

BRAND EFFICIENCY AND BRAND RELEVANCE: INTRODUCING AND LINKING BOTH CONCEPTS

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ABSTRACT

Brand managers are under increased pressure to illustrate the performance of their multimillion dollar expenditures. This paper provides three contributions in the context of brand management. First, we introduce the concept of brand efficiency as a measure for the performance of the brand management process. Second, we develop a measure for the industry-specific brand relevance (influence of branding on purchase decisions). Third, we link these concepts and examine if brand management efficiency in an industry is influenced by brand relevance.

INTRODUCTION

Several authors stress that most of existing brand equity approaches are developed ad hoc and are used in an isolated way (Ambler and Barwise 1998; Chumpitaz, Kerstens, and Paparoidamis 2006; Luo and Donthu 2006). They note that a variety of “stand alone” brand equity concepts exists, providing only fragmented insights rather than a holistic perspective on brand performance. Thus, the authors call for a stronger integration of the different outcome variables. Moreover, most approaches do not relate brand outcomes to brand investments which were employed to create the outcomes. The first contribution of our paper is to address these issues by introducing the concept of brand efficiency as a broader, more integrated measure of brand performance. To the best of our knowledge, no study has examined the efficiency of brand management so far or has provided a methodologically and theoretically sound measure for the efficiency of the brand management process. The advantages of the brand efficiency concept are that we consider both the input and the output side simultaneously (resulting in a measure for the “return on brand investment”) and conceptualize both sides multi-dimensionally. By measuring efficiency as a ratio of multiple outputs to multiple inputs we embed the multitude of brand equity measures in an economic framework. This allows identifying overspendings and therefore helps to avoid misallocations of brand management resources. In doing so, we answer Rust and colleagues’ (2004, p. 83) call for new methodologies to measure marketing productivity, in which they clearly identify a key gap in the literature when they state that “few methods currently exist for comprehensively modeling the chain of

marketing productivity all the way from tactical actions to financial impact or firm value.”

We propose that firms are not equally successful in achieving high efficiency of their brand management process because they do not align their brand investments to the influence of brands on consumers buying decisions (brand relevance). The long-term success of a brand depends on the sustainable influence brands have toward the buying decision in a specific product category. If the influence of the brand on the buying decisions of consumers is low, a brand management that invests heavily to create a strong brand (in terms of customer-based outcome) is assumably inefficient as the brand investments will not lead to a high financial outcome. As a second contribution we therefore develop a multi-item measure for the brand relevance in an industry or a product market in terms of the “brand drivenness” of purchase decisions in that industry (Riesenbeck and Perrey 2006). To our knowledge, this is the first academic study addressing this issue.

After introducing the two concepts of brand efficiency and brand relevance our third contribution is to link these two concepts to investigate whether different levels of brand relevance across industries can explain differences in brand management efficiency. We argue that creating high brand efficiency depends on the alignment of brand investments with the level of brand relevance. To test this hypothesis we conduct two studies using brand related data from five industries or product categories, respectively (automotive, desktop computers, casual clothing, financial services, banks). Our findings answer the question under what circumstances the focus of marketing should be on brand building or on other decisions criteria such as price or customer service. In other words, we analyze when the focus of marketing investments should be on maximizing brand equity and when it should be on creating customer equity in the respective industry.

CONCEPTUAL FRAMEWORK

Brand Efficiency

We use the concept of brand efficiency as a measure of brand performance. Brand efficiency or brand management efficiency is to be understood as a ratio of multiple brand outputs to multiple brand inputs. It reflects whether

brand management achieves the best transformation of deployed brand investments (e.g., advertising spendings) into brand outcomes (consumer based and financial brand success). Due to the multitude of branding instruments (inputs) and brand-related success measures (outputs), brand efficiency has to be conceptualized multi-dimensionally (Staat and Hammerschmidt 2005). Then a simultaneous analysis of different investments and outcome factors is possible. The target is to gain insights into how brand management can transform deployed inputs (advertising, distribution, quality management) into outputs aligned to the steps of the brand management process. In order to conceptualize this brand management process we refer to the brand value chain proposed by Keller and Lehmann (2006).

