



# Managerial Actions, Stock Returns, and Earnings: The Case of Business-to-Business Internet Firms

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## ABSTRACT

In this study we investigate the valuation implications of managerial actions undertaken by 57 Internet firms engaged in Business-to-Business (B2B) e-commerce. We classify 3,007 managerial actions undertaken by our sample firms between the firm's IPO date and September 30, 2000 into nine action categories: (1) acquisition of major customers, (2) introduction of new products and services, (3) promotional and marketing actions, (4) actions taken to address the concerns of stakeholders such as employees and the community at large, (5) announcements of technology, marketing, and distribution alliances, (6) completion of acquisitions, (7) expansion into international markets, (8) management team building actions, and (9) organizational changes.

In the short window tests, we find a significant increase in stock price volatility over a three-day event window surrounding the announcement of almost all actions suggesting that announcement of managerial actions provides value-relevant information to the stock market. In the long window tests, we use factor analysis to group the counts of managerial actions taken by each firm over its post-IPO life into two broad managerial initiatives—market penetration and organization building. These two initiatives explain a substantial portion of the cross-sectional variation in the firms' post-IPO life stock market returns beyond that explained by both reported earnings and analysts' forecasts of future earnings and revenues. Thus, investors appear to supplement relatively meager accounting information with data about the cross-sectional intensity of managerial actions in setting stock prices of B2B Internet firms.

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## 1. Introduction

In this paper, we explore the valuation implications of managerial actions undertaken by Internet firms engaged in Business-to-Business (B2B) e-commerce. B2B commerce, or industrial purchasing, refers to the many different types of interactions related to the purchase and sale of goods and services between businesses (Federal Trade Commission [2000]). According to Forrester Research, an Internet research company, annual B2B e-commerce is expected to account for 92 percent of total e-commerce by 2003 (Forrester Research [2000]).

Given the size of the U.S. economy, even a small reduction in transaction costs (Williamson [1989]) resulting from B2B transactions can have profound implications for firms and consumers. In an attempt to exploit this market opportunity, many B2B start-ups have recently gone public with attractive market valuations. One set of start-up firms hosts online marketplaces to mediate transactions among businesses (e.g., VerticalNet and Freemarkets) while the other set provides software solutions that enable businesses to build, or participate, in online marketplaces (e.g., Ariba and Commerce One). Even though only one firm in our sample of 57 B2B firms has reported an annual profit, the combined equity value of our sample firms exceeded \$100 billion as of September 30, 2000. The co-existence of significant market capitalizations with negative accounting earnings raises interesting questions about the factors that drive valuation of B2B firms.

There are several impediments to understanding the value of B2B stocks. First, the median firm in our sample has been public only for a year and a long history of commonly used performance measures such as accounting earnings is unavailable for forecasting future profitability. Second, the B2B Internet sector is an emerging industry and the determinants of value creation for such firms are not well documented. Third, unlike Business-to-Consumer (B2C) e-commerce firms, cross-sectionally comparable non-financial indicators of stock prices such as web traffic (Trueman, Wong, and Zhang [2000a]) are not readily available for B2B firms. This is because transactions in the B2B domain are not driven as much by mass consumer interest as they are by the proportion of cost savings or overall value obtained from purchasing of supplies or manufacturing inputs via the Internet.

We compile a list of managerial actions taken by B2B firms and examine whether such actions are associated with shareholder value creation. Because managerial actions form the basic building blocks of the

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entrepreneurial functions of acquiring, combining, and deploying resources in the marketplace, firm-specific measures of such actions are likely to be informative about future profitability.<sup>1</sup> Our investigation provides an opportunity to explore how investors supplement relatively meager financial data with non-financial data such as managerial actions in valuing an economically significant subset of e-commerce firms, i.e., B2B firms.<sup>2</sup>

Our sample of 57 public B2B firms is drawn from a list published in a Morgan Stanley report titled “The B2B Internet Report” (available on [www.msdw.com](http://www.msdw.com)). Our approach is to obtain managerial actions that firms disclose in their press releases between the firm’s IPO date and September 30, 2000 (a period we label as the post-IPO life of a firm). We collect 3,007 actions and classify them into nine categories: (1) acquisition of major customers, (2) introduction of new products and services, (3) promotional and marketing actions, (4) actions taken to address the concerns of stakeholders such as employees and the community at large, (5) announcements of technology, marketing, and distribution alliances, (6) acquisitions, (7) expansion into international markets, (8) management team building actions, and (9) organizational changes.

After classifying actions taken by firms, we conduct two tests. First, we investigate the information content of the action announcements by examining stock price volatility surrounding the announcement. We find a statistically significant increase in stock price volatility for announcement of all the action categories studied, with the exception of international expansion, over a three-day event window surrounding the announcement of managerial actions. Moreover, the increase in stock return volatility of all managerial actions exceeds the stock return volatility increases around earnings announcements. Hence, in the spirit of Beaver [1968], we conclude that announcements of managerial actions have information content over and above information contained in earnings announcements.

Second, we correlate the stock returns of our sample firms over their post-IPO life with a count of the actions taken by each firm in each of the

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<sup>1</sup> The alternate hypothesis is that managerial action announcements are not associated with shareholder value creation. The alternate hypothesis might hold under two circumstances. First, managers may indulge in cheap talk when they issue announcements of actions without any intent to follow up on those announcements. Second, measurement error may render our action measures incapable of capturing any value relevant information.

<sup>2</sup> Our focus on B2B firms does not imply that managerial actions would not explain stock prices of B2C Internet firms or even non-Internet firms. We do not consider B2C Internet firms because prior research has found non-financial indicators (such as web traffic) to be significantly associated with stock prices of such firms. In contrast, we are unaware of research into non-financial value drivers for B2B firms. We do not consider non-Internet early stage companies because they are more likely to be profitable at the time of their IPO and more likely to have significant accounting performance histories relative to Internet firms (Meeker [2000], Hand [2000]). Finally, we do not focus on non-Internet mature firms because they have longer accounting performance histories that are likely to better reflect the impact of managerial actions.

categories enumerated earlier. In particular, we use factor analytical techniques to group the counts of managerial actions taken by each firm over its post-IPO life into two broad managerial initiatives—market penetration (consisting of acquisition of new customers, promotions, international expansion, technology and distribution alliances) and organization building (comprising of stakeholder actions, organization changes, acquisitions, and new product introductions). The two grouped action measures explain a substantial portion (over 25 *percentage points*) of the cross-sectional variation in the firms' post-IPO life stock market returns beyond that explained by accounting earnings. This suggests that cross-sectional variation in the intensity of managerial actions conveys important valuation related information to investors.

Our study adds to the growing body of literature on the role that non-financial indicators play in explaining stock prices. Prior research has documented the value-relevance of several industry-specific non-financial measures. For example, Amir and Lev [1996] study market share in the wireless communications industry, while Chandra, Procassani, and Waymire [1999] investigate the book-to-bill ratio in the semi-conductor industry. With respect to the Internet, research by Trueman, Wong, and Zhang [2000a], Demers and Lev [2001], and Rajgopal, Venkatachalam, and Kotha [2001] documents the value relevance of web traffic and customer experience ratings. In contrast to prior research, our study examines the value implications of a broad range of managerial actions taken by firms.<sup>3</sup> Ours is perhaps the first paper to consider a portfolio of managerial actions in the set of non-financial indicators that investors appear to use while setting stock prices.

Our study is subject to three important caveats. First, the evidence that managerial actions possess information content is also consistent with the stock markets' fixation on B2B firms' announcements regardless of the effects of these actions on future earnings. Although the factor scores related to the grouped actions are positively correlated with future earnings forecasts suggesting a link between actions and fundamental future accounting information, we cannot rule out the possibility that investors fixate on action announcements. Second, we assume that managerial actions are exogenous signals of firm performance although some actions are likely to be endogenous to firm performance. Third, our study does not document differential information content across good news and bad news announcements. This is because significant negative announcements are absent in our sample. Also,

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<sup>3</sup> Previous research in the strategy and marketing literatures has conducted event studies on industrial firms for a number of events covered in this paper. However, they focus on how a few specific actions such as alliances (Das, Sen, and Sengupta [1998]) or new product introductions (Chaney, Devinney, and Winer [1991]), in isolation, create an advantage for a firm vis-à-vis its competitors. In contrast, we document that a *composite* measure of strategic actions such as market penetration and organization building are important pieces of non-financial information that investors appear to use for valuation. Furthermore, we contribute to the accounting literature by documenting the value-relevance of managerial actions over and above accounting information.

specifying a model of investor expectations about action announcements is very difficult. A more comprehensive examination of action announcements over a long period of time where managers announce both good news and bad news would be necessary to provide evidence on this issue.

