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Assessing the Role of Marketing at Earnings Announcement: Stock Market Response to Marketing Metrics Surprises

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ASSESSING THE ROLE OF MARKETING AT EARNINGS ANNOUNCEMENT:
STOCK MARKET RESPONSE TO MARKETING METRICS SURPRISES

BY

ANKIT ANAND

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree

Of

Doctor of Philosophy

In the Robinson College of Business

Of

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GEORGIA STATE UNIVERSITY

ROBINSON COLLEGE OF BUSINESS

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ACCEPTANCE

This dissertation was prepared under the direction of the *ANKIT ANAND's* Dissertation Committee. It has been approved and accepted by all members of that committee, and it has been accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Business Administration in the J. Mack Robinson College of Business of Georgia State University.

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ABSTRACT

ASSESSING THE ROLE OF MARKETING AT EARNINGS ANNOUNCEMENT:
STOCK MARKET RESPONSE TO MARKETING METRICS SURPRISES

BY

ANKIT ANAND

07/06/2020

Committee Chair: *Dr. Naveen Donthu*

Major Academic Unit: *Marketing*

The explanatory power of earnings per share (eps) is on the decline as firms are focusing more on intangible assets and are disclosing more marketing metrics when they announce their earnings (e.g., subscribers for the telecom & media industry and monthly active users for social media industry). However, the performance of these marketing output metrics beyond market/analysts' expectations (i.e., surprises) requires marketing resources, which may reduce current profitability but may also signal a higher future cash flow. Therefore, building on information economics, we assess if there is information content in marketing metric surprises, and how the stock market reacts to such surprises. Further, we argue that the information content of marketing metric surprises varies under different information signals by firms (strategic emphasis) and screening cues by investors (marketing expenditure). We also investigate the temporal variations in the effect of marketing metric surprises and also examine the relative importance of marketing metric surprises as compared to earnings surprises across multiple industries. We test the claims using an event study methodology around earnings announcement on S&P 1500 firms consisting of firms disclosing industry-specific marketing metrics and non-disclosing firms. We account for sample selection bias and correcting for potential endogeneity concerns of surprises marketing metrics. Our findings suggest that (1) although an increase in marketing metric surprise affects the stock market returns positively, (2) this effect is strengthened when firms signal strategic emphasis on value appropriation relative to value creation whereas (3) it is attenuated when investors screen for firms with higher unanticipated marketing expenditure, (4) the effect of marketing metric surprises increases over time whereas it decreases for earnings surprise, and (5) the effect of marketing metric surprise is higher in the telecom and media industry as compared to earnings surprises. The study helps to improve marketing accountability at the time of earnings announcement by improving the overall earnings quality of firms.

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Introduction

Quarterly earnings announcements are important events in firms' lifecycle, wherein firms disclose information about their quarterly earnings, and investors update their beliefs about firms' overall financial health. Traditionally, investors have focused mainly on the financial information chiefly earnings per share (eps) at the earnings announcement. The stock market rewards firms that meet or beat the market expectations of eps (Bartov et al. 2002) i.e., investors react to a new information (good news in this case) in eps. However, the explanatory power of eps has been declining as firms are focusing on and building more intangible assets (Francis and Schipper 1999), which are not visible in earnings outcomes. Moreover, it is known that marketing is particularly important in building intangible assets of firms through branding, customer relationships, etc. (Srivastava et al. 1998). Therefore, a pertinent question arises: what is the role of the marketing in the assessment of overall earnings quality of the firm? In this study, we attempt to answer this question by evaluating the performance of marketing output metrics beyond market/analysts' expectations (marketing metric surprises) at the time of earnings announcement.

Existing studies on stock returns to marketing output metrics either use subjective marketing metrics (e.g., customer satisfaction and customer-based brand equity) that are not disclosed by the focal firm at earnings announcement or objective marketing metrics only that are limited to only a few industries (e.g., number of subscribers for media industry). Further, the stock market reacts only to the new information or unexpected performances (surprises) in firms' performances and existing marketing studies use autoregressive models to predict these unexpected performances (Mizik and Jacobson 2008) ignoring analysts' expectations of the model. However, financial analysts are better forecasters than autoregressive models because

they have superior and timely information compared to quantitative models (Fried and Givoly 1982). In fact, in their review article of marketing and firm value, Srinivasan and Hanssens (p.308, 2009) raise the question "How do analysts' interpretations of marketing activities, such as product-price changes, affect stock returns?". Therefore, in this study, we focus on the stock market returns on *objective* marketing *output metrics* across *different industries* that are *disclosed by focal firms* when they announce their earnings. Further, the forecasts on these marketing metrics are done by *financial analysts*. For example, some of the marketing metrics that we use in this study are the number of subscribers in the media and telecom industry, monthly active users in social media, similar store sales growth in retail, and the number of deposits in the banking services. Once firms disclose such marketing metrics, they may positively (negatively) surprise the market expectations on these marketing metrics i.e., exceed (or fall short of) financial analysts' forecasts. However, surprises in marketing metrics require higher marketing resources that may negatively impact the current profitability or stock returns, and at the same time, may bring a higher current and future cash flow due to more intangible assets. Therefore, building on information economics, we assess the information content in marketing metrics surprises beyond the effect of financial metric surprises (e.g., eps) at the time of earnings announcements.

Further, the information content of the marketing metric surprise could vary in different information environments, may vary over time, and, the relative information content of marketing metric surprise may be different from the eps surprise. Therefore, we should test for such boundary conditions. First, our moderators are drawn from the literature on information asymmetry where firms (agents) use a signaling strategy whereas investors (principals) use screening strategy to reduce any asymmetry around the new information of marketing metric

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surprises. Specifically, firms signal their marketing resource allocation through their strategic emphasis, i.e., emphasis on value appropriation relative to value creation. The signaling of strategic emphasis is important in communicating to the stock market the likelihood the firms can achieving and stabilizing the future cash flow generated by information content (surprises) in marketing metrics. On the other hand, investors, who are the less informed players in the market, may screen firms indulging in unanticipated expenses in marketing to assess the information content of marketing metrics. Second, finance and accounting researchers have emphasized that the effect of earnings surprise has been decreasing over time (Francis and Schipper 1999), so a key question emerges that is the declining effect of eps surprises now being captured in marketing metric surprises? Finally, the relative information content in marketing metric surprises as compared to eps surprises may be different based on different industries in which firms operate. Overall, our research objectives are as below:

1. *Information content of marketing metric surprises*: How does the stock market react to the information content in marketing metric surprise at the time of earnings announcement?

2. *Moderating effect of information asymmetry*: How is the relationship between marketing metric surprises and stock market returns moderated by: (i) firms' signal of strategic emphasis, and (ii) investors' screening cues of unanticipated marketing expenses?

3. *Time-varying effect of marketing metric surprises*: What is the effect of marketing metric and earning surprise over time?

4. *Relative effect of marketing metric surprises*: What is the relative effect of marketing metric surprises over earning surprise in different industries?

To test the conceptual framework, we use S&P 1500 firms from multiple industries voluntarily disclosing their key industry-specific marketing metrics at the time of quarterly earnings. We use an event study methodology at the time of the earnings announcement to investigate stock market reactions to surprises in marketing metrics. Recognizing that not all firms voluntarily disclose their industry-specific marketing metrics, we correct for the same using Heckman correction. Further, similar to earnings management, where firms strategically try to surprise the stock market positively (Burgstahler and Dichev 1997), firms may strategically choose to surprise the stock market with respect to marketing metrics also. Therefore, we correct for the potential endogeneity of marketing metrics surprises using the control function approach (Petrin and Train 2010).

Our results shed light on the role of marketing metric surprises and how the stock market reacts to this information. First, our main effect result indicates that the stock market reacts positively to marketing metrics surprises at the time of earnings announcement as they are an indicator of a higher future cash flow and also attract higher investors' attention. Second, our moderating effect results suggest that the effect of marketing metric surprises vary under information asymmetry. Specifically, the positive effect of marketing metrics surprise deteriorates when firms signal their strategic emphasis on value appropriation compared to value creation because of a firm's ability to mitigate risks in the cash flow generated by marketing metric surprises due to superior brand and customer assets. Further, the positive effect of marketing metrics surprise deteriorates when investors screen unexpected increases in marketing expenditure mainly due to lower marketing capability of firms in extracting future cash flow from marketing metric surprises. Third, the time-varying effect of marketing metric surprise shows that the effect of marketing metric surprise on stock returns increases with time whereas

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the effect of earnings surprise decreases with time. Finally, the industry-specific relative information content results indicate that on average the effect of marketing metric surprise is lower than earnings surprise across industries except for the media and telecom industry where the effect of marketing metric surprise is higher than earnings surprise.

The study makes several contributions to the marketing-finance interface. First, the research introduces the idea of marketing metric surprises at the time of earnings announcement and its relevance to the stock market and thereby advancing the accountability of marketing in the boardrooms. Second, the study contributes to the resource-based view (RBV) and information asymmetry literature where signaling strategic emphasis on value appropriation relative to value creation and screening about the excessive expenditure of marketing resources impact the value in information content of the marketing metric surprises, i.e., its effect on stock returns. Third, to the literature on market-based assets, the study finds that the effects of marketing metric surprises are increasing over time as firms invest in building higher intangible assets that are captured through these marketing performances. Finally, the findings of this study would help marketing managers and Chief Marketing Officers in establishing the role of the marketing through the value relevance of marketing metrics reported at the time of earnings announcement.

