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Getting Return on Quality: Revenue Expansion, Cost Reduction, or Both?

Financial benefits from quality may be derived from revenue expansion, cost reduction, or both simultaneously. The literature on both market orientation and customer satisfaction provides considerable support for the effectiveness of the revenue expansion perspective, whereas the literature on both quality and operations provides equally impressive support for the effectiveness of the cost reduction perspective. There is, however, little evidence for the effectiveness of attempting both revenue expansion and cost reduction simultaneously, and some of what little empirical and theoretical literature is available suggests that emphasizing both simultaneously may not work. In a study of managers in firms seeking to obtain a financial return from quality improvements, the authors address the issue of which quality profitability emphasis (revenue expansion, cost reduction, or both) is most effective. The authors examine firm performance using managers' reports of firm performance and longitudinal secondary data on firm profitability and stock returns. Although it is clear that no company can neglect either revenue expansion or cost reduction, the empirical results suggest that firms that adopt primarily a revenue expansion emphasis perform better than firms that try to emphasize cost reduction and better than firms that try to emphasize both revenue expansion and cost reduction simultaneously. The results have implications with respect to how both theory and practice view organizational efforts to achieve financial returns from quality improvements.

Consider the chief executive officer (CEO) of a firm facing an important strategic decision. There are two competing strategic initiatives on the CEO's desk. The chief operating officer notes that Motorola, GE, DuPont, and other high-profile companies have adopted a Six Sigma program (Pande, Neuman, and Cavanagh 2000) that suggests that the route to higher profitability is through improving efficiencies and cutting costs. The vice president of marketing would prefer to increase profits by building revenues through improvements to customer service, customer satisfaction, and customer retention (Johnson and Gustafsson 2000). From these recommendations, it appears that the chief operating officer views quality in terms of internal processes, whereas the vice president of marketing views quality in terms of external customer relations. At this point, the chief financial officer states emphatically that, according to the shareholders, the most important issue is whether the chosen strategy generates acceptable financial return. The purpose of our research is to provide empirical findings that may help determine the primary way of deriving financial returns from quality—what we refer to as a firm's "quality profitability emphasis."

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The scenario we depict is a common occurrence in contemporary organizations. Firms increasingly pay attention to the financial return obtained from strategic initiatives (Copeland, Koller, and Murrin 1996). Using such approaches as economic value added (Ehrbar 1998), firms assess the extent to which strategic initiatives increase net operating profits compared with the opportunity cost of capital. This trend has also affected marketing managers, who must focus on the financial implications of their decision making and on conceptualizing marketing expenditures as investments (e.g., Srivastava, Shervani, and Fahey 1998). Consistent with this, efforts to quantify the financial impact of customer-perceived quality have proliferated in recent years (e.g., Anderson, Fornell, and Lehmann 1994; Heskett, Sasser, and Schlesinger 1997; Johnson and Gustafsson 2000; Rust, Zahorik, and Keiningham 1995). An important part of this effort has involved understanding the nature of service quality (Parasuraman, Zeithaml, and Berry 1985) and how its management can produce the greatest impact on financial outcomes.

One of the challenges associated with making strategic decisions about quality is that its conceptualization varies by discipline. In marketing, quality tends to mean quality as perceived by the customer (e.g., Bolton and Drew 1991a; Parasuraman, Zeithaml, and Berry 1985). In operations and quality management, quality tends to mean the efficiency and reliability of internal processes (e.g., Crosby 1979; Deming 1986), even if those processes are invisible to the customer (Ramaswamy 1996). Depending on how quality is defined, different kinds of quality improvement efforts are likely to be appropriate, and most important, they are likely to have different pathways to profitability.

Although some quality improvements may increase revenues and decrease costs simultaneously, efforts to improve customer-perceived quality usually increase profits through

revenue expansion, and efforts to improve the efficiency of internal processes tend to increase profits through cost reduction. Our conceptualization spans both of these viewpoints and explores their differences by studying three emphases for managing the financial returns associated with quality: revenue, cost, and dual (both revenue and cost combined).[1] We now review each quality profitability emphasis in detail and derive competing testable propositions. Table 1 summarizes various features of these emphases.

The Revenue Emphasis

Although high-quality internal processes can serve the customer (Nilsson, Gustafsson, and Johnson 2001), a revenue emphasis to quality profitability focuses externally—on customer perceptions and attitudes that will lead to more sales.[2] Therefore, programs emphasize improving quality by addressing the issues that have the greatest impact on overall customer satisfaction. These programs may occasionally lower costs, but more often costs rise as the firm delivers a higher level of quality that meets customer needs. Documenting the impact of customer satisfaction and retention on revenues is somewhat more difficult than documenting cost reductions, because the path from customer perceptions to financial results is indirect and must be modeled statistically (e.g., Anderson, Fornell, and Lehmann 1994; Johnson and Gustafsson 2000; Nelson et al. 1992; Rust, Zahorik, and Keiningham 1995). The pathways from customer satisfaction to revenue include customer attraction (Kordupleski,

[1]This emphasis approach follows other contemporary strategy approaches. In one example, Treacy and Wiersema (1995) suggest that firms can emphasize one of several value disciplines that focus on operational excellence (costs), product leadership (revenues), or customer relationship building (revenues). In their view, firms cannot ignore any of these value disciplines, but successful firms tend to emphasize just one of them.

[2]We use the term "revenue emphasis" to describe an emphasis on growing demand through catering to consumers' preferences for quality and increasing consumer preferences for quality—that is, making the market for higher quality (Dickson 1992). We recognize that revenue can also be increased by reducing costs and prices in markets where price elasticity is greater than one.

TABLE 1
Characterizing the Quality Profitability Emphases

	Cost Emphasis	Revenue Emphasis	Dual Emphasis
Profit focus	Cost reduction	Revenue expansion	Both at once
Quality focus	Internal	External	Both at once
Quality measures	Defect rate	Customer satisfaction/retention	Both at once
Operational focus	Standardization	Customization	Both at once
Organizational focus	Operations, accounting	Marketing, human resources, research and development	Operations, accounting, marketing, human resources, research and development
Typical improvement initiative	Efficiency improvement to reduce costs	Service augmentation or product innovation to increase customer satisfaction	Process redesign to improve both costs and revenues
Research programs adopting this emphasis	Six Sigma (Pande, Neuman, and Cavanagh 2000) Total quality management (Easton and Jarrell 1998)	American Customer Satisfaction Index (Fornell et al. 1996) Return on quality (Rust, Zahorik, and Keiningham 1995) Service profit chain (Heskett, Sasser, and Schlesinger 1997)	Balanced scorecard (Kaplan and Norton 1992) Supply chain management (Mentzer 2000)
Example of a corporate application	Lehigh Valley Hospital built a customer information and tracking system that resulted in shorter hospital stays and reduced operating costs (*Health Management Technology* 1997).	American Airlines spent $700 million to increase cabin legroom in the coach cabin by 3–5 inches per row to improve passenger satisfaction and loyalty (Rust, Zeithaml, and Lemon 2000).	RightCHOICE's Physician Group Partners Program creates financial incentives for physicians to improve both patient satisfaction and cost containment (RightCHOICE 2000).

Rust, and Zahorik 1993), customer retention (Bolton 1998), and word of mouth (Anderson 1998; Danaher and Rust 1996). Approaches include measurement of customer-perceived service quality (Bolton and Drew 1991b; Kordupleski, Rust, and Zahorik 1993), measuring customer satisfaction (Churchill and Surprenant 1982; Fornell 1992), and measuring the disconfirmation of customer expectations (Oliver 1980; Parasuraman, Zeithaml, and Berry 1988).

Several arguments provide support for the revenue emphasis. One reason may be the capabilities of information technology. In customer relationship management, for example, computational power facilitates the storage and processing of customer data, making it easier to address specific customer needs (Greenberg 2001). Combining computing power with a wide-ranging communication network over the Internet enables firms to listen to customers, store and process their preferences, and respond to them with ever-greater customization (Peppers and Rogers 1999).

