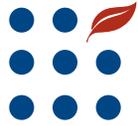




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New Directions in Global Food Markets

Anita Regmi and Mark Gehlhar, editors

Abstract

Although consumer diets are being upgraded globally, food purchase patterns vary across countries based on income levels. Developing countries are registering rapid increases in retail sales of high-value foods, while developed countries are seeing a rise in sales of products that meet consumer demands for variety, food safety, and quality. To meet these increasingly varied needs, multinational food retailers and manufacturers are expanding their presence in developing countries, and food retailers and suppliers are adding value and differentiating their products in developed countries. The ongoing changes are driving food supply chains to adopt closer coordination between producers and retailers to facilitate customizing products to meet consumer demands. Even as the food industry is becoming more global, food markets are increasingly responding to consumer preferences at a local level and catering to specific demands in each market.

Keywords: Global food markets, retail market, supply chains, high-value foods, food manufacturers, private labels, industry concentration.

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Summary

Understanding the performance and dynamics of global food markets is no longer a matter of understanding the fundamentals of international trade. At \$3.2 trillion, processed food sales are a major component of global food markets and account for about three-fourths of total world food sales. Still, only 10 percent of processed food sales are traded products. Although consumer demand for processed food continues to grow globally, growth in processed food trade has generally stalled since the mid-1990s. While trade policy may contribute to this disparity between trade levels and market performance, many other factors are at play.

Understanding the competitive nature of the global food industry means understanding changing consumer preferences and the food industry's efforts to meet these demands. The task of moving food from the farm to the table has become more complex, involving diverse local, national, and global agents and networks. Food markets are constantly evolving, driven not only by changes in consumer preferences, but also by technology, linkages between members of the food supply chains, and prevailing policies and business environments. Sophisticated supply chains and distribution channels are now being adopted across different regions and national boundaries.

Developing countries are expected to largely account for future increases in food demand, resulting from both increases in population as well as increases in per capita food consumption. Annual growth rates of retail sales of packaged food products in developing countries range from 7 percent in upper-middle-income countries to 28 percent in lower-middle-income countries, much higher than annual growth rates of 2-3 percent in developed countries.

The food industry will continue to evolve in response to specific consumer demands in individual markets, with significant differences between industry strategies in the developing and the developed countries. Across all countries, modern food markets are responding to consumer preferences at a local level, even as the food industry becomes more global.

In mature developed-country markets, product differentiation, value added, and consumer trust are important considerations for retailers seeking to retain market share. Many retailers, particularly in Western Europe, have developed private label products that capture these qualities. To ensure that their branded products meet quality and safety standards demanded by consumers, retailers coordinate and develop relationships with other upstream sectors in the food supply chain.

In rapidly growing developing-country markets, multinational food companies are expanding and changing regional food industry landscapes. Foreign investments by these firms have played major roles in the diffusion and expansion of supermarkets in Latin America and Asia. While supermarkets accounted for 15-30 percent of the national food retail sales before the 1980s, they currently account for 50-70 percent of the retail sales in many Latin American countries, registering in one decade the level of growth experienced in the United States in five decades. Although the supermarket

sector in Asia is 5-7 years behind in its expansionary process, it is registering faster rates of growth than in Latin America.

In all markets, market forces are expected to push the evolutionary process toward increased efficiency, higher quality products, and more integrated food supply chains. Increased private label products in developed-country markets are contributing to the global trend in more integrated food supply chains. Likewise, changes brought about by multinational retailers are upgrading the food marketing sector in many developing countries, while leading to more integrated supply chains serviced by fewer producers. The quest for efficiency and cost reduction has encouraged investments in new technologies and joint ventures with marketing intermediaries and producer associations able to meet big volumes and high private standards.

In a food industry driven by consumers' retail pull, food manufacturers have to continuously reorient themselves to remain competitive. Firms that respond to market signals are better able to adjust and maintain their positions in the industry. Flexible organizational structures that enable firms to make adjustments at various stages of the production process in response to consumer demand are better suited for the current industry. Such a business structure is possible if firms operate in close coordination with producers and other sectors of the supply chain.

Expansion in foreign markets is contributing to the growth of large multinational food manufacturers. But, although significant concentration may exist in certain individual product markets at the local level, at the global level, even the largest food company accounts for less than 3 percent of total world food sales. The diversity of consumer demand creates opportunities for smaller firms to successfully compete in the marketplace.

New Direction in Global Food Markets

Introduction

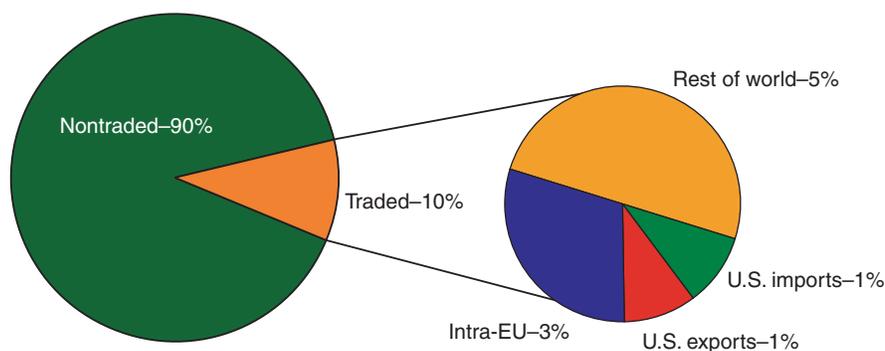
Understanding the performance and dynamics of global food markets is no longer a matter of understanding the fundamentals of international trade. At \$3.2 trillion, processed food sales are a major component of global food markets and account for about three-fourths of the total world food sales. Still, only 10 percent of processed food sales are traded products (fig. 1). Although consumer demand for processed foods continues to grow globally, growth in processed food trade has generally stalled since the mid-1990s. While trade policy may contribute to this disparity between trade levels and market performance, competition in the global food industry is also influenced by many other factors.

Understanding the competitive nature of the global food industry means understanding changing consumer preferences and the food industry's efforts to meet these demands. The task of moving food from the farm to the table is becoming increasingly complex, involving diverse local, national, and global agents and networks. Food markets are constantly evolving, driven not only by changes in consumer preferences, but also by technology, linkages between members of the food supply chain, and prevailing policies and business environments. Sophisticated supply chains and distribution channels are now being adopted across different regions and national boundaries.

The ongoing changes and innovations in global food markets, as well as the trends in different sectors of the food industry, make up a complex puzzle with consumers, producers, and global retailing and manufacturing firms representing the many pieces. A growing trend in food markets is the shift

Figure 1

Only 10 percent of \$3.2 trillion global processed food sales are traded products, 2002



Source: Trade data from U.N. Comtrade, 2002.
Global commerce in processed food is approximated from Euromonitor.

in growth of food sales from high-income (developed) countries to lower income (developing) countries. Despite the shift, per capita commercial sales show wide regional disparities worldwide, though growth in food sales in the developing countries is expected to continue in the coming decade. In anticipation of this growing market, food firms appear to be repositioning themselves and investing in many developing countries.

Supply chains are the mechanisms for transmitting signals from consumers to food manufacturers, as well as delivering products from the farm to the consumer's table. The major components of a supply chain are input supply, production, processing or manufacturing, and retailing. In response to consumer demands, suppliers can choose to add value and market products that meet specific needs. Additional value can be added at any of the four points in the supply chain prior to reaching the consumer. In the evolving global food economy, signaling the additional value (quality) of the new product is as important as developing the product.

Modern technology, such as point-of-sale scanners, provides retailers with first-hand information regarding consumer food preferences, positioning retailers to interpret and transmit changing consumer demands. However, food retailing is a service industry and does not generally engage in the design and manufacture of new products. Rather, the development of specific products desired by consumers requires coordinated efforts and cooperation among all segments of the supply chain. Degrees of coordination and cooperation among the different elements of the supply chain are more pronounced in developed countries, particularly in the European market, which may serve as a model for many markets in high-income countries.

Food distribution/retailing channels differ across regions in the world. Consumer shopping habits, income levels, and lifestyles all influence how the food retail sector is configured in different countries. However, liberalized trade and globally focused commodity and financial markets have initiated the move toward convergence of the world food retail structure, as evidenced by the growing presence of supermarkets and hypermarkets across the globe, often with multinational chains operating across many countries. In developed countries, a large share of retail food is sold through supermarkets/hypermarkets. The United States has the largest share, at 62 percent (table 1). Despite developed countries having similarly large shares of supermarket sales, cultural and lifestyle differences influence the structure of retail outlets in specific developed-country markets. For example, consumer demand for convenience and efficiency in Japan accounts for the relatively high share of food sold through convenience stores and petro-gas outlets, 18 percent, which is much higher than shares in other developed countries. In developing countries, where supermarkets/hypermarkets are newly establishing, independent stores and traditional markets still account for very large shares of total retail sales, as shown by the growing presence of large multinational food retail firms in Latin America and Asia.

The reorientation of global food markets has prompted food manufacturers to adopt more focused growth strategies to maintain leadership positions in specific sectors. Food manufacturers compete in the retail sector by marketing and promoting their own products. It is increasingly common for private firms to own trademarks, brands, formulas, and processing technolo-

Table 1—Share of food sales for retailers in selected international markets, 2002

Retail outlets	United States	Western Europe	Latin America	Japan	Indonesia	Africa and Middle East	World
	<i>Percent sales</i>						
Supermarkets/hypermarkets	62.1	55.9	47.7	58.0	29.2	36.5	52.4
Independent food stores	10.0	10.0	33.0	11.3	51.1	27.1	17.8
Convenience stores	7.5	3.8	3.1	18.3	4.8	10.0	7.5
Standard convenience stores	5.7	2.5	1.8	18.2	4.8	9.5	6.4
Petrol/gas/service stations	1.8	1.2	1.3	0.1	0.0	0.5	1.1
Confectionery specialists	0.5	2.0	1.7	0.3	0.1	1.3	1.2
Internet sales	0.2	0.1	0.1	0.4	0.0	0.0	0.2
Chemists/drugstores	0.2	0.3	0.2	0.4	0.2	0.3	0.3
Home delivery	0.4	0.2	0.0	0.0	0.0	0.0	0.1
Discounters	7.4	10.3	0.2	2.2	2.7	6.2	5.7
Other	12.0	17.5	14.0	9.0	11.9	18.6	14.9
Total	100	100	100	100	100	100	100

Source: Euromonitor, 2004.

gies associated with manufacturing. Licensing and marketing agreements with other national and multinational firms play a role in determining how a food manufacturer's products are sold in foreign markets. Of increasing importance is the manufacturer's ability to establish business relationships with supermarkets and other retail chains. For example, Ben and Jerry's, a popular U.S. ice cream manufacturer, had its products introduced into the Japanese market via a partnership with a single retail chain, 7-Eleven (Hagen, 2000).

Another increasingly important strategy of multinational companies is winning public support for business activities in developing countries. This strategy is reflected in current annual reports of most international companies, which once focused solely on financial reporting but now include substantial sections on corporate social responsibility. Consumer concerns about the environmental impacts of agriculture and inequities in income distribution arising from food production are growing. It is not enough for firms to allay consumer concerns for food quality and food safety to preserve product loyalty or win the public trust. Rather, firms are increasingly driven to integrate plans for sustainable development of the world's natural resources into corporate strategies and responsibilities.¹ Firms are reviewing not only their product-market portfolio but also their specific roles in the food chain.

Given the profits from catering to specific consumer demands and preferences in each market, global firms with wide geographic coverage are not necessarily the largest or the most diversified firms. Rather, firms with a flexible business structure that enables them to respond to demand signals and a more focused market orientation are more competitive in global markets. Producer-owned firms, such as cooperatives, successfully compete in global food markets by adopting vertically integrated approaches to delivering quality products to consumers.

