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A NEOCLASSICAL ECONOMIC AND STRATEGIC MANAGEMENT APPROACH TO EVALUATING GLOBAL AGRIBUSINESS COMPETITIVENESS

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Introduction

The importance of high value products as a component of United States agricultural output has increased significantly in recent years. Moreover, high value products as a percentage of U.S. agricultural exports have also risen (Burfisher and Missiaen, 1990). Given these trends, it is not surprising that agribusiness competitiveness has become a topic of much discussion in both the popular press and in academic literature. Its importance is also evidenced by initiatives set forth by the Western Regional Coordinating Committee on Agribusiness Research Emphasizing Competitiveness and the International Agricultural Trade Research Consortium symposium Competitiveness in International Food Markets. More recently, the National Association of State Universities and Land Grant Colleges' Board on

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Agriculture endorsed the Agricultural Competitiveness Initiative (ACI). This initiative calls on land-grant universities to consider new paradigms for conducting research, extension, and teaching on the issue of U.S. agricultural competitiveness.

Despite the emphasis placed on evaluating the competitiveness of agricultural industries, the term competitiveness has not been clearly defined. Nor has a consensus been reached as to its proper measure. The disciplines of neoclassical economics and strategic management each provide useful insight regarding competitiveness. The economic literature has placed emphasis on the concept of comparative advantage, while research conducted in strategic management has emphasized the concept of competitive advantage.

If researchers are to successfully analyze the competitiveness of agricultural industries, a framework that offers a comprehensive and measurable definition of competitiveness must be developed.

The objective of this paper is to develop a framework for evaluating competitiveness that offers a clearer linkage between the theoretical constructs of neoclassical economics and strategic management. The paper begins with a review of literature aimed at defining what is meant by "competitiveness." A definition drawing on the disciplines of neoclassical economics and strategic management is proposed. The linkages to the theoretical underpinnings of the two disciplines are developed. Finally, empirical

measures that follow from the conceptual framework are discussed.

Literature Review

Competitiveness has been addressed from a number of different perspectives, depending on the respective discipline and the objectives of the research. For example, researchers interested in evaluating a nation's competitiveness have defined it as the ability to sustain an acceptable growth rate and real standard of living for their citizens while efficiently providing employment without reducing the growth potential and standard of living for future generations (Landau, 1992). This definition is linked to a nation's employment and consequently the standard of living of its citizens. However, the level of national employment, growth of employment, and the standard of living in an economy depend on the competitiveness of firms within the country. Hence, analyzing a nation's competitiveness requires that the underlying factors influencing the competitiveness of individual firms and industries be examined.

Other definitions contrast competitiveness with the neoclassical economic concept of comparative advantage. The theory of comparative advantage predicts that trade flows occur as a result of relative cost differentials between countries. According to Barkema, et al. (1991), this theory does not apply to a world with market distorting government policies. They assert that competitiveness takes a more realistic view of the world. Their definition, similar to the above, views competitiveness from a national perspective. It also implies that government policy affects competitiveness. However, it fails to provide insight regarding the underlying sources of competitiveness or

account for demand-side factors, such as product differentiation. Thus, a description of the linkages between the sources and indicators of competitiveness must account for the effect of government policies and consumer demand.

Porter (1990) introduces how firms compete with one another in international markets rather than nations. When considering competitiveness, the emphasis must not be placed on the economy as a whole, but on specific industries and industry segments. Competitive advantage (or competitiveness) results from the difference between the value a firm is able to create for its buyers and the cost of creating that value. He goes on to state, superior value results from offering lower prices than competitors for equivalent benefits, or by providing unique benefits more than offsetting a higher price.

Firm level definitions of competitiveness have been put forward by various economists. They assert competitiveness is the ability to deliver goods and services at the time, place, and form sought by buyers at prices as good as, or better than other suppliers while earning at least opportunity costs on resources employed (Sharples and Milham, 1990, and Cook and Bredahl, 1991). Though this definition views competitiveness from the perspective of the firm, it fails to address the sources that give firms the ability to deliver goods or services at competitive prices. Still other economists define competitiveness as the sustained ability to profitably gain and maintain market share in domestic and/or foreign markets (Van Duren, et al., 1991). This definition also addresses competitiveness from the perspective of the firm, yet it focuses on defining

competitiveness in terms of performance indicators, e.g., net worth, profitability, and market share.