The remainder of the paper is organized as follows. In section 2, we briefly describe the two key types of business models in B2B e-commerce—online marketplaces and technology providers. In section 3, we develop the taxonomy of managerial actions listed in the introduction and argue why these actions are expected to be associated with firm value. In section 4, we describe the research methodology, data, and results. Section 5 concludes the study.

## *2. Institutional Background: The B2B Sector*

A 1999 study by the Organization for Economic Co-operation and Development (OECD) observes that savings across five nations from B2B commerce could represent a one-half to a two-third percent increase in productivity, \$250 billion savings in inventory, a 10–50 percent savings in customer service costs, and a 50 percent fall in order processing costs in the 2003–2005 timeframe (Thompson [1999]). Most of these productivity gains are expected to come from savings in transaction costs for both buyers and sellers.

The B2B sector consists of firms in two categories: (1) electronic marketplaces for buying and selling products and services, and (2) technology providers marketing software necessary to build and maintain marketplaces. Each category is described in greater detail below.

### 2.1 ELECTRONIC MARKETPLACES

With the Internet emerging as an important e-commerce transaction platform, new intermediaries or net market makers are attempting to establish electronic marketplaces. Kaplan and Sawhney [2000] define these emerging electronic marketplaces as Internet-based metamediaries that focus on specific industries or business processes and use various market-making mechanisms to mediate transactions among businesses.

Marketplaces attempt to create value by first attracting and then aggregating buyers and sellers. Once a critical mass of buyers and sellers congregate and a high degree of market liquidity is attained, buyers and sellers both benefit from reduced transaction costs. Generally, B2B marketplaces can be separated into two distinct types: vertical hubs and functional hubs. Vertical hubs focus on industry-specific markets. Sciquest.com (chemicals), Partsbase (aerospace), and Neoforma (health products) are examples of such hubs. In contrast, functional hubs focus on providing standardized inputs required by many businesses across a wide range of industries such as computer paper, stationery, cleaning supplies, etc. An example of a functional hub is Onvia.com, an exchange focused on facilitating trade in manufacturing and office products for small businesses. Prices on these marketplaces

can be set in a variety of ways: by auction, the seller's catalog, bid-ask system, or negotiation.

Marketplaces charge commissions based on the gross amount of each transaction. Some exchanges charge fees for participating in the exchange or for anticipated usage. Besides such fees, exchanges sell advertising space on their sites and or provide market participants with data mining services on various aspects of market behavior by firms participating in the exchange.

## 2.2 TECHNOLOGY PROVIDERS

Technology providers market and support software-based applications for trading on the electronic marketplaces on either the buy side or sell side, or as market makers. The trading models described above are driven by software platforms developed and supported by firms such as Commerce One, Ariba, and i2 Technologies, among others.

These firms typically have two main streams of revenue. One revenue stream is derived from software licensing, which is usually a one-time fee charged on a per-user basis. The second stream is derived from a host of services such as software integration, customization of the software platform, software maintenance, and other consulting activities. Some technology providers such as Commerce One also receive a percentage of commission fees that the electronic marketplaces collect on transactions carried out by the buyers and sellers who frequent the marketplace. Recently, the distinction between electronic marketplaces and technology providers is blurring as firms that subscribe to one business model continue to adopt features of the other business model.

## 3. *Managerial Actions and Value Creation*

In this section, we identify nine action categories used in the study and present arguments for the effect of actions on shareholder value. Our taxonomy of actions and the hypothesized links of actions to firm value creation are primarily motivated by a review of literature in various disciplines of business research such as finance, economics, strategy, and marketing. A discussion of the value implications of each of the action categories follows.

### 3.1 INTRODUCTION OF NEW PRODUCTS OR SERVICES

With the emergence of the Internet as a trading platform, firms have introduced a number of new products or services. Chaney, Devinney, and Winer [1991] argue that new products and innovations are essential to create competitive advantage. Hence, new products or service introductions are likely to be valued by investors. Firms that innovate would be expected to generate excess returns, the more innovation, the better the signal to shareholders that firms are willing to invest substantially in the future.

An alternative hypothesis is that new product introductions are risky since failures are fairly commonplace. Mansfield, Rapoport, Schnee, Wagner, and Hamburger [1971], for example, found new product failure rates that varied

from 32% for a chemical laboratory to 48% for a drug laboratory. Moreover, innovators, especially in Internet businesses, run the risk that other firms will imitate their actions and earn a greater share of profits than their original investment (Porter [1980], Rindova and Kotha [2001]). If stockholders anticipate that product innovations would likely fail or be imitated by others to the point at which the innovator cannot recoup the cost of its investment, we would not expect firms that announce new products or services to generate excess stock returns (see Barney [1991]).

A press release that announces new software applications, new features to an existing software application, or the launch of new electronic marketplaces is classified as an introduction of a new product or service.

### 3.2 ACQUISITION OF MAJOR CUSTOMERS

Acquiring major new customers is vital to the firm's prospects for a variety of reasons. All new ventures face concerns associated with "liability of newness" (Stinchcombe [1965]), and because of a lack of legitimacy arising from this, they may not be able to compete successfully in the marketplace. Besides providing a source of future revenues, major new customers are likely to serve as references to attract others. Furthermore, unless a critical mass of buyers and sellers joins an electronic marketplace, the technology used to operate the marketplace (or the marketplace itself) may not achieve the necessary market liquidity to function effectively (Meeker [2000]). Failure of sellers to join a firm's marketplace in sufficient numbers would make the network less attractive to buyers and consequently even to other sellers. Based on the above arguments, we expect announcements of customer acquisition to be value-relevant.

Announcements that a software enabler was chosen to provide the technology platform for a major client or the addition of a major supplier or buyer to an electronic exchange are counted as actions in this category.

### 3.3 PROMOTIONS

Promotional or marketing campaigns are directed towards building or reinforcing brand awareness among existing and potential customers by associating a firm with specific causes and themes, and by the use of stories and evocative symbols (Aldrich and Fiol [1994]). Furthermore, new technologies and business models associated with new Internet businesses increase the perceived risk associated with these ventures, calling for intensified communication activities. Hence, we expect the market to value promotional and marketing efforts.

Initiatives taken to promote the firm via publicity and marketing campaigns, retaining an advertising or a public-relations agency, and sponsoring marketing-related events are coded as actions in this category.

### 3.4 STAKEHOLDER ACTIONS

Management literature has argued that firm performance depends on relationships with multiple stakeholders such as employees, customers, and

the community as a whole. Perceived commitment of a firm to the interests of a stakeholder group is likely to facilitate resource exchanges between the firm and members of the stakeholder group (Berman, Wicks, Kotha, and Jones [1999]), and to enhance firm performance (Jones and Wicks [1999]).

For example, improving employee relationships can reduce turnover and increase productivity, worker commitment, and effort. Also, positive customer perceptions about product quality and safety might lead to increased sales. Waddock and Graves [1997] report that good community relations can help a firm lower its tax bill, lower its regulatory burden, and improve the quality of local labor. Altman [1998] found that many executives believe that community involvement is a business imperative and often creates a competitive advantage.

A press release that announces a firm's actions to address the concerns of employees, suppliers, or the community at large is coded as actions in this category.

### 3.5 STRATEGIC ALLIANCES

Strategic alliances usually entail pooling specific resources and skills by the cooperating organizations to achieve common goals, as well as goals specific to the individual partners. The usual objectives of alliances include gaining access to new markets; accelerating the pace of entry into new markets; sharing research and development, manufacturing, or marketing costs; or broadening the product lines offered (Kogut and Zander [1993]). Alliances provide opportunities for leveraging resources, learning, and for drawing on a broader base of resources embedded in a network of partners (Chang [1995]). Strategic alliances also create an organizational structure situated in the continuum between a hands-off market transaction and a hierarchical relationship within a firm. An alliance would be expected to create shareholder value by realizing benefits from cooperation and flexibility that stem from the loose structure of the arrangement without incurring the high transaction costs associated with negotiation, coordination, and monitoring inter-firm transactions (Williamson [1989]).