Keller and Lehmann (2006) provide a conceptual framework for the creation of brand value and propose that brand equity is built and should therefore also be measured along the “brand value chain” (Figure 1). In the first step of the chain brand investments are considered which directly affect both the cognitive and affective dimension of customer based brand equity. These two dimensions are captured appropriately by brand awareness and brand image respectively as recent studies show (Keller 1993; Kapferer 2004). According to empirical results they are mainly driven by investments in communication, distribution, and product quality (Johnson, Herrmann, and Huber 2006; Yoo, Donthu, and Lee 2000; Rossiter and Percy 1997).

In the second step, brand image and brand awareness lead to financial outcomes (financial brand success). Here, we distinguish between *product market* performance represented by brand revenue or brand profitability and *stock market* performance represented by stock price, P/E-ratio or market capitalization. This follows the logic that from the marketing perspective consumers are the major constituency driving brand revenue, while shareholders constitute the central stakeholder from a financial perspective driving stock price. Recently, brand managers are seen as accountable not only for the success of the individual brand but for creating shareholder value in order to strengthen marketing’s credibility (Madden, Fehle, and Fournier 2006). Instead of capturing stock market performance by the company’s market capitalization as done in several publications (e.g., Rust, Lemon, and Zeithaml 2004) we believe that from a financial market perspective the stock price relative to the earnings (Price/Earnings-ratio) should be used as an outcome of brand investments. Both the company earnings (E_i) and the willingness of investors to pay for it (measured by the P/E-ratio) are the drivers of market capitalization (MV_i).

$$MV_i = E_i \times \left(\frac{P}{E} \right)_i$$

Furthermore research findings in Finance show that the P/E-ratio (willingness to pay) is positively influenced by the liquidity and breadth of a stock. According to Grullan, Kanatas, and Weston (2004) brand investments are a key driver of liquidity and breadth of a stock because stocks of strong brands are heavily traded. Additionally, investors view a strong brand as an indicator for the company’s ability to create and to ensure future cash flows (Madden, Fehle, and Fournier 2006). As a result, the P/E-ratio is a more comprehensive indicator for the stock market performance. Figure 1 summarizes our conceptual framework.

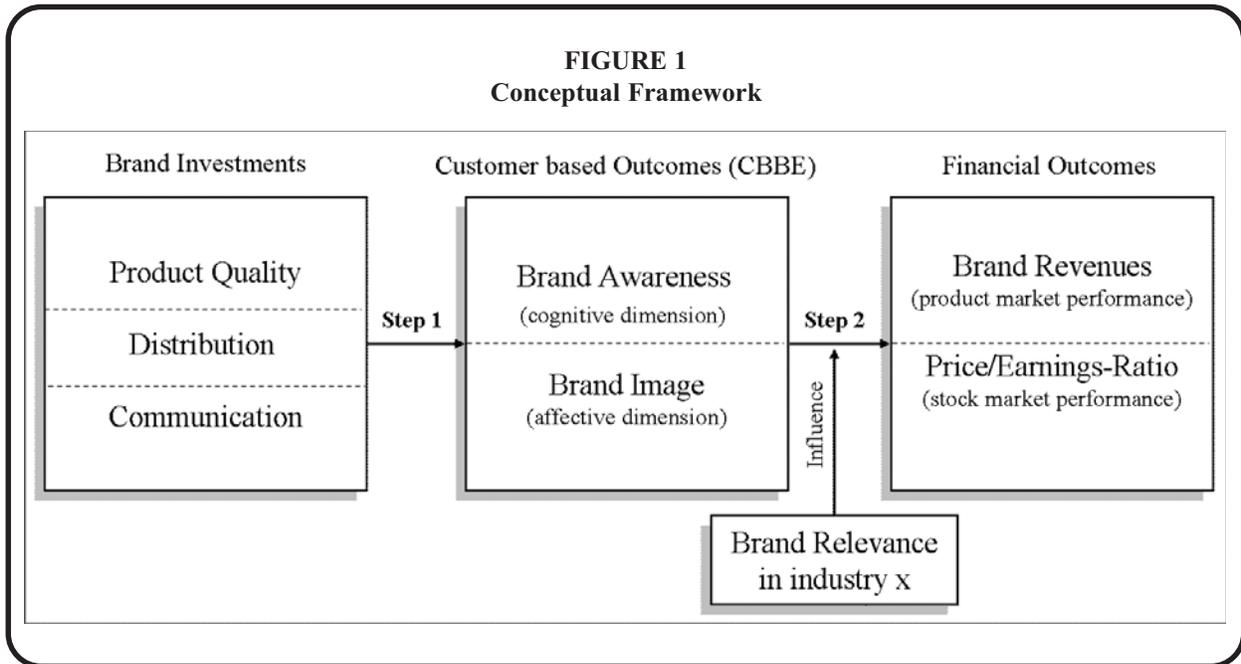
This paper investigates how efficient brand investments are transformed into customer-based outcomes (step 1) and, subsequently, how efficient this customer-based brand impact is transformed into financial outcomes (step 2). We propose that the efficiency of the transformation of customer-based outcomes into “hard” financial results (step 2) highly depends on the degree on which the decision criterion “brand” influences purchase decisions (i.e., the level of brand relevance).