These definitions contrast the differing approaches used to analyze competitiveness. The strategic management school defines competitiveness as the ability to profitably create and deliver value through cost leadership or product differentiation. This approach implies competitiveness is directly related to factors influencing a firm's cost and demand structure. Other schools of thought place greater emphasis on the indicators of competitiveness. These approaches describe competitiveness as the sustained ability to profitably gain and maintain market share (Van Duren, et al., 1991). Both approaches can be useful for evaluating competitiveness given the objectives of the researcher. However, neither demonstrates a clear linkage between the factors that influence the cost and demand structure of the firm and possible measures of competitiveness, e.g., profits and market share.

Definition of Competitiveness

This paper examines competitiveness from the perspective of a firm that sells products in a specific market. A market is defined as the set of all actual and potential buyers and sellers of a product who interact in a specific time and place. Competitiveness is defined as the ability to profitably create and deliver value at prices equal to or lower than those offered by other sellers in a specific market. This approach is similar to the definition developed by Sharples and Milham (1990), yet emphasis is

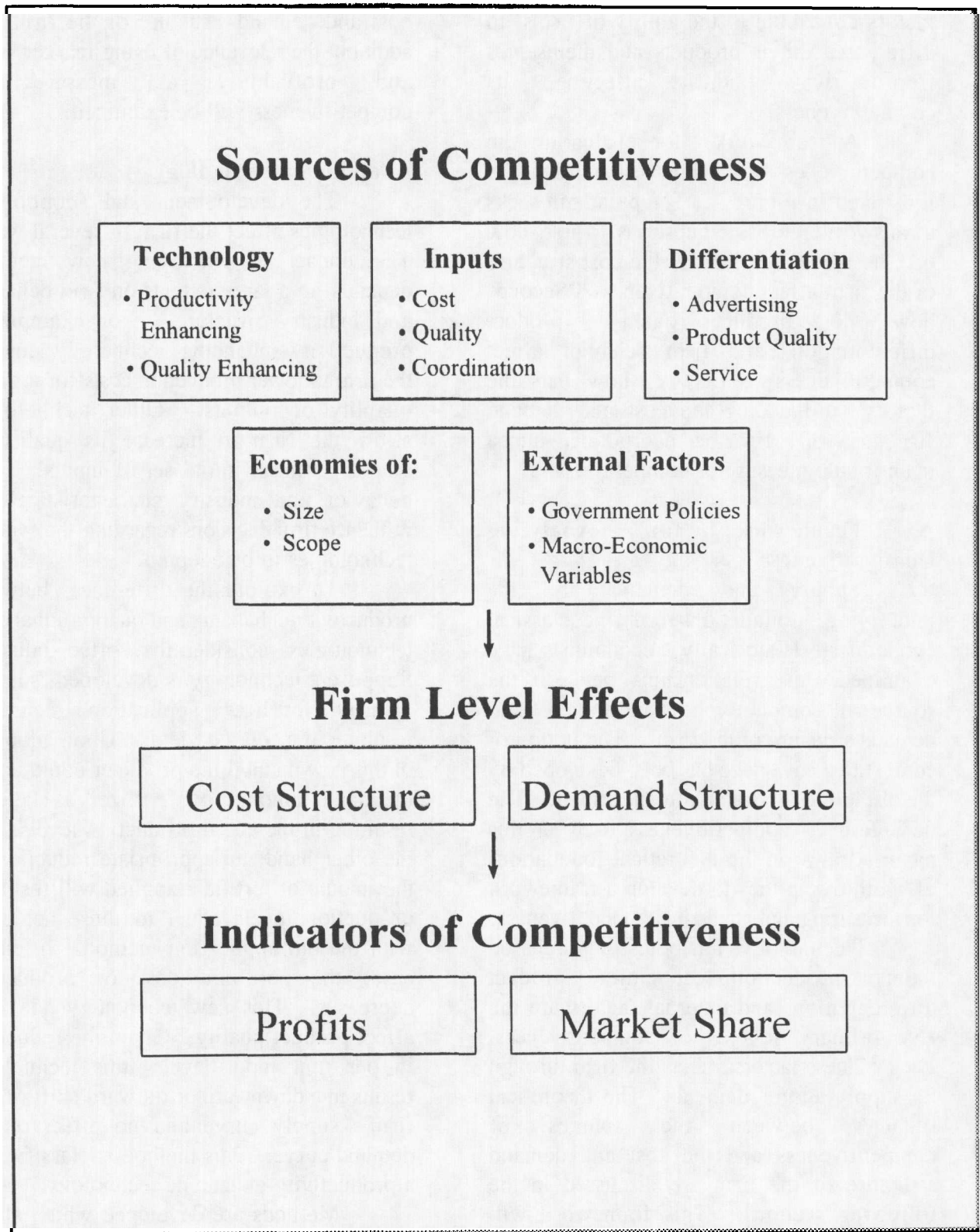
also placed on the market in which the firm competes. This approach draws from the strategic management literature, which asserts firms create value through cost leadership or product differentiation (Porter, 1980). In addition, the definition is directly linked to neoclassical economic theory, since cost leadership and product differentiation directly impact a firm's cost and demand structure.