The rest of the paper is organized in the following manner. The next section discusses the research background and motivation, followed by the conceptual framework. Then, we discuss the data and measures used in this study, followed by the methodology. Next, we discuss the results. Finally, we discuss the theoretical and managerial contributions and conclude the study.

Research Background

In the last two decades, since the seminal paper by Srivastava et al. (1998), substantial work has been done in the area of marketing-finance interface highlighting the role of marketers in creating values for shareholders (Edeling and Fischer 2016). Much of the work emphasizes on how various *subjective* marketing metrics such as customer satisfaction (Anderson et al. 2004), product quality (Tellis and Johnson 2007), brand equity (Mizik and Jacobson 2008), word- of - mouth (Tirunillai and Tellis 2012), customer equity (Kumar and Shah 2009) help in creating firm value. Another stream of literature focuses of various how *objective* marketing metrics - advertising expense (Joshi and Hanssens 2010), marketing expenditure (Kim and McAlister 2011), and objective marketing outcome metrics such as number of subscribers (McCarthy et al. 2017), similar store sales growth (Tuli et al. 2012), affect the stock market response at the time of earnings announcement. This study falls under the stream of the latter area.

The current study deviates from existing literature in four important ways. First, from the literature that uses subjective marketing metrics as these metrics are not announced at the quarterly earnings announcement and are reported by third parties. For instance, customer satisfaction by the American Customer Satisfaction Index (ACSI) and brand equity by various third parties – Interbrand, Young and Rubicam, and Brand Finance, to name a few. However, subjective marketing metrics have different measurements by different third parties and are difficult in assessment by investors (Seggie et al. 2007). Second, the existing studies in assessing the role of objective marketing metrics in affecting firm value are limited to a few firms and only in certain industries where customer-based valuation is possible. For example, McCarthy et al. (2017) study the effect of the number of subscribers in the media industry for two firms, Tuli et al. (2012) studies the role of similar store sales growth for the retail industry. Third, the objective

marketing action metrics such as advertising and marketing expenditure tells only half of the

story, and it is important for investors to assess the outcomes of such marketing actions rather

than just assessing the inputs (Katsikeas et al. 2016). Finally, as the stock market reacts only to

the new information in metrics, the information content in subjective and objective marketing

metrics considered in the existing literature only uses time series models to measure the

unanticipated changes in those metrics. However, finance and accounting literature has

emphasized the role and superiority of financial analysts in predicting unanticipated changes for

different performance measures. They find that models that use financial analysts forecasts for

unanticipated changes perform better than time series model as analysts have timely, and a larger

set of information and more timely information to forecast the metrics compared to the time

series models (Brown et al. 1987). Therefore, in this study, we study the stock market returns to

objective marketing *outcome* metrics across different *industries* where *financial analysts*

determine the new information in marketing metrics. Table 1 lists select studies in assessing the

stock returns to marketing metrics and the contribution of this study.

[Insert Table 1 about here]

Industry-Specific marketing metrics

Every industry has its own marketing output metric that is relevant to the stock market.

Table 2 presents all the industry-specific marketing metrics used in this study. The compilation

of industry-specific marketing metrics is based mainly on existing literature. In case where an

industry discloses more than one marketing metrics then we choose the marketing metrics that

has on average the greatest number of analysts following. For media and telecommunication

industry, investors consider number of subscribers as the key marketing metric. Several

marketing studies studying customer-based valuation of firms use the number of subscribers as

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the basis for their studies (Gupta et al. 2004; McCarthy et al. 2017). Further, as one goes from the media and telecommunication industry to the social media industry, the number of subscribers or users in not a value relevant marketing metric for this industry. Instead, the stock market is interested in how many users are actively engaged with the firm and hence Monthly Active Users (MAU) is the most relevant marketing metric for these industries (CNBC 2018). Further, as one moves from these high-tech industries to more traditional industry such as Retail industry, the relevant marketing metrics for them is similar store sales growth indicating customer loyalty for these retailers (Tuli et al. 2012). Overall, the value relevance of industry-specific marketing metrics in Table 2 is either drawn from existing literature or from the number of analysts following on these marketing metrics. In an industry, if more than one marketing metric is value relevant, then, we choose the marketing metrics where the number of analysts following is the highest (Barth et al. 2001).

[Insert Table 2 about here]

Building on Information economics, the information content in any metric should have two important characteristics (a) value relevance, and (b) credibility (Healy and Palepu 2001). Next, we discuss both value relevance and credibility of the aforementioned objective marketing metrics and shed some light on the role of financial analysts for such marketing metrics.

Value Relevance of marketing metric at the earnings announcement

The discounted cash flow of firm valuation has two factors: future cash flow and discount rate (weighted cost of capital). Both these factors are relevant to investors. Future cash flow is important to shareholders as it indicates a firm's ability to reinvest in projects, return money to shareholders, and liquidate the assets (Vuolteenaho 2002). Further, a lower cost of capital is

important for equity investors and debt holders as it indicates a higher net present value of future cash flow (Kothari 2001). Marketing metrics affects both these components of the discounted cash flow model and thus, is relevant to investors. First, marketing metrics are forward-looking in nature and are indicative of a higher future cash flow (Gruca and Rego 2005; Srivastava et al. 1998). The disclosure of marketing metrics at the time of earnings announcement reduces information asymmetry about future cash flow between the managers and investors (Healy and Palepu 2001). Indeed, Dechow et al. (2010) show that non-financials such as marketing metrics improve the overall earnings quality of firms. Second, marketing metrics are also important in reducing the cost of capital of firms. In fact, higher marketing outcome metrics are a result of higher intangible assets such as customer satisfaction, brand equity, and corporate reputation, and these assets influence the cost of capital (Himme and Fischer 2014). A variety of customer and brand assets affect loyalty, willingness to pay, among others, further improving marketing outcomes, and thus investors perceive lesser risk because of higher marketing outcomes of firms.

The Credibility of marketing metrics

The disclosure of marketing metrics are voluntary decisions, and therefore, investors may raise a concern about the credibility of these metrics. In this study, we argue that the voluntarily disclosed marketing outcome metrics are credible in two important ways. First, unlike subjective marketing metrics such as customer satisfaction, brand equity, etc., these marketing metrics are objective in nature and disclosed by firms and therefore are subject to verification. Second, false reporting of such metrics is associated with huge reputational and litigation costs (Gigler 1994), and thus in general, firms do not indulge in such practices. For instance, Wells Fargo was involved in a scandal in late 2016 when it reported false marketing metrics by creating millions of fraudulent customer deposits (accounts). Wells Fargo was fined $185 million for this illegal

activity and by the end of 2018 had to pay $2.7 billion because of various civil and criminal lawsuits. Indeed, in a setting where managers voluntarily disclose the information, Stocken (2000) finds that managers almost always disclose the voluntary information truthfully to build their reputation.

Information Intermediaries and marketing metrics

Information intermediaries or financial (sell-side) analysts are important constituents of the capital market in the efficient flow of information from firms to investors and generate information for the market (Healy and Palepu 2001). Primarily, analysts offer stock recommendations, make forecasts about a firm's financials, in particular, the estimates on earnings per share. The market expectation of eps is the average eps estimates from all the analysts covering a particular firm. Similarly, when a firm discloses marketing output metrics at the time of earnings announcements, various analysts make forecasts about these marketing metrics also.[1] The consensus estimates of financial analysts are considered important by investors, as they are more accurate, and their predictions explain the stock return better than the time-series models of earnings (Brown et al. 1987; Kothari 2001). The analyst consensus estimates are better than time series model estimates because analysts use a variety of accurate, and timely information for their forecasts (Brown et al. 1987). Therefore, unlike past studies that focus on time series trends of marketing metrics to measure surprise/unexpected/unanticipated performance (Mizik 2010; Mizik and Jacobson 2008), we use analysts' forecasts of marketing metric to measure marketing metric surprise.

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[1] It should be noted that the number of analysts following for a particular marketing metric forecast is much lower than eps forecast as eps has been the traditional focus of analysts and investors. However, as there is higher focus on intangibles in recent times, more analysts are following marketing metrics too in the recent time.

Conceptual Framework

Information content of marketing metric surprises

As discussed earlier, marketing outcome metrics are value relevant and the information about these metrics are credible to investors. However, the stock market reacts only to the new information in the marketing metrics. Therefore, it is important to consider stock market reactions to marketing metric surprise instead of the level values of marketing metrics. Marketing metric surprise refers to the unexpected change in the actual marketing metric with respect to the expected marketing metric. In Figure 1, we present the conceptual framework of our study where we hypothesize the effect of marketing metric surprise on the stock market returns contingent upon firms' resource allocation signals and investors' screening of unanticipated marketing expenditure.

[Insert Figure 1 about here]

In general, marketing output metrics are associated with future cash flows (Srivastava et al. 1998). Increase in surprise in marketing output metrics are results of superiority in customer mindset metrics such as customer-based brand equity, customer satisfaction, etc. and these metrics are known to influence firm value (Anderson et al. 2004; Mizik and Jacobson 2008). Surprise in marketing metrics also indicates that firms would be able to extract higher values in the future from existing customer relationships (Kumar and Shah 2009), make use of brand as assets to appropriate higher values from customers (Edeling and Fischer 2016). In this case, the customer mindset metrics would affect stock market returns through marketing output metrics. Further, the signaling theory suggests the good news or unanticipated increase in marketing output metrics signals investors to revise their expectations to higher future cash flow

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(Srinivasan and Hanssens 2009). Finally, the investor attention hypothesis suggests that the good news in marketing metrics attract investor attention (Barber and Odean 2007; Xiong and Bharadwaj 2013), which influences the stock returns. Indeed, Lou (2014) finds that marketing resources, such as product market advertising, that impacts marketing metrics, has a spillover effect in grabbing the attention of investors and thus stock returns. A higher number of investors in the focal firm that surprise the market on marketing metrics help in spreading risks across these investors and the cost of capital decreases and hence increasing the stock returns. Therefore:

> H_1: Increase in marketing metric surprises increases stock market returns at the time of earnings announcement.