Brand Relevance

Building strong brands is not a promising strategy for any industry. This is because brands are not equally important to purchasing decisions in every market. Brand relevance is defined as the degree to which the brand plays a key role in consumers’ choice process for a product in a given product category. The stronger the role of the brand against other purchasing decision criteria, such as price, customer service, or product quality, the more relevant the brand appears (Perrey et al. 2003).

Brand relevance is an often-used phrase, but it generally has not been well defined or explained. In literature, definitions exist that differ from our understanding of brand relevance. Aaker (2004) regards a specific brand as relevant if three conditions are met: (1) a product or service category or subcategory – defined by some combination of attributes, applications, user groups, or other distinguishing characteristics – exists or emerges. (2) There is a perceived need or desire on the part of a customer segment for the category or subcategory. (3) The brand is part of the evoked set of brands that a segment considers as being material to the product category or subcategory. Brand relevance involves two stages of the customer-brand interaction: First, when the customer selects a product category or subcategory perceived to be relevant to the problem or opportunity (e.g., he or she may decide to buy a luxury sports sedan rather than a compact or an SUV). Second, the customer determines which brands to consider (in this case the choice might include Audi, BMW, Lexus, and Cadillac). A specific brand’s relevance depends on both stages. Although preference

FIGURE 1
Conceptual Framework



based on a differentiated offering and a positive usage experience can help to enhance a brand's relevance, if the need or category association is missing, the brand lacks relevance, and no differentiation, attitude, or relationship will help. In other words, according to Aaker (2004) a brand (e.g., Cadillac) is relevant if it is associated with a product category or subcategory (e.g., SUV). In order to be relevant, a brand should at least be recalled without aid.

Kapferer and Laurent (1992) present another approach called "sensibilité aux marques" (brand sensitivity). They define brand sensitivity as the influence of a brand on the buying decision of a specific consumer. Brand sensitivity exists if the consumer takes the brand into consideration for his buying decision as a matter of principle.

Obviously, existing approaches relate brand relevance to *specific* brands (Aaker 2004) or to *specific* individuals (Kapferer and Laurent 1992). Our understanding of brand relevance is related to the relevance of the decision criterion "brand" in *general* to an *average* consumer in a market (Perrey et al. 2003). It is the average brand sensitivity in an industry. Here, we follow Kotler's (2003, p. 442) definition of a brand as a "name, sign, symbol or design which identifies the goods and services of one seller and differentiates them from those of competitors." Hence, with the term brand we consider consumers' associations and feelings related to a brand name (Aaker 1991).

