

MARKETING CAPABILITY, ANALYST RECOMMENDATIONS, AND FIRM VALUE

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Presented to the Faculty of the Graduate School of
The University of Texas at Arlington in Partial Fulfillment
of the Requirements
for the Degree of

DOCTOR OF PHILOSOPHY

THE UNIVERSITY OF TEXAS AT ARLINGTON

MAY 2010

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ACKNOWLEDGEMENTS

Completing a dissertation is never an easy task. I am able to arrive at this remarkable chapter in my life because of great help and assistance from people surrounding me. First and foremost, I would like to give my sincerest thanks to my advisor, Dr. Xueming Luo, for his guidance and encouragement during every phase of my doctoral studies. I have acquired immense knowledge and, most importantly, the right attitude when facing challenges. I would also like to thank my committee members, Drs. Douglas Grisaffe, Fernando Jaramillo, and Mary Whiteside for their advice and support throughout the dissertation process.

It is a difficult task to raise a family and complete a doctoral degree at the same time. I am deeply indebted to my family for their love and unlimited support during this journey. My husband, Ralph, always gave me encouragement and support whenever I lost confidence, even if he was also stressed by his doctoral course work during that time. My lovely daughters, Adeline and Artemis, always cheered me with their angelic smiles. My mother, Lihua, came to my rescue several times when I was overwhelmed by my course work, regardless of the long distance between Texas and Taiwan. My father, Yi-San, and my parents-in-law, Cheng-Hsin and Chin-Mei, also supported me wholeheartedly. My very special thanks go to Linda and Scott Bevier, without whose love and support, my days would be unbearable. They are my second home here and make my memories in Texas unforgettable.

April 7, 2010

ABSTRACT

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The University of Texas at Arlington, 2010

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This dissertation consists of two essays investigating the potential performance impact of marketing capability. The first essay focuses on the impact of marketing capability on analyst recommendations. Three hypotheses are developed to delineate the relationship between marketing capability and analyst recommendations. The result supports that marketing capability not only has a positive direct impact but also a stronger effect, relative to financing capability, on analyst recommendations for the firm. Furthermore, the direct effect of marketing capability on analyst recommendations is nonlinear. Pursuing an extremely high level of marketing capability may incur trade-off effects and result in unwanted outcomes. The effects of marketing capability are more pronounced in the condition of high market competition.

With the foundation established by the first essay, the second essay illustrates the potential mechanisms involved in the translation process of the value of marketing capability gap to product and stock markets. The marketing capability gap between a firm and its rivals represents the firm's competitive advantage. Two mechanisms, analyst coverage and market competition, are proposed to test their roles in revealing the value of marketing capability gap to the markets. In addition, this study examines the impact of marketing capability gap on multiple performance measures simultaneously. The analysis suggests that the product-market reaction to marketing capability gap differs from finance-market response. The result further indicates

that analyst coverage helps the stock market recognize the value of marketing capability. Market competition facilitates the value recognition process to product market.

These two essays make several contributions to literature. First, they introduce the under-researched analyst recommendation metrics into marketing capability literature. Second, they propose and investigate potential mechanisms involved in influencing the business performance impacts of marketing capability level and gap. Third, this dissertation provides a novel perspective in demonstrating marketing accountability by analyzing a dataset collected from multiple archival databases with a nonparametric statistical tool, data envelopment analysis, to assess marketing capability.

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CHAPTER 1

INTRODUCTION TO THE DISSERTATION

Studies that examine the impact of marketing drivers on firm value are gaining momentum in the marketing discipline. As the Marketing Science Institute indicates, the accountability of marketing expenses is considered a key issue among marketing managers. Responding to this need, many researchers begin to investigate whether market-based assets drive firm value in addition to their contribution to firms' product market success demonstrated by conventional research in marketing literature. In other words, whether this success is recognized by the financial community and translated to stock market is of both researchers' and practitioners' interest. Generally, literature on marketing-finance interface has provided evidence that customer equity, brand equity and advertising correspond to the value of the firm (see Srinivasan and Hanssens 2009 for a review). Thus far, one has limited knowledge on how marketing capability and actions drive firm value. Furthermore, the research community has restricted understanding on what mechanisms are involved in the value translation process from product market to stock market. The role of information intermediaries, such as stock analysts, has been proposed as a potential factor to channel the process and has not been examined yet (Hanssens, Rust, and Srivastava 2009).

Against this background, this dissertation tends to investigate the relationships among marketing capability, analyst recommendations, and firm value from different angles. Essay 1 makes an initial attempt to investigate the potential impact of marketing capability on stock analysts. Although analyst metrics are important topics in finance literature, they are largely ignored in the marketing-finance interface research stream. To fill in this research gap, the first essay is interested in whether stock analysts recognize the value of marketing capability by investigating the impact of marketing capability on several analyst recommendation metrics.

This essay contributes to literature in three aspects. First, it introduces under-researched analyst recommendation metrics into marketing capability literature. The association between marketing capability and analyst recommendations is examined and discussed. Second, this study is among the first to reveal a non-linear impact of marketing capability on analyst recommendations. This result is of practical use to managers because it alerts the potential dark side of endlessly pursuing extremely high level of marketing capability by slashing marketing expenditures. Third, this essay compares and contrasts the relative effects of marketing capability versus financing capability to analyst recommendations and investigates the moderating role of market competition. The result, that marketing capability has a stronger impact than financing capability, serves as additional evidence of marketing's accountability. The positive moderating effect of market competition shows that the value of firms with high marketing capability is more recognized by stock analysts in competitive markets.

The second essay steps forward to examine the potential moderating role of stock analysts in promoting the impact of marketing capability to various performance metrics. In addition, this study intends to investigate the heterogeneity in associations between the marketing capability gap and multiple firm performance measures. The marketing capability gap represents the source of a firm's competitive advantage as it measures the differences in marketing capability between a firm and its industry rivals. This study offers several contributions. First, this research examines the potential mechanisms, analyst coverage and market competition, in facilitating the impact of marketing capability gap to product and stock markets. The result shows that analyst coverage helps reveal the value of marketing capability in the eyes of investors. Market competition helps the product market recognize the value of marketing capability gap, but not stock market. Second, unlike existing research, this study investigates the impact of marketing capability gap on marketing-, accounting-, and finance-oriented performance measures simultaneously. The results indicate that the response of stock market is not in tandem with that of product market. In other words, there is heterogeneity in

associations among marketing capability gap and various firm performance metrics. Third, this study proposing to gauge marketing capability gap with data envelopment analysis (DEA) is novel. This methodology is nonparametric and hence requires no *a priori* information on the transformation function which describes how a firm transforms its resources into desirable outcomes.

These two essays work together to provide an enriched portrait of the associations among marketing capability, analyst recommendations, and firm value. The first essay demonstrates the importance of marketing capability from a different perspective of stock analysts. The second essay further examines the intermediary role of stock analysts in translating the value of marketing capability to product and financial markets.

CHAPTER 2

ESSAY 1: MARKETING CAPABILITY, FINANCING CAPABILITY, AND ANALYST RECOMMENDATIONS FOR THE FIRM

2.1 Abstract

Managers face increasing pressure to boost marketing capability, especially during economic downturns. Although prior research has examined the impact of marketing capability on firm performance, there appears no published study that has investigated the importance of firm-idiosyncratic marketing capability for financial analysts. The analyses with a large scale longitudinal dataset support that higher marketing capability is related to stronger stock recommendations (higher levels and fewer downgrades) for the firm. Yet, this impact is non-linear: too high marketing capability is sub-optimal and associated with weaker recommendations. In addition, marketing capability has a relatively larger impact in magnitude than financing capability. The result also indicates that the effects of marketing capability are more pronounced in the condition of high market competition. These findings innovatively reveal the dark side of both too low and too high marketing capability. The side-by-side comparison of marketing vs. financing capability also provides a new perspective for future research to examine issues related to marketing accountability.

2.2 Introduction

The importance of marketing capability has been widely acknowledged by researchers and managers. Day (1994, p. 38) holds that “capabilities are complex bundles of skills and accumulated knowledge” that enable firms to enjoy long-run competitive advantages. Echoing this, Dutta, Narasimhan, and Rajiv (1999, p. 550) regard marketing capability as a firm’s superior ability relative to competitors in “identifying customers’ needs and understanding the factors that influence consumer choice behaviors.” Prior research has documented that

because it presents valuable market-sensing knowledge and customer-oriented skills (Kohli and Jaworski 1990), marketing capability drives firm profitability (Krasnikov and Jayachandran 2008) and stock value (Luo and Donthu 2006).

The popular trade press also suggests that marketing managers face increasing pressure to boost marketing capability, i.e., “being asked to do more with less” (McKinsey Quarterly 2008, p. 1). This pressure is expected to grow especially during economic recessions. Recent statistics from economists and analysts show that: (1) due to reduced consumer spending, specialty retailers and department stores suffered 11.9% and 13.8% sales decline in 2008, respectively. (2) The Institute for Supply Management Index has reached a new low since 1982, reflecting a weak manufacturing sector. And (3) over \$2 trillion of credit lines are expected to be pulled during the next 18 months (Business Week 2008; Wall Street Journal 2009). Given these downturn conditions, every penny out of pocket is examined under scrutiny by companies’ top management. Marketing is not an exception. Although the chief bean counters know that marketing matters, the demand is to demonstrate the financial value of marketing activities such as advertising expenses, promotions, and other selling efforts (Business Week 2004). As such, MSI considers the accountability and ROI of marketing expenditures a critical area in the 2008-2010 top research priority lists.

Although prior research has generally supported the impact of marketing capability on firm performance, the knowledge on how financial market participants (e.g., stock analysts) respond to marketing capability is limited. Yet, it appears important to take financial analysts into account. Functioning as an intermediate between firms and investors, financial analysts have influence on both firms and investors. On the one hand, analysts collect in-depth information of the firm and analyze the true value of the firm’s tangible and intangible assets. On the other hand, analysts release earnings forecasts and stock recommendations that help investors make informed investment decisions in the stock market (Barth, Kasznik, and McNichols 2001; Womack 1996; Howe, Unlu, and Yan 2009). Barber, Lehavy, and McNichols

(2001, p. 531) document that “purchasing (selling short) stocks with the more (less) favorable consensus recommendations ... yields annual abnormal gross returns greater than four percent.” Thus, finance literature concludes that financial analysts play an indispensable role in the stock market.

Therefore, given the critical role of financial analysts, it is worth exploring the association between marketing capability and financial analysts’ stock recommendations for the firm. However, there appears no prior study that has done so. This is the research gap this study intends to fill. Specifically, this study addresses the following questions.

1. Can firm marketing capability affect analysts’ stock recommendations (i.e., recommendation level, downgrade, and dispersion) for the firm?
2. Does marketing capability have a relatively stronger impact than financing capability on analysts’ stock recommendations?
3. How would the relationship between marketing capability and analysts’ stock recommendations be moderated by market competition?

By answering the above mentioned questions, this study makes several contributions. First, it advances the strategic marketing literature by integrating resource-based view, market-based asset, and marketing-finance interface theories so as to examine the importance of marketing capability for financial analysts. This is among the first to propose non-linear relationships and uncover the dark side of both too low and too high marketing capability in the context of analysts’ stock recommendations.

Second, this study innovatively compares and contrasts the relative effects between marketing capability and financing capability on analyst stock recommendations. This side-by-side comparison of marketing vs. financing capability provides a new perspective for future research to examine issues related to marketing accountability.

Third, this study employs a unique methodology and large-scale archival database to gauge firms' marketing and financing capability. This methodology can empower managers to benchmark firm-idiosyncratic marketing capability compared to best practices. It also helps managers to more effectively engage in financial reporting and disclose the direct relevance of marketing capability to the Wall Street community including financial analysts.

2.3 Theory and Background

Extant marketing research on firm capability and its impact on performance is mostly grounded in resource-based view (RBV), dynamic capabilities theory (DCT), and market-based asset framework (MAF). RBV posits that resources possessing imperfect mobility and imitability are the sources of sustainable competitive advantages (Dutta et al. 1999). According to RBV, a firm with distinct capabilities such as marketing capability is able to develop better market segmentation, targeting, and positioning skills and, thus, achieve competitive advantages and superior financial performance. In a time dynamics sense, DCT postulates that "it is the capabilities by which firm resources are acquired and deployed in ways that match the market environment that explains interfirm performance variance over time" (Morgan, Vorhies, and Mason 2009, p. 910).

Echoing RBV, Srivastava, Shervani, and Fahey (1998) put forth MAF to elaborate the effects of intangible market-based assets on firms' financial performance. Firms with better market-based assets such as marketing capability can enhance the level, accumulation speed, and residual value of cash flows and decrease the volatility of cash flows, thus enjoying higher shareholder value (McAlister, Srinivasan, and Kim 2007; Pauwels, Silva-Risso, Srinivasan, and Hanssens 2004; Srinivasan and Hanssens 2009). Indeed, Song, Droge, Hanvanich, and Calantone (2005) found positive association between marketing capability and firm revenue based on survey data. Dutta et al. (1999, 2005) also documented a positive impact of marketing capability on Tobin's q. Luo and Donthu (2006, p. 70) revealed the benefits of "marketing communication productivity on improving firm stock returns." In short, according to a recent

meta-analysis (Krasnikov and Jayachandran 2008), marketing capability plays an important role in firm financial performance.

This study advances current marketing literature in two ways. First, departing from prior studies that use average-performance approaches to marketing capability, this essay gauges marketing capability with a best-performance benchmark that compares firms against the best practices (i.e., relative to the strongest rivals). Grounded in RBV, DCT, and MAF, this study defines a firm's marketing capability as firm-idiosyncratic optimally weighted efficiency in transforming its marketing input spendings (firms' stock of advertising expenses, promotions, and other selling expenditures) into desirable marketing outcomes (sales and sales growth). This best-performance benchmark approach to marketing capability is consistent with the marketing literature (Kamakura, Mittal, Rosa, and Mazzon 2002; Luo and Donthu 2006). See Table 1 for a review and comparison of the literature on marketing capability.

Second, this study links the resultant relative marketing capability to financial analysts' stock recommendations. Financial analysts are experts in collecting, interpreting, and disseminating information to guide investors' investing behaviors. Partially due to information asymmetry between the firm and investors and partially because of the difficulty in estimating the value of intangible assets of firms (Barron, Byrad, Kile, and Riedl 2002), financial analysts play an important role in providing investment advice for individual and institutional investors. Extant research in finance shows that analysts' stock recommendations provide beneficial advice to investors and that following analysts' recommendations lead to significant positive abnormal returns in the stock market (Barber et al. 2001; Boni and Womack 2006; Bryan and Tiras 2007; Womack 1996).

Following this literature in finance, this essay examines multiple metrics of financial analysts' stock recommendations, i.e., level, downgrade, and dispersion. Stock recommendation *level* ranges from lowest (i.e., sell=1) to highest (i.e., strong buy=5) in the expert advice from financial analysts to investors. Recommendation *downgrade* assesses

whether the recommendation issued from financial analysts to investors is revised downwardly from high to low. Recommendation *dispersion* is the variation of the issued recommendation from financial analysts to investors, closely reflecting uncertainty among analysts' perceived prospects of firm future financial performance. By definition, stronger stock recommendations for the firm are those associated with higher levels, fewer downgrades, and smaller dispersions in the author's logic for the hypotheses.

2.4 Hypothesis Development

This section provides hypothesis development. The research framework focuses on three aspects: (1) relationships between firm marketing capability and financial analysts' recommendation metrics (level, downgrade, and dispersion) for the firm, (2) relative effects between marketing capability and financing capability, and (3) the moderating role of market competition.

