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The Net Present Value of Market Share

This article evaluates the dynamic interaction of market share and profit. The determinants of market share are compared with published empirical research and illustrated in a consumer product industry. The effects of market growth, maturity and decline, competitive attack, price leadership, and heavy user strategies on market share and profit are analyzed theoretically and simulated over a 10-year period.

THE pursuit of market share for profit is hotly debated. At the heart of the debate lies the relationship between market share and profitability (Wind and Mahajan 1981). Evidence shows a 10-point increase in share of market is associated, on the average, with a five-point increase in return on investment (Buzzell, Gale, and Sultan 1975). Yet, the exceptions to the rule are convincing (Hamermesh, Anderson, and Harris 1978; Jacobson and Aaker 1985; Woo and Cooper 1982). Adding heat to the debate is the prospect that profitability is a random walk among market shares (Caves, Gale, and Porter 1977; Mancke 1974; Rumelt and Wensley 1981). A resolution seems to require placing a price tag on the value of a change in market share and evaluating the corresponding return on investment (Henderson 1979).

In search of a resolution, this article will outline the determinants of market share, based on the principles of causal analysis. Market share and profit stud-

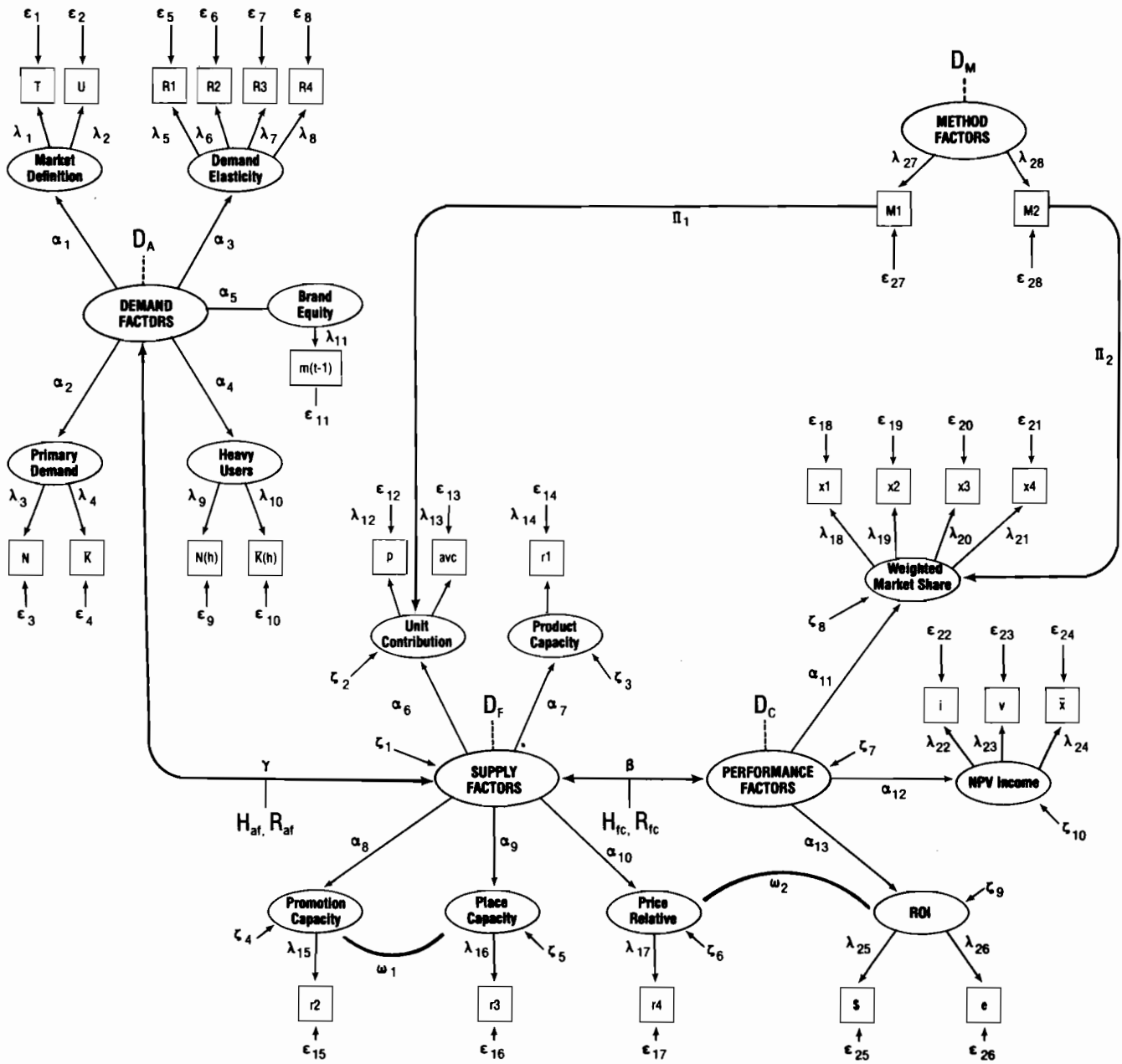
ies published over 20 years are then compared with the determinants of market share to gauge the reach of past empirical research. The value and cost of market share are introduced, to illustrate how a price tag is placed on market share in a consumer product industry. The theoretical effects of market share and profit are examined for growth, maturity, and declining market strategies, as well as competitive attack, price leadership, and heavy user strategies. To demonstrate the theory, a simulation of market share and profit over a 10-year period in a dynamically competitive environment is presented. The pursuit of market share for profit is discussed, in an effort to provide new direction for scholars and managers.

The Determinants of Market Share

Market share is a consequence of interactions between demand and supply. Demand factors determine the extent of the market. Supply factors define the manner in which resources are put at risk. Performance factors measure the outcomes. Method factors influence the validity of conclusions. A path diagram (Bagozzi 1984) of the determinants of market share is presented in Figure 1. Each major concept appears at the center of the cluster of factors it represents. Demand, for example, appears at the center of a cluster of the five

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FIGURE 1
The Net Present Value of Market Share



Concept	Definition of Measurements
Demand	T = Technology; U = Uses; N = Number of users; K = per capita consumption; h = heavy users; R1 = capacity of market to produce, R2 = market capacity to promote, R3 = market capacity to deliver, R4 = average market price; $m(t - 1)$ residual brand equity measured by lagged market share.
Supply	p = company selling price; avc = company average variable cost; r1 = company product capacity, r2 = company capacity to promote, r3 = company capacity to deliver, r4 = ratio of company retail price to average market price.
Performance	x1 = company share of product capacity, x2 = company share of promotion capacity, x3 = company share of delivery capacity, x4 = 1 - r4; i = company's opportunity cost of capital; v = value of next market share point; \bar{x} = weighted average market share; \$ = profit impact; e = total company expenditures on marketing capacity.

factors. Leading from each factor, an operational measure appears in a box. Market definition is operationalized by combining a specific product technology with a defined user segment. Measurement error is represented by a lower case epsilon.

