Chapter 14
Assessing Efficiency and Effectiveness in Marketing: Applications of Data Envelopment Analysis—Prelude to Chapters 15 and 16

Gopalkrishnan R. Iyer and Dhruv Grewal

Abstract Academic theory and marketing practice have both grappled with the problem of assessing marketing performance, either in terms of effectiveness of marketing strategies and/or the efficiency of marketing operations. Data Envelopment Analysis (DEA) is an important tool for the assessment of marketing efficiency, or the relation between marketing inputs and outputs, as well as marketing effectiveness, or the impact of marketing actions on specific performance results. The following pages provide an introduction to various challenges in the assessment of marketing performance followed by two articles that demonstrate the application of DEA in two different contexts. In the retail context, DEA is used to highlight the importance of considering regional factors when evaluating the efficiency of individual stores within the same retail chain. In the global marketing context, DEA is used to address the fact that most marketing actions involve the creation of marketing assets that in turn impact performance.

Keywords DEA in marketing • Marketing performance assessment • Retail store efficiency • Subsidiary performance evaluation

Marketing performance assessments have been the subject of intense scrutiny for several decades, with renewed interest in recent years (Gauri 2013; Morgan et al. 2002; Rust et al. 2004; Sheth and Sisodia 2002; Vorhies and Morgan 2003). In particular, attention has centered on the efficiency of marketing actions

G.R. Iyer
Center for Services Marketing and Management, Florida Atlantic University, 777 Glades Road, Boca Raton, FL 33431, USA
e-mail: giyer@fau.edu

D. Grewal (✉)
Babson College, 213 Malloy Hall, Babson Park, MA 02457, USA
e-mail: dgrewal@babson.edu

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J. Zhu (ed.), *Data Envelopment Analysis*, International Series in Operations Research & Management Science 238, DOI 10.1007/978-1-4899-7684-0_14

(e.g., Bonoma and Clark 1988) and the effectiveness of marketing strategies (e.g., Dunn et al. 1994). Some researchers also emphasize the analytical processes involved in assessing marketing performance (e.g., Laréché and Srinivasan 1982).

Central to any efficiency-based marketing performance assessments are two distinct but complementary elements. First, an assessment of marketing productivity addresses the effective management of the marketing mix and the efficiency of marketing spending (Thomas 1984). Second, the extent to which marketing activities contribute to the firm's bottom line signals the impact of marketing on overall firm performance, measured by financial results (Day and Fahey 1988; Srivastava et al. 1998).

Early approaches to measuring marketing productivity focused more on distribution and logistics, rather than the full span of the marketing function (Sheth and Sisodia 2002). In turn, marketing productivity measures tend to consider the return on marketing investments, at the mass market or segment level. Costs and expenditures can often be measured precisely, but considerations of what to include in measures of marketing performance have long been a bone of contention for academics and practitioners. For example, measures of marketing performance might include market share, sales generated, and customer account data—which also are the most readily available and objective outcomes of marketing activities. However, a view of marketing as an expense rather than an investment often resulted in choices that sacrificed key elements necessary for long-term marketing success, such as customer satisfaction, when the related activities were deemed too costly (Sheth and Sisodia 2002). Other, more recent measures of marketing performance include brand equity (Keller 1993), customer retention (Gummeson 1999), customer equity (Blattberg and Deighton 1996; Rust et al. 2004), customer lifetime value (Berger and Nasr 1998; Kumar and Shah 2009), and quality (Rust et al. 2002).

In addition, the challenge of marketing performance assessments at the top management level has led to an emphasis on marketing's impact on firm performance as a measure of marketing success. Thus, another set of approaches attempts to link marketing investments and/or marketing performance measures to firm performance, with the recognition that marketing performance measures such as brand equity and customer loyalty tend to be intangible outputs (Srinivasan and Hanssens 2009). Prior research cites the links between marketing mix investments and some measures of firm value. For example, researchers have studied the impacts on firm value of investments in advertising (Joshi and Hanssens 2009), sales promotions (Pauwels et al. 2004), distribution channels (Geysens et al. 2002), or product innovations (Srinivasan et al. 2009), among others. Marketing outputs also can be linked to firm value; in their review, Srinivasan and Hanssens (2009) highlight studies that focus on the firm value impacts of brand equity (e.g., Madden et al. 2006), customer satisfaction (e.g., Fornell et al. 2006), customer equity (e.g., Gupta et al. 2004), and product quality (e.g., Tellis and Johnson 2007).

Yet another approach to performance assessment links marketing actions and investments to the creation of market-based outputs, which then contribute to firm performance. Thus, marketing outputs are key intermediate outputs of the links between the marketing function and firm performance. The development and leveraging of market-based assets and their consequent impact on shareholder value are key to these approaches (Day and Fahey 1988; Srivastava et al. 1998). A core thrust is the

goal of linking the performance of marketing activities to objective measures that are supra-marketing measures. They involve inclusion of traditional financial measures of firm performance, such as net present value of cash flows and shareholder value, together with marketing measures, such as sales volume, market share, and gross margin (Day and Fahey 1988; Srivastava et al. 1998). The performance output measures are broad, firm-level financial measures; the key drivers or inputs of performance instead involve attention to market-based assets and business processes that are within the marketing domain (Srivastava et al. 1998, 1999).

