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Limitations of Nonfinancial Metrics Reported by Social Media Companies

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ABSTRACT

Publicly traded companies in the U.S. are required by the Securities and Exchange Commission (SEC) to file annual and quarterly financial statements (form 10-K and form 10-Q respectively). The Management Discussion and Analysis (MD&A) section of these reports, as per SEC requirements, should include the identification and discussion of nonfinancial performance metrics that are critical to management and important to investors.

This paper examines a set of common nonfinancial metrics reported by some well-known social media companies. These metrics include such quantities as number of registered users, monthly average users, and number of unique visitors. The definition and use of metrics such as these have gained increased importance as the recent stratospheric market valuations of a number of social media companies seem to be supported by them, as opposed to more traditional measures, such as profitability.

This paper points to a number of limitations of these reported metrics, including that:

- *What a metric actually measures may lie in the details of how it's calculated; that is, relying on the name of the metric to indicate its meaning may be an error.*
- *Many of the metrics reported are inexact but the companies reporting them do not specify ranges of uncertainty around these point estimates.*
- *Important nonfinancial metrics (e.g., user demographics and customer churn rates) may simply not be reported at all.*

Typically, corporate nonfinancial metrics are not audited as is financial data. The contribution of this paper is in providing investors and other interested parties with a better understanding of the meaning and limitations of nonfinancial metrics reported by social media companies. Further, in highlighting some problematic issues in the current reporting of these nonfinancial metrics, we hope to raise interest in improving MD&A reporting standards.

INTRODUCTION

The recent stratospheric market valuations of a number of social media companies seem to be supported more by nonfinancial metrics that purportedly capture user growth and engagement than by more traditional financial measures, such as profitability.

However, these nonfinancial metrics are not audited, nor are they bound by the Generally Accepted Accounting Principles (GAAP) standards and procedures that companies use to compile their financial statements. As an example of how this can be problematic, consider that Facebook includes in its count of active users those who “took an action to share content or activity with his or her Facebook friends or connections via a third-party website or application that is integrated with Facebook” (Facebook 10-Q, March 2014). By this definition, Facebook includes in its active user count users who may not have spent any time on facebook.com. We elaborate on this later, but the point is that 1) Facebook defines the term “active user,” 2) neither the definition nor its measurement is vetted by any external body, and 3) the definition itself is opaque. (What exactly does it mean to “[take] an action to share content or activity?”)

Further, the popular press is often taken with these metrics but are casual in their usage of them; USA Today proclaimed, “Facebook tops 1 billion users” (Vance, 2012) and Business Week had an article with the headline “Facebook: The Making of 1 Billion Users” (Ortutay, 2012), but neither indicated how a “user” was defined. In fact the definition of these metrics is rarely if ever reported beyond the SEC documents.

This Facebook example highlights a general cause for concern regarding the reporting of nonfinancial metrics by social media companies but the issues extend well beyond this instance. In this paper, we address the following questions:

- What nonfinancial metrics are disclosed by social media companies?
- How are the nonfinancial metrics defined and calculated? Can investors rely upon their accuracy? What are their limitations?
- Are the social media metrics collected in a consistent manner across all companies? Is there any standardization in the industry?
- Are there metrics that companies don’t disclose that should be reported?
- What has prior research shown to be the relationship, if any, between nonfinancial metrics and financial measures and/or firm valuation?
- Is professional guidance available for social media companies to follow when calculating and disclosing their nonfinancial metrics?
- Are the nonfinancial metrics confirmed by independent third parties? Are they verifiable? What challenges do they present for auditors?

To answer these questions, we analyze the publically available nonfinancial metrics disclosed by the six largest (in terms of market capitalization) U.S. based social media companies, in the light of the expectations set forth by the Financial Accounting Standards Board (FASB) regarding external financial reporting.

The contribution of this work is twofold. First we aim to provide investors, researchers, and other interested parties with a better understanding of the meaning, limitations, and challenges of nonfinancial metrics reported by social media companies. Second, in highlighting the many issues surrounding the failures of the current reporting guidelines for such metrics, we hope to spur changes in the accounting standards with the goal of bringing the reporting of such metrics in line with the objectives of external reporting as defined by FASB.

The organization of this paper is as follows:

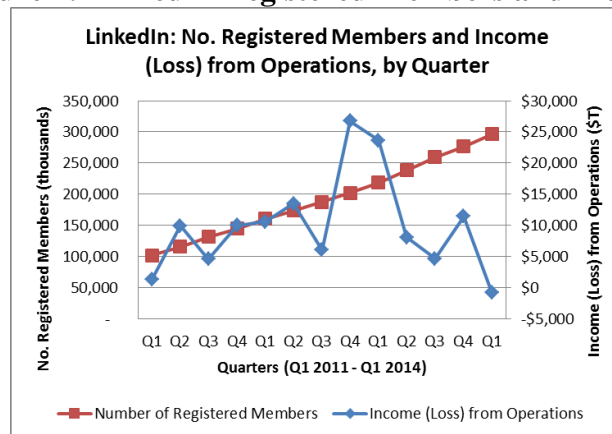
- Social Media Companies and Nonfinancial Metrics: Overview of the social media companies discussed here and the nonfinancial metrics they use.
- Accounting and Auditing Guidance: Regulations and guidance provided by FASB and the SEC in regard to reporting requirements. Provides the basis for the argument that companies are not following the spirit of regulatory requirements.
- Literature Review: Outlines existing research on nonfinancial metrics, the relationship between nonfinancial metrics and financial performance, and regulatory guidance regarding nonfinancial metrics.
- Limitations of Nonfinancial Metrics: The thrust of this work. We outline a set of problems associated with the current reporting of nonfinancial metrics and provide examples based on the social media companies in our sample.
- Concluding remarks.

SOCIAL MEDIA COMPANIES AND NONFINANCIAL METRICS

Social media and mobile-based companies have particular ways of capturing their nonfinancial performance levels; Twitter counts the number of “timeline” views of its users, Facebook reports monthly active users (and defines the term in a particular way), Pandora uses listener hours, etc. These figures (and others) are provided in the company’s public filings, but these nonfinancial metrics are not audited. The magnitudes of these numbers are striking. For example, for the three months ending March 31, 2014, Twitter reported 156.7 billion timeline views and Pandora reported more than 4.8 billion listener hours. Facebook reported 1.3 billion monthly active users for March 2014.

The actual financial performance and market capitalizations of the social media companies, however, would seem to be at odds with such nonfinancial metrics. Consider for example the chart below that plots the number of registered members and income (loss) from operations for LinkedIn in by quarter over the past three years. As is evident, while the nonfinancial metric (number of registered members) is linearly increasing, the financial metric (income from operations) tells a different story.

Figure 1: LinkedIn Registered Members and Income.



It would seem investors are motivated, at least in part, by nonfinancial metrics.

The six largest public U.S. social media companies in terms of market capitalization are Facebook, Twitter, LinkedIn, Pandora, Yelp, and Groupon. Table 1 below provides some data for these companies and for two other more traditional companies, Microsoft and Ford.

Table 1: Market Capitalizations and Annual Revenues.

Company	Market Cap as of Q1 2014 (\$B)	2013 Annual Revenue (\$B)	Market Cap/Annual Revenue	Year Founded (IPO Year)
Facebook	\$154.46	\$7.87	19.63	2004 (2012)
Twitter	\$27.50	\$0.66	41.67	2006 (2013)
LinkedIn	\$22.50	\$1.53	14.71	2002 (2011)
Pandora	\$6.22	\$0.64	9.72	1982 (2011)
Yelp	\$5.50	\$0.23	23.91	2004 (2012)
Groupon	\$5.35	\$2.57	2.08	2008 (2011)
Microsoft	\$338.58	\$83.44	4.06	1975 (1986)
Ford	\$61.69	\$146.92	0.42	1903 (1956)

Sources: The market capitalizations are from Standard & Poor's Compustat.