To our knowledge, McKinsey & Company conducted the only empirical studies on brand relevance so far (Perrey et al. 2003; Riesenbeck and Perrey 2006). A

crucial shortcoming of these studies is that brand relevance is operationalized as a single-item, global measure only not capturing the different facets of the construct. Therefore, we introduce a multi-item measure of brand relevance. Based on a review of existing literature (Riesenbeck and Perrey 2006; Perrey et al. 2003; Kapferer and Laurent 1992) we generated five items that capture our understanding of brand relevance. We reveal the influence of the buying decision criterion "brand" in an industry by asking consumers if in industry X (1) the brand plays an important role compared to other decision criteria (e.g., price); (2) the brand is a very important decision criterion; (3) it is important for them to buy branded products; (4) they would buy a branded product even if they would have to incur extra efforts; (5) the brand is very important for the purchase decision. Using this measurement model researches can classify existing product categories or industries according to their level of brand relevance (e.g., industries with high, medium, or low brand relevance).

Linking Brand Efficiency and Brand Relevance

We suggest that the efficiency of the first step transformation (creating superior awareness and image through branding instruments) depends mainly on factors that are under control of brand management e.g., managerial skills and competencies (Murthi, Srinivasan, and Kalyanaram 1996). Recent literature proposes an increasing standardization and homogenization of brand strategies and policies across firms (Cervino and Cubillo 2004; Teece, Pisano, and Shuen 1997). At the same time the number of mergers and acquisitions as means to capture marketing resources has grown significantly (Capron and Hulland 1999). In

line with these developments it can be assumed that even invisible brandind assets become more and more mobilized making an easy and efficient transfer of branding skills between companies possible (Itami and Roehl 1991). This leads us to conclude that in the first step, high efficiency can be achieved in every industry irrespective of brand relevance. Thus, we propose H_1 : In the **first** step of the brand value chain brand efficiency does **not** differ significantly between product markets with high vs. medium or low brand relevance. In contrast, for efficiently transforming consumer-based outputs into financial outcomes in the second step of the brand value chain, brand relevance is a crucial prerequisite. As explained above, brand relevance can be seen as a market characteristic which is exogenously given and cannot be controlled by brand management, at least not within a short and medium term horizon (Smith 1992). Presumably, only if brands have a significant impact on the buying decision of consumers (i.e., the level of brand relevance is high), high expenditures to build up strong brands will translate into high financial success. Thus, we formulate H_2 : In the **second** step of the brand value chain, brand efficiency is significantly higher in product markets with high brand relevance than in product markets with medium or low brand relevance.

RESEARCH SETTING AND METHODOLOGY

Research Setting

To test our hypotheses we follow a three-stage approach: First, we measure brand relevance in different product categories and rank them according to their level of brand relevance. Second, we choose three industries with significantly different levels of brand relevance (high, medium, and low) and measure the efficiency of brands in each industry using Data Envelopment Analysis (DEA). Third, we compare the average efficiency between the industries for step 1 (H_1) and step 2 (H_2) of the brand value chain to analyze differences between product categories with different levels of brand relevance.

Stage 2 and 3 are conducted twice. In study 1 we use “mono-brand” manufacturers that are publicly traded. Therefore, as the financial output for step 2 we use a stock market related metric (price/earnings ratio). To test for the robustness and generalizability of the findings we conduct a second study now including brands that don’t have an own stock price either because the manufacturer is not publicly traded at all or is a “multi-brand” publicly traded firm (i.e., only the parent brand is listed). As stock market related metrics become inappropriate in those cases we use earnings before interest, taxes, depreciation, and amortization (EBITDA) to capture the profitability of these brands. We believe that examining one sample without stock metrics is important as several studies emphasize

that stock returns may be driven simply by the fact that investors and analysts observe high brand investments. This may lead to the fact that they expect higher appreciation potential although the long run sales or profitability remains unaffected, resulting in a pure “investor response effect” (Joshi and Hanssens 2004; Mizik and Jacobson 2005). Joshi and Hanssens (2004) show, that high advertising has a direct effect on valuation, i.e., an effect independent of its indirect effect via revenue and profit response. Frieder and Subrahmanyam (2005) find that investors favor stocks with strong brand names, even though these powerful brands did not generate superior returns. Thus, even if sales response to branding activities is demonstrably weak, investors are willing to pay a premium for aggressive brand management initiatives. Therefore, one could argue that the high brand efficiency scores and the close relationship between brand relevance and brand efficiency occurred due to the use of a stock market performance metric instead of a conventional profit measure like EBITDA.