The ongoing evolution of the global food industry is driven by changes in consumer preferences and the food industry's response to those changes at the local, national, and global levels. Market trends revealed in food retail sales

¹ Companies listed in the Dow Jones Sustainability Index are selected by a systematic assessment of corporate sustainability practices. They must actively lead their industries and set industrywide best practices in strategy innovation, governance, and relationships with shareholders, employees, and other stakeholders.

data pose questions regarding the long-term impact of these changes on consumers, small businesses, and the relationship between food exports and foreign direct investment. These questions remain for future investigation.

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Factors Shaping Global Food Markets

Mark Gehlhar & Anita Regmi¹

Modern food markets are responding to consumer preferences at a local level, as the food industry becomes more global.

¹ Mark Gehlhar and Anita Regmi are economists, Market and Trade Economics Division, ERS/USDA.

Consumers today are upgrading their diets to include more higher valued products than in the past (Regmi, 2001; Rosegrant et al., 2001). Initially, this trend was accompanied by rapid growth in trade for high-value foods, fueling speculation of continued trade growth in the sector. However, contrary to conventional wisdom, global food trade patterns have shifted again and the trade share of high-value food, particularly processed products, has started to decline.

Competing in the global food industry is a complex undertaking, as firms must continually react to the demands of wealthier and more selective consumers for higher quality and more varied products. Markets for individual food products, however, are not becoming global. Rather, consumer demand for food products varies based on income and regional cultural preferences. Successful local, regional, and global firms supplying foods to these diverse markets employ increasingly sophisticated technologies and business practices to customize food products to meet local tastes and preferences.

Size and Changing Shape of the Global Food Market

Food is sold either through retail stores or through foodservice establishments, mainly hotels and restaurants. Global sales of food, including food sold through foodservice establishments, are estimated at \$4 trillion in 2002 (table 1-1). Over 40 percent of the total value of global food sales is currently accounted for by the foodservice sector. With consumers increasingly demanding convenience, it is likely that the value of global foodservice sales will overtake global retail food sales in the future. The demand for convenience is not limited to consumers in developed countries. In the developing countries, rising demand for convenience is reflected by the rapidly expanding fast food sector.²

As the food sector is not consistently defined across countries and regions, nor is food sold in the same manner, it is difficult to measure precisely the actual size of the world food market. For example, in developed countries, the foodservice sector accounts for a large and growing share of total food sold. However, food service covers a wide variety of outlets, and reliable data are generally hard to obtain across different countries. In developing countries, a large share of food is traditionally sold through streetside

² The World Bank defines high-income countries as those with year 2000 per capita Gross National Income (GNI) above \$9,266; upper-middle-income countries as those between \$2,996 and \$9,266; low-middle-income countries as those between \$756 and \$2,995; and low-income countries as those below \$756. Countries in the low- and middle-income groups are generally considered to be developing countries.

Table 1-1—Global food sales, 2002

	Retail stores	Food service	Total
<i>Billion dollars</i>			
Fresh food	531	382	913
Processed products	1,762	1,420	3,182
Packaged food	1,148	828	1,976
Beverages	614	592	1,206
Alcoholic drinks	316	422	729
Hot drinks	53	12	65
Soft drinks	245	167	412
Total food	2,293	1,803	4,096

Source: Euromonitor, 2003.

stalls. Products sold in such markets include food prepared at vendors' homes and sold to consumers in a ready-to-eat form.

At the retail level (which excludes food service), a relatively consistent comparison across regions is possible through the use of food sales data from grocery stores. However, these data fail to completely capture all food sales, especially in the developing countries. Although supermarkets are increasingly prevalent in developing countries, the available food sales data from these outlets may understate the actual size of individual developing country markets. Nevertheless, lacking alternative sources, this study uses retail sales data collected by a commercial vendor, Euromonitor, which consists of globally consistent food categories (see box on Euromonitor).

At the retail level, food can be broken down to fresh (\$531 billion) and processed (\$1.7 trillion). Processed product sales are the combined sales of packaged food (\$1.1 trillion) and beverages (\$641 billion). High-income regions, including European Union (EU) countries, the United States, and Japan, accounted for over 60 percent of packaged food sales in the world in 2002. Packaged food accounts for about half of total food expenditures in developed countries but only a third or less in most developing countries (fig. 1-1). In most countries, packaged food accounts for about two-thirds of all processed products sales, with alcoholic beverages, soft drinks and hot drinks constituting the remaining one-third. The value of packaged food sales varies among countries based on per capita incomes (table 1-2).

Market sizes, as indicated by the value of retail sales, are much larger in high-income countries, but market growth has generally been faster among developing countries (table 1-3). Among developing countries, oils and fats, dried food, and dairy products have sizable retail markets with strong growth trends. While smaller in terms of retail value, the breakfast cereals market has skyrocketed, registering double- and triple-digit sales growth in some developing countries.

In the mature markets of high-income countries, processed food retail sales are growing at a slower pace than in the developing countries. Ready-to-eat meals are one of the fastest growing sectors in developed countries, while breakfast cereals are making inroads in the nontraditional French and Singaporean markets. As growth rates of ready-to-eat products have risen, growth rates in

Euromonitor Data

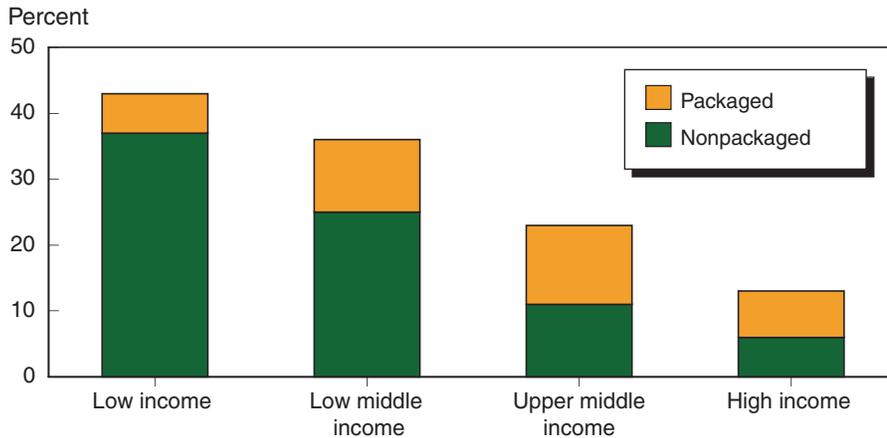
The data on global food sales in this chapter come from a single commercial vendor, the Integrated Market Information System of the Euromonitor International. Data on products and brands are collected from national statistical offices, international and intergovernmental bodies, manufacturers and retailers, and store visits in 70 countries. Standardized international product sectors are developed by the Euromonitor to ensure global comparability (see table A). Industry average markups as defined by the Euromonitor include wholesaler, distributor, and retailer as well as value-added tax/sales (VAT/sales) when appropriate. Comparative checks are made on per capita expenditure growth rates and product breakdowns. Trade interviews with companies are conducted at all levels of the supply chain. If irregularities are found, supplementary research is conducted in the relevant countries to confirm or amend findings. In addition to indepth data collection from 70 countries, the Euromonitor generates data using statistical models for those countries where official data cannot be obtained. The models are used to generate composite regional figures based on population, consumer expenditures, gross domestic product, food price indices, Gini index, and purchasing power parity. For example, model-based data on packaged food retail sales are available for Africa and the Middle East, although actual data are unavailable for many countries in these regions.

Table A—Food product categories provided by the Euromonitor

Sectors	Products	Subproduct (>150, examples below)	
Alcoholic drinks	Beer	Lager	
	Wine	Still red wine	
	Spirits	Whiskey	
	Flavored alcoholic beverages (FAB)	Wine-based drinks	
Hot drinks	Coffee	Instant coffee	
	Tea	Green tea	
	Other drinks	Chocolate-based hot drinks	
Soft drinks	Carbonates	Cola carbonates	
	Fruit/vegetable juice	Nectars	
	Bottled water	Carbonated bottle water	
	Functional drinks	Sports drinks	
	Ready-to-drink (RTD) concentrates	Powder concentrates	
	RTD tea	Carbonated RTD tea	
	Packaged foods	Confectionery	Chocolate confectionery
		Bakery products	Breakfast cereals
Ice cream		Take-home ice cream	
Dairy products		Yogurt	
Savory snacks		Tortilla chips	
Snack bars		Energy bars	
Meal replacement drinks		Slimming drinks	
Ready meals		Frozen ready meals	
Soup		Instant soup	
Pasta		Canned pasta	
Noodles		Instant pasta	
Canned food		Canned beans	
Frozen food		Frozen potatoes	
Dried food		Rice	
Chilled food		Chilled processed meat	
Oils and fats		Olive oil	
Sauces, condiments		Soy-based sauces	
Baby food	Milk formula		
Spreads	Jams and preserves		

Figure 1-1

Food share of total expenditures declines while processed food share of food expenditures increases with income, 2002



Note: The World Bank defines high-income countries as those with 2000 per capita Gross National Income (GNI) above \$9,266; upper-middle-income countries as those with per capita GNI between \$2,996 and \$9,266; low-middle-income countries as those with per capita GNI between \$756 and \$2,995; and low-income countries as those with 2000 per capita GNI below \$756. Countries in the low- and middle-income groups are generally considered to be developing countries.

Source: Euromonitor, 2003. World Bank classification of countries.

retail sales of items used in meal preparations, such as oils and fats and dried food, have slowed or turned negative in many high-income countries.

In Eastern European countries, retail sales of processed food products grew rapidly during the 1990s.³ This growth resulted from ongoing westernization of both consumers and food marketing sectors in the region. Multinational companies and Western brand products have become increasingly visible in these markets. At the same time, Eastern European consumers are growing more sophisticated, with greater demand for products offering health benefits and convenience. Czech and Hungarian consumers, in particular, have increased consumption of nutrient-enriched and low-fat products, such as yogurts and specialty drinks. The busy lifestyles of young professionals and entrepreneurs have accounted for increases in the demand for labor-saving breakfast cereals, snack foods, and ready-to-eat meals. Sales of such products as canned ready meals, frozen pizza, and dehydrated soups are high in the region. Dried food products, particularly pasta and other noodles, have been one of the most dynamic growth sectors in this retail market. Foreign investments in private label product development have also helped drive the demand for high-value processed foods in some Eastern European countries.

Retail food sales in Latin America and developing countries in Asia are undergoing changes similar to those in Eastern Europe. However, the markets in such countries as China and Vietnam are at the early stages of transformation, with smaller shares of multinational retail chains and limited penetration of packaged food products in the rural areas. As in Eastern Europe, wealthier consumers in Latin American are purchasing more time-saving products and products associated with higher health attributes. Low-fat yogurt and lean chilled and frozen food products are becoming very popular in Brazil, while meal replacement drinks are one of the strongest

³ Except Russia, where retail sales trends mirror those of high-income countries.

Table 1-2—Annual average growth in retail sales of packaged foods

Country group	Per capita gross national income (2000)	Per capita 2002 retail sales	Total retail growth		Per capita growth	
			1996-2002	2002-08 ¹	1996-2002	2002-08 ¹
		<i>Dollars</i>	<i>Percent</i>		<i>Percent</i>	
High-income	>=9,266	979	3.2	1.7	2.5	1.1
Upper-middle-income	2,996-9,265	298	8.1	4.0	6.7	2.8
Lower-middle-income	756-2,995	143	28.8	4.4	28.1	3.8
Low-income	<755	63	12.9	6.1	11.9	5.3

Note: Country classifications as per the World Bank. Retail sales are sales of packaged foods.

¹ Retail growth projections made by Euromonitor.

Source: Euromonitor, 2003.