However, in certain circumstances, costs associated with the alliance can exceed potential benefits. Das, Sen, and Sengupta [1998] argue that shareholder-manager agency problems may prevent managers from entering into alliances that may be in the best interests of the shareholders. For example, managers may form alliances to protect their jobs. Further, alliances are inherently incomplete contracts in which all the future contingencies cannot be fully anticipated and contracted upon. Hence, alliances may expose each partner to opportunistic exploitation by the other (Williamson and Ouchi [1998]) that could lead to renegotiation and unequal gain sharing (Hart [1995]). If such costs of entering into alliances exceed the benefits on the margin, alliances would be less valuable to shareholders.

We examine three types of alliances for our sample firms: technology, distribution, and marketing alliances. Actions that involve a partnership with another company to use its technology or jointly develop new technology

are coded as technology alliances. Technology alliances become necessary in high-technology industries such as the Internet where the rapid pace of frontier technology development, product complexity, and the high cost of product development make cooperation beneficial even to the most sophisticated company (Teece [1986]). Arrangements with another company to distribute products or services are coded as distribution alliances. Co-marketing agreements are coded as marketing alliances. We also found a handful of content alliances but did not pursue them on account of insufficient sample size.

### 3.6 ACQUISITIONS

As Schultz and Zaman [2001] point out, Internet firms have generally pursued a strategy of growth through acquisition. Acquisitions allow a firm to acquire new technological resources, market share, or skilled manpower the acquiring firm lacks or cannot develop internally in a reasonable period of time. The extant evidence about the shareholder wealth effects of acquisitions, in general, has been mixed. Some researchers have found value-decreasing effects of mergers due to difficulties in integration (Porter [1987]), diversion from R & D investment (Hitt, Hoskisson, Ireland, and Harrison [1991]) and excessive premiums (Sirower [1997]). However, Jensen and Ruback [1983] found that, on average, the shareholders of the acquiring firm do not lose, and the shareholders of the acquired firm experience stock price gains from acquisitions. Notwithstanding the mixed directional evidence, we conjecture that announcement of acquisitions has valuation-related information content.

### 3.7 INTERNATIONAL EXPANSION

Firms pursue international expansion to offload excess capacity, reduce unit costs, spread economic risks over more markets, and exploit lower production costs or the lack of competition in foreign markets (Caves [1996]). International expansion, however, is not without costs. Firms sometimes confront different and often little understood social, political, or economic forces in foreign markets, which researchers have termed "liability of foreignness" (Zaheer [1995]). Such forces increase the costs associated with coordinating and monitoring overseas operations. Moreover, firms have been known to underestimate the weaknesses of foreign competitors (Dunbar and Kotha [2000]). Announcements of establishing or expanding international presence are counted as actions in this category.

### 3.8 MANAGEMENT TEAM BUILDING

Building a strong senior management team is crucial for Internet firms because many of these companies are creating business models that did not exist before. A good senior management team can quickly adjust the business model and the firm's vision in response to changes in the competitive environment and avoid potential pitfalls. Because managerial team building is likely to increase the venture's chances of success and its ability to capture

customers and capital, we expect the stock market to value such announcements. Almost all actions in this category relate to hiring a new member of the senior management team to manage a functional area, a group, or a division of the firm.

### 3.9 ORGANIZATION CHANGES

Announcement of a change in the organizational structure, including spin-offs, the formation of a new corporate entity, or change in locations, are coded under this category. Because our sample firms are very young, organizational changes are likely to signal growth or installation of workflow processes to address rapid growth. Hence, we expect the market to react to the announcement of organization changes.

## 4. *Data and Empirical Tests*

### 4.1 DATA

We collect a list of B2B firms from *The B2B Internet Report* published by Morgan Stanley in April 2000 ([www.msdc.com](http://www.msdc.com)). The Morgan Stanley report identifies 13 public firms that run online marketplaces and 50 public firms that are B2B technology providers.<sup>4</sup>

We restrict the sample to firms that were public as of April 1, 2000. This was done to ensure collection of action information for at least 6 months for each firm, i.e., until September 30, 2000, the date we terminate data collection.<sup>5</sup> Despite our best efforts, five firms were removed from the original listing because we could not find their press releases. One foreign firm, Open Text, was dropped to restrict the sample to U.S. firms. Thus, the final sample consists of 57 B2B firms (see table 1 for the list).

We hand collect all press releases issued by each sample firm from the “Investor relations” or “Press releases” tab of the firm’s web site and classify actions into one of the categories described in section 3. A few actions are coded under more than one category. This coding of the press releases yields

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<sup>4</sup> Unlike a number of past studies (Hand [2000]; Trueman, Wong, and Zhang [2000a, 2000b]; Demers and Lev [2001]) we did not choose to use the Internet Stock List at [www.internet.com](http://www.internet.com) because the Internet Stock List does not separately identify either marketplaces or technology providers focused on the B2B space. For example, B2B marketplaces such as B2B stores.com are classified as content and community sites along with B2C firms such as Amazon.com.

<sup>5</sup> We chose this terminal date purely for practical reasons so that we could get enough time to collect and process the data for our study. An ex post limitation of restricting the sample data to this date is the absence of significant negative announcements in our sample. Negative market sentiment about the B2B sector in general appears to have surfaced in the first few months of 2001. For example, *Ventro*, one of the firms in our sample and the first publicly traded online marketplace, announced on March 21, 2001 that the company would be de-listed unless its net tangible assets met the minimum \$4 million requirement for continued listing on the NASDAQ National Market. Furthermore, on April 26, 2001, the company announced that it would layoff one third of its workforce.

**TABLE 1**  
*Sample of Firms*

Online Marketplaces	Technology Providers	
1 VerticalNet	1 Ariba	23 Calico Commerce
2 FreeMarkets	2 i2 Technologies	24 Silverstream software
3 Ventro	3 Commerce One	25 OTG software
4 Purchasepro.com	4 Broadvision	26 Intraware
5 Onvia.com	5 Vignette	27 Accrue Software
6 Neoforma	6 WebMethods	28 Delano
7 Emerge	7 Software.com	29 Bluestone
8 Fair Market	8 Art Technology	30 Marimba
9 Sciquest.com	9 E.phipany	31 Extensity
10 Iprint	10 Niku	32 Viador
11 Rowecom	11 Selectica	33 Net.Genesis
12 Partsbase.com	12 Agile Software	34 Choridant
	13 Interwoven	35 Netobjects
	14 Silknet Software (Kana Communications)	36 Centra
	15 Versata	37 Apropos Technology
	16 Allaire	38 Eprise
	17 Matrixone	39 Pcorder.com
	18 Mcafee.com	40 Prime Response
	19 OnDisplay.com	41 Imanage
	20 Broadbase	42 Optio
	21 Interworld	43 Xcare.net
	22 Firepond	44 Landacorp
		45 Vantagemed

The sample is drawn from a list of firms identified as B2B firms in Morgan Stanley's report titled *The B2B Internet Report*, April 1, 2000 (source:[www.msdcw.com](http://www.msdcw.com)).

a database of 3,019 action announcements undertaken by our sample firms between their IPO date and September 30, 2000.<sup>6</sup> Stock return and stock price data for our sample are collected from the 2000 CRSP tapes. Financial statement data are hand-collected from 10-Qs and 10-Ks ([www.sec.gov](http://www.sec.gov)) and analyst forecast data are obtained from First Call database.

Table 2 presents examples of actions from our dataset and a frequency count of action categories. Of the 3,019 actions we did not pursue analysis of content alliance announcements because they are too few in number (12 actions).<sup>7</sup> This leaves us with 3,007 actions for our empirical analyses. As shown, 1,127 actions or 37% of the actions undertaken relate to the announcement of new customers. Announcement of technology alliances constitutes the second largest set of actions (412 actions or 14% of all actions).

<sup>6</sup> One of the authors coded these actions into the categories described above. To ensure integrity of the coding scheme, another author coded a sub-sample of 853 randomly selected actions that constitute approximately one fourth of the total actions. The two coders were in agreement 85% of the time. This level of agreement indicates high levels of inter-coder reliability (Miles and Huberman [1984]). The initial differences between the coders were resolved in discussions.

<sup>7</sup> We also collected 169 press releases related to various third party awards (e.g., PC Magazine editor's choice award). But we ignore them in our empirical analyses because they represent outcomes of managerial actions as opposed to actions themselves.