The revenue emphasis implies a customer focus and a market orientation, and a voluminous literature has emerged to support each of those ideas. Extensive research linking customer satisfaction and customer-perceived quality to positive business outcomes supports the effectiveness of a customer focus (for a review of this literature, see Zeithaml 2000). Despite the popular press's protests that customer satisfaction is not enough (Gitomer 1998), the academic literature provides overwhelming evidence that customer satisfaction profoundly affects revenue-generating behavior (Zeithaml, Berry, and Parasuraman 1996) and business performance outcomes (Anderson, Fornell, and Lehmann 1994; Danaher and Rust 1996; Fornell 1992; Fornell et al. 1996; Hallowell 1996; Loveman 1998; Rust, Zahorik, and Keiningham 1995). For this reason, the marketing literature has developed considerable knowledge about customer satisfaction (Oliver 1980) and the critical incidents and service environment that produce it (Bitner 1992; Bitner, Booms, and Tetreault 1990). Likewise, the market orientation literature shows strongly that firms that have a market orientation perform better than firms that do not, a finding that is supported by literature in customer orientation and strategy (e.g., Johnson 1997; Porter 1996; Prahalad and Krishnan 1999).

The first source of evidence that a revenue emphasis to quality profitability exerts a strong positive effect on performance outcomes stems from research on customer- or market-oriented approaches to managing organizations. Although several studies on this topic exist (e.g., Jaworski and Kohli 1993; Kohli and Jaworski 1990; Moorman 1995; Narver and Slater 1990), we focus on two that are most diagnostic for our discussion of the three quality profitability emphases.

First, Deshpandé, Farley, and Webster (1993) define four types of organizational cultures that emphasize the customer to various degrees. They find that market cultures that place the customer's interests first are the most profitable. Among the other cultures investigated, the hierarchical culture (which most closely resembles the cost emphasis because of its strategic emphasis on stability, efficiency, and smooth operations) is found to be the least profitable. Second, Day and Nedungadi (1994) show that senior managers tend to adopt one of four types of competitive advantage models (high customer/high competitor, low customer/high competitor, high customer/low competitor, and low customer/low competitor). A competitor model of strategic emphasis is on low costs through low-cost processing and lowest delivered cost, whereas a customer model builds revenue through superior customer service, market scope, and innovation. The results indicate that customer-oriented models positively affect a firm's financial performance, whereas competitor-centered models negatively affect a firm's financial performance.

Note that though a customer focus and a market orientation are necessary conditions for the revenue emphasis, they are not sufficient. That is, a firm possessing both a customer focus and a market orientation may be classified as using the dual emphasis instead of the revenue emphasis if the firm simultaneously emphasizes cost reduction. Either emphasis (revenue or dual) would be consistent with both the customer satisfaction and the market orientation literature. In other words, although the literature states strongly that customer focus and market orientation lead to positive financial outcomes, it does not indicate whether the revenue emphasis will be preferred to the dual emphasis (or vice versa). Because the existing literature does not reveal which quality profitability emphasis is best, our study adds to the conclusions of the market orientation and customer satisfaction literature by disentangling the issue of which emphasis should be preferred.

In summary, advocates of quality profitability programs that emphasize revenues argue that profitability improvements associated with quality efforts will come primarily through serving customer needs that trigger satisfaction and retention. Consistent with a goal of presenting competing hypotheses, given the evidence in the literature and the continuing expansion of information technology and customer relationship management, we predict the following:

H_1: A revenue emphasis to quality profitability will have stronger positive effects on firm performance outcomes than either a cost emphasis or a dual emphasis.

The Cost Emphasis

The cost emphasis focuses on the efficiency of the firm's processes. General cost reduction efforts (e.g., downsizing) do not necessarily improve efficiency, but quality efforts that reduce costs always do. Successful programs tend to increase the productivity of quality efforts by reducing the input (labor and materials) required to produce a unit of output. These improvements can be incremental (continuous improvement) or discontinuous (process reengineering); in either case, the focus is internal and the goal is to reduce costs. Customer satisfaction improvements are sought only indirectly, through such results as increased reliability or lower prices. Cost reduction programs thus transfer their savings to the bottom line directly. Methods of quantifying cost reductions are referred to as "cost of quality" programs (e.g., Bohan and Horney 1991; Campanella 1990; Carr 1992; Gryna 1988). Philosophically, these programs are akin to the total quality management programs of the 1980s and 1990s (Spitzer 1993), and modern variants have continued to emerge (e.g., Six Sigma; Breyfogle 1999).

Since Crosby (1979) introduced his method of classifying and measuring quality costs, many firms have documented significant profit impacts through improved quality by means of advancements in computation (e.g., mainframe computers, followed by personal computers and microprocessors) and communication (e.g., the Internet, wireless communication networks). Computational advances have enabled widespread use of statistical quality control techniques, thereby increasing companies' abilities to improve operating efficiencies and cut costs (Wheeler and Chambers 1992). This has resulted in a measurable profit impact from the implementation of quality principles and programs (Easton and Jarrell 1998; Hendricks and Singhal 1997). To some extent, information technology, the Internet, and other communication networks have also increased efficiencies by making business faster and easier in general (Lucas 1999) and by coordinating supply chains (Poirier and Bauer 2000).

Advocates of programs that emphasize increasing efficiency and productivity by eliminating defects and unnecessary effort hold that profitability improvements associated with quality efforts will come primarily through cost reduction. Continuing with our goal to present competing propositions, this suggests the following:

H_2: A cost emphasis to quality profitability will have stronger positive effects on firm performance outcomes than either a revenue emphasis or a dual emphasis.

The Dual Emphasis

Everyone knows that profits are equal to revenues minus costs and that profit improvement must result from increasing revenues, decreasing costs, or both. It would be difficult to find a CEO who did not at least pay lip service to both increasing revenues and decreasing costs. It is also undeniable that ignoring either revenues or costs is a sure path to disaster. All of this seems to imply that a firm should emphasize both revenue expansion and cost reduction simultaneously. The dual emphasis tries to implement tenets of both the revenue building and cost reduction approaches simultaneously.

Why the Dual Emphasis Should Be Effective

The possibility that the dual emphasis can be effective seems to be implied by such quality theorists as Juran (1988), who breaks quality into two opposite but presumably complementary categories—"freedom from deficiencies" and quality that "meets customer needs." Likewise, Kano's model of delight (Oliver 2000; Roberts Information Services n.d.) argues for "monovalent dissatisfiers" (quality aspects that can dissatisfy if they are missing, yet their presence does not delight the customer) and "monovalent satisfiers" (quality aspects that the customer will not miss if they are not there but that can delight if present).

Many other quality theorists and practitioners generally support the idea that quality improvement involves both cost cutting and revenue expansion through satisfying and retaining customers (Hiam 1993; U.S. General Accounting Office 1991). This idea is espoused by Deming (1986), who states that improved business processes will inevitably result in both lower costs and more-satisfied customers, thus implying that a company should emphasize both approaches simultaneously (Gitlow and Gitlow 1987). Presumably, improved business processes will result in fewer defects, which creates a higher customer perception of quality and lower costs because of less rework.

A reverse but complementary argument holds that improved quality drives market share improvements directly through improved customer perceptions, which result in cost reductions that follow from the operating efficiencies produced by increased scale (Jones and Butler 1988; Phillips, Chang, and Buzzell 1983). Finally, strategic advantages may arise from the dual emphasis. It has been argued that "simultaneous pursuit of several competitive advantages can lead to a stronger position in the market than focusing on a single competitive advantage" (Flynn, Schroeder, and Sakakibara 1995, p. 666), because a firm that is strong in multiple areas is more difficult for competitors to attack.

Doubts About the Dual Emphasis

Despite the existence of support for the dual emphasis, other literature gives some clues that suggest that the dual emphasis may not be as effective as other emphases. We focus on theories about a firm's learning, system dynamics, and organizational structure and incentive systems.