Demand factors are antecedent concepts that reveal the behavior of buyers in consummating exchanges (Hunt 1983): market definition, primary demand, demand elasticity, heavy users, and brand equity. *Supply factors* are focal concepts that reveal the behavior of sellers in consummating exchanges: unit contribution, product capacity, promotion capacity, and relative price. *Performance factors* are the consequence of demand and supply interactions: market share, NPV of income, and ROI.

Method factors affect the validity of conclusions regarding the value and cost of market share. Two method factors are the assumed maximization rule and market response function. The maximization rule specifies the objectives implicit in resource allocations, and the response function determines market share weightings.

Market Share and Profit Studies

Several studies of the relationship between market share and profit published in the marketing literature are compared with the determinants of market share in Figure 2. The determinants of market share are displayed in the rows. Twenty empirical studies of mar-

FIGURE 2
Market Share and Profit Studies*

	Telser 1962	Buzzell 1964	Weiss 1968	Simon 1969	Lambin 1970	Schultz 1971	Beckwith 1972	Lambin 1972	Clarke 1973	Wildt 1974	Houston and Weiss 1974	Buzzell, Gale, and Sultan 1975	Moriarty 1975	Prasad and Ring 1976	Horsky 1977	Wittink 1977	Hanssens 1980	Naert and Weverbergh 1981	Woo and Cooper 1982	Phillips, Chang, and Buzzell 1983				
	CIG	F	FGP	FGP	LIQ	RAZ	AIR	F	GAS	F	IGP	F	FGP	PIM	F	FGP	F	CIG	F	AIR	GAS	PIM	PIM	
Demand Factors																								
Market definition	Y						Y	Y				Y											Y	Y
Primary demand	Q			Q		Q	Q	Q				S						Q				S	S	
Demand elasticity	Y						Y	Y	Y									Y						
Heavy user													Y											
Brand equity	Y	Y			Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Supply Factors																								
Unit contribution	Y				Y	Y	Y	Y	Y	Y	Y	Y											Y	
Product capacity	r				r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	
Promotion capacity	e	r	e	e	e	e	e	e	e	e	e	e	e	e	r	e	e	e	e	e	e	e	e	
Place capacity						r	r	r	r										r	r				
Price relative				Y		Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	
Performance Factors																								
Market share	m	m	m	m	m	m	m	m	m	m	m	m	m	S	m	m	m	m	m	m	m	m	S	S
Income	Y						Y						Y											
ROI							Y		Y			Y					Y		Y	Y				
Method Factors																								
Response function	L	L	M	M	M	M	L	L	L	M	M	L	M	L	M	M	M	A	L	L				
Maximization rule	PV			PV	PV	SR	PV	PV	SR	SR							PV							

*Q = quantity of primary demand, Y = yes, r = company's real capacity, e = expense of company capacity, m = market share, A = attraction, L = linear additive, M = multiplicative, PV = net present value, SR = short run.

ket share and profit are cited in the columns.

Market definition determines the extent of a market; this was missing, however, from most of these market share and profit studies. Primary demand was frequently omitted and sometimes confounded by monetary measures that masked the effects of demand elasticity. The impact of heavy users and other bases of market segmentation were overlooked in all but one of these market share and profit studies. Brand equity, measured by lagged market share, appeared as a determinant of market share in nearly every study.

Unit contribution was linked with market share in half the studies. The remaining authors expressed concern over the absence of direct cost estimates. The marketing mix is a key factor in a firm's strategy, yet only two of twenty studies included all four mix variables. Eight papers included measures of a company's capacity to produce. Nearly every study measured promotional capacity in terms of media expenditures, but only four incorporated place capacity as a factor. Relative price appeared in 12 of the studies listed in Figure 2.

Market share was the key performance factor in all the studies, and most were based on share of quantity. Six papers reported ROI and three included income. Maximization rules were incorporated in less than half the studies. Six of these adopted net present value solutions. Linear response functions appeared in nine, multiplicative forms in ten, and the attraction function in one of the studies.

The record of research on market share and profit is mixed. Important steps have been taken toward incorporating all of the determinants of market share listed in Figure 2. Yet, achievements to date remain limited. Key determinants of market share were routinely overlooked or assumed away. *Research has focused primarily on the form of the response function relating brand equity and advertising expenses to market share.* A more comprehensive analysis that demonstrates the long run relationship between all key demand, supply, and performance factors is needed (Anderson 1980).

The Value and Cost of Market Share

The value and cost of market share depend on assumptions about future demand, supply, performance, and method factors. Managers and scholars should be explicit in the development of these assumptions. To document the effect of strategic assumptions on a firm's market share and profit, a benchmark illustration is presented for Wineco, a beverage industry leader.

Demand Factors

Market definition influences the value and the cost of market share. A product-market is "the *set of products*

judged to be substitutes, within those *usage situations* in which similar patterns of benefits are sought, and the *customers* for whom such usages are relevant" (Day, Shocker, and Srivastava 1979, p. 10). The set of substitute product technologies available to satisfy the human need for beverages ranges from those that stimulate (coffee and tea), to those that provide nutritional needs (water and milk), to those that relax (beer and wine). Usage situations vary from routine consumption at home, to parties and sporting events (Impact Research 1984).

Primary demand is measured in gallons of per capita consumption. The population base contained 55 million adults who drank wine. Within the wine market, "still wines" involved quite different technologies and uses compared with sparkling party wines, vermouth, or dessert wines. Not counting the latter three types, consumers drank an average of seven gallons each in the benchmark year. Primary demand in the U.S. market for the still wine segment was 390 million gallons. Demand elasticities with respect to industry capacity and price were assumed to be greater than one.

The heavy user segment was a significant force in the domestic still wine market. The heavy user group totaled 17 million adults, or 31% of users, and consumed 18 gallons per year per capita. Total heavy user demand was 306 million gallons, or 78% of total still wine demand.

The carryover effect of brand equity generated by previous capital outlays on the firm's capacity to produce, distribute, and promote its brand was estimated to be 6.7% in the benchmark year. These demand factors are summarized in Table 1.

Supply Factors

Wineco sold to wholesalers as well as directly to retail outlets. Taxes and dealer markup were charged several times in the channels of distribution. A gallon of wine selling at retail for an average price of \$13.85 entered Wineco's books at an average price of \$6.93. The company's variable cost of grapes, bottles, materials, and other supplies totaled \$4.00. The considerably greater experience of Wineco yielded a variable cost lower than its closest competitor. Unit contribution to profits was \$2.93 per gallon in the benchmark year.