Table 1-3—Retail sales size and growth of selected food items

Market	Retail sales, 2002					Average annual growth rate (1998-2003)				
	Oils & fats	Breakfast cereals	Ready meals	Dried food	Dairy products	Oils & fats	Breakfast cereals	Ready meals	Dried food	Dairy products
	<i>Million dollars</i>					<i>Percent</i>				
High-income countries:										
France	2,294	646	2,924	1,085	14,733	1.3	5.0	4.8	1.5	3.8
Germany	2,413	711	1,986	1,969	13,798	-1.7	0.4	3.4	2.2	2.4
Japan	2,731	300	11,573	22,510	18,801	-1.8	2.2	4.9	-1.5	0.9
Singapore	35	17	22	139	134	2.2	10.0	3.6	3.6	4.7
United Kingdom	1,997	1,999	6,172	1,215	10,239	1.1	1.0	5.9	3.5	1.8
United States	4,673	9,476	17,278	9,965	46,969	-0.1	1.3	5.8	1.4	3.8
High-middle-income countries:										
Brazil	2,559	117	203	3,369	7,106	24.0	8.9	17.3	16.1	13.4
Chile	250	48	10	217	747	1.0	10.3	4.0	-0.2	3.7
Czech Republic	443	19	201	221	1,427	0.8	12.4	10.8	11.3	4.4
Hungary	319	40	124	378	1,206	6.9	16.2	10.2	7.9	8.6
Mexico	1,105	1,008	36	1,757	7,393	9.6	14.6	13.8	20.8	9.8
South Africa	964	144	196	637	1,404	10.4	4.0	3.3	7.9	6.2
South Korea	782	141	24	3,936	2,608	4.9	9.2	5.0	4.6	4.1
Turkey	2,097	27	33	447	4,692	1.5	2.2	-1.1	-1.8	3.0
Low-middle-income countries:										
Bulgaria	142	6	4	60	348	2.9	14.5	5.0	4.4	5.1
China	1,576	—	665	4,615	4,479	11.2	—	2.9	10.4	15.4
Colombia	909	58	20	754	3,266	5.6	11.0	8.9	11.0	13.3
Morocco	697	1	1	98	705	3.5	16.1	5.1	5.1	5.9
Philippines	492	23	30	305	571	8.0	12.0	4.8	12.0	11.0
Romania	270	6	3	169	652	29.4	27.8	34.6	37.3	27.3
Russia	3,095	207	618	1,543	3,790	-3.6	2.5	9.3	-3.8	1.8
Low-income countries:										
India	1,466	16	—	437	1,245	5.5	11.7	—	10.6	9.8
Indonesia	404	20	12	1,944	895	6.7	10.8	9.5	3.8	14.8
Ukraine	1,177	9	33	457	651	19.6	20.7	12.5	12.6	10.4
Vietnam	208	0.2	—	96	156	14.7	182.0	—	30.6	10.6

Note: — = unavailable sales data.

Source: Euromonitor, 2003.

growth sectors in Colombia. Latin American consumers are also developing a taste for different ethnic foods, with pasta being the fastest growing dried packaged product sold in the region.

Reflecting the increased demand for variety as incomes increase, the number of products purchased at retail outlets is greater for wealthier countries. For example, the top five product categories account for 71 percent of processed food retail sales for Mexico and 74 percent for India, but only 48 percent for the United States and 47 percent for the United Kingdom. In most countries, the top five product categories are bakery, dairy, confectionery, carbonated drinks, and chilled foods.

As the demand for processed foods is also driven by the demand for higher quality and labor-saving products, the items consumed by countries at different income levels reflect different levels of demand for services embodied in the products. For example, ready-to-eat meals account for about 4 percent of total retail sales in the United States and the United Kingdom, but only 0.06 percent in Mexico, 0.55 percent in China, and 0 percent in India. On the other hand, intermediate products, such as fats and oils, while accounting for over 7 percent of total processed food retail sales in India, 13 percent in Indonesia, and 5 or more percent in many developing countries, account for less than 2 percent of retail sales in high-income countries (0.79 percent in the United States).

Trends in the soft drink and beverage sector are often an indicator of the ability of consumers to purchase higher value foods. For example, growing affluence in the developing countries is associated with greater expenditures on soft drinks, which, in turn, indicates increased consumer ability to purchase processed foods. In fact, foreign direct investments (FDI) in the beverage sector often function as a bellwether in the local food industry (Bolling, 2002). The global market for soft drinks is rapidly expanding, with large growth in sales in Eastern Europe and Asia (table 1-4). Growth in soft drink sales is particularly high in East Asia, with markets expanding at rates ranging from almost 12 percent (Philippines) to 22 percent (Indonesia) annually. The soft drink markets in developed countries, however, are sluggish, with average annual growth rates for all soft drinks ranging from 3 percent in Germany to about 5 percent in Singapore. The growth in sales of carbonated drinks is considerably lower in all developed country markets, where many consumers seek more healthful alternatives to carbonated drinks, with annual growth rates at or below 3 percent, and negative for Singapore. Sales growth data for soft drinks offer a picture of future growth for processed food sales.

Although high-income countries account for over 60 percent of total processed food retail sales, they are essentially mature markets with limited future growth potential in this sector. In developed countries, growth in food consumption is expected to arise mainly from slow rates of population growth rather than from increases in per capita consumption. Developing countries, on the other hand, are expected to account for most future increases in food demand, resulting from both increases in population as well as increases in per capita food consumption. Diet upgrades made possible by income growth are expected to double the quantity of meat demanded by consumers in developing countries by the year 2020, as well as increase the demand for other high-value food products (Rosegrant et al., 2001).

Table 1-4—Retail sales of soft drinks

Market	2002 sales	Share of carbonated drinks	1997-2002 an. avg. growth	
			All soft drinks	Carbonated drinks
	<i>Million liters</i>		<i>Percent</i>	
High-income countries:				
France	12,755	17.4	4.4	2.4
Germany	18,920	31.2	2.4	2.9
Japan	16,885	16.3	4.5	1.0
Singapore	448	41.2	4.9	-0.9
United Kingdom	10,031	57.3	3.6	1.9
United States	91,286	66.0	3.1	1.4
High-middle-income countries:				
Brazil	16,630	71.8	5.9	2.5
Chile	1,762	85.2	2.4	1.9
Czech Republic	2,524	33.3	10.7	8.0
Hungary	1,561	44.1	7.0	1.6
Mexico	34,874	46.0	8.6	4.1
South Africa	2,938	80.1	6.8	6.2
South Korea	3,737	33.4	5.7	3.8
Turkey	7,508	32.2	6.7	5.2
Low-middle-income countries:				
Bulgaria	774	52.3	14.3	10.4
China	22,952	27.4	15.9	8.8
Colombia	3,484	76.0	-0.1	3.3
Morocco	961	38.6	3.5	2.8
Philippines	4,998	64.2	12.0	8.4
Romania	1,561	41.8	13.5	9.9
Russia	5,010	47.6	7.9	2.7
Low-income countries:				
India	3,272	60.3	13.9	7.9
Indonesia	9,017	8.9	21.7	7.8
Ukraine	1,378	47.7	7.9	6.0
Vietnam	539	58.4	4.8	-1.8

Source: Euromonitor, 2003.

While retail sales of packaged foods have grown at about 2-3 percent annually in high-income countries, they have grown much faster among developing countries, ranging from 7 percent in upper-middle-income countries to 28 percent in lower-middle-income countries. The dramatic growth among middle-income countries is partly due to tremendous growth in sales among Eastern European countries, such as Romania, Poland, and Hungary. With sales in these countries nearing their peak potential, future growth in packaged food retail sales among developing countries is expected to be much slower, but will continue to exceed the rates for high-income countries. As with retail sales in the soft drink and beverage sectors, a slowdown in sales of packaged foods in Eastern Europe is expected to be offset by growth in sales in East Asia. China, Thailand, the Philippines, Indonesia, Vietnam, and India are expected to be some of the fastest growing markets for packaged food retail sales in the next 5 years.

Based on per capita income levels, retail sales of different food products vary across countries, with greater sales in higher value-added products occurring in wealthier countries. In fact, high-income countries currently

account for most global retail sales of processed foods. However, these large markets offer little potential for future growth in this sector. On the other hand, markets for processed foods and beverages are rapidly expanding in developing countries.

The Changing Consumer

A primary driving force in the global food market is the consumer. Income growth, lifestyle changes brought about by urbanization, and changing family structures have resulted in diet changes among consumers worldwide. Because of either increases in purchasing power or the increased opportunity cost of time required for preparing food, the demand for higher value and processed food products has expanded globally. Consumers in developing countries, whose diets have traditionally been high in low-value, carbohydrate-rich cereals, have increased their consumption of higher value meats, fruits, and vegetables. Similarly, consumers in wealthier countries are increasingly moving their diets toward relatively higher value foods, although the higher value reflects not increases in quantity and nutrient value of the food basket but the value-added service embodied in the products, which reduces time required to prepare the foods for consumption.

Although consumers with higher income levels spend more money on food, the food share of total household expenditures is low for wealthier consumers, who typically spend a larger share of their incomes on more expensive items, such as health care, energy, and recreation (Seale, Regmi, and Bernstein, 2003). During the last decade, consumers in high-income countries spent an average of 13 percent of their total household expenditures on food while consumers in low-income countries spent an average of 43 percent (fig. 1-1).⁴ In 2002, these shares ranged from a high of 55 percent of total household expenditures in Indonesia, to 7 percent in the United States. Over half of total food expenditures in high-income countries are attributable to packaged food products. In developing countries, packaged foods account for a smaller share of the total food budget. The average share in low-income countries is 14 percent.

The increased share of high-value food expenditures in total food expenditures reflects not only consumers' increased purchasing power but also lifestyle changes brought about by the increased prevalence of household amenities. For example, increases in acquisitions of refrigerators may lead to greater household purchases of perishable food products, while increases in ownership of microwave ovens may lead to increased purchases of ready-to-eat foods that require minimal preparation. Ownership of refrigerators has risen significantly in most developing countries over the last decade (table 1-5).

Microwave oven ownership in high-income and high-middle-income countries increased significantly during the last decade. Over 90 percent of households in Japan now possess microwave ovens, compared with about 76 percent a decade ago, while over 85 percent of U.S. households possess microwave ovens, compared with less than 80 percent in 1990. In lower income countries, such as Bulgaria, Brazil, Indonesia, and Mexico, the number of households possessing microwave ovens is small but growing (table 1-6). Increased ownership of microwave ovens is likely to increase

⁴ Food expenditure data exclude expenses on food consumed away from home.

Table 1-5—Refrigerator possession per 100 households

	1990	1995	2000	2002
	<i>Number</i>			
China	1	4	6	6
India	5	9	12	13
Vietnam	9	14	17	18
Indonesia	13	20	24	26
Philippines	22	31	38	41
Morocco	27	34	41	44
Egypt	47	56	69	70
Romania	59	66	74	76
Brazil	62	75	82	83

Source: Euromonitor, 2003.

Table 1-6—Ownership of microwave ovens and retail sales of ready meals

	Ownership of microwave ovens		Ready meal sales
	2002	An. av. growth 1998-2002	An. av. growth 1998-2002
	<i>No. per 100 households</i>	<i>Percent</i>	
Brazil	5	7	17
Bulgaria	9	23	5
Chile	9	6	4
Colombia	8	4	9
Czech Republic	36	8	11
Hungary	47	9	10
Indonesia	1	6	10
Japan	91	0	5
Malaysia	65	1	2
Mexico	22	7	14
Morocco	0	3	5
Russia	4	9	9
Singapore	53	6	4
South Africa	6	5	3
Thailand	3	3	4
United Kingdom	87	3	6
United States	85	0	6

Source: Euromonitor, 2003.

purchases and consumption of prepared foods. Retail sales of ready meals have increased among some developing countries, with dramatic rates of growth in many middle-income countries in Eastern Europe and Latin America. In developing Asia, total value of retail sales of prepared meals is relatively small, and annual growth in sales suffered in the late 1990s due to the Asian financial crisis. Given the region's financial recovery, ready meal sales are picking up and have registered healthy growth rates between 1998 and 2002.