One perspective theorizes that organizations are bundles of learning routines focused to various degrees on the *exploration* of new goals, strategies, technologies, and processes or on the *exploitation* of existing goals, strategies, technologies, and processes (e.g., March 1991). Following from this view, it seems reasonable to suggest that the customer model is more exploration based (given the focus on finding new markets and discovering innovations to satisfy and retain customers) and the cost emphasis is more exploitation based (given the focus on the more effective deployment of existing competencies and the efficiency of internal operations).

Although it is theoretically possible and often practically desirable for exploitation and exploration to exist in organizations simultaneously (as in the dual emphasis), research indicates that one of these approaches will tend to dominate the culture and systems in organizations because of the natural tensions that exist between these two management approaches (Levinthal and March 1993; March 1991). This trade-off between exploration and exploitation is also evident in generic strategy choices of cost leadership (exploitation) and differentiation (exploration) (Porter 1980) and the "productivity dilemma" in operations between efficiency (exploitation) and innovation (exploration) (Abernathy 1978). In support of this view, Capon and colleagues (1992) find that three of four clusters of industrial firms they discover are divided on the issue of exploration (e.g., the investors and the acquirers) versus exploitation (e.g., the improvers of existing processes). Empirical support for this viewpoint is also provided by Ettlie and Johnson (1994).

A similar argument suggests that the dual emphasis might fail simply because of limited budgets. If the quality improvement budget is fixed yet both revenue expansion

and cost reduction are attempted, it is possible that neither effort will receive enough resources to reach "critical mass."

Another theoretical perspective that would predict the superiority of the revenue emphasis over the dual emphasis lies in system dynamics. System dynamics examine the recursive relationships among various activities, including negative feedback effects (which create stability) and positive feedback effects (which create change and growth) (Dickson 1992; Dickson, Farris, and Verbeke 2001; Farris et al. 1998). In one dynamic, the implementation of a cost emphasis might have the tendency to initiate firings and loss of benefits and perks, which lowers morale among employees who operate at the market interface. This, in turn, may lower customer service, customer loyalty, and sales, which leads to further cost cutting—creating a vicious circle (Grönroos 1984) or "death spiral" (Rust, Zeithaml, and Lemon 2000). A revenue emphasis, in contrast, is more likely to create a virtuous circle—a dynamic that moves in the opposite direction. These nonreinforcing dynamics mean that the combination is ineffective and that neither approach works as well as it might alone.

A final organizational perspective suggests that a dual emphasis may not be possible because many firms have not developed organizational structures that link areas of the firm involving customers and costs. Moreover, functional differences often reduce the effectiveness of existing structures. Organizational reward structures, for example, are often skewed toward short-term outcomes that favor the cost emphasis. Unless reward systems encourage long-term evaluation horizons as well, it is unlikely that firms will be able to entertain a dual emphasis.

In summary, doubts exist about the efficacy of the dual emphasis because of the tensions among various processes and dynamics as well as the lack of structures within organizations for integrating the two approaches. Proponents of the dual emphasis believe, however, that because the road to satisfying customers is improving efficiency, dependability, and reliability, reducing costs through efficiency improvements should also increase revenues. This means that the dual emphasis should produce the best results with respect to profitability, through simultaneously increasing revenues and decreasing costs. Therefore, we should observe that

H_3: A dual emphasis to quality profitability will have stronger positive effects on firm performance outcomes than either a revenue emphasis or a cost emphasis.

Method

Sample and Procedure

Although firms have long sought to increase profits by improving quality, few have employed formal methods to measure the financial impacts, and there has been no straightforward way to identify those that do. For this reason, our population comprised managers from every company we could identify as employing such a measurement program. Conversations with thought leaders in this area helped us construct a set of roughly 100 U.S. firms, some of which contained multiple business units.[3] The firms employed an average of approximately 70,000 people and were from both the service sector and the goods sector; the goods sector was somewhat overrepresented compared with its percentage of the economy. Many of the firms were household name or *Fortune*-500 companies.

Access to the firms was enhanced by one author's personal industry connections; however, this was usually limited to the name of a relevant contact person. Surveying managers about the nature of the quality profitability emphases and various firm performance outcomes of their business units produced our primary data, which were supplemented by secondary data on firm performance outcomes. To generate individual manager respondents for the study, we telephoned a company contact and discussed the study at an abstract level as involving an investigation of "the systems firms have in place for examining the financial return from quality initiatives" and the "factors that influence the operation and effectiveness of these systems." Usually these conversations resulted in the contacts expressing interest in the study and their organizations' participation. There were two models of participation, each of which occurred approximately half the time.

The first model involved the contact providing the names of individual managers in the firm. For those firms, we mailed questionnaires to 185 managers from 75 business units and received responses from 69 managers representing 44 business units, which resulted in a response rate of 37.3%. The second model involved sending questionnaires to the contact person, who was asked to pick randomly among managers who would have exposure to these systems and to send them a questionnaire. Contacts at 35 business units agreed to distribute 664 questionnaires to managers. Of these, 8 business units ultimately did not return any questionnaires, indicating that contacts did not follow through on their commitment despite several reminders. Of the remaining 27 business units and 368 questionnaires mailed to firms, we received responses from 117 managers from all the business units, which resulted in a 31.8% response rate and yielded a total sample size of 186. This reported response rate is likely lower than the actual rate, because if one response was received from a business unit, we assumed that the contact at that business unit distributed all of the questionnaires provided to him or her, as promised (even though we suspect that many questionnaires that were sent to contacts were never distributed).

The two data collections were compared on key independent and dependent variables measures (described subsequently), and no differences were found: revenue emphasis ($F_{(2, 178)} = .598$, not significant [n.s.]), cost emphasis ($F_{(2, 180)} = .510$, n.s.), and dual emphasis ($F_{(2, 178)} = .598$, n.s.). Responding firms were also asked to rate their level of experience in measuring customer satisfaction (mean = 4.89, standard deviation [S.D.] = 1.51) and costs (mean = 5.00, S.D. = 1.36). The difference in firm-level knowledge

[3]Thought leaders consulted included staff and corporate executives affiliated with the Marketing Science Institute, as well as academic authors who are knowledgeable about financial return on quality.

of the two areas is not significant ($t_{(174)} = .825$, n.s.), indicating that our sample shows no evidence of bias due to a lack of knowledge of either quality profitability emphasis.

The people who responded to the survey were, on average, knowledgeable about quality initiatives in their organizations, as the average number of hours per week they spent making decisions related to quality was 9.6 (S.D. = 5.00). Moreover, the respondents were self-reported to be knowledgeable in the measurement of areas of importance to the study; all were assessed on a seven-point scale, where 1 = "low" and 7 = "high" (customer satisfaction: mean = 5.15, S.D. = 1.30, and costs: mean = 4.89, S.D. = 1.51). Therefore, these respondents appear to meet the knowledgeability and experience criteria often suggested for key informant status (Campbell 1955).

Informants also reported that their organizations were knowledgeable about how to measure financial performance (mean = 5.78, S.D. = 1.41, on a seven-point scale). They reported an average of 5.8 years of experience (S.D. = 7.8 years) using a system that links quality initiatives to financial performance. Managers also stated that their firms had made important investments in measuring quality (mean = 3.82, S.D. = 1.53) and linking quality efforts to financial performance (mean = 3.33, S.D. = 1.57), both of which were rated on a seven-point scale, where 1 = "low level" and 7 = "high level."

We constructed averages for each item across the informants for each of the 71 business units for which we had reporting respondents. We used these average scores to conduct our firm-level analyses.

Potential Moderating Factors

We tested the influence of several factors we believed might affect our results: industry competitiveness, past emphasis, and quality information processes. First, there are different views about how industry competitiveness might affect our predictions. One view is that in highly competitive industries, prices will be competed down to levels that make subsequent cost reductions less attractive. Another view is that competitive pressures make a revenue emphasis more attractive because it differentiates the firm in a field of highly competitive, price-conscious firms, thus leading to economic rents. Second, it is possible that a firm's success with a given quality profitability emphasis may be a function of its past emphasis. After a five-year program of intensive cost cutting, for example, a shift to a revenue emphasis might work better than further cost cutting. Third, the market orientation literature has shown that a firm's development of systems for acquiring, disseminating, and responding to customer information is positively related to the financial performance of the firm (Jaworski and Kohli 1993) and new product development (Moorman 1995). Consistent with this literature, more highly developed quality profitability information processes may influence the effectiveness of the quality profitability emphases.