Capacity levels are among the most significant strategic decisions made by management (Porter 1980, p. 324). Product assortment is one dimension of the firm's capacity to meet consumer demand (Alderson 1965, pp. 78-83). It is particularly important in the wine market where consumer search for variety is legendary. Wine assortment is measured by the number of varieties offered. In the benchmark year, competitors offered a total of 62 and Wineco 24 varieties of

TABLE 1
Wineco Demand and Supply Factors

Demand		Supply		
Wine population	55 million	Average retail price/gallon	Competitors \$13.85	Wineco \$13.85
Wine per capita	$\times 7$ gallons ^a /year	Average selling price/gallon	—	6.93
Still wine demand	385 million gallons	Variable cost/gallon	—	4.00
		Unit contribution	—	2.93
		Capacity to produce:		Wineco Factor Cost \$2.4 million
		• Varieties	62	24
		• Share	72%	28%
Heavy users	17 million	Capacity to deliver:		
Heavy per capita	$\times 18$ gallons ^a /year	• Linear feet	13.2 million	8.1 million \$8.32/foot
Heavy user demand	306 million gallons	• Share	62%	38%
		Capacity to promote:		
Wineco brand equity	6.7%	• Impressions	12.4 billion	2.1 billion \$16.60/000
		• Share	85%	15%

Gavin-Jobson 1982, Simmons 1981
*Rounded to nearest gallon.

Gavin-Jobson 1982, Leading National Advertisers 1981, company reports Impact Research 1984.

still wine. Capacity expansion through the creation of a new product variety at Wineco's current level of operation was estimated to incur a factor cost of \$2.4 million.

Place or distribution capacity in the wine trade varied with linear feet of shelf space available. Wineco occupied 8.1 and its competitors a combined total of 13.2 million linear feet. The factor cost of place capacity to Wineco was \$8.32 per linear foot of shelf space.

Promotion capacity may be measured in a number of different ways. One measure relevant in the wine market is the number of impressions a firm can deliver to the target audience through available media vehicles. Measured by the number of media impressions, competitors' promotional capacity was 12.4 and Wineco's was 2.1 billion messages in the base year. Wineco's media factor cost was \$16.60 per thousand impressions. Wineco and competitors' prices were equal in the benchmark year. These supply-side assumptions are summarized in Table 1.

Performance Factors

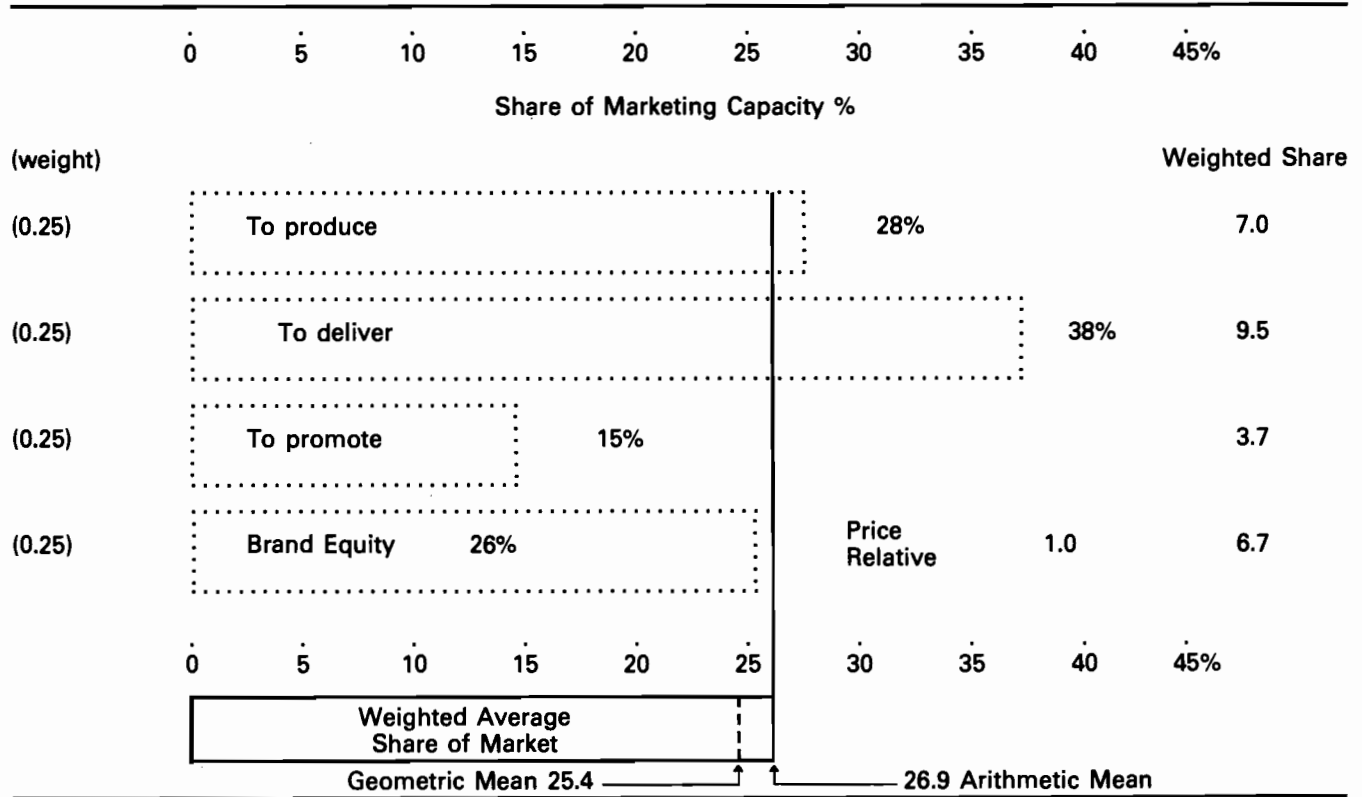
Weighted average market share is a link between profit and fixed costs. It is an average of an organization's capacity to produce, distribute, and promote the product, weighted by its effectiveness and relative price (Utsey and Cook 1984, p. 97). The average may be either an arithmetic or geometric mean, depending on whether the relationships are linear and additive or multiplicative and interactive. Computation of both an arithmetic and a geometric weighted average share of market for Wineco in the benchmark year is illustrated in Figure 3. Wineco's shares of industry capacity to produce, deliver, and promote wine in the U.S. mar-

ket appear as dotted horizontal bars. To the left of each bar (in parentheses) are the effectiveness weightings used if one assumes they are equal to 0.25 among the four marketing variables and competitors. It appears to the right of each bar as the weighted linear effect of marketing capacity on market share.