A number of factors affect a firm's costs and the degree to which it can differentiate its products. For example, economic theory indicates cost advantage can be achieved through proprietary technologies that affect the productivity of labor and capital. Costs are also influenced by the price, quality, and dependability of purchased inputs.

Production economies can be achieved through economies of size and breadth of product scope. These factors affect cost leadership, which in turn influences a firm's competitiveness.

Similarly, the disciplines of strategic management and neoclassical economics indicate a number of factors influencing a firm's ability to differentiate its products. Among these is the ability to affect product demand through the development of superior product quality. This can be achieved through research and development, quality control, and the use of higher quality inputs. Advertising and other promotional strategies can also influence the consumers' perception of a product, thus altering the demand structure. Firms' can also provide superior services, which enhance the reputation of

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their company and product lines. These factors contribute to the ability of firms' to differentiate their products and themselves from rivals, thus affecting its competitiveness.

A framework for evaluating the competitiveness of agribusiness industries is illustrated in Figure 1. The paradigm seeks to answer three basic questions. First, how do the factors influence the cost structure of the firm affect competitiveness? Second, how do product quality, product differentiation, and firm behavior affect competitiveness? Finally, how can the factors influencing the cost and demand structures of a firm be incorporated into a quantifiable measure of competitiveness?

A Framework for Analyzing Competitiveness

Supply and demand are the underlying foundations of neoclassical economics. Historically, economists have examined the relationships between the sources of competitiveness and the cost and demand structure of the firms. The notion of competitive advantage has been developed by the discipline of strategic management. The definition of competitiveness used in this paper draws on the theoretical foundations of both disciplines to develop a framework for measuring and analyzing competitiveness.

Technology, attributes of purchased inputs, production economies, product differentiation, and external factors are the five primary sources of competitiveness. Each of these factors affects the firm through its supply and/or demand. The theoretical linkages between the sources of competitiveness and the cost and demand structure of the firm are discussed in the following sections. This framework will concentrate on these five sources of

competitiveness and their relationship to the cost and demand structure of the firm. In addition, the relevance of using market share and profitability as measures of competitiveness will be examined.

Adoption of Technology

The development and adoption of technologies affect the firm in several ways. The impact of employing new methods depends, to a large extent, on firm behavior and industry structure. For example, a productivity-enhancing technology enables the firm to lower production costs for a given quantity of outputs. Other technologies allow the firm to increase its quality of output given an initial set of inputs. Firm behavior and industry characteristics will influence firm decisions regarding the type of technologies to be adopted.

To explore the differences between productivity-enhancing and quality-enhancing technologies, consider the coffee industry. Suppose a technology is developed, such as a new fertilizer application technique resulting in increased yields. Upon adoption of this new method the producer could apply the same amount of fertilizer as before, resulting in increased production levels. On the other hand, an appropriate reduction in the amount of fertilizer applied will result in production levels equal to those achieved with the old application method. In either case, the per unit cost of production decreases. This new technology does not affect product quality. Given the reduction in per unit input levels, this technology results in a downward or outward shift of the firm's supply curve and no effect on its demand curve. This method is classified as a productivity-enhancing technology.

Methods are developed which allow coffee processors to enhance the flavor of

their final product. The development of a packaging system allowing coffee to hold its aroma until reaching the consumer is one example of quality-enhancing technology. Application of this new method permits the firm to differentiate its product by creating superior quality. Given this increase in benefits, one would expect consumers will be willing to pay more for this product. This result is an upward or outward shift in the demand curve. However, unlike the productivity-enhancing technology, the processor also incurs increased costs associated with this higher quality level, resulting in an upward shift in its supply curve.