Measurement

Quality profitability emphases. Given the various meanings associated with the term "quality," we defined it for respondents as "efforts to improve the quality of products and processes within your firm." Each respondent was asked to rate measures designed to tap each emphasis (for a complete list of measures, see the Appendix). To generate an organizational-level view of these approaches, we asked respondents to rate the extent to which "managers in their division agree with statements" that reflect each quality profitability emphasis or "their firm encourages managers to take certain actions to improve the quality of products and processes."

The six revenue emphasis items used two questioning approaches. One approach asked managers to rate the firm's agreement that revenue streams from quality improvements are valued (e.g., "Quality improvements that increase future revenue streams are more valuable than investments that reduce future cost streams"). The second approach presumed that customer satisfaction and retention are revenue-building activities and asked informants to rate the extent to which the managers in the organization agree that the focus of quality improvements should be to improve customer satisfaction and retention (e.g., "Quality improvements should be differentiated by their impact on customer satisfaction/retention").

The three cost emphasis items examined the domain by asking informants to rate the extent to which managers in the organization agree that "The purpose of quality improvements is to reduce cost," "Quality improvements should be differentiated by their degree of cost saving," and "Quality improvements should always result in reduced costs."

The six dual emphasis items examined the extent to which firms try to use both approaches simultaneously. Therefore, all items referred to quality improvements that use revenue (cost) approaches with a consideration of their impact on cost (revenues). Some items, for example, ask informants to rate the extent to which the managers in their organization agree that "It is possible that investments in quality programs can increase customer satisfaction/retention and reduce costs at the same time." Other items asked informants to rate whether the firm encourages managers to "Consider the long-term effect of cost reduction efforts on customer satisfaction/retention," and so on.

Given the centrality of the dual emphasis to this research, we also assessed it by "constructing" dual emphasis from the measured revenue and cost emphasis. Specifically, we created an interaction of the revenue emphasis and the cost emphasis that reflects the organization's ability to manage both of these emphases. Therefore, if a revenue emphasis is high (7) and a cost emphasis is low (1), the dual emphasis would be low (7). If, however, the revenue emphasis is high (7) and the cost emphasis is high (7), the dual emphasis would be high (49).

Firm performance measures. We measured firm performance using both primary and secondary data. Although each data set has limitations, together they reveal a more complete portrait of effects on the firm, and each offsets the weaknesses inherent in the other. The primary measures involved managers' perceptions of business unit performance. Borrowing from Moorman and Rust (1999), we measured financial performance by division performance on sales, market share, and profitability; we assessed customer relationship performance by examining division perfor-

mance on customer satisfaction, customer retention, and product/service quality.

The secondary data involved two financial measures: return on assets (ROA) and stock returns. The former was measured as the firms' overall 1998 ROA as reported in COMPUSTAT. This time lag enabled us to ascertain the direction of causality in the relationship between the firms' quality emphases (data collected in 1997) and ROA (data collected in 1998). These data were collected at the overall firm level, because business unit–level data were not available.[4]

We measured stock returns by calculating a firm's size-adjusted stock return for 1998. Our approach differs from a formal event study of stock returns in which a clear demarcation between new information about a firm (e.g., an announcement of a merger) and a firm's stock price can be assessed (e.g., Fama et al. 1969). Specifically, because we collected our firms' quality emphases in 1997, we assume that they represent "information" that should affect analysts' assessment of the firms' current and future potential earnings in 1998. Given a lack of event study controls, our examination should be considered exploratory. Moreover, we expect that as markets learn about the earnings potential of various quality profitability emphases, our return effects should weaken over time (Fama 1970),[5] which is why we investigated stock returns one year after the primary data were collected.

We calculated size-adjusted returns as the difference between a firm's stock return and value-weighted return on the Center for Research in Security Prices (CRSP) size decile portfolio to which the firm belonged at the beginning of the year. We used this procedure to provide an adjustment for a firm's risk because of risk's association with firm size (Ball 1992). We pulled both the firm's return and the portfolio's return for each month in 1998 from CRSP. The firm's return is referred to as its holding period return, which is equal to {[(share price in period t − share price in period t − 1) + (cash and cash dividends)]/share price in period t − 1}.[6] We adjusted holding period return data for both stock splits and stock dividends by CRSP. We determined the value-weighted portfolio return from the portfolio assignment number in CRSP for 1998, which provided information about the riskiness of the stock. We pulled the return for this portfolio—referred to as the NYSE/AMEX/Nasdaq Capitalization Decile—for each firm in each month.

To compute size-adjusted returns, we compounded both holding period return for the firm and the value-weighted returns for the portfolio across the 12 months in 1998: $[(1 + \text{return}_1) \times (1 + \text{return}_2) \times (1 + \text{return}_3) \times (1 + \text{return}_4) \times (1 + \text{return}_5) \times (1 + \text{return}_6) \times (1 + \text{return}_7) \times (1 + \text{return}_8) \times (1 + \text{return}_9) \times (1 + \text{return}_{10}) \times (1 + \text{return}_{11}) \times (1 + \text{return}_{12})]$. Size-adjusted returns then became the difference between the compounded holding period return for the firm and the compounded value-weighted returns for the portfolio (Barber et al. 2001; Mikhail, Walther, and Willis 1999).

Moderator variables affecting performance of quality profitability emphases. Industry competitiveness was measured on Jaworski and Kohli's (1993) three-item scale (α = .58). The scale was retained despite the low alpha, because its psychometrics have been established in prior research. Past quality profitability emphasis was examined with a single-item scale that asked informants to report on the approach used in their firm five years earlier, in which customer focus was measured on a seven-point scale from 1 = "all efforts directed at cost reductions" to 7 = "all efforts directed at satisfying and retaining customers." Quality profitability information processes were operationalized on a four-item scale adapted from Moorman's (1995) measure of organizational processes for using information (α = .92).

Control variables. We included firm size, because it is a standard variable in all strategy research and it captures, in a crude way, the level of firm resources. We measured this using a one-standard approach—the number of employees in the overall firm in 1999 as reported in COMPUSTAT. We also included a self-reported measure of individual manager performance. This three-item measure asked the reporting manager to rate his or her performance on a seven-point Likert scale (see the Appendix). The resulting scale was reliable (α = .76).

Measure purification. We began measure purification for the primary measures by examining the correlation matrix and Cronbach's alpha (see Table 2). The correlations do not appear to indicate that discriminant validity is a problem; however, we further examined discriminant validity using confirmatory factor analysis in Amos (Arbuckle and Wothke 1999). We employed confirmatory factor analysis on each pair of primary measures for both a constrained model (constraining the measures to be perfectly correlated) and an unconstrained model (permitting any level of intercorrelation). We tested the superiority of the unconstrained model statistically using a chi-square difference test with one degree of freedom (d.f.), reflecting the intercorrelation parameter connecting the measures. If the measures were truly separate, the chi-square difference should be statistically significant. If the two measures reflect a common or distinct domain, the model in which phi is freely estimated should have a significantly better fit than the unconstrained model. Table 3 indicates that the revenue, cost, and dual profitability emphases are distinct measures. In all cases, the model in which phi is free (unconstrained) fits significantly better.

Results

Firm Performance: Primary Data

We begin by discussing the results for the direct measure of the dual emphasis and then the results for the constructed measure of the dual emphasis (i.e., revenue × cost).

Measured dual emphasis. Because of the presence of potential moderators that may influence the relationship between the quality emphases and profitability, we used a two-step hierarchical linear moderator regression model to

[4]Later, we investigate the effect that business unit–level data might have on our analysis.

