Examination of Ethanol Marketing and Input Procurement Practices of the U.S. Ethanol Producers

Aslihan D. Spaulding

Timothy J. Schmidgall

Illinois State University

Department of Agriculture
Campus Box 5020
Normal, IL 61790-5020
Phone: (309) 438-8091
E-mail: adspaul@ilstu.edu & tjschmi@ilstu.edu

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Abstract

Growing concerns about the dependence on foreign oil and high prices of gasoline have led to rapid growth in ethanol production in the past decade. Unlike earlier development of the ethanol industry which was highly concentrated in a few large corporations, recent ownership of the ethanol plants has been by farmer-owned cooperatives. Not much is known about the marketing and purchasing practices and plants' flexibility with respect to adapting new technologies. The purpose of this research is to fill the gap in knowledge on these practices and to test whether the practices differ with the size and type of ownership.

Keywords: ethanol, marketing, input procurement, technology

[1] Authors are an Assistant Professor of Agribusiness and a graduate student at Illinois State University, respectively.

Introduction

With an increase in national energy consumption and a mandated charge by the Energy Policy Act of 2005, ethanol is expected to fulfill the needed U.S. fuel requirement. In 2007, ethanol production totaled 6.5 billion gallons increasing 32% from the previous year's production of 4.9 billion gallons. Ethanol production is expected to exceed ten billion gallons by 2009. In the fall of 2007, President Bush has increased ethanol production by signing the Energy Independence and Security Act of 2007. This act expands the Renewable Fuels Standard, mandating that 36 billion gallons of renewable fuels be annually used by 2022 (RFA, 2008). This growing industry may potentially relieve stress on foreign dependency stimulating the economy and improving national energy security. As a consequence to increased demand for corn, farm income, government payments, and food prices will be susceptible to change (Westcott, 2007).

The profitability of ethanol is directly linked to the prices of corn per bushel. Subsidies are given to the ethanol industry by the federal government with a flat rate payment of $.51/gallon for each gallon of ethanol blended with gasoline (Quear and Tyner, 2006). The Energy Policy Act of 2005 expanded the Small Ethanol Producer Credit production restrictions from 30 to 60 million gallons per year. A small producer is able to credit $.10 per gallon on the first 15 million gallons produced given that the producer does not produce more than 60 million gallons per year (Eidman, 2007).

Growing concerns about the dependence on foreign oil and high prices of gasoline have led to rapid growth in ethanol production in the past decade. Ethanol plants are being built in not just the "Corn Belt" but coast to coast (Renewable Fuels Association, 2007). There has also been a change in the structure of the industry. Unlike earlier

development of the ethanol industry which was highly concentrated in a few large corporations, recent ownership of the dry-mill ethanol plants has been by a new generation of farmer-owned cooperatives. These cooperatives are formed specifically to raise the equity needed to build an ethanol plant in farmers' communities. With growing demand for ethanol, there is considerable interest among policy makers in promoting production by small scale producers, often bolstering rural economies. The high price of oil and the tax and subsidy incentives to encourage its production are now attracting financial investors and venture capitalists that otherwise have no linkage to the land or the rural economy. Not much is known however about the marketing and purchasing practices of these new biorefineries, as well as their flexibility with respect to adapting new technologies. In particular there is lack of research about the types of contracts they are using for purchasing inputs such as corn for feedstock and for selling co-products such as DDGS and whether these differ with the size and type of ownership of the refineries.

Specifically, this study will (1) examine the current marketing and procurement practices of ethanol production plants; (2) examine ethanol producer's flexibility and readiness for new technologies; (3) examine the differences and similarities between small verse large production plants; (4) examine the differences and similarities between farmer cooperatives and private investors.