Measurement of Brand Relevance

In order to get a brand relevance ranking of product categories, we randomly selected 26 business-to-consumer (B2C) product categories from the Consumer Price Index (CPI) market basket. The five statements introduced above were transferred to an online questionnaire using a seven-point Likert-scale ranging from “absolutely do not agree” to “absolutely agree.” To ensure that respondents only answered questions about product categories they are familiar with, we first asked them for their purchase experience in the 26 categories within the last 12 months. Among these “familiar” product categories seven were randomly selected and respondents answered the five relevant questions per category and several questions regarding socio-economic characteristics. Brand relevance is measured as an index of the five items for which the average values of all respondents within an industry were taken.

Measurement of Brand Efficiency

To capture the two steps of the brand value chain we use a two-step Data Envelopment Analysis (DEA) model. DEA is a nonparametric tool that can deal with multiple inputs and outputs when measuring inefficiency. It estimates an efficient frontier by maximizing the weighted output/input ratio of each brand, thus producing a single measure of overall efficiency (Charnes, Cooper, and Rhodes 1978). Efficient brands (best practices) are those for which no other brand or linear combination of brands can generate as much as or more of the output given the input levels. Because the weights for input and output variables of a brand are computed in order to maximize the ratio and then compared to similar ratios of best-perform-

ing units, the measured value is also referred to as relative efficiency (Seiford 1996). The efficiency results given by DEA will provide firms valuable information for assessing the adequacy of their spending.

According to the brand value chain the influence of the resources consumed by brand management instruments on financial performance is indirect, utilizing psychographic outputs as intermediate factors to generate financial outputs (Keh and Chu 2003). Thus, we recast the brand value chain as a chain of two DEA models. In the first step DEA model we examine the influence of brand investments on the psychographic variables awareness and image covering the cognitive and affective dimension of customer-based brand equity. Subsequently, in the second step DEA model it is investigated whether psychographic variables are translated successfully into “hard” economic facts. Such a multi-stage model allows insights into the sources of overall brand (in)efficiency. Not decomposing the overall efficiency score would mask whether inefficiency arises from internal, operational aspects (conversion of resources in superior awareness and image) or from market-related aspects (capitalizing on awareness and image). We argue that the success in the first step mainly depends on the skills of the brand managers (H_1) while success in the second step depends on brand relevance as a key market characteristic (H_2).

DATA AND SAMPLE

Data and Sample for the Brand Relevance Ranking

Three hundred fifty respondents answered the online questionnaire. As every respondent rated seven industries we obtained more than 2,500 evaluations in total, i.e., 100 evaluations per industry. The sample’s socio-economic characteristics are representative for the Central Europe population. We conducted exploratory and confirmatory factor analysis indicating excellent fit measures (Cronbach’s alpha: 0.95, Variance Extracted: 83%, χ^2/df : 2.95, RMSEA: 0.03, NNFI: 0.99, CFI: 0.99; RFI: 0.99; SRMR: 0.015). As a result we obtained the brand relevance ranking of the 26 industries shown in Table 1.

Data and Sample for the Measurement of Brand Efficiency

In order to examine the differences in brand efficiency between industries and the moderating role of brand relevance we first selected the following product categories (brand relevance score in parentheses): Study 1: automotive (high brand relevance: 5.1), desktop computers (medium: 3.8) and financial services (low: 2.5); Study 2: automotive (high: 5.1), casual clothing (medium: 4.4) and banks (low: 2.2). The differences in brand relevance are highly significant at $p < 0.01$.

