

Rowles, Kristin

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Processed Apple Product Marketing Analysis: Apple Juice and Cider

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Staff Paper

Department of Agricultural, Resource, and Managerial Economics
Cornell University, Ithaca, New York 14853-7801 USA

Processed Apple Product Marketing Analysis: Apple Juice & Cider

Kristin Rowles

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Processed Apple Product Marketing Analysis:

Apple Juice & Cider

Kristin Rowles^{*}

^{*}Marketing Analyst, Department of Applied Economics and Management, New York State College of Agriculture and Life Sciences, Cornell University, Ithaca, New York

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Abstract

Apple juice and cider experienced rapid market growth in the U.S. during the past few decades, but now a mature market is established. The industry faces economic pressures created by the globalization of the market, and growers and processors across the industry are trying to adapt to new market conditions.

The development of effective competitive strategies for this industry requires an understanding of industry trends, market conditions, consumer preferences, and the forces driving competition in the industry. The purpose of this paper is to provide apple growers and processors with information on the markets for apple juice and cider to support the analysis of marketing opportunities and the development of effective competitive strategies.

This paper is issued as a part of a larger project focused on the processing apple industry. This paper will be supplemented with additional consumer marketing research findings in the final report for this project.

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Section I

Introduction

This paper is a preliminary section of the final report for a larger project focused on the Northeastern apple processing industry. As described below, the project aims to assist apple growers and processors in facing the challenges presented by a changing market and taking advantage of opportunities offered by new information and technology related to production, pest control, product development, and marketing. This paper focuses on one segment of the processing apple industry, the market for apple juice and cider.

The New York Processing Apple Industry

New York State is the second largest producer of apples in the United States and the largest producer in the Northeast. The processing apple sector of the state's apple industry is an important part of the state's agricultural economy. Processing apples account for over half of the apples produced in the state each year, and apple processors have long provided an important marketing outlet for the state's apple growers.

The processing industry extends beyond the state's borders. In 1998, almost 20% of the state's processing apples were shipped to processors in other states. On the other hand, in the same year, over 90% of the apples processed by New York State processors were from New York State (NY Agricultural Statistics Service, 1999). While the in-state processors are clearly the most important processing markets for the state's apple growers, processors in other East Coast states also play an important role in providing a regional market for the state's processing apples.

In recent years, the apple processing industry has experienced increasing economic pressures: declining prices for raw product supplies, stagnant consumption of apple products, closure of major apple processors in the Northeast region, competition with low-priced imports of apple juice concentrate, retailer demands for increased services from suppliers, high costs of developing new products, and increased costs of environmental regulation. These pressures are requiring the industry's growers and processors to respond with competitive strategies that will help them to adapt to new market conditions and provide for future profitability.

Cornell University Processing Apple Industry Research

To assist the industry in meeting the increased challenges of the changing market, Cornell University is conducting research on the production of processing apples and the development of new value-added apple products. This research is conducted with the support of an anonymous grant for a project entitled, "Development of an Environmentally Sound, More Profitable System for Production and Marketing of Value Added Processing Apple Products in the Northeastern United States."

The goals of this project are:

1. To develop a more environmentally sound, cost-effective apple production and integrated pest management system,
2. To stimulate growth of apple processing industry with new technologies that support commercial production of diversified, high value apple products, and
3. To assess economic impacts, marketing potential, and consumer reactions to new products.

The project includes faculty and staff from six Cornell Departments: Entomology, Plant Pathology, Horticulture, Food Science, Cornell Cooperative Extension, and Applied Economics and Management

Objectives of the Paper

This paper was developed as a part of the project described above, and it focuses on an important segment of the processed apple industry, the market for apple juice and cider. The purpose of the paper is to provide the industry with information that can be used in analyzing market opportunities and challenges and developing effective marketing strategies. Similar papers concerning other important segments of the industry will also be issued during the final phase of this project.

This paper is a work in progress. Over the next several months, additional marketing research will add to the findings of this paper. Furthermore, research conducted by other departments involved in the project will provide complementary findings. The final project report will incorporate these additional results.

Organization of the Paper

This paper has the following sections:

- Apple Juice and Cider Industry: summary of production trends and industry structure
- U.S. Fruit Beverage Industry and Market: overview of the competitive environment for juice and cider products
- U.S. Market for Apple Juice and Cider: description of markets for apple juice and cider, including consumption trends
- Strategic Analysis: evaluation of influence of various competitive factors in the industry

The paper concludes with a brief summary and outlook for the industry. For background information on the production of apple juice and cider products, see Appendix A: Description of Products.

While the paper includes information about both apple juice and cider, it gives greater emphasis to the apple juice industry. This bias results from the greater amount of information available on the apple juice industry and its markets, the larger size of the industry, and its higher level of utilization of processing apples. Information on the cider industry, as available, is included throughout the paper.

Section II

Apple Juice and Cider Industry

Apple juice and cider production occurs in a broad industry that includes a wide range of producers from farm-based cider makers to multinational food and beverage corporations, such as Coca-Cola and PepsiCo. Processors include those who press 100% fresh apple juice and cider from raw apples, those who blend juice concentrate and fresh juice, those who pack juice reconstituted from 100% concentrate, and those that produce juice concentrate.

This section focuses on the production of apple juice and cider products. Industry production and price trends are summarized for U.S. and global markets. For detailed descriptions of apple juice and cider products, see [Appendix A: Description of Products](#).

U.S. Juice and Cider Production

In the U.S., juice and cider are the top processing uses for apples. During the past 25 years, utilization of apples for juice and cider in the U.S. has increased by 136% (see Figure 1). In 1999, 59 million bushels of apples grown in the U.S. were processed into juice and cider. This amount was about 24% of total U.S. apple production and 56% of total U.S. processing apple production in 1999 (USDA NASS, 2000). Figure 2 shows how the 1999 U.S. apple crop was utilized.

Between August 1, 1998 and July 30, 1999, 478 million gallons of apple juice (single-strength equivalent) were consumed in the U.S., and approximately 9 million gallons were exported. Preliminary data for 1999-2000 estimate total U.S. juice consumption at 497 million gallons and apple juice exports at 11 million gallons (Rosa, 2000).

Producing 478 million gallons of apple juice requires the processing of about 137 million bushels of apples. With approximately 56 million bushels of juice apples produced in the U.S. during that year, about 60% of the apple juice supply (or the equivalent of about 83 million bushels of apples) was imported. Imports are primarily in the form of apple juice concentrate. For comparison, in 1977-78, 30% of apple juice was imported. As shown in Figure 3, this proportion increased to over the 50% level in the mid-1980's and has remained above that level in all subsequent years except for 1987-88 (USDA ERS, 1999).

The trend in average prices for juice apples in the U.S. is shown in Figure 4. Price data given here are averages for the entire U.S.; prices can vary significantly by region. Average prices fluctuated over the 20-year period from 1979 to 1999, and prices (unadjusted for inflation) at the end of the period were 6% lower than prices at the beginning of the period. Between 1979 and 1999, inflation was 101.2% (GDP deflator). Adjusted for inflation, average juice prices declined by 53% over the 20 years.

Figure 1: Juice Apple Production: U.S., New York, Washington
5-Year Rolling Averages