The eating habits among countries at different income levels illustrate the trend to upgrade diets as incomes grow. As incomes rise, consumers increasingly substitute products embodying higher levels of value-added service into their diet. For example, in 2000, total per capita consumption in Vietnam was

about 1,200 calories less per day than in the United States (table 1-7).⁵ However, cereals, which require greater food preparation time, accounted for about 70 percent of the total calories consumed by the average consumer in Vietnam. In contrast, cereals accounted for about 22 percent of the total calories consumed in the United States. Although cereals accounted for a smaller share of total calories in the United States, per capita expenditures on cereals were higher in the United States (\$274 per capita in 2000) than in Vietnam (\$15 in 2000). The higher expenditures incurred by U.S. consumers reflect the additional value added embodied in the cereal products.

Changes in expenditures on different food items over time (reflecting income growth over time) relative to calorie consumption may also capture the additional premium paid for food quality, preparation, and processing embodied in the product. Between 1996 and 2000, total available calories per capita in the United States increased 4 percent; however, per capita food expenditures increased over 13 percent. The most dramatic change in the United States is noted for dairy and eggs, which increased 3 percent in per capita calories but 15 percent in expenditures. Similarly, across all countries, expenditures on food products have generally grown much faster than per capita calorie supplies. This increase in expenditures may reflect the increased demand for value added in food products.

Varied Strategies To Meet Growing Demand in Emerging Markets

Food retailers and manufacturers are adjusting to specific needs in individual markets.⁶ In the developing country markets, changes are primarily driven by increased demand for different food products. Although Europe remains a

⁵ Per capita calorie consumption figures are based on FAO's per capita calorie availability estimates calculated from the per capita food supply in a country. Note that these figures represent an upper bound since total food supply in a country is generally higher than the total food consumed.

⁶ For more information, see chapters 2-4.

Table 1-7—Expenditures share and calorie contribution of different food products

Countries	Total	1996 per capita calorie supply					2000 per capita calorie supply					
		Cereals	Fruits & vegetables	Meat	Dairy & eggs	Seafood	Total	Cereals	Fruits & vegetables	Meat	Dairy & eggs	Seafood
Developed	3,203	1,020	163	342	326	46	3,260	1,006	173	342	766	45
Developing	2,644	1,494	124	156	100	22	2,679	1,453	135	182	102	23
United States	3,616	639	196	427	431	28	3,772	848	209	446	445	30
EU	3,401	838	208	431	362	42	3,487	864	218	441	365	44
Brazil	2,868	897	132	299	223	12	2,985	901	123	337	218	10
China	2,941	1,736	145	325	76	31	3,029	1,646	176	411	84	35
India	2,446	1,549	81	22	114	9	2,428	1,455	93	22	118	8
Philippines	2,360	1,203	188	166	50	71	2,379	1,231	181	188	52	63
Vietnam	2,508	1,826	98	168	13	33	2,583	1,796	106	203	15	35
		1996 per capita expenditures (dollars)					2000 per capita expenditures (dollars)					
United States	1,543	247	179	307	176	77	1,745	274	202	337	202	89
EU	1,261	204	190	302	170	30	1,440	229	220	341	194	41
Brazil	233	34	22	47	37	3	363	46	37	75	64	5
China	129	26	30	35	9	11	136	21	35	37	11	14
India	87	23	24	2	15	4	129	28	39	3	22	7
Philippines	185	63	19	31	16	31	233	71	26	37	21	42
Vietnam	48	12	12	8	4	3	61	15	15	10	5	4

Source: Calorie supply from Food and Agriculture Organization of the United Nations (FAO), and food expenditures from Euromonitor.

growing food market, it has noticeably lagged behind other regions in retail food sales growth. Nestlé, the world's largest food company, had 37 percent of its total sales in Europe in 1998 but only 32 percent in 2002, with overall European sales growing only 7 percent during the period (table 1-8). In other countries, Nestlé's sales grew more rapidly. For example, sales in the Americas grew nearly 30 percent between 1998 and 2002. Similarly, Unilever achieved a mere 3-percent growth in its European market during 1998-2002, a much slower growth rate than the company's 19-percent global average over the period. Europe accounted for 47 percent of total Unilever sales in 1998 but only 40 percent in 2002. Markets outside Europe expanded at faster rates. Population, demographics, and economic growth have all contributed to increased sales in the developing country markets, where food firms continuously seek new strategies for expansion.

Food companies have several options for selling in the developing-country markets. Exporting high-value food products remains an option, but most food company sales are generated by investing abroad and processing food in foreign markets. The choice of mode of sale depends on the type of products sold, and is generally based on product characteristics that determine a product's suitability for trade or for FDI. Most food sold in retail outlets can be considered as either commodity based or manufactured. Commodity-based products are those that are identifiable with a specific commodity, such as meat, fruits and vegetables, fish, milk, or sugar, and are typically sold under generic labels. A manufactured product undergoes substantial transformation during manufacturing and includes multiple commodities as ingredients. For example, breakfast cereals or bakery products are manufactured from a wide variety of ingredients, such as milled grain, flours, oils, sugar, fruit, nuts, dairy, and eggs. Manufactured products are processed into consumer-ready packages carrying company brands, which differentiate products in the marketplace.

Commodity-based products are less suited for FDI because production is limited by specific growing conditions. Commodity-based products are generally processed close to the location of primary production. Once

Table 1-8—Sales growth for leading companies

Company	1998	2002	Sales growth
			1998-2002
	<i>Billion dollars</i>		<i>Percent</i>
Nestlé:			
Europe	15.9	17.0	7.0
Americas	13.4	17.3	29.8
Asia, Oceania, and Africa	7.4	8.8	19.7
Other (not specified)	5.9	9.7	63.8
Total	42.5	52.8	24.3
Unilever:			
Europe	11.2	11.6	3.2
North America	5.0	7.4	47.9
Africa, Middle East, and Turkey	1.3	1.9	40.9
Asia and Pacific	3.4	4.5	32.3
Latin America	3.0	3.2	8.3
Total	23.9	28.6	19.4

Source: Euromonitor, compiled from company reports.

Sales data converted from local currency to U.S. dollars using fixed exchange rate for year 2000.

processed, commodity-based products, such as fresh or frozen meat, frozen and canned fruits and vegetables, and dry milk powder, can be exported to foreign markets. Commodity-based products tend to be traded far more than manufactured packaged products and account for nearly 75 percent of the total value of U.S. processed food trade (table 1-9).

Production of manufactured products is less location specific than agricultural production, since processing technology and capital are mobile in the world food economy. With FDI, food manufacturing can be relocated to another country to satisfy local demand. Firms investing abroad can strategically tailor both manufacturing and packaging to suit local tastes and preferences, as well as cater to retailers' demands. Firms generally opt for an FDI sales strategy over an exporting strategy in markets where the demand base is large enough to warrant investing in a local manufacturing affiliate. The effect of this strategy tends to lessen global trade in manufactured food products. For example, beverages and bakery products account for the bulk of U.S. products manufactured abroad, but commodity-based products, such as meat, vegetable oils, fruits, and vegetables, account for the largest share of U.S. processed food exports. Given the rationale for foreign direct investment among many food manufacturers, U.S. processed food sales through FDI (\$150 billion) are five times more than U.S. processed food exports (\$28 billion) in 2002.⁷ This illustrates how food manufacturers can meet the growing demand in overseas markets with little increase in overall processed food trade.

⁷ Food sales from FDI and trade correspond to the Standard Industrial Classification (SIC 20) "food and kindred products," which includes processed food, beverages, processed animal feeds, and food ingredients.

Table 1-9—U.S. high-value food exports

Item	Value in 2002	Share of total high-value food trade
	<i>Million dollars</i>	<i>Percent</i>
Commodity-based products:		
Meat and poultry	8,763	21.5
Fresh fruits and vegetables	3,286	10.3
Fats and oils	3,085	11.3
Preserved fruits and vegetables	2,765	7.2
Fish and seafood	2,651	8.2
Flour and milling products	2,266	6.8
Dairy products	1,076	3.3
Processed nuts	849	3.3
Animal feeds	597	2.0
Sugar and roasted coffee	157	0.6
Total	25,494	74.5
Manufactured packaged products:		
Food preparations	1,990	6.3
Alcoholic beverages	1,425	4.5
Breakfast and bakery products	1,393	4.4
Flavorings	1,013	3.2
Candy and chocolate products	865	2.7
Pet food	691	2.2
Snack foods	245	0.8
Soft drinks	241	0.8
Speciality foods	164	0.5
Pasta and noodles	85	0.3
Total	8,113	25.5

Source: U.S. Census Bureau, Foreign Trade Statistics, ERS classification.

Looking Ahead

While the United States, the European Union, and Japan currently account for about two-thirds of global processed food sales, developing countries account for over three-fourths of total global food consumers. Given the growth in demand and projected food sales in developing countries, multinational food retailers and manufacturers are expected to increasingly focus on those markets. Data on retail sales across regions and FDI in the processed food sector tend to support the hypothesis that a global market may exist only for limited food products. Food preferences vary based on income and geographic location. Moreover, processed food products tend to be manufactured locally, which allows manufacturers to prepare and package products to suit local preferences and values. Therefore, while the food industry becomes more global, with retail chains and multinational manufacturers operating across many countries, growth in food trade may not keep pace with growth in global food demand.

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Demand for Quality Drives Changes in Food Supply Chains

Robert P. King and Luciano Venturini¹

Production and marketing of a differentiated product, in response to consumer demand, requires adjustments in the traditional food supply chain to preserve the product's identity and provide quality assurance to consumers.

High-value food products have unique characteristics that differentiate them from other food products. These characteristics may be related to sensory attributes, nutritional content, health claims, food safety guarantees, origin, production and processing practices, and/or convenience. High-value foods—which include semiprocessed, processed, and other packaged food products—have long been an important part of agricultural trade in local, regional, and interregional markets. For example, the ancient Greeks traded olive oil and wine throughout the Mediterranean Basin, and trade in spices and seasonings was the basis for early commercial and cultural linkages between Europe and East Asia. High-value foods constitute a major share of total agricultural trade in the contemporary world economy. That share has increased significantly in recent years—from 31 percent in 1975 to 69 percent in 2000 for the United States, and globally from 73 to 87 percent over the same period (FAO, 2002).

Suppliers of high-value food—farmers, manufacturers, or retailers—face challenges in creating and preserving the unique characteristics of their products and conveying information about those characteristics to consumers. Often, suppliers must rely on numerous members of the food supply chain, such as farmers, for raw products and key services required for production, and they must work through downstream market intermediaries, such as processors and distributors, as their products move to consumers. This configuration of food chain members complicates information sharing and the coordination of activities, product monitoring and quality assurance, and the provision of incentives to supply chain members to ensure equitable and efficient allocation of costs and returns. It also makes it more difficult to convey information about product attributes, especially the increasing number of attributes that cannot be observed or independently verified before or after purchase and consumption (known as credence goods). The diverse solutions developed to address these problems are helping to shape the evolving global food market, influencing patterns of production, distribution of revenues and costs, product innovation, product availability, and economic development.

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The problems faced by food suppliers are not new, but recent research on supply chain design and management puts them in a new light. Writing about quality assurance in food supply chains, Venturini and King (2002, p. 58) define a supply chain as “... a linked set of value creating activities encompassing product design, input procurement, primary production and processing, marketing, distribution, and service.” Supply chain thinking encourages a systemwide view of the chain—focusing as much on the linkages between technologically separable segments as on the management of processes within those segments. This perspective is valuable for chain participants as they plan supply chain designs and make management decisions to further the growth of and benefits from expanding markets in high-value food.