Moderating Effects

Drawing on the literature on information economics, we argue that there is an information asymmetry between managers and shareholders. Two solutions of information asymmetry have been suggested in the literature – *signaling* and *screening* (Löfgren et al. 2002). Building on the solution to information asymmetry, we argue that the information content in marketing metric surprise at the time of earnings announcement may vary based on the information provided by managers. The surprises in marketing metrics are a result of marketing efforts and resources, and therefore, managers signaling of and investors' screening of such marketing resource allocation may moderate the relationship between marketing metric surprises and stock returns.

Specifically, marketing resource allocations between value appropriation efforts and creation efforts is referred to as a firm's strategic emphasis, signals investors how values (profits) are extracted from a firm's customers (Mizik and Jacobson 2003). For instance, Netflix (a media

company) can allocate resources to create value by producing original content or it can spend resources in advertising to acquire more customers or extract higher values from existing customers. Therefore, the information content in marketing metric surprises may vary under the information signals about a firm's strategic emphasis. Further, investors may also screen a focal firm due to excessive utilization of marketing resources. The information content in marketing metric surprises may vary under unanticipated higher or lower marketing spending.

Moderating effect of signaling (strategic emphasis). Strategic emphasis refers to the relative emphasis on value appropriation compared to value creation strategy of firms. Firms signal both these essential strategies to the stock market, and each creates firm value in a unique way (Mizik and Jacobson 2003). The value creation strategy focuses on generating new sources of revenue through activities such as developing new products/services for customers. Similarly, value appropriation strategy focuses on extracting higher profits from existing customers by building brand assets (Edeling and Fischer 2016; Mizik and Jacobson 2003). In this context, strategic emphasis signals how firms utilize their resources through value creation and appropriation in fulfilling their future cash flow ability generated by marketing metric surprises. The relative emphasis on value appropriation compared to value creation helps in increasing stock returns (Frennea et al. 2019; Mizik and Jacobson 2003) and as well as reducing systematic risks (Han et al. 2017).

The future cash flow generated through marketing metrics surprise can potentially be achieved by both the value creation and value appropriation strategies. Value creation can develop new products/services for their existing customers and stabilize the cash flow created from marketing metrics surprises. Further, value appropriation strategies can help firms build competitive barriers by building brand assets, extract profit from existing relationships, and help

achieve the cash flow stability in the future. Marketing literature has credited value appropriation strategies as more cash stabilized strategies as they are important in mitigating both systematic and any idiosyncratic risks (Han et al. 2017). However, it is not certain which strategy would signal as more relevant to shareholders when assessing the information content of marketing metric surprises. Therefore,

H_2: Strategic emphasis on value appropriation relative to value creation negatively moderates the relationship between marketing metric surprise and stock market returns.
H_{2ALT}: Strategic emphasis on value appropriation relative to value creation positively moderates the relationship between marketing metric surprise and stock market returns

Moderating effect of screening (unexpected changes in marketing expenditure). Marketing investments are important indicators of the financial health of firms and also an important signal for investors for the firm's future growth. Unexpected changes in marketing expenditure refer to an unanticipated increase or decrease in marketing expenditure compared to the forecast. Advertising expenditure, which is an important component of the overall marketing expenditure, has gained a lot of attention in the marketing literature and its importance has been shown to increase firm value (Joshi and Hanssens 2010) and reduce systematic risks (McAlister et al. 2007). Further, marketing expenditure that includes components other than advertising such as salesforce expense, administrative expenses, etc. are also considered important for the investors (Kim and McAlister 2011; Kurt and Hulland 2013) which is important for a variety of industries' marketing metrics. However, consistent with finance and accounting literature, Kim and McAlister (2011) find that unexpected marketing expenditure negatively affects the stock market returns.

We argue that an unexpected increase in marketing expenditure would indicate lower cash flow stability in the future, mainly due to the marketing capability of firms. Firms that

surprise the stock market on marketing metrics signal their investors about the stability of future

cash flow generated by such surprises, as they require larger than expected marketing resources.

Firms with superior marketing capabilities can generate higher output metrics using limited

marketing resources (Dutta et al. 1999; Saboo et al. 2017). Firms that are more efficient in

marketing learn about customers' future needs and create products/services accordingly to

generate a stable cash flow (Vorhies et al. 2009). Therefore:

> H_3: Unanticipated marketing expense negatively moderates the relationship between
> marketing metric surprise and stock market returns.

Time-varying effect

Time-varying effect of earnings vs. marketing metric surprises. The earnings and marketing

metrics are disclosed by firms in their financial reports every quarter. Investors update their

beliefs about the value relevance in surprises of both financial and marketing metrics through

various learning mechanisms. Many companies are investing resources in building their

intangible assets such as brands, customer equity, etc., which might not be reflected completely

in the financial statements. In fact, accounting researchers find that financial statements may be

losing its relevance in the stock market over time. Specifically, the explanatory power of

earnings has been declining at the rate of 0.4% per year in the last four decades (Francis and

Schipper 1999) and the earnings response coefficient is also declining over time (Lev and

Zarowin 1999).

The part of earnings that is not being explained are mainly captured in the intangible

assets as reflected through the marketing output metrics (Amir and Lev 1996; Goodwin and

Ahmed 2006). We argue that as companies disclose their marketing outcome metrics and hence,

the marketing metric surprises information, the stock market learns more about a firm's growth prospective through the forward-looking marketing metrics that are not captured in the backward-looking financial earnings. Therefore,

H$_4$: The effect of marketing metric surprises affecting stock returns increases over time whereas the effect of earnings surprise decreases over time.

Data and Sample

We test the conceptual framework using data from S&P 1500 firms consisting of firms disclosing industry-specific marketing metrics and non-disclosing firms. S&P 1500 accounts for around 90% market capitalization of all US stocks. To understand the effect of marketing metric surprises on stock market returns, we would need consensus analysts' estimates of marketing metrics. Due to the wide use of financial metrics, analysts' consensus eps estimate data is easily available through Institutional Broker Estimates System (IBES). However, the same is not true for marketing metrics as IBES KPI data, which contains analysts' forecasts on marketing metrics, is sparsely populated. One other source of data on analysts' marketing metrics consensus estimates, *Factset Estimates on Demand* database, is well populated and therefore, is used in this study. The data on stock market returns are collected from The Center for Research in Security Prices (CRSP) database, and the data on other firm-specific control variables are collected from the COMPUSTAT database. The final compiled data is from 402 S&P 1500 firms that disclose key industry-specific marketing metrics and the panel data has around 11009 firm-quarter observations from a ten-year period 2007-2017.

Measures

Independent Variable. Marketing metric surprise measures the unexpected performance of firms

on marketing metrics. We measure it as the ratio of difference between actual and analysts'

consensus estimate to that of analysts' consensus estimate. The unexpected performance in

marketing metrics and eps can also be measured using time series models (Fried and Givoly

1982; Mizik 2010). The difference between the actual marketing metric at the time of earnings

announcement and the predicted value by the time series model is the unexpected performance in

marketing metrics. However, consensus analyst estimates are better forecasters compared to

time-series models because they have more timely and accurate information about the firm's

performances (Kothari 2001). The average marketing metric surprise is 3.6% and on average

55.4% times positive marketing metric surprises occur.

Dependent Variable. In line with the existing literature to capture the information content of

marketing metric or eps surprises at the time of earnings announcement, we use the stock

abnormal return around the event (Bartov et al. 2002; Srinivasan and Hanssens 2009). The

abnormal stock return at the time of earnings announcement is the equity value beyond the

expected returns using Fama-French three factor model (Fama and French 1993) including the

momentum factor (Carhart 1997).The abnormal return over a period of time around the earnings

announcement is cumulative abnormal returns (CAR). We write the combine four-factor model

as below:

$$AR_{it} = (R_{it} - R_{ft}) - [\alpha_i + \pi_{1i}(R_{mt} - R_{ft}) + \pi_{2i}SMB_t + \pi_{3i}HML_t + \pi_{4i}UMD_t + \varepsilon_{it}] \tag{1}$$

where; AR_{it} is the abnormal return, R_{it} is returns for firm i at time t, R_{ft} is risk-free rate, R_{mt} is the

average market returns, SMB_t is returns on portfolio of small stocks minus large stocks, HML_t is

returns on portfolio of high book-to-market ratio stocks minus low book-to-market, UMD_t is

Carhart's price momentum factor, and ε_{it} is disturbance term such that $E[\varepsilon_{it}]=0$.

Figure 2 panel A displays both average marketing metric and average earnings surprise

across different years showing adequate variance in both these variables across years. Further, it

also shows both earnings surprise and marketing metric surprise do not move in the same

direction across different quarters and is also evident from the binary correlation between the two

variables ($\rho_{EPSSUR,MMSUR} = 0.024$). Figure 2 panel B displays model free evidence showing

average abnormal positive/negative returns for industry-specific positive/negative marketing

metric surprises, and the number of for different marketing metrics.