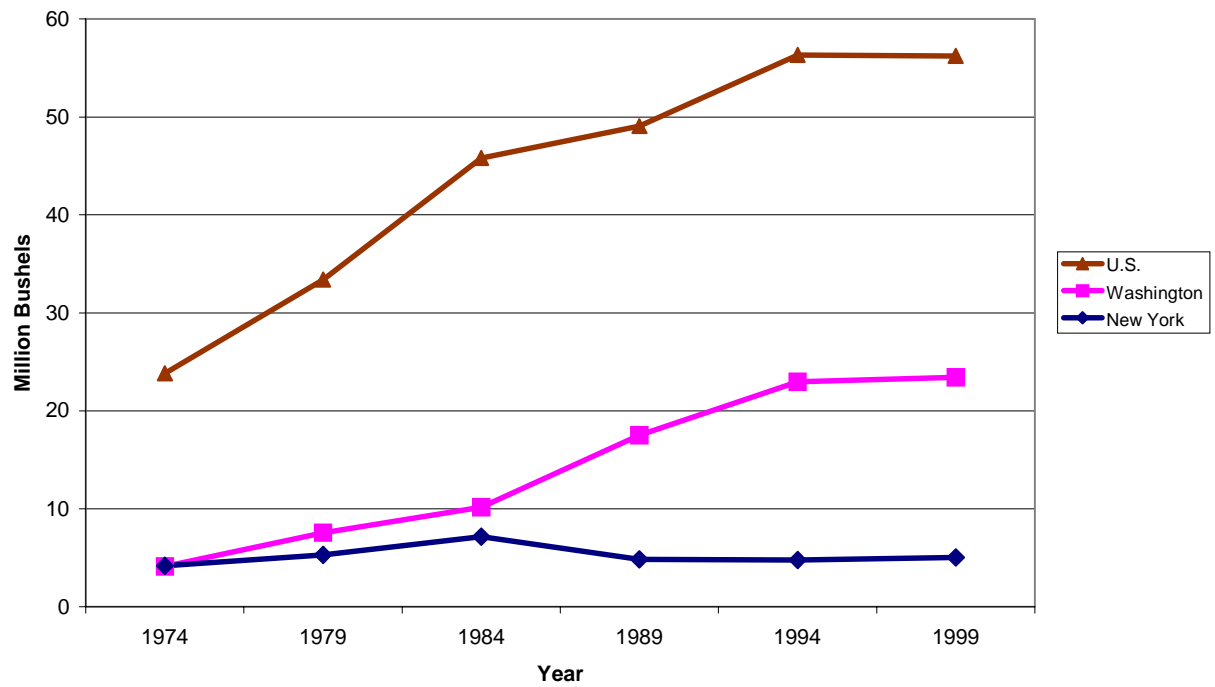


Figure 2: U.S. Apple Crop Utilization: 1999

Total Crop: 247 million bushels

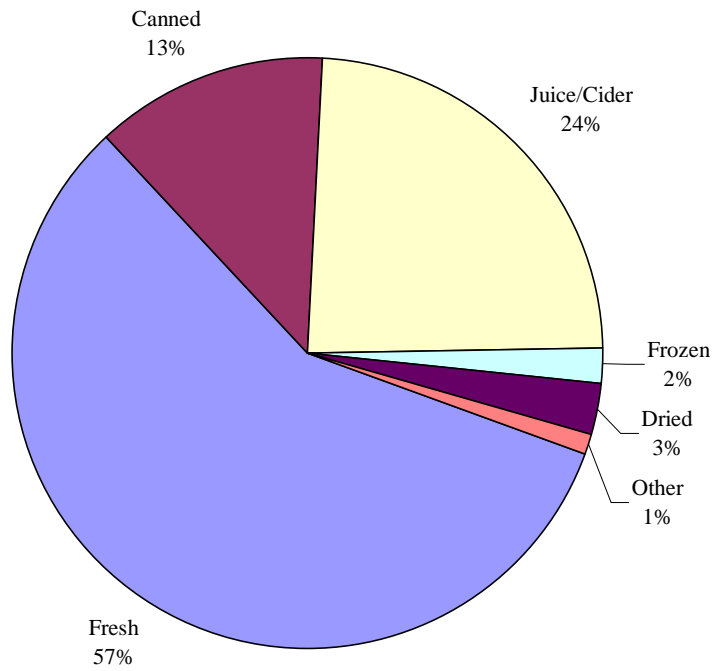


Figure 3: U.S. Apple Juice Supply: Domestic and Imports

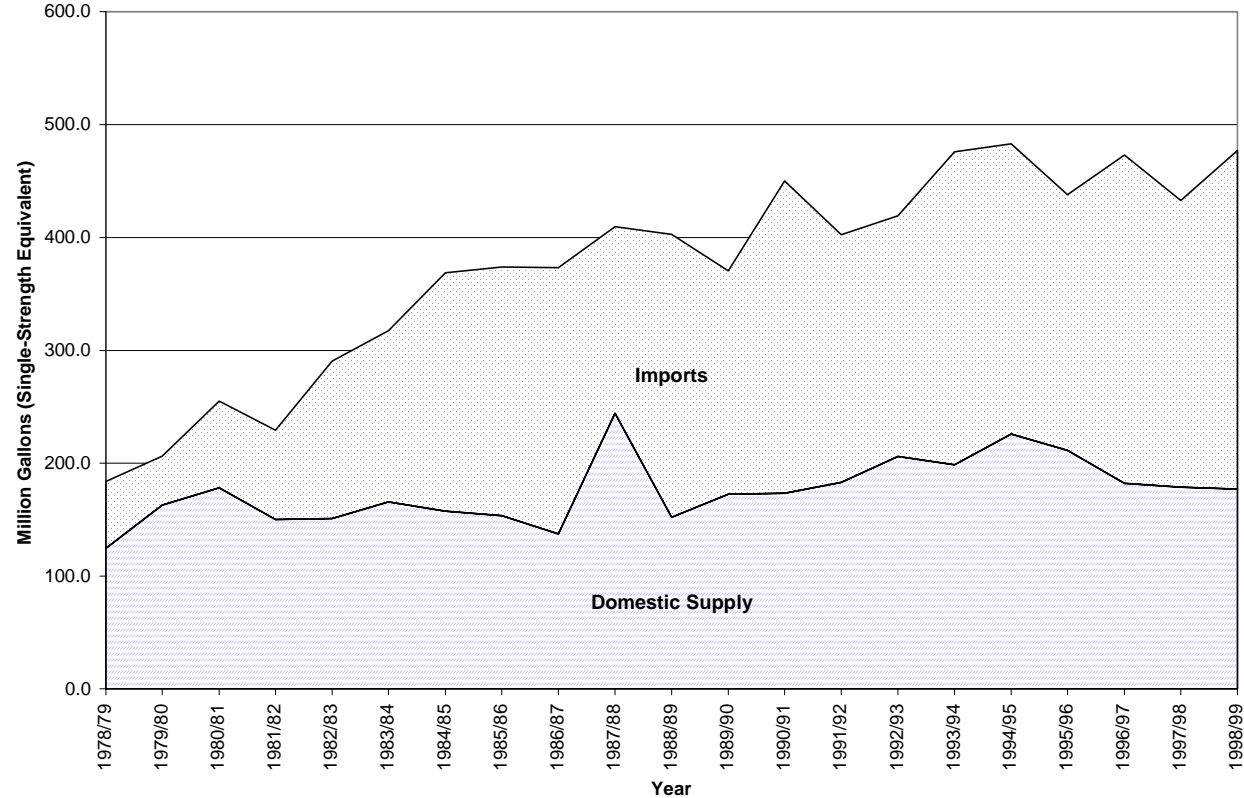
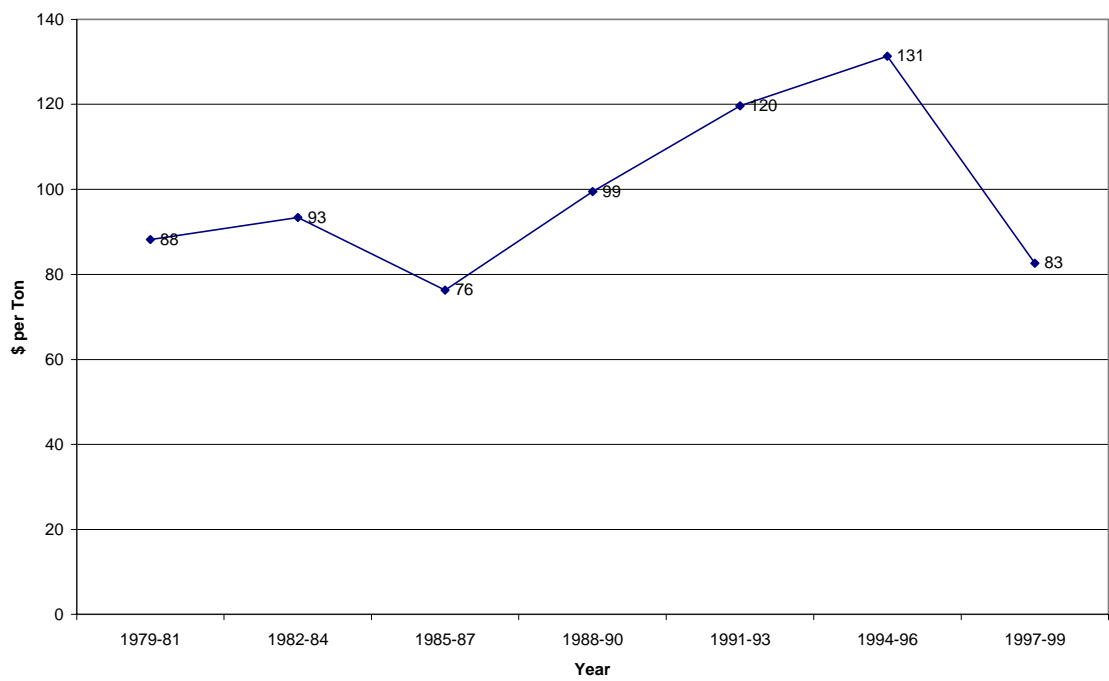


Figure 4: U.S. Juice Apple Prices: 1979-1999
3-Year Averages



Source: USDA ERS, 1999

Over the same period, apple production yields per acre increased. However, yields do not appear to have increased enough to compensate for the decrease in real prices. In 1982, the average U.S. apple yield was 19,400 pounds per acre. In 1999, the average yield was 22,900 pounds per acre, about an 18% increase over 15 years (USDA NASS, 2000). During this 17-year period, nominal juice apple prices decreased by almost 8%, and inflation was 58.2%. The increase in production yields during this period was not sufficient to offset the decrease in real prices. To maintain 1982 profitability levels, real costs per acre would have to have decreased substantially. However, real production costs increased during the period (White, 2000).

The leading apple producing state, Washington, is also the leading state in producing apples utilized for juice and cider (see Figure 5). In 1999, 21.4 million bushels of Washington State apples were processed into juice and cider. This level was below the five-year average from 1995 to 1999 of 23.4 million bushels for Washington State. Figure 1 shows the almost 471% increase in juice and cider apple production in Washington State over the past 25 years. Over the same period, juice and cider apple production in New York increased by 19%. Currently, New York State is fourth in the nation for juice and cider apple utilization, behind Washington, California, and Michigan. Over the past 25 years, increases in production of juice and cider apples have been substantial in California (178%) and Michigan (76%), as well as in Washington.

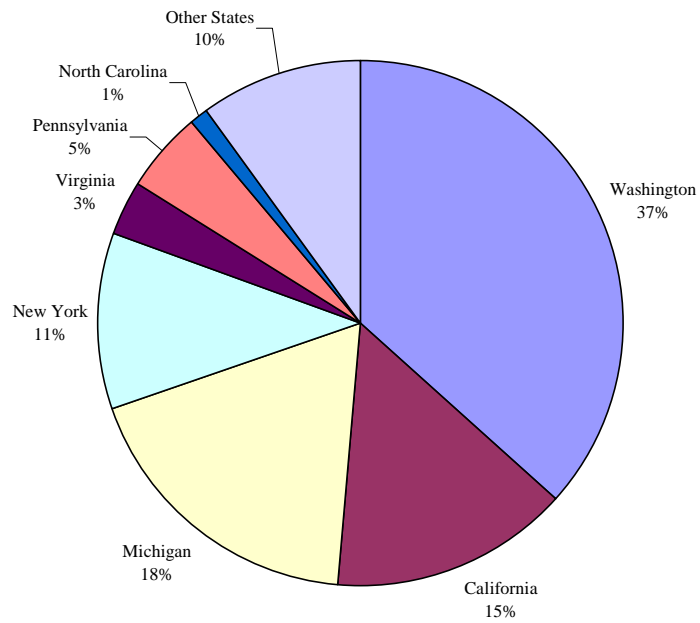
In 1999, 6.3 million bushels of New York apples were processed into juice and cider. The five-year average for 1995 to 1999 for juice and cider apple production in New York is 5.0 million bushels. See Table 1 for five-year averages by state for juice and cider apple production for the period 1995-1999.

**Table 1: Apples for Juice and Cider: U.S. Production, 1995-1999
(5-Year Average)**

State	Million Bushels	% of State's Total Apple Production
Washington	23.4	18.3%
California	8.9	42.0%
Michigan	7.4	30.4%
New York	5.0	18.9%
Pennsylvania	1.9	17.0%
Virginia	1.6	20.9%
North Carolina	1.4	29.7%
Other States	6.6	
US Total	56.2	22.1%

Source: USDA NASS Noncitrus Fruits and Nuts

Figure 5: U.S. Juice Apple Production: 1999
Total Production: 58.6 Bushels



Source: USDA Noncitrus Fruit and Nuts Final Estimates

Table 1 shows the importance of the juice and cider markets in the top apple producing states. During the five-year period 1995 to 1999, juice and cider utilization was about 22% of total national apple production. Most top apple producing states have utilization levels similar to the national average. However, utilization for juice and cider is proportionately higher than average in California, Michigan, and North Carolina.

In USDA statistics, juice and cider production figures are combined. A recent estimate of cider production, based on a survey of processors, places cider at about 20% of the total volume of juice and cider sold (Wettlaufer 1995). In U.S. retail sales in 1998-99, cider accounted for about 16% of sales in dollars and about 10% of sales in volume (“Juice Continues”, 1999). Retail estimates do not include farm-based and other direct market sales of cider, and therefore, underestimate total cider sales. These retail estimates suggest that cider accounts for between 10 and 20% of the total volume of apple juice and cider products in the U.S.

Most of the top apple producing states (Washington, New York, Michigan, and California) have increased production of juice and cider apples during the past 25 years, but the market share held by these states in the juice and cider market has shifted (see Table 2). The combined shares of Washington and California increased from 31% to 58% during the period and indicate a westward shift in industry growth. During the same period, the shares held by several eastern states decreased substantially.

Table 2: Juice Apple Production: Shares of U.S. Market by State, 5-Year Averages

State	1970-1974	1995-1999
Washington	17.4%	41.7%
California	13.5%	15.8%
Michigan	17.8%	13.2%
New York	17.4%	9.0%
Pennsylvania	7.6%	3.4%
Virginia	6.6%	2.8%
North Carolina	3.1%	2.5%

Source: USDA NASS Noncitrus Fruits and Nuts

In New York State, production of juice and cider apples fluctuated during the past 25 years and increased by 19% from the beginning to the end of the period (1974-1999). However, during this time, New York’s share of juice and cider apple production decreased by almost half from 17.4% to 9.0%. In 1999, juice apples accounted for 21% of the New York’s apple production. This level was above the five-year average of 18.9%.

The cider industry in New York State is an important seasonal outlet for apples. Statistics are not available to estimate the size of the cider industry as a separate entity from the juice industry.

In 1998, New York State had 96 processing facilities for apple juice and cider (NYASS, 2000). State statistics do not distinguish between juice and cider plants. There are at least five large juice processing plants in the state, and additionally, four large plants in surrounding states purchase New York apples for processing. At least three large processors in the Northeast produce premium apple juice products that are 100% fresh pressed juice. The regional plants in New York and the Northeast are the main juice markets for New York apples.

Although the apple industries in Michigan and New York are quite similar in many respects, the apple juice industry in Michigan appears to be more robust than that in New York. The Michigan industry has experienced a much higher rate of growth than the New York industry, and Michigan accounts for a larger share of the national market for juice apples. Furthermore, the price for juice apples in Michigan tends to be a bit higher than that in New York. The relative strength of the Michigan industry can in part be attributed to the diversity of juice processors in that state. In fact, a new juice processor began operations to produce juice and concentrate in Shelby, Michigan in Fall, 2000 (Gentry, 2000 [2]). In general, Michigan has greater diversity in fruit processing operations, both in terms of the number of operations and the range of fruits processed, than New York. In the current competitive environment, new apple juice production facilities are relatively uncommon in the U.S., and this facility would appear to signify the relative strength of that industry in Michigan. Higher relative prices for juice apples in Michigan are at least in part the result of efforts of a bargaining association for the processing apple industry (MACMA).

In summary, the last quarter century was a time of rapid growth in the U.S. apple juice industry. As the industry enters a new millennium, however, prices for juice apples have failed to keep up with inflation and the growth trend in the utilization of raw apples for juice may be leveling off. The industry is increasingly global, and U.S. apple growers compete with suppliers of juice concentrate from around the world.

Global Apple Juice Industry

Apple juice and cider are produced around the world in apple producing nations. The leading producing nations of apple juice are the U.S. and Poland, where production levels in 1998-99 were 197 and 176 million gallons (single-strength equivalent), respectively. The U.S. consumes most of the apple juice it produces and exports only 4.4% of its total apple juice production (Rosa, 2000). U.S. exports of apple juice have been decreasing for the past few years, although they are projected to have increased in 1999-2000. The largest export customers for U.S. apple juice are Canada and Japan (Rosa, 1999).

Poland consumes very little of its apple juice production. In most years, Poland exports about 95% of its apple juice production, primarily to neighboring countries. In 1998-99, exports declined and accounted for 81% of apple juice production (see Table 3). Carryover stocks of apple juice were high in Poland in 1998-99 (21.7 million gallons single-strength equivalent), and these stocks contributed to exports in 1999-2000. Germany is the leading importer of Polish apple juice; Germany usually purchases more than 80% of Polish apple juice exports. Most of this juice is reprocessed in Germany and re-exported to the U.S. The profitability of apple juice production in Poland has encouraged new investment in varieties well suited to juice processing as well as in processing operations (Rosa, 1999).

Table 3 shows production and export levels of twelve of the top apple juice producing nations. It is important to note that this table does not include data for China, a rising leader in apple juice concentrate production. Accurate data on Chinese production are not currently available. Discussion of the impact of Chinese apple juice production is included below. Also, in the chart, it is important to note that some nations export more than their annual production of apple juice as a result of carryover inventories and imports. For example, in 1998-99, Germany began with carryover inventory of about 155.8 million gallons (single-strength equivalent), and it imported 344.4 million gallons (single-strength equivalent) of juice. Germany is very active in the reprocessing and re-export of apple juice.

**Table 3: Top Apple Juice Producing Nations, 1998-1999
(Million Gallons, Single Strength Equivalent)**

Country	Production	Exports
U.S.	196.8	8.7
Poland	176.1	142.2
Argentina	114.9	104.6
Germany	90.8	107.6
Italy	79.9	134.1
Hungary	66.4	50.1
Chile	41.3	40.6
Austria	33.5	66.4
South Africa	30.4	30.9
Spain	23.7	17.6
France	21.7	9.3
New Zealand	17.9	13.6

Source: Rosa, 2000

(conversion factor: 1354.5751 SSE gallons per MT AJC, 70/71 brix)

Apple juice concentrate is the most actively traded processed apple product, and it is traded as a commodity on the world market. Most apple juice exports are traded in the form of non-frozen concentrate. Concentrate operations have been developed as a source of

foreign exchange in some countries that have limited domestic markets for apple juice. Concentrate operations can be easily established, with new concentrate processing technologies requiring minimal skilled labor to operate. Without domestic markets for the product, these nations are often price takers in the global market (Belrose, 1998).

Argentina and Chile are the two largest Southern Hemisphere producers of apple juice, with 1998-99 production of approximately 115 and 41 million gallons (single-strength equivalent), respectively. Like Poland, these two countries export most of their apple juice production.

Argentina, the leading producer of apple juice in the Southern Hemisphere, has 17 apple processing plants. Most processing (80%) is conducted from February through May, but plants operate year round using fruit from cold storage. The U.S. is the largest importer of Argentine apple juice. U.S. imports usually account for more than 95% of Argentine apple juice shipments (Rosa, 2000).