Key Elements of High-Value Food Supply Chains

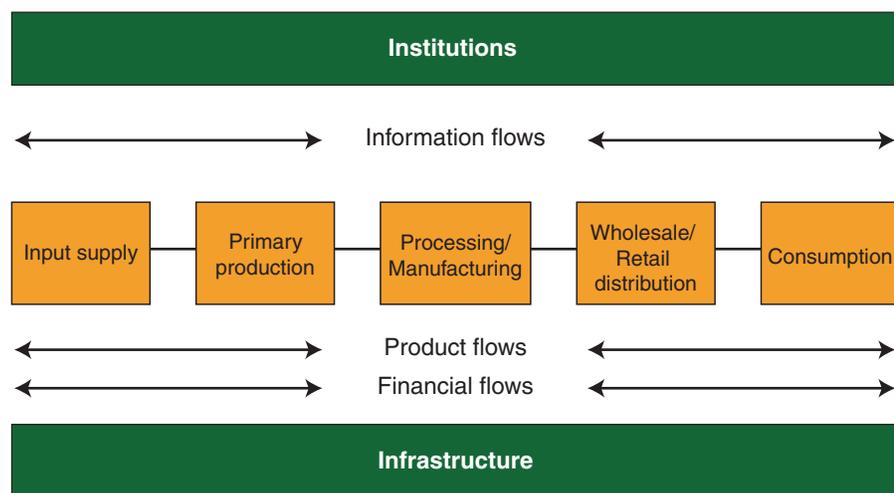
Supply chains for high-value foods are complex and product specific. The generic supply chain represented in figure 2-1 is highly simplified, but it captures key features that are useful for describing and comparing supply chains for different products.

This chain has five technologically separable processes: input supply, primary production, processing/manufacturing, wholesale/retail distribution, and consumption. Of course, not all five segments are relevant for every supply chain, and in many cases these processes can be further divided into separable subprocesses. The configuration of ownership and control over supply chain segments is one important dimension of supply chain design. Coordination between two processes is often simpler when both are controlled by the same firm or when the relationship between distinct firms is governed by long-term contracts.

There are three major types of flows through the supply chain: product, financial, and information. The first, physical product flows, are unidirectional.

Figure 2-1

Key elements of a high-value food supply chain



Source: King and Venturini.

tional in most cases, starting with input supply and ending with consumption. In some chains, return flows of defective products and backhauls of shipping containers can also be significant. Financial resources flows tend to move in the opposite direction of product flows, with payments going to upstream suppliers as products move downstream toward consumers. In some cases, however, suppliers who retain ownership of their products as they move through the supply chain may pay fees to downstream firms for production, processing, or distribution services. Information flows move in both directions throughout the supply chain. From any point in the chain, suppliers convey information about product attributes and availability to downstream customers, while receiving information about product demand, product inventories in downstream segments, and consumer reactions to product attributes.

Supply chains operate in a broad environment that is characterized by infrastructure and institutions. Infrastructure includes transportation and telecommunication systems, multipurpose technologies for packaging and product preservation, third-party providers of logistics and information system services, organizations, such as universities, that create and transfer knowledge, and mass media that reach consumers with advertising messages. Markets and exchanges are also an important component of supply chain infrastructure. Internet-based business-to-business exchanges are transforming trading practices in segments of food supply chains that are far removed from the transactions supported by traditional commodity exchanges.

Supply chain institutions dictate the “rules of the game,” circumscribing the allowable actions of supply chain participants. These institutions may be established through international organizations, national or local governments, or nongovernmental organizations, such as trade associations. They establish laws and regulations that govern commercial practices, food safety and product quality, trade, labor practices, and intellectual property. They also establish industry standards associated with supply chain features ranging from product packaging and contract provisions to electronic data interchange and funds transfer.

Infrastructure quality and institutions can have far-reaching impacts on supply chain design for high-value products, and cross-country differences can significantly affect supply chain configuration and the geographical scope of product distribution. For example, suppliers of branded food products may choose not to enter markets where infrastructure to support advertising is lacking and legal institutions that protect brand trademarks are weak.

Finally, there are many possible dimensions for assessing the performance of high-value food supply chains. However, the following are of critical importance to both supply chain participants and society:

- Systemwide efficiency of resource use
- Equitable distribution of costs and returns
- Food safety and quality
- Adaptability and innovation

The supply chain design process focuses on the configuration of technologically separable processes and the linkages between them; flows of products, financial resources, and information; and investments in infrastructure and institutions. It is iterative and often contentious, but the ultimate aim is to make progress in these four dimensions.

Influence of Locus of Value Creation on Supply Chain Design

Value can be created in any segment of a high-value food supply chain. For example, many food products are distinguished by their place of origin or by unique sensory attributes associated with production practices. Similarly, branded food and beverage products, a growing component of the world market in high-value foods, usually derive their value from processing, packaging, and marketing activities based in the processing/manufacturing segment of the supply chain. Restaurants operating in the wholesale/retail distribution segment of the chain are the primary creators of value in fast food supply chains. Input suppliers are the primary source of value in supply chains for new products with unique nutrition or health attributes based on genetic characteristics of food product ingredients. Therefore, as illustrated by the following four examples of high-value food supply chains, the locus of value creation often determines the supply chain design.²

Value Created in Primary Production: Label Rouge Poultry Example³

The French Label Rouge system is a national food quality assurance program for products of artisanal farming with a well-defined geographical origin. Label Rouge poultry products have been available since 1965, and they currently account for a significant share of the poultry purchased by French households. They are recognized for their taste, appearance, safety and wholesomeness, and the environmentally friendly practices used in producing them. As such, the primary production segment of the supply chain is especially critical in creating high value.

Label Rouge poultry products are produced by *filière*, farmer-centered supply chains comprising genetics development organizations, hatcheries, feed mills, farms, and slaughter/processing facilities. Close cooperation and information sharing across the input supply, primary production, and processing/manufacturing segments of the supply chain is coordinated through procedures and processes established in a *cahier des charges*, a document that must be approved by a national agency. Compliance with the *cahier des charges* is monitored by third-party certification. Noncompliant products, identified at any point in the system, are either destroyed or marketed without the Label Rouge designation, thereby sacrificing a price premium 50 to 150 percent above the price for similar non-Label Rouge poultry products (Westgren, 1994, p. 572; 1999, p. 1109). *Filière* participants are responsible for their losses resulting from noncompliance.

Cahier des charges provisions differ across supply chains, and these differences provide the basis for product branding at the retail level. Label Rouge poultry is packaged and labeled before it leaves the processing

² These brief supply chain descriptions are based on longer descriptions presented by Venturini and King (2002, pp. 60-71).

³ This description is based on material presented by Westgren (1994, 1999) and by Sylvander (1996).

plant. The branding protects product identity as the products enter the distribution/retailing segment of the supply chain with other packaged fresh poultry products.

The Label Rouge poultry supply chain is noteworthy for the degree of cooperation it achieves among input suppliers, farmers, and processors. To a large extent, this is made possible by the institutional foundations provided by the laws establishing the Label Rouge program and by the strong organizational infrastructure that has developed around the program. The program produces a high-value product demanded by consumers, while returning added profits to farmers.

Value Created In Processing/Manufacturing Segment: Wheaties Example⁴

Wheaties breakfast cereal has been produced and marketed by General Mills since 1921. Wheaties is a revered brand, with a loyal customer base built on a simple but appealing product design, decades of consistent quality control, and advertising centered around sports themes. The cost of the ingredients in a box of Wheaties is only a fraction of the price General Mills receives from wholesalers and retailers. This cereal is a classic example of a high-value product that derives most of its value from the processing/manufacturing segment of the supply chain.

Until recently, General Mills procured wheat for Wheaties in traditional commodity markets. However, given recent research revealing superior taste, appearance, and processing attributes of cereal flakes made from particular wheat varieties, General Mills has decided to use select wheat varieties in producing Wheaties. Working through a small line of corporately owned grain elevators in Idaho to control the supply of seed and to collect and store the harvest, General Mills has established a supply chain that ensures a supply of identity-preserved wheat to its manufacturing plants. The wheat is grown under contract with growers in the area, who are paid a small premium—ranging from 5 cents to 25 cents per bushel—for using approved production practices and for keeping the wheat segregated from other varieties. Through its grain elevators, General Mills monitors crop production practices, tests for varietal integrity, and implements grain storage and handling practices designed to minimize risks of contamination or co-mingling. These measures help minimize quality assurance costs elsewhere in the chain. Ownership of the grain elevators also makes it easier for General Mills to coordinate the logistics of shipping wheat to its cereal manufacturing plants and the liquidation of excess supplies through sales in regular commodity markets. The changes in procurement practices have not affected manufacturing processes for Wheaties. Like Label Rouge poultry, cereal leaves the manufacturing plant packaged, which enables it to move easily through wholesale and retail distribution systems.

Value Created in Retailer-Led Supply Chain: Marks & Spencer Beef Example⁵

Food retailers in the United Kingdom (UK) have been leaders in the development of high-quality private label products that shift brand identity from

⁴ This description is based on presentations by and conversations with Ronald D. Olson, Vice President Grain Operations, General Mills.

⁵ This description is based primarily on material presented by Fearn, 1998.

the food manufacturer to the retailer. This shift has partly resulted from implementation of the 1990 Food Safety Act, which requires retailers to take primary responsibility for ensuring the safety of the food products received from their suppliers. The Act forced retailers to focus more on the upstream segments of the supply chain and led to the development of farm quality assurance schemes that set standards for product traceability, animal feeding, animal health and welfare, and product transport and handling (Fearne, 1998, p. 220). Subsequently, the outbreak of Bovine Spongiform Encephalopathy (BSE) in the UK has made quality assurance in food even more important to British consumers.

The supply chain for beef products sold by Marks & Spencer exemplifies a retailer-led supply chain. Marks & Spencer procures beef exclusively through Scotsbeef, a family-owned slaughter and processing firm that buys all its beef from Marks & Spencer-approved Scottish producers. In this way, Marks & Spencer clearly defines its suppliers back through the primary production segments of the supply chain and establishes linkages with them to facilitate coordination and two-way information flows. Marks & Spencer maintains a database with information on all its producers and conducts regular taste tests that are used to provide feedback to individual farmers (Fearne, 1998, pp. 222-223). This system promotes learning throughout the supply chain and is mutually beneficial, since it improves both farm-level performance and product quality.

Value Created in Input Supply Segment: LoSatSoy™ Oil Example⁶

In recent years, seed companies have placed increased emphasis on developing varieties with traits well suited for special end uses. For example, Iowa State University developed the low palmitic-acid soybean using traditional breeding methods. Pioneer Hi-Bred International commercialized the variety under a license agreement. LoSatSoy™ cooking oil produced with low palmitic-acid soybeans has a level of saturated fat comparable to that in canola oil (Iowa State University Office of Biotechnology, 1997). LoSatSoy™ oil sells for a premium retail price relative to standard soybean oil. This high-value food product derives its value primarily from activities at the input supply end of the supply chain.

The DuPont Company, which owns Pioneer Hi-Bred, faces two difficult challenges in commercializing low-saturate soybeans. First, these soybeans have added value only if varietal integrity is maintained during farm production and as the product moves from the farm to the manufacturer. Second, while DuPont operates at the input supply end of the supply chain, the added value for the low-saturate soybeans is not realized until the cooking oil produced from the soybeans is sold to end-users. Both identity preservation and value capture are difficult when ownership changes hands several times as a product moves through the supply chain. Working through Pioneer Hi-Bred and two other subsidiaries—Optimum Quality Grains, L.L.C. (OQG) and Protein Technologies International (PTI)—DuPont has developed an innovative supply chain to address these challenges.

⁶ This description is based on an unpublished case study by Robert King. Information for that case was collected from the Web sites of Optimum Quality Grains, L.L.C. (now DuPont Specialty Grain, <http://www.oscar.dupontsg.com>) and Protein Technologies International (<http://www.protein.com>) and from personal communication with Robert E. Kennedy at Optimum Quality Grain.