Share of product varieties offered by Wineco was 28% of the market total with an effectiveness weighting of 0.25. Thus, the (linear) weighted average share of product capacity for Wineco was 7.0% (0.25×28.0) in the benchmark year. Wineco's share of capacity to deliver wine measured by its retail share of shelf was 38%. Its share of capacity to promote measured by media advertising impressions was 15%. Wineco's lagged market share was 26%. Current distribution and promotion capacity thus contributed 9.5 and 3.7 points respectively to Wineco's 26.9% market share. Weighted brand equity added 6.7 points to Wineco's share. This is a linear weighted average. By comparison, the expected value of a geometric mean was 25.4%. The difference of 1.5 market share points is not trivial, but knowledge of which response function will best represent future long run market behavior is arguable. Management should begin with simpler linear assumptions and equal elasticities among competitors, adding complexity as it proves necessary (Cook 1985).

Marketing contribution is the arithmetic product of the value of market share and weighted average market share. It is the task of marketing management to invest in market share points of known worth so as to maximize their long run net present value. The marginal value of a market share point in a segment may be approximated from accounting records. Unit contribution margin is multiplied by the quantity of pri-

FIGURE 3
Weighted Average Share of Market



mary demand and divided into 100 parts (Cook 1971). The use of unit contribution (price less average variable cost) in computing the marginal value of a share point assumes the total revenue and unit cost functions are linear over the feasible decision interval. As a consequence, marginal and average values are equal. The value of a market share point to Wineco was:

$$vms = (p - avc)(Q)/100.$$

$$\$11.4 = (\$6.93 - \$4.00)(390)/100. \quad (1)$$

Primary demand for wine was 390 million gallons; contribution margin was \$2.93. The total contribution value of the market from Wineco's perspective was thus \$1.14 billion, and each market share point was worth .01 of the total.

Given its marketing capacities and assuming a linear response function, Wineco's weighted average market share and its value of market share are the bases for estimating the company's future marketing contribution:

$$z = (vms)(\bar{x}) \quad (2)$$

$$\$307 = (\$11.4)(26.9).$$

Each share point had a value of \$11.4, and Wineco put marketing capacity in place sufficient to capture 26.9 market share points.

The managerial implications of *marketing* contri-

bution are somewhat different from a traditional *accounting* contribution (Hulbert and Toy 1977). Unit output no longer appears in the profit function. The difference between traditional accounting and marketing contribution is the valuation of market share. Marketing contribution is adjusted for competitive effects, and it is inherently future as well as customer oriented. Accounting contribution is historical and company oriented. A proof that marketing and accounting contributions are financial equivalents is presented in Appendix 1.

Return on investment is measured by the ratio of net marketing contribution to the sum of current charges against the price adjusted replacement value of depreciable assets and the current costs of other fixed investments. Whether market share is worth the risk of company resources depends on the cost of achieving that share (Boyd 1973). The costs of market share are the total of fixed investments dedicated to achieving capacities to produce, promote, and deliver a product, discounted for the effects of inflation (Webster, Largay, and Stickney 1980). It includes all costs of serving the market that do not change with volume. Research and development expenses, current charges for plant and equipment, product management and salesforce salaries, media advertising, warehouses, delivery trucks, insurance, and interest are some of the fixed costs of marketing capacity. The strategic

marketing cost function applies to these fixed investments (Cook 1983, p. 72).

The relationship between market share and profit is now focused on two dimensions. From the demand side, what is the future value of market share? From the supply side, at what total cost must how much marketing capacity be deployed in order to achieve a long run profit maximizing allocation of resources? The final question is, what response function and maximizing rule should be assumed?

Method Factors

The maximization rule is that the marginal cost of the last share of marketing capacity should equal the marginal contribution value revenue of the last share point acquired for all marketing variables over all relevant future time periods. The initial capacity shares reported for Wineco in Figure 3 were calibrated to reflect these profit maximizing conditions under linear response assumptions. Computation of the linear maximum net present value of market share for any marketing capacity factor is described in Appendix 2, which shows that the share of market that maximizes the net present value of future earnings depends on the firm's marketing factor costs, effectiveness weightings, selling price, primary demand, and competitors' capacities.

Market response may be formulated as a linear additive, multiplicative, or attraction function. Each has its theoretical as well as its practical strengths and weaknesses (Barnett 1976; Beckwith 1972; Brodie and de Kluyver 1984; Ghosh, Neslin, and Shoemaker 1984; Karnani 1983; Leeftang and Reuyl 1984; McGuire and Weiss 1976; McGuire et al. 1968; Naert and Bultez 1973; Naert and Weverbergh 1981). Additive functions have the benefit of computational simplicity but are known to be biased in several ways, particularly in their failure to account for interactions among marketing variables. Multiplicative functions have the benefit of accounting for interactions but are computationally more complex and, like additive models, have a tendency to yield inconsistent results. Multiplicative forms also have the drawback that market share predictions fall to zero if a firm eliminates its investments in only one of the many mix factors on which its market share depends. The market share attraction function is logically consistent, yet is operationally cumbersome. For these reasons, a linear additive market response function was adopted to illustrate the theoretical relationship between market share and profit.

Theoretical Effects of Market Share and Profit

The net present value of market share is the difference between long run marginal share value and share cost,

discounted at the organization's cost of capital. The goal of marketing strategy is to maximize this value.

The theoretical implications of equating the marginal value and cost of market share in a dynamically competitive market are portrayed in Figure 4. The firm may adopt a number of different marketing strategies in response to changing market and competitive conditions. The theoretical effects of six alternative strategies on the net present value of market share are assessed (for the linear case) in this Figure. The six strategies are market growth, maturity, decline, competitive attack, price leadership, and heavy user.