2.4.1 Marketing Capability and Analysts' Stock Recommendations

It is expected that marketing capability should be related to stronger analyst stock recommendations for the firm. Both RBV and market-based asset theory suggest that marketing capability is firm-specific, non-transferrable, and difficult to imitate resource (Dutta et al. 1999; McAlister et al. 2007) and represents a valuable market-based asset that can increase the speed and level of future cash flow and reduce cash flow uncertainty in the future. Prior research on market/customer orientation (Kohli and Jaworski 1990; Kirca, Jayachandran, and Bearden 2005) also implies that market-oriented knowledge efficiently fostered by marketing capability can (1) enable the firm to detect and identify customer needs better than its competitors, and (2) utilize this information to maintain loyal customer relationships and reduce customer churn rates. These would bring in more cash, quicker cash, and safer cash with less uncertainty for the firm leading to better prospects of firm future cash flows. Because analysts' stock recommendations should reflect the prospects of firm future cash flows (the better prospects of future cash flows, the stronger stock recommendations for the firm with higher

levels, fewer downgrades, and smaller dispersions), to the extent that marketing capability boosts the firm's prospects of future cash flows (Srivastava et al. 1998), this study hypothesizes that an initial increase of firm marketing capability is related to stronger analysts' stock recommendations for the firm.¹

However, too high levels of firm marketing capability may result in undesired effects. The widely discussed law of diminishing returns in Economics suggests that it is possible that pursuing an extremely high level of marketing capability (with too much cost cut in marketing spending) may lead to compromises and sacrifices in "customer equity efforts, initiatives to achieve predetermined levels of customer awareness, and new product innovations" (Luo and Donthu 2006, p. 72). In addition, information asymmetry theory in finance (Barron et al. 2002; Womack 1996) suggests that the opacity nature of intangible assets may signal higher uncertainty and risks of firm future cash flows. In light of this theory, when the stock of intangible marketing capability is too high, it is likely that the opacity nature of this capability may backfire with signals of higher future risk and lead to weaker prospects of firm future cash flows. If so, then, too high marketing capability would become detrimental and result in weaker analysts' stock recommendations for the firm. Indeed, too low marketing capability would miss the benefits (market-sensing and customer-linking knowledge), and too high marketing capability may incur drawbacks (too much opacity or uncertainty, negative incremental effects, and sacrifices in customer relationship management), both of which would harm analysts' stock recommendations for the firm.² Thus, it is a moderate level of marketing capability that more

¹An assumption of the author's logic is that financial analysts pay attention to non-financial intangible information of the firm. This assumption is validated by prior accounting and finance literature (Barth et al. 2001, Barron et al. 2002). Indeed, effective marketing efforts such as advertising may change information search costs and investor preference orderings (or tastes).

²Because prior studies such as Krasnikov and Jayachandran (2008, p.1) note that "capabilities can turn into core rigidities and might have a *negative* influence on some aspects of firm performance," this literature also motivates the author to hypothesize non-linear effects (i.e., the negative influence of too high) of marketing capability on analyst recommendations.

likely relates to the strongest analysts' stock recommendations (highest levels, fewest downgrades, and smallest dispersions) for the firm. As such,

H₁: Firm marketing capability has non-linear relationships with analyst recommendations; a moderate level, rather than too low or too high, of firm-idiosyncratic marketing capability is related to the strongest analysts' stock recommendations (highest levels, fewest downgrades, and smallest dispersions) for the firm.

2.4.2 Relative Effects between Marketing Capability and Financing Capability

Prior financial studies have suggested that financing capability is also critical because it enables the firm to raise enough external funds in order to maintain a healthy capital structure for business development and firm future success (Campello 2006; Kale and Shahrur 2007). Theoretically, a firm with higher financing capability can more efficiently fund its investment projects and more effectively allocates capital to projects with greater net present value (Kochhar and Hitt 1998; Stulz 1990).³ This study refers financing capability to firm-idiosyncratic, optimally weighted efficiency in transforming financing resources (firms' stock of external debt in the capital structure) into desirable financial outcome (cash flows and cash flow growth).

Marketing capability is expected to have a relatively larger impact in magnitude than financing capability on analysts' stock recommendations for several reasons. First, although both capabilities are intangible according to RBV and MAF, financing capability is easier for analysts to codify due to the regulations requiring firms to fully disclose accounting and finance information to SEC and other agencies (Campello 2006). In contrast, marketing capability is more difficult to codify and transmit because market knowledge about customer needs is tacit,

³Prior finance literature suggests a nonlinear association between financial-related indicators such as debt financing and firm financial performance (Campello 2006; Ng 2005). Thus, an implicit conjecture here is that similar to Campello (2006) and Ng (2005), one may expect a non-linear relationship between financing capability and analyst recommendations.

firm-specific, and developed over time through experiential learning in a socially complex nature. Also, because market-sensing and customer-linking skills are distributed across organizational departments and privately held by individual employees (Jaworski and Kohli 1993), market knowledge tends to have a higher degree of “imperfect mobility and imperfect imitability” (Dutta et al. 1999, p. 550). In fact, supporting the relatively stronger impact of marketing capability than R&D and operations, Krasnikov and Jayachandran (2008, p. 3) conclude that “marketing capability is likely to be immune to competitive imitation and acquisition because of the distributed, tacit, and private nature of the underlying knowledge.”

Furthermore, prior finance literature suggests that there are mixed and weak results on the influence of corporate debt financing and capital structure on firm financial performance (Harris and Raviv 1991). Though benefiting the firm with capital support, financing with external debt may lead the firm to be more vulnerable to unexpected stress and wrongful guidance from debt holders according to the pecking order theory (Campello 2006). Therefore, on the basis of RBV, MAF, and prior finance literature, this study proposes that, on balance, compared to financing capability, marketing capability of a firm is more difficult for rivals to codify, copy, and transfer and more likely signals stronger firm prospects of future cash flows (Jaworski and Kohli 1993; Krasnikov and Jayachandran 2008), thus leading to relatively larger impact on analysts’ stock recommendations for the firm.

H₂: Firm marketing capability has a relatively larger impact in magnitude than financing capability on analysts’ stock recommendations.

2.4.3 Marketing Capability, Market Competition, and Analysts’ Stock Recommendations

Ample research shows that the degree of market competition moderates the relationship between marketing variables and financial related outcomes. For instance, prior studies have generally supported that the higher the market competition, the more evident the

effects of customer satisfaction on firms' future human capital performance (Luo and Homburg 2007), cash flow performance (Gruca and Rego 2005), and stock value (Anderson, Fornell, and Mazvancheryl 2004).⁴

Consistent with this literature, the relations between marketing capability and analyst recommendations for the firm are proposed to be more pronounced in high (vs. low) market competition. Specifically, for firms in a highly competitive environment, their customers face more viable buying options, and hence it is more important to lock in customers through superior marketing capability (Jawoski and Kohli 1990). Thus, in markets with intensive competition, there is increased necessity for firms to utilize their marketing capability to efficiently signal and communicate to financial market participants about their prospects of future cash flows.

Further, market competition may motivate and reward stock analysts to more proactively search for indicators of firm future performance such as superior market capability (Barth et al. 2001; Srinivasan and Hanssens 2009). The more markets are competitive, the more likely industry experts would regard the difficult-to-codify, copy, and transfer information of marketing capability as reliable cues of firms' future financial strength. In other words, financial analysts' evaluations and stock recommendations for the firm may depend even more on firm marketing capability in the condition of high (vs. low) market competition.

H₃: The relationships between marketing capability and analyst stock recommendations for the firm are more pronounced in high market competition than in low market competition.

⁴Because there is a lack of clear theory-based logic for the possible moderating role of market competition on the financing capability-analyst recommendations link, this study does not offer a formal hypothesis of this moderating impact (which was also not significant in the data empirically).

2.5 Methodology

2.5.1 Data

To test the hypotheses, this study collects data for all firms listed on the New York Stock Exchange (NYSE). The sample time frame is eleven years (1996-2006). Data on marketing and financing capability and control variables is collected from Compustat. In addition, data on analysts' stock recommendations is obtained from the Institutional Brokers' Estimate System (I/B/E/S). From Compustat, a total of 27,665 firm-year (=2,515 firms x 11 years) observations are extracted at the beginning. After merging with data from I/B/E/S, deleting missing data, and computing marketing and financing capability, the data collection process produces a useable sample size of 3,045 firm-year observations for the final data analyses. Table 2 reports the summary statistics and correlations of the variables. Appendix A summarizes the measures and data sources for the variables.

2.5.2 Measures for Marketing and Financing Capability

This study measures marketing and financing capability with the data envelopment analysis (DEA) approach. Specifically, DEA models firm capability as the optimally weighted efficiency score in transforming multiple inputs/resources to achieve desirable multiple outputs for the firm. Because capability is firm idiosyncratic or unique (Day 1994), it is not realistic to assume all firms have same transformation function. The DEA approach can precisely relax this assumption because of its non-parametric nature (Kamakura et al. 2002; Luo and Donthu 2006). In DEA modeling, firms on the efficient frontier are deemed as best-performing because they are able to achieve the same outputs by consuming the lowest levels of inputs, or producing the highest levels of outputs with the same inputs. Thus, these firms are the best-performance benchmark with a capability score of 100% (see Appendix B). In contrast, firms below the efficient frontier have a relative capability score less than 100%, when compared against the best-performing competitors on the benchmark.

Following Luo and Donthu's (2006) steps, this study first identifies the inputs and outputs of marketing and financing capability. There are four inputs for marketing capability: individual firm's marketing expenditures (MKEF) at time t and t-1 (e.g., two inputs to capture the lagging and carry-over effects) and firm marketing expenditures *relative* to the industry marketing expenditures (MKEI) at time t and t-1 (e.g, two more inputs to account for competition effects within the industry). In line with prior literature (Luo 2008; Mizik and Jacobson 2007), this research uses the difference between selling, general and administrative expenses (SG&A, Compustat Data 189) and research and development expenses (R&D, Compustat Data 46) scaled by total asset as proxy for marketing expenditure. As suggested by Dutta et al. (1999), this measure captures firms' advertising expenses, promotions, and other selling efforts. In addition, there are four outputs: individual firm's sales (SALF) at time t and t-1 (Compustat Data 12), as well as firm sales relative to the industry sales (SALI) at time t and t-1. Specifically, firm marketing capability is calculated by the optimization programming models as follows:

$$(1) \quad \text{Firm Marketing Capability} = 100 \text{ Max } \phi_i$$

$$\text{Max } \phi_i = \frac{o_1 \text{SALF}_i^t + o_2 \text{SALF}_i^{t-1} + o_3 \text{SALI}_i^t + o_4 \text{SALI}_i^{t-1}}{p_1 \text{MKEF}_i^t + p_2 \text{MKEF}_i^{t-1} + p_3 \text{MKEI}_i^t + p_4 \text{MKEI}_i^{t-1}},$$

$$\text{subject to } \frac{o_1 \text{SALF}_j^t + o_2 \text{SALF}_j^{t-1} + o_3 \text{SALI}_j^t + o_4 \text{SALI}_j^{t-1}}{p_1 \text{MKEF}_j^t + p_2 \text{MKEF}_j^{t-1} + p_3 \text{MKEI}_j^t + p_4 \text{MKEI}_j^{t-1}} \leq 1,$$

$$j=1, 2, \dots, n, \text{ and } o_1, o_2, o_3, o_4, p_1, p_2, p_3, p_4 \geq 0.$$

By the same token, our DEA model for financing capability has four inputs: individual firm's financing leverage (FINF) at time t and t-1 and firm financing leverage relative to the industry financing leverage (FINI) at time t and t-1. Following prior studies (Campello 2006; Kale and Shahrur 2007), financing leverage ratio is calculated as long-term debt (Compustat Data 9) scaled by total asset (Compustat Data 6). In addition, there are four outputs for financing capability: individual firm's cash flows (CAFF) at time t and t-1 (Compustat Data 308), as well as

firm cash flows relative to the industry cash flows (CAFI) at time t and t-1. Specifically, firm financing capability is calculated by the optimization programming models as follows:

$$(2) \quad \text{Firm Financing Capability} = 100 \text{ Max } \theta_i$$

$$\text{Max } \theta_i = \frac{l_1 \text{CAFF}_i^t + l_2 \text{CAFF}_i^{t-1} + l_3 \text{CAFI}_i^t + l_4 \text{CAFI}_i^{t-1}}{m_1 \text{FINF}_i^t + m_2 \text{FINF}_i^{t-1} + m_3 \text{FINI}_i^t + m_4 \text{FINI}_i^{t-1}},$$

$$\text{subject to } \frac{l_1 \text{CAFF}_i^t + l_2 \text{CAFF}_i^{t-1} + l_3 \text{CAFI}_j^t + l_4 \text{CAFI}_j^{t-1}}{m_1 \text{FINF}_j^t + m_2 \text{FINF}_j^{t-1} + m_3 \text{FINI}_j^t + m_4 \text{FINI}_j^{t-1}} \leq 1,$$

$$j=1, 2, \dots, n, \text{ and } l_1, l_2, l_3, l_4, m_1, m_2, m_3, m_4 \geq 0.$$

In this DEA analysis, the mean of firm marketing capability is .482 (standard deviation =.182), and the mean of firm financing capability is .402 (standard deviation =.249). Figure 1 reports the frequencies of marketing and financing capabilities.

2.5.3 Measures for Analysts' Stock Recommendations

Data for analysts' stock recommendation metrics (level, downgrade, and dispersion) is obtained from I/B/E/S. There are over 45,000 companies from 70 markets covered by I/B/E/S. This study collects stock recommendations from I/B/E/S and matches them with the NYSE and Compustat data sources. Since multiple financial analysts follow the same firm each year, originally a total of 16,048 observations of analysts' stock recommendation for the sampled firms is collected. The next step is to merge them with firm marketing and financing capability estimated by DEA and other variables from Compustat.

Specifically, in I/B/E/S, analysts' stock recommendation is the expert advice from financial analysts to investors before the actual earnings announcements at the end of the year. Because it is measured in a reversed scale, this measure is recoded so that the higher value represents better stock recommendation level. The final measure for recommendation level

ranges from “1”= sell-recommendation for the stocks to “5”= strong buy-recommendation for the stocks (Bryan and Tiras 2007; Womack 1996).

Stock recommendation downgrade is measured as the number of downwardly revised recommendations issued for the firm from financial analysts to investors before the actual earnings announcements at the end of the year. This measure is obtained directly from I/B/E/S (Barber et al. 2001; Boni and Womack 2006).

Stock recommendation dispersion is measured as the variation or standard deviation of the issued recommendations from financial analysts to investors before the actual earnings announcements at the end of the year. This measure is also available in I/B/E/S. The higher the dispersion, the more is perceived uncertainty in firm future financial performance among financial analysts (Barber et al. 2001; Howe et al. 2009).

2.5.4 Measures for Control Variables

This research follows prior marketing literature (e.g., McAlister et al. 2007) and includes several control variables. Firm-level control variables contain firm size, liquidity, earnings, R&D expenditures, marketing expenses, financing leverage, analyst earnings forecast consensus, and forecast dispersion. Firm size is the reported total assets from the start and end of the fiscal year (Compustat Data 6). The liquidity is calculated as current asset (Data 4) divided by current liability (Data 5). Earnings data is measured as income before extraordinary items (Data 18). Again, firm marketing expenditure is the difference between SG&A expenses (Data 189) and R&D expenses (Data 46). R&D spending is measured as research and development expenses (Data 46) (Gruca and Rego 2005; Luo and Homburg 2007). Because financial analysts may not fully agree with each other on earnings forecasting, this study also controls for analysts' earnings forecast consensus and forecast dispersion (standard deviation of analysts' earnings forecasts for the firm) collected from I/B/E/S (Barron et al. 2002; Bryan and Tiras 2007).

Furthermore, at the industry level, this study controls for industry earnings volatility, market competition, industry liquidity, and industry sectors. Specifically, industry earnings

volatility is measured as the standard deviation of observed firm earnings within the industry. Market competition is measured with the Herfindahl industry concentration index. Industry competition = $\sum_j s_{ij}^2$, s_{ij} is the share of sales of firm i within the industry j (or the ratio of firm's sales to the total sales of industry j to which firm i belongs) (Anderson et al. 2004; Hou and Robinson 2006). The lower the industry concentration index, the higher the market competition. To avoid losing a large amount of degrees of freedom, this analysis adopts the parsimonious definition of industry sectors from Professor French's databank in the finance literature.⁵ According to this definition, the whole data set is categorized into five industry sectors with four dummies: consumer, manufacturing, hi-tech, health, and others. Figure 2 presents the market competition data across the industry sectors over 1996-2006.