[Insert Figure 2 about here]

Moderating Variables

Unexpected marketing expenditure. We use the difference between selling, general, and

administrative expense (SG&A) and research and development (R&D) expense as the total

marketing expenditure of firms. Using univariate time-series trends (Mizik 2010), we estimate

unexpected expense in marketing expenditure as difference between actual marketing expense

and predicted marketing expenditure from the time series model as below:

$$MktExp_{it} = \delta_0 + \delta_1 MktExpt_{it-1} + \sum Ind_i + \sum Qtr_t + \varepsilon_{it} \qquad (2)$$

Where, *MktExp* is the marketing expenditure of firm *i* in quarter *t*. We also use industry

and quarter fixed effects in the model. However, using an autoregressive model where the lagged

variable is as independent variable create a dynamic panel bias. To correct for the same, we use

the lagged difference in the dependent variable as the instrument, estimate the regression of

$MktExp_{it}$ on $\Delta MktExp_{it-1}$, and use the predicted value as the instrument (Blundell and Bond 1998).

Strategic emphasis. Following existing literature in Marketing (Han et al. 2017; Mizik and Jacobson 2003), we use the ratio of difference in advertising expenses (value appropriation) and R&D expenses (value creation) to total assets as relative baseline strategic emphasis of firms.[2] Similar to Equation 2, our measure of strategic emphasis is unexpected changes in the baseline strategic emphasis (Mizik and Jacobson 2003). A higher value of strategic emphasis indicates a firm's higher focus on value appropriation relative to value creation whereas a lower strategic emphasis refers to higher focus on value creation relative to value appropriation.

Control Variables

We use an extensive set of metric, firm and industry level control variable that may affect a firm's stock returns at the time of earnings announcement. Specifically, we include earnings surprise (Bartov et al. 2002), sales surprise (Jegadeesh and Livnat 2006), and stock recommendations (Altınkılıç and Hansen 2009) that would affect a firm's stock returns due to information content about future profitability in these variables. Further, we include the number of analyst following to account for the availability of information and reputation of firms (Diether et al. 2002). We also include total assets, market value to account for the size firms (Fama and French 1995). Finally, we include industry level controls such as competitive intensity to account for the level of competition and growth opportunities for firms (Hou and

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[2] Given that Compustat data has missing values for advertising and marketing expenditure, we follow (Malshe and Agarwal 2015) to impute these missing values. Specifically, we use ratio of advertising to SG&A for each industry and take the quarterly average. Finally, to impute missing values of advertising expense, we multiply the calculated industry- quarterly advertising to SG&A ratio average with the SG&A expense to get the missing advertising expense. We follow similar process for missing R&D expenditure.

Robinson 2006). We present the operationalization of the independent, dependent, moderating, and other control variables in Table 3.

[Insert Table 3 about here]

Methodology

To test hypotheses H_1 through H_3, we use an event study methodology where we estimate the effect of marketing metric surprise on cumulative stock returns at the time of the quarterly earnings announcement. Our sample of firms has repeated observations over different quarters, and we utilize panel-data methods to answer our research questions. However, our model suffers from two major challenges – sample selection bias of voluntary disclosure of marketing metrics and potential endogeneity of our focal variable marketing metric surprises. We next discuss these two issues and use two auxiliary regression estimations and incorporate them the main model (Equation 4).

Sample Selection

Our final sample of 402 firms disclosing their marketing metrics at the time of earnings announcement out of S&P 1500 firms suggests that managers are strategic in their disclosure behavior (Verrecchia 1983).[3] Therefore, we correct for this sample selection bias using a two-step Heckman correction (Heckman 1979) where we estimate a probit model in the first stage and take the inverse mill ratio (IMR) in the main model (Equation 4). Finance and accounting literature suggest a variety of reasons for a firm's higher information disclosure behavior. For

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[3] Firms are highly sticky in their disclosure behavior i.e., once majority of firms start disclosing their marketing metrics, they do not revert their decisions. Consistent with prior literature in marketing (Bayer et al. 2017; DeKinder and Kohli 2008), in our sample just 2.1% of firms have stopped disclosing their previously disclosed primary marketing metrics. We remove such firms for our analysis.

instance, factors such as institutional ownership, ownership concentration, marketing intensity, market value, among others are some of the known reasons for a higher information disclosure to mitigate any information asymmetry between managers and shareholders (Healy and Palepu 2001; Verrecchia 2001). However, our focus is to identify reasons to disclose primary industry specific marketing metrics.

Drawing on the literature on market orientation, we argue that firms that are more market oriented would make use of industry-specific marketing metrics to assess their performance (Ambler et al. 2004) and would also disseminate the same to their shareholders. Therefore, we use a firm's market orientation as a primary reason to disclose its marketing metrics. Following related literature, we measure a firm's market orientation as the ratio of the total number of words related to a firm's market orientation to the total words in their 10-Ks (Noble et al. 2002; Saboo and Grewal 2013). Moreover, a firm's market orientation is not new information to the stock market. The market reacts only to new information in the stock market. Therefore, a firm's market orientation would not affect abnormal returns at the time of earnings announcement satisfying the exclusion restriction of Heckman correction. In Table 1A of Appendix A, we describe the words used to measure market orientation of firms. Further, we also use disclosure prevalence in the industry as an additional exclusion variable where we argue that there are certain industries where disclosure of marketing metrics is prevalent because of which focal firms are likely to disclose their marketing metrics. Moreover, as the industry is a large entity it does not impact a focal firm's stock returns and therefore, disclosure prevalence also satisfies both the relevancy and exclusion criteria. Formally, we present the first stage probit model as below.

$$\Pr(MM\_Disclose_{it} = 1) = \Phi(\Delta'Z_{it}) = \alpha_0 + \alpha_1 MarketOrientation_{it} +$$

$$\alpha_2 Disclosure\ Prevalence + CONTROLS_{it} + \vartheta_{it}, \tag{3}$$

Where, *MM_Disclose* is a variable equal to 1 if the firms disclose its key industry-

specific marketing metric and 0 otherwise. We estimate the IMR as $\lambda_{it} = \frac{\phi(\widehat{\Delta'Z_{it}})}{\Phi(\widehat{\Delta'Z_{it}})}$ and include it

in the main model (Equation 5) account for the selection bias.

Addressing endogeneity

Managers may strategically manage their earnings for several reasons including stock

compensation (Guidry et al. 1999), to improve valuations around seasoned equity offerings

(Kothari et al. 2015). Similarly, marketing managers have incentives to manage their marketing

metric performances to get higher incentives, which is also evident from our sample that has an

overall positive marketing metric surprise of 3.6%. Recognizing that firms may strategically

choose to beat analyst expectations on marketing metrics would raise concerns of endogeneity of

marketing metric surprise and we correct for the same using control function approach (Petrin

and Train 2010). The first step is to estimate an auxiliary regression where we estimate the

likelihood of marketing metric surprise, the endogenous variables, using exogenous variables --

strategic emphasis, unexpected marketing expenditure, discretionary accruals, marketing myopia,

market value, market to book ratio, eps, eps surprise, sales, and sales surprise and use the

residuals ($\widehat{\mu_{it}}$) in the main model (Equation 4).

Furthermore, in line with the exclusion restriction of the control function approach

(Petrin and Train 2010), we include lagged industry average (peer) marketing metric surprises.

Consistent with the institutional isomorphism theory (DiMaggio and Powell 1983), managers

imitate their peers in the case of uncertainty around the decision whether to surprise the

marketing metrics or not. This is also in line with theories of and industry mindsets (Phillips 1994) and neo institutional theory (Meyer and Rowan 1977) that managers mimic their peers and gain legitimacy to counter environmental pressure. Furthermore, lagged industry average marketing metric surprises (*lagPeerMMSUR*) would not affect the cumulative abnormal returns of the focal firm in the current earnings season. This is mainly due to industry being a large enough entity to affect one firm's returns and there is a time lag in the effect, which according to the efficient market hypothesis should affect returns in the lagged quarter and not the present quarter (Fama 1970). Therefore, *lagPeerMMSUR* serve as valid instrument i.e., although it is correlated with the endogenous variable marketing metric surprise (relevance), it is not correlated with the error and does not directly affect the dependent variable (exogeneity). We present the empirical support of these claims in the results section. Formally, we write the second auxiliary regression model as:

$$MMSUR_{it} = \delta_0 + \delta_1 lagPeerMMSUR_{it} + CONTROLS_{it} + \mu_{it}, \tag{4}$$

Next, we specify a random-effects model regression that accounts for unobserved heterogeneity and augment the model to correct for sample selection bias and potential endogeneity correction. Finally, we account for industry fixed effects to account for observed heterogeneity and time fixed effects to account for any seasonal changes.

$$
\begin{aligned}
CAR_{it} = {} & \beta_0 + \beta_1 MMSUR_{it} + \beta_2 SE_{it} + \beta_3 \Delta MktExp_{it} + \beta_4(MMSUR_{it} \times SE_{it}) + \\
& \beta_5(MMSUR_{it} \times \Delta MktExp_{it}) + \beta_6 EPSSUR_{it} + \beta_7 SALESSUR_{it} + \\
& \beta_8 \Delta Recommendation_{it} + \beta_9 NUMEST_{it} + \beta_{10} EPS_{it} + \beta_{11} MM_{it} + \beta_{12} AT_{it} + \\
& \beta_{13} MV_{it} + \beta_{14} Sales_{it} + \beta_{15} HHI_{it} + \widehat{\vartheta_{it}} + \widehat{\mu_{it}} + \gamma Ind_j + \eta YearQtr_t + \varepsilon_{it},
\end{aligned} \tag{5}
$$

where; *i* is the firm, *t* is year-quarter time, *MMSUR* is marketing metric surprise, *SE* is strategic

emphasis, $\Delta MktExp$ is unexpected change in marketing expenditure, *EPSSUR* is the earnings

per share surprise, *SALESSUR* is sales surprise, $\Delta Recommendation$ is stock recommendation,

NUMEST is the number of analyst estimates or analyst coverage, *EPS* is the baseline earnings

per share, *MM* is the baseline marketing metric output, *AT* is total assets, *MV* is market value,

Sales is total sales, and *HHI* is competitive intensity. Since we use the estimated values of IMR

and residuals from the endogeneity correction term, we use bootstrapped standard errors.