In 1998-99, 45% of the apple juice imported by the U.S. came from the Southern Hemisphere. Argentina and Chile were the leading sources. Argentina alone accounted for 28% of U.S. apple juice imports in 1998-99. About 21% of U.S. apple juice imports come from the European Union in 1998-99, with Germany and Italy as the leading sources in this region. Italy's exports to the U.S. increased substantially in 1998-99. As mentioned above, Germany is active in the reprocessing and re-exporting of apple juice, and therefore, a significant portion of juice imported from Germany originated from other sources, such as Poland. An additional 3% of U.S. apple juice imports came from Eastern Europe directly in 1998-99 (Rosa, 2000).

The fastest growing exporter of juice to the U.S. is China. In 1998-99, China accounted for 20% of apple juice imports to the U.S. (Rosa, 2000). Six years before, China accounted for less than 1% of the apple juice imported by the U.S. (Rosa, 1999). As noted, the table above does not include Chinese apple juice production.

China only recently began production of apple juice concentrate in 1983, when the first concentrate processing system was imported into China. Production has increased rapidly, especially in the late 1990's. In 1996, production was estimated to be 45,000 MT, approximately 61.0 million gallons single-strength equivalent (USAA, 1997). In 1999, production was estimated to be between 80,000 and 110,000 MT, approximately 108 million to 149 million gallons single-strength equivalent. Between 1996 and 1997, 18 new concentrate plants were built in China, and the country now has a total of 40 to 50 plants. Growth in capacity is projected at 20 to 25% by 2007 (USAA, 1998). At its current level of production, China is already one of the top global producers of apple juice, and if growth in China's production capacity continues as expected, China's production level will soon rival that of the U.S. and Poland.

Foreign investment has enabled rapid growth in the apple juice concentrate industry in China. Low prices for Chinese concentrate have had a major impact on prices for juice and apples globally. In the past few years, producing nations such as Argentina, Hungary,

and Chile dropped apple juice concentrate prices to compete with Chinese concentrate and maintain market share in the U.S. (Rosa, 1999).

Between 1995 and 1998, imports of Chinese concentrate to the U.S. increased by more than 1200% from 3,000 MT to 40,000 MT (4 million to 54 million gallons single-strength equivalent). During the same period, the price of Chinese concentrate imports dropped by more than 50% (Gentry, 2000[1]), and the Chinese share of the U.S. apple juice concentrate imports increased from 1.4% to 20.0% (Rosa, 1999 and 2000). The price for concentrate produced in the U.S. fell by about 50% over the same period and adversely affected profitability for U.S. processors of fresh pressed juice. It also contributed to a 64% decline in farm prices for juice apples (Gentry, 2000 [1]). In 1998-99, prices for juice apples dropped to as low as \$10 per ton, well below the costs of production (USAA, 1999).

The availability of low cost imported juice concentrate weakens the competitive position of some existing U.S. apple juice processors in the beverage market, especially fresh-pressed apple juice processors that compete directly with processors that primarily use juice concentrate. The traditional apple juice market is characterized by price sensitive consumers, and fresh-pressed apple juice processors suffer a competitive disadvantage with respect to cost in this market. Competition is heightened by the ease of entry into the market. Low cost concentrate lowers entry barriers for packaged goods companies to start new apple juice production. With a minimal investment in processing equipment, these companies can produce and package apple juice products by purchasing inexpensive concentrate (Belrose, 1998).

In 1999, a coalition led by the U.S. Apple Association responded to the market impact of Chinese apple juice concentrate with an anti-dumping petition requesting protective import tariffs. The coalition included several state grower organizations and several apple processors, including TreeTop, Bowman Apple Products, Knouse Foods Cooperative, and National Fruit. The petition, filed in June 1999, charged that Chinese concentrate was being sold at prices that were 91% below the costs of production. The petition requested an import tariff to offset the impact of dumping below market price concentrate in the U.S. market (USAA, 1999).

The petition received favorable rulings from the International Trade Commission and the Commerce Department, and a tariff of 52%, retroactive to November 1999, was imposed on imported Chinese concentrate in May 2000. This tariff applies to the Chinese companies responsible for 63% of U.S. imports from China and for any increases above current import levels. The remaining Chinese exporters were assessed tariffs from 0% to 28%. The tariffs will remain in effect for a period of five years, after which they are renewable (USAA, 2000). The tariff rate can be recalculated annually based the previous year's price data.

Even before a final ruling was issued, the anti-dumping petition affected the juice market. Because retroactive tariffs were expected by the industry, many importers turned to other sources of apple juice concentrate. The U.S. Apple Association reports that imports of Chinese concentrate dropped by 77% during the year after the petition was filed

(USAA, 2000). However, after the tariffs were set in May 2000, Chinese imports began to rise again (Warner, 2000). Furthermore, the Chinese concentrate producers filed an appeal to the tariff decision with the U.S. Court of International Trade in July, 2000.

The effect of low-cost apple juice concentrate on grower prices is not a new issue in the industry. In the mid-1980's, growers attempted to gain International Trade Commission (ITC) protection from low concentrate prices on the world market. In 1984, as in the recent market, farm prices for juice apples dropped below the costs of production. An ITC case, however, was defeated due to concerns about the effect of trade restrictions on consumer prices for juice and cider (Baden, 1986).

Although the U.S. apple growers have gained a reprieve from the effects of low-cost Chinese concentrate, the protection gained will likely not be long-term. Continued globalization of the industry can be expected, as well as heightened competition. Apple growers will have to continue to cut costs as well as provide value-added features or services to compete with low-cost concentrate in today's global market.

Summary

The last quarter century has been a period of rapid growth in the U.S. apple juice industry. During this period, production of apples for juice and cider increased by 136%, although in recent years, growth appears to have leveled off. During the past 25 years, the greatest growth in the juice and cider industry has occurred in Washington and California, which together currently account for 58% of U.S. juice and cider apple production.

New York State production of juice and cider apples has increased by 19% over the past 25 years, but the state's share of the juice and cider apple market has decreased from 17% to 9% over the same period. Other eastern states have experienced similar declines in market share.

During the past two decades, prices for juice and cider apples in the U.S. have failed to keep pace with inflation and increases in production yields have not compensated for the decline in real prices. Furthermore, as the industry becomes increasingly global, U.S. apple growers must compete with suppliers of low-cost apple juice concentrate from around the world.

In the U.S., over 50% of the nation's apple juice supply has been imported since the mid-1980's. Most U.S. imports are in the form of non-frozen apple juice concentrate. The largest exporters of apple juice to the U.S. are Argentina, Chile, Germany, Italy, and China. Imports from Germany include re-exported Eastern European juice, especially from Poland.

China currently accounts for about 20% of U.S. apple juice imports. Chinese production capacity has increased greatly over the past decade, and continued growth is projected. Low prices for imports of Chinese concentrate to the U.S. have put downward pressure on U.S. grower prices for juice apples. U.S. growers have argued that Chinese concentrate prices are below costs of production for apple juice, and recently, a successful

anti-dumping petition has led to the imposition of protective tariffs charged against imports of Chinese concentrate. The suit is currently being appealed by Chinese concentrate producers.

The anti-dumping petition is providing temporary relief to U.S. apple growers from the impact of low-priced concentrate. However, as in the rest of the apple industry, a sustained situation of oversupply continues to create adverse financial conditions for U.S. apple growers in apple juice markets. In the long-term, in order to compete in the changing and highly competitive global market, successful growers and fresh-pressed juice processors will have to focus on cost-cutting and providing value-added features.

Section III

U.S. Fruit Beverage Industry and Market

Considering apple juice and cider in their competitive context is critical in developing effective marketing strategies. Apple juice and cider products are sold in the highly competitive and constantly changing consumer market for beverages. The following quotes from a recent survey of juice processors indicate the need for competitive strategies focused on marketing and distribution in the broad context of the beverage industry:

- “Yesterday, I was in the apple business; today, I am in the juice business; tomorrow, I will be in the beverage business.”
- “Juices have gone from a product I sold, to an ingredient in a beverage I market.”
- “The juice business today is more about computers and distribution than juices and production.” (Tillotson, 2000)

The previous section of this paper focused primarily on the raw product supply markets for juice and cider. The next two sections focus on the markets for the final products. A thorough assessment of the market for apple juice and cider requires consideration of the broader beverage market to obtain a full understanding of the competitive environment. The competitive context for these products is reviewed in this section. Information is provided on the market for fruit beverages in the U.S. Additional information is provided on the broader consumer markets for beverages. This section also describes the structure of the fruit beverage industry in the U.S.

U.S. Markets for Fruit Beverages

The fruit beverage market can be divided and categorized in several ways. In this paper, two important distinctions are made. First, fruit beverages are classified by juice content into categories including juices, which are 100% juice, and drinks, which are not 100% juice. Among fruit drinks, some products contain some real juice, and others have no real juice content. This distinction is made in some places in this paper because data sources differ in what is included in this category. Classification by juice content is important because the fruit drink category has experienced rapid growth in recent years. Second, this paper classifies products by storage method: refrigerated, aseptic, shelf-stable (bottled and canned), and concentrate (frozen and shelf-stable). Storage method is an important classification in understanding the different sectors of the market.

In the U.S., the market for fruit beverages, including juices and fruit drinks that contain some real juice content, was \$12 billion in 1998. Between 1994 and 1998, the market grew at a rate of 2.3% annually (Market Looks, 1999). Juice accounted for a little over half of sales in the category in 1997. In dollar sales, the market for juice grew slowly between 1991 and 1998, at a rate of less than 1% annually. The market for fruit drinks grew rapidly during the same period, at an average rate of over 6% annually (BTA, 1998). In 1999, dollar sales of juice increased by 5.5%, while dollar sales of fruit drinks increased

by 4.2%. However, in 1999, growth in the volume of fruit drink sales (2.0%) outpaced volume growth for juice sales (1.3%) (Prince, 2000 [2]).

In the market for juice, major drivers of change are citrus prices, apple juice concentrate prices, and consumer trends (BTA, 1998). Recent growth has been driven by innovations in flavors, packaging, and food safety ("Juice Continues", 1999). Publicity given to health benefits has also boosted sales of some juices. For example, in the late 1990's, demand for purple grape juice was stimulated by news that the juice contained high antioxidant levels that can help to prevent heart disease.

Fruit juice sales generally benefit from consumer trends that favor healthy products. However, in recent years, despite consumer interest in healthy products, the largest growth sector in the juice industry has been fruit drinks, products that are not 100% juice. Rapid growth in this sector in the 1990's was fueled by single-serve package sizes, innovative and attractive packaging, new flavors, and flavor combinations. Juice-based beverages are distributed widely in retail grocery stores, convenience stores, and food service operation. They are readily available to consumers, and they currently dominate the single-serve juice market. The size of the fruit drink beverage market doubled between 1985 and 1995, and it may do so again by 2006 (BTA, 1998).

As described above, fruit drinks do not contain 100% juice. Labeling regulations require that the products contain at least 2% juice to be labeled as containing juice. Although consumers remain interested in real juice content, recent trends indicate that they are willing to give up health considerations for the new packaging and flavors offered by fruit drinks.

While fruit drinks appear to dominate the single-serve fruit beverage category, in the late 1990's, 100% fruit juices began to regain share lost to these beverages as some "New Age"¹ brands, which had previously focused on fruit drinks, introduced 100% juice products. Also, some traditional 100% juice companies introduced their products in single-serve sizes. The combined market for juice and fruit drinks that contain some real juice is projected to grow by 11% from 1998 to 2003 (Market Looks, 1999).

Other growth sectors in the fruit beverage market are functional beverages and fresh juices. Functional beverage products are juices and fruit drinks enhanced or fortified with vitamins, minerals, and herbs. Fresh juices are refrigerated, not-from-concentrate, 100% juice products, usually with a high price point (Market Looks, 1999).

In the beverage market as a whole, recent growth markets include ready-to-drink teas, sports drinks, and bottled water. Ready to drink teas had annual sales of about \$450 million in the late 1990's. Growth in that segment appears to be slowing. In 1997, sports drinks had a U.S. market of almost \$1.7 billion, and the category continues to experience strong growth (BTA, 1998). Bottled water sales have increased by 400% over the last 15 years to annual sales of \$3 billion ("Bottled water", 1999). In general, noncarbonated

¹ "New Age" beverages are usually single-serve drinks with attractive design and graphics and a somewhat "anti-establishment" positioning (Market Looks, 1999).

drinks have the greatest growth potential in the current market. In the 7-Eleven retail chain of over 5000 convenience stores, about two-thirds of the cooler space allotted for nonalcoholic beverages is filled with noncarbonated drinks, including bottled water, juices, juice drinks, and sports drinks. A marketing manager for the retail chain says that innovation in noncarbonated drinks, as well as a lack of innovation in carbonated sodas, has driven interest and growth in the category. Growth in sales of noncarbonated drinks is expected to account for as much as 50% of total beverage industry growth over the next five years (McKay, 2000).

About 70% of juice and fruit drinks that have some real juice content are sold in retail food stores. The other significant distribution channels are vending machines (13%), convenience stores (7%), mass merchandisers (3%), and drug stores (1%). Vending has experienced recent growth as new machines that can handle larger packages and glass bottles have become available. Convenience stores sales have a higher proportion of "New Age" fruit drink products than other market channels (Market Looks, 1999).

Convenience has been a major driving factor in the beverage industry in the past several years. As noted above, fruit drink sales were boosted by their wide availability in single-serve packages. Growth in the market for immediate consumption beverages, those consumed within a half-hour of their purchase, has led to shifts in packaging and product distribution throughout the beverage industry. Beverage sales in vending, foodservice, and fast food chains have all been boosted by this trend. Soft drinks account for almost half of the immediate consumption market (Prince, 2000 [1]).

Recently, much attention has been given to the growing role of foodservice in food and beverage distribution in the U.S. With U.S. consumers currently spending almost half of their income on meals away from home, the foodservice sector is an important market. When considering the foodservice market, however, it is important to distinguish between dollar sales and the volume of food and beverage purchased in this sector. By volume, about 13% of U.S. fruit juice is distributed through foodservice markets (McDonald, 1999).

By storage type, sales in the juice market sales are estimated to be split with about 44% in shelf-stable/reconstituted, 23% in fresh, 33% in frozen in 1998 (BTA, 1998). Sales of frozen juices are dropping as more convenient juice products have become available to consumers in the form of refrigerated, shelf-stable, and aseptic juices.