2.6 Results

This section first presents the estimation models for hypotheses testing and then, the estimated results are presented. Specifically, the following simultaneous equations are fitted with the dataset:

$$(3) \text{ ARL} = \delta_0 + \delta_1 (\text{MRC}) + \delta_2 (\text{MRC}^2) + \delta_3 (\text{FIC}) + \delta_4 (\text{FIC}^2) + \delta_5 (\text{MRC}) \times (\text{MCO}) + \delta_6 (\text{MRC}^2) \times (\text{MCO}) + \delta_7 (\text{FIC}) \times (\text{MCO}) + \delta_8 (\text{FIC}^2) \times (\text{MCO}) + \delta_{\text{controls}} (\text{Control Variables}) + v_i + \rho_t + \omega_{it},$$

$$\text{ARG} = \gamma_0 + \gamma_1 (\text{MRC}) + \gamma_2 (\text{MRC}^2) + \gamma_3 (\text{FIC}) + \gamma_4 (\text{FIC}^2) + \gamma_5 (\text{MRC}) \times (\text{MCO}) + \gamma_6 (\text{MRC}^2) \times (\text{MCO}) + \gamma_7 (\text{FIC}) \times (\text{MCO}) + \gamma_8 (\text{FIC}^2) \times (\text{MCO}) + \gamma_{\text{controls}} (\text{Control Variables}) + \phi_i + \xi_t + \psi_{it}$$

⁵ The data library is available at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

$$\begin{aligned}
ARD = & \alpha_0 + \alpha_1 (MRC) + \alpha_2 (MRC^2) + \alpha_3 (FIC) + \alpha_4 (FIC^2) + \alpha_5 (MRC) \times (MCO) + \alpha_6 (MRC^2) \\
& \times (MCO) + \alpha_7 (FIC) \times (MCO) + \alpha_8 (FIC^2) \times (MCO) + \alpha_{controls} (\text{Control Variables}) + \\
& \eta_i + \tau_t + \omega_{it}
\end{aligned}$$

where,

- ARL = Analysts' stock recommendation level,
- ARG = Analysts' stock recommendation downgrade,
- ARD = Analysts' stock recommendation dispersion,
- MRC = Firm marketing capability,
- FIC = Firm financing capability, and
- MCO = Market competition.

In the equations above, the models have considered the possible unobserved industry- and time-specific fixed effects (i.e., $\eta_i, \tau_t, \phi_i, \xi_t, \nu_i, \rho_t$). The parameters of δ_0, α_0 , and γ_0 are intercepts, while ϖ_{it}, ψ_{it} , and ω_{it} are model residuals. Because the three variables of analysts' stock recommendation metrics (level, downgrade, and dispersion) are not independent, these three equations are estimated simultaneously with fixed-effect GLM approach. This simultaneous approach also helps account for the endogeneity bias among the three dependent variables. The hypothesis testing results are reported in Table 3.

2.6.1 Hypotheses Testing Results

H₁ predicts that firm marketing capability has non-linear relationships with analyst recommendations: a moderate level of marketing capability is expected to be associated with highest recommendation levels, fewest downgrades, and smallest dispersions. As Table 3 shows, the GLM results offer some support for H₁. Marketing capability has a positive association with *recommendation level* ($\delta_1 = 1.209, p < .05$), as expected. Yet, because the

quadratic term of marketing capability has a negative coefficient (MRC²: $\delta_2 = -.819$, $p < .05$), too high marketing capability turns to lower recommendation level. In addition, marketing capability has a negative and significant association with *recommendation downgrade* ($\gamma_1 = -.937$, $p < .01$). Again, this impact is not linear, and the quadratic term of marketing capability has a positive association with recommendation downgrade ($\gamma_2 = .860$, $p < .01$), indicating that too high marketing capability would increase recommendation downgrade. However, the analysis does not find support for non-linear relationships with *recommendation dispersion*, because the linear and quadratic terms of marketing capability are not significant statistically ($p > .10$). Overall, the findings offer partial support for H₁ based on significant effects of marketing capability on recommendation level and downgrade. As shown in Figure 3, there is an inverted-U relationship with ceiling effects between marketing capability and recommendation level (Figure 3A). Also, there is a U-shaped relationship with floor effects between marketing capability and recommendation downgrade (Figure 3B).

H₂ hypothesizes that marketing capability has a relatively larger impact in magnitude than financing capability on analysts' stock recommendation.⁶ As shown in Table 3, marketing capability has a significant impact on recommendation level whereas financing capability has a non-significant influence ($\delta_3 = -.226$, $p > .1$; $\delta_4 = .161$, $p > .1$). For analyst downgrades, higher marketing capability is negatively associated with downgrades whereas higher financing capability has no influence on downgrade ($\gamma_3 = .177$, $p > .1$; although the quadratic term of financing capability is significant, it is in the opposite direction). However, both marketing and

⁶ Since this study finds significant impact of marketing capability and non-significant impact of financing capability, it is straightforward to conclude that marketing capability has a relatively stronger influence. However, if both are significant, Chow test would be employed to test the relative magnitude. Chow test F-statistics can be defined as (Peng and Luo 2000, p 496): $F = \frac{(SSE_2 - SSE_1)/[(N_2 - K_2) - (N_1 - K_1)]}{SSE_1/(N_1 - K_1)}$, where

SSE = sum of squared errors, N=sample size, K=number of estimated coefficients. 1 and 2 are subgroups.

financing capability fail to have significant associations with recommendation dispersion. Accordingly, these findings also partially support H₂.

In H₃, this research expects that the relations between marketing capability and analyst recommendation for the firm should be more pronounced in high market competition. As shown in Table 3, the interaction between marketing capability and market competition has a positive association with recommendation level ($\delta_5 = 2.221$, $p < .1$), expanding the positive main effects of marketing capability. Also, the interaction between quadratic marketing capability and market competition has a negative association with recommendation level ($\delta_6 = -1.800$, $p < .1$), strengthening the negative quadratic effects of marketing capability. In addition, the interaction between marketing capability and market competition has a negative association with recommendation downgrade ($\gamma_5 = -1.8$, $p < .05$), and the interaction between quadratic marketing capability and market competition has a positive association with recommendation downgrade ($\gamma_6 = 1.538$, $p < .05$), also expanding the main linear and quadratic effects of marketing capability. Therefore, these findings suggest that marketing capability has stronger linear and quadratic effects on recommendation level and downgrade in high (vs. low) market competition. As Figure 4 describes, the inverted-U relationship between marketing capability and recommendation level is stronger and shifted upwardly (Figure 4A) for high market competition. Also, the U-shaped relationship between marketing capability and recommendation downgrade is stronger and shifted downwardly (Figure 4B) for high market competition. Thus, H₃ is also partially supported.

It is worth noting that because both H₂ and H₃ are supported, these findings imply that the relatively larger impact of marketing capability than financing capability on recommendations is more evident in the condition of high market competition, as opposed to low market competition. Appendix C reports additional analyses and robustness checks for our results.

2.7 Discussion and Implications

This study intends to fill a research gap by shedding light on the relationships between firm-idiosyncratic marketing capability and financial analysts' assessment of stock recommendations. Grounded in the resource-based view, dynamic capabilities theory, and market-based asset literature, this framework examines (1) relationships between marketing capability and financial analysts' recommendation metrics (level, downgrade, and dispersion) for the firm, (2) relative effects between marketing capability and financing capability, and (3) the moderating role of market competition. Data analyses with a large scale longitudinal dataset support that higher firm marketing capability is related to stronger stock recommendations (higher levels and fewer downgrades) for the firm. Yet this impact is non-linear, and too high marketing capability is sub-optimal and associated with weaker recommendations. In addition, marketing capability has a relatively larger impact than financing capability on recommendation level and downgrade. The results also show that the effects of marketing capability are more pronounced in the condition of high market competition than low market competition. These findings offer both theoretical and managerial implications.

2.7.1 Theoretical Implications

Prior research on competitive advantages has shown that market-based assets and customer knowledge play an important role for firms to survive and prosper in competitive environments (Day 1994; Narasimhan, Rajiv, and Dutta 2006). This study contributes to the theory development of RBV and MAF by marrying firm-idiosyncratic marketing capabilities to financial analyst metrics. This study not only agrees with Srivastava et al. (1998, p. 2) that "marketing is concerned with the task of developing and managing market-based assets," but also adds that market-based assets such as marketing capability may have substantial effects on analysts' recommendation metrics. Because these metrics are much under-addressed in marketing and financial analysts are key stock market participants, this research helps justify

the nomological validity of MAF and RBV and encourages future research utilizing such metrics to value marketing actions and customer behaviors.

The findings on the non-linear relationships between marketing capability and analyst recommendations suggest several interesting implications hidden in the literature. First, compared with too low level, higher marketing capability would cultivate market-sensing and customer-linking knowledge (Jaworski and Kohli 1993) and, thus, benefit the firm with more promising future cash flows. As such, new dependent variables such as financial analysts' recommendations for the firm can provide novel perspectives in (1) explaining the critical importance of customer-centric skills in the competitive marketplace and (2) fostering "a market-oriented organization whose actions are consistent with implementation of the marketing concept as a business philosophy" (Kohli and Jaworski 1990, p. 1).

Also, this research is among the first to reveal that too high level of marketing capability can backfire. That is, too high level of marketing capability may incur dark side effects (i.e., too much opacity or uncertainty, negative incremental effects, and sacrifices in customer relationship management) which would harm analysts' recommendations for the firm. Hence, this study not only shows the direct relevance of marketing capability for financial analysts, but also cautions against inappropriate strategic emphasis on too lean marketing budget, or relentlessly cutting firm promotional and selling programs. Just as Luo and Donthu (2006, p. 87) clarify that "an unrestricted increase of marketing communication productivity may be harmful and cause negative stock market returns," this research suggests that a well-balanced level of (rather than too low or too high) marketing capability may boost the credibility of marketing discipline. This study encourages future research along this line with non-linear effects to more realistically support "marketing's existence as a distinct capability within the firm" (Rust, Ambler, Carpenter, Kumar, and Srivastava. 2004, p. 76).

This research makes another contribution to the literature by directly comparing and contrasting the relative effects of marketing capability and financing capability. As the

marketing-finance interface research is gaining momentum, it would be exciting to compare side-by-side whether marketing capability plays a stronger or weaker impact than financing capability. Indeed, recent research has been able to isolate the financial impact of many marketing variables (see Srinivasan and Hanssens 2009 for a review). Yet, there exist few published studies that have modeled the relative effect size of marketing vs. financing determinants. This study is the first to find that marketing capability plays a stronger role than financing capability in enhancing the level of analyst recommendations and reducing the downgrade of analyst recommendations for the firm. These comparative findings justify marketing accountability in a more precise fashion.

Furthermore, the accounting profession faces an aggravating concern on whether marketing and advertising costs should be expensed or capitalized. On the basis of relative impact, this study paints a more vivid picture of marketing's robust effects for the accounting profession. Thus, the Financial Accounting Standards Board (FASB) may more clearly understand the importance of disclosing non-financial information of marketing efforts. If so, this might help establish effective FASB regulations guiding firms to capitalize future value of marketing and selling spending (Barth et al. 2001). In this sense, this research helps extend financial accounting literature and should motivate more scholarly works (e.g., on the value relevance of brand/customer equity, customer satisfaction, product quality, and specific marketing-mix actions) in the marketing-finance interface (Srinivasan and Hanssens 2009).

2.7.2 Managerial Implications

This study also offers several helpful implications for managers. First, it provides evidence for managers that firm-idiosyncratic marketing capability plays a role in financial analysts' assessments of firm future performance prospects. To the extent that marketing capability is a tacit, immobile and nontransferable market-based resource, managers should foster higher marketing capability with more efficient promotional and selling programs to achieve and sustain competitive advantages. Managers should do so especially in a recession

economy. As noted by Rhodes and Stelter (2009, p. 54), “companies that injudiciously slash marketing spending often find that they later must spend far more than they saved in order to recover.” Taking it one step further, because economic downturns create rare opportunities, firms may even outmaneuver rivals by investing for the future, i.e., boosting their intangible off-balance sheet assets such as firm-idiosyncratic marketing capability (McKinsey Quarterly 2008).

Furthermore, managers should emphasize that to achieve consistently profitable results, companies may pursue organic growth from the union of marketing and finance. It seems high time to eliminate sources of friction between finance and marketing executives. For example, in contrast to the traditional myth that “financial directors value the known, prefer stability and are comfortable with measurement; marketing directors are comfortable with the unknown and are rewarded for vision and creativity” (Financial Executive 2005, p. 40), this study suggests that marketing can *measure up* with financial metrics. In addition, Krasnikov and Jayachandran (2008, p. 1) note that “marketing capability has stronger performance impact relative to R&D and operations capabilities.” A clear message of this study to the firm’s chief financial officer is that marketing capability may have even stronger impact than financing capability on analyst recommendations for the firm. Also, managers should match the firm-idiosyncratic marketing capability with market competition, because the more competitive the markets are, the more likely financial analysts may regard marketing capability as difficult-to-codify, copy, and transfer resources (even more so than financing capability) and, thus, reliable cues of firm future organic growth, financial strength, and competitive advantages.

Moreover, managers can employ the nonparametric methodology of DEA to benchmark firm marketing capability compared to best-performing rivals. This technique does not require a *priori* unrealistic specification on resource transformation and fits well with RBV by recognizing firm-idiosyncratic differences and identifying best-practice frontiers. As such, it can empower managers to more scientifically gauge and disclose the direct relevance of marketing capability to key financial analysts on Wall Street.

Table 1 A Review of Studies on Firm Marketing Capability

Illustrative Study	Approach to Firm Marketing Capability	Key Findings
Song, Droge, Hanvanich, and Calantone (2005)	Survey Ask respondents to evaluate how firms perform in customer-linking, market-sensing, and channel-bonding capabilities. (11-point scale, self report)	Both marketing-related and technology-related capabilities have positive effects on firm performance. The positive impact of marketing-related capability is lower in technologically turbulent environment.
Song, Benedetto, and Nason (2007)	Survey Follow measures of Desarbo et al. (2005). Ask respondents to evaluate how firms perform in knowledge of competitor, effectiveness of advertising program, integration of marketing activities, skills of segmenting and targeting markets, effectiveness of pricing programs, and knowledge of customers. (11-point scale, self report)	Strategic type (such as Miles-Snow typology) moderates the relationship between capabilities and performance. Market-linking and marketing capabilities have significant effects on performance for defenders.
Vorhies and Morgan (2005)	Survey Ask respondents to measure firms' eight marketing related capabilities including product development, pricing, channel management, marketing communications, selling, market planning, and market implementation.	Identify eight aspects of marketing capabilities and empirically support the existence and performance impact of interdependency among marketing capabilities.
Morgan, Vorhies, and Mason (2009)	Survey Follow measures of Vorhies and Morgan (2005).	Market orientation and marketing capabilities are complementary assets. Marketing capabilities have direct effects on ROA and perceived firm performance.
Krasnikov and Jayachandran (2008)	Meta analysis Marketing capability is measured as the effect sizes for the capability-performance relationship.	Marketing capability has a stronger impact on firm performance than R&D and operations capabilities.
Dutta, Narasimhan, and Rajiv (1999, 2005)	Secondary data; stochastic frontier estimation (SFE) Marketing capability is measured as part of the model residuals in a pre-specified SFE function (which models the transformation of inputs [technical base, advertising stock, marketing expenditure stock, relationship investment, installed base of customers] into one output variable of sales).	Marketing, R&D, and operations capabilities and interactions among these capabilities are important determinants of relative financial performance of high-technology industry.
Luo and Donthu (2006)	Secondary data; data envelopment analysis (DEA) Marketing communication productivity is measured as an optimally-weighted ratio of marketing outputs (sales level, sales growth, and corporate reputation) to marketing communication expenditures (broadcast, print, and outdoor advertising and sales promotion expenditures).	Marketing communication productivity has curvilinear (inverted-U shape) effects on Tobin's q and stock return. These effects are stronger for firms with intense R&D expenditures and in competitive markets.
The present study	Secondary data; data envelopment analysis (DEA) Marketing capability is measured as firm-idiosyncratic optimally weighted efficiency in transforming marketing input spendings (firms' stock of advertising expenses, promotions, and other selling expenditure) into desirable marketing outcomes (sales and sales growth), when compared against the best-performance benchmark.	Marketing capability has a non-linear (inverted-U) impact on analyst recommendation level and a non-linear (U-shaped) impact on recommendation downgrade. Moreover, marketing capability has a relatively stronger impact than financing capability. The effects of marketing capability are more pronounced for firms in high market competition.

