volume does not provide an adequate gauge of the necessary available systems capacity. Most online trading systems operate well below full capacity for the majority of the trading day. Operational capacity issues arise causing system delays or outages only during specific periods of trading when there is a spike in the volume of customers.[126] The difficulty of assessing existing operational capacity is complicated by the numerous components that comprise an online trading system. Any combination of these components has the potential to create a bottleneck resulting in a firm's inability to meet demand. Furthermore, there is currently no universally established and accepted means of measuring capacity.[127] Broker-dealers also differ drastically in how frequently they assess their systems' capacity.[128] Currently, the most effective means by which online trading firms can gauge their necessary operational capacity is by looking at historical data and estimates of future necessary operational capacity based on planned uses of the system.

The importance of improving trading system capacity alone is not sufficient to ensure adequate protection for online customers. As discussed earlier, even if trading firms are able to develop and implement technology that can sufficiently handle periodic spikes in user volume, it is idealistic to believe that trading systems will not experience other technical glitches causing

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126 These spikes in volume are usually concentrated around the opening or closing of the securities markets or around specific securities themselves. SPITZER, *supra* note 32, at 6.

127 Capacity is often measured by: 1) simultaneous number of trades during peak usage; 2) average number of simultaneous trades; 3) total trades in a day; or, 4) because of the peak demand usage that firms get, rather than a prolonged volume usage, many firms are switching from a capacity planning model based upon a factor of average daily demand to a model based upon average daily peak demand. SPITZER, *supra* note 32 at 79.

128 UNGER, *supra* note 6, at 61 (explaining some firms use a continuous monitoring system alerting firm personnel if there is a systems overload on any one component; others test system capacity on a weekly or monthly basis; others don't test system capacity at all).

outages or delays.[129] The fact that trading system glitches and failures will inevitably exist requires online broker dealers to develop contingency plans to allow customers alternative access to the securities markets during system outages or slowdowns, thereby enabling customers to minimize the effects of outages or delays.

At the most basic level, broker-dealers should be prepared with sufficient available phone lines and telephone representatives to accept and execute orders from customers when their Web sites are not functioning properly.[130] It would also be useful for trading firms to establish dual running sites[131] so that if their system is having problems they can quickly switch to an alternative site to execute customer orders. SLB No. 8 has suggested that trading firms develop computer systems with the ability to prioritize customers. At times of peak usage, priority would be given to customers who wish to enter orders over customers simply seeking account information.[132] Some firms have even gone so far as to suggest to customers that they establish multiple accounts with different online broker-dealers so that if one system is having problems, customers could simply access the other system to execute their order.[133] While this option might be a common-sense alternative, the intense competition for market share makes it unlikely it will become generally practiced. Instead, broker-dealers could encourage customers to utilize multiple Internet service providers (ISPs) to give them another option if one service provider is experiencing outages or delays. It is important not only that trading firms develop these contingency plans, but also that they both make users well aware of these options and test contingency plans periodically to ensure they can be administered properly when needed.

E. Continued Oversight

Despite the exponential growth in popularity of online trading, it is important to remember that this type of access to the markets—and the technology that enables the access—are still in the very early stages of development. The system of online trading

129 *See* Barnett, *supra* note 68.

130 OCIE, *supra* note 8, at 7.

131 These dual running sites are also called hot sites, redundant sites, or class B Internet addresses.

132 BULLETIN, *supra* note 58.

133 GAO, *supra* note 3, at 16-17.

will continue to develop as firms expand their services, technology develops, and customers become more online savvy. It is therefore important that regulators, trading firms, and the general public continue to monitor and analyze the world of online trading to protect the interests of all parties involved.

Online trading firms should seriously consider implementing internal review procedures conducted by an appointed committee. These reviews should analyze the firm's online trading system and procedures through testing of operational capacity and contingency procedures, review of record keeping, and evaluation of customer service practices. Internal reviews should culminate in a report detailing the strengths of the firm's system as well as the areas that need improvement.[134]

Regulators should also explore the idea of forming an independent review committee to evaluate broker-dealers' trading systems to ensure adequate procedures and controls are being utilized and make recommendations for possible improvements.[135] Independent review committees could also serve advisory roles. Committees comprised of industry personnel, regulators, and scholars, meeting periodically to discuss the future development of online trading, would help to avoid pit-falls before they have a tangible effect on customers. While some broker-dealers might initially be resistant to increased oversight, it could prove advantageous in the long run. Continuous oversight of online trading now might prevent a much harsher backlash if something were to go seriously wrong with online trading in the future. If the general public believes that online broker-dealers are currently making a concerted effort to address online trading problems, it is possible they will be more forgiving of a future problem.

Conclusion

The novelty of online trading is quickly coming to an end as more and more investors access broker-dealers' Web sites and execute trades online from their offices or the comfort of their homes. Online trading will continue to grow as more individuals gain access to personal computers and the Internet. Accordingly, broker-dealers will continue to court this growing customer base with aggressive advertising techniques and promises of timely

[134] Furey & Kiesewetter, *supra* note 19, at 1495.
[135] ARP I, *supra* note 80.

and reliable trading. The development of technology and the expansion of online trading is resulting in new scenarios that the outdated securities laws could not have contemplated and are not equipped to deal with properly. As a result, many investors are paying a costly price for the gaps in the current regulatory framework.

The world of investing has moved quickly into a new era and it is time for securities laws to adapt accordingly. Leaving the protection of online investors to broker-dealers has proved inadequate to this point. The financial reward of adding new customers has outweighed the risks of incurring legal action for unreliable service. In the long-term, updated securities laws are not only in the best interest of investors, but they are also in the best interest of online broker-dealers and the business community as a whole. Establishing confidence in online investors will serve to further expand broker-dealers' customer base while also increasing the infusion of capital into the nation's businesses.