The annual revenue figures are from the respective company 10-Ks, except for Pandora and Microsoft where data from the company's investor relations pages were used.

Beyond the significant market capitalizations of the (relatively young) social media companies, of particular note is the markedly higher ratios of market cap to annual revenue for most of these firms (as compared to the more traditional companies). While stock prices are driven by many factors, investors may be "dazzled" by the impressive numbers reflected in the nonfinancial metrics reported by these firms. (Note that we used revenue in the above calculations as opposed to income from operations; this "favors" the social media companies as income from operations in some cases for these companies is zero or negative.)

Table 2 provides facts about aspects of these six social media companies retrieved from public filings (10-Qs, March 31, 2014). The values in the Nonfinancial Metrics column are the actual terms (e.g. Daily Active Users) listed in the public filings; all such reported nonfinancial metrics for each company are included in the table.

Table 2: Key Information for the Social Media Companies Considered Here.

Company	Service	Revenue Sources (as of March 31, 2014)	Nonfinancial Metrics
Facebook	Provides users, both individuals and companies, with a platform to place text and pictures about themselves. Users can search for friends or	Advertising (91%) Payments and other fees (9%)	Daily Active Users (DAU), Mobile DAUs, Monthly Active Users

	companies to see their postings and respond to them.		(MAU), Mobile MAUs
Twitter	Provides any user with the ability to send out short messages that other users can subscribe and respond to. For news reporting, the short message format provides a vehicle for stories to be sent out in close to real time.	Advertising (90%) Data licensing (10%)	Monthly Active Users (MAU), Timeline Views Timeline Views Per MAU
LinkedIn	Provides a website where users can detail their professional profiles. Companies and users can search and network with other users enabling them to find business opportunities.	Corporate access to “Talent Solutions” (Corporate employment services) (58%) “Marketing Solutions” (Advertising) (22%) Premium subscriptions (20%)	Number of Registered Members, Unique Visitors, Page Views, Number of LinkedIn Corporate Solutions Customers.
Yelp	Provides a platform for patrons to post reviews and ratings of local businesses such as restaurants, doctors, or plumbers.	Advertising (95%) Commissions from sales of products (gift cards) (5%)	Reviews, Unique visitors , Mobile Unique Visitors, Claimed Business Locations, Active Local Business Accounts
Pandora	Provides personalized music played to a listener based on each listener’s preferences, delivered to desktop computers or mobile devices. Free subscription has the music stream spliced with advertising while paid subscriptions get uninterrupted music.	Advertising (72%) Subscriptions (28%)	Listener Hours, Active Users
Groupon	Provides subscribers with email notices of promotions from companies that are Groupon customers. Promotions typically sell goods or services at a discount.	Commissions from sales of promotions (56%) Sales of products (44%)	Active Customers, Units (the number of vouchers and products purchased, before refunds and cancellations).

ACCOUNTING AND AUDITING GUIDANCE

The Financial Accounting Standards Board (FASB) set forth in its Conceptual Framework that “the objective of general purpose external financial reporting is to provide information that is

useful to present and potential investors and creditors and others in making investment, credit, and similar resource allocation decisions” (FASB, 2008). Preparers of financial statements are required to adhere to the standards set forth by the FASB to ensure comparability and consistency in financial reporting. Consequently, the financial statements have traditionally been the vehicle through which a company can communicate its performance to the market and such performance should ideally be reflected in the company’s share price.

The Securities and Exchange Commission (SEC) requires publicly held companies to file audited financial statements with the SEC annually and upon initial registration as mandated by the U.S. Securities Act of 1933 (The Act), Section 3-b-2 (SEC, 2012). The audit provides assurance that the company’s financial statements were prepared in accordance with Generally Accepted Accounting Principles (GAAP) and can be relied upon. The audit report and audited financial statements are included in the company’s annual report in Form 10-K or registration statement in Form S-1. The Act also requires periodic disclosure of financial information in Section 3-b-4 (SEC, 2012) and so, companies additionally file quarterly financial statements with the SEC in the Form 10-Q. The quarterly financial statements are subject to a review engagement which is a less comprehensive attestation than the full audit. The Forms 10-K, 10-Q, and S-1 also provide a comprehensive overview of the company’s business and financial condition known as the Management’s Discussion and Analysis (MD&A) which precedes the audit opinion and audited financial statements.

The MD&A is a required section of the Forms 10-K, 10-Q, and S-1 as prescribed by Regulation S-K of the U.S. Securities Act of 1933. Paragraph (a) of Item 303 of Regulation S-K identifies a basic and overriding requirement of MD&A: to "provide such other information that the registrant believes to be necessary to an understanding of its financial condition, changes in financial condition and results of operations" (SEC, 2002). It should not merely be a narrative outlining the financial statements but rather, contribute to the overall financial and operational performance of the company through management’s unique perspective.

The SEC provided further interpretive guidance on the MD&A in Release No. 33-8350 which states that “companies should identify and discuss key performance indicators, including nonfinancial performance indicators, that their management uses to manage the business and that would be material to investors.” The guidance also states that when “there is no commonly accepted method of calculating a particular nonfinancial metric, it should provide an explanation of its calculation to promote comparability across companies within the industry” (SEC, 2003).

The Public Company Accounting Oversight Board (PCAOB) was established by Congress to oversee the audits of public companies in order to protect investors and the public interest. The PCAOB assumed the responsibility for promulgating auditing standards and maintaining those already in place. Auditing Standard, AU Section 110, establishes the Responsibilities and Functions of the Independent Auditor. The auditor’s primary responsibility is to perform an audit “to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether caused by error or fraud...” and to then express an opinion on the financial statements (PCAOB, 2002a).

Auditing Standard, AU Section 550, addresses Other Information in Documents Containing Audited Financial Statements. The auditor's responsibility with respect to information in a document such as the Form 10-K, “does not extend beyond the financial information identified in his report, and the auditor has no obligation to perform any procedures to corroborate other information contained in a document.” The auditor should review the other information and “consider whether such information, or the manner of its presentation, is materially inconsistent with information, or the manner of its presentation, appearing in the financial statements” (PCAOB, 2003).

Companies may, but are not required to, engage audit firms to perform an attest engagement with respect to the MD&A, governed by Auditing Standard, AT Section 701. This engagement is a review or examination rather than a full audit of the information presented. A review consists principally of applying analytical procedures and making inquiries of persons responsible for financial, accounting and operational matters. With respect to nonfinancial data, the auditor conducting a review must consider whether the definitions used by management for such nonfinancial data are reasonable and if suitable criteria such as industry standards exist. The auditor should determine if varying methods of measurement can be used and if such methods could result in significantly different results. If so, he must assess whether the methods selected by management are reasonable and consistent from one period of reporting to the next (PCAOB, 2002b).

The Forms 10-K, 10-Q, and S-1 are client-submitted documents and the auditor is not responsible for verifying all the information that is disclosed. The MD&A portion of these forms, therefore, provides information which is, for the most part, unaudited. In the required audit, the auditor has no responsibility to verify any financial information not already disclosed in the audited financial statements or nonfinancial measures. The nonfinancial metrics reported by social media firms and other industries do not undergo an audit to validate the accuracy of their definitions of calculations. While companies can engage the audit firms to perform a review or examination of the MD&A, this is not required and generally not conducted. Even with a review or examination in place, the auditor cannot gain assurance as to the validity of the nonfinancial metrics without some guidance from industry standards.