Table 2 Variable Correlations

Correlations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.Recommendation Level	1.000															
2.Recommendation Downgrade	-.056***	1.000														
3.Recommendation Dispersion	-.050***	.117***	1.000													
4.Marketing Capability (MRC)	.111***	-.016	-.067***	1.000												
5.Financing Capability (FIC)	-.049***	-.102***	-.036**	-.071***	1.000											
6.R&D Expense	-.028**	.186***	.050***	-.127***	-.172***	1.000										
7.Marketing Expense	-.019	.120***	.067***	-.097***	-.113***	.572***	1.000									
8.Firm Size	-.023	.096***	.046***	-.119***	-.087***	.572***	.720***	1.000								
9.Firm Leverage	-.069***	-.046***	.022	-.069***	.673***	-.086***	-.036**	-.008	1.000							
10.Analysts Forecast Consensus	.006	-.021	.085***	-.019	-.057***	.015	.079***	.106***	-.028*	1.000						
11.Analyst Forecast Dispersion	-.063***	-.029*	.034**	-.007	-.013	.037**	.041***	.078***	.013	.097***	1.000					
12.Firm Earnings	.025*	.043***	.086***	-.024	-.135***	.311***	.500***	.411***	-.083***	.183***	.054***	1.000				
13.Industry Earnings Volatility	-.029**	.069***	.090***	-.044***	-.047***	.238***	.401***	.451***	-.097***	.134***	.105***	.317***	1.000			
14.Firm Liquidity	.066***	-.036**	-.034**	-.105***	.035**	-.093***	-.157***	-.159***	-.174***	-.077***	-.028*	-.076***	-.048***	1.000		
15.Industry Liquidity	.038***	.068***	-.006	-.137***	.014	.062***	-.085***	-.140***	-.202***	-.094***	-.047***	-.039***	-.097***	.504***	1.000	
16.Market Competition	.053***	-.113***	-.082***	.094***	.049***	-.136***	.026*	-.032**	.056***	.058***	-.015	-.035**	-.107***	-.087***	-.185***	1.000
Mean	3.761	.243	.727	.482	.402	304.977	1382.441	10466.218	.201	1.431	.081	473.616	915.239	2.055	2.056	.346
SD	.532	.289	.309	.182	.249	930.229	3510.173	34398.33	.168	1.471	.206	2096.927	1490.102	1.529	.772	.198
N	4917	4917	4917	4413	3422	4921	4921	4922	4920	4680	4495	4922	4921	4812	4787	4404

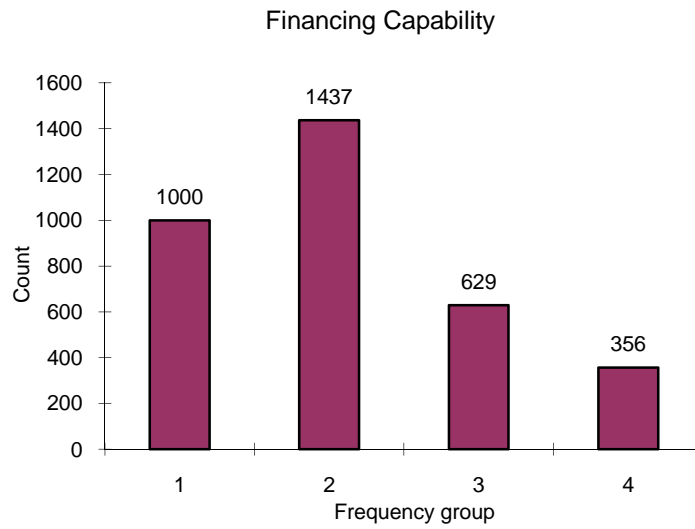
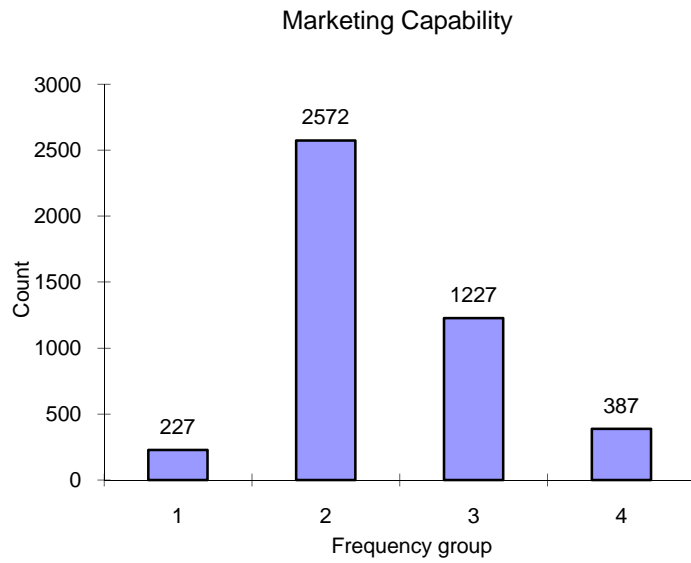
* p< .10, ** p< .05 *** p< .01.

Table 3 Hypothesis Testing Results

Variables	Hypothesis	Recommendation Level		Recommendation Downgrade		Recommendation Dispersion	
		Coefficient (t)	p-Value	Coefficient (t)	p-Value	Coefficient (t)	p-Value
Marketing Capability (MRC)	H ₁	1.209 (2.512)	.012	-.937 (-3.283)	.001	-.220 (-.791)	.429
Financing Capability (FIC)	H ₂	-.226 (-.986)	.324	.177 (3.506)	.192	.065 (.492)	.622
Marketing Capability ² (MRC ²)	H ₁	-.819 (-1.981)	.048	.860 (1.304)	.000	.187 (.783)	.434
Financing Capability ² (FIC ²)	H ₂	.161 (.739)	.460	-.311 (-2.396)	.017	-.067 (-.533)	.594
MCO *MRC	H ₃	2.221 (1.781)	.075	-1.800 (-2.433)	.015	-.458 (-.635)	.525
MCO *MRC ²	H ₃	-1.800 (-1.685)	.093	1.538 (2.427)	.015	.301 (.488)	.626
MCO *FIC		-.471 (-.849)	.396	.224 (.683)	.495	.184 (.576)	.565
MCO *FIC ²		.017 (.031)	.975	-.240 (-.744)	.457	.045 (.143)	.886
Market Competition (MCO)		.607 (1.688)	.091	-.481 (-2.256)	.024	-.126 (-.608)	.543
Firm size		-.000 (-.260)	.795	.000 (3.174)	.002	.000 (-.012)	.990
Firm Leverage		-.000 (-.308)	.758	.000 (1.242)	.214	.000 (1.306)	.192
R&D Expense		.000 (1.646)	.100	.000 (-.162)	.871	.000 (-1.969)	.049
Marketing Expense		-.273 (-3.115)	.002	.099 (1.907)	.057	.140 (2.762)	.006
Firm Earnings		.001 (.239)	.811	-.006 (-1.624)	.104	.014 (3.900)	.000
Firm Liquidity		-.074 (-1.465)	.143	-.012 (-.392)	.695	.057 (1.943)	.052
Analysts Forecast Consensus		.000 (1.773)	.076	.000 (2.000)	.046	.000 (2.554)	.011
Analyst Forecast Dispersion		-.000 (-2.876)	.004	.000 (-.041)	.968	.000 (2.089)	.037
Industry Earnings Volatility		.039 (3.899)	.000	-.016 (-2.744)	.006	.005 (.873)	.383
Industry Liquidity		-.045 (-2.742)	.006	.037 (3.857)	.000	.004 (.386)	.700
Partial Eta Squared		.072		.067		.066	
F		9.781		9.020		8.832	
N		3044		3044		3044	

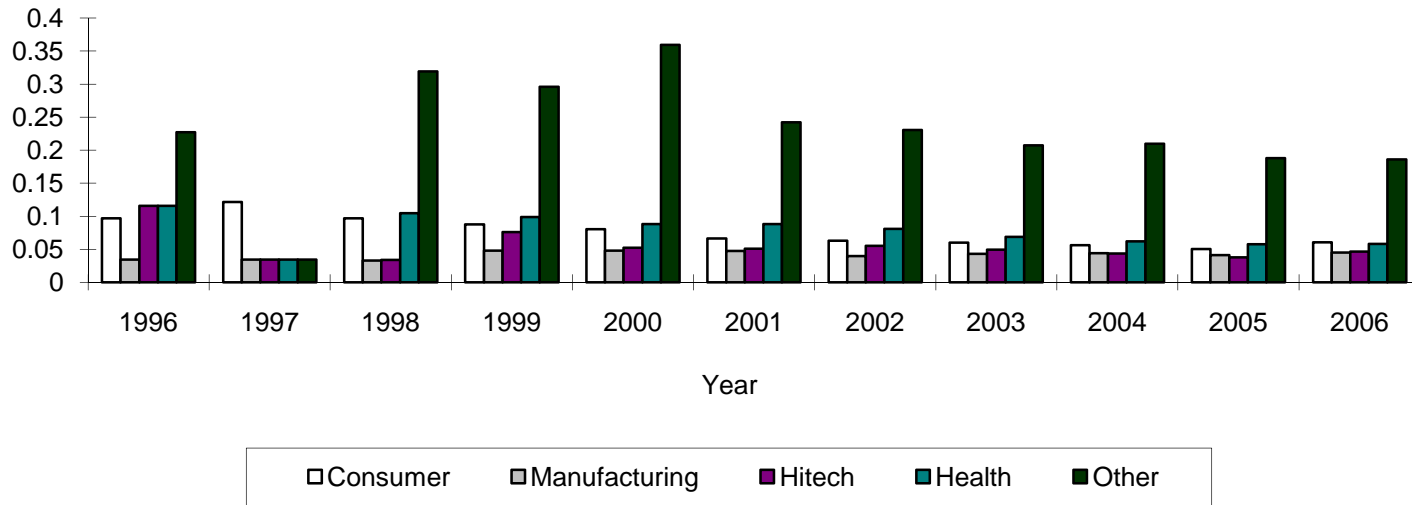
Time and Industry dummies included.

Coefficients in bold are significant at .05 level; in italic are significant in .1 level.



Note: Frequency group 1= for capability with a score between 0 and .25 (included); group 2= .25 ~.50; group3= .50 ~.75; group 4= .75 ~1.00.

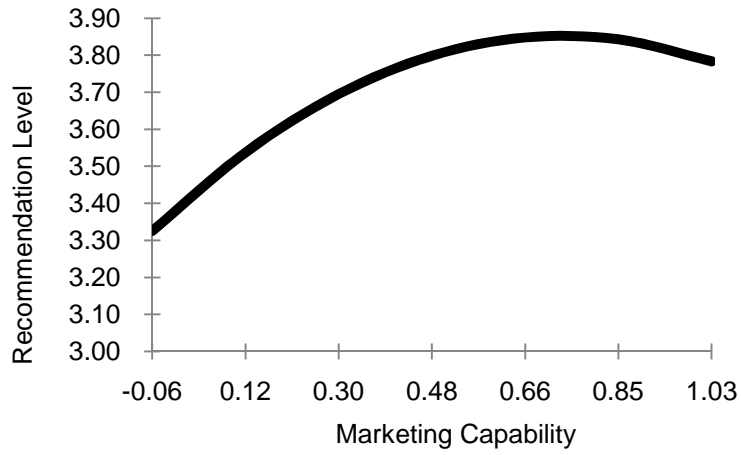
Figure 1 Marketing and Financing Capability



Note: Market competition is measured with the Herfindahl industry concentration index. The lower the industry concentration index, the higher the market competition is.

Figure 2 Market Competition across Industry Sectors over Time (1996-2006)

Panel A: Inverted-U Effects on Recommendation Level



Panel B: U-shaped Effects on Recommendation Downgrade

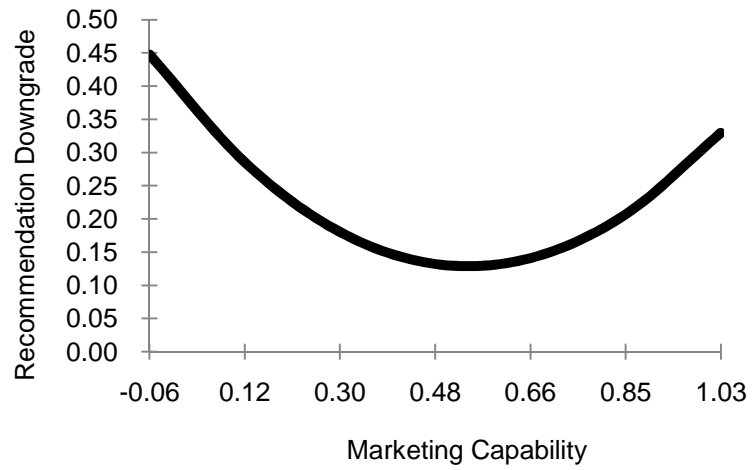
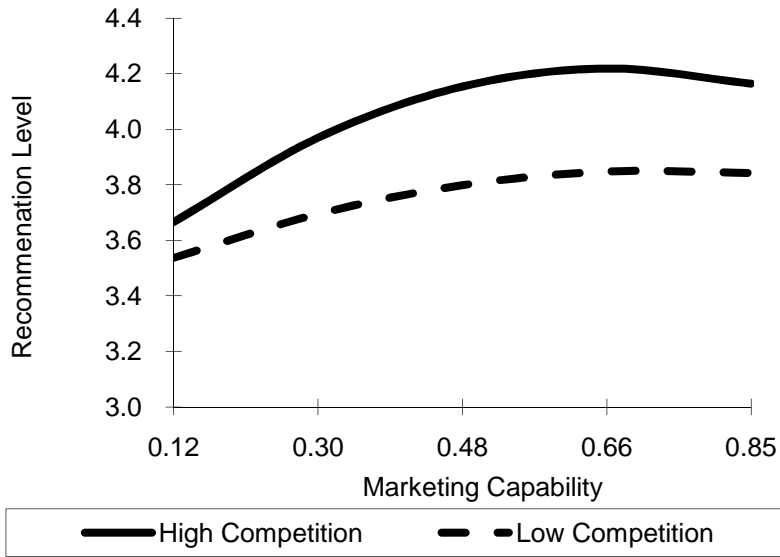


Figure 3 Non-linear Relationships between Marketing Capability and Analyst Recommendations

Panel A: Moderated Effects on Recommendation Level



Panel B: Moderated Effects on Recommendation Downgrade

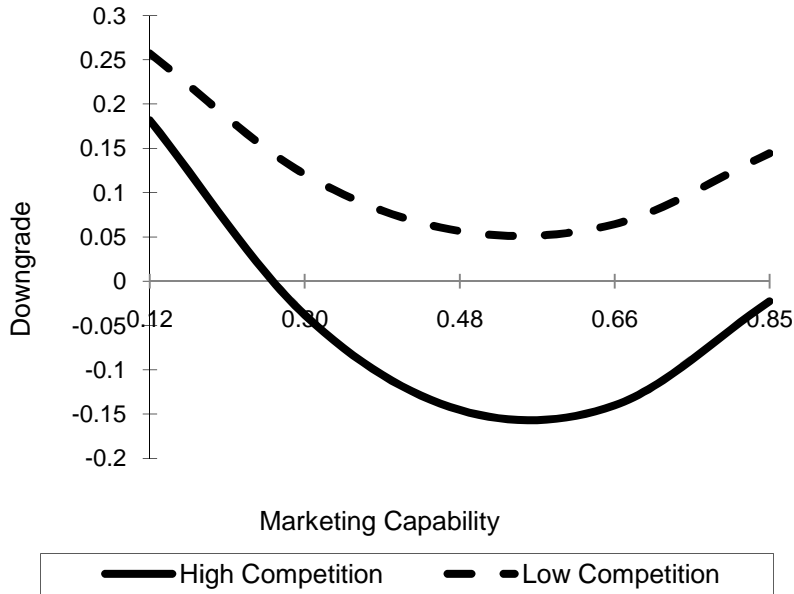


Figure 4 Moderated Inverted Non-linear Relationships

CHAPTER 3

ESSAY 2: WHY DOES MARKETING CAPABILITY GAP AFFECT FIRM VALUE: THE ROLE OF ANALYST COVERAGE AND MARKET COMPETITION

3.1 Abstract

This research examines the economic value of marketing capability *gap* defined as the distance between own-firm and industry-rivals marketing capability on various firm performance metrics. This study probes to determine if marketing capability gap affects firms' top-line, bottom-line, and stock market performance metrics. Furthermore, it demonstrates two potential mechanisms, analyst coverage and market competition, transferring the value of marketing capability gap to product and financial markets. The result shows heterogeneity in association between marketing capability gap and different performance measures used in marketing, accounting, and finance disciplines. This finding implies that responses of product markets may not be in sync with those of stock markets. It is important to note that analyst coverage may serve as an information intermediary translating the value of marketing capability gap to financial markets. Market competition helps facilitate this translation process to product market rather than stock market. Analyst coverage and market competition work complementarily to unveil the value of marketing capability. For firms with low marketing capability gap operating in competitive markets, acquiring high analyst coverage help them be valued higher by product market. On the other hand, for firms with high marketing capability gap operating in less competitive markets, analyst coverage also facilitates the value translation process of marketing capability gap to product market.