[5]We use this approach to market adjustment because we lack a sufficient number of months of return to use the market model method that relates the return on a given stock to the return of the overall market (Brown and Warner 1985).

[6]The virtue of this stock return indicator is that it is constructed by differencing daily stock returns during the year. This differencing removes the potential bias from correlated omitted variables that are not accounted for in the analysis, to the extent that those omitted variables persist across the years.

TABLE 2
Measure Characteristics and Intercorrelations

Measure	Mean	S.D.	Items	N[a]	1	2	3	4	5	6	7	8	9	10	11
1. Revenue emphasis	4.842	.880	6	70	*.77*										
2. Cost emphasis	3.948	.934	3	69	−.01	*.80*									
3. Dual emphasis	4.515	.849	6	70	.66	−.01	*.80*								
4. Past quality profitability emphasis	3.387	1.238	1	69	.24	−.32	.09								
5. Industry competitiveness	4.937	.998	3	69	.05	.04	−.02	−.16	*.58*[b]						
6. Quality profitability information processes	4.258	1.140	4	69	.48	.16	.65	−.14	.04	*.92*					
7. Individual manager performance	5.224	.765	3	69	.18	−.09	.13	−.02	.32	.02	*.80*				
8. Firm size	70,386	50,734	1	63	.22	−.08	.24	.28	−.06	.13	−.01				
9. Financial performance	4.361	1.039	3	67	.26	−.03	.06	−.01	−.15	.09	−.03	−.24	*.77*		
10. Customer relationship performance	4.178	.807	3	69	.28	−.04	.20	.17	−.22	.24	−.03	.02	.57	*.81*	
11. ROA	5.392	4.050	1	60	.09	−.29	−.03	.31	−.13	−.08	.10	.32	.10	−.01	
12. Size-adjusted stock returns	.358	.269	1	47	−.05	−.27	.17	.22	−.16	−.11	−.12	.30	.18	−.12	.72

[a]N refers to the number of companies. The total sample size of individual respondents is 186.
[b]Although this alpha is below typical standards, we decided to use it because its psychometrics have been established in prior research.
Notes: Correlations: r > .15 implies $p < .05$. Alpha is on the diagonal (in italics) for multi-item measures.

TABLE 3
Discriminant Validity Analysis Among Primary Data Measures

Comparison	Constrained Model χ^2 (d.f.)	Unconstrained Model χ^2 (d.f.)	$\Delta\chi^2$ (1)
Revenue emphasis versus cost emphasis	106.7 (27)	69.0 (26)	37.7**
Revenue emphasis versus dual emphasis	181.0 (54)	161.5 (53)	19.5**
Revenue emphasis versus customer relationship performance	58.3 (27)	44.8 (26)	13.7**
Revenue emphasis versus financial performance	63.7 (27)	49.4 (26)	14.3**
Cost emphasis versus dual emphasis	143.7 (27)	107.4 (26)	36.3**
Cost emphasis versus customer relationship performance	34.6 (9)	6.5 (8)	28.1**
Cost emphasis versus financial performance	37.2 (9)	17.1 (8)	20.1**
Dual emphasis versus customer relationship performance	109.3 (27)	86.4 (26)	22.9**
Dual emphasis versus financial performance	101.3 (27)	75.7 (26)	25.6**
Customer relationship performance versus financial performance	17.5 (9)	11.1 (8)	6.4*

*Significant at $p < .05$.
**Significant at $p < .01$.

examine our predictions. Step 1 contained the three main-effect quality emphasis predictors (revenue, cost, and dual), the main effects associated with the moderating predictors, and control variables. Step 2 contained the interactions we constructed by mean-centering the main effects and creating products of each potential moderating factor (e.g., industry competitiveness) and each quality profitability emphasis (revenue, cost, and dual).

We then analyzed collinearity levels by computing variance inflation factors for all coefficients in each model. All were well below the acceptability threshold of ten established in the literature. Across both of the dependent variables (customer relationship performance and financial performance), the entry of the interaction effects on Step 2 did not explain a significant level of additional variance in the model (financial performance: change in $F_{(9, 37)} = .863$, n.s., and customer relationship performance: change in $F_{(9, 38)} = .161$, n.s.). This means that the moderating factors did not influence the validity of our results. Given these results, we reestimated the models with only the three main-effect predictors and the control variables. Table 4, Part A, reports the results of these models.

Both models were significant (financial performance: $F_{(5, 53)} = 2.653$, $p = .033$, and customer relationship performance: $F_{(5, 55)} = 3.420$, $p = .003$). Across both models, the revenue emphasis had the strongest performance effect. Indeed, it is the only quality profitability emphasis that showed a significant, positive effect on managers' reports of financial performance (b = .477, $p = .004$) or customer relationship performance (b = .515, $p = .001$). Both the cost emphasis and the dual emphasis had an insignificant impact on financial performance and customer relationship performance.[7]

Constructed dual emphasis. We also examined the impact of the quality profitability emphases using a measure of dual emphasis constructed from the interaction of the revenue and cost emphases. We used a two-step hierarchical linear moderator regression model by entering the mean-centered revenue and cost emphasis main effects and the control variables during Step 1 and the constructed dual emphasis in Step 2.

In both cases, the entry of the constructed dual emphasis on the second step does not explain a significant amount of variance (financial performance: change in $F_{(1, 53)} = .694$, n.s., and customer relationship performance: change in $F_{(1, 55)} = .795$, n.s.). Given these results, the main-effects model results remain the focus. Examining these, we find that only the revenue emphasis had a significant, positive effect (financial performance: b = .341, $p = .009$, and customer relationship performance: b = .497, $p = .000$).[8] Complete results are given in Table 4, Part B.

Next, as with the measured models, we examined whether interactions reflecting various organizational and environmental factors moderated the impact of the quality

[7]We followed this analysis and the analysis involving the secondary measures with a validation approach that randomly removed 25% of the observations several times to check for parameter stability by comparing the estimated parameters on different samples of the whole data set. Although the magnitude of the parameters varied from sample to sample, the overall pattern of our findings was consistent.

[8]In addition to the constructed dual emphasis, we took precautions and examined our predictions using two other approaches. The first involved entering each one of the quality profitability emphases into a simple regression model. The results indicated that the pattern we observed in the multiple regression models was replicated. Specifically, the revenue emphasis was the only significant, positive indicator. The second approach involved examining the impact of the quality profitability emphases in a structural equation model. The virtues of this approach are that it does not use summated scales and therefore models the error associated with the variables and it permits the latent constructs to be correlated. We tested the two models for which multiple indicators of the dependent variable were available (financial performance and customer relationship performance). The results indicate that the revenue emphasis had a significant, positive impact in both models; the dual emphasis had a significant, negative impact on financial performance and no significant effect on customer relationship performance.

TABLE 4
The Impact of Quality Profitability Emphasis on Firm Performance: Primary Data

A: Measured Dual Emphasis

	Financial Performance		Customer Relationship Performance	
Final Model Statistics				
Adjusted R^2	.125		.212	
F-statistic	2.653		3.420	
d.f.	5, 53		5, 55	
p-Value	.033		.003	
Final Predictors	b[a]	(t)[b]	b	(t)
Revenue emphasis	.477	(2.982)***	.515	(3.420)***
Cost emphasis	−.040	(−.323)	.007	(.061)
Dual emphasis	−.217	(−1.368)	−.030	(−.199)
Firm size	−.303	(−2.392)*	−.293	(−2.452)**
Individual manager performance	−.055	(−.446)	−.161	(−1.398)

B: Constructed Dual Emphasis

	Financial Performance		Customer Relationship Performance	
Model Statistics				
Step 1				
R^2	.172		.277	
F-statistic	2.804**		5.361***	
d.f.	4, 54		4, 56	
p-value	.035		.001	
Step 2 (containing constructed dual emphasis)				
Change in R^2	.010		.010	
Change in F-statistic	.674		.795	
Change in d.f.	1, 53		1, 55	
p-Value	n.s.		n.s.	
Final Predictors	b	(t)	b	(t)
Revenue emphasis	.341	(2.701)**	.497	(4.230)***
Cost emphasis	−.044	(−.328)	.007	(.058)
Firm size	−.309	(−2.415)**	−.295	(−2.497)**
Individual manager performance	−.043	(−.345)	−.160	(−1.403)

[a]Standardized coefficients are used throughout.
[b]t refers to the t-statistic for the estimated coefficients.
*$p < .10$.
**$p < .05$.
***$p < .01$.

profitability approaches. As previously, we introduced these interactions on the second step of the model and found that they did not explain a significant level of additional variance in financial performance (change in $F_{(9, 36)} = .833$, n.s.) or customer relationship performance (change in $F_{(9, 37)} = .807$, n.s.). This means that the moderating factors do not influence the validity of our results.