Effectiveness-based approaches to marketing performance start with the assumption that measuring marketing productivity provides only one side of the story. Several aspects of a marketing strategy cannot be objectively assessed or numerically measured, including the impact of marketing on the achievement of business and organizational goals (Walker and Ruekert 1987). The crux of these approaches is the extent of fit between the core marketing strategy pursued and the marketing organization (McKee et al. 1989; Walker and Ruekert 1987). The key driver of marketing performance in this context is thus the fit between a specific strategy type and the structural and task characteristics of the marketing organization (Slater and Narver 1993; Walker and Ruekert 1987; Workman et al. 1998). The congruence between the marketing strategy and marketing organization is important not only for assessing marketing effectiveness but also for competitive reasons (Bharadwaj et al. 1993; Day 1994). The effectiveness of the fit is not visible to competitors, which makes it difficult to imitate (Bharadwaj et al. 1993). Accordingly, the fit between strategy and organization appears critical to marketing performance (Moorman and Rust 1999; Workman et al. 1998).

Viewed according to the performance assessment framework, efficiency-based approaches focus on tangible measures of both inputs and outputs (Bonoma and Clark 1988), whereas effectiveness-based approaches focus on intangible measures of marketing strategy (e.g., ideal strategic types) and marketing organization (Walker and Ruekert 1987). Both approaches have been extended to include measures of organizational performance. In the case of efficiency-based approaches, they include measures of the firm's financial performance (Srivastava et al. 1998), but in the case of effectiveness-based measures, they include broad measures of organizational performance (Conant et al. 1990). At another level, focusing on the intangibility of outputs has resulted in other measures of marketing performance, such as brand equity and customer value.

At the heart of all approaches to broadening marketing performance assessment lie two academic and practical pressures: (1) the assessment of the impacts of marketing on the overall organization and (2) the assessment of intermediate processes through which marketing contributes to firm performance. These objectives have led to various discourses, including a focus on the financial performance implications of marketing (Srivastava et al. 1998); the merger of efficiency and effectiveness dimensions of marketing performance, in the form of "effective efficiency" (Sheth and Sisodia 2002); measures of both efficiency and effectiveness (Vorhies and Morgan 2003); and the development of tangible measures of various aspects of marketing inputs or outputs (Berger and Nasr 1998; Rust et al. 2004).

Against this lack of consensus about the appropriate inputs, outputs, or processes for marketing performance, it becomes clear that marketing performance assessment cannot be considered straightforward or easy. Chapters 15 and 16 provide examples of assessments at the retail level or the global level.

Retail Level: In Grewal et al. (1999), "Planning Merchandising Decisions to Account for Regional and Product Assortment Differences," DEA serves to assess the efficiency of 59 stores of a major *Fortune* 500 multinational retailing chain. Multiple inputs (store operating expenses, square footage of each store, inventory) lead to the key outputs of sales volume in units for sales of products A and B. A regional factor serves as the control variable. Chapter 15 (Grewal et al. 1999) highlights the importance of incorporating regional differences in the analysis and potential adjustments to target sales on the basis of assessments of how the best practice stores are performing.

Marketing Performance Assessments at a Global Level: Empirical assessments of global marketing performance are relatively sparse. When they exist, they tend to focus on specific aspect(s) of marketing strategy and firm performance. Because a global firm learns from its operations in various countries, assessments of global marketing performance must not only compare the relative performance of each subsidiary but also focus on the processes that lead to superior performance. Grewal et al. (2009), in Chap. 16 acknowledge that in international markets, the firm first must create certain key capabilities before it can achieve success in each market in which it operates (Luo 1999). These capability-building efforts lead to the development of critical market assets (Srivastava et al. 1998) that can be leveraged to enhance marketing performance. Strategic moves by the firm and its subsidiaries to develop national markets leads to market creation; harnessing national markets in terms of their observable performance is termed market yield.

Specifically, the development of critical, intangible, and rent-generating assets by subsidiaries is a first step toward enhancing marketing performance, not only for the subsidiary but for the firm as a whole. Knowledge is one such critical asset, though other market-based assets exist too. A focus on the intermediate development of critical resources makes it imperative that marketing performance goes beyond simply the relationship between inputs and outputs. It must involve the development of enduring market-based assets that, when harnessed, contribute to superior performance. Therefore, marketing performance assessments must focus on process aspects, as well as inputs and outputs.

The national environment of each subsidiary also influences global marketing operations and performance. They variously might be sources of competitive advantage creation, locus of location-specific advantages, wellsprings for different factor costs or margins, barriers to transfers of extant knowledge, or schools for developing experiential knowledge. Any performance assessment of global operations must account for the environment. In general, the environment moderates the development of market-based assets, such as knowledge, experience, and firm-specific competitive advantages, as well as the extent to which those market-based assets can be harnessed to produce superior performance.

Chapter 16 (Grewal et al. 2009) use DEA to assess marketing performance using multiple inputs and outputs. Moreover, they apply DEA to identify subsidiaries that are best in terms of either or both market creation and market yield. Thus, DEA can be applied not just for performance assessments but also to identify subsidiaries that provide insights into best practices, to be developed and transmitted across the global organization.

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