3.2 Introduction

Understanding marketing levers of firm performance is of central interest of managers and researchers. Hanssens, Rust, and Srivastava (2009) identify three key marketing drivers

that affect firm performance: marketing mix actions, market-based assets, and capabilities. Extant research suggests that outcomes of marketing activities are mainly intangible assets and capabilities, whose value may not be readily translated into financial markets (Srinivasan and Hanssens 2009). Empirical research also provides ample evidence that financial markets are not always efficient despite the well-known Efficient Markets Hypothesis (EMH) (Fornell, Mithas, Morgeson, and Krishnan 2006). Responding to this, research efforts have been devoted to examine the direct impact of marketing metrics on various finance metrics. However, the mechanisms that channel the value of marketing metrics to finance market are under-researched. Srinivasan and Hanssens (2009) indicate stock analysts as a potential information intermediary that may influence how financial market reacts to marketing assets and capabilities. This essay intends to investigate this proposition by evaluating the analysts' role in the capability-performance link. Specifically, this study focuses on marketing capability gap, which refers to the difference in marketing capability between a firm and its rivals within the industry. By accounting for competitors, this gap represents a source of a firm's competitive advantages. In addition to examining the market performance impact of marketing capability gap, this essay further investigates the intermediary role of two potential mechanisms, analyst coverage and market competition, in enhancing the recognition of the value of marketing capability gap in product and finance market.

This essay extends existing research in several aspects. First, this study explores what mechanisms translate the benefit of marketing capability gap to firm performance. Two potential mechanisms are investigated: analyst coverage and market competition. Examining whether stock analysts link marketing strategy to Wall Street is important because stock analysts may change investors' responses to firms' marketing capability (Srinivasan and Hanssens 2009). This also answers recent research issues on connecting marketing to firm value via "the role of information intermediaries, such as stock analysts" (Hanssens et al. 2009, p. 118). In addition to stock analysts, market competition may influence the marketing capability-performance link

through reactions of customers and their rivals. Customers in competitive markets act differently because they have more buying options. Thus, effects of marketing capability gap may change when market competition is high versus low. Similarly, rivals' reactions also complicate market conditions and jeopardize the value translation process of marketing capability gap. It seems no prior studies have examined these product market- and financial market-based mechanisms which can amplify or buffer the effects of marketing capability gap on firm performance.

Furthermore, this study examines the heterogeneity in association between marketing capability gap and firm performance. This study evaluates multiple performance metrics simultaneously, i.e., operations-based revenue, accounting-based ROA, and finance-based market capitalization. In doing so, this research is able to contrast the impact of marketing capability gap on top-line, bottom-line performance and the ultimate stock market value. This study seeks to account for trade-offs among financial goals that firms pursue (Morgan, Slotegraaf, and Vorhies 2009). This is important because success in one goal sometimes comes from sacrifices of another (Luo and Donthu 2006) and most prior studies focus on only one performance measure. Thus, it is critical to accommodate heterogeneous performance impact of marketing capability gap.

Methodologically, this essay gauges marketing capability gap, represented as the distance between own-firm marketing capability and industry-rival capability, through the nonparametric Data Envelopment Analysis (DEA). DEA measures marketing capability as optimally weighted efficiency score in transforming multiple inputs/resources to achieve desirable multiple outputs for the firm. This method allows this study to extend prior research that focuses on the *level* of firms' own marketing capability (Dutta, Narasimhan, and Rajiv 1999; Luo and Donthu 2006) instead of the *gap* in capabilities compared to industry rivals. This gap approach is grounded in benchmarking and RBV literature on sources of sustainable competitive advantages (Vorhies and Morgan 2005). Hence, this study sheds light on impacts of

marketing capability gap on firm performance in various situations that are largely ignored in the literature.

3.3 Literature Review

3.3.1 Marketing Capability

Marketing capability represents a firm's specific ability in identifying target markets, developing marketing mix strategy, and building and maintaining loyal customer relationship. Theoretical and empirical research on marketing capability generally supports a positive link between marketing capability and firm performance (Morgan, Vorhies, and Mason 2009). This association is theoretically pinned on resource based view (RBV) which posits that resources and capabilities possessing *immobility* and *inimitability* are the sources of sustainable competitive advantages (Dutta et al. 1999). These sustainable competitive advantages contribute to the firms' superior performance. By definition, competitive advantages involve the existence of competitors. If a firm's marketing capability is considered a competitive advantage of the firm relative to competitors, a distance on the magnitude of marketing capability measure between this firm and its competitors should be observed. Following this logic, this study measures marketing capability gap as the distance between the marketing capability levels of individual firm and competitors. It is believed that this measure is more able to reflect the competitiveness of a firm's marketing capability compared to the level of marketing capability. This measure is then used to test capability-performance association.

Abundant extant literature in marketing has examined the positive impact of marketing capability on firm product market performance such as profit and margin growth (Morgan, Slotegraaf, and Vorhies 2009). However, marketing managers are stressed to demonstrate marketing accountability in terms of financial market performance measures. Echoing RBV, Srivastava, Shervani, and Fahey (1998) present Market-based Asset Framework to elaborate the effects of intangible market-based assets on firms' financial performance. Firms with better market-based assets such as marketing capability can enhance the level, accumulation speed,

and residual value of cash flows and decrease the volatility of cash flows, thus enjoying higher shareholder value (McAlister, Srinivasan, and Kim 2007; Pauwels, Silve-Risso, Srinivasan, and Hanssens 2004; Srinivasan and Hanssens 2009). A positive association between marketing capability and firm revenue based on survey data is reported by Song, Droge, Hanvanich, and Calantone (2005). Moreover, Dutta et al. (1999) also documented a positive impact of marketing capability on the long-term financial performance measure, Tobin's q. A recent meta-analysis (Krasnikov and Jayachandran 2008) summarizes that marketing capability plays an important role for firm financial performance.

3.3.2 Analyst Coverage

It appears to be important to take financial analysts into account when examining a firm's performance in terms of stock market. Financial analysts act as an intermediate between firms and investors and have influence on both of them. On the one hand, analysts collect in-depth information of the firm and evaluate firms' future prospect in terms of their tangible and intangible assets. On the other hand, analysts release earnings forecasts and stock recommendations that help investors make informed investment decisions in the stock market (Barth, Kasznik, and McNichols 2001; Womack 1996; Howe, Unlu, and Yan 2009). Barber et al. (2001, p. 531) document that "purchasing (selling short) stocks with the more (less) favorable consensus recommendations ... yields annual abnormal gross returns greater than four percent." Thus, finance literature concludes that financial analysts play an indispensable role in the stock market. A research question related to this knowledge in this research context is whether how financial analysts interpret marketing capability moderates the relationship between marketing capability gap and firm value. As to the author's knowledge, the financial analyst metric is under-researched in marketing discipline. Since marketing capability is mainly intangible asset, information asymmetry may involve in the translation process of marketing capability to stock market. Financial analysts rely on personal knowledge and information

seeking behaviors in order to reveal a firm's true value. Therefore, a firm covered by financial analysts is less likely to involve a high degree of information asymmetry issues. Following this logic, the analyst coverage may influence the impact of marketing capability gap on firm value through alleviating information asymmetry.

3.3.3 Market Competition

Research also shows that market competitiveness may have an impact on the relationship between marketing variables and financial outcomes. Prior studies generally support a positive moderating effect of market competition on impacts of customer satisfaction on firms' future human capital performance (Luo and Homburg 2007), cash flow performance (Gruca and Rego 2005), and stock value (Anderson, Fornell, and Mazvancheryl 2004). In a highly competitive environment, firms with greater marketing capability gap are more able to keep customers, generate higher revenue, and achieve better performance. Therefore, the impact of marketing capability gap on firm value may be influenced by market competition.

3.3.4 Firm Performance

Firms usually set and pursue multiple goals covering several managerial functions such as marketing, finance, and accounting. A balanced set of measures often contains top-line, bottom-line and stock market performance measures. To examine the heterogeneity, this study uses revenue, ROA, and market capitalization as performance measures and estimates them simultaneously.

Firm revenue, measuring a firm's top-line performance, is an important operations performance metric because "marketing's path to financial impact is through revenues" (Hanssens, Rust, and Srivastava 2009). It reflects how a firm performs in terms of product market success in operations (Hendricks, Singhal, and Stratman 2007).

ROA, representing a firm's bottom line performance, is a widely-used metric for firm performance in accounting literature (Ittner, Larcker, and Taylor 2009). It assesses a firm's ability to turn its assets into profit.

Market capitalization represents how a firm performs in stock markets. Compared to a backward-looking measure such as revenue and ROA, market capitalization is a forward looking measure. It provides investors' view on firms' future cash flow prospects (Srinivasan and Hanssens 2009). Next, this study tests the effects of marketing capability gap on firm performance as well as the two mechanisms.

3.4 Research Methodology

3.4.1 Data

The data is collected from two datasets for all NYSE listed firms. Data for marketing capability and performance measures is first obtained from Compustat. Data for analysts related measures is collected from Institutional Brokers' Estimate System (I/B/E/S). The sample time frame includes eleven years (1996-2006). After merging data from Compustat with data from I/B/E/S, an initial sample of 7,581 firm-year observations is retained. Approximately half of the original data is not usable because data is missing for R&D expenses (4,967 observations retained) which data is required in this estimation of a firm's marketing capability gap. Moreover, calculating firms' capability scores requires two years data of input and output variables and hence leads to data loss. In the final data analysis, a useable sample size of 3,854 firm-year observations⁷ spanning from 1997 to 2006 is obtained. Table 4 reports the summary statistics and variables correlations.

⁷ Besides lacking R&D expense data, another reason for reduced sample size is because the methodology this study uses to measure marketing capability, Data Envelopment Analysis, is sensitive to negative value and missing value which may cause data loss problem. Therefore, this limitation constrains the sample size in final analysis.

3.4.2 Measures

Marketing Capability Gap. In the literature, marketing capability has been measured either based on primary survey or on secondary archival data. Survey approach allows researchers to measure marketing capability more directly, albeit subject to sample selection and subjectivity biases. In contrast, secondary data is objective and has fewer selection bias, but infers marketing capability indirectly. Two methods have been adopted in the literature to measure firm capability based on secondary data: stochastic frontier estimation (SFE) (Dutta et al. 1999) and Data Envelopment Analysis (DEA) (Luo and Donthu 2006). Table 5 illustrates exemplar studies examining the relationship between marketing capability and firm performance.

In this study, marketing capability is measured with DEA because its characteristics make it a good fit in this context. First, DEA is a nonparametric approach that requires no *a priori* knowledge on resources transformation functions. Because capability is firm idiosyncratic or unique (Day 1994), assuming an identical transformation function for every company may not reflect the reality. A nonparametric approach that requires no assumptions in advance is more likely to mirror the complexity of firms' resource transformation processes. Furthermore, most firms possess multiple resources to achieve multiple goals simultaneously. DEA accommodates multiple inputs and outputs in its capability score generation process. By accounting for multiple factors, DEA contains more information than single ratio approach and implicitly considers potential interactions and trade-offs among resources. In addition, DEA allows firms to be compared to best practices instead of average performers and models firm capability as the optimally weighted efficiency score in transforming multiple inputs/resources to achieve desirable multiple outputs for the firm. In the modeling procedure, each firm's efficiency is optimized to achieve the same outputs by consuming minimum inputs or to produce maximum outputs by using same inputs when compared to others in the sample. Thus, firms deemed as best-practices on the benchmark frontier receive a relative capability score of 100%. In contrast, firms below the benchmark frontier obtain a capability score of less than 100%.

This study uses three steps to estimate a firm's marketing capability gap. The first step is to derive individual firm's marketing capability score. This step starts with identifying DEA inputs and outputs of marketing capability. Then it calculates firm marketing capability using optimization programming models specified as follows:

$$(1) \quad \text{Firm Marketing Capability (MRC)} = 100 \text{ Max } \phi_i$$

$$\text{Max } \phi_i = \frac{o_1 \text{SALF}_i^t + o_2 \text{SALF}_i^{t-1} + o_3 \text{SALI}_i^t + o_4 \text{SALI}_i^{t-1}}{p_1 \text{MKEF}_i^t + p_2 \text{MKEF}_i^{t-1} + p_3 \text{MKEI}_i^t + p_4 \text{MKEI}_i^{t-1}},$$

$$\text{subject to } \frac{o_1 \text{SALF}_j^t + o_2 \text{SALF}_j^{t-1} + o_3 \text{SALI}_j^t + o_4 \text{SALI}_j^{t-1}}{p_1 \text{MKEF}_j^t + p_2 \text{MKEF}_j^{t-1} + p_3 \text{MKEI}_j^t + p_4 \text{MKEI}_j^{t-1}} \leq 1,$$

$$j=1, 2, 3 \dots n, \text{ and } o_1, o_2, o_3, o_4, p_1, p_2, p_3, p_4 \geq 0.$$

Where, MKEF= individual firm's marketing expenditures,

MKEI = relative ratio of individual firm's marketing expenditures to industry marketing expenditures,

SALF = individual firm's sales, and

SALI = relative ratio of firm sales to industry sales.

The model includes four inputs for marketing capability. The first two are individual firm's marketing expenditures at time t and t-1. Two time periods are adopted in order to capture marketing expense's lagging and carry-over effects. Two more inputs are included to account for competition effects within the industry, calculated as firm marketing expenditures *relative* to industry marketing expenditures at time t and t-1. In line with prior literature (Luo 2008; Mizik and Jacobson 2007), this study uses the difference between selling, general, and administrative expenses (SG&A, Compustat Data 189) and research and development expenses (R&D, Compustat Data 46) scaled by total asset as proxy for marketing expenditure. As suggested by Dutta et al. (1999), this measure captures firms' advertising expenses, promotions, and other selling efforts. In addition, this study has four outputs: individual firm's sales at time t and t-1

(Compustat Data 12), as well as a firm's sales growth, assessed as firm sales relative to industry sales at time t and t-1. Similar to input variables, these output measures are adopted to capture time and competition effects.