LITERATURE REVIEW

The growth in social media is presenting new challenges for financial reporting and the communication of financial results (Alexander and Gentry, 2014). On the eve of Twitter’s Initial Public Offering (IPO), Mary Jo White, Chair of the Securities and Exchange Commission (SEC), addressed whether investors could comprehend a company’s future potential when faced with user data that may bear not relation to profitability. Ms. White questioned the “unique financial or operational metrics” used by many technology companies to demonstrate their size or growth potential. Some suggest that the SEC should push for increased disclosure of the number of advertisers a company has, rather than the number of users (Kuchler et al., 2013), since advertising is the primary source of revenue for social media companies. John Sviokla, a principal at Pricewaterhouse Coopers, which provides audit and assurance services, recommended that CFOs “need new statistical techniques outside traditional GAAP accounting that blend in social-media information systems to measure financial activity” (Rosenbaum,

2012). Social media companies are like black boxes making them harder to value than companies with more visible, conventional businesses (Eavis, 2013). Thus, there is a growing concern that the current accounting and auditing models are not equipped to properly measure and verify the information reported by firms in newer industries like social media. The biggest concern lies with the reporting of nonfinancial metrics.

There are benefits and challenges in using nonfinancial metrics coupled with accounting measures whether for internal use or in firm valuations. The primary challenges are measuring nonfinancial performance measures accurately and weighting measures appropriately when nonfinancial and accounting measures are used together (Luft, 2009). Wyatt (2008) evaluates the relevance and reliability of financial and nonfinancial information from the value-relevance literature. The evidence from studies focused on intangibles reveals that some nonfinancial measures do not appear to be reliably measured. While much of financial and nonfinancial information is value-relevant, it is difficult to make categorical judgments about many items as differences in relevance and reliability could be driving inconsistencies in value-relevance.

Though nonfinancial measures present some difficulty with regards to the accuracy of their measurement, they continue to attract much notice. Cohen et al. (2011) cites the increased attention on the corporate disclosure of nonfinancial information in the academic literature and the business press. They conducted a survey of retail investors to examine perceptions about indicators of economic performance, corporate governance policies and performance, and corporate social responsibility. Respondents expressed an interest in increasing their use of nonfinancial information in the future with the greatest focus on economic performance indicators such as market share, customer satisfaction, and product innovation information. Behbahani (2013) contends that modern accounting emphasizes nonfinancial measures as a device to compensate the financial measures' weakness and the financial measures are recommended to be used with nonfinancial ones. The author's findings indicate that the auditing firm size has positive and significant effect on nonfinancial information disclosure quality.

An emerging view among managers and academicians argues for an expanded reporting system to provide more comprehensive information about organizational performance, including internal strategic performance variables, although there is little systematically gathered evidence on the views of the analyst community in this regard. Based on a study of practitioners regarding the frequency of use, predictive value, and ease of acquisition of a variety of financial and nonfinancial performance measures, responses indicate that analysts go well beyond the traditional financial measures and use a broad range of strategic leading indicators to assess long-term organizational success (Dempsey, 1997). Jack Welch, former CEO of General Electric, advises getting away from measurement based on profit to monitoring three specific items: customer satisfaction, employee satisfaction, and cash flow. He contends that chief executives must take care in selecting those performance measures which reflect moving organizational goals (Oliver, 1996). Overall, it appears that users of company financial information, both within and outside the company, are clamoring for increased disclosure of nonfinancial information.

This presents a challenge for the accounting and auditing professions. The FASB and the American Institute of Certified Public Accountants would like to see an improvement in

nonfinancial disclosures, a viewpoint shared by the SEC (Cole & Jones, 2005). Making financial statements more useful to users by reporting expanded information on corporate operations and other nonfinancial data continues to gain momentum. The FASB agreed to review what type of information beyond the more traditional accounting and earnings statistics will make annual reports more relevant to investors (The CPA Journal, 1998). The FASB also appointed a Committee to study the academic literature in this field. The Committee concluded that mandating a standard set of disclosures related to customer satisfaction, quality, etc. would not best serve investors. Rather, companies should be encouraged to provide such disclosures voluntarily. Additionally, they believe that companies should be encouraged to experiment with new nonfinancial measures and models integrating financial and nonfinancial measures, under the umbrella of safe harbor rules (Maines et al., 2002).

While many believe that new age companies require new and different forms of financial reporting, the FASB disagrees. Technology companies that emerged with the explosion of the Internet advocate the importance of nonfinancial information, forward-looking information and intangible assets to new economy companies; however, the same is true for their traditional counterparts. Nonfinancial metrics are obviously important, but investors need the financial information too (Investor Relations Business, 2001). In terms of revenue recognition, the FASB does not have standards for social media companies specifically but the broader guidelines hold that revenue should not be recognized until it is both realized or realizable, and earned (McKenna, 2012). Therefore, the FASB has yet to see the need to develop standards specifically for the social media industry.

Do the nonfinancial metrics reported by social media and other companies bear any relation to firm value or profitability? Several academic studies have examined the linkage between a company's nonfinancial information and its financial information and/or valuation. Amir and Lev (1996) examine the value-relevance to investors of financial and nonfinancial information of independent cellular companies and found that financial information is largely irrelevant for security valuation. Nonfinancial indicators, such as population size and market penetration, are highly value-relevant. Earnings contribute to the explanation of prices only when combined with nonfinancial information. Ittner and Larcker (1998) find that relations between customer satisfaction measures and future accounting performance generally are positive and statistically significant.

Trueman et al. (2000) examine the manner in which accounting information, along with measures of Internet usage, is employed by the market in the valuation of Internet firms. The authors find that in most instances both unique visitors and pageviews, as measures of Internet usage, provide incremental explanatory power for stock prices, over and above net income and its components. Hand (2001) assesses the degree of similarity in the cross-sectional pricing of Internet and non-Internet stocks during the tumultuous year of 2000. The author finds that, beyond earnings, web traffic is significantly positively priced both at and after the Internet peak. Demers and Lev (2001) explore various value drivers of business-to-consumer Internet companies' share prices both before and after the steep market decline of spring 2000. The authors utilize a model comprised of both accounting and nonfinancial variables and find that the reach (i.e. the number of unique individuals who visit a site) and stickiness (i.e. a site's ability to

retain a customer at its site after arrival) of web traffic measures are value relevant in each of 1999 and 2000.

Lazer et al. (2001) examine whether traffic data on sites owned by publicly listed Internet companies provides information useful in investment decision making. The authors find that when companies are divided into above-median and below-median traffic data, the companies with the more popular websites yield better stock returns. Hirschey (2001) documents the value-relevance of nonfinancial information on the quantity and quality of inventive output for high-tech companies. They find that the number of patents and information on the quality of patents have consistently positive effects on stock prices. The findings also lend credence to the suggestion of the AICPA Special Committee on Financial Reporting that firms disclose nonfinancial performance measures to provide insight into a company's operations.

Rajgopal et al. (2003) contend that although leading indicators are becoming increasingly important for equity valuation, disclosures of such indicators suffer from the absence of GAAP related guidance on content and presentation. The authors find that the stock market overweights the contribution of order backlog in predicting future earnings, and a hedge strategy that exploits such overweighting generates significant future abnormal returns. Dikolli and Sedatole (2007) study empirical refinements that increase the information content of nonfinancial performance measures. The refinements reveal that website stickiness, constructed from seven individual web traffic measures, is a positive signal for future financial performance for firms with good websites but a negative signal for firms with poor websites.

Simpson (2010) examines the association between analyst earnings forecast errors and the persistence of nonfinancial disclosures. Their results show that analysts tend to underreact to performance measures that have significant predictive ability for future earnings of wireless firms: customer acquisition cost, average revenue per user, and the number of subscribers. Serrano-Cinca et al. (2010) analyze intangible constructs that affect sales on the Internet retailing industry. Nonfinancial information was used to identify several intangible constructs: web traffic generation, relevance in search engines, link popularity, and blogs popularity. The results show that there is a significant relationship between the intangible constructs and accounting figures. This relationship is stronger when Sales from Internet Operations rather than Total Sales or Net Profit is considered.