**TABLE 2**  
*The Categories and Frequency of Managerial Actions*

Action type	Definition	Examples in the dataset <sup>a</sup>	Action count	%
New customers	Acquisition of a new customer.	<ul style="list-style-type: none"> <li>● Ericsson chooses <i>BroadVision</i> to Personalize Third Generation (3G) M-commerce infrastructure offering</li> <li>● Foodbuy.com selects <i>PurchasePro.com</i> to build online E-marketplace for its more than 4,000 foodservice professionals</li> </ul>	1127	37
New Products/ Services	Introduction of new product, services, or product features.	<ul style="list-style-type: none"> <li>● <i>Ariba</i> hosts European E-commerce advisory council launching New Solutions for broad market coverage of large, medium and small enterprises in Europe</li> <li>● <i>FreeMarkets</i> announces availability of web-based eMarketplace platform</li> </ul>	360	12
Promotions	Efforts to promote the company, retain advertising or public relations agencies or sponsor thematic events.	<ul style="list-style-type: none"> <li>● <i>VerticalNet</i> to present at Emerald Research Forum</li> <li>● <i>Vignette</i> Launches New U.S. Executive E-Business Forum</li> <li>● Houston, we have an announcement: <i>Ariba Inc.</i> to sponsor Apollo 13 anniversary gala</li> </ul>	292	10
Stakeholder Actions	Actions that deal primarily with employee and community concerns.	<ul style="list-style-type: none"> <li>● <i>PurchasePro.com</i> establishes a role with women and minority-owned business associations</li> <li>● Silicon Valley gives back: <i>Ariba</i> employees donate \$50,000 to the United Way</li> </ul>	206	7
Technology Alliances	Partnership with another company to use their technology or jointly develop new technology.	<ul style="list-style-type: none"> <li>● <i>OnDisplay</i> works with Oracle to accelerate business process-focused enterprise and B2B integrations</li> <li>● IKON and <i>iPrint</i> team to provide high volume digital printing and document delivery</li> </ul>	412	14
Marketing alliances	Partnership with another company to co-brand or co-market products.	<ul style="list-style-type: none"> <li>● Vitria Technology and <i>Calico</i> Commerce Team form a strategic marketing partnership to power trading communities</li> <li>● Travelscape.com, <i>PurchasePro.com</i> announce strategic marketing partnership</li> </ul>	121	4

TABLE 2—Continued

Action type	Definition	Examples in the dataset <sup>a</sup>	Action count	%
Distribution alliances	Arrangements with another company to distribute products or services.	<ul style="list-style-type: none"> <li>● CKS Group and <i>Interwoven</i> announce reseller agreement to support enterprise web production</li> <li>● NetVendor and <i>Commerce One</i> link supplier distribution channels with <i>Commerce One</i> marketsite</li> </ul>	116	4
Acquisitions	Announcements of an acquisition.	<ul style="list-style-type: none"> <li>● <i>Software.com</i> to acquire @mobile.com</li> <li>● <i>BroadVision</i> extends its E-Business leadership with agreement to acquire Interleaf, the e-content company</li> </ul>	82	3
Internationalization	Expansion outside the U.S.	<ul style="list-style-type: none"> <li>● <i>Agile Software</i> expands European operations, opens central European regional headquarters.</li> <li>● <i>FairMarket</i> opens for business in Australia</li> </ul>	79	2
Management team building	Hiring senior management or board members.	<ul style="list-style-type: none"> <li>● Leading e-Business investment banker joins <i>Versata</i> to direct business development</li> <li>● <i>Calico Commerce</i> appoints Andersen Consulting luminary Joel Friedman to board of directors</li> </ul>	162	5
Organizational changes	Announcement of a change in the organizational structure including spin-offs or new corporate entity or change in locations.	<ul style="list-style-type: none"> <li>● Bank of America and <i>BroadVision</i> to form new company</li> <li>● <i>Calico</i> announces new business unit organization</li> </ul>	50	2
Total			3007	100

<sup>a</sup> Sample firms are in italics.

The other significant categories of managerial actions include addition of new products or product features (360 actions), announcements pertaining to promotional and marketing initiatives (292 actions), and actions undertaken to address stakeholder issues (206 actions). In addition to these action announcements, we also examine 223 earnings announcements for descriptive purposes.

## 4.2 EMPIRICAL TESTS

We conduct two empirical tests to examine the valuation implications of managerial actions. In the first test, we assess the information content of announcement of managerial actions by investigating stock return volatility for a three-day window surrounding the action announcement date. Because announcement of most of these actions is voluntary, managers are unlikely to systematically make firm-value decreasing announcements. Hence, the *ex ante* prediction of the sign of the return will be positive, at least when measured over a short event window around the announcement of the event. However, the absence of a clear model on investor expectations about actions creates difficulties with a positive prediction. To the extent that investors anticipate firms to make such announcements from time to time, when they occur, they should be better (worse) than expected half of the time on average, producing positive and negative returns with approximately equal frequencies. Furthermore, investors may assess a particular strategic move to be good news for a firm and bad news for another depending on the firm's individual circumstances. Developing testable theories and empirical proxies to identify such circumstances and thereby explain cross-sectional variation in the sign of the abnormal return in the short window for each of action categories poses a daunting challenge. Moreover, the classification of managerial actions into various categories is somewhat subjective and is potentially noisy. Hence, in the short window tests, we abstract from the sign of the stock market reaction and merely evaluate whether the stock market finds announcement of these actions to be informative. In particular, following Beaver [1968], we investigate whether stock price volatility increases around the announcement of managerial actions.

In our second test, we examine whether the intensity of managerial actions, measured by the number of actions taken by each firm by action category, is related to stock returns measured over the firm's post-IPO life ending September 30, 2000. Specifically, this test explores whether managerial actions serve as leading non-financial indicators of firms' future prospects. Here, concerns about investor anticipating announcements and the deviation of the realized announcement from expectations are likely to be less severe when the event window is long such as the post-IPO life of the firm. Another advantage of examining long run returns is that the stock market may also acquire information about the *ex post* failure of managerial actions leading to a null or even a negative relation between long run returns and action measures. This test also enables us to examine the incremental contribution of the action measures in explaining cross-sectional variation in post-IPO performance when compared to the information in accounting earnings or its components.

*4.2.1 Information Content of Managerial Actions in a Three-day Window.* We use the approach adopted by Beaver [1968] to document information content of managerial actions. Beaver [1968] shows that stock volatility increases around earnings announcements suggesting that earnings announcements alter investors' beliefs about future cash flows and hence, have information

content. For an announcement to contain information, the stock volatility surrounding the announcement should be incremental to that in non-release periods. Therefore, we examine stock volatility surrounding the announcement of managerial actions relative to that in days when no announcement is made. Consistent with Beaver [1968], we measure abnormal stock return volatility (AVOL) surrounding the announcement of a management action as follows:

$$AVOL_{it} = u_{it}^2 / \sigma_i^2 \quad (1)$$

where  $u_{it}$  represents the daily market-adjusted returns as described by Brown and Warner [1980].<sup>8</sup> That is:

$$u_{it} = R_{it} - R_{mt} \quad (2)$$

where  $R_{it}$  ( $R_{mt}$ ) is the average daily raw return (NASDAQ return) for firm  $i$  for the three day window ( $t = -1, 0, 1$ ) surrounding the announcement day  $t$ .  $\sigma_i^2$  represents the variance of firm  $i$ 's market-adjusted returns calculated during days for firm  $i$  where no announcement of any action investigated in the study.<sup>9</sup> The AVOL measure must be positive, by construction. AVOLs less than one are indicative of smaller than non-announcement period volatility while AVOLs greater than one suggest that the volatility during the announcement period is larger relative to non-announcement periods.

We compute the cross-sectional mean of AVOL for every action category across firms to determine information content. If the mean AVOL is significantly greater than 1 we interpret this as evidence of information content of a particular action announcement. Table 3 reports descriptive statistics of the means of AVOL by each action category. As shown in table 3, the mean AVOL is significantly greater than one across all actions with the exception of international expansion.<sup>10</sup> Among the means of AVOLs that are significant, the highest mean of 2.97 pertains to organization changes while the lowest (1.58) relates to distribution alliances. In addition, much of the price reaction for all actions occurs surrounding the announcement date. This is evident from figure 1 where we plot AVOLs averaged across all actions and

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<sup>8</sup> Estimating abnormal returns using the conventional market model requires a history of returns for a period prior to the event. Specifying such an estimation period would force us to ignore the market effects of managerial actions the firm took during the estimation period. For example, we would be forced to ignore announcement of managerial actions made right after the firm's IPO. Hence, we choose to use the market adjusted returns technique described by Brown and Warner [1980].

<sup>9</sup> We also exclude stock returns for days surrounding quarterly earnings announcements and two announcements not considered in the study (content alliances and announcement of awards). In computing  $\sigma_i^2$  we exclude three days before and after the announcement of any action, i.e., we eliminate returns for the period  $t - 3$  to  $t + 3$  of any action announcement day  $t$ .