Time Varying-Effect Model

To test hypothesis H4, we model the time-varying effect of marketing and earnings

surprises explaining stock returns. Many marketing studies have utilized time-varying effect

model to understand the changing role of marketing actions such as marketing expenditure

(Osinga et al. 2010), social media marketing (Kumar et al. 2017), and marketing resource

allocations (Saboo et al. 2016). We model the time-varying effect model as:

$$CAR_{ij} = \beta_0(t_{ij}) + \beta_1(t_{ij})X_{ij} + CONTROLS + \varepsilon_{ij}; \quad i=1,\ldots,\text{n}, j=1,\ldots,k_i \qquad (6)$$

where, *CAR$_{ij}$* is the cumulative stock returns and *X*$_{ij}$ are earnings and marketing metric surprises

for firm *i* in quarter *t$_{ij}$*, n is the total number of firms, *k*$_i$ is the number of repeated observations

for firm *i*, *t$_{ij}$* is the measurement time for *i$_{th}$* firm's *jth* observation, and ε_{ij} is the random error

term which is normally distributed. $\beta_1(t_{ij})$ represents the time-varying effect of the surprises

(earnings and marketing metric surprises).

To estimate the time-varying effect model, we use a semiparametric regression estimation

with smoothing splines approach to recover the parameter $\beta_1(t_{ij})$. Specifically, we use cubic

penalized-spline (P-spline) that has advantages over other smoothing methods in terms of

flexibility, computational efficiency, and it does not show boundary effects and has been used widely in the various studies in marketing (Saboo et al. 2016; Sloot et al. 2006). Further, we need to specify number of knots or truncated points between time intervals used in the smoothing method. Although P-spline method is not sensitive to selection of number of knots, we use guidance by Wand (2003) and select 10 knots as the minimum number of 35 and (40/4=10), where 40 is the number of time-periods (quarters) in our data.

Industry-Specific Effects Model

To answer our research question about the relative impact of earnings surprise vs marketing metric surprise across various industries, we estimate our main model (Equation 6) using hierarchical Bayesian multivariate regression to recover industry-specific parameters. In other words, instead of recovering average parameters (β) across industries, we recover industry-specific parameters (β_j), where j represents industries.[4] Specifically, we use hierarchical specification for β_j, such that $\beta_j \sim MVN(\bar{\beta}, \Omega)$ where MVN is multivariate normal distribution. In this way, we can estimate industry-level coefficients and at the same time consider overall average effects, $\bar{\beta}$. Further, we draw the industry average parameters using a multivariate specification $\bar{\beta} \sim MVN(\bar{\bar{\beta}}, 0)$. For all the parameters, we assume vague conjugate priors. For the estimation, we use two MCMC chains with 50,000 draws where we use 40,000 for burn-in period and remaining 10,000 for estimating posterior means.

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[4] Since there are different marketing metrics in different industries and an increase in marketing metric surprise in one industry-specific marketing metric may be assessed differently than other industry. Therefore, for relative information content across industries, we operationalize marketing metric surprises as dummy variable where 1 indicates non-negative surprises and 0 indicates negative surprise. Similarly, we use dummy variable operationalization for eps surprises for industry-specific effects model.

Results

Auxiliary Estimation Results

In Table 4, we present first stage probit model results where we find that our exclusion variables market orientation ($\beta = 65.15$, $p<0.01$) and disclosure prevalence ($\beta = 5.04$, $p<0.01$) are significant predictors of a firm's decision to disclose its marketing metrics at the time of earnings announcement. Both the market orientation nature and disclosure prevalence in the industry increase the voluntary disclosure of marketing metrics of a focal firm. The inclusion of market orientation and disclosure prevalence variables improve the hit-rate by 12.1% giving confidence in the relevancy of these instruments. Further, we find that our control variables that explain the disclosure are along the expected lines. Specifically, we find that ownership concentration decreases ($\beta = -0.995$, $p<0.05$) marketing metrics disclosures as there is a higher potential for agency conflicts when ownership is in fewer hands (Fama and Jensen 1983), whereas higher marketing intensity ($\beta = 1.145$, $p<0.01$) improves such a disclosure as managers attempt to reduce information asymmetry. Similarly, we observe that a higher analyst coverage ($\beta = 0.032$, $p<0.01$) and higher percentage of shares held by institutional shareholders ($\beta = 0.0004$, $p<0.1$) increase voluntary disclosure of marketing metrics as these firms are highly monitored by analysts and have a higher reputation.

[Insert Table 4 about here]

Next, as discussed earlier in the second auxiliary equation, we test exclusion restriction of instruments empirically by assessing correlations between the instrument and the endogenous and dependent variable of our main model. We find that the correlation between *lagPeerMMSUR* and the focal firm's marketing metric surprise is positive ($\rho = 0.31$) and with CAR is negligible

($\rho = 0.008$). These results provide additional confidence to our theoretical arguments that the instrument, lagged industry average marketing metric surprises, is a valid instrument for the endogeneity correction model.

Main-model Estimation Results

We present the results of main model in Table 4. First, we find that the coefficient of IMR ($\beta = .002$, $p<0.1$) and the endogeneity correction term of marketing metric surprise ($\beta = .015$, $p<0.05$) are both significant suggesting that our assumptions of these modeling challenges are genuine, and we corrected for the same. Next, in line with hypothesis H_1, our results indicate that marketing metrics surprise has a positive effect on 3-days CAR at the time of earnings announcement.[5] This result suggests that there is an information content in the marketing metric surprises and investors react positively to increase in such surprises hoping that there will be a higher future cash flow from these marketing metric surprises. Consistent with the existing literature (Bartov et al. 2002; Easton and Harris 1991), an increase in eps surprise affects CAR positively ($\beta = .015$, $p<0.01$). It is important to note that that the impact of eps surprise is significantly higher than marketing metric surprise. The Wald test confirms that the effect of earnings surprise on stock returns is significantly higher than the marketing metric surprise ($\chi^2(1) = 14.3$, $p<0.01$). We also find that there are positive synergistic effects of marketing metric and eps surprises ($\beta = .012$, $p<0.01$). In other words, firms that have higher than expected profitability are able to get higher abnormal stock returns by surprising the marketing on marketing metrics.

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[5] Our results are consistent with other event windows: 1-day (0, 1], and 2-days [0, 1].

Next, we discuss the results of our moderating effects of firm's resource allocation signals and investors' screening cues. First, regarding the moderating hypothesis H_2 of a firm's strategic emphasis on value appropriation relative to value creation (resource allocation signals), where we theoretically argue that the moderating effect may be positive or negative. However, we empirically find that there is a positive moderating effect ($\beta = .484$, $p<0.01$) of strategic emphasis on relationship between marketing metric surprise on stock returns. This result indicates that firms that the cash flow generated from marketing metric surprises are stabilized in future when firms' relative strategic emphasis is on appropriating higher values as compared to creating higher values. The result is similar to findings from prior literature on strategic emphasis (Mizik and Jacobson 2003) that suggests firms having a higher than expected earnings surprise are able to get higher stock returns by focusing on value appropriation activities. Our findings extend these results to marketing metric surprises as well.

Further, in line with moderating hypothesis of investor's screening of unexpected marketing expense (H_3), we find that the effect of marketing metric surprises on stock returns decreases with investors' screening of increase in unexpected marketing expenditure ($\beta = -.109$, $p<0.01$). This result indicates that a higher unexpected marketing expenditure lowers investors' information uncertainty about lower marketing capabilities of firms in stabilizing future cash flow that is generated from an increase in marketing metric surprises. This result is in line with existing studies in marketing that an unexpected increase in marketing expenditure such as salesforce expense results in lower stock returns (Kim and McAlister 2011).

[Insert Table 5 about here]

Time-Varying Effects Results

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To test the hypothesis on time-varying parameters of earnings and marketing metric surprises (H_4), we present the TVEM model results in Figure 3. Our results capture temporal variations in the stock returns to both earnings and marketing metric surprises. Specifically, the results highlight that although the effect of earnings surprise is positive throughout it diminishes over time. At the beginning of our study timeframe the parameter value of earnings surprise was closer to $\beta = .02$ and towards the end the parameter approaches closer to $\beta = .01$. It is important to note that the average parameter estimate of earnings surprise is $\beta = .015$ (Figure 3) is closer to middle of these two numbers.

On the other hand, the effect of marketing metric surprise is close to $\beta = .0001$ in the beginning and towards the end it almost approaches $\beta = .01$. Also, it is important to know that the average parameter estimate $\beta = .004$ (Table 5), is closer to the middle value of these two extremes. These findings are consistent with our arguments that the effect of earnings surprises is decreasing over time as firms as firms spend significant resources in building their intangible effects that are being captured over time through marketing metric surprises.