Firm Performance: Secondary Data

We analyzed the effect of quality profitability emphasis on future profitability (ROA) and stock returns, partially ameliorating the problems of cross-sectional correlational studies in interpreting causality. The use of secondary data also enabled us to control statistically for unobserved firm-level factors that have a contemporaneous correlation between the independent variables and the error (e.g., Boulding and Staelin 1995; Jacobson 1990; Schmalensee 1987). A typical approach to controlling for the effects of omitted variables when long-term data are available is the instrumental variable approach (Hausman 1978), which uses two-stage least squares (2SLS) to produce coefficient estimates that are not contaminated by omitted variables that may be correlated with the independent variables (Greene 1997, pp. 288–95; Leeflang et al. 2000, p. 334).

For the first stage of 2SLS, we used a set of years (ROA_{1989}, ROA_{1990}, ROA_{1991}, ROA_{1992}) as the independent variable to predict each quality profitability emphasis. We chose those years because they fell before 1998 (our performance measurement year) and therefore by definition can-

not be correlated with the error term in the 1998 equation.[9] We estimated the predicted values of each of these quality emphases, known as instrumental variables, in the model and used them in the second stage of the 2SLS to predict ROA in 1998. We performed the Hausman test of the equality of the estimates produced by the use of the instrumental variables and estimates produced by nonadjusted independent variables. The results indicated the need for the instrumental variables.[10]

The stock returns analysis was based on data from CRSP, which reports holding period return, as is frequently analyzed in the finance and accounting literature, in part because it has been "differenced" across the days in the year and therefore is not biased by constant unobserved factors within the year. As a result, instrumental variables were not necessary to deal with omitted variables.

Given the use of instrumental variables in the case of ROA and the construction of stock returns in CRSP, it may not be necessary, strictly speaking, to include any moderating variables, as was the case with the primary data. To be conservative, however, we included the two control variables in the model. We included firm size because it is regularly included in strategy research as a measure of firm resources. We included individual manager performance because we sought to account for the individual manager's biases in evaluating the firm's quality emphases that might be due to his or her own performance in the firm. Recall that we also included these control variables in the primary data analysis.

The individual respondent sample size for our secondary data analysis is somewhat smaller (134 for the ROA analysis, 117 for the stock returns analysis) than the sample size (186) for our primary analysis. This is because some of the firms in our sample are not publicly held; therefore, stock returns and profitability metrics are not available in CRSP and COMPUSTAT. This, in turn, reduces the total business unit sample size from 71 to 53 for the ROA analysis and to 45 for the stock returns analysis.

Measured dual emphasis. We began by estimating models with the measured dual emphasis. As with the primary data, we first examined collinearity levels and found them to be well within the range of acceptability. Following this, we tested whether the interactions should be included. Across both of the dependent variables (ROA and stock returns), the entry of the interaction effects on Step 2 did not explain a significant level of additional variance in the model (ROA: change in $F_{(9, 35)} = 1.049$, n.s., and stock returns: change in $F_{(9, 23)} = .859$, n.s.).[11]

Given that the entry of the interaction effects was not significant, we report the results from the model that contains only the three quality profitability emphases and the two control variables. The results are given in Table 5, Part A. For ROA, the overall model is significant ($F_{(5, 47)} = 7.746$, $p = .0001$). The revenue emphasis had a positive and significant impact (b = .775, $p = .000$), whereas the cost emphasis (b = .208, n.s.) and dual emphasis (b = .091, n.s.) were insignificant.

For the size-adjusted stock returns, the overall model is moderately significant ($F_{(5, 39)} = 2.374$, $p = .057$). The revenue emphasis had a significant, positive impact (b = .387, $p = .056$), whereas the cost emphasis had an insignificant effect (b = –.185, n.s.) and the dual emphasis had a significant, negative impact (b = –.455, $p = .021$).

Constructed dual emphasis. Following our approach for the primary dependent measures, we also examined the impact of the quality profitability emphases using a measure of dual emphasis constructed from the interaction of the revenue and cost emphases. We again used a two-step hierarchical linear moderator regression model by entering the mean-centered revenue and cost emphasis main effects and the control variables in the first step and the constructed dual emphasis in the second step.

In the case of ROA, the entry of the constructed dual emphasis in the second step did not explain a significant amount of variance (change in $F_{(1, 47)} = 2.223$, n.s.). In the case of size-adjusted stock returns, the entry of the constructed dual emphasis was significant (change in $F_{(1, 39)} = 5.862$, $p = .02$). Therefore, the final model results report all three quality profitability emphases.

We next considered whether any of the moderating variables affected our results. As previously, we entered the interactions of the profitability emphases and the moderating variables in the second step of the model. The results indicate that the entry of the interactions for ROA (change in $F_{(9, 35)} = 1.735$, n.s.) and stock returns (change in $F_{(9, 26)} = .736$, n.s.) was not significant, which indicates that an exclusive focus on our profitability emphases was appropriate (see Table 5, Part B).

Considering ROA, the revenue emphasis had the only significant, positive effect (b = .761, $p = .004$). The cost emphasis was not significant (b = .211, n.s.). Recall that the constructed dual emphasis was not significant upon entry. For the stock returns, recall that the constructed dual emphasis was significant upon entry; however, its effect on stock returns was significant and negative (b = –.400, $p = .02$). Conversely, the revenue emphasis was moderately significant and positive (b = .286, $p = .103$).

[9]Before using the ROA to generate the predicted instrumental variables, we took one additional precaution, which was to remove any autocorrelation in the residuals among these years. We accomplished this by regressing, for example, ROA_{t-1} on ROA_t, ROA_{t-2} on ROA_{t-1}, and so forth for each of the years. We then used the residuals obtained from each of these models as input for the Hausman test.

[10]Johnston and DiNardo (1997, p. 259) recommend a modification to the Hausman test involving a test of $Y = x_{regular}\beta_1 + x_{instrumental}\beta_2 + \varepsilon$, where $x_{regular}$ are the original independent variables, $x_{instrumental}$ are the instrumental variables (formed in stage one), and the βs are coefficient vectors. If the nested F-test that relates a model with instrumental variables to a model without instrumental variables is significant, then instrumental variables are justified. The results for the measured dual emphasis ($F_{(3, 44)} = 10.688$, $p = .000$) and the constructed dual emphasis ($F_{(3, 44)} = 11.761$, $p = .000$) provided clear evidence that instrumental variables were required.

[11]Interaction models involving ROA used the noninstrumented version of those predictors. This was necessary because the interactions involving the instrumental variables introduced high levels of collinearity, producing results that could not be interpreted.