In recent years, shelf-stable, bottled juices have become very attractive to consumers. Shelf-stable bottled juices offer a wide variety of sizes, packages, and products, and this market is growing. In 1998, the total shelf-stable bottled juice market was \$3.4 billion in sales, an increase of 6.6% from the previous year. Shelf-stable aseptic juices have also experienced growth. Sales of aseptic juices increased by 6.2% in 1998 to \$673 million and increased by over 10% in 1999 (Theodore, 1998, "Juice Continues", 1999).

The shelf-stable, canned juice market is declining. In 1998, sales of canned juice decreased by 4.6%. While overall canned juice sales dropped, sales of canned juice increased by 35.7% at mass merchandisers in 1998 (Theodore, 1998). The overall decline

in canned juice sales is probably due to a shift in consumer preferences toward juices packaged in PET plastic over cans in the shelf-stable juice category.

New shelf-stable juice concentrates offer a convenient alternative to frozen concentrates, but their success has been mixed. The total market for these products was about \$99 million in 1998, and while dollar sales grew in 1998, the total volume of product sold decreased (Theodore, 1998). Shelf-stable concentrate may not be convenient enough for U.S. consumers, relative to the other types of juice products available.

Fresh juices have experienced the largest gains in the juice market in the past few years, and this segment will likely continue to be an important focus of growth in the juice market. Refrigerated juices had sales of \$4.0 billion in 1999, up more than 8% from the previous year ("Juice Continues", 1999).

U.S. Beverage Consumption Trends

Per capita consumption trends for the U.S. beverage industry are summarized in Figure 6. This figure is based on U.S. Department of Agriculture and U.S. Department of Commerce data. The fruit juice data do not include the full-range of fruit beverages; fruit drink beverage data is not included in this total. A 1999 Beverage World article reports that in 1998, U.S. consumers drank an average of about 9 gallons of juice and about 6 gallons of fruit beverages per year (Prince, 1999).

Figure 6 also does not include data for sports drinks. Consumers drank an average of 1.9 gallons of sports drinks in 1997 (Beverage World, 2000).

Between 1987 and 1997, U.S. consumers increased their fruit juice consumption by about 1.4 gallons per capita. During this time, they increased their consumption of fruit drinks by about 2 gallons per capita (BTA, 1998). Consumption of milk, coffee, wine, beer, and spirits declined between 1987 and 1997. Soft drink consumption increased by almost 8 gallons per person over the same period.

More recent data indicate growth in consumption of bottled water, soft drinks, and sports drinks. In 1999, consumers drank an average of 15.5 gallons of bottled water, 55.9 gallons of soft drinks, and 2.3 gallons of sports drinks (Beverage World, 2000).

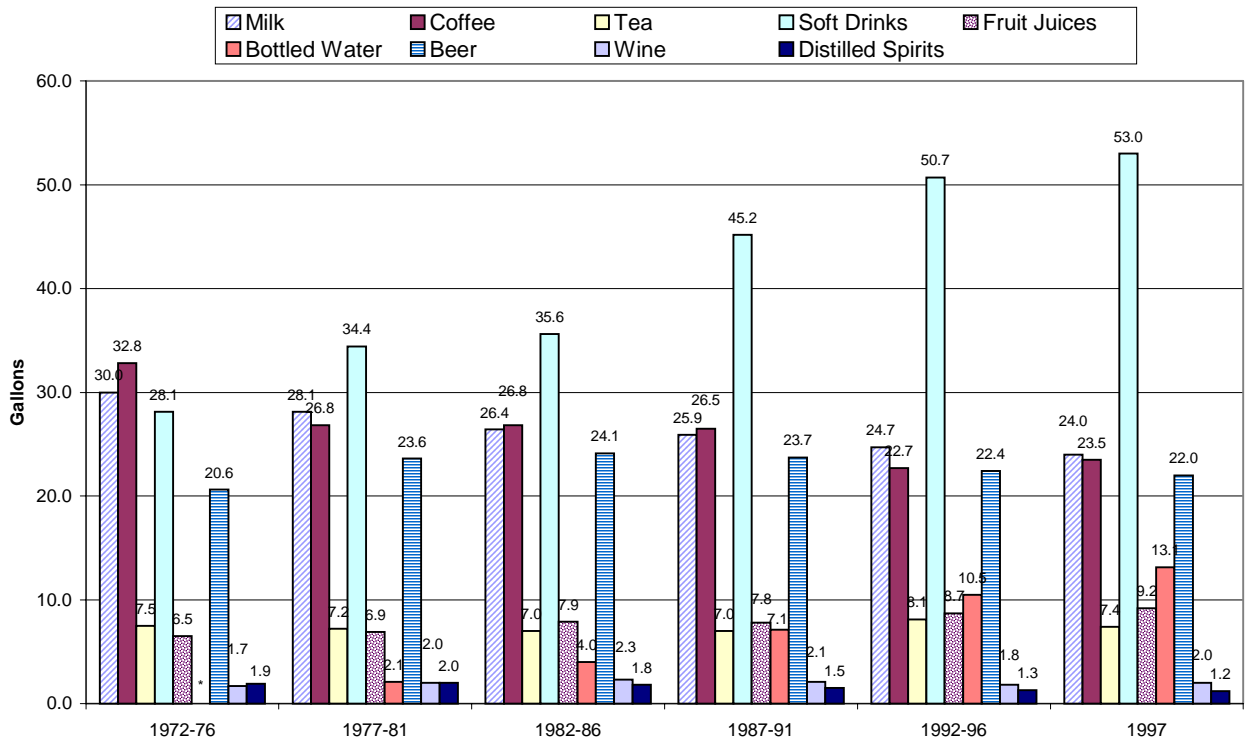
In the U.S., juice drinkers are a broad market that includes most consumers. Consumers in the Northeast region spend the most on fresh and shelf stable juices. Consumers in the Western region of the U.S. spend the most on fruit drinks and frozen juices. As might be expected, spending on juice increases with consumer income. Consumers in the 35-44 year old range spend the most on shelf stable juices and fruit. Ethnically, African Americans and Hispanics in the U.S. spend the most per capita on fresh and shelf-stable juices, and Hispanics spend the most per capita on frozen juices, vegetable juices, and juice drinks (BTA, 1998).

Generally, among consumers, apple and grape juices are favored by children, while cranberry juice appeals to older consumers. Children are the leading consumers of apple juice in the U.S. Children's consumption of apple juice has been estimated at half of the total apple juice consumed in the U.S. (Market Looks, 1999).

Because consumers have less time available for food preparation, they are more interested in convenient foods. They also have a high level of interest in healthy products. Reconciling the need for both health and convenience can be difficult. Juice can appeal to consumers by fulfilling both of these needs with one product. Juice is both healthy and convenient. Successful products in the coming years will likely be those that offer good nutrition, possibly with vitamin fortification, convenient ready-to-drink packaging, and a fun experience.

In general, juice consumers are becoming older and more knowledgeable. In industrialized nations, populations are getting older on average. While one in seven people in industrialized nations are now over age 65, by the year 2030, one in four people in industrialized nations will be over age 65. An aging market presents an opportunity for the juice industry, which offers healthy products. In terms of knowledge, consumers have greater access to information about products and use this information in evaluating products and making purchases. Juice processors should expect to fulfill consumers' demands for product information (Tillotson, 2000).

Figure 6: U.S. Per Capita Beverage Consumption: 1972-1997



Source: Putnam and Allshouse, 1999

* No bottled water data collected during this period.

Fruit Beverage Industry Structure

In the fruit beverage market, one to two companies tend to dominate in each juice flavor. For example, PepsiCo's Tropicana and Coca-Cola's Minute Maid currently lead the U.S. orange juice market. The leaders in fruit drink products are Procter and Gamble (e.g., Sunny Delight, Hawaiian Punch) and Coca-Cola (e.g., Hi-C). In cranberry juice, the industry is led by Ocean Spray and Northland. In apple juice, Mott's and TreeTop are the market leaders (Market Looks, 1999).

Overall, PepsiCo held over 15% of the U.S. fruit beverage market (including juice and fruit drinks that have some real juice content) at the end of 1997, after its purchase of Seagram's Tropicana brands. Coca-Cola held about 14.4% share. Private label juices and fruit drink products held 18.9% of the market in 1997 (Market Looks, 1999).

Large juice manufacturers in the U.S. are feeling the effects of food industry consolidation. When retail and foodservice sector customers consolidate and form larger firms, they gain greater bargaining power. Some juice manufacturers are responding to this pressure with their own restructuring. In 1999, for example, Minute Maid streamlined its distribution and sales network and greatly reduced the number of brokers it uses to sell its products ("Juice Continues", 1999). In 2000, juice makers Odwalla and Fresh Samantha merged to create a national leader in the super-premium refrigerated juice category. In the private label category, the nation's leading private label juice manufacturer, Cliffstar, based in Dunkirk NY, has been aggressively pursuing a strategy of expansion through acquisitions. In the past few years, Cliffstar has purchased the private label juice operations of Speaco, Northland Cranberries, Crosby Food, and Carolina Products. In New York State, one major juice processor, Seneca Foods, has exited the industry to focus its resources on other product lines. Success in the juice industry will be greatly affected by a company's ability to compete effectively with the new large industry players.

Competitiveness in this industry is also driven by advertising and promotion. Juice manufacturers invest substantial resources in advertising and promotion. The juice industry spent \$277 million in advertising in 1997 (Market Looks, 1999). Brand image is an important selling feature for many well-established and dominant brands in this sector, such as Welch's, Minute Maid, Mott's, and Ocean Spray. New juice and fruit drink products entering the market need to create a strong and appealing image to compete successfully with existing brands and low-cost private label products. New products have some advantage to the extent that novelty is an important selling feature when trying to reach young consumers in this market.

Promotion in the juice industry spans a wide range of techniques in addition to traditional media advertising. Cross-promotions, coupons, promotional packaging, in-store promotions, television and movie tie-ins, celebrity endorsements, sweepstakes, and sports sponsorships are all used by juice manufacturers.

Innovation is another major factor in the success of juice and fruit drink products. To an extent, the industry mimics the fashion industry in the importance in this respect.

Innovation and change are critical factors in each industry. New product research and development is important to success in this highly competitive market.

According to an annual survey of beverage manufacturers, most juice companies have an on-site R&D department and half of the juice companies surveyed contract out some R&D work (Penn, 1999). The survey included companies of all sizes ranging from under \$1 million to over \$100 million in annual sales. Partnerships with suppliers to conduct new product research are common in the juice industry. The survey showed that among beverage companies, juice manufacturers have the highest rates of new product introductions with about 9.4 new products per company in 1998. They also have the fastest new product development cycles in the beverage industry, an average five months and three weeks to bring a new product to the market (Penn, 1999). While these data indicate the rate of new product introduction, data were not available to gauge the success rate of these introductions.

Innovation comes in many forms in the beverage industry, including new ingredients, new packaging, new processing methods, new design, and new promotions. Successful innovations appeal to consumer needs and interests, such as convenience, health, food safety, and gratification.

Recent innovations in juice packaging offer some of these benefits. For example, VeryFine's new VeryFresh PET bottle with an oxygen barrier layer construction provides product safety and freshness almost as well as glass does. In the past few years, several juice companies have adopted plastic bottles that provide molded hand grips for ease in handling.

Stand-up pouch packaging is quickly becoming popular and increasing sales in many food and beverage products, including juice and fruit drinks. The packaging allows for appealing colors and graphics and offers convenience in its lightweight and easy to grip form. Aseptic filling and sealing of pouches provides a 10-month non-refrigerated shelf-life. Pouch packaging particularly appeals to young consumers in the "tween" group, ages 9 to 14. Pouch packaging has recently been adopted in the juice category by Minute Maid and Hi-C.

Summary

Growth in the market for fruit beverages was focused in the fruit drink category in the 1990's, but it appears that fruit juices may be beginning to regain share lost to fruit drinks in the 1990's. Growth sectors in the fruit beverage market include fresh juices and functional beverages. In the overall beverage market, growth sectors include ready-to-drink teas, sports drinks, and bottled water.

Convenience and innovation are driving factors in the beverage industry. Convenience has driven consumer interest in shelf-stable bottles of juices and fruit drinks, especially those packaged in PET plastic. The drive for convenience has also led to declines in sales in the frozen juice concentrate category.

Novelty is an important selling feature in the beverage industry, and successful fruit beverage producers are frequent innovators. Juice companies generally have a high level of investment in research and development and introduce new products to the market more frequently than other beverage companies.

Looking forward, the fruit beverage industry, like other food and beverage manufacturers, faces the pressures created as retail and foodservice customers consolidate and gain greater bargaining power. Success will depend upon the ability to compete effectively with large industry players.

Section IV

U.S. Market for Apple Juice and Cider

Apple juice and cider products are marketed in the competitive environment of the juice and fruit beverage industry described in the last section of this paper. In this section, specific data and trends for the apple juice and cider industry are summarized to provide an overview of the market for the products in the U.S.

Consumption Trends

Consumption of apple juice in the U.S. increased rapidly during the past 25 years and leveled off in the late 1990's (see Figure 7). In the period 1997-1999, U.S. consumers drank an average of 1.67 gallons of apple juice per person annually (see Figure 8). This amount is equivalent to about 20 pounds of apples per person per year.

Figure 8 compares apple juice consumption to consumption trends for orange juice and all juice over the past 20 years. During this period, apple juice consumption increased by 82%, while orange juice consumption increased by 20%. Total juice consumption increased by 26%. Apple juice currently accounts for about 19% of all juice consumption in the U.S., while orange juice accounts for 63%. Despite the rapid overall growth in apple juice consumption during the 20 year period, consumption declined slightly over the most recent period between 1994-96 and 1997-99.

Apple Juice and Cider Sales

Apple juice is a major product in the shelf-stable, bottled juice market. Sales of shelf-stable, bottled apple juice increased in the late 1990's. In 1998, apple juice had a share of about 16% of the shelf-stable, bottled juice market. Sales increased to \$529 million in 1998 and increased again to \$563 million in 1999. These figures do not include shelf-stable cider, which had sales of \$74.3 million in 1998 and \$81.2 million in 1999 (Theodore, 1998, "Juice Continues", 1999). The shelf-stable segment will likely continue to experience growth, but it will also remain highly competitive.