<sup>10</sup> We find consistent results (untabulated) when we examine abnormal trading volume surrounding action announcement dates. Average daily trading volume over three-day event window for an action category statistically exceeds the average trading volume over non-announcement periods for all managerial actions, except internationalization.

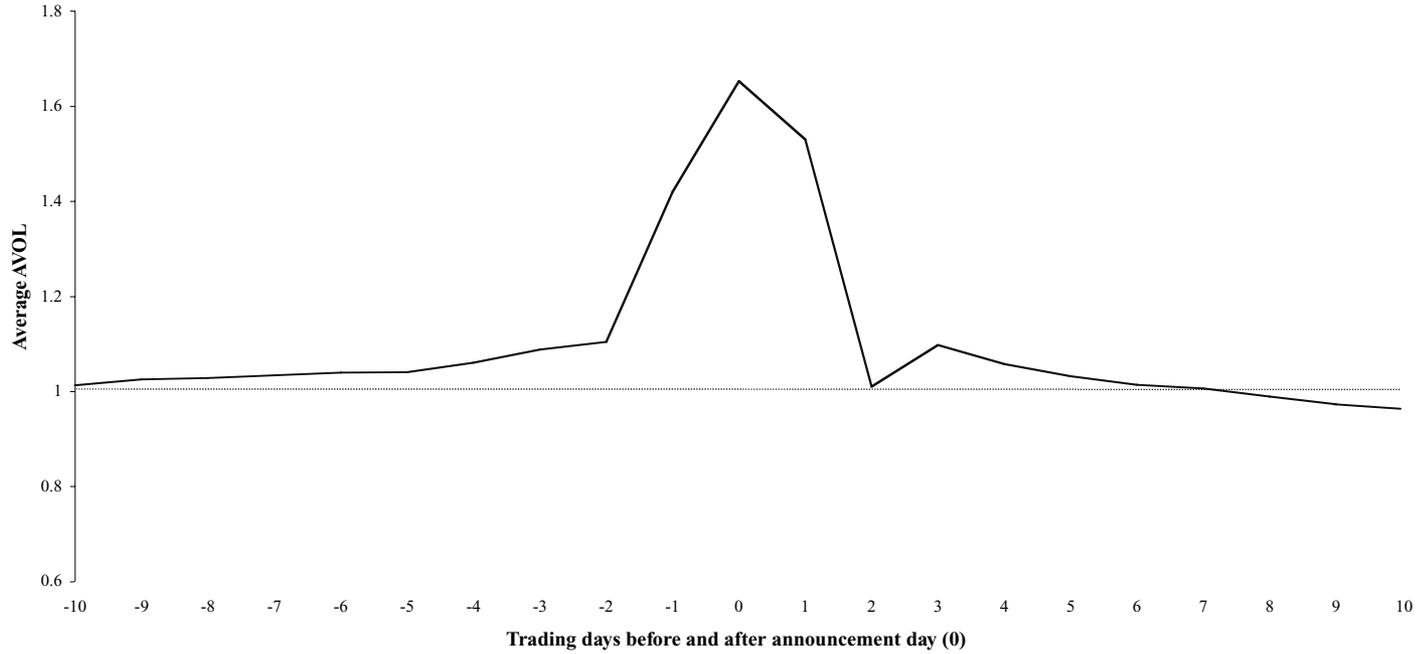


FIG. 1.—Average Stock Return Volatility.  $AVOL = u_i^2 / \sigma_i^2$ .  $u_i$  is the average daily market-adjusted returns for a three day window surrounding the announcement of an action,  $\sigma_i^2$  is the variance of firm  $i$ 's market-adjusted returns calculated during days for firm  $i$  where no announcement of an action (including earnings announcement) was made. Average AVOL is computed across all firms after aligning every action announcement at the announcement date (0). For computing average AVOL for trading days before and after the action announcement date (0), we exclude firms that have any action or earnings announcements on those days.

**TABLE 3**  
*Summary Statistics for the Average Stock Return Volatility during the Action Announcement Period Relative to Stock Return Volatility During Non-Announcement Periods*

$$AVOL = u_{it}^2 / \sigma_i^2 \quad (1)^a$$

Action	# obs.	Mean AVOL <sup>b</sup>	<i>t</i> -statistic <sup>c</sup>	Proportion of observations where AVOL in the non-announcement periods > Mean AVOL in action announcement periods
New customers	1127	1.59***	5.63	8.98%
New products or product features	360	1.85***	3.75	8.07%
Promotions	292	1.59***	3.57	8.98%
Stakeholder actions	206	2.22***	4.34	5.67%
Technology alliances	412	1.62***	3.73	8.98%
Marketing alliances	121	2.29***	3.86	5.27%
Distribution alliances	116	1.58**	1.82	9.04%
Acquisitions	82	1.63**	2.11	8.98%
Internationalization	79	1.04	0.23	19.29%
Management team building	162	1.59**	2.51	8.97%
Organizational changes	50	2.97***	2.93	1.67%
Earnings announcements	223	2.50***	5.26	3.94%

<sup>a</sup>  $u_{it}$  is the average daily market-adjusted returns for a three day window surrounding the announcement of an action,  $\sigma_i^2$  is the variance of firm  $i$ 's market-adjusted returns calculated during days for firm  $i$  where no announcement of any action (including earnings announcement) was made. For computing  $\sigma_i^2$  we exclude three days before and after the announcement of any action, i.e., we eliminate returns for the period  $t - 3$  to  $t + 3$  of any action announcement day  $t$ .

<sup>b</sup> \*\*\*/\*\*/\* represents one-tailed significance of  $p$ -values to assess whether the mean AVOL is different from 1 at 1%, 5%, and 10% significance levels, respectively.

<sup>c</sup>  $t$ -statistic relates to the test that the mean AVOL is different from 1.

all firms surrounding the action announcement date. To provide an indication of how unusual the mean AVOL is, we report in table 3 the proportion of cases where AVOL in the non-announcement periods is greater than the reported mean AVOL for every action category. Non-announcement periods are defined as trading days when no managerial action or earnings was reported. We find that the AVOL in non-announcement periods exceeds the mean AVOL across all action categories (except internationalization) in less than 10% of the cases. Thus, the stock volatility analysis suggests that the announcement of managerial actions possess significant information content.

For comparison purposes, we also report the mean of abnormal stock volatility calculated for quarterly earnings announcements. The average AVOL for earnings announcements is high at 2.50 and is statistically greater than one, consistent with findings in Beaver [1968]. Thus, although most of the B2B firms in our sample experience negative earnings this evidence is consistent with earnings announcements for these firms possessing

information content.<sup>11</sup> To examine whether managerial action announcements provide incremental information content when compared to the information content in earnings we compute the ratio of average AVOL for each firm across all managerial actions reported by the firm to the average AVOL relating to earnings announcements for that firm. We then compute the cross-sectional average of this ratio across our sample of 57 firms. The results (untabulated) indicate that the ratio is 1.71 and is statistically different from one at conventional levels ( $t$ -statistic = 2.71,  $p < 0.01$ ). In sum, our results are consistent with announcement of managerial actions possessing significant information content over and above information content in accounting earnings.

*4.2.2 Long Window Tests.* The short window tests document that the stock market views announcement of managerial actions as informative in valuing our sample firms. However, the short window tests present no evidence on whether managerial actions are viewed as value increasing or decreasing and whether they provide value-relevant information about long run stock return performance incremental to that provided by accounting earnings. To address that issue, we turn to a longer event window. In the long window tests, we assess whether action measures can explain cross-sectional variation in long run returns over and above accounting earnings.

Two important design choices need to be made to operationalize the long window tests. First, we need to define the duration of the longer event window. Considering that the post-IPO life (defined as the time from the IPO till September 30, 2000, the day we terminated our data collection) of our average sample firm is approximately one year (mean 383 days, median 365 days), we define our event window as the firm's post-IPO life. Second, we need to aggregate actions taken by a firm during the event window in a meaningful way. As a first cut, we decided to count the number of actions the firm took under each category during its post-IPO life; i.e., we expect firms that take a greater number of actions to be associated with higher returns. We use a count measure because firms do not usually disclose the future cash flow implications of a number of important actions such as hiring senior management personnel or signing a technology alliance.<sup>12,13</sup>

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<sup>11</sup> In recent work, Trueman, Wong, and Zhang [2001] conclude that investors of Internet firms are fixated on earnings announcements regardless of earnings or revenue news released in those announcements. The high stock return volatility around earnings announcements may very well reflect such fixation.