Luo et al. (2010) find that positive changes in customer satisfaction not only improve analyst recommendations but also lower dispersion in those recommendations for the firm. These effects are stronger when product market competition is high and financial market uncertainty is large. Overall, their research reveals the impact of satisfaction on analyst-based outcomes and firm value metrics and calls attention to the construct of customer satisfaction as a key intangible asset for the investor community. Tirunillai et al. (2012) examine whether user-generated content (UGC) is related to stock market performance, which metric of UGC has the strongest relationship, and what the dynamics of the relationship are. Of all the metrics of UGC, volume of chatter has the strongest positive effect on abnormal returns and trading volume. The volume of chatter and negative chatter has a significant positive effect on trading volume. These results have important implications for managers and investors. Overall, the literature examining

nonfinancial metrics and their relation to firm valuation and/or profitability has produced mixed results.

More recently, studies have focused on the social media industry. Luo et al. (2013a) scrutinize the predictive relationships between social media and firm equity value, the relative effects of social media metrics compared with conventional online behavioral metrics, and the dynamics of these relationships. The results suggest that social media-based metrics, such as web blogs and consumer ratings, are significant leading indicators of firm equity value. Interestingly, conventional online behavioral metrics, Google searches and Web traffic, are found to have a significant yet substantially weaker predictive relationship with firm equity value than social media metrics. Luo et al. (2013b) consider the interaction between consumer buzz and web traffic as well as competitive effects in relation to firm performance. Their results support the dynamic relationships of buzz and traffic with firm value as well as significant market competition effects, including the effects of a firm's own and its rivals buzz and traffic measures. Yu et al. (2013) aimed to investigate the effect of social media and conventional media, their relative importance, and their interrelatedness on short term firm stock market performances. The authors find that, overall, social media has a stronger relationship with firm stock performance than conventional media while social and conventional media have a strong interaction effect on stock performance.

In addition to the impact that nonfinancial metrics have on corporate communication of performance, the disclosure of nonfinancial information also greatly affects the audit profession. The Financial Accounting Standards Board's (FASB) decision to set standards for financial reporting rather than only financial statements creates new responsibilities for independent auditors. Financial reporting not only includes financial statements but other financial and nonfinancial information. Financial statements are limited to a basic core of information, so other analytical or supplemental information is presented outside the basic financial statement. Some supplemental information might be auditable, but that does not mean it should be audited (Carmichael, 1979). "The Management's Discussion and Analysis (MD&A) presents challenges for audit committees and their auditors because it is broader in scope than traditional financial statements. It focuses on the business, includes nonfinancial performance metrics and contains prospective information. In addition, there is only a minimum of guidance for the MD&A's preparation" (Deloitte, LLP).

There is a misconception that a professional engagement ends when the public accountant has signed off on an audit or review. The auditor's association with the financial statements normally extends to the form in which the statements are published. The auditor has a responsibility to be satisfied that the statements (and the report of the auditor when it is issued in written form) are accurately reproduced and that other financial and nonfinancial information accompanying it do not raise questions about the statements (Jeffreys & Kirkwood, 2003). Users, auditors, and even preparers of financial statements generally agree that nonfinancial performance measures and forward-looking information are important to making investment and credit decisions (Myers, 1997). The need for additional information by security analysts for investment advising purposes is the basis for the argument to expand the audit attest function (Moscove, 1977).

The FASB has raised the question of whether it should broaden its scope beyond financial statements and review nonfinancial information as well (e.g., Investor Relations Business, 1999). Jay Thibodeau, Professor of Accountancy at Bentley College, explained that the current accounting model lacks standardized measures for many of the nonfinancial metrics that are commonly used in many information age companies. Analysts use massive amounts of information that is not independently audited. The current accounting model was developed for the industrial age but nonfinancial metrics are very important in the Internet sector. “Why not have a standardized measurement display of these nonfinancial performance measures? These things can be measured and audited” (Denison, 2002).

Information technology is dramatically changing the way financial statements are prepared, audited and used. Alternative information is now available to those who traditionally relied on financial statements. While these changes pose serious threats to the economic viability of auditing, they also create new opportunities for auditors to pursue. Financial statements are not as important to investors as they once were. As technology changes the way companies create value, financial statements describe modern companies less well than they described industrial-era companies. Because the audit function is tied to financial statements, the auditors’ role in providing relevant data has declined. The diminishing role of the auditor creates a need to redesign the audit product (Elliott, 1994).

Analytical procedures used by auditors consist of evaluations of financial information, which are made by studying plausible relationships among financial and nonfinancial data. Sources of information for developing expectations in engagements include the relationship of financial information with nonfinancial information (Mancuso, 1992). Performance measurement requires an understanding of a company's goals, objectives, strategies, and operations in order to identify and evaluate measures that inform management about issues necessary to align its future activities with its strategies. The level and sophistication of the current management information system affect the design and implementation of performance measurement. The measures often constitute relevant nonfinancial information, an important source for developing analytical expectations according to SAS No. 56, Analytical Procedures (Waddington, 2001).

Brazel et al. (2009) examine whether auditors can effectively use nonfinancial measures to assess the reasonableness of financial performance and as a result, detect financial statement fraud. The authors find that the difference between financial and nonfinancial measures is significantly greater for firms that committed fraud than for their competitors which did not commit fraud. Admiraal et al. (2009) review the growing focus on social responsibility and policy results in the public sector. Much of the information on social performance and its effects is of a nonfinancial nature, therefore, the reliability and relevance of this information are highly important. The authors conclude that auditors can play an important role in providing assurance on the reliability of nonfinancial information.

Cohen et al. (2000) discuss that in conducting analytical procedures, auditors may use both financial information and nonfinancial information such as general economic conditions, technological changes in the client's industry, and new products from competitors. The results suggest that auditors place heavier reliance on financial trends than nonfinancial trends in establishing the overall level of audit scope. Further, auditors apparently utilize nonfinancial

information as corroborating evidence. Cohen et al. (2008) discuss the quality of disclosures provided in MD&A as a subject of continuing concern on the part of regulators. A variety of regulatory bodies have recently initiated discussion on the extent to which the auditor should be involved with MD&A disclosures. Academic research yields information about explicit and implicit information that may be useful to the auditor in boosting both the quality of disclosures and the quality of the audit.

Cohen et al. (2012) examine the public voluntary disclosure of a set of leading indicators of economic performance and sustainability of earnings. Their results indicate that, among the sample firms, there remains a lack of rigorous and expansive disclosure of this type of information and that considerable variability exists in disclosure practice based on both industry and size. For example, companies disclose a wide variety of nonfinancial information both through mandatory filings such as 10-Ks and through alternative sources such as investor promotion materials and company websites, with the most frequent types of disclosures being concerned with information pertaining to market share and innovation. The authors recommend that these types of disclosures would benefit from the availability of assurance services. There is increased pressure, therefore, on the auditor to provide some type of assurance with respect to nonfinancial metrics.

Overall, there has been prolific research in the field of nonfinancial disclosures. This research has focused on the need for nonfinancial information, the relationship between such nonfinancial information and firm valuation and/or financial information, and the impact that nonfinancial information has on the audit profession. Saxton (2012) reviews the literature surrounding new media defined as all forms of digital information and communication technologies. He finds that research to date has focused on determinants or outcomes of voluntary Web disclosures, the market effects of online investor discussion, and the manipulation of investors in online message boards. Much of the research focuses on the information perspective and little attention has been given to other issues and approaches such as institutional perspectives on the ongoing changes sparked by this new media. Our paper specifically focuses on the accuracy and inconsistency of nonfinancial metrics disclosed by firms in the social media industry, the relationship, if any, that such metrics have with firm profitability, and the impact that the disclosure of nonfinancial metrics has upon the accounting and auditing professions.