These examples illustrate the primary difference between productivity-enhancing and quality-enhancing technologies. A technology is *productivity-enhancing* if its adoption enables the firm to decrease its costs per unit of output. On the other hand, a technology is *quality-enhancing* if its adoption enables the firm to increase quality per unit of input. Despite the inclination to categorize technology as either productivity-enhancing or quality-enhancing, many technologies exist which cannot be pigeonholed into just one classification. The existence of technologies that are simultaneously productivity- and quality-enhancing, combined with the effects of firm behavior, implies cost and quality factors must both be utilized in an analysis of firm competitiveness.

The type of technology the firm adopts depends on its goals and the strategies it chooses to pursue. If the primary objective of the firm is cost leadership, technologies that reduce costs will be of primary interest to the firm. If the main objective is product differentiation or superior product quality, adoption of quality-enhancing technologies will be the major concern.

A firm's adoption of productivity-enhancing and/or quality-enhancing technologies will cause movement in the supply and/or demand curves. Although various technologies affect production in different ways, the supply and demand curves serve as links between technology and profits. These linkages are useful in analyzing the correlation between sources of competitiveness, in this case of various types of technology, and profits.

Input Costs

One of the most direct and obvious sources of competitiveness is input costs. Even so, it is difficult for a firm to attain an advantage in this area. To illustrate this point, consider two coffee processing firms. Assume coffee-bean inputs compose the same share of production inputs for the two companies and the cost of coffee-beans declines. This decrease in the cost of inputs shifts the supply curves of both firms to the right. However, it does not change either firm's relative cost of production. Although both firms incur lower production costs, neither gains competitive advantage relative to the other.

To gain a competitive edge in this area, a firm must lower input costs relative to those incurred by rival firms. Suppose one of the firms in the previous scenario has the capacity to utilize weather forecasting services. This provides the firm with information regarding coffee-bean yields around the world. Knowledge of this type permits the firm to better coordinate coffee-bean procurement. The resulting cost advantage, which affects profits through the supply curve, influences the relative competitive advantage of the firms.

Production Economies

As previously discussed, cost advantage is an important determinant of competitiveness. Cost advantages allow the

firm to gain a competitive edge over rivals and deter entry of new firms. One way cost advantage can be affected, is through economies of size and product scope. Economies of size occur when plant size is adjusted in a way that decreases average costs of production. When a firm is able to capture a larger share of the market, the resulting increase in production in the short-run allows fixed costs to be spread over increased output, thus reducing average costs. Perhaps more important, the sustained ability to maintain market share allows the firm to adjust plant size and attain economies of size. For example, one of the arguments for the efficiency of the United States meat packing industry is its evolution from a large number of medium-sized packers to an industry where a few large firms control most of the market. The increased size of these firms allows them to reduce total costs through a greater division of labor.

Economies can also be achieved by broadening the scope of products that a firm produces. The firm's scope can be adjusted to produce a wide variety of products which are close substitutes in the production process. An example of this would be the diversification of a producer of cola products to include other soft drinks. Expansion of its product line in this manner would allow the firm to utilize excess capacity. Thus, economies of scope permit the firm to spread the cost of its fixed assets over additional lines.

Product Quality and Enterprise Differentiation

Another factor affecting the firm's competitiveness is its ability to differentiate itself. This can be achieved through product and enterprise differentiation. Many agribusiness firms differentiate their products

from those of their competitors in order to increase market share and develop consumer loyalty. Product differentiation is the degree to which the products of competing sellers substitute for one another in consumption (Marion, 1986). A primary way in which firms' differentiate their products is by providing superior product quality. Research and development, quality control, and the use of higher quality inputs are among the sources affecting product quality. Firms can also provide superior services and enhance the reputation of their company and product lines. These factors contribute to enterprise differentiation, which refers to the firm's ability to distinguish its products and itself from rivals.

Advertising and Promotion

Actual physical differences between food products contribute to the degree of product differentiation. However, in many cases, advertising alone is sufficient to differentiate products in the mind of the consumer. Brand advertising is one means by which a firm can distinguish its products from those of other firms. A successful advertising strategy establishes a barrier to market entry by creating brand loyalty. This loyalty is based on the customer's perception that the preferred product conveys greater value relative to close substitutes. Brand loyalty allows a firm to pursue one of two strategies. The firm can sell the same amount of its product at prices higher than competitors, or it can sell more of its product at prices equal to competitors. In either case, demand for the firm's product increases and its relative competitiveness in the market will also increase.