<sup>12</sup> An examination of a random sample of 25% of the press releases indicates that the dollar effects of only actions relating to financials and acquisitions were consistently provided. For the remaining actions only a handful of press releases contained information about dollar effects. Hence, we could not incorporate the dollar effects of the actions in our empirical tests.

<sup>13</sup> We acknowledge at least three limitations of the count measure. First, the count measure weights each action as equally important even though an alliance with an important competitor or associate with significant market power may be more valuable than ten similar alliances with less endowed firms. Second, this measure ignores rich information about the competitive

**TABLE 4**  
*Descriptive Statistics and Correlation Matrix of Action Counts over Firms' Post-IPO Life*

<b>Panel A: Descriptive Statistics</b>										
Action <sup>a</sup>	1	2	3	4	5a	5b	5c	6	7	(N=57 firms) 8 9
Mean	19.77	6.31	5.12	3.61	7.72	2.12	2.03	1.43	1.14	2.84 0.87
Std dev	16.96	5.33	5.18	3.04	8.86	2.39	3.38	1.60	2.62	2.52 1.72
Median	15.00	5.00	4.00	2.00	4.00	1.00	1.00	1.00	0.00	2.00 0.00
Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 0.00
Max	83.00	31.00	26.00	15.00	49.00	10.00	17.00	7.00	16.00	13.00 10.00

<b>Panel B: Pearson Correlation Matrix</b>										
Action	1	2	3	4	5a	5b	5c	6	(N=57 firms) 7	8
2	0.63 (0.00) <sup>b</sup>	1								
3	0.59 (0.00)	0.64 (0.00)	1							
4	0.52 (0.00)	0.58 (0.00)	0.42 (0.00)	1						
5a	0.79 (0.00)	0.60 (0.00)	0.65 (0.00)	0.54 (0.00)	1					
5b	0.36 (0.00)	0.28 (0.02)	0.27 (0.04)	0.41 (0.00)	0.38 (0.00)	1				
5c	0.38 (0.00)	0.23 (0.07)	0.66 (0.00)	0.16 (0.20)	0.46 (0.00)	0.27 (0.04)	1			
6	0.26 (0.00)	0.42 (0.00)	0.35 (0.00)	0.49 (0.00)	0.35 (0.00)	0.07 (0.58)	0.30 (0.02)	1		
7	0.57 (0.00)	0.23 (0.07)	0.43 (0.00)	0.19 (0.14)	0.77 (0.00)	0.23 (0.08)	0.53 (0.00)	0.18 (0.18)	1	
8	0.31 (0.01)	0.18 (0.07)	0.36 (0.00)	0.46 (0.00)	0.36 (0.00)	0.21 (0.11)	0.35 (0.00)	0.28 (0.03)	0.31 (0.01)	1
9	0.47 (0.00)	0.29 (0.02)	0.25 (0.05)	0.51 (0.00)	0.31 (0.01)	0.22 (0.09)	0.12 (0.33)	0.38 (0.00)	0.17 (0.20)	0.30 (0.00)

<sup>a</sup> The following action codes have been used in the above table: 1 = New customers; 2 = New products or product features; 3 = Promotions; 4 = Stakeholder actions; 5a = Technology alliances; 5b = Marketing alliances; 5c = Distribution alliances; 6 = Acquisitions; 7 = International expansion; 8 = Management team building; 9 = Organizational changes.

<sup>b</sup> p-values are in parenthesis.

Panel A of table 4 reports the summary statistics of firms' action counts. The reported summary statistics reveal interesting trends. The median firm makes 15 announcements of major customers, initiates 4 promotional campaigns, and signs 4 technology alliances over its post-IPO life. The median firm undertakes no international expansion and announces no distribution alliance over its life.

dynamics among our sample firms. For example, we do not explicitly measure whether a firm's actions are responses to stimuli of a competitor's initial actions or whether one set of actions necessitates a follow up set. Third, as indicated earlier, this measure relies solely on voluntary disclosures made by firms. Firms have fewer incentives to disclose bad news. While we recognize these limitations, we proceed with our count measure and note that addressing the limitations deserves consideration in future work.

Although panel A lists action counts under various categories, it is perhaps inappropriate to view action categories as independent initiatives undertaken by our sample firms. Managerial actions are usually implemented as a portfolio of initiatives (Porter [1987, 2001]). Certain actions necessitate or facilitate other actions. For example, new product features or new technology alliances have to be promoted via marketing campaigns to acquire more customers. Similarly, signing new technology alliances makes it easier to develop new product features or acquire new customers. Hence, we would expect to observe substantial correlation among action counts. The correlations reported in panel B of table 4 confirm this conjecture. Potential multi-collinearity arising from such correlation also makes it difficult to assess whether one set of actions dominates another set in explaining stock returns.

In an attempt to reduce the number of managerial actions to a few parsimonious variables, we carry out a factor analysis using principal components estimation of the action counts under each action type.<sup>14</sup> The factor analysis technique maximizes commonalities within a group (i.e., a factor) and minimizes commonalities among groups. Hence, we implicitly assume that actions that fall under one factor tend to occur more often with other actions that load on that factor but are less likely to occur with actions that fall under another factor.

From a scree test, two factors with eigenvalues greater than 1.0 emerge. Out of the 11 action types shown in table 5, 9 exhibit strong loadings on at least one factor (Kim and Mueller [1986]). Based on actions that exhibited loadings greater or equal to 0.5, the two factors are represented in the table. Together, these two factors account for 58.93% of the variance in our sample. The reliability of these factors is high as the Cronbach alpha is 0.877 (0.811) for Factor 1 (Factor 2). Note that the introduction of new products loads on Factors 1 and 2. However, the action exhibits greater loadings on Factor 1 and as such can be considered more representative of Factor 1.

The five actions that load on Factor 1 include international expansion, technology alliances, distribution alliances, promotions, and acquisition of new customers. These actions appear to represent a managerial orientation external to the firm, and as such, capture firms' attempts to grow their business through international expansion and alliances. Hence, we label this group of actions as the *market penetration* factor. The four primary

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<sup>14</sup> We use the factor analysis technique as opposed to cluster analysis technique because our goal is to identify factors representing groups of actions due to correlations among the action counts. Under the cluster analysis procedure, where the unit of analysis is usually the subject (i.e., the firm), firms are grouped based on some common characteristics (Nunnally and Bernstein [1994]). In our specific case, the use of cluster analysis would result in categorizing firms into distinctive profiles based on their action scores. For example, we may find that one group of firms emphasizes market penetration while another group emphasizes organization building strategy. Our main objective, however, is to document the value-relevance of managerial actions across all firms as opposed to creating clusters of firms with specific strategic objectives. Hence, we believe that factor analysis technique is more appropriate for our study.

**TABLE 5**  
*Factor Loadings Using Principal Components Method with Varimax Rotation*

Actions	Factor 1 <sup>a</sup>	Factor 2
	Market penetration	Organization building (N = 57 firms)
International expansion	<b>0.854</b>	0.025
Technology alliances	<b>0.861</b>	0.422
Distribution alliances	<b>0.788</b>	0.037
Promotions	<b>0.721</b>	0.382
New customers	<b>0.661</b>	<b>0.502</b>
Marketing alliances	0.348	0.335
Stakeholder actions	0.199	<b>0.847</b>
Organizational changes	0.037	<b>0.769</b>
New products or product features	0.339	<b>0.731</b>
Acquisitions	0.147	<b>0.634</b>
Management team building	0.379	0.382
Cronbach's alpha	0.877	0.811
Eigenvalue	5.048	1.433
Cumulative percentage of variation explained (%)	45.89	58.93
Incremental percentage of variation explained (%)	45.89	13.04

<sup>a</sup> Factor loadings exceeding .5 are identified in bold.

actions that load on Factor 2 include organizational changes, actions directed at stakeholders, acquisitions of other firms, and the introduction of new products or product features. In contrast to the actions that load on Factor 1, these actions focus mostly on the activities internal to the firm (e.g., organizational changes, and acquisitions). They appear more representative of actions that emphasize organization-building efforts. Hence, we label this set of actions as the *organizational building* factor.