LIMITATIONS OF NONFINANCIAL METRICS

In this section we consider five categories of issues that affect the accuracy of the measures reported: issues regarding the definition and calculation of nonfinancial metrics, duplicate accounts, false accounts, circumstances where the nonfinancial metrics may be spuriously inflated from what they purport to measure, users sharing accounts, limitations in reporting the geographic locations of users, and metrics that are not reported that we argue should be.

Issues Regarding the Definitions and Calculation of Nonfinancial Metrics. Are the definitions of some nonfinancial metrics misleading?

Facebook

As briefly touched upon in the introduction, Facebook defines a MAU as a registered user who, within the past 30 days, 1) logged in and visited Facebook through the website or a mobile device, or 2) used the Facebook Messenger app, or 3) "... took an action to share content or activity with his or her Facebook friends or connections via a third-party website or application that is integrated with Facebook." (A Daily Active User is defined similarly.)

It seems straightforward enough that a user is considered to be a MAU if s/he logs in and visits Facebook. However, consider the third alternative: users who "... took an action to share content or activity with his or her Facebook friends or connections via a third-party website or application that is integrated with Facebook." There are two issues here. The first is that it's not clear exactly what this means. Which actions? What third-party websites? In our view, this kind of lack of clarity fails to meet the objectives of the 10-Q as specified by the SEC.

Second, is someone who "took an action to share content, etc." equivalent to someone who logs in and visits Facebook? The question is clarified, and the ramifications detailed in Sorkin (2012):

In other words, every time you press the "Like" button on NFL.com, for example, you're an "active user" of Facebook. Perhaps you share a Twitter message on your Facebook account? That would make you an active Facebook user, too. Have you ever shared music on Spotify with a friend? You're an active Facebook user. If you've logged into Huffington Post using your Facebook account and left a comment on the site — and your comment was automatically shared on Facebook — you, too, are an "active user" even though you've never actually spent any time on facebook.com.

"Think of what this means in terms of monetizing their 'daily users,' " Barry Ritholtz, the chief executive and director for equity research for Fusion IQ, wrote on his blog. "If they click a 'like' button but do not go to Facebook that day, they cannot be marketed to, they do not see any advertising, they cannot be sold any goods or services. All they did was take advantage of FB's extensive infrastructure to tell their FB friends (who may or may not see what they did) that they liked something online. Period."

Likewise, as noted above, using the Facebook Messenger app counts in the MAU, but (at least of this writing) there are no ads on Messenger, nor on the mobile Facebook app for that matter.

Twitter

Twitter's nonfinancial metrics are MAUs and Timelines. (A Twitter user's home timeline is a stream of all the Tweets from those the user has chosen to follow. A user may have additional timelines comprised of messages from users in lists that they've created or as a product of search results.) The definitions are not complicated; we address below a concern about Timeline figures being inflated.

LinkedIn

The nonfinancial metrics LinkedIn uses (registered members, unique visits, and page views) are straightforward.

Groupon

Groupon reports the number of “units” it sells – that is, the number of vouchers and products purchased by its customers, but this figure is reported “before refunds and cancellations.” No indication is provided as to the magnitude of refunds and cancellations.

Yelp

Yelp uses the number of reviews as one of its key metrics. The number of reviews is cumulative, and includes reviews that have been removed (by Yelp due to violations of the terms of service, or by whoever contributed them). As of March 31, 2014, Yelp reported some 56.9 million reviews, which includes 4.0 million removed reviews.

Yelp also uses Claimed Local Business Locations – that is, cumulative number of business locations that have been claimed on Yelp (by a business representative) worldwide since 2008 – as a key metric. It is unclear if and when such locations are removed from this count as businesses close; that is, there is nothing in the 10-Qs in this regard.

Pandora

Clearly an important nonfinancial metric for Pandora is listener hours. Pandora indicates that they calculate listener hours “based on the total bytes served for each track that is requested and served from our servers, as measured by our internal analytics systems, whether or not a listener listens to the entire track.” That is, if a user turns off Pandora after the first five seconds of a song, the system uses the total number of bytes of that song in the calculation of listener hours. This approach would seem to overestimate listener hours calculated either by actually measuring the amount of time each listener played Pandora, or by using the fraction of bytes served in the case where an entire track was not served. (This being said, Pandora also reports ad revenue per thousand listener hours, so an overestimated listener hour figure would serve to decrease this statistic.)

Pandora indicates that other approaches, for example, those used by third parties, will yield different results.

Duplicate Accounts

We consider the situation where a single individual opens more than one account with different user names. The companies we consider here tend to discuss this issue in their 10-Qs, but then ignore the phenomenon in published values for user counts – that is, reported values presume each account represents a different user. In the cases where companies address the issue and

estimate the number/percentage of false accounts, aside from indicating that sampling is involved, no details are provided as to how these accounts are identified.

Facebook

Facebook defines duplicate accounts as accounts “a user maintains in addition to his or her principal account” and indicates that these accounts “may have represented between approximately 4.3% and 7.9% of our worldwide MAUs in 2013” (10-Qs, Q4 2013 and Q1 2014). Facebook estimates the number of duplicate accounts via a sampling process, though no specifics of this process are provided; see the False Accounts section below for more on this.

Twitter

Twitter permits people and organizations to have more than one account; these multiple accounts are therefore simply counted as multiple users when calculating active users. No estimate is provided as to the number of such accounts.

LinkedIn

LinkedIn provides no estimate for the number of duplicate accounts. It does recognize that the number of its registered members is higher than the actual number of members as, “some members have multiple registrations, other members have died or become incapacitated, and others may have registered under fictitious names or created fraudulent accounts.” See LinkedIn below under False Accounts for more information.

Groupon

Groupon’s service agreement specifies one account for each user. There would seem to be some incentive for Groupon users to establish multiple accounts to take advantage of “one-to-a-customer” offers. There is, in any case, no discussion of duplicate accounts in their 10-Qs.

Yelp

Yelp’s terms of service agreement prohibits duplicate accounts. A concern here might be individuals creating accounts for motives other than providing honest reviews. See additional comments below under False Accounts.

Pandora

Pandora indicates that, “The number of active users may overstate the number of unique individuals who actively use our service within a month as one individual may register for, and use, multiple accounts.” No estimates are given as to the number of such multiple accounts.

False Accounts

Facebook defines false accounts as either “user-misclassified” or “undesirable.” A user-misclassified account includes when a user creates a personal account for a business or, say, a pet. Undesirable accounts include those set up for spamming purposes.

Twitter does not make the user-misclassified/undesirable distinction Facebook does, but simply uses the term “false or spam accounts” without formally defining either.

Both Facebook and Twitter indicate that they estimate these accounts by examining a sample of accounts. Neither discloses details of the process they use – not even the size of the sample they study. Both indicate the challenges in estimating these figures. Facebook provides the following caveats (for example, in their Q1 2014 10-Q).

... these estimates are based on an internal review of a limited sample of accounts and we apply significant judgment in making this determination, such as identifying names that appear to be fake or other behavior that appears inauthentic to the reviewers. As such, our estimation of duplicate or false accounts may not accurately represent the actual number of such accounts.

Twitter uses similar language (in their Q1 2014 10-Q):

... there are inherent challenges in measuring usage and user engagement across our large user base around the world. For example, there are a number of false or spam accounts in existence on our platform. In 2013, we performed an internal review of a sample of accounts and estimated that false or spam accounts represented less than 5% of our MAUs. In making this determination, we applied significant judgment, so our estimation of false or spam accounts may not accurately represent the actual number of such accounts, and the actual number of false or spam accounts could be higher than we have estimated.

Both Facebook and Twitter indicate that they are continually aiming to improve their capabilities to identify improper accounts and then take the appropriate actions.

Facebook

For 2013, Facebook estimates that “user-misclassified accounts may have represented between approximately 0.8% and 2.1% of ... worldwide MAUs and undesirable accounts may have represented between approximately 0.4% and 1.2% of ... worldwide MAUs” (10-Q, Q1 2014). So, estimated total false accounts in 2013 ranged between 1.2% and 3.3% of MAUs. Again, no methodology by which these numbers were determined is provided by Facebook.