TABLE 1
Brand Relevance Ranking of Industries

Rank	Industry	Brand Relevance	Rank	Industry	Brand Relevance
1	Consumer Electronics	5.16	14	Desktop Computers	3.80
2	Automotive	5.10	15	Soft Drinks	3.73
3	Cigarettes	5.08	16	Convenience Food	3.68
4	Sports Shoes	5.04	17	Cellular Phone Networks	3.52
5	Cosmetics	5.00	18	Shower Gel	3.43
6	Business Clothing	4.91	19	Sunglasses	3.35
7	Beer	4.90	70	Fixed Line Networks	2.91
8	Laptop Computers	4.79	21	Furniture	2.74
9	Television	6.63	22	Mineral Water	2.61
10	Casual Clothing	4.48	23	Financial Services	2.52
11	Sparkling Wines	4.46	24	Banks	2.23
12	Power Tools	4.01	25	Electricity	2.07
13	Insurances	3.90	26	Toilet Paper	1.60

Second, to analyze brand efficiency we chose 16 brands per industry in Study 1 and 20 brands per industry in Study 2. For each industry the brands cover at least 60 percent of the market volume. Thus, no major brand is missing in our data set. Note that the number of brands was limited as data for all steps and variables of the brand value chain had to be available. To get the input and output data we collected secondary data for the period 2005. Communication investments were taken from Nielsen Media Research including expenditures for print (newspaper, magazines), broadcast (television, radio) and outdoor (expenditures in more than 300 outdoor plant operator markets). To control for lagged and carryover effects of advertising we used a function of previous period (2004) and current period (2005) expenditures as the communication input (Charnes et al. 1997). As most studies on advertising response modeling found that 90 percent of all advertising effects dissipate after 15 months at latest (see the review in Vakratsas and Ambler 1999) this time span seems adequate. For quality costs we used costs of goods sold as this metric represents all resources that go into the product and thus determine its quality (e.g., labor, material). Distribution costs refer to the costs for making the product available in a great number of stores in order to offer the brand where and when consumers want it and thus reducing the time consumers must spend searching, providing convenience in purchasing, and making it easier to get services related to the product. Hence, distribution costs encompass costs for outlets, sales force, and trade marketing (Smith 1992; Yoo, Donthu, and Lee 2000). Both quality and distribution costs were taken from COMPUSTAT. Image (as an index of 13 indicators like innovativeness, design, and prestige evaluated on a 7-point scale) and awareness (measured as aided recall) are obtained from a cross-industry brand survey. It is one of the most comprehensive and widely circulated surveys based on over 10,000 consumer interviews that are representative for 50.3 million people. Data on brand specific revenue, EBITDA, and P/E ratio were obtained from COMPUSTAT database. Note that DEA estimates the efficiency without a priori information on tradeoffs among inputs and outputs (Chen and Agha 2004; Luo and Donthu 2006). Thus, this method is advantageous for our study as we have no prior knowledge about which part of the brand expenditures produces which part of the outputs.

Regarding the sample size of DEA studies necessary for meaningful results, the literature commonly suggests that the amount of observed units (in our case brands) has to be larger than double the amount of the product of the number of inputs and number of outputs. This test is regarded as valid for assessing the appropriateness of datasets for DEA (Dyson et al. 2001; Vassiloglou and Giokas 1990). For both steps of the model this condition is fulfilled. To check for potential outliers which is crucial due to high error sensitivity of DEA results, we conducted super-efficiency analysis. Brands with abnormal super-

efficiency scores extremely push out the frontier leading to biased efficiency evaluations. As all brands' super-efficiency scores are below the suggested screen level of 1.2 (Banker and Chang 2006) there is no need for removing brands from the dataset. In summary, the DEA results can be expected to be robust and without systematic errors (Doyle and Green 1995).

RESULTS

Study 1

Comparison of First Step Results Between the Industries (Test of H_1). On the first step of the brand value chain (see Table 2) the fraction of efficient brands is very similar (automobile and financial services: 50%; computers: 40%). Using the nonparametric Mann-Whitney rank statistic we find that the differences in first step efficiency scores between the three industries are non-significant. This test avoids the hazard of making assumptions about the distribution of DEA efficiency scores. In contrast to parametric techniques, non-parametric rank procedures can be used for any sample size; studies have shown that the asymptotic normal approximation used here only requires $n_1, n_2 > 10$ (Brockett and Golany 1996). The results confirm H_1 implying that in the first step of the brand value chain operational management capabilities drive branding success. As expected, in average the branding competence – which can be learned internally or externally acquired in any industry – is quite similar across the industries.

Even in the industry with lowest brand relevance there is little room for improvements in the first step. The average efficiency score in the financial industry indicates that the mean brand could have reduced spending by 13 percent ($1 - 0.87$) while holding the level of outputs (image, awareness) constant.

