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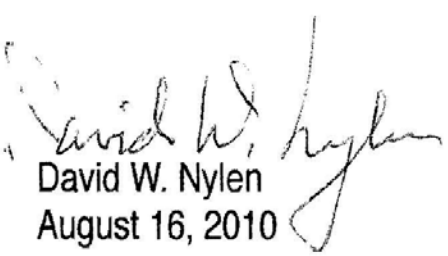

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A.14 Price Elasticity

PRICE ELASTICITY AS AN ANALYTICAL TOOL

The concept of the price elasticity of demand comes from the field of economics where it plays a role in price determination. The price elasticity concept has been adopted by marketers who use it as one of the determinants of price. In addition, understanding price elasticity provides helpful insights in making other marketing strategy decisions.

Price Elasticity Defined. **Price elasticity** is a measure of the sensitivity of the quantity of a product demanded to changes in price. The **law of demand** states that the quantity of a product demanded varies inversely with its price. Price elasticity does not measure the direction of response, but measures how responsive quantity demanded is to changes in price.

Price elasticity is measured quantitatively as the ratio of the percentage change in quantity to the percentage change in price or

$$\text{Price elasticity} = \frac{\text{Percentage change in quantity}}{\text{Percentage change in price}}$$

Because of the inverse relationship of price and quantity demanded, elasticity measures will be negative. If quantity demanded is highly sensitive to price and a small change in price leads to a large change in quantity demanded, demand is said to be **elastic,** and the elasticity measure would be more than -1. If quantity demanded is insensitive to price and a change in price would result in a proportionately smaller change in quantity demanded, demand is said to be **inelastic,** and the elasticity measure would be between -1 and 0. Elasticity of exactly -1 is termed **unitary elasticity.**

Elasticity can also be expressed in terms of revenue produced (price $\times$ quantity). If demand is elastic, a change in price will result in a change in revenue in the opposite direction. Thus, an increase in price will result in a decrease in revenue. This occurs because the increased revenue per unit is more than offset by the decrease in the number of units sold. If demand is inelastic, revenue

will change in the same direction as the price change. This is illustrated in Figure A.14–1 that shows a hypothetical demand schedule, including revenues. In this example, demand is elastic between $4 and $5 and inelastic between $3 and $4. Note that elasticity is measured between two prices or two points on a demand curve, not for an entire demand curve. In fact, most demand curves or demand schedules, including the one illustrated in Figure A.14–1, have both elastic and inelastic segments.

Elasticity can be measured for both industry or product category demand and for individual product or brand demand. Because marketers are usually in the position of stimulating **selective demand** or selling their own brand in competition with other brands, brand demand elasticity is most relevant. However, when marketers are primarily concerned with stimulating **primary demand,** industry demand elasticity becomes most relevant. (See GLOSSARY entry C.24 on **primary versus selective demand.**)

Cause of Price Elasticity. Marketers seek to increase the inelasticity of demand for their brands. Indeed, from an economic standpoint, a major objective in designing marketing strategies is to increase brand demand inelasticity. Why is this so desirable? If the demand curve for a brand demonstrates some inelasticity, the marketer can raise the price above the going market rate, increasing revenue at the same time, and, if costs are stable, enjoy increased margins. These increased margins can be allocated to product improvement, promotion, more intensive distribution, and enhanced profits.

If inelastic demand is desirable, how can the marketer achieve it? The major factor influencing price elasticity is the availability of substitutes. The more close substitutes are available for a brand, the more elastic its demand. If there are close substitutes for a brand and its price is increased, consumers will simply switch brands and the quantity demanded of the higher priced brand will decrease sharply. Demand is elastic. How, then, can the marketer make brand demand inelastic? It is accomplished by making other brands less good substitutes or, in marketing terms, by differentiating the product and closely tailoring the product to the needs of customers.

Creating inelasticity is closely related to other marketing concepts. Creating **brand loyalty** results in more inelastic demand. Brand loyalty is created when consumers are highly satisfied that the brand meets their needs and will accept no substitute. In other words, demand has become inelastic (see GLOSSARY entry A.6). In the **consumer goods classification system,** one of the classes is **specialty goods,** products for which consumers are insistent upon a particular brand (see GLOSSARY entry A.3). Marketers strive to develop marketing mixes that are so satisfying to consumers that the brand becomes considered a specialty good. In so doing, they are creating inelastic brand demand.

Through the mechanism of substitution, elasticity varies according to the **competitive market structure** (see GLOSSARY entry A.1). In purely competitive markets, demand for individual product is perfectly elastic; any increase in price above the market price results in selling zero product. This occurs because in pure competition, products are homogeneous and serve as perfect substitutes for each other. A purely elastic demand curve is disastrous to the marketer. Price is driven down to a subsistence level, leaving no margins for product improvement, promotion, or profit. How does the marketer escape this dilemma? The marketer must build inelasticity into the product's demand curve by differentiating it or by segmenting the market and tailoring the product to the needs of a segment. If this can be done, the demand curve becomes less

FIGURE A.14–1

A Hypothetical Demand Schedule

Price	Quantity	Revenue
$6	700	$4,200
5	900	4,500
4	1,200	4,800
3	1,400	4,200
2	1,800	3,600

elastic and the product enters monopolistic competition; prices can then be increased, promotion and product improvement are possible, and profits increase.