[Insert Figure 3 about here]

Industry-specific results

Finally, our industry-specific coefficients indicate that across different industries, the effect of marketing metric surprise is positive (the posterior mean estimates are positive does not contain zero) except for the education industry. In Figure 4, we present industry-specific coefficients for both marketing metric surprise and earnings surprise for different industries. In half of the industries in our analysis, the effect of marketing metric surprise is not significantly different than or higher than earnings surprise. Specifically, for the media and telecom industry

where the effect of marketing metric (number of subscribers) surprise is significantly higher compared to earnings surprise (the 95% confidence interval is [0.013, 0.045] and does not contain zero). On the other hand, the 95% confidence interval of posterior mean (β = .006) of earnings surprise in telecom and media industry is [0.002, 0.019]. The Wald test of the difference in parameters of marketing metric and earnings surprise of telecom industry corroborates that the difference in the posterior mean has 95% confidence [0.01, 0.048] and does not contain 0. This is mainly due to the reason that the number of subscribers is an indicator of a higher future cash flow as compared to the earnings surprise. These findings are also consistent with the literature that has used number of subscribers as key metric to measure customer based valuation of firms (Gupta et al. 2004; McCarthy et al. 2017).

[Insert Figure 4 about here]

Discussions

Propensity score matching analysis

Although several event studies are causal in nature (Srinivasan and Hanssens 2009), the effect of any surprises for event studies around earnings announcements may be contaminated due to multiple announcements in the same time frame. Therefore, to establish the effect of marketing metric surprises and disentangle the effects of other announcements, we follow a propensity score matching analysis (Sorescu et al. 2017). We use the dummy variable of marketing metric surprise as the treatment variable where 1 indicates if the firms have been treated with non-negative marketing metric surprise and 0 indicates negative marketing metric surprise or no treatment. We use different matching criteria such as nearest neighbor matching,

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radius marching, kernel matching, and stratification matching and estimate the average treatment

effect (ATE) of marketing metric surprise (Caliendo and Kopeinig 2008).

We find that the ATE across different analysis are in line with our main findings.

Specifically, we find that the range of ATE of marketing metric surprise from our analysis based

on different matching methods are in the range [0.003, 0.006]. Further, all these ATEs are

significant at 95%. The analysis offers additional confidence in our previous results that

marketing metric surprise has a positive effect on the stock returns at the time of earnings

announcement beyond the effects of other confounding factors.

Robustness

Alternate model specification. We estimate the alternate model specification and compare the

results with our proposed models on Akaike Information Criterion (AIC). We find that our

proposed model (*AIC* = -15268) performs better than a model without our focal variable

marketing metric surprise (*AIC* = -15259), without correction for sample selection bias (*AIC* = -

15265), and endogeneity correction (*AIC* = -15261)*.*

Alternate variable operationalization. We measure our focal independent variable, marketing

metric surprises, in alternate ways and check for consistency of our results. First, we measure

marketing metric surprises as the dummy variable where 1 represents the positive marketing

metric surprise and 0 represents the negative or no marketing metric surprises. We estimate

Equation 5 with the dummy variable and find that the marketing metric surprise positively

affects the stock market returns (β = .014, $p<0.01$). Next, we measure marketing metric surprises

using autoregressive model (Mizik 2010) and measure marketing metric surprises as the

difference between actual marketing metric and that predicted from the model (instead of

consensus analysts' estimates). We find that our results are in line with the earlier results and there is a positive effect of marketing metric surprises.

Contributions

Theoretical Contributions

The marketing-finance interface has been touted for the role of marketing actions and outcomes in increasing shareholder value. Prior studies in marketing focus on both marketing actions such as advertising expense, salesforce expense as well as marketing outcomes such as customer satisfaction, customer equity, and establishes that these marketing efforts are important in improving shareholder value. However, the stock market mainly focuses on marketing outcomes that are value relevant to investors. Therefore, to understand the effect of such marketing metrics and in order to accurately capture the role of marketing in explaining stock returns, we also contrast it with the most important financial metric that stock market considers (i.e., earnings surprise) in assessing a firm's value. This is the first study to introduce the concept of marketing metric surprise in assessing a firm's stock returns. We compile industry-specific marketing metrics that are value relevant to the stock market for each industry in our study.

The study contributes mainly to the literature marketing-finance interface by introducing and signifying the concept of marketing metric surprises at quarterly earnings announcements. We argue that marketing metric surprises are an indicator of higher future cash flow and therefore investors react to higher marketing metric surprises. Specifically, we contribute to the literature on information economics indicating that marketing metric surprise has an information and that good news (higher marketing metric surprises) results in higher stock returns. The study also sheds light on the information asymmetry literature suggesting that the information content

in marketing metric surprise increases with strategic emphasis on value appropriation activates relative to value creation activities. Further, the study also adds to the resource-based view of firms that firms with a higher marketing capability i.e., those using a higher than expected marketing expenditure would get lower returns from their marketing metric surprises. We argue that the future cash flows generated by marketing metric surprises can be stabilized by signaling (of strategic emphasis) and screening (of unanticipated marketing expenditure) mechanisms by firms.

Finally, our study also contributes to the literature on market-based assets (Srivastava et al. 1998) where we investigate temporal variations in the effects of marketing metric surprises and industry-specific effects (relative information content of marketing metric surprises). We argue that firms are increasingly spending resources in building their intangible assets and that investors learn about this mechanism through information content in marketing metric surprises. Therefore, we observe an increasing effect of marketing metric surprises affecting stock returns of firms over time whereas the effect of earnings surprise decreases over time. Finally, our results highlight that in half of the industries, the effect of marketing metric surprises is not different than the effect of earnings surprise. Specifically, industries with higher intangible assets (e.g., telecommunication and media firms) have significantly higher returns to marketing metric surprises as compared to earnings surprises.

Managerial Contributions

The study is a substantial step towards marketing accountability in the firm specially related to quarterly earnings. During the earnings call and earnings report, the role of marketing has been almost nonexistent. This study would be the first to bring marketing managers and their role to the forefront. Managers should not only focus on disclosing key marketing metrics but

also aim to surprise the stock market with respect to these metrics so that the surprise will have higher stock returns. Specifically, we find that a 1% increase in marketing metric surprise would increase the cumulative abnormal return by $ 3.6 Million at the time of earnings announcement. These calculations are based on the total shares traded around earnings announcement and the average share price. In the media and telecom industry where marketing metrics surprises are superior to earnings surprises, a positive surprise in the number of subscribers increases the returns by $ 11.8 Million.

Finally, our findings also highlight the increasing importance of marketing metric surprises over time. The study attempts to divert both investors and managers' attention from traditional earnings surprises to marketing metric surprises by highlighting the increasing importance of marketing metric surprise whereas decreasing effect of earnings surprises. Specifically, we show that the effect of earnings surprises on stock returns declines by almost half (0.021 to 0.01) during the timeframe of our study (2007 to 2017). On the other hand, during the same timeframe, the effect of marketing metric surprises affecting stock returns increases significantly.

Conclusion

In this study, we attempt to assess the impact of firms' performance on marketing metrics that exceeds consensus analysts' expectations on marketing metrics i.e., marketing metric surprises on the stock market returns. Our findings suggest that marketing metric surprises act as good news to investors. However, its impact on the stock returns is contingent upon the firm's marketing resource allocation signals and investors screening cues of unanticipated marketing expenditures. Further, the study highlights the increasing time-varying effects of marketing

metric surprises whereas decreasing effects of earnings surprises. Finally, the study compares the relative information content of marketing metric surprises compared to earnings surprises across various industries. We find that for the telecommunication and media industry marketing metric surprises are superior to earnings surprises in explaining stock returns. The findings of our study are significant to marketing managers who can efficiently utilize resources to beat the market expectations. Marketing executives can also benefit from our findings in establishing the accountability of the marketing department in the capital market.

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Table 1**: Select Studies on Marketing Metric Surprises**

Authors	Marketing Metric	Marketing Output Metric	Objective Marketing Metric	Marketing metric surprises	Analyst estimates of the marketing metric	Industry	Key Findings
Joshi and Hanssens (2010)	Advertising Expense	No	Yes	No	No	Personal Computer and Sporting Goods	Advertising expense affects stock returns directly and indirectly through sales and profits
Kim and McAlister (2011)	Advertising and Salesforce expense	No	Yes	Yes	No	Multi	Unexpected growth in advertising spending above the advertising response threshold positively affects stock returns. Stock market reacts negatively to unexpected increase in salesforce expense.
Mizik and Jacobson (2008)	Customer based brand equity	Yes	No	Yes	No	Multi	Brand relevance and energy positively affects abnormal stock returns
Anderson, Fornell, and Mazvancheryl (2004)	Customer Satisfaction	Yes	No	No	No	Multi	Customer satisfaction positively affects shareholder value
Kumar and Shah (2009)	Customer Lifetime Value	Yes	Yes	No	No	Retail Clothing and High-tech	Customer lifetime value predicts market capitalization of firms
McCarthy, Fader, and Hardie (2017)	Customer Acquistion and Retention	Yes	Yes	No	No	Media	Customer acquisition and retention predicts market capitalization of firms
Tuli, Mukherjee, and Dekimpe (2012)	Similar Store Sales Growth	Yes	Yes	Yes	No	Retail	Surprise in comparable store sales growth increases abnormal stock returns
This Study	**Industry-specific marketing metrics**	**Yes**	**Yes**	**Yes**	**Yes**	**Multi**	**Industry-specific marketing metrics positively affects cumulative abnormal returns**