Comparison of Second Step Results Between the Industries (Test of H_2). The results for the second step model are totally different. The Mann-Whitney test indicates that both the difference in average efficiency between automotive and computers ($0.94 - 0.72 = 0.22$) and the difference between computers and financial services ($0.72 - 0.63 = 0.09$) are significant. Moreover, while within the automobile industry (high brand relevance) 40 percent of brands are efficient, this fraction declines to 25 percent in the financial services industry (low brand relevance). These results confirm H_2 showing that the efficiency of the transformations in the second step of the brand value chain is influenced by brand relevance because the initial situation for all branches was comparable: For example the 2005 brand advertising expenditures in the automotive industry (1.39 billion euros) and in the financial service industry (1.22 billion euros) are very close (Nielsen Media Research 2007). They also reach nearly the same efficiency scores in step 1, but as the brand

TABLE 2
DEA Results for Brand Management Efficiency in Study 1

	Automotive (High Brand Relevance)			Computer & Equipment (Medium Brand Relevance)			Financial Services (Low Brand Relevance)		
	Step 1	Step 2	Overall	Step 1	Step 2	Overall	Step 1	Step 2	Overall
Fraction of efficient brands	50%	40%	33.3%	40%	33%	26.6%	50%	25%	6.2%
Average efficiency score (all Brands)	0.91	0.94	0.86	0.91	0.72	0.67	0.87	0.63	0.53
Average efficiency score (inefficient brands)	0.80	0.91	0.81	0.86	0.60	0.56	0.73	0.50	0.49

is not the key driver of buying decisions in markets with low brand relevance well-known brands with a positive image do not translate into economic performance. As the efficiency score for the financial service industry (0.63) indicates, for the mean brand almost 40 percent of the current values of awareness and image are not capitalized, i.e., are wasted. In contrast, for automotives investments in awareness and image are nearly fully reflected in the bottom line.

Comparison of Overall Results Between the Industries. The overall efficiency score shows the efficiency that is reached by the brands in the entire brand management process; it is calculated by multiplying the efficiency scores of both steps (Golany and Storbeck 1999). The overall efficiency is also significantly higher for the automotive brands (0.86) than in the other industries (0.67 and 0.53). As the results show, the high overall inefficiency in the computer and financial services industry is predominantly caused by inefficiencies in the second step of the brand management process. Obviously, there exist two possibilities to increase the overall efficiency: (1) through creating higher revenue and stock value by realigning brand resources to other more brand driven product markets; (2) through reducing wasted brand expenditures (thereby improving brand efficiency) and re-assigning them to the actual drivers of buying decision such as price or service quality. These results confirm our suggestion that low brand investments should be employed in industries with low brand relevance. Thus, it is not adequate that the brand advertising expenditures of the financial service industry are that close to the automotive ones.

Comparison of Results for the Inefficient Brands Between the Industries. Finally, an analysis of the inefficient brands is relevant for the deduction of managerial implications as well. The overall efficiency of inefficient brands is considerably high in the automotive industry (0.81). Especially in the second step, the efficiency values of the inefficient brands are close to 1. This indicates that it would be easy for *all* brands in the sample to reach the

efficient frontier. The derived values indicate a lead of the automotive industry, even within the inefficient units. This provides further support for H_2 . Our model can confirm the assumption that brand relevance is a good indicator for the optimum level of brand investment since it shows a high predictive validity for brand management efficiency.

Study 2

In order to ensure the robustness of our findings we repeated the analysis for a new data set modifying several aspects of the first study. In Study 2 we focused on non-publicly traded brands, in order to check whether our implications are robust when using conventional profitability measures instead of stock market performance. Thus, in step 2 of the DEA model we substituted the output price/earnings-ratio by EBITDA (earnings before interest, taxes, depreciation, and amortization). Again we used the automotive industry to represent high brand relevance. As the industry for the medium brand relevance level we now used casual clothing manufacturers instead of desktop computers; for low brand relevance we more specifically used banks instead of financial services providers in general. Moreover, in Study 2 we used data for 20 brands for each industry (instead of 16 in Study 1). The inputs and outputs of the first step DEA were the same as in Study 1. Results for Study 2 are shown in the following Table and can be interpreted analogously to Study 1.