Ethanol Production

Strong global demand for oil has increased considerably over the past 15 years. According to Westcott (2007), in the 1990s crude oil prices averaged less than $20 a barrel escalating to $68 a barrel in the summer of 2006. Furthermore oil reached $100 a

barrel in the fall of 2007 and $120 barrel in 2008. In part, this is due to increased world demand from energy-intensive economies in Asia, mainly from the rapid growth of manufacturing in China and India. Increased demand of exhaustible petroleum products adds an interest in corn based ethanol. According to the United States Department of Agriculture (2007), ethanol accounts for 14 percent of corn usage but only contributes 3.5 percent to fuel consumption. By the year 2017, ethanol is expected to account for 31 percent of the corn use, contributing 7.5 percent to fuel consumption. To meet transportation needs the United States consumes 190 billion gallons of gasoline and diesel fuel annually. Sixty five percent or 124 billion gallons of petroleum products are derived from foreign sources (CFDC, 2007).

The original renewable fuels standard mandated 7.5 billion gallons of renewable fuels are annually used by 2012. The new renewable fuels standard was expanded in the fall of 2007. The annual consumption of renewable fuels is expected to increase to 15.2 billion gallons by 2012. This sudden increase in ethanol production provides an economic stimulus that goes beyond Midwestern grain producing states not being exclusive to rural America. The ethanol industry can provide a significant amount of income to the United States economy. In 2007 the ethanol industry used more than 2.4 billion bushels of corn in production valued at $8.1 billion dollars. In the 2006/07 marketing year, 19 percent of total corn consumption was derived from ethanol. This demand surpassed exports and became the second largest component behind the use of corn as feedstock (Urbanchuk, 2008).

The introduction of a production facility capable of producing 100 million gallons per year would impact the local economy significantly. A biorefinery is expected to

generate approximately $406 million in gross output and would add $223 billion in gross state output. The facility supports 1,600 new jobs increasing household income by $50 million (Building RFA, 2007). Smaller communities looking to economically develop by job creation, tax base diversification, and new capital investment would be able to benefit from a local processing plant. Beyond rural America, economic growth is stimulated by technical software, manufactory technology, and improved plant components (Economic Impacts, 2006).

Two methods of ethanol production are available, dry-mill or wet-mill processes yielding identical products. Dry-mill production is used by 82% of refineries; wet-mill production consumes the remaining 18%. A dry-mill facility is able to produce 2.8 gallons of ethanol and 17 pounds of distillers grains per bushel corn. Wet-mill refineries use a technical intensive process, converting the main components of the corn kernel into food, feed, fuel, and industrial products (Impact of Ethanol, 2007). Dry distillers grain which can be used as a valuable feed source is a co-product from ethanol (RFA, 2005). Dried distillers grains can have product variability from plant to plant varying quality. This product is consumed mostly by the dairy and beef cattle industry (Building RFA, 2007) and has sustained a 15% growth rate over the past five years (Renewable Fuels Association, 2007). As the market for dried distillers grain consumption is satisfied in the Corn Belt, an effort is being made to expand dried distillers grain consumption in the dairy and beef markets outside of the Midwest. Transportation and flowability have become major obstacles when expanding into these markets (Cooper, 2005).

Financial Impact

Expanded ethanol production is expected to boost net farm income with the expectation to lower government payments. The agricultural sector will rely on the market for more of its income and less on the government. Government payments which averaged over seven percent of gross cash income from 2000-2005 will fall to four percent over the next decade (Westcott, 2007). The Renewable Fuel Standard, made to encourage the blending of renewable fuels into petroleum, would increase net farm income by 2.3 percent, resulting in $1.4 billion increase over the period of 2006-2013 (Economic Impacts, 2006). According to the United States Department of Agriculture, production will add 25-50 cents to the value of each bushel of corn or $5.5 billion over the corn crop (RFA, 2005). The Renewable Fuel Standard would increase the value of U.S. grain and exports by $300 million and would reduce government payments by nearly one billion dollars over the period of 2006-2013 (Economic Impacts, 2006).

Laws and regulations have helped with the success of ethanol. According to Hahn, in 2006, the federal government provided $2.5 billion as a tax credit to gasoline blenders. This equated to a 51 cent tax incentive to each gallon of gasoline blended with ethanol. Total subsidies are expected to increase as ethanol production rises. The Energy Information Administration predicts that by 2010 ethanol production will exceed 11 billion gallons. If all ethanol production is blended into gasoline the government could pay out an estimated five billion dollars in tax credit (Hahn, 2008).