Changes in Elasticity Over the Product Life Cycle. It seems likely that the price elasticity of a brand changes over the course of the **product life cycle** (see GLOSSARY entry A.15). It has been hypothesized that demand tends to become more elastic as the product life cycle moves from the introductory stage through growth, maturity, and decline.[1] Because of increasing competitive pressure, product differentiation diminishes and, hence, substitutability increases throughout the life cycle. In addition, the earlier adopters of the product tend to be financially better off and less price sensitive than later adopters. The hypothesis is intuitively appealing. Unfortunately, the one major study conducted to confirm price behavior over the life cycle found opposite results.[2] This may be because the test used brand life cycles while the hypothesis appears to be couched in terms of the life cycle for a product category.

Determining Price Elasticity. Calculating price elasticity requires knowing the demand schedule or demand curve for a product. With this knowledge, elasticities can easily be calculated. However, few marketers know the demand schedule for their brands, although they may have a qualitative sense of demand and elasticity based on experience.

It is possible to estimate demand, although the process tends to be expensive and inexact. Four methods are used: econometric analysis, experimentation, survey, and conjoint analysis. These techniques are explained in GLOSSARY entry C.21.

Other Elasticities. Several other elasticity measures can be analytically useful to marketers. **Cross elasticity of demand** measures the change in quantity demanded for one product when the price of another product is changed. When products are substitutes, a change in price of one product will result in a change in quantity demanded in the same direction for the other product. For complementary products, price and demand will change in opposite directions. Cross elasticity is used in **product line pricing** (GLOSSARY entry C.28) and in estimating **response to competitive price changes** (see GLOSSARY entry C.32).

Elasticities can also, at least conceptually, be calculated for other variables in the marketing mix such as promotional elasticity, distribution elasticity, and product quality elasticity.[3] Calculating these elasticities requires knowing the demand function for each of these variables. The calculation is the same as for price, but the results will be positive rather than negative as in the case of price elasticity. Determining elasticities for other marketing mix variables is difficult and attempted mainly in forming mathematical decision-making models. However, even qualitative knowledge of elasticities for these variables can help the marketer predict the effect on revenue of an increase or decrease in expenditure for a marketing mix variable.

USE OF PRICE ELASTICITY IN MARKETING DECISION MAKING

The price elasticity of demand for a product should be analyzed as part of the **situation analysis,** prior to formulating or changing a marketing strategy. Knowledge of price elasticity provides helpful insight in making many marketing strategy decisions, some of which are considered below.

Price Elasticity in Market Segmentation. In the segmentation of markets, price elasticity has been proposed as a segmentation base

[1]Reported in Philip Kotler, *Marketing Decision Making: A Model Building Approach* (New York: Holt, Rinehart & Winston, 1971), pp. 62–63.

[2]Herrmann Simon, "Dynamics of Price Elasticity and Brand Life Cycles: An Empirical Study," *Journal of Marketing Research* 16 (November 1979), pp. 439–52.

[3]See Kotler, *Marketing Decision Making,* pp. 56–63.

(see GLOSSARY entry B.3). Segmentation bases are the dimensions along which markets are subdivided in the segmentation process. Using price elasticity as a segmentation base, the market would be divided into subgroups of people who exhibited similar price elasticity. Each segment would have a different price elasticity and would be responsive to a different marketing mix.[4]

One practical difficulty in using price elasticity as a segmentation base lies in the difficulty and cost of estimating elasticities. It may also be that other segmentation bases, such as needs or benefits desired, provide dimensions more closely related to the cause of consumer response and hence are more appropriate. (See GLOSSARY entry B.2 on **segmentation evaluation.**)

While price elasticity may not be appropriate as a segmentation base, it certainly provides a useful variable to use in describing the characteristics of segments after they have been formed. As described below, knowing the price elasticity of segments is useful in selecting target markets and in formulating the marketing mix.

Price Elasticity in Target Market Selection. **Target market selection** is concerned with deciding to which segments of the market a marketing mix will be directed. GLOSSARY entry B.4 provides criteria for selecting the most advantageous segment as the target market. Although price elasticity is not one of the listed criteria, it is inherent in several.

In most cases, a segment showing a more inelastic demand for the brand would be more attractive as a target market. If demand for the brand is inelastic, it would indicate that other brands were not considered by consumers to be good substitutes. It would suggest that consumers saw the brand as meeting their needs rather well. It would also suggest that the segment was less competitive than others with more elastic demand.

Price Elasticity as a Determinant of Price. The price set for a product is influenced by many factors; the most important are demand, product cost, and competitive behavior (see GLOSSARY entry C.21). Price elasticity, a demand variable, is one of the determinants of price. If demand is inelastic, the marketer is influenced to move the price higher, especially if the pricing objective is to increase revenue. By the same token, if demand is elastic, the marketer is influenced to lower price to increase revenues. The behavior of cost and competition must, of course, also be considered in making price moves.

Price Elasticity and Product Design. **Product design** and price elasticity are related concepts. Demand for a brand becomes inelastic when consumers perceive that competitive products do not serve as adequate substitutes. The marketer attempts to achieve inelastic demand for a brand by differentiating the product and tailoring its design to the needs of the target market. The brand then offers superior value for its price and demand becomes inelastic. (See GLOSSARY entry C.25 on product design.) Thus product design is a means to achieve less elastic demand; at the same time, elasticity of demand is a measure of the success of product design.

SUGGESTIONS FOR FURTHER READING

KOTLER, PHILIP. *Marketing Decision Making: A Model Building Approach.* New York: Holt, Rinehart & Winston, 1971, chap. 3.

SIMON, HERRMANN. "Dynamics of Price Elasticity and Brand Life Cycles: An Empirical Study." *Journal of Marketing Research* 16 (November 1979), pp. 439–52.

[4]See Richard P. Bagozzi, *Principles of Marketing Management* (Chicago: Science Research Associates, 1986), pp. 225–26.