Firms pursuing the first strategy will maintain market share, while those following the second strategy will increase market

share. However, the effect of advertising on profitability may be ambiguous. For example, a firm pursuing the first strategy will capture a larger portion of the market, but this expansion in market share may result in a short-run loss in profits as increased advertising will also increase short-run costs. As a result, an increase in short-run profits will occur only if the marginal return from advertising outweighs its marginal cost. Yet, the firm may choose to incur short-run losses to gain economies of size in the long-run. In this case, the firm's long-run profits will increase.

External Factors

There are a number of external factors that influence the competitiveness of agribusiness firms and industries. A variety of government policies can affect an industry's competitiveness in both domestic and international markets. These factors have a direct impact on the cost and demand structures of agribusiness firms. For example, government policies subsidizing the production of raw agricultural commodities directly affect the prices food processors pay for inputs. Lower priced inputs lead to decreased costs for the downstream firms and an increase in their competitiveness relative to foreign rivals.

Government policies also affect agribusiness firms' ability to obtain world market share. For example, government export subsidies decrease the world price at which domestic industries are willing to sell various quantities of their product. As a result of the subsidy, exporters can sell their products at a discounted price on the world market while maintaining, or increasing, their effective price per unit. This acts to expand the subsidized industry's world market share.

Macro-economic variables, such as exchange rates, consumer incomes, and population growth also influence the competitiveness of the firm. For example, a devaluation of the U.S. dollar has the effect of lowering the price of U.S. goods in foreign markets. Although, individual firms have little influence on the exchange rate, they benefit from increased profits and market share. Thus, government policies and other factors beyond the firms' control impact agribusiness competitiveness.

An industry's competitiveness can also be enhanced through publicly funded research and extension programs. For example, the agricultural Land Grant system has been acclaimed for enhancing the competitiveness of the United States' agricultural sector. Land Grant research is responsible for a variety of technological innovations affecting U.S. agricultural competitiveness over the past several decades. These technologies include the development of improved seed varieties, fertilizers, pesticides, and other output enhancing techniques. Moreover, the Land Grant system's Cooperative Extension Service has also enhanced competitiveness by facilitating information transfer and the adoption of new technology.

The successful development and dissemination of competitiveness enhancing technologies through the Land Grant system is partially due to the homogeneity and political leverage of the U.S. agricultural sector. However, this model may be difficult to implement in other sectors of the economy. For example, successful research and extension programs in manufacturing must be tailored to meet the needs of diverse and highly specialized subsectors. The development of publicly funded programs serving these industries require substantial

political support for their long-term viability. Publicly funded extension programs for manufacturing may be more difficult to implement because of the highly specialized and heterogeneous nature of most manufacturing industries. In fact, the mission of the Land Grant may become more difficult to accomplish as the agricultural sector becomes more industrialized and diverse.

Measures of Competitiveness

The previous discussion has reviewed a number of sources influencing firms' competitive advantage. These sources can be grouped into two categories: those that affect the firm's relative cost of production and those that affect the quality, or perceived quality, of its product and/or business enterprise. Increased proficiency in these cost and quality groupings results in a shift to the right of the firm's supply and demand curves, respectively. Although firm behavior varies according to individual goals, economists typically assume firms seek to maximize profits. As the firm gains advantage in various sources of competitiveness, relative market share and profits increase. Thus, market share and profits serve as useful measures of a firm's relative competitiveness.

The strategic management literature emphasizes the use of market share as a measure of competitiveness. However, market share is often employed as a means to achieve future competitive advantage. For example, firms may lower prices in the short run to increase market share and obtain increased long-run profits. This increase in market share will affect future competitive advantage. Thus, a gain in relative market share is not sufficient to guarantee an increase in the relative competitive advantage

of the firm. Aside from this, an increase in competitive advantage is typically accompanied by an increase in relative market share. The use of market share as a measure provides insight into a firm's strategic position and its ability to produce and market its goods.

This raises the issue that in the examination and measurement of competitiveness, there must be a distinction between short-run and long-run factors. In the short-run, as alluded to previously, firms may set prices below cost to obtain market share. This increase in market share does not result from an increase in competitiveness. Rather, it is used as a tool to gain economies of size or force competitors out of the market, thereby setting the stage for increasing long-run profits.