In the frozen juice concentrate market, apple juice has about a 7% share (BTA, 1998). Overall, the frozen juice concentrate market is declining, and sales of frozen concentrates, including apple, are likely to continue to decline in the coming years.

In the refrigerated juice market, cider is more prominent than refrigerated apple juice. Cider had refrigerated sales of \$42.9 million in 1999, while refrigerated apple juice had sales of \$11.2 million (Theodore, 1998, "Juice Continues", 1999). In total, refrigerated apple juice and cider sales are about 1% of the refrigerated juice market. While the refrigerated juice market will likely continue to grow rapidly, it will be highly competitive, with the world's two largest soft drink companies vying for shelf space for their refrigerated juice products (i.e., PepsiCo's Tropicana and Coca-Cola's Minute Maid).

Figure 7: U.S. Per Capita Apple Juice Consumption: 1976-1999

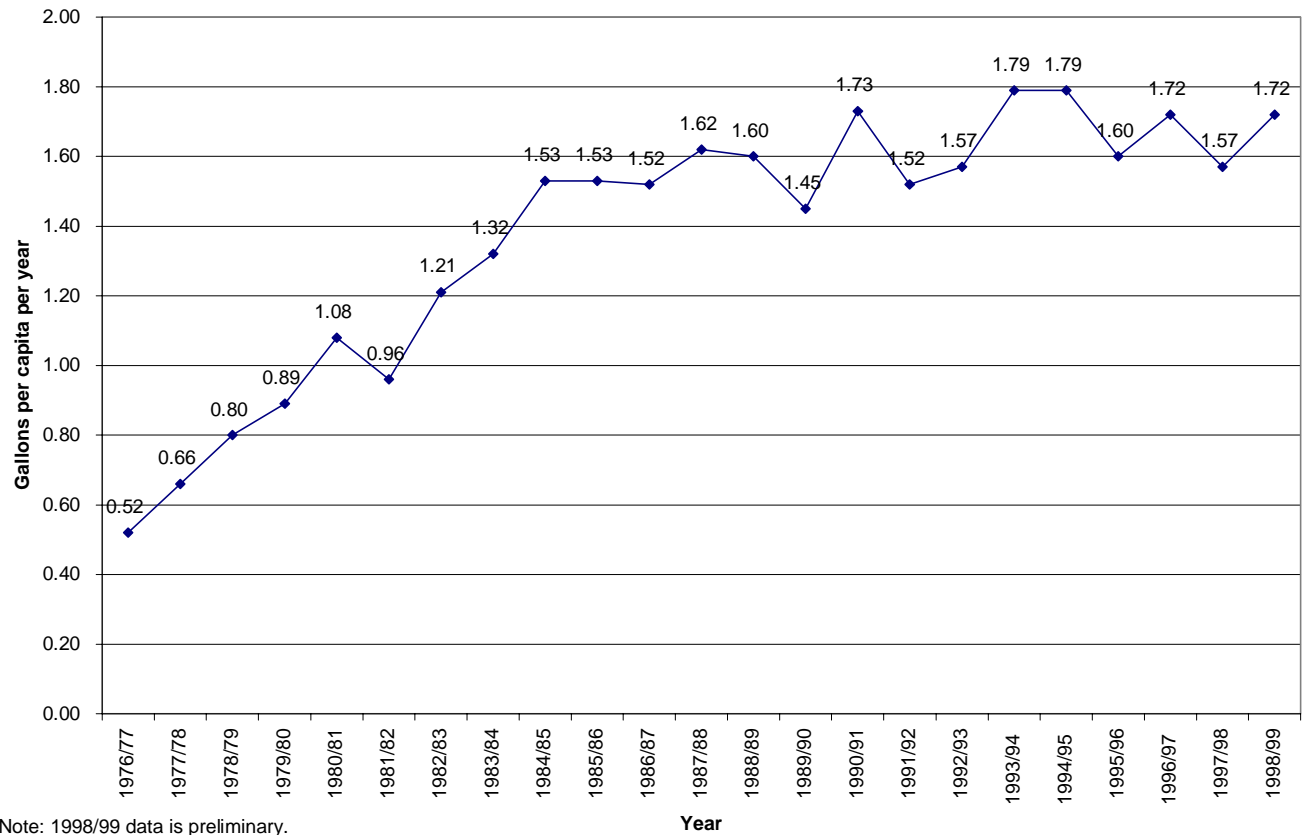
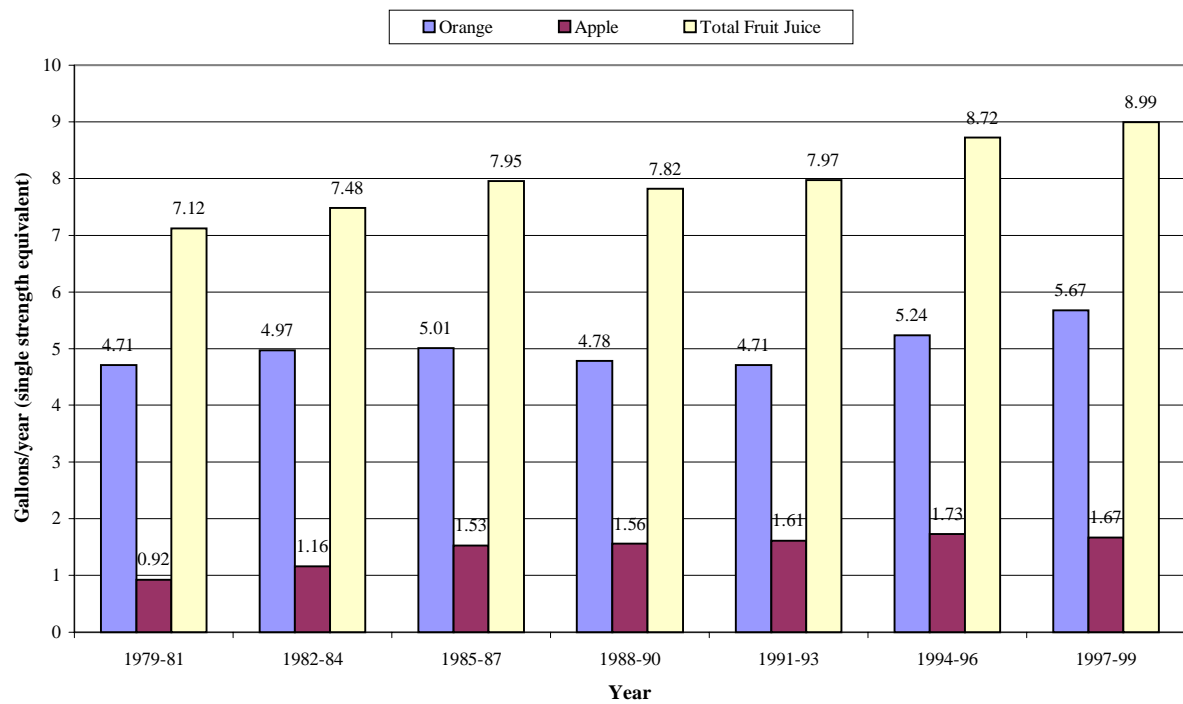


Figure 8: U.S. Per Capita Juice Consumption: Orange, Apple, and All Fruit Juice



Source: USDA ERS 1999

Apple Juice and Cider Products

Apple juice and cider products currently available in the U.S. market include a wide range of types, brands, and features. An understanding of this range of products illustrates the scope of the market and opportunities for new products. Products include not only those comprised entirely of the juice of apples, but also products blended with other juices and ingredients.

Cider products found in U.S. markets include:

- pasteurized cider
- unpasteurized cider
- blended cider (mixed with other juices, including raspberry, cranberry, grape, strawberry, rhubarb)
- sparkling cider
- blended sparkling cider (mixed with other juices)
- organic cider
- boiled cider (for use as a sauce)

Cider is commonly considered a seasonal beverage, but it is available in most places throughout the year. Unpasteurized cider is becoming less common in the U.S. because of recent consumer food safety concerns and new FDA regulations requiring warning labels for unpasteurized cider. Blended ciders are now being offered by several regional processors in the Northeast. Some products combine cider with fresh juices, while others use juice concentrates for the blended flavors. These products seek to take advantage of the beverage market trend favoring unique flavor combinations.

The most common type of cider packaging is an HDPE plastic container, in a variety of sizes (16oz., 32 oz., 64oz., 128oz.). Cider is also available in aseptic juice boxes. Sparkling ciders are generally packaged in 25 oz. glass bottles.

Apple juice is available in many product forms, including apple juice, juice blends (combined with other juices), and juice drinks (not 100% juice). Apple juice is also often a base for other juice products. Apple juice is available in a variety of types, including shelf-stable juices, refrigerated juice, non-frozen concentrate, and frozen concentrate.

Apple juice products include:

- fresh pressed apple juice (not-from-concentrate)
- apple juice from concentrate
- apple juice blended from fresh juice and concentrate
- varietal apple juice (e.g., McIntosh, Red Delicious, Golden Delicious, Granny Smith, Pink Lady)
- natural style apple juice
- refrigerated apple juice
- apple and fruit juice blends (mixed with other fruit juices, including blackberry, raspberry, cranberry, pear)
- apple and vegetable juice blends (mixed with other juices, including carrot and tomato)

- fortified apple juice (vitamin or mineral enriched, including vitamin C and calcium fortification)
- apple nectars
- organic apple juice and nectar
- apple and herb blends
- apple juice drinks (not 100% juice, often mixed with other flavors)
- frozen concentrate
- non-frozen concentrate
- organic frozen concentrate

Typical packaging for shelf-stable apple juice products is PET plastic containers in a variety of sizes (64 oz., 48 oz., 128 oz.). Some shelf-stable apple juices are also packaged in glass, and a few products are packaged in multi-serve cans. Single-serve apple juice products are packaged in PET plastic and glass bottles and aluminum cans. Frozen concentrate is usually packaged in paperboard containers with metal ends, although microwaveable plastic cans have recently been introduced in this category. Non-frozen concentrate is packaged in aluminum cans.

In addition to the markets discussed above, apple juice is also used in many products as a base ingredient. For example, many fruit juice blends and fruit drinks use apple juice as a base ingredient, but do not feature apple juice in the product name. Because of its low cost and natural sweetness, apple juice is often used as an ingredient in other products. Types of products in which apple juice is a base ingredient include:

- Fruit punch frozen concentrate
- Juice blends
- Juice smoothies
- Juice nectars
- Nutraceutical juices

As described in Section III, fruit drinks, which are not 100% juice, have recently risen in popularity in the U.S. beverage market. Also, juice and juice-based drink products that contain “nutraceutical” ingredients such as herbs and vitamins have been very popular recently. The size of the market for apple juice as a base ingredient is difficult to estimate, but these products are an important market for apple juice.

Apple juice is a commodity in the global market. Producers that wish to attain higher margins for the product must de-commoditize the product by developing value-added features. Many new apple products feature value-added benefits that distinguish them in the market.

A recent new product trend in the apple juice market is varietal juices. Varietal juices are a type of value-added product. This strategy is intended to appeal to sophisticated apple consumers who are familiar with different apple varieties. Several companies are now offering varietal apple juices:

- VeryFine offers shelf-stable varietal fresh-pressed apple juices in McIntosh, Golden Delicious, Red Delicious, and Granny Smith.

- Sun-Rype of Canada offers a 100% fresh-pressed refrigerated varietal apple juice in McIntosh, Gala, and Fuji. Sun-Rype developed its varietal apple juice product with the goal of appealing to adult taste preferences.
- E.W. Brandt and Sons, a grower-packer operation from Washington State, recently introduced an apple juice product featuring the new apple variety Pink Lady. The product is called Pink Lady Apple Nectar. The company plans to also offer Pink Lady varietal apple sauce and dried apples (Stover, 2000).

Value-added features are often incorporated into product packaging. Recent innovations in apple juice packaging include the new VeryFine oxygen barrier PET containers, mentioned in the previous section. Another packaging innovation was adopted by National Fruit (Winchester, VA) in late 1999. The new package is an asymmetrical bell design for a PET bottle. The design resembles an old-fashioned apple cider jug with a jug handle. National Fruit introduced this new package to attempt to capture consumers' attention with a bit of nostalgia in the supermarket aisles.

Fortified apple juices are a value-added marketing strategy to appeal to consumer's health interests. Generally, consumers do not perceive that apple juice offers significant nutritional value (McDonald, 1999). Therefore, fortification with nutrients may be important in attracting and retaining health conscious consumers. Old Orchard of Michigan has introduced a calcium enriched apple juice product. Calcium-enriched apple juice is also offered by Apple & Eve of Roslyn, NY. Fortified juices aim to appeal to consumers by offering a convenient nutrition solution.

Attempting to add appeal in apple juice's traditional market of young children, some major apple juice makers have incorporated popular children's television characters into product packaging through license agreements. For example, Mott's offers "Blue's Clues" apple juice to take advantage of the popularity of this animated children's television show. Apple & Eve launched a line of Sesame Street juices in 1999, including Big Bird's Apple. The Sesame Street products are also fortified with vitamin C and calcium. Among organic products, New Organics is offering a cherry apple juice as a part of a new Richard Scarry line of juices. These products are licensed to use the characters of popular children's book author Richard Scarry, whose stories are featured on a daily Nickelodeon television show.

A recent new product introduction by VeryFine, Apple Quenchers, is an apple juice drink (30% juice) that is blended with other fruit flavors. The product is offered to consumers as a sport drink type of product. The product seeks to address a specific consumer use occasion and needs for refreshment and sports nutrition.

All of these new products offer specific benefits that attempt to distinguish the products from commodity apple juice. This marketing strategy requires that the product offer a clear benefit to consumers that justifies associated price premiums. However, products should not overwhelm the consumer with too many benefits. Moreover, offering "me-too" benefits that mimic other products may be necessary to compete with existing products, but they will not distinguish the product in the market. Innovative features are needed to distinguish a product in the crowded market for juice and fruit drinks.