To assess whether these two portfolios of managerial actions explain variation in firms' returns, we estimate equation (3) below using the standardized factor scores corresponding to the two factors described earlier as independent variables. Standardized factor scores for each firm are computed in accordance with the following formula:  $f_k = a_{1k}z_1 + a_{2k}z_2 + a_{3k}z_3 + \dots + a_{jk}z_j$ , where  $a_{jk}$  is the factor score coefficient for action type  $j$  ( $j = 1, \dots, 9$ ) on the factor  $k$  ( $k = 1, 2$ ), and  $z_j$  is the firm's standardized value on action type  $j$ .<sup>15</sup> These factor scores, labeled as Factor 1<sub>*i*</sub> and Factor 2<sub>*i*</sub> are introduced as independent variables in the following regression:

$$R_{i,tjfe} = \delta_0 + \delta_1 R_{m,i,tjfe} + \delta_2 \text{Factor}1_i + \delta_3 \text{Factor}2_i + \varepsilon_{i,tjfe} \quad (3)$$

<sup>15</sup> As a sensitivity check, we compute equally weighted factor scores, i.e., we use  $a_{jk} = 1$  (0) for factor loadings that exceed (did not exceed) 0.5 and re-estimate equation (3) using these scores. Our inferences are unchanged. Note that the new customer action category loads on both factors but for the purpose of equally weighted factor scores we consider new customers under Factor 1 because the loading on new customers for Factor 1 is higher.

Because the factor scores are computed after a varimax rotation, the factor scores are orthogonal to one another. Thus, factor analysis enables us to assess the impact of unique managerial action choices captured by the two factors on stock returns. In equation (3),  $R_{i,life}$  is post-IPO life buy-and-hold return,  $R_{m,i,life}$  is the NASDAQ return corresponding to the post IPO life of each firm.<sup>16</sup> As discussed before, we view these action measures as non-financial leading indicators of firms' performance. If cross-sectional variation in the intensity of these actions, measured as factor scores, signals good news about firms' future prospects, we expect a positive cross-sectional association between factor scores and post-IPO performance. However, if investors have ex post information that certain actions were not likely to be value-increasing in expectation, we would observe a null or even a negative cross-sectional association between these factor scores and post-IPO performance.

An important issue to accounting researchers is the extent to which contemporaneous accounting earnings captures information about a firm's multiple managerial actions. Therefore, we include the cumulative accounting earnings over a firm's post-IPO life scaled by the average market value of its equity in model (3). In addition, we estimate model (3) with components of earnings namely gross margin, marketing expenses, and research and development (R&D) expenses (scaled by average market value of equity) (Hand [2000], Trueman, Wong, and Zhang [2000a]). We also include analysts' consensus forecast of future earnings and revenues for three future fiscal years as competing variables.<sup>17</sup> When using future earnings (revenue) forecasts our sample size reduces to 52 (41) firms due to lack of data availability from the First Call Database.

In panel A of table 6 we report the descriptive statistics for the various variables used in the long window tests. Panel A of table 6 reports that the median firm has accumulated losses of about 2.5% of its average market value. Only one sample firm, Broadvision, had positive lifetime earnings. The median firm had an average market capitalization of about \$0.94 billion over its life. The median firm earns a gross margin of 1.4% of its market value, spends 2.2% of its market value on marketing and advertising, and 0.8% on R&D. Analysts expect our median sample firm to continue reporting cumulative negative earnings of 5.1% of its market value three years out, although they expect the median firm to report revenues equal to 13.3% of their average market value. The median firm reports a stock market return of 0.1% over its post-IPO life whereas the mean firm earned a return of 33.1% over the same

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<sup>16</sup> Our inferences are robust to two sensitivity checks. First, we adjusted the raw returns for the risk free rate. Failing to adjust for the risk-free rate may potentially bias abnormal returns. Second, we used the Internet Stock Index (ISDEX) instead of NASDAQ index for our stock return tests. Note that the correlation between ISDEX returns and NASDAQ returns is very high (0.86,  $p = 0.00$ , two-tailed).

<sup>17</sup> Forecast data in the database is not available beyond three years for most of our sample firms in that database.

**TABLE 6**  
*Descriptive Statistics and Correlation Matrix for Variables Used in the Long-Window Tests*

<b>Panel A: Descriptive Statistics</b>									
Variable <sup>a</sup>	N	Mean	Std dev	Median	Minimum	Maximum			
Earnings/AveMVE	57	-0.046	0.078	-0.025	-0.553	0.002			
GM/AveMVE	57	0.023	0.025	0.014	-0.010	0.110			
Mktg/AveMVE	57	0.034	0.046	0.022	0.003	0.315			
R&D/AveMVE	57	0.012	0.016	0.008	0.001	0.110			
Forecasted Earnings/AveMVE	52	-0.105	0.106	-0.051	-0.925	0.014			
Forecasted Revenues/AveMVE	41	0.386	0.812	0.133	0.002	4.532			
Stock returns ( $R_{i,tjfe}$ )	57	0.331	2.317	0.001	-0.950	7.400			
NASDAQ returns ( $R_{m,i,tjfe}$ )	57	0.004	0.281	0.001	-0.343	0.521			
AveMVE (\$ billion)	57	2.041	2.696	0.940	0.260	12.511			
<b>Panel B: Pearson Correlation Matrix<sup>b</sup></b>									
Variable	$R_{i,tjfe}$	$R_{m,i,tjfe}$	Factor 1	Factor 2	GM/ AveMVE	Mktg/ AveMVE	R&D/ AveMVE	Earnings/ AveMVE	Forecasted Earnings
$R_{m,i,tjfe}$	0.31 (0.00)								
Factor 1	0.35 (0.00)	0.24 (0.00)							
Factor 2	0.48 (0.00)	0.23 (0.00)	0.00 (1.00)						
GM/AveMVE	-0.04 (0.75)	0.39 (0.00)	-0.04 (0.74)	0.17 (0.19)					
Mktg/AveMVE	-0.16 (0.22)	-0.02 (0.89)	-0.13 (0.33)	-0.07 (0.61)	0.60 (0.00)				
R&D/AveMVE	-0.20 (0.13)	0.06 (0.96)	-0.14 (0.30)	-0.14 (0.30)	0.64 (0.00)	0.95 (0.00)			
Earnings/AveMVE	0.16 (0.22)	0.09 (0.49)	0.09 (0.47)	0.11 (0.38)	-0.32 (0.01)	-0.91 (0.00)	-0.88 (0.00)		
Forecasted Earnings/AveMVE	0.23 (0.04)	0.30 (0.05)	0.25 (0.00)	0.18 (0.01)	-0.34 (0.02)	-0.94 (0.00)	-0.92 (0.00)	0.93 (0.00)	
Forecasted Revenues/AveMVE	-0.15 (0.33)	-0.21 (0.18)	-0.21 (0.17)	-0.12 (0.45)	0.18 (0.24)	0.43 (0.00)	0.44 (0.00)	-0.43 (0.00)	-0.41 (0.00)

<sup>a</sup>Earnings is income before extraordinary items, GM is gross margin, Mktg is marketing expenses, R&D is research and development. All these variables are measured over each firm's post IPO life (measured as time from the IPO date till September 30, 2000). Ave MVE refers to the average market value of the firm over its post IPO life. Forecasted earnings and revenues are three year cumulated annual earnings forecast for fiscal years ending 2001–2003 measured at September 30, 2000.  $R_{i,tjfe}$  is the stock return over the firm  $i$ 's post IPO life till September 30, 2000.  $R_{m,i,tjfe}$  is the return on the NASDAQ composite index for each firm event window. Factor 1 and Factor 2 represent standardized factor scores for market penetration factor and organization building factor respectively.

<sup>b</sup> $p$ -values are presented in parenthesis.