The second step of the procedure to obtain the marketing capability gap is to calculate the average marketing capability score of a firm's competitors. A firm's competitors are those in the same industry defined by the three-digit SIC code. The average marketing capability score of each firm's competitors is assessed as follows:

$$(2) \quad \text{Competitors' marketing capability (MCC)} = \frac{1}{n-1} \sum_{j \neq i}^n MRC_j \times 100\%,$$

$$j=1, 2, \dots, n; j \neq i.$$

The third step is to derive marketing capability gap by subtracting the competitors' capability score from each firm's capability score. The equation is specified as follows:

$$(3) \quad \text{Marketing Capability Gap (MCG)} = \text{MRC} - \text{MCC}$$

As shown in Table 4, the marketing capability gap has a mean of .485 with a standard deviation of .19.

Firm Performance. Firm revenue represents top-line performance and reflects how a firm performs in product market. This study measures revenue as a firm's sales (Compustat Data 12) scaled by total asset (Compustat Data 6). In the data, the revenue measure has a mean of 1.147 with a standard deviation of .631.

ROA is a bottom line performance measure and assesses a firm's ability to generate profits. This study derives it by dividing net income (Compustat Data 18) by total asset (Compustat Data 6). Table 4 shows that ROA has a mean of .058 and its standard deviation is .182.

Market capitalization is calculated by multiplying the stock price of the firm (Compustat Data 24) with common shares outstanding (Compustat Data 25). It reflects the view of the

investor community about a firm's future performance. The mean market capitalization for firms in the data is over 11 billion while the standard deviation is 32.6 billion. The data shows that firms retained in this final data are generally medium to big firms.

Analyst Coverage. Two mechanisms, analyst coverage and market competition, are examined. Analyst coverage is calculated as the number of analyst recommendations for the firm. It is available in I/B/E/S. Firms in the final sample have nine recommendations in average, whereas the standard deviation is 7.347.

Market Competition. Market competition is measured by the Herfindahl industry concentration index (Anderson, Fornell, and Mazvancheryl 2004; Hou and Robinson 2006). The market competition is estimated via this formula.

$$\text{Industry concentration index} = \sum_i s_i^2,$$

Where, s_i is the share of sales of firm i within the industry (or the ratio of firm's sales to total sales of industry). The industry is defined by the three-digit SIC code. The lower the industry concentration index, the higher the market competition. The HHI index has a mean of .346 with a standard deviation of .198, inferring that most firms in the sample are in competitive markets.

Control Variables. This study follows prior literature (McAlister et al. 2007, Thomas 2002) and accounts for several control variables. Firm-level control variables include analyst forecast consensus, firm size, liquidity, earnings, and R&D expenditures. This research includes analyst forecast consensus, i.e., the average of analyst earnings forecasts for the firm, to parcel out potential confounding effects. Firm size is the reported total assets from the start and end of the fiscal year (Compustat Data 6). The liquidity is calculated as current asset (Data 4) divided by current liability (Data 5). Earnings data is measured as income before extraordinary items (Data 18) scaled by total asset (Data 6). R&D spending is the research and development expenses (Data 46) scaled by total asset (Data 6) (Gruca and Rego, 2005; Luo and Homburg, 2007).

Furthermore, at the industry level, this study controls for industry earnings volatility, market competition, and industry liquidity. Industry earnings volatility is measured as the standard deviation of observed firm earnings within the industry. Industry liquidity is calculated as the average of the firm's liquidity for each industry. A year dummy and four industry dummies are also included to control time and industry effect. Specifically, this study identifies five industry sectors based on Dr. French's definitions: consumer, manufacturing, hi-tech, health, and other industry.⁸ Consumer industry refers to durables, nondurables, wholesale, retail, and services like laundries and repair shops. Manufacturing industry includes manufacturers, energy, and utilities. Hi-tech industry means firms producing business equipment, telephone and television transmission. Health industry contains companies of healthcare, medical equipment, and drugs.

3.4.3 Model Specification

This study estimates associations among firms' marketing capability gap and firm value with the following models:

$$\begin{array}{l}
 \text{System Equations} \\
 \left\{ \begin{array}{l}
 \text{Revenue} = \delta_0 + \nu_i + \rho_t + \delta_1 (\text{MCG}) + \delta_2 (\text{MCG}) \times (\text{NREC}) + \delta_3 (\text{MCG}) \times (\text{HHI}) + \\
 \delta_4 (\text{MCG}) \times (\text{NREC}) \times (\text{HHI}) + \delta_{controls} (\text{Control Variables}) + \varpi_{it} , \\
 \text{ROA} = \gamma_0 + \phi_i + \xi_t + \gamma_1 (\text{MCG}) + \gamma_2 (\text{MCG}) \times (\text{NREC}) + \gamma_3 (\text{MCG}) \times (\text{HHI}) + \\
 \gamma_4 (\text{MCG}) \times (\text{NREC}) \times (\text{HHI}) + \gamma_{controls} (\text{Control Variables}) + \psi_{it} , \text{ and} \\
 \text{MV} = \alpha_0 + \eta_i + \tau_t + \alpha_1 (\text{MCG}) + \alpha_2 (\text{MCG}) \times (\text{NREC}) + \alpha_3 (\text{MCG}) \times (\text{HHI}) + \\
 \alpha_4 (\text{MCG}) \times (\text{NREC}) \times (\text{HHI}) + \alpha_{controls} (\text{Control Variables}) + \omega_{it} ,
 \end{array} \right.
 \end{array}$$

where, MCG is marketing capability gap, NREC is analyst coverage, and HHI is Herfindahl concentration index. The above equations have considered the possible unobserved industry-

⁸ The definition and list of SIC codes categorizing each industry sector are available at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_5_ind_port.html

and time-specific fixed effects (i.e., $\eta_i, \tau_t, \phi_i, \xi_t, \nu_i, \rho_t$). The parameters of δ_0, γ_0 , and α_0 are intercepts, while ϖ_{it}, ψ_{it} , and ω_{it} are model residuals. These equations are estimated using seemingly unrelated regression (SUR) and results are reported in Table 6. The SUR is appropriate because it simultaneously estimates a system of regression equations and accommodates correlated error terms. As Table 4 shows, three performance measures are significantly correlated to each other. To check robustness, the generalized linear model (GLM) and ordinary least squared regression (OLS) are also applied to estimate these three equations separately. Generally, results are consistent with SUR model results (see Table 6, Appendices D and E).

3.5 Results

3.5.1 Effects of Marketing Capability on Firms' Financial Performance

As shown in Table 6, this study presents results in four steps. The basic model includes only control variables (M1, M5, and M9), whereas the other three models add direct effect (M2, M6, and M10), two-way interactions (M3, M7, and M11), and three-way interactions (M4, M8, and M12), incrementally. The additional power of these effects can be measured by examining changes of weighted R^2 of SUR model (which indicates an incremental contribution to the explanatory power of a system of three equations). In the SUR model in Table 6, the R^2 rises from 44.9% to 48.9% after entering marketing capability gap ($p < .05$), to 49.1% with two-way interactions, and to 49.2% with the three-way interaction.

The results show that the marketing capability gap has direct impact on firms' top-line and bottom-line performance. That is, marketing capability gap has a significant positive association with revenue ($\delta_1 = 1.264$ in M2, $p < .01$) and ROA ($\gamma_1 = .108$ in M6, $p < .01$). This means that the more a firm outperforms industry rivals in marketing capability, the more likely the firm will enjoy higher operations revenue and accounting ROA, consistent with extant

marketing literature. For market capitalization model, the effect is weaker and one direct effect of marketing capability gap is significant ($\alpha_1 = 3328.109$ in M10, $p < .05$). Thus, the value of marketing capability is more recognized by product markets as opposed to financial markets. However, after entering moderating effects in M11 and M12, the direct effect of marketing capability gap on stock market performance becomes insignificant ($p > .10$). This weaker association found in market capitalization model implies that the product market reaction to marketing levers may not be in sync with stock market response. As reflected by the R^2 changes in additional OLS modeling (see Appendix A), the marketing capability gap is able to explain an increment of 13.7% of variations in top-line revenue but much less for bottom-line ROA and stock market performance. It shows additional evidence for the heterogeneity in association between marketing capability gap and various firm performance measures.

3.5.2 The Mechanism of Analyst Coverage

To examine potential mechanisms translating different value of marketing capability to firm performance, this research tests the moderating effect of analyst coverage and market competition. The interaction between analyst coverage and marketing capability gap has a positive impact on top-line operations revenue ($\delta_2 = .009$ in M3; $p < .10$) but a negative coefficient on bottom-line ROA ($\alpha_2 = -.012$ in M7, $p < .01$; and $= -.014$ in M8, $p < .01$).⁹ This shows that analyst coverage contributes to heterogeneity in impact of marketing capability gap on performance metrics. Surprisingly, when entering the moderating role of analyst coverage, the direct effect of marketing capability gap is no longer significant, but the interaction has a positive effect on market capitalization ($\alpha_2 = 423.422$ in M11, $p < .10$; and $= 427.452$ in M12; $p < .10$). This finding implies that analyst coverage helps stock markets incorporate the fair value

⁹ Because the moderating effect of analyst coverage is negative in accounting measure, ROA, the author conjectures that the accounting rule on expensing marketing expenditures may contribute to this result.

of intangible marketing capability if analyst coverage is high for the firm. In other words, the reaction of stock markets may be in sync with that of product markets when stock analysts (industry experts) are involved in valuing marketing capability gap. Without analysts involved as an information intermediary, the value of superior marketing capability relative to industry rivals may not be fully recognized in the eyes of investors. Indeed, in finance and accounting literature, analyst coverage has been cited as a potential mechanism unveiling the value of firm intangible assets to investors (Kimbrough 2007). Through analysts' efforts in seeking private information of the firm, the analysts fill the information gap (Barth, Kasznik, and McNichols 2001). As such, the firm with higher analyst coverage has less of an information ambiguity problem. This information discovery role of analyst coverage might account for the results regarding the significant interplay (MCG x NREC) in affecting market capitalization of the firm.¹⁰

3.5.3 The Mechanism of Market Competition

Furthermore, market competition changes the effects of marketing capability gap on top-line revenue and bottom-line ROA. The interaction between marketing capability gap and market competition has a significant positive impact on top-line revenue ($\delta_3 = -.289$ in M3, $p < .10$ and $-.801$ in M4, $p < .01$) and bottom-line ROA ($\gamma_3 = -.334$ in M7, $p < .01$; and $-.404$ in M8, $p < .01$). However, the interaction between marketing capability gap and market competition is not significant in market capitalization model. Note that the analysis uses the Herfindahl's concentration index to measure market competition. A competitive market would have a low index value. Therefore, a negative sign of the interaction coefficients suggests that marketing capability gap has a stronger effect on revenue and ROA when market competition is high,

¹⁰ This study follows Kimbrough (2007) and tests analyst coverage as a moderator. However, Barth et al. (2001) find that advertising has an impact on analyst coverage. Because analyst coverage influences stock price, it implies that analyst coverage could be a mediator. This research has tested this potential mediating role of analyst coverage but could not find significant evidence. Even though the data does not support the mediating role of analyst coverage, theoretically, analyst coverage could be a channel in translating the value of marketing activities. This study reserves this line of thinking for future research.

rather than low. Thus, these findings not only support the moderating role of market competition but also show additional proof of heterogeneity in marketing capability gap's impact on performance metrics.

This study also finds significant three-way interactions in the top-line revenue and bottom-line ROA models. As Table 6 reports, the three-way interaction has a positive impact on top-line revenue ($\delta_3 = .048$ in M4, $p < .01$) and bottom-line ROA ($\gamma_3 = .007$ in M8, $P < .10$). This indicates that analyst coverage and market competition may work complementarily to reveal the value of marketing capability. When the market condition is less competitive, the analyst coverage works as a channel to facilitate the value translation to product markets. On the contrary, when the market is more competitive, the necessity of decreasing information ambiguity through analysts is alleviated because market competition forces firms to increase their transparency. In brief, outperforming marketing capability relative to industry rivals pay off optimally in the situation of high analyst coverage coupled with low competition or low analyst coverage coupled with high competition.

3.6 Discussion and Implications

The empirical findings of this paper are interesting in several ways. This essay emphasizes performance implications of the *gap* between one's marketing capability and its rivals' capability instead of the *level* of marketing capability. Possessing valuable resources relative to rivals in the same industry is a key source of sustainable competitive advantages. Acknowledging Dutta et al.'s (1999) findings with marketing capability level, this study adds the gap approach to show the degree to which a firm outperforms its competitors drives firm performance. In other words, a firm with a bigger marketing capability gap rather than its own absolute value enjoys superior ability to outmaneuver its rivals and achieves better financial performance. This research offers several theoretical and managerial implications.

3.6.1 Theoretical Implication

This study contributes to marketing-finance interface literature by exploring potential mechanisms that may explain why product market reactions are not in tandem with stock market responses (Song, Benedetto, and Nason 2007; Ramaswami, Srivastava, and Bhargava 2009). This paper is among the first to propose and empirically examines the role of information intermediaries associated with the capability-performance link. The moderating role of analyst coverage and market competition is empirically examined with data collected from multiple datasets. Responding to the recent research call on investigating analyst role as an information intermediary, this research incorporates analyst coverage into valuation models. Financial analysts have been cited as effective avenues to eliminate the information void associated with intangible assets (Kimbrough 2007; Barth, Kasznik, and McNichols 2001). Yet, they are largely ignored in marketing literature. The result finds that analysts help financial markets discover the value of intangible assets such as marketing capability gap.

Also, the analysis finds that the more competitive the market is, the stronger the impact of marketing capability gap is on operations revenue and ROA. The derived positive effects of marketing capability gap on revenue and ROA provide extra support for the RBV framework and research stream on the impact of marketing strategies (Krasnikov and Jayachandran 2008). The results based on archival data supplement prior studies based on survey data (Morgan, Slotegraaf, and Vorhies 2009) and provide an enriched portrait of relationships between marketing capability and firm performance.

Another contribution of this essay is the examination of the performance heterogeneity of marketing capability associated with operations, accounting, and finance metrics. Previous studies have linked marketing capability either to one overall financial performance measure or to multiple subjective measures but test individually (Ramaswami, Srivastava, and Bhargava 2009). Against this background, this study complements extant knowledge by stepping forward to simultaneously examine multiple measures consisting of top-line revenue, bottom-line ROA,

and market capitalization. The results find that responses of product markets are not parallel to those of stock markets. It has been cited in the literature that firms pursuing multiple goals involve trade-off issues (Luo and Donthu 2006). Similar to this study, Morgan, Slotegraaf, and Vorhies (2009) report that the impact of brand management capability on different performance differs, i.e., positive impact on revenue growth rate and negative effect on margin growth rate. Morgan and Rego (2006) also show heterogeneity in association between customer metrics and different performance measures. This study contributes to this stream of literature of uncovering heterogeneity across performance metrics used in multiple disciplines. The empirical evidence finds that marketing capability gap has positive impacts on top-line revenue and bottom-line ROA but a weaker impact on market capitalization. This indicates that stock markets may not be efficient at all times in incorporating the value of marketing capability which is reflected in product markets.

3.6.2 Managerial Implication

The performance heterogeneity reflects that product market response is not parallel to finance market reaction. The result, that the value of a firm with high marketing capability gap is more recognized in stock market if this firm has high analyst coverage, points to managers that stock analysts play an important role in unveiling the value of marketing capability gap to investors. In other words, stock analysts help mitigate the information asymmetry issue involved in the value translation process especially in stock market. Managers should take advantage of this phenomenon and consider the necessity of maintaining a good relationship with analysts altogether with financial managers. The communication efforts with goals to convey firms' marketing capability should be incorporated into the corporate reporting system and made available to both investors and customers.

Even more, if managers care more about the reaction of product market, it is important to account for the environmental factor, market competition, when developing the relationship with analysts. The analysis indicates that analyst coverage and market competition may work

complementarily to reveal the value of marketing capability to product market. Other things being equal, a high (low) level of market competition coupled with low (high) analyst coverage work optimally to manifest the impact of marketing capability gap to product market. For example, for firms with high marketing capability gap in low competition market, analyst coverage helps the product market be more aware of the value of marketing capability gap. By the same token, for firms with low marketing capability gap in highly competitive market, analyst coverage also enhances the value transfer to product market.