Market Growth, Maturity, and Decline Strategies

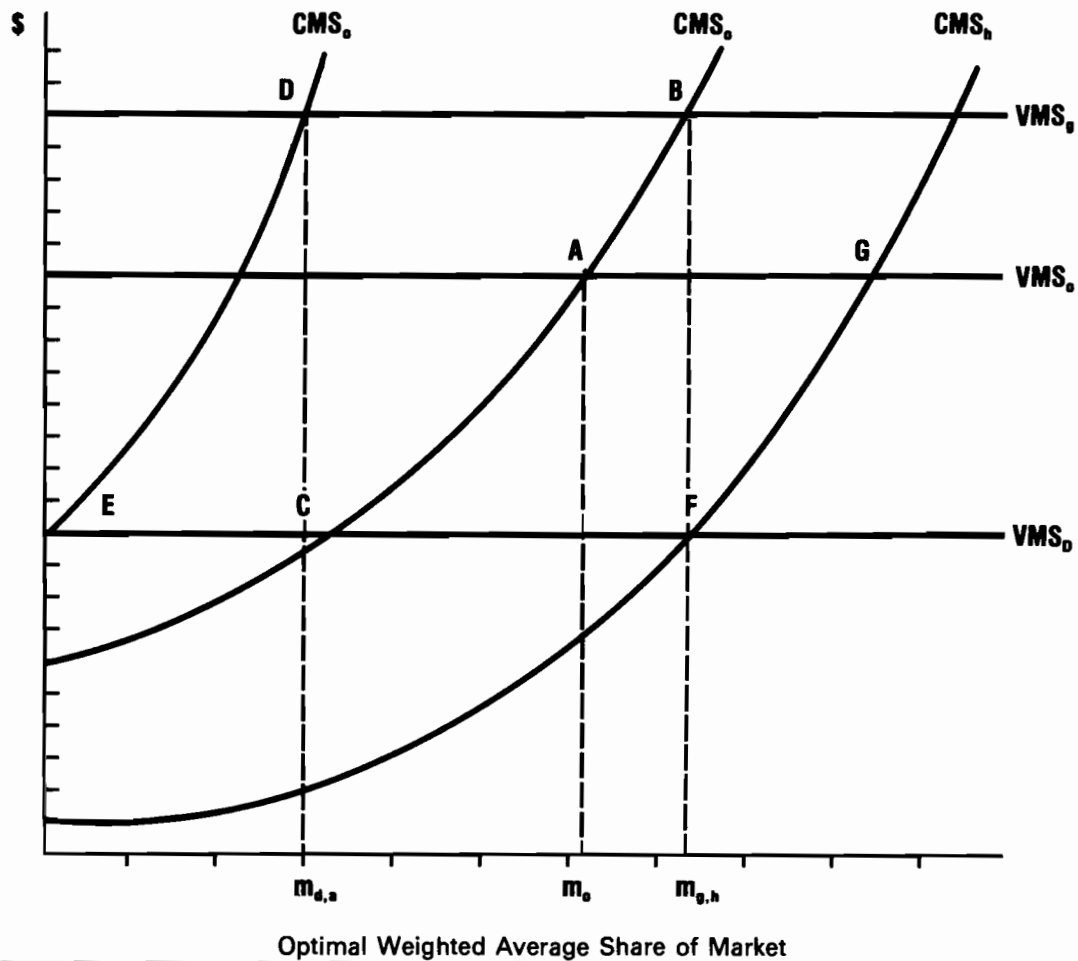
How should a business adjust its weighted average share of marketing capacity to achieve maximum net present values over the product life cycle? The three value of market share (VMS) schedules in Figure 4 represent different stages in the product life cycle (Polli and Cook 1969, p. 391). The marginal value schedule VMS_g represents the upward shifting value of market share in the growth stage of a product's life cycle. VMS_o represents the stable value of market share in the mature stage of the product life cycle. The lower schedule, VMS_d , is the downward shifting marginal value of market share in a declining market. Suppose for the moment the firm's marginal cost of market share (CMS) schedule is in equilibrium at CMS_o .

Market growth drives management to build market share because the marginal value of the next share point increases faster than its marginal cost. In Figure 4, the firm will attempt to build share of market from m_o to m_g in order to maximize the net present value of its future position. It will move from point A to point B, and in the process, its share of investment will exceed its (current) share of market. These conditions produce what is known as a *building* strategy. A growing market pushes up the value of market share faster than the cost of market share increases at the margin.

Market maturity, with constant marginal costs, leads the firm to a *holding* strategy. Profits are maximized at $VMS_o = CMS_o$, and management holds market share at m_o until disequilibrium is induced by changes in technology, competitive actions, or the company's own initiatives.

Market decline leads to a downward adjustment in market share if the firm's marginal cost schedule remains constant. Marginal share value falls faster than marginal share costs, driving the firm to disinvest in market share. As the value of market share falls from VMS_o to VMS_d , the firm will reallocate its resources to more profitable market opportunities. It may not seem intuitively obvious that a business should purposely decrease its share of a declining market, but it is rational. The firm will move over time from point

FIGURE 4
Theoretical Value and Cost of Market Share*



*Value of Market Share (VMS), Cost of Market Share (CMS), g = growth, o = equilibrium, d = decline, a = attack, h = heavy user.

A to point C, seeking to maximize the net present value of its future position in a declining market at $m_{d,a}$. In the process, its share of marketing capacity will be less than its share of market. This is one set of conditions that gives rise to a *harvesting* strategy.

Competitive Attack, Price Leadership, and Heavy User Strategies

A dynamic market calls on management to make rapid adjustments of market share in response to changing competitive positions, as well as to the company's own initiatives. Over the long run, management attempts to equate the changing marginal cost of market share with its shifting marginal value. This task is complicated by the unexpected behavior of competitors.

Competitive attack dramatically alters a firm's value maximizing market share. Assume the product life cycle is in its growth stage, represented by schedule VMS_g in Figure 4. Competitive attack raises the table stakes by rapidly shifting fresh resources into play and thereby

sharply increasing the marginal cost of market share. Without warning, the victim's cost of market share schedule shifts upward from CMS_o , with optimal market share at m_o , to CMS_a , with optimal market share at m_g . The shift induced by competitive attack leads to a significant decrease in the firm's optimal market share. The firm should move its resources out of this market to achieve a lower optimal weighted average share of market. In other terms, if marginal share value holds at VMS_g , management should moderate its ambitions and move from point B to point D in Figure 4. Otherwise, it is maintaining a high market share position that carries a significant opportunity loss. The firm in a declining market, facing the VMS_d schedule, is subject to even more significant shocks from competitive attack. If optimal net present value is achieved at the intersection of CMS_o and VMS_d , the firm would be at point C. Competitive attack in this declining market shifts the firm's marginal cost schedule to CMS_a , driving its optimal share of market to zero, at

point E. In this event, management should withdraw from the market. A product in this position is labeled a "dog" and should be put quietly to sleep unless conditions are expected to improve in the longer term.

Price leadership offers an interesting perspective on the effects of company-initiated strategies. The first effect of a price cut is to reduce the firm's value of market share by shifting the VMS_0 schedule downward. Initially, a price cut has the same effect on optimal market share as a decline in primary demand. Both act to depress the value of market share and, hence, optimal weighted average share declines. In response to its own price cut, the firm should shift its target market share from point A to point C in Figure 4. This result is nonintuitive. It follows logically from the fact that a price cut devalues market share at the margin, while short run factor costs, primary demand, and competitive resources remain unchanged. Price leadership anticipates either *long run* increases in primary demand, which shift the VMS schedule upward, or increased market share, which reduces factor costs and shifts the CMS schedule downward.