As the results of Study 2 show, the ranking of the three industries with respect to second step brand efficiency (from high to low efficiency) exactly corresponds with the brand relevance ranking of the industries (from high to low brand relevance). This holds true for all three efficiency indicators, i.e., fraction of efficient brands, average efficiency score across all brands and average efficiency score across inefficient brands. Thus, the results of both studies are highly consistent indicating that our results are robust with respect to industry type, types of financial output measures and number of observations (brands) included in the DEA model.

TABLE 3
DEA Results for Brand Management Efficiency in Study 2

	Automotive (High Brand Relevance)			Casual Clothing (Medium Brand Relevance)			Bank (Low Brand Relevance)		
	Step 1	Step 2	Overall	Step 1	Step 2	Overall	Step 1	Step 2	Overall
Fraction of efficient brands	55%	30%	20%	25%	25%	0%	40%	20%	15%
Average efficiency score (all brands)	0.80	0.92	0.73	0.47	0.56	0.20	0.51	0.31	0.20
Average efficiency score (inefficient brands)	0.56	0.89	0.68	0.28	0.40	0.20	0.20	0.14	0.06

DISCUSSION

Brand managers are accountable for the task of getting the most out of company resources such as communication, distribution, and quality investments. Brand investments become increasingly threatened since they entail a large part of the overall marketing costs. Thus, it becomes important for brand managers to show the productivity of their multimillion dollar spending (Rust, Lemon, and Zeithaml 2004). A methodologically sound measure of brand performance is challenging because firms often target their expenditures to promote multiple outcomes simultaneously, such as both visible sales and stock performance and invisible brand image and awareness.

Theoretical Contribution

First, we provide a model to measure the efficiency of both steps of the brand management process with efficiency being defined as a multiple-output to multiple-input ratio. In the first step we examined the transformation of brand investments into customer-based metrics (brand awareness and brand image). The first step model represents the cognitive and affective aspect of brand equity. Subsequently, in the second step model it has been investigated whether customer metrics have been translated successfully into “hard” financial metrics. As a second theoretical contribution we developed a multi-item measure to assess brand relevance in an industry. This allows researchers to analyze if brands have an impact on consumers’ purchase decisions.

Managerial Contribution

By analyzing five industries differing significantly in their level of brand relevance we revealed a significant influence of brand relevance on brand management efficiency. As the results show, firms are equally successful in creating consumer-based outputs but differ significantly in creating brand related financial success along the

level of brand relevance in the product market they are operating in. This is because brand relevance, in contrast to the consumer-based outputs, cannot be influenced by brand managers in the short run. Thus, brand relevance should be seen as a solid metric for determining the optimal extent and allocation of brand investments. The findings show that high brand investments in markets with high brand relevance are justified while the enormous costs to build up well known brands in markets with low brand relevance have to be scrutinized. In such markets other criteria than brands seem to be the key drivers of consumers buying decisions.

An understanding of brand relevance provides companies with a more solid basis for determining how much to spend on communication. High communication intensity can only be justified if brand relevance is high. If brand relevance is low, such investments should, at the very least, be carefully scrutinized. Our findings highlight the key issue in any marketing decision: Whether it is pricing, distribution, or brand, the marketing lever that is used must be effective enough to justify the investment. For example, in the financial service sector brand investments are highly inefficient due to the low significance of brands in this market. Consequently, the use of other marketing tools would be more beneficial. The low importance of the brand as a purchase criterion in the financial services sector is consistent with the discussion that the personal relationship with customers is the key success factor in that industry. Therefore, when it comes to the decision which metrics should be used for resource allocation the customer equity concept may be more appropriate. Our findings do question the recent discussion whether customer equity and brand equity should necessarily be integrated (Leone et al. 2006; Ambler et al. 2002). Instead, we propose that this integrated approach is only appropriate in industries with high brand relevance. From a financial perspective companies in industries with low brand relevance should concentrate on customer equity only.

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