In addition, the empirical evidence from this study indicates the importance of beating competitors by showing that marketing capability gap has positive impact on top-line revenue and bottom line ROA. Under certain circumstances, the benefit of being top performers in terms of marketing capability is valued by the stock markets as well.

3.6.3 Limitation and Future Direction

Despite the contributions delineated in prior sections, this research has some limitations associated with the features of the data. In addition to acknowledging these limitations, several future directions are discussed as follows. First, this study shares a major restriction with those studies utilizing archival data in that it measures a firm's marketing capability with an overall measure. Therefore, it lacks the ability to measure different aspects of marketing capability, if there are any. Future study may overcome this limitation by using unique datasets or measuring with different methodology in creative ways.

Second, the data only contains information of U.S. firms. Researchers may also extend this topic with data from other countries such as companies in Europe and Asia to compare and contrast whether there are differences across countries.

Third, this study examines two potential mechanisms moderating the effect of marketing capability gap on firm performance. The results document that analyst coverage and market competition have influences on the impact of marketing capability gap on firm performance. However, this research is not able to answers questions such as when the influence of analyst

metrics takes place or how analysts interpret marketing information. It would also be interesting to study how long the effect can last.

Forth, it is worth investigating whether other factors may influence the association between a firm's marketing assets and its financial outcomes. Future research can work on discovering other potential mediators and moderators. In addition to external financial analysts, there might be some other potential factors inside the company that have influence on the associations between market-based assets and firms' financial outcomes such as a firm's market orientation and the attitudes of top management towards marketing assets. This study serves as initial empirical evidence and it is hoped that future research will focus more on the economic impact of marketing capability as well as related conditions and processes so that marketing strategic activities can lead to more fruitful results in both product and stock markets simultaneously.

Table 4 Correlations and Summary Statistics

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Market Capitalization (Stock Market Performance)	1												
2. Revenue (Top-line Performance)	-.085**	1											
3. ROA (Bottom-line Performance)	.050**	.262**	1										
4. Marketing Capability Gap (MCG)	-.062**	.418**	.106**	1									
5. Analyst Coverage (NREC)	.387**	-.049**	0.008	-.059**	1								
6. Analyst Forecast Consensus	.122**	-.004	.044**	-0.028	.018	1							
7. R&D Expense	.120**	-.159**	-.061**	0.000	.236**	-.075**	1						
8. Firm Size	.660**	-.132**	-0.021	-.129**	.193**	.107**	-.018	1					
9. Firm Earnings	.050**	.262**	1.000**	.106**	.008	.044**	-.061**	-.021	1				
10. Industry Earning Volatility	.468**	-.090**	-0.023	-0.016	.129**	.135**	.086**	.451**	-.023	1			
11. Firm Liquidity	-.129**	-.117**	-0.011	-.054**	-.106**	-.078**	.111**	-.159**	-.011	-.048**	1		
12. Industry Liquidity	-.028	-.134**	-0.011	-0.020	.050**	-.094**	.251**	-.140**	-.011	-.097**	.504**	1	
13. Market Competition (HHI)	-.057**	.184**	0.001	-0.001	-.138**	.057**	-.291**	-.032*	.001	-.107**	-.087**	-.184**	1
N	6743	4968	4968	4166	4963	4723	4967	4968	4968	4967	4858	4822	4439
Mean	11,544.536	1.147	.058	.485	9.466	1.428	.032	10,383	.058	910.209	2.054	2.056	.346
Std. Deviation	32,625.151	.631	.182	.190	7.347	1.468	.041	34,250	.182	1486.087	1.523	.770	.198

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 5 Prior Studies on Capability-Performance Link

Illustrative Study	Research Issue	Key Findings
Song, Droge, Hanvanich, and Calantone (2005)	Examine the direct impact of the marketing-related capabilities on firm performance. The moderating effect of external environment is also testes.	Both marketing-related and technology-related capabilities have positive effects on firm performance. The positive impact of marketing-related capability is lower in a technologically turbulent environment.
Song, Benedetto, and Nason (2007)	Examine the moderating role of strategic types in the capability-performance link.	Strategic type (such as Miles-Snow typology) moderates the relationship between capabilities and performance. Market-linking and marketing capabilities have significant effects on performance for defenders.
Vorhies and Morgan (2005)	Propose and examine the interplay among different aspects of marketing capability in the context of capability-performance link.	Identify eight aspects of marketing capabilities and empirically support the existence and performance impact of interdependency among marketing capabilities.
Morgan, Slotegraaf, and Vorhies (2009)	Examine the direct impact of different components of marketing capabilities on different performance measures.	Different elements of marketing capabilities have direct impacts on revenue and margin growth. However, brand management and CRM capability have opposing effects on revenue and margin growth.
Morgan, Vorhies, and Mason (2009)	Examine the role of marketing capabilities as complementary assets to market orientation.	Market orientation and marketing capabilities are complementary assets. Marketing capabilities have direct effects on ROA and perceived firm performance.
Krasnikov and Jayachandran (2008)	Compare and contrast the impact of marketing capability on firm performance relative to other capabilities.	Marketing capability has a stronger impact on firm performance than R&D and operations capabilities.
Dutta, Narasimhan, and Rajiv (1999)	Examine capability-performance link in high-tech industry.	Marketing, R&D, and operations capabilities and interactions among these capabilities are important determinants of relative financial performance of high-technology industry.
Luo and Donthu (2006)	Examine the nonlinear impact of marketing communication productivity on firms' financial performance.	Marketing communication productivity has curvilinear (inverted-U shape) effects on Tobin's q and stock return. These effects are stronger for firms with intense R&D expenditures and in competitive markets.
The present study	Focus on the marketing capability gap rather than the level. Propose two potential mechanisms involved in the capability-performance link.	Marketing capability gap has stronger impacts on bottom-line and top-line performance than stock market performance. Moreover, analyst coverage help translate the value of marketing capability to stock market. Marketing capability gap pays off the best in revenue and ROA under the condition of high coverage with low competition.

Table 6 Results of Seemingly Unrelated Regression (SUR)

Variables	Top-line performance (Operations Revenue)				Bottom-line performance (ROA)				Stock Market Performance (Market Capitalization)			
	M1 Beta(p)	M2 Beta(p)	M3 Beta(p)	M4 Beta(p)	M5 Beta(p)	M6 Beta(p)	M7 Beta(p)	M8 Beta(p)	M9 Beta(p)	M10 Beta(p)	M11 Beta(p)	M12 Beta(p)
Analyst Coverage (NREC)	<i>-.001</i> (.550)	<i>.001</i> (.413)	<i>-.004</i> (.191)	<i>-.004</i> (.129)	<i>.001</i> (.162)	<i>.001</i> (.124)	.006 (.000)	.006 (.000)	877.444 (.000)	891.450 (.000)	685.097 (.000)	685.262 (.000)
Analyst Forecast Consensus	<i>-.005</i> (.373)	<i>-.001</i> (.785)	<i>-.002</i> (.755)	<i>-.001</i> (.843)	.005 (.016)	.005 (.021)	.006 (.015)	.006 (.013)	330.098 (.113)	395.837 (.075)	384.335 (.084)	384.164 (.084)
R&D Expense	.959 (.000)	.703 (.001)	.745 (.001)	.850 (.000)	-.291 (.001)	-.267 (.005)	-.304 (.002)	-.289 (.003)	58153.200 (.000)	61967.620 (.000)	63553.550 (.000)	63522.380 (.000)
Firm Size	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	<i>.000</i> (.598)	<i>.000</i> (.831)	<i>.000</i> (.602)	<i>.000</i> (.612)	0.874 (.000)	0.864 (.000)	0.863 (.000)	0.863 (.000)
ROA	.925 (.000)	.821 (.000)	.823 (.000)	.817 (.000)	- (.000)	- (.000)	- (.000)	- (.000)	10060.980 (.000)	9581.069 (.000)	9842.054 (.000)	9843.635 (.000)
Industry Earning Volatility	.000 (.000)	.000 (.042)	.000 (.041)	<i>.000</i> (.071)	<i>.000</i> (.193)	<i>.000</i> (.117)	<i>.000</i> (.073)	<i>.000</i> (.062)	1.828 (.000)	1.793 (.000)	1.809 (.000)	1.810 (.000)
Liquidity	-.035 (.000)	-.026 (.000)	-.026 (.000)	-.026 (.000)	<i>.000</i> (.939)	<i>.001</i> (.799)	<i>.001</i> (.704)	<i>.001</i> (.698)	-860.312 (.000)	-1041.520 (.000)	-1043.970 (.000)	-1044.020 (.000)
Industry Liquidity	-.037 (.009)	-.031 (.015)	-.032 (.012)	-.028 (.029)	<i>.000</i> (.985)	<i>.001</i> (.833)	<i>.002</i> (.769)	<i>.002</i> (.694)	3067.146 (.000)	3185.119 (.000)	3158.988 (.000)	3157.734 (.000)
HHI	.292 (.000)	.334 (.000)	.475 (.000)	.504 (.000)	<i>-.024</i> (.168)	<i>-.027</i> (.137)	.134 (.002)	.138 (.001)	5029.585 (.003)	5488.686 (.002)	3611.603 (.387)	3602.985 (.389)
Year Dummy	<i>.024</i> (.143)	<i>-.013</i> (.388)	<i>-.012</i> (.393)	<i>-.015</i> (.307)	<i>-.003</i> (.578)	<i>-.007</i> (.292)	<i>-.006</i> (.323)	<i>-.007</i> (.300)	1939.574 (.002)	1872.171 (.004)	1864.518 (.004)	1865.227 (.004)
Consumer	.934 (.000)	.888 (.000)	.884 (.000)	.871 (.000)	-.097 (.000)	-.090 (.000)	-.087 (.000)	-.089 (.000)	1411.175 (.368)	1320.327 (.416)	1228.034 (.450)	1232.007 (.450)
Manufacturing	.276 (.000)	.248 (.000)	.245 (.000)	.242 (.000)	-.103 (.000)	-.095 (.000)	-.090 (.000)	-.091 (.000)	2530.096 (.097)	2346.910 (.138)	2191.179 (.166)	2191.955 (.166)
Hi-tech	.198 (.000)	.189 (.000)	.185 (.000)	.176 (.000)	-.113 (.000)	-.109 (.000)	-.104 (.000)	-.105 (.000)	-2140.090 (.212)	-2115.400 (.236)	-2277.810 (.202)	-2275.050 (.203)
Health	<i>.035</i> (.480)	<i>.036</i> (.418)	<i>.031</i> (.487)	<i>.034</i> (.454)	-.071 (.000)	-.066 (.001)	-.058 (.004)	-.058 (.004)	9404.726 (.000)	9518.367 (.000)	9267.168 (.000)	9266.476 (.000)
Marketing Capability Gap (MCG)		1.264 (.000)	1.283 (.000)	1.450 (.000)		.108 (.000)	.346 (.000)	.369 (.000)		3328.109 (.048)	-2288.700 (.595)	-2338.360 (.604)
MCG*NREC			<i>.009</i> (.080)	<i>-.005</i> (.416)			-.012 (.000)	-.014 (.000)			423.422 (.061)	427.452 (.089)
MCG*HHI			<i>-.289</i> (.100)	-.801 (.000)			-.334 (.000)	-.404 (.000)			3931.548 (.613)	4083.968 (.643)
MCG*NREC*HHI				.048 (.000)			<i>.007</i> (.096)					-14.326 (.971)
R ²	.449	.489	.491	.492	.449	.489	.491	.492	.449	.489	.491	.492

Coefficients in bold are significant at .05 level; those in italic are significant at .1 level

CHAPTER 4

CONCLUSION TO THE DISSERTATION

The objective of this dissertation is to paint a clearer view on the capability-performance link by testing the relationships among marketing capability, analyst recommendations, and firm value. The first essay introduces the under-researched analyst metrics. The second essay examines the intermediary role of stock analysts and heterogeneity in this link.

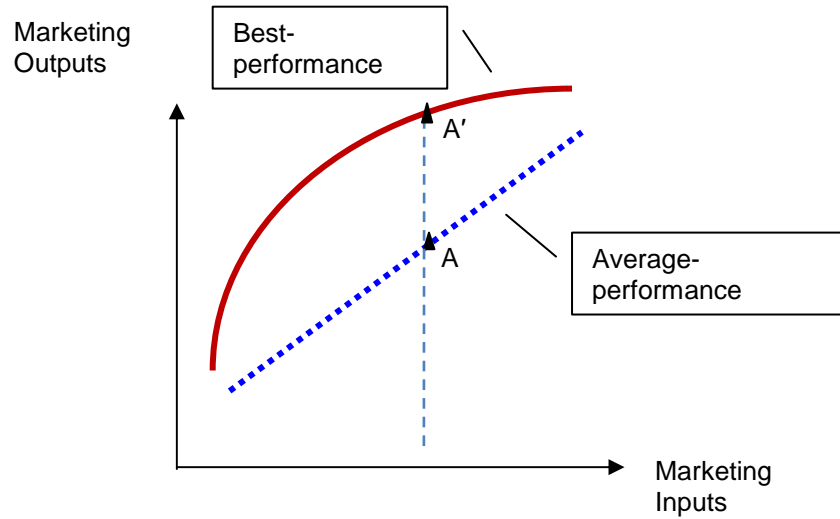
Essay 1 attempts to investigate the direct and relative effect of marketing capability on various analyst recommendation measures. In addition, the role of market competition in this relationship is also examined. The results show positive and stronger impact of marketing capability on analyst recommendation level and downgrade. Furthermore, the impact of marketing capability is more pronounced in competitive markets. The nonlinear direct impact also reveals a potentially harmful side of marketing capability in terms of stock analysts.

Essay 2 finds evidence of heterogeneity in associations with marketing capability gap and different performance measures. Performance measures from marketing, accounting, and finance disciplines are adopted in this study. The results support the notion that the response of product market to marketing capability is not in sync with that of stock market. In other words, the financial market does not always efficiently reflect the value of marketing assets. The finance market reaction may align product market response only under certain conditions. Two potential mechanisms that may involve the value translation process are examined. The result reveals that analyst coverage moderates the impact of marketing capability gap on stock market performance. This means that analyst coverage contributes to the heterogeneity in associations between marketing capability gap and firm performance measures. Market competition moderates the impact of marketing capability gap on firms' top- and bottom-line performance and hence is another source of heterogeneity.