Segmentation strategies focus the firm's resources on smaller segments of the market that exhibit relatively homogenous demands (Alderson 1965, p. 186). If the firm, for example, adopts a *heavy user* segmentation strategy, the result is a downward shift in the marginal cost schedule from CMS_0 to CMS_h in Figure 4. The downward shift is due to the improved efficiency of reaching a smaller, more richly endowed market segment. (In the special case where heavy users can exert price pressure on the supplier, the VMS schedule shifts downward at the same time.) Heavy user strategies differentially affect a firm's capacity to produce, promote, and distribute. In the limit, the CMS schedule may shift downward in proportion to the number of heavy users in the population. Such a dramatic shift may apply to every form of marketing capacity except production. For example, if all competitors allocate distribution resources without regard to the shopping habits of heavy users, a significant opportunity exists to deploy resources dedicated exclusively to this target. The cost function for distribution shifts down in proportion to the heavy user population, while the value of market share is reduced only in proportion to their share of total demand. If 30% of users are in the heavy segment, distribution capacity may be reduced by as much as 70%. If marginal value remains constant at VMS_0 , a heavy user strategy would shift the firm's optimal market share from point A to point G in Figure 4. Since dedication of distribution resources to the heavy segment may ignore medium and light user demand, the value of market share may shift downward in proportion to the quantity of heavy user consumption. Should heavy users account for 80% of unit volume, VMS may decline

only 20% if this segment is isolated by channels of distribution. In this event, optimal share under a heavy user strategy would shift from point A to point F with market share at m_h in Figure 4. Experience and scale effects on factor cost have precisely the same result—a downward shift in the CMS curve—leading management to build toward higher optimal share of market.

The behavior of demand, factor costs, and competitive resource deployments dramatically alter the market share value and cost schedules faced by a firm. These shifting and discontinuous demand and supply curves reveal the link between market share and profit.

A Simulation of Market Share and Profit

The theoretical effects of market share on profit, and of profit on market share, are examined in more concrete terms in a 10-year simulation of the wine market. The benchmark data summarized in Table 1 are characteristic of industry records. The behavior of Wineco is a composite of wine competitors and not intended to represent a particular firm.

The results of the simulation appear in Table 2. The columns present results for each of seven different strategies over a 10-year interval. In the rows are five basic measures of market and company behavior. These are reported as 10-year cumulatives of primary demand, optimal market share, cost of marketing capacity, net present value of marketing contributions, and return on investment. The specific conditions defining each strategy are summarized in the footnote to Table 2. In addition to stable equilibrium, two general classes of market behavior are examined: market volatility and market maturity.

Stable Equilibrium

Strategy I in Table 2 reflects the 10-year results of extending the benchmark year conditions. Competitive market capacity remains constant, along with prices, unit contribution, and factor costs. Primary demand is unchanged as well. Wineco maintains an optimal market share at 26.9% and incurs a cumulative cost of market capacity totaling \$1,609 million. The net present value of market share is \$829 million, and the company earns a return on its marketing investment of 91.2% before taxes.

Market Volatility

The effects of a volatile market are portrayed in strategies II and III. Strategy II illustrates the effects of management efforts to maximize the net present value of market share in the face of aggressive competition in a market that is both factor and price elastic and, due to exogenous causes, growing at 5%. The strategy

TABLE 2
Performance Factors

	10-Year Cumulative Value of Strategy in Millions*						
	Market Volatility			Market Maturity			
	I	II	III	IV	V	VI	VII
	Stable + Equilib.	Growth + Attack	Decline + Retreat	Product Attack	Price Leader Solo	Price Leader + Match	Heavy User Solo
Primary demand	3,900	6,473	2,362	4,308	4,018	4,303	3,900
Market share	26.9%	30.0%	24.7%	24.8%	16.1%	12.6%	44.1%
Cost of capacity	\$1,609	\$2,766	\$897	\$1,599	\$492	\$591	\$1,669
Net present value	\$829	\$1,299	\$541	\$847	\$459	\$316	\$1,907
Return on investment	91%	94%	90%	96%	151%	79%	202%

Based on maximizing the net present value of Wineco's (linear) weighted average market share, following the conditions in Table 1 and solutions in Appendix 2. Stable equilibrium was set at 1.0(Q) and 1.0(r). *Growth + Attack* was set to 1.05(Q) and 1.1(r*) for all marketing factors, and *Decline + Retreat* at 0.95(Q) and 0.90(r*), both with factor elasticities of 1.05. *Product Attack* was set at 1.1(r*) for product capacity. *Price Leadership* by the firm was set at 0.90(p) for the first two years in both solo and competitive matching cases, with price elasticity at 1.20 in both years. The solo heavy user strategy set primary demand faced by Wineco at 0.8(Q), with competitive capacity dedicated to heavy users at 0.3(r*) for all marketing factors. A listing of the IFPS.m subroutine and detailed inputs are available from the author.

is labeled *Growth + Attack*. Strategy III, on the other hand, reflects management's efforts to maximize the net present value of market share in the face of a factor and price elastic market, with primary demand declining at a rate of 5% per year due to exogenous causes and a field of competitors, each seeking to retreat in the face of the unfavorable demand trend. This strategy is labeled *Decline + Retreat*. The long run cumulative net present value of market share for Wineco ranges from \$1,299 million, in the case of Strategy II, to \$541 million in Strategy III. Yet, between these two results, Wineco made no changes in its basic stance. The company simply adapted its investments to changing market conditions. Management did not try to build or hold or harvest market share. It sought to maximize the net present value of its marketing assets over the long run in a dynamic market driven by forces over which the firm had no control. Marketing factor costs were held constant over the period. Competitive selling prices and margins were equal and constant. Variable costs, unit contributions, and market response weights did not change. Optimal long run share of market for Wineco under Strategy II was 30.0%, while it was 24.7% under Strategy III.