Table 2**: Definition of Industry-specific Marketing Metrics**

Marketing Metrics	Definition	Industry	Support for Value Relevance
Same-store sales	Growth in revenue by retailers' existing stores in each quarter	Retail	(Tuli et al. 2012)
Subscribers	Total number of subscribers in the current quarter	Media, Telecom	(McCarthy et al. 2017)
Monthly Active Users	Number of active users using the platform in that quarter on monthly basis	Social Media	(McCarthy et al. 2017)
Delivery Units	Number of home units delivered in the quarter	Home builders	(Francis et al. 2003)
Same store admissions	Growth in number of patient admissions in existing hospitals in each quarter	Hospitals	(Tuli et al. 2012)
New student enrollment	Number of new students enrolled in each quarter	Education	(McCarthy et al. 2017)
Deposits	Total number of deposits in a bank in each quarter	Banks	Hewett et al. (2013)
Available seat miles	Number of seats times distance flown	Airlines	(Francis et al. 2003)
Total production	Total oil production in each quarter	Oil	(Francis et al. 2003)
Production per day	Total production per day of oils and minerals	Oil and Mining	(Francis et al. 2003)

Table 3: **Variable Operationalization and Data source of Key Variables**

Conceptual Variable	Operationalization	Data Source
Stock returns	3 days cumulative abnormal returns [-1,1] at the time of earnings announcement	CRSP
Marketing metric surprise	Percentage difference in marketing metrics relative to consensus analyst estimates of marketing metrics	Factset
Strategic emphasis	Ratio of difference between value appropriation (advertising expense) and value creation (R&D expense) to total assets	Compustat
Unexpected marketing expenditure	Difference between actual and expected marketing expense estimated through autoregressive model	Compustat
Earnings surprise	Percentage difference in earnings per share relative to consensus analyst estimates of earnings per share	Factset
Sales surprise	Percentage difference in sales relative to consensus analyst estimates of sales	Factset
Recommendation	Difference between current stock recommendation and past stock recommendations estimated through autoregressive model	IBES
EPS	Actual earnings per share value (baseline)	Factset
Marketing metric	Actual marketing metric value (baseline)	Factset
Analyst coverage	Total number of analysts providing forecasts	Factset
Assets	total assets of the firm	Compustat
Market Value	Number of outstanding shares multiplied by share price at closing	CRSP
Sales	total sales of the firm	Compustat
Competitive intensity	Herfindahl-index measured as sum of squared sales of top four players in the four-digit SIC code industry	Compustat

Table 4: **Parameter estimates for the Heckman Correction model (Equation 3)**

	Parameter Estimates	Std. Error
Market Orientation	65.158***	17.567
Disclosure Prevalence	5.046***	0.173
Ownership Concentration	-0.995**	0.483
Institutional Ownership %	0.0004*	0.0002
Marketing Intensity	1.145***	0.257
Leverage	-0.0002***	0.003
Analyst Coverage	0.032***	0.006
Market Value	0.0007	0.000
Market to Book Ratio	0.0004	0.001
Assets	0.0003	0.000
Intercept	0.0162	0.021
Industry Fixed Effects	Yes	
Year Fixed Effects	Yes	

Notes: ***$p < .01$ (two-tailed)
       **$p < .05$ (two-tailed)
       *$p < .1$ (two-tailed)

	Marketing metric Surprise only	Marketing metric and earnings surprise	Full Model
Marketing Metric Surprise (*MMSUR*)	0.009***	0.008***	0.004**
EPS Surprise (*EPSSUR*)		0.014***	0.015***
MMSUR × *EPSSUR*			0.012***
Strategic Emphasis (*SE*)			-0.067
MMSUR × *SE*			0.484***
Unanticipated Marketing Expense ($\Delta MktExp$)			0.001
MMSUR × $\Delta MktExp$			-0.109***
SALESSUR			0.013***
Recommendation ($\Delta Recommendation$)			0.002
Analyst Coverage (*NUMEST*)			-0.004
EPS			0.001***
Marketing Metric (*MM*)			-0.001
Assets (*AT*)			-0.002
Market Value (*MV*)			-0.04
Sales			0.309*
Competitive Intensity (*HHI*)			0.003
IMR ($\widehat{\vartheta_{\iota t}}$)			0.002*
Endogeneity Correction Term ($\widehat{\mu_{\iota t}}$)			0.015**
Intercept	0.002***	0.002***	-0.026
Industry Fixed Effects		Yes	
Year-Quarter Fixed Effects		Yes	

Notes: ***$p < .01$ (two-tailed)
      **$p < .05$ (two-tailed)
      *$p < .1$ (two-tailed)