Other incentive programs offered to the ethanol industry is a tariff tax on imported ethanol. The Omnibus Reconciliation Tax Act formed in 1980 created a tariff on imported ethanol. Since all ethanol was eligible for tax credit, Congress feared that

other countries may benefit where it is cheaper to make and produce ethanol. Therefore a duty set at 54 cents was added to imported ethanol (Hahn, 2008).

Marketing Contracts

Ethanol producers and petroleum blenders are coordinating a system of marketing contracts which are mutually beneficial to both parties. The ethanol industry has developed a wide variety of marketing contracts that will improve efficiency procedures across the United States. According to The Illinois Corn Growers Association (2003), ethanol producers will be able to use any of the following contracts: marketing agreements, consortium, exchange, or time trade agreements to market ethanol to petroleum blenders (Shane and Kindler, 2003).

Marketing agreements are becoming very common among smaller plants. Many plants ranging from thirty million gallons per year or less find it more efficient to market their product through a larger ethanol producer. The marketing agreement allows smaller refineries to have one marketer transport products to distribution points closest to their plant, decreasing transportation costs. The agreement eliminates sales personnel and enables product pooling. Large amounts of capital used for transportation equipment are reduced or eliminated. The agreement allows for a smaller producer's product to be sent to a higher valued market, increasing the marketer's trading position. A disadvantage to this arrangement is the dependency on one marketing firm.

A consortium agreement enables several small producers to pool their product, utilizing less expensive modes of transportation, such as rail roads or barges. The ethanol industry is currently exploring exchange agreements. These agreements are common in the petroleum industry which allows for an increase in product exchange. This contract

can eliminate transportation charges between distant areas. Both parties agree to use one another's products to satisfy their own market demand. These arrangements are expected to grow as ethanol production increases. Time trade agreements are used to balance out "short positions" for scheduled maintenance or a lack of production. This type of arrangement requires ethanol inventory storage at all times. Any combination of contracts will provide a consistent market to ethanol producers and improve the efficiency of petroleum blenders (Shane and Kindler).

Data and Methods

A mail survey, which is a commonly used method of marketing research, is utilized to collect data from 230 ethanol production plants. The Renewable Fuels Association website is used to identify U.S. production plants. The survey procedure suggested by Salant and Dillman (1994) will be followed. More specifically, each ethanol sales manager will receive a notification card prior to the first mailing informing them of the research project. The first mailing will consist of a survey and cover letter explaining the study. They will be asked to fill out the survey and send it back to us in a pre-stamped, preaddressed envelope. A reminder card will be sent to participants that have not responded to the survey. This card will provide an option to complete the survey via electronically through the internet. The estimated time frame for the survey mailing is approximately eight weeks. As an incentive to participate in the study, therefore, achieving high participation rate, results of the study will be offered to the ethanol sales managers.

A survey is designed to collect information on product capacity, expansion plans, marketing practices, and procurement practices. This survey addresses capital costs of

production, marketing contracts used to sell ethanol and co-products, and the purchase methods of key inputs, such as corn and natural gas. The survey inquires about strategic plans used to deal with the volatility of ethanol, corn prices, and environmental regulations. We will examine the current use of technology, its risk of obsolescence, and its limitations in expansion. Furthermore, we will examine how current technology, marketing contracts, and pricing strategies vary with the ownership and size of the plant.

Due to the restriction of approved funds by the state of Illinois, this research has been delayed. We will send the survey, collect data, and complete the final paper by the time of this summer conference. Please excuse us from this unusual circumstance.

Data Analyses

Data collected from the mail survey will be entered into a computer database and will be analyzed using Microsoft Excel for graphical analyses and SAS and SPSS for econometric/statistical analyses.

Descriptive statistics will be used to describe the results of each section of the questionnaire. Statistical significance tests will be applied to analyze relationships between variables representing marketing practices of small-to-medium sized and large sized producers. Test results will be reported at α=0.05 level.

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