Strategies II and III illustrate the case for both "high" and "low" relative share companies, depending on market and competitive conditions. Strategy II appears to be the high relative share (1.2) case, with a net present value over twice that of Strategy III because an elastic, growing market with vigorous competition generates increasing market share values. Strategy III is the low relative share (0.8) case. This follows from an elastic, declining market, with competitors in retreat and falling market share values. The long run cumulative return on marketing assets for both

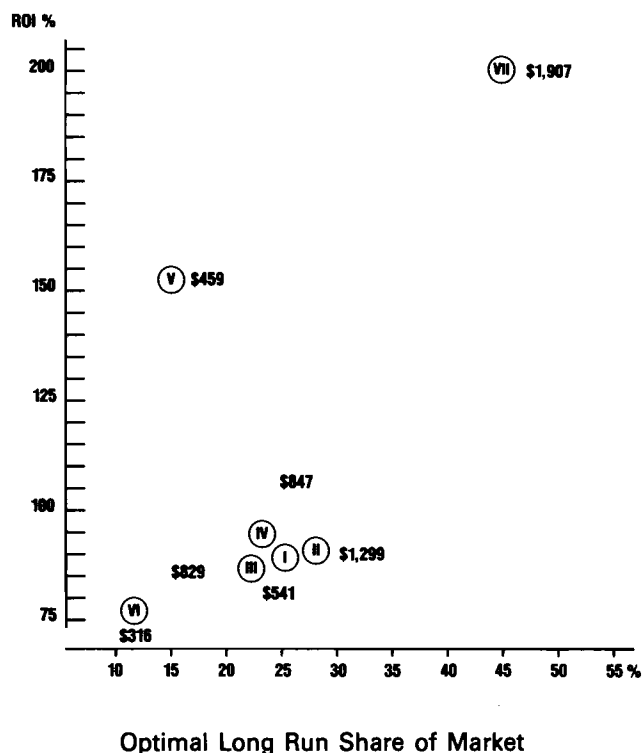
Strategy II and III are nearly equal to the 91% realized under conditions of stable equilibrium. Clearly, these are neither high nor low share strategies. Market shares are the *result* of seeking to maximize net present values over the 10-year period under alternative circumstances.

Market Maturity

The maturity stage of the product life cycle offers a rich tapestry of strategic alternatives. A few of these are illustrated in Table 2. One is the impact of competitive attack on a single mix factor, product variety (IV). Another is the effect of price leadership by Wineco when competitors fail to follow (V) and when they match Wineco price cuts (VI). Finally, the impact of a solo heavy user strategy (VII) on market share and profit is presented in the last column of Table 2.

Wineco's cumulative 10-year cost of marketing capacity reflects the intensity of resource utilization required by each of these mature market strategies. In the case of solo price leadership (V), a lower optimal share is realized on a smaller asset base, leading to a much higher return on investment with reduced NPV of income. The solo heavy user of strategy (VII) leads to a much higher share of market, more intense use of a larger asset base, and still higher return on investment and net present values. In each case the marketing asset base is measured by the cost of marketing capacity. It ranges from a low of \$492 million when Wineco's solo price leadership remains unmatched by competitors for two years (V), to a high of \$1,669 million with a solo heavy user strategy (VII). Primary demand remains roughly constant under each of these

FIGURE 5
Marketing Strategy, Market Share,
and Profitability^a



^aCircled numerals are references to the simulation results in Table 2. ROI values are return on fixed marketing costs before taxes. The dollar entries are the cumulative 10-year net present values of market share at a capital cost of 12%.

strategies, responding to changes in only one mix variable in each case.

The results of the Wineco simulation are arrayed in a more familiar cross-sectional format in Figure 5. On the lower axis is Wineco's optimal share of market for each of the seven strategies identified in the columns of Table 2. The company's optimal long run market share ranges from a low of 12.6% when competitors match its price leadership in a mature market, to a high of 44.1% when Wineco becomes the preferred brand among heavy users. On the vertical axis are the before-tax ROIs due to each strategy, ranging from a low of 79% to a high of 202%. The cumulative 10-year net present value of market share in millions of dollars is reported beside each strategy. These results are for the same firm, with the same cost structure, in the same market, following the same basic long-term marketing strategy: maximize the net present value of market share in a dynamic competitive market. The differences are due to changes in market growth, the ambitions of competitors, and the imagination of Wineco management.

The Pursuit of Market Share for Profit

The strategic marketing objective of the firm is to maximize the long run net present value of market share. To achieve this objective, management must be disciplined in making marketing investments. It should make changes in its capacity to produce, promote, and distribute in accord with shifts in primary demand, changes in competitive capacity and prices, and movements in its own unit contribution and marketing factor costs. Each of these have significant effects on the long run net present value of market share. Likewise, management's own initiatives in price leadership and target marketing can dramatically change its optimal long run course of action. Viewed in this light, both high and low share companies are snapshots of firms seeking to maximize the net present value of future marketing investments.

Successful strategic planning is vastly more complex than rule-of-thumb would imply. Detailed anticipations must be outlined of the dynamic effects of demand, supply, performance, and method factors in future competitive markets. Many will argue management cannot anticipate the future course of demand, does not know about competitive resource levels, and will not adjust market share to its most profitable point. Each of these reservations is valid. But the effort should be made to anticipate demand, reveal competitive resource commitments, and design company strategies to account for the determinants of market share. Lack of data is not an acceptable excuse for myopic marketing plans.

Demand Factors

A marketing strategy puts shareholder assets at risk in the search for differential advantage (Cook 1985). If a strategy is to succeed, it should methodically define the product technologies to be put to known end uses. Market definition cannot be ignored. Marketing plans should be expressed in real units of primary demand to avoid confounding volume with value. Future primary demand is the starting point in marketing planning, and plans that begin and end with company sales forecasts are shortsighted. Primary demand response to the combined resources of the market, or factor elasticity, should be incorporated in long run strategic plans. Failure to design marketing strategies to serve the interests of specific market segments, like heavy users, can incur large opportunity losses. Brand equity is an important asset. Its value accrues from all strategic mix investments, not just media promotion. The lagged value of brand equity directly influences the need for current and future investments in marketing capacity and should become a guideline for establishing depreciation rates on fixed assets.

Supply Factors

Unit contribution is the yardstick for measuring the value of a market to each competitor. Combined with anticipated primary demand, this traditional profit measure leads to an unambiguous indicator of the value to each competitor of changes in market share. The value of market share naturally varies among competitors, according to their scope, scale, and experience in the market. It is the job of the marketing manager to invest in market shares of known worth. Marketing capacity with known factor costs should be put in place in such a way as to achieve maximum long run marketing contribution. Management should not selectively consider only those capacities for which data are readily available or where its strengths are to be found. It is dangerous to conclude the capacity to deliver is unimportant because the firm is weak in distribution. It is risky to assume one product will be good enough to sweep a market with 12 vigorous competitors, however superior management may believe it to be. The marketing mix is at the core of a firm's strategy. Marketing management should be able to explain why a given level of production capacity is needed, when the product line is to be extended, what level of inventory is required, and what product performance characteristics are expected by the consumer. Marketing management should be able to explain why millions will be invested in media and salesforce capacity and what return on investment in delivery capacity is anticipated. If the number of outlets is to be expanded, shelf facings increased, or display advantages otherwise improved, the factor costs of these efforts should be estimated. If selling prices are to be altered, the competitive effects of the change on short and long run market share values should be anticipated. It is insufficient to claim either ignorance or hardship if company resources are misused in the search for differential advantage.