OQG coordinates seed production and distribution, farm production, assembly, and transportation through an Internet-based contracting system called OSCAR™. This system enables farmers to identify nearby grain elevators offering contracts for identity-preserved products. Low-saturate soybean seeds are sold only to farmers who have contracted through this system. The contracts stipulate production practices that ensure varietal integrity and require farmers to deliver all their production to the contracting elevator. In return, farmers receive a premium of 25 cents over the local price for commodity soybeans. Contracting elevators, not OQG, purchase the low-saturate soybeans from the farmers. OQG reimburses the elevators for the identity preservation premium paid to farmers, pays the elevators a small fee for segregating the low-saturate soybeans during storage, and directs elevators to ship the identity preserved soybeans to crushing plants when needed.

PTI coordinates soybean processing and distribution to retail channels and works with retailers to promote demand for LoSatSoy™ oil. PTI contracts with crushing and refining plants to ensure the product's identity throughout processing. PTI never actually owns the soybeans or the oil derived from them. Rather, it pays small quantity-based premiums to crushers and refiners and then charges a royalty fee to refiners for each unit of LoSatSoy™ oil sold.

The LoSatSoy™ oil supply chain brings many independent segments together in a well-integrated identity-preserved system that promotes efficiency and responsiveness to consumer demand. As such, it may be a model for other high-value food products that derive their value from genetic attributes. DuPont has developed a system that converts intellectual property into a tangible product with value to consumers. DuPont captures a large share of the added value in the chain by paying downstream chain participants for identity preservation while never actually taking title to the low-saturate soybeans or the products derived from them.

In the four examples, it is apparent that successful production and marketing of high-value products requires coordination between the different segments of the supply chain. The degree and types of coordination and integration among the different segments may vary based on the locus of value generation. When value is generated in the primary production process, coordination is required among input suppliers, farmers, and primary processors. When value is added at the processing segment, coordination is required between suppliers of raw material and processors. In the case of General Mills' Wheaties, coordination is further facilitated by General Mills' ownership of elevators in the wheat-producing areas. When value creation is driven by the retail sector, a high degree of coordination is required among farmers, processors, and retailers. Finally, when value is created in the input supply segment and product identity must be preserved along different levels of the supply chain, coordination is required among many different players, including producers of the input (seed), farmers, grain elevators, crushing and processing plants, and retailers.

Fundamental Principles Behind a Successful Supply Chain

Contemporary studies of supply chains have focused on the concept of “lean thinking.” In *The Machine That Changed the World*, Womack, Jones, and Roos (1991) describe the development of lean production methods by Toyota Motor Company and the impacts of those methods on the global automobile industry. In their followup book, *Lean Thinking*, Womack and Jones (1996, pp. 15-99) identify five fundamental principles for lean enterprises and show how they have been applied by firms in a range of industries and locations. Even though these principles are based on the experiences of nonagricultural firms, they are reflected in the four examples in this section and in supply chain designs for other successful high-value foods.

- **Specify value**—Firms need to understand the value their product offers to end-users, staying focused on the customers’ points of view rather than their own. Supply chains for Label Rouge poultry, Wheaties, and Marks & Spencer beef all focus on delivering products that consumers appreciate and demand. Despite possessing attributes that are important to consumers, LoSatSoy™ oil has been less successful than the other three products. Input suppliers are far removed from consumers, and conveying value to consumers is generally difficult for makers of biotech products.
- **Identify the value stream**—The value stream is the entire set of activities required to deliver the product and the value embodied in it to the ultimate customer. It includes product design and development, the information tasks associated with order processing and scheduling, and the physical transformation in form, space, and time associated with manufacturing and distribution. Firms must fully understand the entire value stream, including those activities performed by other firms. This kind of learning is especially evident in the supply chains for Label Rouge poultry, Marks & Spencer beef, and LoSatSoy™ oil.
- **Ensure continuous flow**—Firms need to make the value stream flow continuously rather than in batches. Traditional manufacturing systems were characterized by long production runs and large inventories of intermediate and finished goods, which served as buffers for responding to demand shocks. Flow is difficult to achieve in agriculture, where production is seasonal and requires weeks, months, or years. Even though primary production in the Label Rouge poultry and Marks & Spencer beef chains is in batches, the involvement of many producers who coordinate their production makes it possible to achieve a steady flow in the processing/manufacturing segment of the chain. Grain storage serves the same purpose in the Wheaties and LoSatSoy™ chains.
- **Govern production through pull**—Quite simply, this principle implies that production of a product should not begin until requested by a customer. Pull eliminates the need for large price swings and inventory buildups but is difficult to fully achieve in food supply chains due to the fundamental nature of agricultural production. In both the Wheaties and LoSatSoy™ supply chains, however, the principle of pull governs movements from storage to processing and manufacturing plants. Also, in the four chains, improved information flows help transmit demand signals

more quickly to the input supply and primary production segments than would be the case in less integrated chains.

- **Strive for perfection**—Firms should strive for continuous, incremental improvement in their products and processes. They should configure the value stream to minimize defects at each stage to reduce the need for costly reworking and replacement of defective items. Once again, all four supply chains described in this chapter include quality assurance processes that reduce product contamination. The Wheaties and LoSatSoy™ supply chains achieve this primarily through monitoring and testing. On the other hand, information sharing and the threat of being excluded from the chain for noncompliance with quality standards are key quality assurance tools in the Label Rouge poultry and Marks & Spencer beef chains.

The idea of transparency is also critical for understanding Womack and Jones' view of the lean enterprise. In almost all cases, the supply chain encompasses several firms, and many of the most difficult challenges in implementing lean thinking involve eliminating negative externalities firms impose on each other and fostering positive externalities. This requires openness among firms along the supply chain regarding costs, prices, and processes, and some commitment by all to ensuring each firm receives an adequate return on investment (Womack and Jones, 1996, pp. 276-278). The high degree of information sharing in the four chains described here helps promote transparency. Nevertheless, complete transparency is an ideal that is difficult to achieve. It is crucial to recognize that noncooperative strategic behavior continues to be prevalent, even with the focus on efficiency and collaboration associated with the shift toward the lean enterprise.

Evolving Linkages Shape Food Supply Chain

The problem of supply chain design is one of configuring a set of discrete activities and processes into an integrated system that creates value and delivers it to customers. Physical processes are often product specific, though there is usually some degree of choice regarding technology, scale, and location. Linkages between processes are more generic, and linkages developed for one chain can often be adapted for use in others. Mechanisms for linking and coordinating processes can be grouped into three broad categories: standards, markets, and organizational coordination mechanisms.

Standards

Standards have long been recognized as a tool for linking discrete processes in the food system. The publicly defined grain grades established under the 1916 Grain Standards Act lower transaction costs and are an institutional foundation for the decentralized grain marketing system in the United States (Hill, 1998). Even as the system moves away from standard commodities to more specialized products, public grades and the standard measures that define them continue to be important (Chambers and King, 2002). Standards can also be established by trade associations or by individual firms. For example, the Universal Product Code (UPC) identification number system is

the product of an industry-sponsored organization. This system revolutionized operations at the retail end of the supply chain, not only in the checkout lane but also in the backroom, where inventory management and product ordering are key concerns (Walsh, 1993).

At least three types of standards are likely to play a role in the design of supply chains for high-value foods.

- **Primary production practice standards** often serve as a basis for value creation in food supply chains. These standards may simply specify a variety or a time when a production cycle will be initiated, as in the Wheaties and LoSatSoy™ supply chains; or they may be more complex and far-reaching, as in the Label Rouge poultry and Marks & Spencer beef chains.
- **Packaging and logistics standards** aid the configuration of new supply chains. “Packaging” used in a very broad sense refers to any technology that preserves the integrity of a product as it moves through the supply chain. At the distribution/retail end, standards have been developed for reusable pallets and containers used to transport food products from manufacturers to distributors and retailers. These standardized tools make it possible to move large numbers of distinct products from many points of origin to many destinations in an efficient manner. As the overall volume and diversity of identity-preserved products increases, incentives emerge to develop new packaging and logistics standards for the upstream segments of food supply chains. For example, greater use of containers to move food products from farms to processors and manufacturers adds flexibility in transport. This facilitates identity preservation and quality assurance in general purpose logistics systems that may be able to approach the efficiency of current bulk transportation systems.
- **Data transfer standards** shape supply chain design. Building on the UPC standards developed in the 1970s and 1980s, food manufacturers, wholesalers, and retailers developed and implemented electronic data interchange (EDI) standards in the 1990s. More recently, the pace of development has increased for Internet business-to-business systems. These systems rely on more generic standards and tools, requiring less upfront investment by trading partners. They are well suited for data transfer between small firms and for situations where low volumes of data are transferred infrequently.

Standards development greatly influences systemwide efficiency and quality assurance. New standards alter the level of transparency and the intensity of competition, thereby impacting the distribution of returns within a supply chain. Standards can also affect innovation by making it easier for new firms to develop the management systems and business practices needed to enter a supply chain segment or establish a supply chain for a new product. Narrowly defined standards, however, may make it difficult to introduce radically new systems and processes.

Markets

Markets are efficient mechanisms for coordinating resource allocation decisions and product flows among firms when externalities, public goods, and

access to information are not important factors and when there is adequate competition among both buyers and sellers. The emergence of greater product diversity at the primary production end of the food system is creating many new opportunities for market formation. At the same time, the rapid development of electronic commerce is lowering the cost of establishing new markets.

The electronic commerce system for production contracts in the LoSat-Soy™ supply chain helps producers identify delivery points for low-saturate soybeans and provides information on contract terms and price premiums. DuPont also uses the same system for other crops, making it easier for elevators and other downstream firms to identify and contact potential farmer suppliers. The system provides farmers an opportunity to compare delivery point locations, contract provisions, and price premiums for a range of crops.

Though the development of electronic commerce has slowed recently in segments closely linked with primary agricultural production, progress continues in developing electronic exchanges that link manufacturers, wholesalers, and retailers. These new markets are having profound effects on the structure of business-to-business linkages and the role of intermediaries. The impacts are likely to extend back upstream to the primary production and input supply segments of food supply chains (Wheatley, Buhr, and DiPietre, 2001). Future developments will continue to be driven by advances in information technology and by economic research on theories of bidding and auction market design (McAfee and McMillan, 1987), helping to clarify the efficiency and distributional impacts of alternative market mechanisms.

New markets can lower systemwide costs and alter the distribution of returns among chain participants. The presence of markets spanning across several supply chains should help foster adaptation and innovation if the control of competing supply chains is not highly concentrated. For example, several distinct supply chains compete for supplies of identity preserved grain in the United States. It is important to consider interchain markets in the institutional design process. Inter-chain markets can inject competitive forces and are more likely than markets operating within a single chain to be the focus for public sector regulation and intervention.

Organizational Coordination Mechanisms

Organizational coordination mechanisms used in supply chain design include business practices that may be established through nonprice/quantity provisions in contracts or through informal interfirm relationships. They also include new organizational forms, such as third-party certification agencies helping guarantee product quality and joint ventures and alliances that coordinate investment, operations, and gain-sharing among otherwise independent trading partners.

Information sharing, decision transfer, and decision partnership are three generic business practices for coordinating resource allocation and product flows across firm boundaries. Each helps reduce information asymmetries,

facilitating trading partners to recognize and reduce the effects of externalities they impose on each other. For example, vendor-managed inventory practices between food manufacturers and distributors use information sharing and decision transfer to realize efficiency gains. A wholesaler or self-distributing retailer regularly sends product movement data to a manufacturer, which allows the manufacturer to make decisions regarding replenishment flows, subject to restrictions on minimum and maximum inventories at the distribution center. This enables the manufacturer to lower costs by smoothing production and rationalizing logistics, with cost savings being shared by the two parties. Higher degrees of interdependence and information sharing are evident in retailer-led supply chains, such as in the case of Marks & Spencer beef.