TABLE 5
The Impact of Quality Profitability Emphases on Firm Performance: Secondary Data

A: Measured Dual Emphasis

	ROA 1998		Size-Adjusted Stock Returns 1998	
Model Statistics				
Adjusted R^2	.393		.135	
F-statistic	7.746****		2.374*	
d.f.	5, 47		5, 39	
p-Value	.000		.057	
Predictors	b[a]	(t)[b]	b	(t)
Revenue emphasis	.775	(3.081)***	.387	(1.967)*
Cost emphasis	.208	(.820)	−.185	(−1.298)
Dual emphasis	.091	(.807)	−.455	(−2.408)**
Firm size	.220	(1.961)*	.202	(1.353)
Individual manager performance	.179	(1.628)	−.093	(−.634)

B: Constructed Dual Emphasis

	ROA 1998		Size-Adjusted Stock Returns 1998	
Model Statistics				
Step 1				
R^2	.444		.119	
F-statistic	9.590***		1.355	
d.f.	4, 48		4, 40	
p-value	.005		.267	
Step 2 (containing constructed dual emphasis)				
Change in R^2	.025		.115	
Change in F-statistic	2.223		5.862**	
Change in d.f.	1, 47		1, 39	
p-Value	n.s.		.02	
Final Predictors	b	(t)	b	(t)
Revenue emphasis	.760	(3.038)**	.286	(1.669)*
Cost emphasis	.211	(.834)	−.145	(−1.018)
Dual emphasis[c]			−.400	(−2.421)**
Firm size	.234	(2.116)**	.233	(1.580)
Individual manager performance	.195	(1.813)*	−.034	(−.238)

[a]Standardized coefficients are used throughout.
[b]t refers to the t-statistic for the estimated coefficients.
[c]The dual emphasis results are reported only for the size-adjusted stock returns model and not the ROA model, because entry of dual emphasis was significant only for the former and not the latter.
*$p < .10$.
**$p < .05$.
***$p < .01$.
****$p < .001$.

Exploring the effect of firm-level data. We measured the dependent measures for the secondary data at the firm level, because business unit data were not available. We tested whether this might have an effect on our results. The sum of squares relating to the dependent variable can be partitioned into between companies sum of squares and within companies sum of squares, and it seems reasonable to assume that the ratio of within company mean square to between company mean square should be roughly the same in the primary and secondary data. We performed one-way analyses of variance with firm as treatment on the financial performance measure and found that the mean square within company was .644 × the mean square between companies. We then did one-way analyses of variance on the secondary data and multiplied the between company mean squares by .644. However, this is an overestimate for within-company variance, because independent variable deviations from the company mean should be correlated with the estimated Y.

Therefore, we conducted multiple regressions using firm-level data to obtain the approximate percent variance explained by the explanatory variables, uncontaminated by the within-company variance. Multiplying $(1 - R^2)$ by the company variance estimate resulted in an estimated within-company variance, after we controlled for the explanatory variables. Taking the square root produced the estimated standard deviation within company. We then obtained ran-

dom normal deviates from a normal distribution with mean zero and the preceding square root and added it to the firm measure. This yielded simulated business unit dependent variables, with approximately the correct amount of within-company variance. We then ran the regressions as previously. The ROA results produced the same pattern of significant, positive effects for the revenue emphasis, whereas the stock returns showed insignificant (but directionally similar) effects for the revenue emphasis and replicated the significant, negative effects for the dual emphasis. Therefore, the conclusions from our analyses are mostly unaffected by the use of firm-level dependent measures.

Quality Profitability Emphasis Trends

Our empirical results suggested that the revenue emphasis may produce better financial outcomes, which led us to wonder whether firms were adopting the revenue emphasis over time. Our survey asked managers to evaluate their firm's quality profitability emphases (1) five years ago, (2) currently, and (3) five years from now; relative emphasis was measured on a seven-point scale from 1 = "all efforts directed at cost reductions" to 7 = "all efforts directed at satisfying and retaining customers." Presumably, a pure revenue emphasis would imply the right-hand (7) side of the scale, a pure cost emphasis would imply the left-hand (1) side of the scale, and a pure dual emphasis would imply the middle (4) of the scale. The mean relative emphasis shifted from 3.45 (toward a cost or dual emphasis) five years previously to 4.49 (more of a revenue or dual emphasis) at the time of the study to 5.31 (even more of a revenue emphasis) projected five years into the future.

To test whether there were perceived shifts in quality profitability emphasis over time, we conducted one-sample, two-tailed t-tests of the hypothesis that there was no change. Referring to the three measurements as PREVIOUS, CURRENT, and FUTURE, we calculated changes from one period to the next as DELTA1 = CURRENT – PREVIOUS and DELTA2 = FUTURE – CURRENT. A one-sample t-test for DELTA1 resulted in a t-value of 7.314 (significant at $p < .001$), and a test of DELTA2 resulted in a t-value of 7.661 (again significant at $p < .001$). To gain further insight, we then regressed DELTA1 on PREVIOUS and DELTA2 on CURRENT. We observed regression to the mean. The first regression was estimated DELTA1 = 3.784 – .794 × PREVIOUS, and the second regression was estimated DELTA2 = 3.804 – .662 × CURRENT. This indicates that companies with less revenue emphasis are the ones experiencing greater shifts in their quality profitability orientation.

Discussion

Summary of Findings

Collectively, these primary and secondary results suggest that firms adopting a revenue emphasis to manage quality profitability may reap the greatest rewards. The revenue emphasis showed a significant, positive impact on financial performance and customer relationship performance, as reported by managers. It also had a one-year-ahead positive impact on ROA and stock returns. The cost emphasis had no effect on primary or secondary measures of performance. Likewise, the dual emphasis had no effect on financial performance and customer relationship performance as reported by managers, nor on one-year-ahead ROA from the secondary data. Both the measured and the constructed dual emphasis, however, exerted a negative effect on one-year-ahead, size-adjusted stock returns.

The Optimal Quality Profitability Emphasis in Organizations

Our research implies that the two faces of quality (revenue expansion through customer satisfaction and cost reduction through efficiency) are not two sides of the same coin. They are distinct and affect firm performance differentially. Furthermore, a company may have different emphases with respect to quality. Our research suggests that companies should clearly determine whether they are emphasizing customer satisfaction (revenue emphasis), efficiency (cost emphasis), or both at once (dual emphasis).

More important, our research indicates that a revenue emphasis may be the most effective quality profitability emphasis for organizations. Across both cross-sectional, manager-reported performance and longitudinal objective performance indicators, firms using revenue approaches to quality profitability outperformed firms that used either cost or dual approaches. This set of results is robust to differences in the turbulence of competitive environments, in firms' past quality profitability emphases, and in the development of firms' quality information systems. Moreover, our results conform to this pattern when either a measured or a constructed dual emphasis variable is used. Finally, our results stand up to four distinct modeling approaches that resolve different empirical challenges associated with our measures and analyses.

As previously noted, prior research in marketing has not resolved whether an emphasis on building revenues through customer-focused activities should be accompanied by an emphasis on reducing costs, even though the literature states strongly that customer focus and market orientation lead to positive financial outcomes. Our results resolve this uncertainty by providing some empirical evidence for the importance of a sole revenue emphasis in firms' financial performance. The results provide some support for the idea that firms should allocate more resources to initiatives such as customer satisfaction programs, customer retention and loyalty programs, customer relationship management programs, and customer equity programs but should allocate fewer resources to quality programs that are designed to improve efficiency and reduce costs.

For the most part, both the dual and cost quality profitability emphases had an insignificant impact on firm performance. In the case of size-adjusted stock returns, however, both the constructed and the measured dual emphasis measures negatively affected firm performance. We theorized that organizational systems and structures involved in implementing both a revenue and a cost emphasis might involve nonreinforcing learning systems, system dynamics, and incentive systems that reduce the financial impact of quality profitability efforts. Alternatively, firms in our study may have had a fixed budget, making it difficult for the two

concurrent emphases (revenue and cost) to achieve critical mass.

At the same time, we did not expect to find a negative effect. These results may indicate that financial analysts anticipate the types of organizational repercussions we expected under a dual emphasis. These results may also suggest, however, that analysts view a dual emphasis as an attempt by firms to "play the spread," which they perceive as poor management acumen or risk aversion. In either case, such ideas should correct themselves over time as analysts learn more about the true implications of various quality profitability emphases. If so, it is likely that our results provide insights into the possibly deleterious organizational dynamics and conflicts set in motion by the dual emphasis.