Twitter

As noted above, Twitter indicates that for 2013 estimated false or spam accounts represented less than 5% of MAUs. Twitter stipulates that when spam accounts are identified they are not included in the active user statistics (10-Q, 2014 Q1).

LinkedIn

LinkedIn's 10-Qs acknowledge the difficulties in accurately determining its user base.

While we are using what we believe to be accurate methods of measuring the number of registered members, there are no methodologies available that would provide us with an exact number of non-actual member types of accounts. Therefore, we cannot assure you that our current or future methodologies are accurate...

So, LinkedIn provides no description at all here of the procedures it claims it uses, nor does it provide any estimates as to the error intervals associated with the membership numbers (point estimates) it reports.

Groupon

There is no mention of false accounts in the 10-Qs for Groupon. As per our comment in the Duplicate Accounts section, it would seem to be reasonable to assume that some users have established fake accounts to take advantage of the same offer multiple times.

Yelp

As their business relies on users having trust in their reviews, Yelp clearly must be concerned about possible accounts set up to falsely praise or criticize businesses. As noted in their 10-Q and on their website (http://www.yelp.com/faq#recommended_reviews, retrieved July 13, 2014) they utilize automated software to determine which reviews should be "recommended" and therefore appear on the business in question's profile page. (Reviews that are not recommended are accessible from a link on the business's profile page. These reviews are not included in a business's rating or review count.) The 10-Q indicates that essentially the automated software is designed to identify reviews that are "biased, unreliable or otherwise unhelpful." Yelp also indicates that they strive to remove inappropriate (e.g., defamatory, threatening, lewd, harassing) content.

In terms of figures, the Q1 2014 10-Q indicated that, "As of March 31, 2014, approximately 69% of the reviews submitted to our platform were recommended; approximately 24% were not recommended but still accessible on our platform and approximately 7% had been removed. However, there is no reference in Yelp's 10-Q to the number of accounts associated with reviews that were removed or habitually not recommended.

Pandora

There is no mention of false accounts in the 10-Qs for Pandora. (It's not clear that false accounts should be an issue for this kind of service.)

Inflation of User Metrics

The user metrics of Facebook and Twitter in particular are affected by applications that automatically contact their servers, with no human interaction involved. These contacts cause their systems to count such interactions in their active user metrics.

Facebook

Facebook recognizes this issue in their 2014 Q1 10-Q:

Some of our historical metrics through the second quarter of 2012 were also affected by applications on certain mobile devices that automatically contact our servers for regular updates with no user action involved, and this activity can cause our system to count the user associated with such a device as an active user on the day such contact occurs.

It's unclear to us what's meant by "this activity **can** cause our system to count the user ..." [emphasis ours]. This seems to imply some uncertainty – perhaps that it does it sometimes but not others – but there is no further explanation.

In terms of impact, Facebook provides the following information:

For example, we estimate that less than 5% of our estimated worldwide DAUs as of December 31, 2011 resulted from this type of automatic mobile activity, and that this type of activity had a substantially smaller effect on our estimate of worldwide MAUs and mobile MAUs. The impact of this automatic activity on our metrics varies by geography because mobile usage varies in different regions of the world.

Facebook seems to be saying that this phenomenon ceased after the second quarter of 2012, but no additional information in this regard is provided as of the 10-Q for the first quarter of 2014.

Twitter

Twitter's 2014 Q1 10-Q includes the following:

Our metrics are also affected by applications that automatically contact our servers for regular updates with no user action involved, and this activity can cause our system to count the users associated with such applications as active users on the day or days such contact occurs.

The verbiage here is almost identical to that provided by Facebook, though Facebook indicates that the automated contacts are due to applications on (unspecified) mobile devices, while Twitter just points to unnamed applications. As with Facebook, Twitter indicates that these applications **can** result in counting the automated contact in their user metrics.

Twitter's 2014 Q1 10-Q indicates that:

In the three months ended December 31, 2013, approximately eleven percent of all active users used applications that have the capability to automatically contact our servers for regular updates. This increased from the prior period as a result of deeper integration with iOS and desktop operating systems. As such, the calculations of MAUs presented in this Annual Report on Form 10-K may be affected as a result of automated activity

It would seem possible from this description that Twitter's MAU numbers are inflated by as much as 11%, but the actual percentage is not determinable from this information.

In addition it seems that Twitter's timeline count is affected by automatic incrementing.

As per Twitter's 10-Q:

We define timeline views as the total number of timelines requested and delivered when registered users visit Twitter, **refresh a timeline** or view search results while logged in on our website, mobile website or desktop or mobile applications... We believe that timeline views and timeline views per MAU are measures of user engagement. [emphasis ours]

At least on some platforms (e.g., Android) the user sets the sync interval and the timeline refreshes according to this interval, whether or not new content is in the timeline. In other words, some fraction of timeline refreshes are not due to any kind of user interaction.

LinkedIn

The nonfinancial metrics LinkedIn reports are registered members, unique visitors, and number of page views. The issues relating to the number of registered members have been noted above. Unique visitors and page views are determined by a third party, comScore.

Groupon

This type of over counting of user metrics would not seem to be an issue for Groupon.

Yelp

Yelp keeps track of unique visitors via cookies. They note therefore that "an individual who accesses our website from multiple devices with different cookies may be counted as multiple unique visitors, and multiple individuals who access our website from a shared device with a

single cookie may be counted as a single unique visitor.” No estimate is provided for these figures.

Mobile unique visitors are calculated separately from (non-mobile) unique visitors; likewise they may be double counted as unique visits to their mobile website and unique mobile devices using their mobile app contribute independently to the total count of mobile unique visitors. So, for example, if a single individual accesses the mobile website in the morning and then uses his/her mobile app in the afternoon, it will count as two unique mobile visits.

Pandora

As noted above, Pandora’s approach for calculating listener hours would seem to implicitly overestimate true listener hours.

Multiple Users Using the Same Account

Here we consider the situation in which more than one individual uses the same account – effectively the opposite of the duplicate accounts scenario considered above. Where more than one person share an account, the number of users is undercounted.

Facebook

Facebook does not reference this phenomenon in their 10-Qs.

Twitter

In addition to recognizing that individual users may have multiple accounts, Twitter notes that some accounts “are used by many people within the organization.” Twitter simply notes that, “As such, the calculations of our active users may not accurately reflect the actual number of people or organizations using our platform.”

LinkedIn

LinkedIn makes no mention of this phenomenon and indeed it would seem unlikely to be an issue under the circumstances.

Groupon

There is no reference to this issue in their 10-Qs. (While false accounts may be an issue for Groupon, there does not seem to be an incentive for multiple users to share the same account.)

Yelp

Multiple individuals sharing the same computer or using the same mobile device (app or website) will register as a single unique visitor.

Pandora

There is no reference to this issue in their 10-Qs.

Ascertaining the Geographic Location of Users

It would seem that ascertaining the geographic location of users would be important, both in terms of advertising revenue and ascertaining the potential growth of users.

None of the companies provides any geographic information more local than a broad region (e.g., United States, Europe, Asia). These broad categories may be of limited help – we’d expect, for example, business in China to be different than that in India in terms of existing competitors, potential for new entrants, and government influence. Beyond this, the data provided for identifying geographic location of users by region seems to be problematic in different ways.

Facebook

Facebook’s revenue per user and growth rates vary significantly by region, so good estimates of user location would appear to be essential. Facebook provides location by the following regions: US & Canada, Europe, Asia, Rest of the World. They state that location is “estimated based on a number of factors, such as the user’s IP address and self-disclosed location.” They note that it may be difficult to correctly identify a user’s location as, for example, should a user connect to Facebook via a proxy server. In any case, they provide no significant details as to their approach, or by how much their estimates may vary from the actual values.