APPENDIX A
MEASURES AND DATA SOURCES FOR THE VARIABLES

	Measures	Source
Independent variables:		
Marketing Capability	It is firm-idiosyncratic optimally weighted efficiency in transforming marketing input spendings (firms' stock of advertising expenses, promotions, and other selling expenditure) into desirable marketing outcomes (sales and sales growth).	Compustat Data 6, 12, 46, 189
Financing Capability	It is firm-idiosyncratic optimally weighted efficiency in transforming financing resources (firms' stock of external debt in the capital structure) into desirable financial outcomes (cash flows and cash flow growth).	Compustat Data6, 9, 308
Dependent variables:		
Analyst Recommendation Level	In I/B/E/S, since stock recommendation is measured in a reversed scale, this study recodes this measure so that the higher value represents better stock recommendation level. The final measure for recommendation level ranges from "1"= sell-recommendation for the stocks to "5"= strong buy-recommendation for the stocks.	I/B/E/S
Analyst Recommendation Downgrades	Stock recommendation downgrade is measured as the number of downwardly revised recommendations issued for the firm from financial analysts to investors before the actual earnings announcements at the end of the year.	I/B/E/S
Analyst Recommendation Dispersion	Stock recommendation dispersion is measured as the variation or standard deviations of the issued recommendations from financial analysts to investors before the actual earnings announcements at the end of the year.	I/B/E/S
Control variables:		
R&D Expenditure	Firm R&D spending is measured as research and development expenses.	Compustat Data 46
Marketing Expenditure	Marketing expenditure is the difference between SG&A expenses and R&D expenses.	Data46, 189
Firm Size	It is measured as the reported total asset from the start and end of the fiscal year.	Data 6
Leverage	It is measured as Long-term Debt divided by Total Asset.	Data 6, 9
Firm Earnings	Earnings data is income before extraordinary items.	Data18
Industry Earnings Volatility	It is measured as the standard deviation of observed firm earnings within each industry.	Data18
Liquidity	Liquidity is calculated as current asset divided by current liability.	Data 4, 5
Industry Liquidity	It is measured as the average of firms' liquidity within each industry.	Data 4, 5
Market Competition	It is measured using Herfindahl's concentration index. The lower the industry concentration index, the higher the market competition.	Data 12

APPENDIX B
A PICTORIAL PRESENTATION OF DATA ENVELOPMENT ANALYSIS
ESTIMATION



This study measures marketing capability based on a nonparametric methodology, namely DEA. The DEA approach to measure capability is advantageous for three reasons: (1) It acknowledges the firm-idiosyncratic (or firm-specific) nature of capability. (2) Unlike other techniques, DEA does not unrealistically assume *a priori* the same transformation function for all the firms. And (3) it compares each firm against the best-performing competitors on the benchmark, as opposed to the average-performance benchmark (OLS). As shown in the figure above, DEA models firm capability relative to the efficient frontier or the best-performance benchmark. Firms on this benchmark have a capability score of 100% from DEA estimation results. Because firm A is not on the efficient frontier, its capability score is less than 100% (or close to 60%) relative to the hypothetical firm A' (which achieves more marketing outputs given the same marketing inputs). Since DEA is sensitive to cases with negative values or missing values on input and output variables, these cases are deleted. The frequencies of DEA results on marketing and financing capability are reported below:

	Lower than .25 (included)	.25 ~.50	.50 ~.75	.75 ~1.00
Marketing Capability	5.144% (n= 227)	58.282% (n=2,572)	27.804% (n=1,227)	8.77% (n=387)
Financing Capability	29.223% (n=1,000)	41.993% (n=1,437)	18.381% (n=629)	10.403% (n=356)

APPENDIX C

ADDITIONAL ANALYSES WITH ALTERNATIVE VARIABLES

The results are also checked with several additional steps. First, several alternative measures for marketing and financing capability are tested. That is, measures of marketing and financing capability with the constant returns-to-scale specification obtained from DEA analyses are adopted in additional analyses. The results show that the conclusion on recommendation level is robust to this alternative measure of capability. Second, because of the threat of non-normality and extreme values, alternative dependent variables with natural log of the measures of stock recommendations are also used to check the robustness of the results. Again, the key hypothesis testing results do not change substantially for stock recommendation levels. See the table below.

Variables	Recommendation Level Results using		Recommendation Level Results using	
	Alternative Independent Variables		Alternative Dependent Variables	
	Coefficient (t)	p-Value	Coefficient (t)	p-Value
Marketing Capability (MRC)	1.336 (4.102)	.000	.196 (3.291)	.001
Financing Capability (FIC)	.137 (.539)	.590	-.044 (-1.506)	.132
Marketing Capability ² (MRC ²)	-1.378 (-3.567)	.000	-.148 (-2.893)	.004
Financing Capability ² (FIC ²)	-.211 (-.756)	.450	.029 (1.025)	.305
MCO *MRC	2.104 (2.639)	.008	.433 (2.763)	.006
MCO *MRC ²	-2.485 (-2.590)	.010	-.368 (-2.743)	.006
MCO *FIC	-.322 (-.531)	.596	-.065 (-.912)	.362
MCO *FIC ²	-.077 (-.113)	.910	.006 (.083)	.934

Coefficients in bold are significant at .05 level; in italic are significant in .1 level

APPENDIX D
RESULTS OF ORDINARY LEAST SQUARED REGRESSION (OLS)

Variables	Top-line performance (Revenue)				Bottom-line performance (ROA)				Stock Market Performance (Market Capitalization)			
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
	Beta(p)	Beta(p)	Beta(p)	Beta(p)	Beta(p)	Beta(p)	Beta(p)	Beta(p)	Beta(p)	Beta(p)	Beta(p)	Beta(p)
Analyst Coverage (NREC)	<i>-0.001</i>	<i>.001</i>	<i>-.003</i>	<i>-.004</i>	<i>.001</i>	<i>.001</i>	.006	.006	887.520	891.450	685.097	685.262
Analyst Forecast	<i>-.006</i>	<i>-.002</i>	<i>-.002</i>	<i>-.001</i>	.005	.005	.005	.006	<i>383.936</i>	<i>395.837</i>	<i>384.335</i>	<i>384.164</i>
Consensus	<i>(.284)</i>	<i>(.756)</i>	<i>(.726)</i>	<i>(.812)</i>	<i>(.033)</i>	<i>(.022)</i>	<i>(.015)</i>	<i>(.014)</i>	<i>(.084)</i>	<i>(.075)</i>	<i>(.084)</i>	<i>(.084)</i>
R&D Expense	.891	.696	.736	.841	-.252	-.266	-.302	-.288	62471.434	61967.618	63553.551	63522.384
Firm Size	<i>(.000)</i>	<i>(.001)</i>	<i>(.001)</i>	<i>(.000)</i>	<i>(.008)</i>	<i>(.005)</i>	<i>(.001)</i>	<i>(.003)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>
ROA	.000	.000	.000	.000	<i>.000</i>	<i>.000</i>	<i>.000</i>	<i>.000</i>	.860	.864	.863	.863
Industry Earning Volatility	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.579)</i>	<i>(.831)</i>	<i>(.602)</i>	<i>(.612)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>
Liquidity	.943	.823	.824	.819	-	-	-	-	9900.041	9581.069	9842.054	9843.635
Industry Liquidity	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>.000</i>	<i>.000</i>	<i>.000</i>	<i>.000</i>	1.831	1.793	1.809	1.810
HHI	<i>(.000)</i>	<i>(.047)</i>	<i>(.047)</i>	<i>(.080)</i>	<i>(.273)</i>	<i>(.119)</i>	<i>(.075)</i>	<i>(.064)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>
Year Dummy	-0.040	-0.026	-0.025	-0.025	<i>-.001</i>	<i>.001</i>	<i>.001</i>	<i>.001</i>	-1078.888	-1041.520	-1043.972	-1044.022
Consumer	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.821)</i>	<i>(.827)</i>	<i>(.740)</i>	<i>(.736)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>
Manufacturing	-0.030	-0.032	-0.033	-0.028	<i>.002</i>	<i>.001</i>	<i>.002</i>	<i>.003</i>	3190.512	3185.119	3158.988	3157.734
Hi-tech	<i>(.040)</i>	<i>(.012)</i>	<i>(.010)</i>	<i>(.024)</i>	<i>(.779)</i>	<i>(.805)</i>	<i>(.731)</i>	<i>(.657)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>
Health	.303	.336	.473	.501	<i>-.030</i>	<i>-.027</i>	.134	.137	5402.450	5488.686	3611.603	3602.985
Marketing Capability Gap (MCG)	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.100)</i>	<i>(.137)</i>	<i>(.002)</i>	<i>(.001)</i>	<i>(.003)</i>	<i>(.002)</i>	<i>(.387)</i>	<i>(.389)</i>
MCG*NREC	<i>.026</i>	<i>-.012</i>	<i>-.012</i>	<i>-.014</i>	<i>-.003</i>	<i>-.007</i>	<i>-.006</i>	<i>-.006</i>	1972.616	1872.171	1864.518	1865.227
MCG*HHI	<i>(.112)</i>	<i>(.411)</i>	<i>(.413)</i>	<i>(.324)</i>	<i>(.597)</i>	<i>(.309)</i>	<i>(.347)</i>	<i>(.323)</i>	<i>(.002)</i>	<i>(.004)</i>	<i>(.004)</i>	<i>(.004)</i>
MCG*NREC*HHI	.919	.891	.888	.875	-.087	-.089	-.086	-.088	<i>1404.500</i>	<i>1320.327</i>	<i>1228.034</i>	<i>1232.007</i>
n	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.387)</i>	<i>(.416)</i>	<i>(.450)</i>	<i>(.450)</i>
R ²	.269	.253	.249	.247	-.094	-.094	-.089	-.089	<i>2398.632</i>	<i>2346.910</i>	<i>2191.179</i>	<i>2191.955</i>
adj R ²	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.129)</i>	<i>(.137)</i>	<i>(.166)</i>	<i>(.166)</i>
	.189	.194	.190	.181	-.109	-.108	-.103	-.104	<i>-2118.774</i>	<i>-2115.398</i>	<i>-2277.810</i>	<i>-2275.049</i>
	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.235)</i>	<i>(.236)</i>	<i>(.202)</i>	<i>(.203)</i>
	<i>.033</i>	<i>.039</i>	<i>.035</i>	<i>.038</i>	-.065	-.064	-.056	-.056	9508.550	9518.367	9267.168	9266.476
	<i>(.520)</i>	<i>(.377)</i>	<i>(.440)</i>	<i>(.400)</i>	<i>(.001)</i>	<i>(.001)</i>	<i>(.005)</i>	<i>(.005)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>
		1.261	1.280	1.446		.107	.345	.367	3328.109	-2288.702	-2338.365	
		<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>		<i>(.000)</i>	<i>(.000)</i>	<i>(.000)</i>	<i>(.048)</i>	<i>(.595)</i>	<i>(.604)</i>	
			<i>.009</i>	<i>-.005</i>			-.012	-.014		<i>423.422</i>	<i>427.452</i>	
			<i>(.088)</i>	<i>(.389)</i>			<i>(.000)</i>	<i>(.000)</i>		<i>(.061)</i>	<i>(.089)</i>	
			<i>-.281</i>	-.792			-.333	-.401		<i>3931.548</i>	<i>4083.968</i>	
			<i>(.109)</i>	<i>(.000)</i>			<i>(.000)</i>	<i>(.000)</i>		<i>(.613)</i>	<i>(.643)</i>	
				.048			<i>.006</i>	<i>(.104)</i>			<i>-14.325</i>	
				<i>(.000)</i>							<i>(.971)</i>	
	<i>n</i>	<i>3854</i>			<i>3854</i>				<i>3837</i>			
	<i>R²</i>	<i>.389</i>	<i>.526</i>	<i>.527</i>	<i>.530</i>	<i>.020</i>	<i>.030</i>	<i>.039</i>	<i>.040</i>	<i>.632</i>	<i>.632</i>	<i>.633</i>
	<i>adj R²</i>	<i>.387</i>	<i>.524</i>	<i>.525</i>	<i>.528</i>	<i>.017</i>	<i>.026</i>	<i>.035</i>	<i>.036</i>	<i>.631</i>	<i>.631</i>	<i>.631</i>

Coefficients in bold are significant at .05 level; in italic are significant in .1 level

APPENDIX E
RESULTS OF GENERALIZED LINEAR MODEL (GLM)

Variables	Top-line performance (Revenue)				Bottom-line performance (ROA)				Stock Market Performance (Market Capitalization)			
	M1 Beta(p)	M2 Beta(p)	M3 Beta(p)	M4 Beta(p)	M5 Beta(p)	M6 Beta(p)	M7 Beta(p)	M8 Beta(p)	M9 Beta(p)	M10 Beta(p)	M11 Beta(p)	M12 Beta(p)
Analyst Coverage (NREC)	.000 (.930)	.001 (.192)	.002 (.531)	.001 (.690)	.001 (.161)	.001 (.124)	.006 (.000)	.006 (.000)	883.728 (.000)	898.334 (.000)	748.661 (.000)	748.043 (.000)
Analyst Forecast Consensus	.000 (.980)	.003 (.586)	.003 (.579)	.004 (.502)	.005 (.016)	.005 (.021)	.006 (.015)	.006 (.013)	<i>381.531</i> (.068)	445.781 (.046)	438.549 (.049)	439.121 (.049)
R&D Expense	.690 (.005)	.483 (.032)	.495 (.028)	.614 (.007)	-.291 (.001)	-.267 (.005)	-.304 (.001)	-.289 (.003)	55229.295 (.000)	59408.475 (.000)	60566.188 (.000)	60677.794 (.000)
Firm Size	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.598)	.000 (.831)	.000 (.602)	.000 (.612)	.873 (.000)	.864 (.000)	.863 (.000)	.863 (.000)
ROA	.000 (.001)	.000 (.172)	.000 (.196)	.000 (.296)	.000 (.193)	.000 (.117)	.000 (.073)	.000 (.062)	1.795 (.000)	1.754 (.000)	1.763 (.000)	1.762 (.000)
Industry Earning Volatility	-.035 (.000)	-.026 (.000)	-.025 (.000)	-.025 (.000)	.000 (.939)	.001 (.799)	.001 (.704)	.001 (.698)	-862.099 (.000)	-1034.855 (.000)	-1033.777 (.000)	-1033.606 (.000)
Liquidity	-.037 (.013)	-.030 (.027)	-.031 (.024)	<i>-.026</i> (.055)	.000 (.985)	.001 (.833)	.002 (.769)	.002 (.693)	3066.106 (.000)	3196.749 (.000)	3175.557 (.000)	3179.972 (.000)
Industry Liquidity	.270 (.000)	.312 (.000)	.585 (.000)	.617 (.000)	<i>-.024</i> (.168)	<i>-.027</i> (.137)	.134 (.002)	.138 (.001)	4787.183 (.005)	5226.949 (.004)	4930.365 (.240)	4960.009 (.238)
HHI	.020 (.234)	<i>-.018</i> (.240)	<i>-.018</i> (.253)	<i>-.020</i> (.187)	<i>-.003</i> (.578)	<i>-.007</i> (.292)	<i>-.006</i> (.323)	<i>-.007</i> (.300)	1904.472 (.002)	1806.045 (.005)	1801.121 (.005)	1798.657 (.005)
Year Dummy	.844 (.000)	.814 (.000)	.813 (.000)	.798 (.000)	-.097 (.000)	-.090 (.000)	-.087 (.000)	-.089 (.000)	437.518 (.780)	461.110 (.777)	370.865 (.820)	357.338 (.827)
Consumer	.182 (.000)	.170 (.000)	.171 (.000)	.168 (.000)	-.103 (.000)	-.095 (.000)	-.090 (.000)	-.091 (.000)	1498.143 (.326)	1432.094 (.365)	1302.630 (.411)	1300.398 (.411)
Manufacturing	.094 (.049)	.100 (.019)	.100 (.020)	.090 (.034)	-.113 (.000)	-.109 (.000)	-.104 (.000)	-.105 (.000)	<i>-3274.063</i> (.056)	<i>-3155.907</i> (.077)	<i>-3296.978</i> (.065)	<i>-3306.135</i> (.065)
Hi-tech	<i>-.030</i> (.569)	<i>-.018</i> (.705)	<i>-.017</i> (.725)	<i>-.014</i> (.770)	-.071 (.000)	-.066 (.001)	-.058 (.004)	-.058 (.004)	8691.792 (.000)	8883.480 (.000)	8691.476 (.000)	8694.241 (.000)
Health	.000 (.930)	.001 (.192)	.002 (.531)	.001 (.690)	.001 (.161)	.001 (.124)	.006 (.000)	.006 (.000)	883.728 (.000)	898.334 (.000)	748.661 (.000)	748.043 (.000)
Marketing Capability Gap (MCG)		1.353 (.000)	1.568 (.000)	1.752 (.000)		.108 (.000)	.346 (.000)	.369 (.000)	4359.882 (.009)		1118.893 (.794)	1292.104 (.774)
MCG*NREC			<i>-.001</i> (.889)	-.016 (.009)			-.012 (.000)	-.014 (.000)			307.274 (.175)	293.128 (.244)
MCG*HHI			-.564 (.003)	-1.131 (.000)			-.334 (.000)	-.404 (.000)			645.246 (.934)	109.579 (.990)
MCG*NREC*HHI				.054 (.000)			<i>.007</i> (.096)					50.521 (.897)
n	4096	3837	3837	3837	4096	3837	3837	3837	4096	3837	3837	3837
Partial Eta ²	.300	.461	.462	.466	.022	.030	.039	.040	.637	.629	.629	.629

Coefficients in bold are significant at .05 level; in italic are significant in .1 level

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