Apple Juice Consumers

In general, juice drinkers are a broad market that cuts across demographic lines to include most consumers. However, typical apple juice consumers can be profiled as a more specific subset of this group. Apple juice consumption is skewed toward families with young children (Mediamark, 1995, McDonald, 1999). Apple juice is also more popular with ethnic minorities (African American, Asian, and Hispanic) than with Caucasian Americans (McDonald, 1999). Generally, apple juice purchases increase with education level and the income of the consumer. Purchases are highest among 25-34 year olds. Regionally, apple juice consumption is highest in New England and lowest in the Southeast (Mediamark, 1995). Overall, the most important factor in purchase behavior for apple juice is the presence of young children in the household.

In 1997, the Processed Apple Institute held consumer focus groups to gauge consumer attitudes about apple juice. In these groups, consumers indicated that they do not perceive any distinct health benefits from apple juice. Generally, they reported that they buy apple juice for children because it is not acidic and because it has a positive laxative effect. They perceive apple juice to have a higher sugar level than other juices, and they felt that most adults do not like apple juice because it is too sweet. Consumers in the focus groups also said that they have no reminders to buy apple juice. Apple juice is not well advertised compared to other juices. Among juice companies that conduct advertising, 89% do not produce apple juice (McDonald, 1999). The focus groups participants said that if their children do not ask for apple juice, they do not buy it. Other than as a juice for young children, apple juice lacks a definitive image or positioning in consumer's minds.

Summary

Apple juice and cider consumption increased rapidly over the past 25 years, but consumption appears to have leveled off in the late 1990's. Apple juice is prominent in the shelf-stable bottled juice segment, but it is not a major product in the refrigerated juice segment. Both of these segments are expected to continue to grow, and both are also highly competitive.

Apple juice is a commodity, and attaining higher product margins with apple juice products requires the development of value-added features. Currently, apple juice producers are offering features including varietal juices, packaging innovations, nutrient fortification, and children's appeal.

Like juice consumers in general, apple juice consumers are a broad demographic group, but certain trends can be distinguished. Apple juice is somewhat more popular with ethnic and racial minorities than with Caucasian Americans, and apple juice consumption generally increases with the level of education and income of the consumer. The most important factor influencing the purchase of apple juice, however, is the presence of children in a household.

Apple juice marketers face difficult competitive challenges in the juice and fruit drink market. Recent focus group results indicate that apple juice lacks a clear positioning in consumers' minds. Generally, the focus group results indicate that consumers do not perceive distinct health benefits for apple juice. They buy it primarily for their children's consumption, and when children do not ask for apple juice, they no longer buy it. Apple juice is not well advertised to consumers, and a lack of an active advertising presence is a competitive disadvantage for apple juice in the highly competitive beverage market.

Section VI **Strategic Analysis**

The following section provides a strategic overview of the apple juice and cider industry. First, an industry analysis model is applied to assess the driving forces of competition in the industry and the application of competitive strategies. Next, marketing strategies appropriate to this industry's competitive context are discussed. Then, a number of specific market strategies for this industry are evaluated. Finally, the implications of the industry strategic analysis for apple growers are discussed.

Competitive Factors

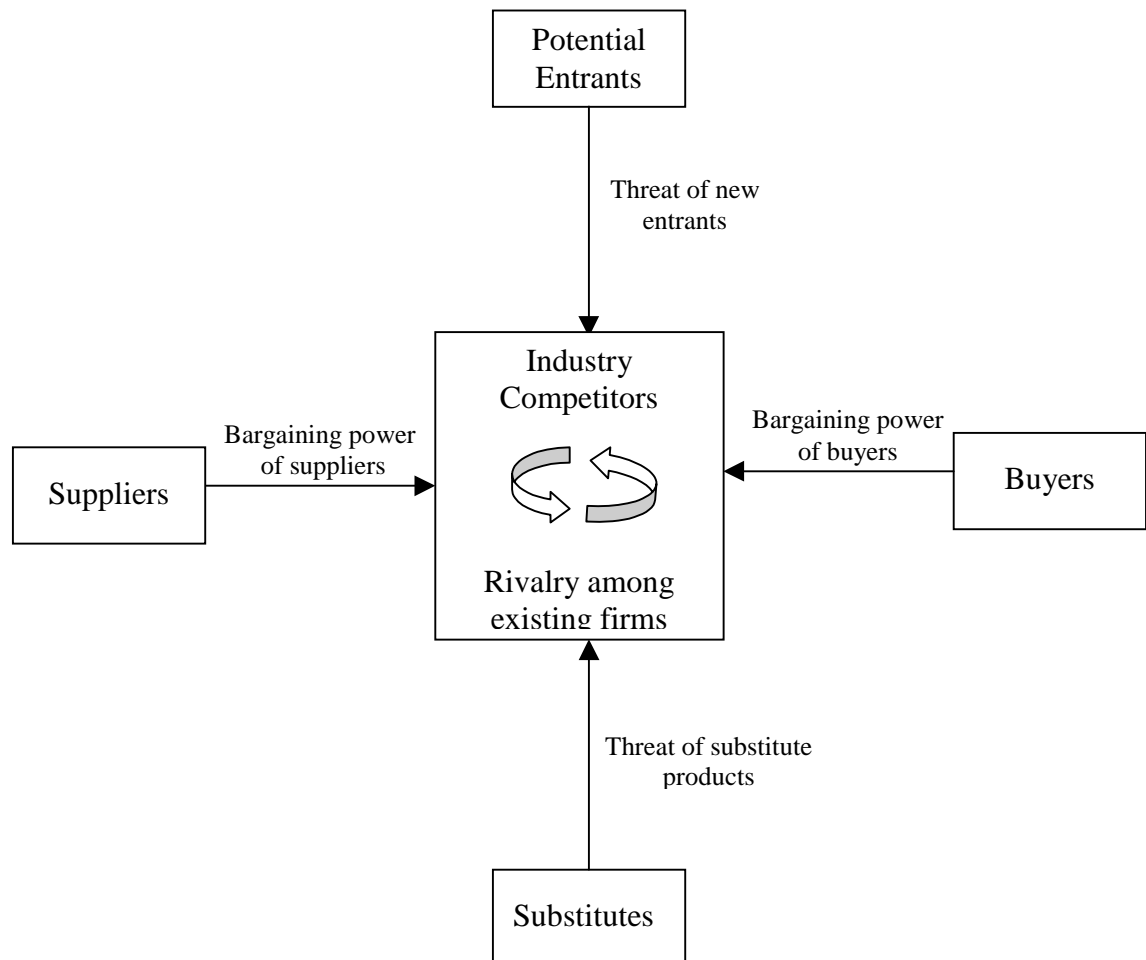
An analysis of the apple juice industry can be organized using the framework suggested by Porter for identifying and assessing the competitive forces in an industry (Porter 1980). This framework identifies five types of factors that drive competition (see Figure 9): threat of new entrants, threat of substitute products or services, bargaining power of suppliers, bargaining power of buyers, rivalry among existing firms. The framework is applied to the apple juice industry below.

Potential Entrants: The apple juice market does not have substantial barriers to entry for existing packaged goods manufacturers. Producing apple juice from concentrate does not require specific manufacturing knowledge or equipment, and therefore most beverage manufacturers can easily add this product to their lines to take advantage of shifts in concentrate or retail prices. This ease of entry tends to intensify competition among commodity apple juice producers. Barriers to entry are more substantial for manufacturers that wish to enter the market with differentiated apple juice products. Differentiated products usually require specific production knowledge, strong marketing capabilities, good research and development support, and access to appropriate distribution channels. For example, fresh pressed, refrigerated juice requires access to and cooperation with distribution channel partners that can accommodate the short shelf-life of the product and reach target consumers.

Suppliers: Juice processors have a high level of bargaining power relative to their suppliers in this industry because of the commodity status of apple juice concentrate. Producers can easily substitute the use of juice concentrate for juice pressed from raw apples in many juice products, and as a result, prices for juice apples are held low by concentrate prices. Some seasonal variation in the market exists, particularly in the late summer when raw apple supplies are relatively scarce, but this effect is decreasing as a result of globalization and the availability of controlled atmosphere storage. Processors can assert their bargaining power by demanding higher levels of service from suppliers in deliveries, sorting, and documentation.

Differentiated suppliers are the only suppliers that are not price-takers in this market. A differentiated supplier provides a producer with a value-added raw product, such as specific apple varieties, high quality supplies, or environmental certification, for use in value-added consumer products.

Figure 9: Forces of Industry Competition (Porter, 1980)



Buyers: The bargaining power of buyers is a major factor affecting competition in this industry. Most juice is sold through retail food stores, an industry that has experienced tremendous consolidation in the past decade. Consolidated retail chains are exerting greater bargaining power with their suppliers. In some cases, they are demanding increased promotional efforts from suppliers. Many charge fees for access to retail shelf space and require suppliers to share the risks of new product introductions. Most retail chains directly compete with some processors by offering their own private label product lines. Private label products are appealing to retailers because they can earn an average of 25% greater profit on these products while offering their customers savings of 10 to 35% (Breyer, 1999)

Foodservice is an important market for food and beverage products, and it is growing as Americans increasingly spend more of their food budget on meals away from home. In the U.S., foodservice accounts for about 13% of the market for fruit juice (McDonald, 1999). Like retail food stores, foodservice distributors are also undergoing a consolidation trend in the U.S., and as these distributors grow larger, their bargaining power is enhanced.

Substitutes: The threat of substitute products is high in this industry. Apple juice must compete not only with other fruit juices and drinks, but with many other categories of beverages, including soda, bottle water, iced teas, and sports drinks. Consumer perceptions that the apple juice is mainly for children and that it does not offer distinct nutritional benefits create a competitive disadvantage for apple juice products. The development of apple juice products that offer more “adult flavor” (less sweet) may help to stimulate sales by expanding the consumer base for the product. Industry investments into research and promotion about nutritional claims for the product may be used to improve consumers’ perceptions about the health benefits of apple juice and make the product more competitive among other juices.

Rivalry: Competition in the U.S. industry is generally dominated by Mott’s and Treetop’s brands. The industry is mature with an emphasis on price competition among non-value added products. Slow growth and price competition intensify rivalry within the industry. Countering the effects of industry rivalry requires producers to de-commoditize their products and focus on the fastest growing segments of the market. Fresh refrigerated juice producers may be best positioned for this strategy in the industry.

Table 4 summarizes the competitive forces discussed in the analysis. In the Porter framework, these competitive forces result in three generic competitive strategies for industry participants to earn above average returns: low-cost leadership, differentiation, and focus.

Low-cost leadership is traditionally the dominant strategy in this industry. It requires tight cost controls and a low-cost distribution system. Profits are earned through high volumes and low costs. To an extent, low-cost leaders differentiate themselves from each other by their reputations for low cost, high quality, service, or other characteristics. The industry leaders, Mott’s and TreeTop, generally follow the low-cost leadership

strategy, as do other national juice manufacturers that offer apple juice products (Minute Maid, Tropicana).

TABLE 4: Competitive Analysis Summary

Competitive Force	Apple Juice Processor Position
Threat of Potential Entrants	Threat of entry by new competitors is high.
Bargaining Power of Suppliers	Most suppliers have relatively low bargaining power.
Bargaining Power of Buyers	Most buyers have relatively high bargaining power.
Threat of Substitute Products	Competitive threat of substitute products is high in the beverage market.
Rivalry among Existing Firms	Industry firms that do not de-commoditize their products face intense price competition in a mature market.

Differentiation is the strategy of offering a product that is perceived as unique. Profits are earned through the higher margins that can be obtained for value-added products and services. In the apple juice industry, Apple & Eve has followed a differentiation strategy by offering a product that is perceived as natural and high quality.

The focus strategy is used by companies that aim to serve a particular target market. An example in the apple juice industry would be a regional producer that seeks to serve regional buyers with a fresh juice product. For example, Zeigler's produces fresh cider to sell to East Coast retail food chains. Another example of a focus strategy is service specifically tailored to the foodservice industry. At least one upstate New York cider producer is following this strategy in school foodservice markets.

Following a clearly defined competitive strategy is important in a highly competitive market. Companies that choose to adopt one of these strategies will be most successful in achieving above average returns. A company that is stuck in the middle between these strategies will likely lose profitability and be less able to compete with companies that have more clearly defined strategies.

Mature Industry Marketing Strategies

The apple juice industry has the characteristics of a mature industry. Sales growth has slowed, and per capita consumption has stabilized and may be beginning to decline. Mature industries are usually characterized by intense price competition, profit erosion, and a shakeout of weaker competitors. Private label competition tends to increase in mature industries.

Many mature industries are dominated by a few large firms that are following the low-cost leadership strategy discussed above. The rest of the industry consists of niche and focused marketers. This model applies well to the apple juice industry.

In a mature market, the marketing objective is usually to maximize profits while defending market share. Marketing strategy options in a mature market include market expansion, product modification, and changes to the marketing-mix.

Market expansion strategies seek to increase the number of consumers or to increase the volume of a product used per consumer. One way to win new customers is to convert non-users, those who do not already use a product. Most apple juice consumers are families with children. A marketing strategy that targets new users outside of this group would attempt to expand the market by converting non-users. Other methods of expanding the consumer base are to enter new market segments (e.g., regional, demographic) and to win over competitors' customers. Increasing the volume of product used by consumers may be pursued by encouraging more frequent use, by encouraging higher volume usage at each use occasion, and by educating consumers about new or alternative uses of the product.

Product modification is a strategy to attract consumers by adding value through increased quality, new features, or improved aesthetic appeal. With apple juice, a new product feature might be calcium fortification or a new convenient and aesthetically appealing package.

Changes in the marketing mix are a common marketing strategy in the mature phase of a product. The marketing mix includes the basic tools of marketing: prices, distribution, advertising, promotion, sales force, and services. In the mature phase of a product, a firm may change how it uses marketing tools. For example, a firm may try to offer lower prices or increased levels of promotion. It may add to its sales force or place the product in new distribution channels.