Performance Factors

Market share is a goal of marketing strategy because it is an informative and useful intermediate performance factor. Market share of quantities sold is the result of a natural weighting by users of the effectiveness of a competitor's share of capacity to produce, promote, deliver, and price its products. It is both a summary of past successes and an indicator of future events. It is a key to profitability. ROI adds a dimension of the relative quality and intensity of marketing investment. Net present value relates the income stream to time and to the opportunity costs of capital. These different performance factors are not substitutes for one another. Each serves a special purpose, and marketing management should learn to in-

corporate all three performance measures in its strategic plans. With the application of this discipline, marketing risk can be managed successfully in dynamic competitive environments.

Conclusions

The pursuit of market share for profit has been hotly debated. A resolution to the debate can be found by placing a price tag on the value of changes in market share and evaluating the corresponding changes in performance. The array of strategic alternatives appears to be richer than previously reported. Studies have focused too much on the form of the response function relating brand equity and advertising expense to market share. Critical factors like market definition and segmentation are routinely overlooked. Placing a price tag on a change in market share should shift management's attention from internal company performance toward customer needs and competitive positions. The concept of marketing capacity may broaden our understanding of nonprice factors in a competitive market. The price-adjusted replacement value of fixed investments dedicated to creating the capacity to produce, promote, and distribute a product are the costs of market share. Adjusted for its selling price, a firm's weighted average long run share of marketing capacity should be identical to its long run share of market.

Company oriented planning and accounting methods are the innocent purveyors of marketing myopia. A market-led company should lay its plans from market segments, backward through competitive commitments, to achieve a realistic assessment of company resources and expected performance. Balancing marketing risk with return is not a random walk. It is a challenging management responsibility. Meeting the challenge demands management assess the long run net present value of its market share.

Appendix 1

Marketing and Accounting Contribution Are Equal

Proof:

Marketing contribution from Equation 2 is $Z = (v)(m)$, where m is a discrete percentage between 0 and 100, and v is the value of market share.

Market share $m = 100(q/Q)$, where q is company unit sales and Q is primary demand.

Accounting contribution is $Z = (p - avc)(q)$.

Then $(v)(m) = (p - avc)(q)$, and $v(100)(q/Q) = (p - avc)(q)$.

Solving for v gives: $v = (Q)(p - avc)/100$.

Appendix 2

Computation of Linear Maximum Net Present Value of Market Share

To achieve a given share of capacity (designated by a row vector) x' when rivals have committed real resources at a rate r'^* , a firm must deploy its own resources (r') at a rate given by Cook (1983, p. 72),

$$r' = (x'/(100 - x'))r'^*; \quad 0 < x' \leq 100. \quad (2.1)$$

operating in turn on each element in a vector of capacity shares.

Capacity input requirements increase exponentially with the share of capacity to produce, distribute, or promote. The marginal increase in resources with respect to a share of capacity is found by differentiating equation 2.1:

$$dr'/dx' = [100/(100 - x')^2]r'^*; \quad 0 < x' \leq 100. \quad (2.2)$$

To equate the marginal costs of capacity with the marginal value of market share, factor costs are assigned to each real marketing capacity variable. De-

fine a vector of factor costs c' to correspond with the resources needed to produce, promote, and distribute a product or service. A general rule for linear profit maximization of any marketing capacity variable where $f(x')$ is the optimal ratio of marginal share value to marginal share cost is

$$f(x') = dr'/dx' \\ = [(w')(v)]/[(c')(r'^*)/100]; \quad 0 < x' \leq 100, \quad (2.3)$$

and w' are effectiveness weightings on each input, with prices exogenous. The arithmetic product $(c')(r') = e'$ is the firm's total expenditure on a given marketing capacity. For current charges against depreciable assets, the price adjusted replacement cost of marketing capacity defines e' . The function $f(x')$ defines the ratios of marginal share revenue $(w')(v)$ to standardized marginal share cost $(c')(r'^*)/100$ which equate VMS with CMS. These ratios are computed in Appendix 3. Cumulative marketing contribution, less the fixed costs of optimal capacity, discounted at the cost of capital, is the net present value of market share.

Appendix 3

Optimal Ratios of Value of Market Share (VMS) to Cost of Market Share (CMS)

Capacity Share x'	VMS/CMS Ratio $f(x')$	Capacity Share x'	VMS/CMS Ratio $f(x')$	Capacity Share x'	VMS/CMS Ratio $f(x')$
1.0	1.020	31.0	2.100	61.0	6.575
2.0	1.041	32.0	2.163	62.0	6.925
3.0	1.063	33.0	2.228	63.0	7.305
4.0	1.085	34.0	2.296	64.0	7.716
5.0	1.108	35.0	2.367	65.0	8.163
6.0	1.132	36.0	2.411	66.0	8.615
7.0	1.156	37.0	2.520	67.0	9.183
8.0	1.181	38.0	2.601	68.0	9.766
9.0	1.208	39.0	2.687	69.0	10.406
10.0	1.235	40.0	2.778	70.0	11.111
11.0	1.262	41.0	2.873	71.0	11.891
12.0	1.291	42.0	2.973	72.0	12.755
13.0	1.321	43.0	3.078	73.0	13.717
14.0	1.352	44.0	3.189	74.0	14.793
15.0	1.384	45.0	3.306	75.0	16.000
16.0	1.417	46.0	3.492	76.0	17.361
17.0	1.452	47.0	3.560	77.0	18.904
18.0	1.487	48.0	3.968	78.0	20.661
19.0	1.524	49.0	3.845	79.0	22.676
20.0	1.563	50.0	4.000	80.0	25.000
21.0	1.602	51.0	4.165	81.0	27.701
22.0	1.644	52.0	4.340	82.0	30.864
23.0	1.687	53.0	4.527	83.0	34.602
24.0	1.731	54.0	4.726	84.0	39.063
25.0	1.778	55.0	4.938	85.0	44.444
26.0	1.826	56.0	5.165	86.0	51.020
27.0	1.877	57.0	5.408	87.0	59.172
28.0	1.929	58.0	5.669	88.0	69.444
29.0	1.984	59.0	5.949	89.0	82.645
30.0	2.041	60.0	6.250	90.0	100.000

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