Previous research has indicated the possibility of a trade-off between customer satisfaction and productivity for service firms, but not for goods firms (Anderson, Fornell, and Rust 1997; Huff, Fornell, and Anderson 1996). Therefore, because our results favor the revenue emphasis, one question is whether they might be moderated by the extent to which a company is a service business. Similarly, because productivity improvement is related to internal process quality improvement and cost reduction, it might be inferred from our results that the dual emphasis would perform better for firms with less service intensity. We examined this possibility by testing for the presence of significant interactions between each quality profitability emphasis and the intensity of the firm's service level (i.e., the degree to which a company is a service provider as opposed to a goods provider). We failed to find support for this inference in our model testing. The preference for the revenue emphasis as opposed to the dual emphasis appears to hold across the board.

Further Research

Future work might examine a wider set of contingencies that could influence the financial implications of various quality profitability emphases. The relationship of the business cycle to the effectiveness of quality profitability emphases, for example, would be a fertile area of research, as would the stage of development of the national economy in which the business unit operates.

Further research should also examine the firm, customer, competitor, and environmental factors that tend to create these emphases. In the latter regard, recent exploratory work by Morgan and Piercy (1996) examines a firm's overall strategy on firm performance. The authors focus in particular on a firm's differentiated quality strategy and its low-cost quality strategy and suggest that the two approaches cannot be used within the same firm. In an extension, they describe the role of marketing in each strategy condition as contingent on whether the quality differences are objective or only perceived. Drawing from their work, we would expect a revenue focus to evolve more from a differentiation strategy than from a low-cost strategy and more from perceived than from objective quality. We expect perceived to be stronger than objective quality, because objective quality may increase managers' focus on the product, whereas perceived quality has a clear customer focus.

Another issue for further research that cuts across all these studies is where such an emphasis resides within the organization. Specifically, does the customer focus of a firm reside in the belief systems of the people who make up the organization, or does it instead reside in the collective belief systems of the organizational culture, beyond the people who constitute it? Despite the demonstrated importance of customer focus to firm success, research has not examined the locus of customer-oriented belief systems or investigated whether different locations influence the ability of customer focus to affect a firm's financial performance.

Limitations

Several limitations of our current study should also be acknowledged. As is true for a great deal of empirical strategy research, we use self-reported data on such key dependent variables as firm performance. To remedy concerns regarding method bias, we introduced the use of secondary indicators of longitudinal firm performance in the form of ROA and size-adjusted stock returns. These performance measures are also imperfect, because they examine overall firm performance, not business unit performance. It would be optimal to have secondary business unit performance measures to match our business unit–level evaluations of the independent variables, but no such data are available. The strength of our article is that it looks across our objective and subjective measures for trends regarding the impact of quality profitability emphases.

We also acknowledge that our sample does not represent a true probability sample of all organizations, because we created a sample of firms that are actively involved with evaluating returns from quality. It could be that this sample is somewhat more progressive than would be obtained from simple random sampling.

We also recognize that our results may be dependent on the economic climate in which the data were generated. One plausible alternative to our viewpoint, for example, might hold that macroeconomic factors influence which of the quality profitability emphases is best at a particular time. When energy prices rise, for example, the cost emphasis may be more effective; when disposable income is high, the revenue emphasis may do better. It is impossible to know whether this interpretation is correct without replicating our study in a different macroeconomic climate. Replication of this research, in either the past (if possible to do) or the future, would be helpful in confirming the universality of the results.

Conclusion

How a firm should attempt to derive financial benefits from quality might vary depending on the functional perspective it takes. Marketing tends to address the problem from a revenue perspective and operations from a cost reduction or efficiency perspective. Although it might appear possible to double the benefit by using both approaches simultaneously, our empirical findings suggest that firms can achieve greater financial returns from quality improvements by emphasizing revenue generation solely, along with its underlying focus on customer satisfaction and retention. The results from such an emphasis exceed those arising from a focus on costs alone or from attempts to balance a dual emphasis on both revenues and costs. These findings reinforce the literature that describes tensions between revenue building and cost

reduction firm dynamics and learning systems. It also contributes to the literature on market orientation by suggesting that a market orientation may not be fully compatible with a concurrent emphasis on cost reduction.

Appendix: Measures

Quality Profitability Emphases

Revenue Emphasis

Rate the degree to which the managers in your division agree with the following statements about initiatives to improve the quality of products and processes: (1 = "low level," 7 = "high level")

1. The purpose of quality improvement is to improve customer satisfaction/retention.
2. Quality improvements should be differentiated by their impact on customer satisfaction/retention.
3. It is best to invest in improving those initiatives that greatly increase customer satisfaction/retention.
4. Quality improvements should always result in increased revenues.

Rate the extent to which your division encourages managers to take the following actions regarding efforts to improve the quality of products and processes:

5. Build revenues by increasing customer satisfaction/retention.
6. Invest in improving those activities that generally increase customer satisfaction/retention.

Cost Emphasis

Rate the degree to which the managers in your division agree with the following statements about initiatives to improve the quality of products and processes: (1 = "low level," 7 = "high level")

1. The purpose of quality improvements is to reduce costs.
2. Quality improvements should be differentiated by their degree of cost saving.
3. Quality improvements should always result in reduced costs.

Dual Emphasis

Rate the degree to which the managers in your division agree with the following statements about initiatives to improve the quality of products and processes: (1 = "low level," 7 = "high level")

1. Customer satisfaction/retention efforts should always consider the long-term impact on costs.
2. Cost reduction efforts should always consider the long-term impact on customer satisfaction/retention.
3. It is possible that investments in quality programs can increase customer satisfaction/retention and reduce costs at the same time.

Rate the extent to which your division encourages managers to take the following actions regarding efforts to improve the quality of products and processes:

4. Consider the long-term effect of cost reduction efforts on customer satisfaction/retention.
5. Consider the long-term effect of customer satisfaction/retention efforts on costs.
6. Manage as if quality programs can increase customer satisfaction/retention and reduce costs at the same time.

Primary Performance Outcomes

Relative to your division's stated objectives, how is your division performing on (1 = "worse," 4 = "on par," and 7 = "better")

Customer Relationship Performance

1. Customer satisfaction?
2. Customer retention?
3. Service quality?

Financial Performance

1. Sales?
2. Profitability?
3. Market share?

Secondary Performance Outcomes

ROA (from COMPUSTAT)

Size-Adjusted Stock Returns (from CRSP)

Variables Affecting Impact of Quality Profitability Emphases

Industry Competitiveness (Jaworski and Kohli 1993)

Use the scale at the top of the page to rate your division's operating environment: (1 = "strongly disagree," 4 = "uncertain," and 7 = "strongly agree")

1. Competition in this product/service area is very cutthroat.
2. One hears of a new competitive move in this product/service area almost every day.
3. Our competitors in this product/service area are relatively weak.

Quality Profitability Information Processes (adapted from Moorman 1995)

Rate your division's processes for using information that ties quality initiatives to financial outcomes. To what extent does your division have processes (either formal or informal) (1 = "low level," 4 = "moderate level," 7 = "high level")

1. That rely on this information to make decisions related to customer satisfaction/retention?
2. That use this information to solve specific customer satisfaction/retention problems?
3. That use this information to implement various customer satisfaction/retention initiatives?
4. That use this information to evaluate customer satisfaction/retention performance?

Past Quality Profitability Emphasis

Five years ago, how did your division allocate its quality improvement efforts?

All efforts directed at cost reductions _ _ _ _ _ _ _ _ _ _ _ All efforts directed at satisfying and retaining customers

Service Intensity

Evaluate your division's present operations on the following scale:

Producing goods _ _ _ _ _ _ _ _ _ _ Providing services

Control Variables

Firm Size (from COMPUSTAT)

Number of employees

Individual Manager Performance

Use the scale at the top of the page to rate your individual performance: (1 = "strongly disagree," 4 = "uncertain," and 7 = "strongly agree")

1. I have generally performed better than my peers in comparable jobs.
2. I am more effective in my job than my peers.
3. I have been promoted at a faster rate than my peers.

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