Marketing mix changes, however, can be easily imitated by competitors and, as a result, may lead to heightened competition and further profit erosion. Therefore, expanding the market and adding value to a product are more effective strategies to gain competitive advantage. The following section suggests and evaluates a number of specific applications of these strategies in the apple juice industry.

Industry Outlook

The apple juice industry is becoming more price competitive as key buyers consolidate and the supply of concentrate and juice apples remains plentiful and inexpensive. To escape the intense rivalry of price competition, the best marketing opportunities lie with new products that are differentiated as well as focused marketing strategies that meet the needs of consumers (e.g., wellness, convenience) and specific customer groups (e.g., foodservice). Consideration must also be given to strategies for

expanding the market for apple juice to new consumers. The following are possible opportunities to enhance apple juice and cider marketing.

1. Fresh juice: Chilled fresh juice is the fastest growing segment of the juice industry. Sales of chilled juice are growing for most fruit juices. However, chilled apple juice is not well established in the market. Sales of chilled apple juice declined by 25% in 1998, but increased by 27% in 1999 (Theodore, 1998, "Juice continues", 1999).

Although the chilled juice market boom is relatively recent, apple cider is a chilled juice product with a long market history. Cider is usually marketed through the produce section, however, instead of the refrigerator case, where new chilled juice products are found. Retail placement of cider with other refrigerated juices may help to boost year-round sales of cider while consumer interest in fresh juice products is strong.

While this segment offers a growth opportunity, competition in the refrigerator case will be intense as a result of the presence of large international beverage companies, including PepsiCo and Coca-Cola, which both market chilled juice products.

In the chilled juice segment, quality and freshness are valued, expected, and rewarded by consumers. Producers should not enter this segment unless they can deliver a product with consistent quality. Year-round availability is also increasingly important in this segment in retail food chain stores.

In addition to flavor, food safety is also an important factor in this segment. For apple juice and cider, safety concerns were brought to the front of consumers' minds in 1996 when an E. coli outbreak linked to unpasteurized Odwalla apple juice caused the death of a Colorado girl and illness in 66 others. Furthermore, recently adopted FDA regulations require prominent warning labels on all apple ciders that do not meet pathogen treatment standards.

Pasteurization is the standard treatment for fresh juice products, including cider. For some consumers, pasteurization unfavorably alters the flavor of fresh juice. Alternatives to traditional pasteurization are available. Flash pasteurization helps to keep juices tasting fresher. At the New York Agricultural Experiment Station, Professor Randy Worobo has collaborated with a Rochester-based firm, FPE Inc., to develop a UV treatment system for fresh juice that may provide fresher flavor and a lower cost alternative to pasteurization. In November 2000, the FDA accepted this technology as alternative to pasteurization for fruit juices.

Another treatment alternative in development uses carbon dioxide to extend the shelf-life of fresh juice while maintaining fresh flavor. This technology is being developed by Praxair, Inc. and the University of Florida Institute of Food and Agricultural Sciences.

2. Packaging: Adoption of new packaging innovations is critical in the beverage industry to provide value to consumers in the form of convenience, food safety, and

aesthetic appeal. Recent packaging innovations in apple juice products include “easy-grip” PET bottles, oxygen barrier PET bottles, and cider jug design PET bottles.

Pouch packaging appears ready to boom in the shelf-stable juice segment. Minute Maid and Hi-C have recently offered products packaged in pouches, and these products have met with great initial market success. Pouch packaging appears to be contributing to growth in the category for these products without cannibalizing sales from other package types (Rice, 2000). Pouch packaging provides consumers with aesthetic appeal and ergonomic convenience. The package is particularly appealing to young consumers in the “tween” age segment (between child and teenager), ages 9 to 14.

Packaging is a very important feature in the beverage industry. Packaging can effectively distinguish a product on the shelf, and it can offer various value-added benefits for which consumers are willing to pay a premium. For example, in the coming decade, innovations will include self-cooling and self-heating packages. Adoption of new packaging technologies is an important differentiation strategy available to beverage manufacturers.

3. Fortified products: A major consumer motivator is maintaining health and wellness, and products that provide the value-added benefit of vitamins, minerals, or herbal ingredients appeal to people seeking good nutrition. Although consumers understand the benefits of good nutrition, many do not incorporate well-balanced diets into their daily routine. Fortified products offer nutrition solutions to these consumers. Fortified juice products are particularly appealing nutrition solutions because they are available in convenient single-serve packages and consumers already perceive juice to be a healthy product.

Fortified products are a rapidly growing market in the U.S. Sales of fortified food and beverages increased by 54% from 1998 to 1999. In this market, fortified beverages are the second largest growth sector, behind fortified cold cereals. Consumers of fortified products tend to be young and female (Ahlberg, 2000).

Many apple juice products are fortified with vitamin C. Fortification with calcium and other “mainstream” nutrients could help apple juice products to compete with other fortified juice products, such as orange juice with calcium. Old Orchard Brands of Michigan and Apple & Eve of New York fortify their apple juice products with calcium. In Europe, beverage offering the combination of anti-oxidant vitamins A, C, and E are popular with consumers. Because consumers tend to lack a clear understanding of the health benefits of apple juice, fortification offers an opportunity to enhance the health image of apple juice products.

Fortification with herbal ingredients is another value-added strategy for beverages. Many “New Age” juice-based beverages already offer herbal combinations. Herbal juice products will probably not have broad-based appeal, however, and are better suited to niche market distribution.

Safety questions may soon be a public issue that could hurt sales of herbally enhanced food and beverage products, known as “functional foods.” The FDA does not currently regulate these products, and a recent U.S. General Accounting Office report strongly criticized the FDA for its handling of functional foods. The GAO report recommended increased regulation to provide greater assurances of product safety to consumers.

The marketing of fortified products presents some challenges with consumer dynamics. Products are being rapidly introduced to the market, and a wide range of products making health claims is now available. However, the variety and the multitude of purportedly health enhancing foods and beverage products can be confusing to consumers. Marketers that can build an image of credibility for their health claims will likely have the greatest success over time with consumers.

4. Adult flavor: Typical apple juice consumers are families with young children. The product is purchased by parents because the sweet flavor and low acidity appeal to kids. Parents also think that the product offers some nutritional benefits for their kids, but as mentioned previously, they lack a definitive understanding of the product’s nutritional benefits. In focus groups, consumers report that they remember liking apple juice as children, but they primarily associate the juice with children. The only adult association is seasonal use of cold cider in the fall or hot cider in the winter. The product does not have a distinct image among adult consumers. Other juices do not suffer this perception issue (McDonald, 1999). In the past, purple grape juice had a similar problem with consumer perception, but recent publicity surrounding the health benefits of this product has given purple grape juice a very positive health positioning in consumers’ minds.

Expanding apple juice consumption to more adult consumers will require the development of a product that appeals to adult tastes with less sweetness. One possibility is an apple spritzer, a popular product in Europe. This product combines soda or mineral water with apple juice to provide a thirst quenching beverage that is not too sweet or fruity. Sales of apple spritzers grew by almost 75% in 1995 in Germany (Bussien, 1998). Availability of apple spritzers in single-serve sizes would add the additional appeal of convenience.

5. Organic and other eco-labels: The market for eco-labeled foods is growing rapidly. The worldwide market for organic products was estimated to be \$10 billion in 1997 and expected to continue to grow due to global consumer interests in health and environmental concerns (USDA FAS, 1999). Although still a niche market, mainstream consumers are expressing an interest in these products, and packaged goods manufacturers are responding. In the past few years, large consumer product companies such as H.J. Heinz, Mars, and General Mills have added organic products internally and through the acquisition of natural foods companies.

Besides organic, eco-labels include IPM labels, such as those used by Wegman’s retail grocery stores and the Core Values program for fresh apples. IPM labels indicate that a product was grown using integrated pest management methods, which seek to minimize

pesticide applications. A 1996 survey of Upstate New York consumers indicates a favorable response to IPM labels and a willingness to pay a price premium for products with IPM labels (Pool, 1996). A national survey focused on eco-labeled fresh apples showed similar results. However, this survey also showed that 90% of consumers are unfamiliar with IPM, and that those who are familiar with IPM are also less likely to purchase IPM labeled apples (Blend and van Ravenswaay, 1998). Additional research is needed to understand the complexity of consumer response to IPM labeling.

Organic apple juice and cider and IPM apple juice products exist in the market, but most of these products are niche products with high price premiums. As organics and eco-labeled products become mainstream, an opportunity exists for products that can appeal to a broader market of consumers. Also, as these markets become more mainstream, retail food chains are carrying more organic and eco-labeled products in their stores. These chains demand an adequate and consistent supply on a year-round basis. As the market expands, organic marketers are becoming more skilled in meeting customer demands and providing quality products at lower costs. The market will continue to demand these services and offer competitive advantage to producers that can provide them.

Organic and eco-labeled products appeal to consumers through their basic interests in health and food safety. Environmental protection is another important benefit that consumers value in these products. Consumer interest in food safety and environmental concerns, as well as a general trend toward well-informed consumers, will likely drive increased demands for information about product ingredients. New methods to trace product origins from the orchard to the retail shelf are being developed by some juice and other food processors, and this trend is likely to continue. The implications for processors and growers will be far-reaching.

6. Varietal products: In the past few years, a few apple juice companies have introduced varietal apple juice products. These products feature specific apple varieties and appeal to sophisticated apple consumers that have developed preferences among apple varieties. They may help to expand consumption by appealing to adult tastes with varieties that offer alternative apple juice flavor profiles (e.g., more acidic). The consumer motivation to purchase varietal products is gratification through the pleasure and experience that their knowledge about apple varieties and the high quality of these products provides.

7. Nutrition: Creating consumer awareness of nutritional benefits is an important marketing strategy for the apple and apple products industry. It may be a necessary strategy to simply remain competitive in an industry where fruit and vegetable nutrition studies are frequently released and touted by industry organizations. Health claims for apple products have not been well-established or publicized in a market where there is substantial competition from the health claims of other fruit juices. Consumers do not appear to understand the health benefits of apple products, and in focus groups, consumers were not able to name any perceived health benefits of apple juice (McDonald, 1999).

Other juice categories have received significant volume gains in sales as a result of health claims. Purple grape juice is a good example. Welch's supported research into

cholesterol reducing benefits of purple grape juice and skillfully publicized the results to consumers. This publicity helped, in part, to boost Welch's 1999 sales by 20% (Reidy, 2000).

Apple juice industry leaders, including the Processed Apple Institute and the U.S. Apple Association, are beginning to develop health claims for apple juice products by supporting research and publicizing the results. Health claims research is primarily focused on the benefits of apple phytonutrient content. Benefits may include aid in prevention of heart disease, cancer, and oxidative damage to cells.

Nutritional research on apples is on-going at Cornell University. Researchers Marian Eberhardt, Rui Hai Liu, and Chang Yong Lee have recently completed a study of the effects of apple skin and flesh on human cancer cells. The combination of antioxidant phytochemicals in apples was shown to have cancer-fighting capabilities. The research showed that 100 grams of unpeeled fresh apple provided the antioxidant activity of 1500 milligrams of vitamin C (Eberhardt et al, 2000).

Apples offer a number of nutritional benefits to consumers: fiber to aid in protecting against heart disease and in controlling weight, potassium to aid in controlling blood pressure and protecting against stroke, and antioxidant phytochemicals that aid in fighting cancer, improving lung function, and protecting against heart disease. Communicating these benefits to consumers is a very critical marketing need. At this time, nutritional research may not be as much a value-added marketing strategy, as it is simply a necessary step to protect market share against loss to other fruits and fruit products, for which health claims are already well known by consumers. The impact of nutritional information will depend on the ability of the industry to successfully publicize research results to consumers, who may already feel overwhelmed with nutritional information on other products. Publicity should focus on simple health messages that will resonate with the familiar idea that "an apple a day keeps the doctor away."

8. Focus: The focus marketing strategy involves serving a particular market segment well, through low-cost, service, quality, or other characteristics demanded by that segment. School foodservice is one unique market segment that is well-suited to a focused strategy. In New York State, schools have been estimated to consume over 6 million bushels worth of apple juice annually. Most of this juice is currently produced from concentrate, but many school foodservice directors in the state have expressed an interest in purchasing fresh juice products from regional producers. Serving this segment requires offering the target market specified packages (4 oz. containers for juice) and adhering to specific bidding processes. At least one upstate cider producer is already focusing marketing efforts in this segment. Additional opportunities for focused marketing may exist in other foodservice segments.

9. Ethnic marketing: Apple juice is consumed more frequently in the U.S. by ethnic minorities (African American, Asian American, Hispanic) than the rest of the population. In the coming decades in the U.S., minority ethnic and racial groups together will count for a majority of the population. In this demographic environment, marketing strategies should

include ethnic marketing techniques. The appeal of apple juice to ethnic minorities in the U.S. should be pursued as an opportunity to expand consumption. Marketing research is needed to determine what makes the product attractive in order to support the successful promotion of the product to ethnic minorities. Ethnic marketing techniques include cultural references, dual language packaging, and targeted distribution strategies.

These potential opportunities reflect current trends and consumer preferences in U.S. food and beverage markets. While many of these markets, such as the markets for fortified products and eco-labels, are growing, an innovative strategy requires a greater commitment to product development than merely following these trends. Successful new products appeal to basic consumer motivators, and today, those motivators are convenience, health, food safety, and personal gratification. A truly innovative approach requires a commitment to understanding consumer motivators so that unmet needs can be identified and fulfilled.

Apple juice and cider marketers face considerable challenges in expanding the markets for their products. Apple juice and cider are not widely advertised products. Most marketing investments are focused on promotion in the retail trade. Low concentrate prices have led to a high level of price competition in the market. Currently, the best opportunities for industry growth, which can also increase domestic apple utilization, may be with differentiated products and focused customer service.

As indicated by the quotes in the beginning of this section, juice processors must approach their business with a marketing focus. Consumers for juice products are the limiting factor to industry growth. Resources must be focused on earning and retaining customers, and the most valuable resource for juice processors is now market knowledge. Successful companies will be those that effectively collect and utilize information about consumers' wants and needs to their advantage.