TABLE 7

Summary Statistics for the Generalized Least Squares Regression of Firm Returns over the Firm's Post-IPO Life on Factor Scores of Managerial Actions, Financial Statement Information, and Analyst Forecasts

$$R_{i,tjfe} = \beta_0 + \beta_1 R_{m,i,tjfe} + \beta_2 \text{Factor } 1_i + \beta_3 \text{Factor } 2_i + \varepsilon_{i,tjfe} \quad (3)$$

Variable <sup>a</sup>	Pred. Sign	(1) <sup>b</sup>	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	?	0.38 (1.44)	0.17 (0.33)	0.04 (1.28)	0.23 (0.75)	0.35 (1.13)	0.05 (0.33)	0.32 (0.94)
Market return	+	2.09* (1.49)	3.41*** (2.52)	2.09* (1.47)	1.59 (1.03)	2.50** (1.65)	1.34** (1.74)	2.80** (1.71)
<b>Managerial actions</b>								
Factor 1 Market penetration	+/-	0.92*** (5.11)		0.91*** (5.89)	0.91*** (5.13)	1.13*** (3.27)	0.98*** (4.81)	0.90*** (3.02)
Factor 2 Organizational building	+/-	1.03*** (7.66)		1.02*** (7.03)	1.04*** (7.67)	1.12*** (6.16)	1.15*** (5.82)	0.79** (2.23)
<b>Accounting information</b>								
Earnings/AveMVE	+		2.40 (0.61)	0.80 (0.32)				0.90 (0.82)
GM/AveMVE	+				8.65 (0.52)			
Mktg/AveMVE	+				18.71 (0.48)			
R&D/AveMVE	+				-42.51 (-1.02)			
Forecasted Earnings/AveMVE	+					-0.25 (-0.52)		-0.46 (0.77)
Forecasted Revenues/AveMVE	+						0.15 (0.35)	0.25 (0.64)
Number of firms		57	57	57	57	52	41	41
Adjusted R <sup>2</sup> (%)		54.28	24.99	52.22	56.58	61.98	59.26	60.61

<sup>a</sup> Earnings is income before extraordinary items, GM is gross margin, Mktg is marketing expenses, R&D is research and development. All these variables are measured over each firm's post IPO life (measured as time from the IPO date till September 30, 2000). Ave MVE refers to the average market value of the firm over its post IPO life. Forecasted earnings and revenues are three year cumulated annual earnings forecast for fiscal years ending 2001–2003 measured at September 30, 2000.  $R_{i,tjfe}$  is the stock return over firm  $i$ 's post IPO life till September 30, 2000,  $R_{m,i,tjfe}$  is the return on the NASDAQ composite index for each firm's post IPO life. *Factor 1* and *Factor 2* represent standardized factor scores for market penetration factor and organization building factor respectively.

<sup>b</sup>  $t$ -statistics are presented in parenthesis. \*\*\*/\*\*/\* represents  $p$ -values with one (two) tailed significance when a sign is (is not) hypothesized at 1%, 5%, and 10% significance levels, respectively.

event period.<sup>18</sup> To prevent outlier returns from influencing our inferences, we winsorize the returns distribution at the 99% and 1% percent levels.

Panel B of table 6 reports the correlations among the variables of interest. Note that post-IPO returns are positively correlated with factor scores and forecasted earnings. Consistent with factor scores capturing information about future earnings, we observe a significant positive association between factor scores and future earnings forecasts. Whether factor scores dominate current and forecast accounting information in explaining cross-sectional variation in post-IPO performance is examined in multivariate regressions reported in table 7.

<sup>18</sup> Qualitatively similar inferences obtain after two sensitivity checks. First, we redefine the firms' post-IPO life returns as log (1 + post life returns) to address the skewness. Second, we delete statistical outliers whose absolute  $R$ -student scores in an OLS version of our regressions exceed 3.

Column (1) of table 7 reports the results of estimating equation (3). Factors 1 and 2 are strongly associated with returns at conventional levels.<sup>19</sup> The respective coefficients on Factors 1 and 2 are 0.92 ( $t$ -statistic = 5.11) and 1.03 ( $t$ -statistic = 7.66) respectively. The regression equation explains 54.28% of the variation in post-IPO returns. We could not reject a test of equality of the two coefficients. Hence, managerial actions related to market penetration and organization building seem to be equally important in terms of their association with post-IPO returns. Note that the coefficient on the market return is positive but weakly significant ( $t = 1.49$ ). The positive correlation between factor scores and the market return (see panel B of table 6) is partially responsible for the weak significance of the market factor.<sup>20</sup>

Column (2) of table 7 shows that accounting earnings scaled by average market value do not explain any variation in stock returns. When accounting earnings is introduced as an independent variable in addition to the two factors, we observe that the coefficients on the two factors remain statistically significant in column (3). The adjusted  $R$ -square of the model in column (3) with earnings and the factor scores is more than double (52.22%) the adjusted  $R$ -squared of the model in column (2) with just accounting earnings (24.99%). Thus, information about managerial action choices of B2B firms explains a substantial portion (over 25%) of stock returns above and beyond accounting earnings.

Although post-IPO earnings of firms do not explain cross sectional variation in firm returns, it is quite possible that components of earnings, especially gross margin, marketing expenditure, and R&D expenses, might be informative about stock returns. For example, Hand [2000] argues that the stock market views advertising and R&D expenses of Internet firms as investments. Trueman, Wong, and Zhang [2000a] show that gross margin is valued by the stock market for a sample of B2C firms. However, we do not find the earnings components to be significantly related to post-IPO performance in our sample of B2B firms. Perhaps, the strong collinearity among the various earnings components (see panel B of table 6) is partly responsible for the lack of association. Most important, the two managerial action measures (market penetration and organization building) continue to be strongly associated with stock returns.

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<sup>19</sup> In untabulated analyses, we find that action counts for six action categories are positively related to post IPO returns: new customers, new products, promotions, stakeholder actions, technology alliances, and organizational changes. In view of the multicollinearity in action counts documented in panel B of table 6, we view these univariate results as supplementary analyses.

<sup>20</sup> Our conjecture for the correlation is that the two actions—market penetration and organization building—capture events that are likely to affect the market return as operationalized here (the NASDAQ composite index) due to potential spillover effects associated with technology alliances or stakeholder actions. As a sensitivity check, we re-estimated the equations in table 7 with S&P 500 index, a broader market return measure, and find that the coefficient on market return becomes positive and strongly significant.

Although past earnings do not explain cross-sectional variation in returns, it is quite plausible that future earnings might have better success in explaining performance given that differences in the intensity of managerial actions are likely to result in differences in future earnings. When future earnings forecasts are introduced as competing variables against the two action measures in equation (3), we find that the coefficient on future earnings is negative but insignificant (coefficient =  $-0.25$ ,  $t$ -statistic =  $-0.52$ ) but the action measures continue to be strongly significant (see column (5) of table 7). Hence, factor scores appear to dominate future earnings forecasts in terms of explanatory power.<sup>21</sup>

Finally, we assess whether consensus revenue forecasts explain cross-sectional variation in post-IPO returns. Column (6) suggests that it is not the case. However, when we include actual earnings and analyst forecasts (see column (7)), the  $t$ -statistics related to the two factors fall in magnitude. Note that the  $t$ -statistic on the market penetration factor falls from 5.11 in column (1) to 3.02 in column (7) while the  $t$ -statistic on organization building factor falls from 7.66 in column (1) to 2.23 in column (7). This decrease in the  $t$ -statistics perhaps suggests that current accounting information and forecasted future earnings and revenues capture some of the value-relevant information embedded in the action measures. Overall, our results indicate that the action measures captured in the paper would be expected to flow into earnings and revenues only after three years.<sup>22</sup> Of course, we cannot fully rule out the possibility that the market fixates on announcements of actions regardless of the firm value effects of these actions.

## 5. Conclusions

Our study is among the first in the accounting and finance literatures to operationalize a comprehensive set of managerial actions empirically and relate it to stock returns and earnings. We compile a count of managerial actions taken by a sample of B2B e-commerce firms under nine action categories and reduce such counts into two broad initiatives (market penetration, organization building) using factor analysis. These initiatives are strongly associated with the post-IPO stock returns of our sample firms. Accounting earnings and its components such as gross margin, marketing, and R&D expense generally do not reflect value-relevant information in the two managerial initiatives. We also find that the value-relevance of these

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<sup>21</sup> In unreported analyses, we find that introducing forecasted earnings for each of the three future years individually instead of cumulatively does not alter our inferences.

<sup>22</sup> To assess whether firm age is an omitted variable, we introduce the firm's age (computed as the number of days from the IPO to September 30, 2000) as an independent variable in equation (3) and re-run the regression with and without accounting earnings. Inferences remain unchanged. Age is not a significant explanatory variable in any regression. We also considered cash burn rate (Demers and Lev [2001]) and quarterly percentage change in revenues as competing financial measures in the long window regressions. However, the actions count measure dominates these financial measures in terms of explanatory power.

two initiatives overwhelms that of accounting earnings and its components. This finding suggests that investors appear to use information about the cross-sectional intensity of managerial actions to supplement the meager financial information available to set prices of B2B firms.

Our focus on early stage companies with negative earnings limits the generalizability of our findings to firms in other emerging sectors or to firms in mature industries. Hence, an interesting extension would be to assess whether the information content in managerial actions dominates that of accounting earnings for firms in other emerging and mature industries. We leave such an endeavor for future research.

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