Category management practices at the retail end of the food system illustrate the value of decision sharing. Manufacturers, brokers, wholesalers, and retailers form teams to make joint decisions about product assortment, shelf-space allocation, pricing, and promotions. Often, these teams are based on informal ties rather than on contractual agreements. When successful, category management reduces costs and increases product flows for all parties.

New organizational forms also facilitate coordination. Third-party certification agencies can play a role in high-value food supply chains when defining attributes are linked to production practices, as they are in the case of organic products. In such cases, a group of firms in one segment of a supply chain, a vertical alliance of trading partners, or a government body may establish and use an independent certification agency for quality assurance. For example, in the Label Rouge case, a third-party certification agency monitors compliance with *cahier des charges*. Generally, the certification process involves a combination of baseline and periodic followup inspections, strict record-keeping procedures, and unannounced audits. This process can be costly, but in some settings it is more efficient and effective than direct monitoring and laboratory testing.

Vertical joint ventures and alliances are also organizational tools for supply chain design. A joint venture may make it possible for independent trading partners to establish a service that draws on the unique competence of each firm and broadly benefits the entire supply chain. More broad-based alliances between trading partners—for example, an alliance between a cooperative, with members that can source a wide range of identity-preserved raw ingredients, and a food manufacturer requiring ingredients for a diverse product line—may be the basis for efficiency gains across a number of more narrowly defined high-value product supply chains.

Looking Ahead

The future evolution of high-value food supply chains will be primarily driven by creative ideas and strategic choices of individuals and firms responding to new market opportunities. In general, competitive forces at the local, national, and international levels can be expected to push this evolutionary process toward increased efficiency and higher quality products. However, some economists voice concern that concentration of owner-

ship and control will skew the distribution of costs and returns and impede innovation in some segments of the food system.

Public sector organizations will help shape the evolution of high-value food supply chains. Perhaps the most important influences will be through public investment in infrastructure and public establishment of institutions. In developing countries, especially, infrastructure and institutions will be a major factor determining both the ability of suppliers to offer their food products in world markets and the opportunities consumers will have to enjoy efficiency gains of new technology and product development. In developed countries, infrastructure and institutions will have important impacts on product diversity, competition, competitiveness, and innovation.

The world food system is undergoing fundamental changes due to technological change, population growth, economic development, and globalization. The emergence of more highly integrated supply chains for high-value foods, increasingly demanded by consumers across all income levels, is an important part of the overall pattern of change. Sound knowledge of supply chain design principles and thoughtful evaluation of design alternatives will help promote change that fosters economic growth, food safety and security, and innovation.

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Retail Sector Responses to Changing Consumer Preferences

The European Experience

Jean-Marie Codron, Klaus Grunert, Eric Giraud-Heraud, Louis-Georges Soler, and Anita Regmi¹

Private retailer labels have been effective in providing quality assurance and meeting the highly differentiated demands of wealthier consumers, particularly in Europe.

The Western European countries are a mature market for food, with growth in demand generally associated with growth in population. However, demand patterns of European consumers are changing, with growing demand for food products with certain characteristics, such as products perceived to be safer, more healthful, or produced in ways that are more beneficial to the environment and take animal welfare and equitable labor concerns into consideration. For example, 80 percent of the consumers in the European Union (EU) indicate a concern for animal welfare (Blandford and Fulponi, 1999), and European consumers are increasingly demanding organic food products and a wider selection of such products (Lohr, 2001). The social concerns for equitable income distribution and sustainable development are reflected in the growth of sales of products marketed under Fair Trade labels. The European Fair Trade market is estimated at \$140 million annually (FAO, 1999), with participation by 50 supermarket chains in 14 countries (Lohr, 2001).

The changes noted in food demand patterns of European consumers are representative of certain segments of the population in many affluent countries. Consumer demand changes pose certain challenges and opportunities for food suppliers. In the United States, rising demand for organic products has resulted in an expansion of area planted to organic crops from 1.3 million acres in 1997 to 2.3 million acres in 2001 (Greene and Kremen, 2003). Similarly, a small and growing group of livestock producers, such as the Niman Ranch, are successfully raising animals under conditions that meet animal welfare guidelines. Therefore, opportunities exist for food producers and suppliers to differentiate their products to meet specific demands of consumers.

When value is added to products under the retailer initiative, appropriate quality signals are required to convey the information regarding the added value to the consumer. Private retailer brands exist in the United States, but these brands are generally cheaper substitutes to major brands and are not

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necessarily recognized as products associated with additional value added to reflect higher quality or food safety standards. On the other hand, private retailer brands in the European retail sector are associated with higher quality and food safety standards. It is likely that this trend will spread to other wealthier countries and the shares of private brands associated with improved quality and safety standards will grow on grocery store shelves across these countries.

European Consumers

Food consumption behavior in the EU is rapidly evolving and becoming more difficult to understand and predict. The complexity of food choices for consumers stems from increasing differentiation of food products in the marketplace, and the increasing dynamics, complexity, and heterogeneity of consumer demands (Grunert, 2002). Consumer food choice is still influenced by product prices, product quality, and income levels. But what consumers regard as “quality” has changed considerably in recent years and is today more closely associated with four quality attributes for food products: sensory attributes, health attributes, process attributes, and convenience attributes (Grunert, 2003).

Sensory attributes refer to the classical aspects of food quality: taste, appearance, and smell, with taste being dominant. Taste is an experience quality that can be evaluated only after a product is purchased, and consumers use a host of market signals, like brand, price, and quality labels, in trying to predict the taste experience.

Health attributes have become increasingly important during the last 50 years, and studies indicate that consumers give equal weight to health and sensory attributes (Grunert, 2003). While consumers are aware of the link between eating and health, they do not expect the consumption of a particular product on a particular occasion to have a health implication that they can experience. Many health effects of food are of a rather abstract nature—like the risks of particular diseases being reduced by a certain percentage—and thus do not lead to consequences that are readily accessible to experience. Health as a choice criterion for food is thus a question of communicating and interpreting various signals. Some recurring themes among signals sent by European consumers are that industrial food production is less healthy than small-scale local production, additives are unhealthy, fat is unhealthy, and vegetables are healthy (Brunsø, Fjord, and Grunert, 2002).

More recently, food manufacturers have used the health criterion in the development of “functional foods,” food products that have an added positive health benefit (Frewer et al., 2003). These products include yogurts with probiotic ingredients,² margarine enriched by cholesterol-reducing ingredients, and juices enriched with calcium and other healthy ingredients. While some functional ingredient benefits may be perceived to enhance short-term well-being or performance ability, many health benefits envisaged for functional foods deal with long-term reductions of risks of certain diseases. This type of health benefit is generally invisible for the consumer and is hence a question of communication. For this reason, the question of which health

² Probiotic refers to the use of microorganisms in a way that is beneficial to human and animal health. Harmless bacteria may be introduced through food to promote their colonies and prevent the growth and multiplication of harmful bacteria, a technique known as competitive exclusion.

claims are allowed in the marketing of such products has become a topic for public debate. Even though the type of health claim will have an impact on consumer food choice, the degree to which a health claim affects consumer choice is dependent on the consumer's interpretation of the claim based on personal food health theories (Bech-Larsen and Grunert, 2003).

Process attributes relate to consumer interest in processes used in food production, even when such processes may have no analyzable impact on the final food product. However, some consumers value other nonmarket factors, as indicated by contingent valuation studies using hypothetical food market conditions that reveal consumer willingness to pay for different social and environmental causes (Bennett and Douglas, 1996; Blandford and Fulponi, 1999; and Henson 2001). Some consumers pay premiums for organic products; for products produced with due concern for equitable income distribution, animal welfare and/or environmental considerations; and for biotech-free products, even when these products, as measured by sensory analysis, look and taste the same as products without these attributes.

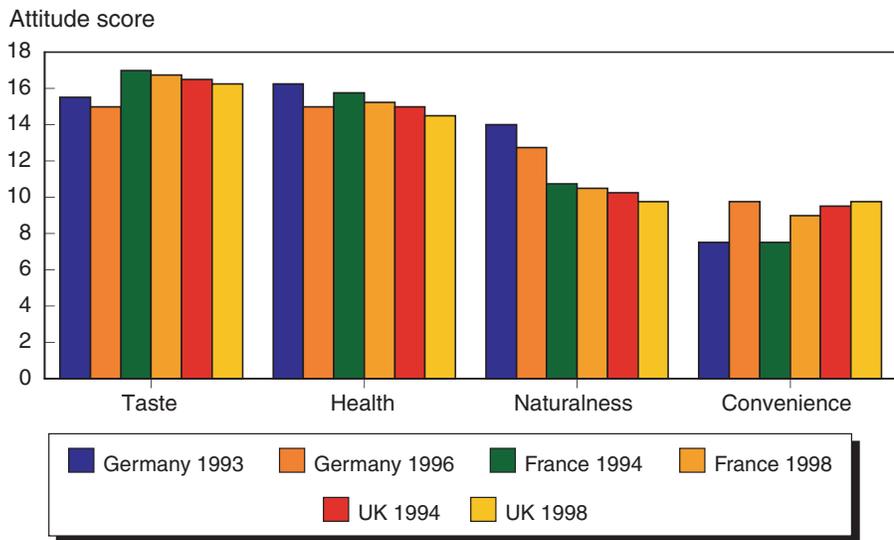
While consumers have long been concerned with methods of food production, European consumers' concerns for the way food is produced have been heightened by recent food safety shocks, such as cattle infected with Bovine Spongiform Encephalopathy, or BSE. Consumers assume that food products reach supermarket shelves via a production and processing system that is hygienic and ensures product safety. As such, food safety may not have a major bearing on consumers' daily food purchases. However, concerns regarding food safety have grown in recent years in the aftermath of dioxin contamination in Belgium, BSE in the UK, and other food scares in Europe. Because food safety is directly linked to food production, processing, and handling, food safety concerns are associated with consumer demand for process attributes.

Convenience attributes are defined as aspects of a food product that save time or energy household members typically spend on shopping, food storage, food preparation, eating, and food disposal. Though European consumers still regard taste and health as the most important dimensions of food quality, surveys indicate a growing regard for convenience (Grunert et al., 2001). Figure 3-1 presents average attitude scores from samples of household members responsible for grocery shopping and cooking in three major European countries (1,000 individuals per country).

Consumers may be interested in all four types of quality attributes, but may believe them to be, at least partly, incompatible. For example, high fat content in a dairy product may be regarded as an indicator of both superior taste and inferior health. Organic products may be desired as a form of production but at the same time be perceived as less convenient by some consumers. Convenience products with a high degree of processing may be regarded as undesirable in terms of their industrial way of production. The conflicting tradeoffs may be resolved by consumers in different ways under different situations, depending on the dominant buying motives.

Figure 3-1

Importance of quality dimensions of food



Note: The attitude scores are sums of three Likert-type items, which respondents rate on a seven-point agree-disagree scale, and the sums can range from 3 to 21. Naturalness can be considered a proxy for process attribute.

Source: Grunert, Brunsø et al., 2001.

Retail Sector Response to Consumers

In response to increasing consumer demand for safety, quality, and convenience in food, retailers have adopted more proactive marketing strategies, where they try to achieve customer loyalty not only by improving service, location, and store layout but also by having more influence on the overall value creation process in the food chain. This phenomenon is not limited to European retailers. For example, changes implemented by U.S. retailers in response to consumer demand include a marked increase in new products on store shelves, a rising prevalence of one-stop shops combining grocery and gasoline operations, and wider selection of prepared foods in store deli sections (Davidson, 2003). The growing demand for quality has also led to the success of such innovative retailers as Whole Foods, which bases its marketing philosophy on sustainable agriculture and active participation in local communities—process attributes desired by discerning consumers in the United States.