Twitter

Twitter provides Timeline views data by two regions: United States and “International.” However, they identify the location of a user by the geographic location of the IP address associated with the account when the user initially registered the account; that is, the reported geographic location is not necessarily the actual location of the user at the time s/he is actually engaged with Twitter.

LinkedIn

Generally speaking, user location information is accessible to LinkedIn via the user profiles. LinkedIn uses the following regions: United States, Other Americas (Canada, Latin and South America), “EMEA” (Europe, the Middle East and Africa), and “APAC” (Asia Pacific).

Groupon

Groupon provides financial data by three regions: North America, “EMEA” – that is, Europe, Middle East and Africa -- and the rest of the world. Given the mixed brick-and-mortar/online nature of Groupon it would seem that identifying the geographic location of their users would be straightforward.

In any case, there is no breakdown of their nonfinancial metrics (active users, units) by geography.

Yelp

Yelp reports that international revenue comprised 3% of total revenue for Q1 2014; their 10-Qs do not identify data in finer categories than domestic and international.

Pandora

According to Pandora's terms of use, "Pandora can only be used in the United States, New Zealand, Australia and those countries' respective territories." Pandora's 10-Q does not break out any data by region.

Are There Metrics That Companies Don't Disclose That Should Be Reported?

Company 10-Qs provide a significant amount of financial and nonfinancial data. In particular, little-to-no information is provided regarding user demographics and customer churn rate, both of which would appear to be critical information for evaluating these companies.

It should be borne in mind that 10-Qs include extensive "risk factor" sections that provide a plethora of possible threats to the company, many of which are obvious and/or unlikely. (No doubt these are provided to reduce possible legal liability.)

For example, Facebook includes the following risk: "If we fail to retain existing users or add new users, or if our users decrease their level of engagement with our products, our revenue, financial results, and business may be significantly harmed." Other companies have similar statements. Is the reader supposed to conclude from this statement that there are companies that lose existing customers or don't add new customers or decrease level of engagement and don't suffer financially? Some of the more egregious of these stipulated risks are provided below.

Our business is highly competitive. Competition presents an ongoing threat to the success of our business. (Facebook)

We generate the substantial majority of our revenue from advertising. The loss of advertising revenue could harm our business. (Twitter)

Our business is subject to the risks of earthquakes, fire, power outages, floods and other catastrophic events, and to interruption by man-made problems such as terrorism. (Twitter)

Our business depends on a strong and trusted brand, and any failure to maintain, protect and enhance our brand would hurt our ability to retain or expand our base of members, enterprises and professional organizations, our ability to increase their level of engagement and our ability to attract and retain high level employees. (LinkedIn)

The loss of one or more key members of our management team, or our failure to attract, integrate and retain other highly qualified personnel in the future could harm our business.

(Groupon)

If we are unable to implement and maintain effective internal control over financial reporting in the future, the accuracy and timeliness of our financial reporting may be adversely affected. (Pandora)

Our business and prospects depend on the strength of our brand and failure to maintain and enhance our brand would harm our ability to expand our base of listeners, advertisers and other partners. (Pandora)

Negative publicity could adversely affect our reputation and brand. (Yelp)

It could be argued that providing such an extensive list of risks actually does a disservice to the investor as the critical, less obvious risks may be buried under the avalanche of obvious ones. However, our point here is that if these factors are important for investors to know, then certainly understanding user demographics, customer churn and the cost of acquiring new customers should be reported.

User Demographics

Particularly for companies whose revenue is derived principally from advertising, it would seem that understanding the demographics of users would be fundamental. However, the 10-Qs of these social media companies indicate that precious little is known here, or at least revealed.

In some cases, companies indicate that they utilize third parties to determine relevant demographic information. We note these in the company analyses below, and comment on this more generally at the end of this section.

Facebook

Regarding the age of their users, Facebook indicates that this determination is problematic particularly for younger users who are not necessarily truthful when providing this data. With this in mind, they note (10-Q, Q1 2014):

In the third quarter of 2013, we worked with third parties to develop models to analyze user data by age in the United States. These models suggested that usage by U.S. teens overall was stable, but that DAUs among younger U.S. teens had declined. The data and models we are using are not precise and our understanding of usage by age group may not be complete.

There are well-established “third-party” companies (e.g., comScore, QuantCast) whose business is to provide just this sort of information to digital companies. Is it possible that Facebook can’t obtain more precise market research results than those indicated here? In any case, no such

information is forthcoming in their public statements. (Indeed not even a definition of what's meant here by "younger" U.S. teens.)

Twitter

No demographic information is provided in the 10-Q.

LinkedIn

LinkedIn should have access to some demographic information based on user profile information. (For example, it's probably possible to estimate a registered user's age from the information provided in the profile.) In any case, no demographic information is provided in the 10-Q. (LinkedIn reports that it uses comScore to determine its Unique Visitors and Page Views data.)

Groupon

No demographic information regarding their users is provided by Groupon in their 10-Qs.

Yelp

No demographic information regarding their users is provided by Yelp in their 10-Qs.

Pandora

Pandora makes several references to how important demographic knowledge is for their advertising-based revenue model, and to their use of third parties and third party tools to in regard to their ascertaining audience metrics. However, no information as to their user demographics is provided in the 10-Qs.

As noted above, there are companies that specialize in providing demographic data of online, mobile web and mobile app users. These companies provide detailed data regarding user characteristics. Also as we've noted previously, none of the companies in this study include anything like detailed demographic data of their users in the public documents we've analyzed.

Churn Rate/Cost of Acquiring New Customers

For the companies we examined, we were unable to find explicit reporting of churn rates or the cost of acquiring new customers in their 10-Qs. Clearly these are important figures for investors. We don't know if the companies know these numbers, but it would seem reasonable to assume they do, but they don't explicitly report them.

By "customer" we're primarily referring to individuals who use a particular social media (e.g., a Facebook registered user) but also to corporate clients who pay the companies for advertising or other services.

The churn rate is effectively the attrition rate of customers. If the customer is a paying subscriber to a service, the churn rate is readily determinable (as the company knows exactly when a subscriber terminates service). For the social media companies discussed here that require user registration, the user churn rate can be determined if the company simply checks to see how long it's been since a particular user has been counted as active. Given some defined, perhaps industry-standard, length of time without activity, a user may be classified as having terminated service.

None of the companies report a churn rate associated with their paid services (e.g., LinkedIn Premium Subscriptions), corporate affiliates or advertisers. If a formal churn rate is not possible to calculate, a related measure like the percentage of customers who tried the product once and never returned. As an example, Groupon indicates that merchant relationships are a critical part of their business model. It would be valuable to have some sense of the attrition/return rate of these merchants.

Finally, not a single company reports the cost of acquiring new customers. The companies do report Sales and Marketing costs, but these cover a range of items, not just new customer acquisition costs. For example, the following is from Pandora's 2014 Q1 10-Q:

Sales and marketing consists primarily of employee-related costs, including salaries, commissions and benefits related to employees in sales, sales support and marketing departments. In addition, sales and marketing expenses include transaction processing fees for subscription purchases on mobile platforms, external sales and marketing expenses such as third-party marketing, branding, advertising and public relations expenses, facilities-related expenses, infrastructure costs and credit card fees.

So, it seems the best an investor can do is estimate customer acquisition costs for a particular company by taking the provided sales and marketing expenses and dividing this figure by the relevant increase in registered users. It seems unlikely that companies don't have these figures (or at least better estimates than those obtained by the calculation just described). Shouldn't this data be provided in the 10-Qs?

CONCLUSIONS

Social media companies and their nonfinancial metrics are attracting much attention amongst investors. These companies tend to report impressive nonfinancial metrics and possess enormous market capitalizations, which would lead one to believe that the companies are achieving great success. Such success, however, may not be reflected in traditional financial measures, like profitability. This should be a cause of concern for investors, analysts, and regulators following this industry. This paper seeks to gain insight into the nonfinancial metrics reported in the social media industry by answering several questions regarding their merit.