Implications for Apple Growers

Many apple growers that depend on commodity juice markets have faced very difficult economic pressures in the past few years. Inexpensive juice concentrate available on the global market has placed downward pressure on prices for apple growers. The recently adopted U.S. anti-dumping tariffs against Chinese apple juice concentrate provide the industry with temporary relief from some of the impacts of industry globalization. However, the effects of cheap concentrate on the juice apple market will not disappear, and a long-term, global oversupply of apples persists.

The tariffs may give the industry's growers a bit of breathing room to adapt to a changing market, but those that do not alter their marketing strategies will likely continue to find it difficult to compete. Juice apple sales to low-cost processors will require growers to attain increasingly larger economies of scale or to accept losses on juice apples. Those producers that are able to de-commoditize their juice apples will be in a better position to attain a price premium. Opportunities to de-commoditize juice apples depend on the

presence of and cooperation with innovative processors that are creating differentiated juice products. For example, juice processors that create varietal , eco-labeled, or fresh juice products may pay price premiums to growers that can supply their specific raw product needs.

As noted above, most growers have very limited bargaining power in this industry. Processors are able to assert their relative strength with demands for additional services from their suppliers. For example, some juice processors are beginning to require juice apples in bulk truck deliveries, instead of bins.

To date the industry has been largely traditional in its approach to ordering and billing, but as electronic processes become more common in the produce industry, growers should anticipate the need to integrate these services into their businesses. The use of business-to-business Internet-based services for electronic ordering, contracting, and auctions is expected to grow substantially in the produce industry over the next few years. In a recent survey of food processors, 81% said that it is likely that they will purchase most of their ingredients and supplies via the Internet in the coming two years (FoodTrends, 1999). Growers that begin to familiarize themselves with electronic business processes now will be prepared to meet processor demands in the future.

Summary

The apple juice industry faces significant competitive threats from potential new entrants to the industry, competition from substitute products, and the increasing bargaining power of retail and foodservice customers. The implementation of a clearly defined competitive strategy is important in this highly competitive market environment.

The industry has many characteristics of a mature industry: slow growth, intense price competition, profit erosion, and domination by a few large firms. Marketing strategies should seek to expand the market through new consumers, new uses, and increased use per consumer. Product modifications that add value in new product features are also important at this stage. Several opportunities to enhance apple juice and cider marketing are discussed in this section.

Apple growers that market juice apples face difficult economic pressures in this industry. Recently adopted anti-dumping tariffs against Chinese apple juice concentrate may provide growers some relief, but long-term marketing strategies must consider how best to compete in a global market where low cost concentrate will likely continue to be a major factor.

Section VI

Summary

Apple juice and cider are important markets for apples and currently account for 24% of apple utilization in the U.S. Over the past several years, utilization of apples for juice and cider appears to have leveled off after a long period of growth. Similarly, per capita consumption of apple juice in U.S. appears to have leveled off after a long period of growth. Apple juice consumption now accounts for 19% of all juice consumption in the U.S.

At the global level, apple juice concentrate is traded as a commodity. Worldwide, a sustained oversupply of apple juice has put downward pressure on prices for juice concentrate and juice apples. U.S. apple growers felt this pressure acutely when low cost imports of Chinese apple juice concentrate to the U.S. increased rapidly in the late 1990's. A recent anti-dumping petition has resulted in tariffs on Chinese concentrate. However, low cost concentrate and globalization of the market are likely to continue to create pressure for change in the industry.

In the U.S., the market for apple juice and cider is mature. Industry growth is slow, and consumers have set patterns of use for the product. Market research has revealed that apple juice lacks a definitive image, other than as a juice for young children, in most consumer's minds. Furthermore, consumers seem generally unaware of health benefits associated with apple juice.

At the industry level, there are additional challenges. Processors' customers are in the retail food and foodservice industries, which have recently experienced significant consolidation. As a result, customer bargaining power has increased. Furthermore, substitute beverage products provide intense competition. Apple juice and cider compete not only with other fruit juices, but with products across the highly competitive and rapidly changing beverage industry.

In this market environment, apple juice and cider marketers face a number of challenges. The most appropriate strategic marketing efforts will be those that focus on expanding consumption and introducing innovative products. A number of opportunities are suggested and evaluated in Section V. A few producers will be able to maintain a competitive position as low cost, high volume suppliers in this industry. However, most producers will need to consider how to de-commoditize their products by providing value-added features or by focusing on service to specific customer groups. Implementation of a clearly defined strategy is critical within an intensely competitive industry such as the beverage industry.

Given these market conditions, U.S. apple growers that depend on the commodity juice apple markets have faced difficult economic conditions in the past few years. Furthermore, because of global supply conditions, growers lack relative bargaining strength in this market. Recent anti-dumping tariffs for Chinese apple juice concentrate may give growers some temporary relief from downward pressure on juice apple prices. However,

the effects of cheap concentrate and a long-term, global oversupply of apples will continue to exert pressure in the market. Growers must adapt to market globalization with clearly defined strategies. Those that wish to continue to serve the commodity juice market will need to focus on cost-cutting and high volume production. The alternative strategy is to attempt to de-commoditize the raw product supply with value-added characteristics and services to meet the needs of processors who produce value-added consumer products. Regardless of their chosen strategy, growers should expect increased demands for services from their customers, including demands for the use of electronic business processes.

Apple juice and cider will continue to provide important markets for apples in the U.S. However, global market forces are likely to amplify the distinction between a low-cost commodity market and a higher margin differentiated market. Success and profitability in this industry will require implementation of clearly defined, customer focused competitive strategies.

Bibliography

Ahlberg, Pam. "Study Reports Trends and Discoveries Driving Fortified Food Market." *Beverage On-Line* (www.beverageonline.com). April 4, 2000.

Baden, Tom. "Apple Growers Fail to Get Relief from Flood of Juice Imports." *The Post-Standard*. Syracuse, New York. May 22, 1986: C1.

Beverage World. (www.beverageworld.com). August, 2000.

Belrose, Inc. *World Apple Review 1998 Edition*. Pulman, WA: Belrose, Inc., 1998.

Blend, Jeffrey and Eileen van Ravenswaay. *Consumer Demand for Ecolabeled Apples: Survey Methods and Descriptive Results*. Michigan State University Department of Agricultural Economics, Staff Paper 98-20.

"Bottled Water a Growing Industry." *Beverage Industry* 90.11 (November 1999): A9.

Breyer, R. Michelle. "Private Label First Class." *Supermarket News*. January 4, 1999: 27-29.

Business Trend Analysts (BTA). *The Market for Juices, Ades, and Noncarbonated Drinks*. 1998.

Bussien, H. "The Nonalcoholic Beverage Market." *Fruit Processing*. May 1998: 184-189.

Eberhardt, Marian, Chang Yong Lee, and Rui Hai Liu. "Antioxidant Activity of Fresh Apples." *Nature* 205 (June 22, 2000): 903-904.

FoodTrends on Purchasing. *A Study of Purchasing Trends among Food Industry Buyers and Specifiers*. Thomas Food Industry Register and American Express, 1999.

Gentry, Karen [1]. "China's apple juice concentrate exports drop dramatically." *The Fruit Growers News* 39.3 (March 2000): 1, 43.

Gentry, Karen [2]. "New juice and concentrate facility begins operations at Peterson Farms." *The Fruit Grower News* 39.11 (November 2000): 1, 28.

"Juice Continues Upward Momentum." *Beverage Industry* 90.11 (November, 1999): 18.

Market Looks. "U.S. Market for Fruit and Vegetable Based Beverages." Kalorama Academic Universe (www.marketresearch.com/kaloramaip). February 2, 1999.

McDonald, Peggy. "Apple Juice Retail Marketing: Category Competition, Trends and Opportunities." In *U.S. Apple Association 1999 Apple Crop Outlook and Marketing Conference Proceedings*. Chicago: August 19-20, 1999.

McKay, Betsy. "Consumers Lose Some Appetite for Fizzy Drinks." *Wall Street Journal*. September 19, 2000, B1, B4.

Mediamark Research Inc. *Mediamark Research Beverages Report*. Spring 1995.

New York Agricultural Statistics Service (NYASS). *New York Agricultural Statistics 1999-2000*. August 2000.

Penn, Catherine. "1999 R&D Survey." *Beverage Industry* 90.1 (January 1999): 29-35.

Pool, William McLaren. *The Influence of Consumer Attitudes and Perceptions about Pesticides and Produce Quality on Technology Transfer*. Unpublished thesis. Rochester Institute of Technology, August 1996.

Porter, Michael. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York, NY: The Free Press, 1980.

Prince, Greg W [1]. "Drink and Run." *Beverage World*: 119.1687 (February 15, 2000): 66.

Prince, Greg W [2]. "Fruit and Center." *Beverage World* 119.1692 (July 15, 2000): 58.

Prince, Greg W. "Great Approval Ratings." *Beverage World* 118.1678 (July 15, 1999): 92.

Putnam, Judith Jones and Jane E. Allshouse. *Food Consumption, Prices, and Expenditures: 1970-1997*. Food and Rural Economics Division, USDA Economic Research Service. Statistical Bulletin No. 965. April 1999.

Reidy, Chris. "Others Feel Squeezed, But Not Welch's." *Boston Globe*. January 12, 2000.

Rice, Judith. "Minute Maid & Hi-C Harness the Power of the Pouch." *Beverage On-Line* (www.beverageonline.com). May 1, 2000.

Rosa, Samuel. "Outlook for Concentrated Apple Juice Production and Trade in Selected Countries." *World Horticultural Trade and U.S. Export Opportunities*. USDA Foreign Agricultural Service Circular Series FHORT 5-00, May 2000.

Rosa, Samuel. "Chinese Share of U.S. Apple Juice Import Market is Increasing Sharply." *World Horticultural Trade and U.S. Export Opportunities*. USDA Foreign Agricultural Service Circular Series FHORT 5-99, May 1999.

Rosa, Samuel. Personal communication. USDA Foreign Agricultural Service. 2000.

Stover, Ed. "Wapato Grower Betting on Pink Lady Nectar." Associated Press Newswire, March 27, 2000.

Theodore, Sarah. "Chilled Juice Remains Segment Leader." *Beverage Industry* 89.11 (November, 1998): 11-16.

Tillotson, James. "Are Your Juices and Your Company Ready for the Next Century?" *Fruit Processing* 7/2000.

US Apple Association (USAA). "World Apple-Juice Concentrate Examined." *AppleNews*, September 12, 1997: 4-5.

US Apple Association (USAA). Unpublished report prepared for Apple Juice Concentrate Anti-Dumping Task Force, July 8, 1998.

US Apple Association (USAA). "Concentrate Dumping Petition Filed." *AppleNews*, June 7, 1999: 1, 4.

US Apple Association (USAA). "Apple Industry Takes on China and Wins." *Apple News*. June 13, 2000: 1-2.

USDA Economic Research Service (ERS). Fruit and Tree Nuts Situation and Outlook Yearbook. FTS-287. October 1999.

USDA Foreign Agricultural Service (FAS). "World Trend Shows Organic Production Moving Into Supermarkets." World Horticultural Trade and U.S. Export Opportunities. USDA FAS Circular Series FHORT 3-99, March 1999.

USDA National Agricultural Statistics Service (NASS) Agricultural Statistics Board. Noncitrus Fruit and Nuts Estimates. 1959-2000.

Warner, Geraldine. "Imports of Chinese Concentrate Resume." *Good Fruit Grower*. 51.13 (August 2000): 63-64.

Wettlaufer, D. "The Fresh Juice Phenomenon in the U.S." *Fruit Processing*. December 1995: 401-402.

White, Gerald B. "Trends in Apple Marketing and Impacts on NY Growers' Profitability." *New York Fruit Quarterly*. 8.2 (2000): 7-12.

Appendix A

Description of Products

Juice pressed from fresh or stored apples can be made into fresh apple juice, fresh apple cider, apple juice concentrate, and fermented beverages and vinegar. This paper focuses on apple juice and non-alcoholic cider. For an in-depth discussion of fermented apple beverages, see Staff Paper 2000-06 (June 2000), *Processed Apple Product Marketing Analysis: Hard Cider and Apple Wine*.

Apple juice and cider are made using similar methods that squeeze and screen juice from fresh or stored apples. Stored apples may be kept in cold storage or controlled atmosphere storage. Controlled atmosphere allows for apples to be stored without a decline in quality for nearly a year. Apple juices and ciders vary in sugar content and acidity depending on the apple varieties used to produce the juice.

Apple juice is consumed as fresh juice, reconstituted juice (from concentrate), and in blended juices. It is also used as a base for other juice products and to sweeten some food products. Apple juice differs from cider in that yeast and mold have been fully removed or killed. Cider can ferment into hard cider, but apple juice will not because yeast is not present.

Apple juice may also be made by reconstituting concentrate or from a combination of fresh juice and reconstituted concentrate. Apple juice is usually hot filled into containers. Usually, apple juice is clarified or filtered before bottling. Most apple juice is pasteurized, and it is available in refrigerated and non-refrigerated forms. Pasteurized, non-refrigerated apple juice can have a shelf life of up to two years.

Apple cider is made from fresh or stored apples. It is often produced as a seasonal product, but it has become available on a year-round basis in many retail outlets. Cider is usually unclarified, and it may or may not be pasteurized. As an alternative to traditional pasteurization, ultraviolet light treatment has recently become available. Often, sorbate is added to cider as a preservative. Cider is usually stored in a non-transparent container at 32 degrees Fahrenheit.

Recently adopted food safety regulations require warning labels on unpasteurized cider, and these rules have resulted in reduced availability of unpasteurized cider. Unpasteurized cider with sorbate has a shelf life of about 6 weeks at 32 degrees Fahrenheit. Pasteurized cider has a longer shelf life than unpasteurized cider.

Apple juice concentrate is available in frozen or non-frozen forms. Concentrate is produced from apple juice. The removal of water allows for efficient storage and transportation of juice. Juice companies that do not specialize in the pressing of fresh apple juice can easily enter the apple juice market by purchasing concentrate and reconstituting it with water. Some concentrates have added ingredients, such as vitamin C.