Figure 1: **Conceptual Framework of stock market returns to marketing metric Surprises**
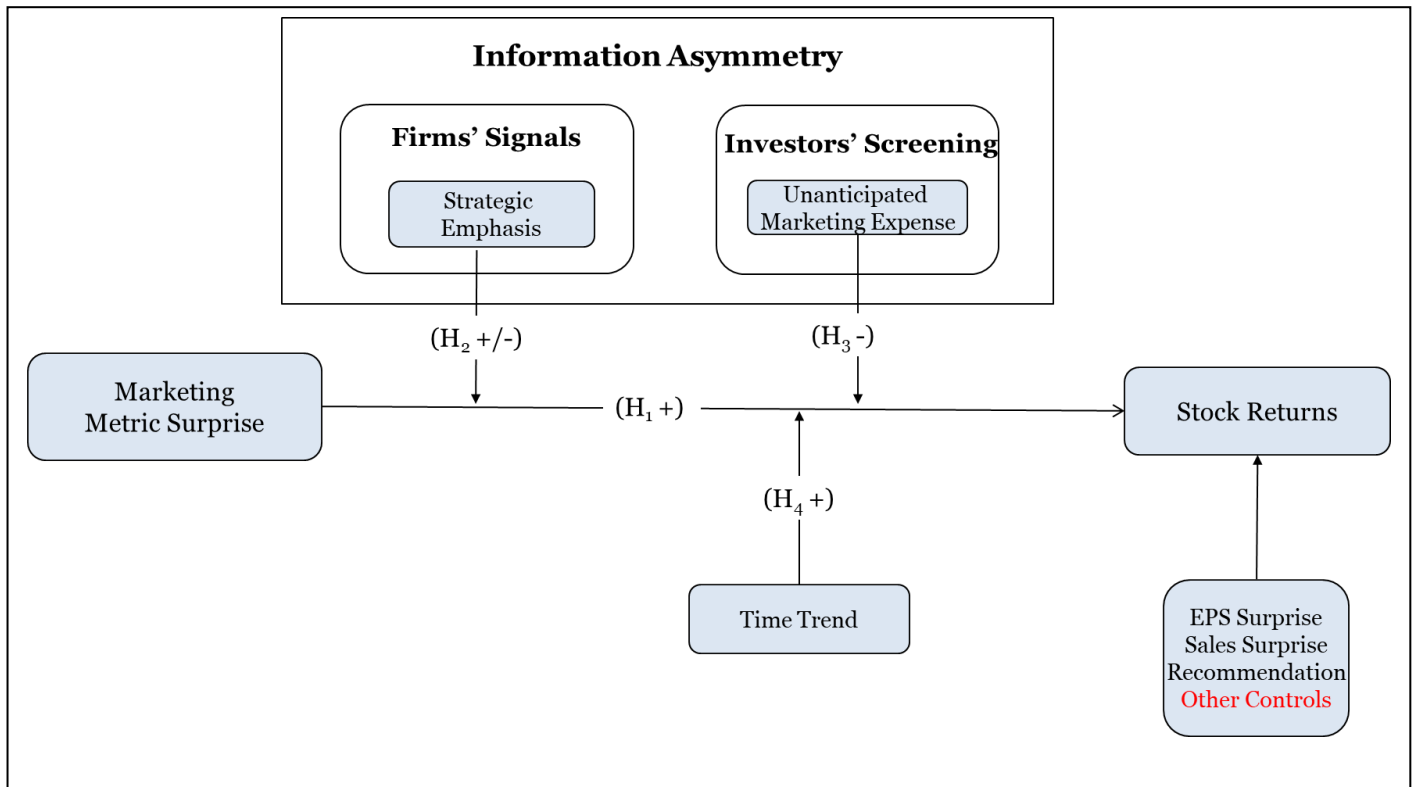
Figure 2: **(A) Time-series plot of earnings and marketing metric surprise and (B) model free evidence of relationship between marketing metric surprise and abnormal stock return across different industries**
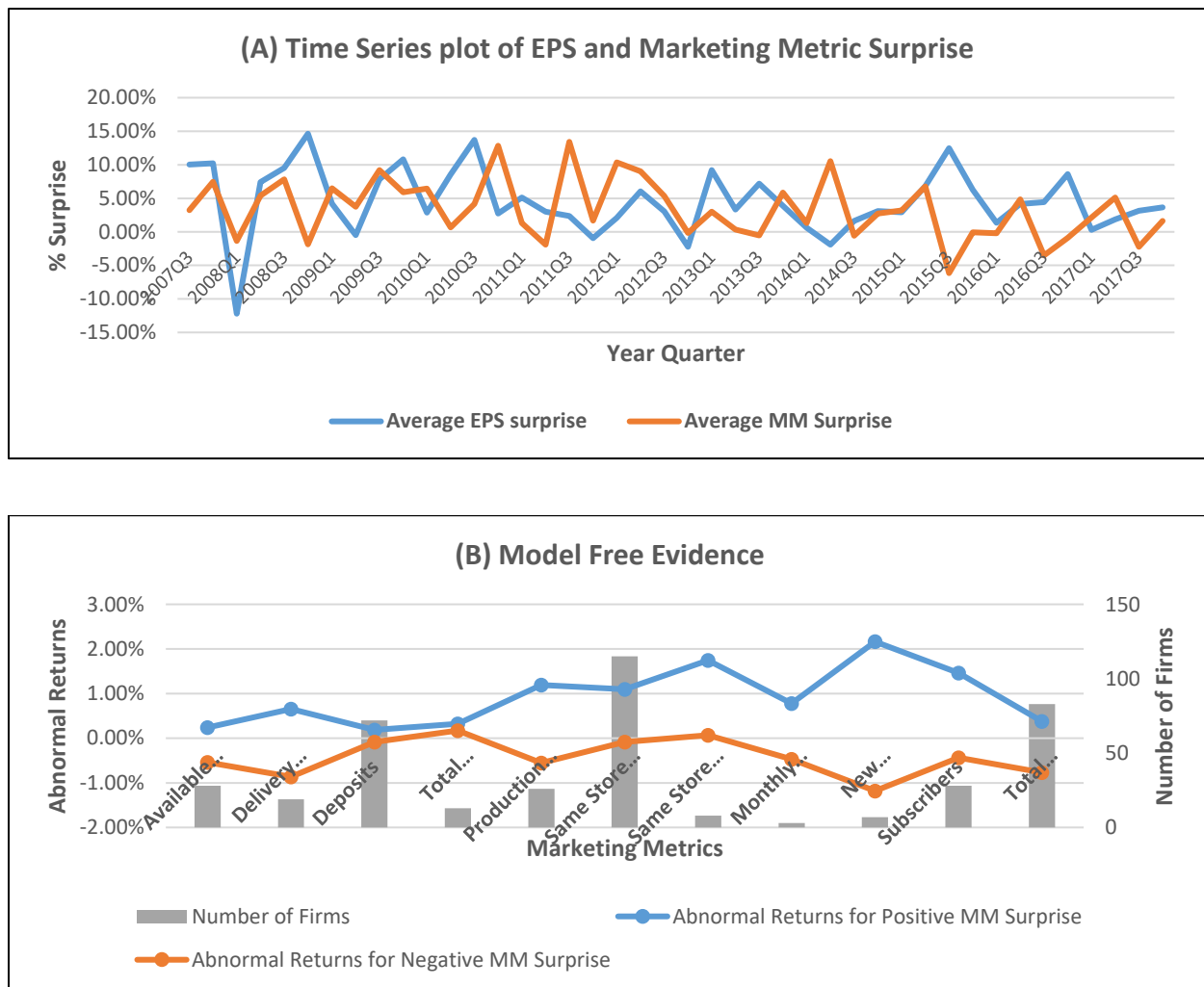
Figure 3: **Industry-specific coefficient *curve and 95% confidence band* of marketing metric surprise and earnings surprise**
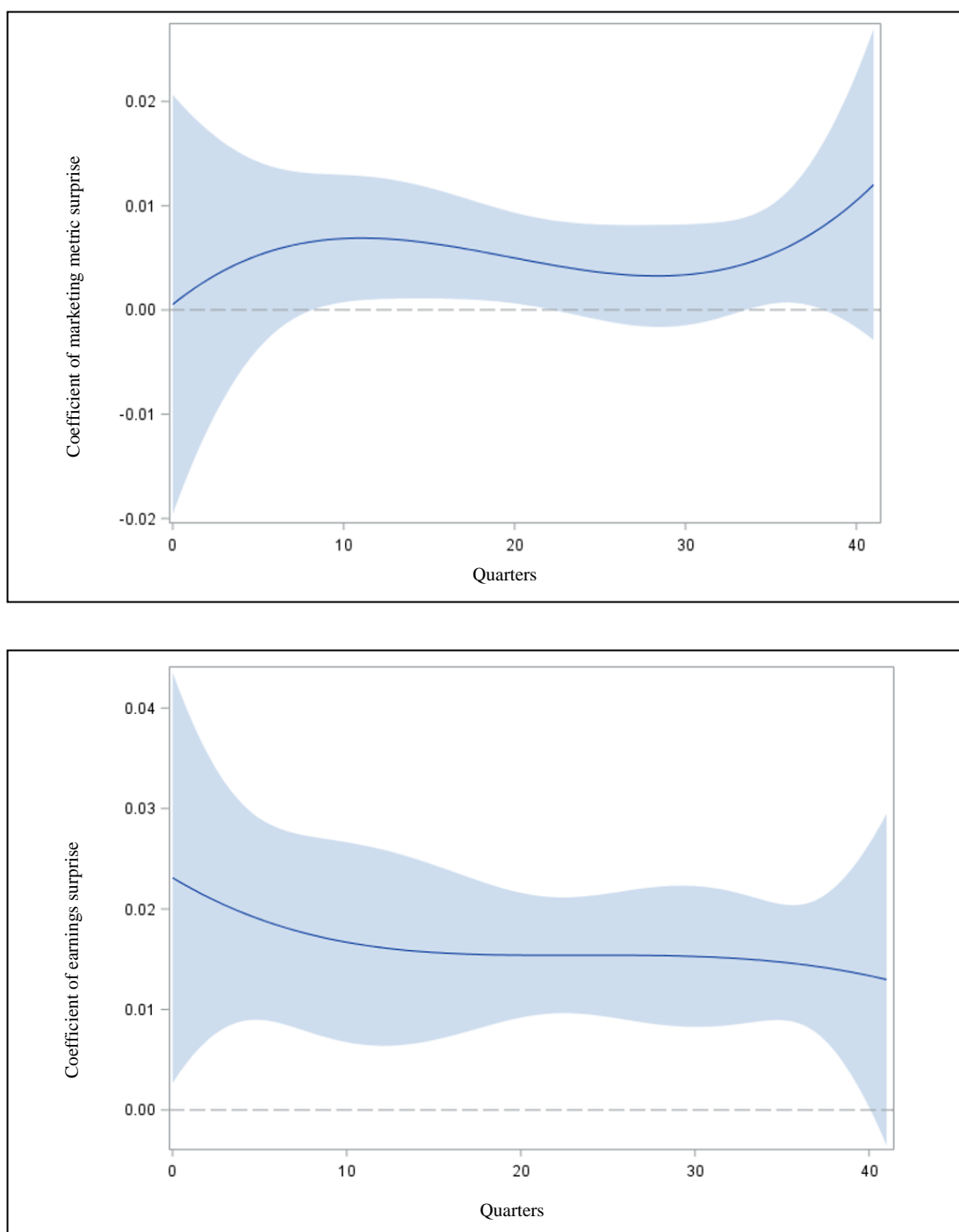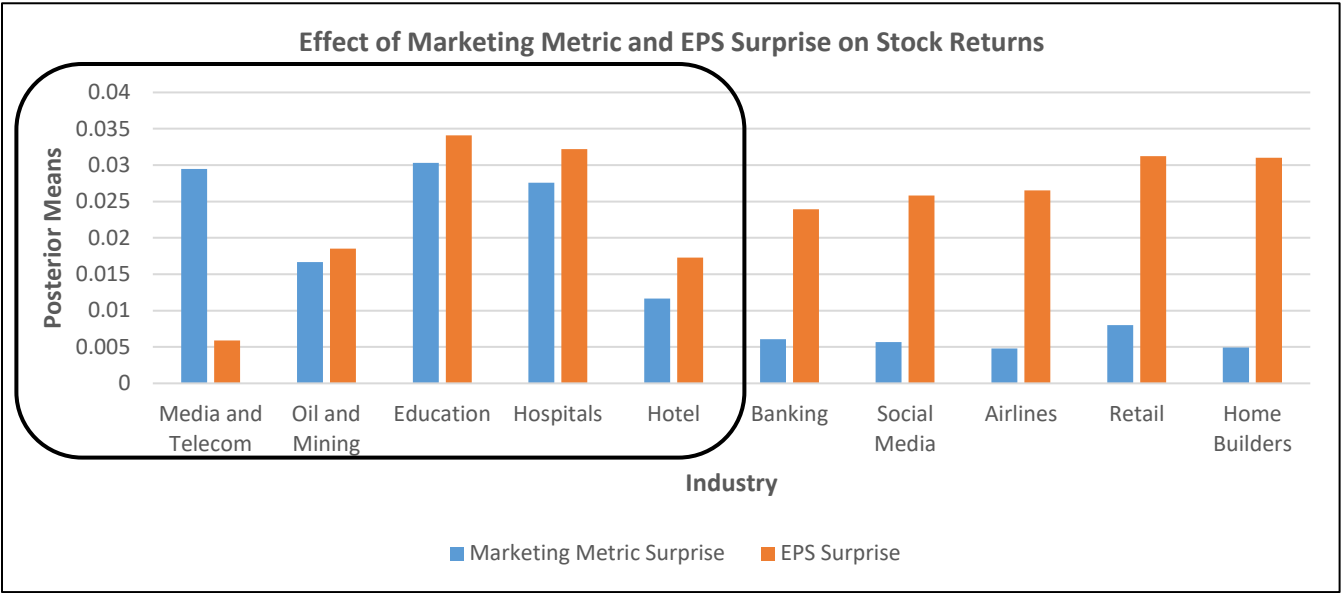
Figure 4: **Industry-specific coefficient of marketing metric surprise and earnings surprise**

Appendix A

Table A1: List of words used to measure Market Orientation of firms

Customer Oriented	Competition Oriented
customer base	compet*
Customers lost	peer*
consumer*	position*
customer*	barrier entry
customer acqui*	market
customer retention*	marketplace
engage*	competitive advantage
customer base	strateg*
customer satisfaction	effective*
brand	threat*
brand equity	
Awareness	
knowledge	
marketing expen*	
advertising expen*	
marketing spend*	
advertising spend*	
customer service	
maintain customer relation	
subscrib*	
customer Profitability	
word of mouth	
customer equity	
customer loyalty	