We reviewed the nonfinancial metrics disclosed by the six largest (in terms of market capitalization) U.S. based social media companies provided in the MD&A portion of their quarterly reports. The companies report nonfinancial metrics which reflect growth and user

engagement, such as monthly active users, listener hours, registered members, page views, etc. However, the definitions of these metrics may be misleading. For example Facebook includes in its Monthly Active Users persons who may not have actually visited facebook.com during the period in question. Pandora includes in its listener hours the minutes/seconds for a full song even if a person stops listening after a couple of seconds. It would appear that such measures are overstated and could be misleading for investors.

There is great variation in the way metrics are calculated and the types of metrics that are disclosed across companies. When companies indicate that they have used third parties to corroborate the metrics they themselves measure, a statement in their 10-Qs stipulates that their metrics may differ from those generated by third parties due to differences in methodologies. We recognize that much of the text in these public documents is motivated by legal concerns, but statements like this, particularly in the light of the issue raised in this paper, call for more explanation. What are these methodologies? How and why do they differ? By how much do their results differ? What are the relative advantages and disadvantages of the competing approaches? Has anyone compared the accuracy of these methods? Sorkin (2012) notes that the Nielsen Company counted 153 million unique users on the Facebook Web site for the month of December (2011) in the United States, though Facebook reported 161 million MAUs in its registration statement (form S-1) – a difference of some 5%.

While these differences are partially due to the differing nature and operations of the companies, the lack of standardization and limited transparency impedes the ability of investors to interpret these figures.

We also question why some nonfinancial metrics, such as customer churn, are not reported as it would seem an investor would be interested in the number or rate of customers who are discontinuing their service.

We reviewed the prior research focusing on nonfinancial metrics and their association with profitability and/or firm valuation and found mixed results. Within the social media industry, there does not appear to be a relationship between a company's profitability and the primary nonfinancial metric disclosed in the MD&A.

We investigated the accounting and auditing guidance surrounding such disclosures. The nonfinancial metrics do not undergo an audit and while companies could opt to have their nonfinancial metrics undergo a review or examination, such attestation services are not required, and generally not performed. The nonfinancial metrics, therefore, are not verified by an independent third party. There have been discussions over time questioning whether the audit profession should review/examine more of the disclosures in the MD&A. This would present great challenges for auditors as there is no standardization, at least in the social media industry, for the nonfinancial metrics disclosed. Auditors would be asked to be accountable for disclosures that are very difficult to confirm.

The SEC does not provide companies with detailed guidance as to which nonfinancial metrics must be disclosed or how they're defined, but rather leaves this decision making to management. Certainly some flexibility is called for. However, in the interest of having companies better

comport with the spirit of SEC guidelines, perhaps at the time of its IPO application, the SEC should, in addition to scouring the financial information, more critically review the nonfinancial metrics reported in Form S-1.

The answers to the questions posed earlier provide an interesting insight into the buzz surrounding social media companies and the nonfinancial metrics that have become an obsession for investors and a concern for regulators. The cause for concern is justified as the nonfinancial metrics bear many limitations yet no real connection to company profitability. We contribute to the literature by providing investors, regulators, researchers, and other interested parties with a better understanding of the meaning, limitations, and challenges of nonfinancial metrics reported by social media companies.

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APPENDIX

Definition of Nonfinancial Metrics

The following are the definitions of the nonfinancial metrics reported by the six firms in this paper. All the definitions come from the MD&A section of the Q1 2014 10-Qs of each firm.

Facebook

Daily Active Users (DAU) - We define a daily active user as a registered Facebook user who logged in and visited Facebook through our website or a mobile device, used our Messenger app, or took an action to share content or activity with his or her Facebook friends or connections via a third-party website or application that is integrated with Facebook, on a given day.

Mobile DAUs – We define a mobile DAU as a user who accessed Facebook via a mobile application or via versions of our website such as m.facebook.com, whether on a mobile phone or tablet, or used our Messenger app on a given day.

Monthly Active Users (MAU) - We define a monthly active user as a registered Facebook user who logged in and visited Facebook through our website or a mobile device, used our Messenger app, or took an action to share content or activity with his or her Facebook friends or connections via a third-party website or application that is integrated with Facebook, in the last 30 days as of the date of measurement.

Mobile MAUs - We define a mobile MAU as a user who accessed Facebook via a mobile application or via versions of our website such as m.facebook.com, whether on a mobile phone or tablet, or used our Messenger app during the period of measurement.

Average Revenue per User (ARPU) - We define ARPU as our total revenue in a given geography during a given quarter, divided by the average of the number of MAUs in the geography at the beginning and end of the quarter.

Twitter

Monthly Active Users (MAU) - We define MAUs as Twitter users who logged in and accessed Twitter through our website, mobile website, desktop or mobile applications, SMS or registered third-party applications or websites in the 30-day period ending on the date of measurement.

Timeline Views - We define timeline views as the total number of timelines requested when registered users visit Twitter, refresh a home timeline or view search results while logged in on our website, mobile website or desktop or mobile applications (excluding our TweetDeck and Mac clients, as we do not fully track this data).

Timeline Views Per MAU - We define timeline views as the total number of timelines requested when registered users visit Twitter, refresh a home timeline or view search results while logged in on our website, mobile website or desktop or mobile applications (excluding our TweetDeck and Mac clients, as we do not fully track this data).

Advertising Revenue Per Timeline View - We define advertising revenue per timeline view as advertising revenue per 1,000 timeline views during the applicable period.

LinkedIn

Number of Registered Members - We define the number of registered members in our network as the number of individual users who have created a member profile on LinkedIn.com as of the date of measurement.

Unique Visitors - We report our unique visitors based on data provided by comScore, a leading provider of digital marketing intelligence. comScore defines unique visitors as users who have visited our desktop website (which excludes mobile engagement) at least once during a month regardless of whether they are a member.

Page Views - We report our page views based on data provided by comScore. comScore defines page views as the number of pages on our desktop website (excluding mobile page views) that users view during the measurement period.

Number of LinkedIn Corporate Solutions Customers - We define the number of LinkedIn Corporate Solutions customers as the number of enterprises and professional organizations that we have under active contracts for this product as of the date of measurement.

Groupon

Active Customers - We define active customers as unique user accounts that have purchased a voucher or product from us during the trailing twelve months.

Units - This metric represents the number of vouchers and products purchased from us by our customers, before refunds and cancellations.

Pandora

Listener Hours - We calculate listener hours based on the total bytes served for each track that is requested and served from our servers, as measured by our internal analytics systems, whether or not a listener listens to the entire track.

Active Users – Active users are defined as the number of distinct registered users that have requested audio from our servers within the trailing 30 days to the end of the final calendar month of the period.

Advertising Revenue per Thousand Listener Hours (“ad RPMs”) – We calculate total ad RPMs by dividing advertising revenue we generate by the number of thousands of listener hours of our advertising-based service.

Yelp

Reviews - Number of reviews represents the cumulative number of reviews submitted to Yelp since inception, as of the period end, including reviews that are not recommended or that have been removed from our platform.

Unique visitors - Unique visitors represent the average number of monthly unique visitors over a given three-month period.

Mobile Unique Visitors - We define mobile unique visitors for a given three-month period to be the sum of (i) the average number of monthly unique visitors who have visited our mobile website during that period (measured as described above) and (ii) unique mobile devices using our mobile app on a monthly average basis over that period.

Claimed Business Locations - We define a claimed local business location as each business address for which a business representative visits our website and claims the free business listing page for the business located at that address.

Active Local Business Accounts - The number of active local business accounts represents the number of local business accounts from which we recognized revenue in a given three-month period