Although change in market share does not always signify a corresponding change in competitiveness, it is an important measure. When a firm is able to decrease production costs or extract higher prices relative to other firms in the industry, profit maximization indicates market share will increase. From a neoclassical economic standpoint, if a firm is achieving positive profits, other firms will enter the market until profits are driven to zero. This assumes free entry into the market. The ability of existing firms to effectively create market barriers against the entrance of new firms, and thereby maintain market share, indicates these initial firms possess some type of competitive advantage.

In addition to their influence on market share, the five sources of competitiveness addressed in this paper clearly affect profits. Yet knowledge of a firm's profitability does not provide information regarding the individual sources of competitiveness. Similarly, a firm's relative advantage in one source of

competitiveness does not guarantee profitability. The profitability of a firm provides a useful means to measure the combined effect of the five sources of competitiveness. Thus, to measure overall competitiveness, profit is a useful indicator.

The value of any indicator is tied to its intended use. For example, profits can be used to measure the firm's overall level of agribusiness competitiveness, relative to other firms. Yet this information may not provide insight with respect to specific strengths of the firm or the policies it should pursue to maintain or increase its competitiveness. Information of this type can be obtained by examining the relative sources of competitiveness.

One "best" measure of competitiveness may not exist. Market share and profitability provide useful insights into the overall competitiveness of a firm. At the same time, the individual sources of competitiveness provide information with respect to the firm's relative strengths and weaknesses. When utilized separately, these tools provide a useful indication of the competitive position of the business. However, when used in concert, these measures provide information regarding the firm's current position in the market, indicate the relative strengths to be maintained and exploited, and identify the relative weaknesses that are a prime area for improvement.

Implications for Agribusiness Research

The agribusiness industry covers a wide spectrum of products and services, ranging from bulk commodities to consumer goods. Abbott and Bredahl (1994) identify undifferentiated primary commodities, differentiated primary products, semi-processed products, and consumption-ready

products as the four economies of agriculture. This diversity necessitates, any analysis of agribusiness competitiveness accounts for both cost factors and differentiation. Studies focusing on raw commodities will place a greater emphasis on the importance of cost reducing strategies. Conversely, studies aimed at evaluating the competitiveness of highly-processed consumer goods must incorporate the effects of strategies affecting product and enterprise differentiation.

Researchers must remember that agribusiness competitiveness is not only measured through its effect on the firm and industry, but also by its impact on the nation's welfare and workforce. These effects are important to the overall economy, since agribusiness provides one-sixth of U.S. jobs (Beierlein, et al., 1995). To examine competitiveness within the context of the workforce and general population, the negatives of adopting new technologies must be considered. Increased competitiveness is a desirable goal for the firm or industry. However, analyses examining competitiveness, particularly on the national level must account for its impact on consumers, workers, and other sectors of society. For example, public policies benefitting larger firms may increase industry concentration. This potentially results in higher prices and decreased output, thus adversely affecting domestic welfare. In an industry where a large portion of research is supported by tax dollars, the research agenda must consider the downside effects when examining the costs and benefits of national research initiatives.

An additional problem researchers must address is the apparent contradiction occurring when an industry, initially competitive on the world market, is protected

against imports from the rest of the world. The goals of domestic policies must first be examined in the context of the competitiveness of the domestic industry and the welfare of the country. For example, a goal of agricultural policy may be food security. To achieve this, a stable domestic supply may be obtained at the expense of consumers. At the same time, supporting domestic production at artificially high prices may detract from the competitive advantage of the nation by inhibiting the development and adoption of new technologies. These issues highlight the need for research and policy initiatives to address more than simply the enhancement of competitiveness. Instead, programs designed to strengthen national competitiveness must include a strategic agenda considers the welfare of society.

This paper provides a framework for developing theoretical paradigms in which researchers can evaluate agribusiness competitiveness. These constructs provide the basis for empirical analyses measuring the effects of the various sources of competitiveness on supply and demand, which ultimately affect profits and market share. For studies of this nature to be successful in measuring competitiveness and providing useful strategy recommendations, accurate firm-specific data pertaining to sources of competitiveness and their indicators must be available. Universities and individual firms must cooperate in developing and conducting industry-wide analyses of this type if researchers are to effectively analyze agribusiness competitiveness.

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