While similar demand trends exist in both the United States and Europe, preference shifts and retail market changes are further along in Europe. Retail changes implemented in Europe are primarily in response to consumer demands for process attributes in food. European consumers are far more concerned about food safety and process attributes of food than American consumers. For example, over 60 percent of British consumers are concerned about BSE, over 50 percent are concerned about animal welfare and the use of hormones and antibiotics in livestock, and 50 percent are concerned about the use of biotechnology in food production (Henson, 2001). In contrast, only 20 percent of Americans are concerned about BSE, about 40 percent are concerned about hormone use in livestock, and about 30 percent are concerned about animal welfare or the use of biotech in food production.

Among the many tools available to retailers, private labels can be viewed as one of the most effective instruments for actively securing customer loyalty to a store, as labels help ensure the same product cannot be available in any other store in the local market. In implementing the private label strategy, retailers seek dual objectives: lowering retail price and enhancing product value.³ Retailer brands may offer consumers products perceived to be of higher quality than the standard product at prices below recognized leading brand products of similar quality. Alternately, retailers may seek to add value and provide higher quality products when the existing products in the market provide few alternatives in meeting particular consumer demands. For example, the Danish retailer Dansk Supermarket offers a series of different private brands for dairy products as higher quality alternatives to the major manufacturer Arla brand commonly seen in the market. The Dansk brands are advertised as being superior in quality due to the use of local production under traditional cultural practices with due consideration given to food safety concerns. Similarly, other retailers across Europe have implemented private label strategies to cater to particular consumer demands, and there has been a trend to develop high-quality, differentiated private label products. The retail share of private labels among food products is high in many European countries, reaching 50-60 percent in Switzerland and 20-40 percent in most other Western European countries (fig. 3-2). The high quality associated with private brands has been shown to be a major determinant in purchasing decisions made by consumers (Hoch and Banerji, 1993).

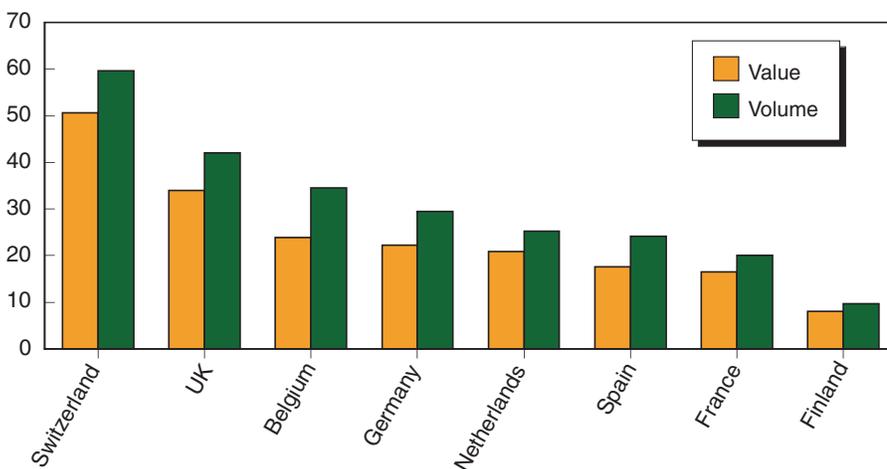
Demand influenced changes in retail strategy have implications for the way retailers choose suppliers. Branding, for consumers, should reduce purchase risk and cost in securing information regarding product quality. Retailers implementing a branding strategy must ensure that their brands meet the set objectives. Therefore, in deciding to implement a private label strategy, retailers consider a set of criteria when selecting suppliers and the type of product for branding. Interviews with 751 retail purchasers in 16 European

³ Note, this is the strategy employed by European retailers. In the United States, private retail brands are generally cheaper substitutes similar or lower in quality to major manufacturer brands. Some U.S. retailer brands, such as Harris Teeter's President's Choice ice cream, are considered higher quality retailer brands.

Figure 3-2

Private label share of total retail food sales

Percent



Source: KPMG, 2000.

countries show that, in addition to traditional factors like price, quality, and the ability to supply needed volume, the ability to trace back products and the willingness of suppliers to engage in long-term relationships with retailers are important selection criteria (Skytte and Blunch, 2001). The prominence of private labels has likely affected this shift.

A comparison of criteria retailers use to select suppliers in Western Europe and Eastern Europe, where the private label development is still in its infancy (Blunch et al., 1999), provides some indication of the relative importance of different criteria over time, and perhaps among markets at relatively different levels of per capita income. For example, product traceability is very important to retailers in Germany, who cater to affluent consumers with a longstanding demand for credence attributes (table 3-1). Traceability has little or no importance for retailers in Poland, who cater to less-affluent consumers unfamiliar with the concepts behind private labels.

The branding function places more responsibility for product design, quality control, and product liability on the retailer. Therefore, traceability and closer cooperation with manufacturers is necessary to bring about products that bear the retailer's mark in terms of design, positioning, and quality consistency. As shown in the following section, levels of cooperation between the retailers and upstream producers and processors can vary based on the degree of quality differentiation desired by retailers.

The French Beef and Produce Example

France has a long history of quality branding of food products, such as manufacturer brands for cheeses and the state-certified collective quality Label Rouge for poultry. French retailers have sought to maintain customer loyalty by employing policies governing shelf-space and product-quality

Table 3-1—Relative importance of criteria in retailer selection of suppliers

Criteria	Germany		Poland	
	Fish	Cheese	Fish	Cheese
	<i>Importance in percent</i>			
Quality	11	11	11	8
Price	6	4	5	0
Consistency	2	2	0	1
Market information	4	6	0	3
Traceability	15	24	0	1
Sufficient quantity	17	12	4	0
Promotion	3	5	5	8
Product range	16	14	10	13
Long-term relationships	16	14	10	13
Reputation	2	0	9	7
National/foreign origin	9	5	13	17

Note: Figures in the table are results from a conjoint analysis. The relative importance of the various criteria is computed as the range of utility values for the levels of that particular criterion divided by the sum of the ranges across all criteria. The relative importance is calculated separately for each individual and the figures in the table represent the average across all individuals. When the ranking is similar across all individuals the rankings for all criteria (rankings in a column) sum to 100.

Source: Blunch et al., 1999.

signaling strategies via branding. These strategies vary based on inherent product characteristics. As previously mentioned, retailers may implement branding to offer lower priced substitutes to leading manufacturers' brands, particularly in the packaged dry food sectors. However, retailer brands have recently emerged in the fresh meat and produce sectors, largely as alternate products associated with higher quality.

Although retailers respond to consumer demand for sensory attributes in food, retail differentiation and segmentation policies are primarily driven by consumer demand for process attributes, which arises from food safety concerns. Process attributes in the produce sector are considered to be indicators of certain sensory attributes and better stewardship of the land. The levels of retail segmentation and coordination among the upstream sectors of the supply chain vary between the beef and produce sectors due to the differences in the factors underpinning the retail segmentation.

The beef sector changes in France are largely influenced by food safety scares in Europe. As elsewhere in Europe, beef consumption declined sharply in France following the outbreak of BSE. French consumers are increasingly concerned about food safety, with 70 percent indicating an awareness of BSE, and a third of those who are aware indicating concerns about it (Aubril, 2002). Given the predominance of food safety concerns, retailer strategies implemented for the beef sector are designed to provide safety and quality assurances to the public. The retailer strategies often lead to close coordination and integration between producers, processors, and retailers.

The retailer strategies for the produce sector (defined as fresh fruit and vegetables), on the other hand, deal with providing assurances regarding the sensory attributes of the product, and also with assurances regarding good stewardship of the environment. While sensory attributes and environmental concerns can have some influence on decisions to purchase beef, food safety concerns overshadow all other concerns for French consumers. Food safety concerns in the produce sector, however, are less important, and only a small segment of the French population indicated concerns regarding pesticide residues in produce, and most consumers considered themselves ill-informed about this topic (Linéaires, 2002). Retailer strategies for fresh fruits and vegetables are also shaped by transportation, handling, and shelving limitations. French consumers are generally reluctant to buy prepackaged fruit, leading to higher costs and labor requirements in shelving and maintaining quality in bulk products. Since sensory attributes of products can vary based on seasonal and regional agronomic factors, retailers are generally hesitant to personally stand behind the product on their shelves. Therefore, as the retailer has limited control in assuring the quality of the final product in the produce sector, the levels of coordination and integration are less than those in the beef sector.

Beef Sector

The French retail sector employs a combination of shelf-space management and quality signaling to meet specific consumer demands as well as to maintain market share. Although all beef sold in France must adhere to nationally required safety and quality standards, private label beef is

promoted as being safer and higher in quality than the standard product, which is unlabeled and generally sold at a lower price. In the beef sector, private retailer brands can be grouped into three categories. *Substitution* brands, which are similar to basic U.S. grocery store brands, use store labels without any specific quality associated with the label. This product undergoes internal retail chain quality control and generally is similar to the standard product. To promote sales, retailers allocate most of their beef shelf space to the brand. This product may carry up to a 5-percent premium over prices of standard beef products.

Segmentation brands differ from standard beef products in that they are perceived to be of a higher quality that is certified either through internal control or through an independent third party. Segmentation brands carry a Certificate of Product Conformity (CPC). The CPC is an official (government-controlled) designation that a retailer can acquire only if it implements safety and quality standards exceeding the national standards. Products labeled with the segmentation brand get a smaller fraction of the total beef shelf space than the substitution brand. However, segmentation brands carry a greater price premium, up to 10 percent over the standard product.

Chain (filière) brands are recognized for quality and systematically carry the CPC designation. The products are produced via a quality-controlled system that may be designed to meet higher product safety standards or specific production processes, such as those that incorporate environmental and animal welfare concerns. In addition to possessing a label that reflects certain standards, the chain brands also reflect traceability of these products. Therefore, the chain brands are associated with close cooperation and coordination between the producers, slaughterers, processors, and retailers. Within this category, further distinctions can be made based on the level of partnership between the retailers and the different upstream players in the supply chain. Based on the level of quality and process assurances provided, the chain brand beef products can carry up to a 25-percent price premium, but generally command a smaller segment of the shelf space.

Two opposing strategies are noted among French retailers. Some retailers tend to maximize private retailer brand sales by allocating a large share of shelf space to minimally differentiated retailer brands commanding small premiums, while others allocate a smaller segment of shelf space to highly differentiated retailer brands carrying large price premiums. For example, the French supermarket Intermarché allocates all its beef shelf space to substitution brand beef (Jean Rozè la Viande), while other supermarkets, such as Carrefour and Auchan, carry all three types of beef brands—the standard, segmentation, and chain brands. The organic private brand of Auchan carries the highest premium, about 40 percent over the price of standard products, but accounts for less than 10 percent of the total beef shelf space.

As mentioned earlier, retailer strategies in implementing private labels have implications for other upstream sectors. A highly integrated chain involving many players may also incur higher costs and have greater risks. For such products, retailers may test the market by allocating the item only to a small share of the overall shelf space typically slotted to that product type. In planning their strategy, retailers can choose a number of coordination

schemes based on the type of branded product to be marketed. The dominant scheme in France is a “two-party” relationship where the producer and the slaughterer enter a contract, and the slaughterer and the retailer enter into a contract. In such a setup, the retailer makes all decisions regarding product quality specifications. The producer and the slaughterer must adhere to these specifications. Such a scheme is generally followed in marketing substitution brand beef.

In the “three-party” relationship, the retailer develops relationships with both the producers and the slaughterers (Mazé, 2002). Product quality specifications may be drawn up mutually by both the producer and the retailer, while an association consisting of representatives of the producer, the slaughterer, and the retailer may handle the operational management of the supply chain. The product quality specifications may be certified through a publicly recognized certification process. When the certification is conducted by a third party, the costs to provide quality assurance may increase. This type of production scheme is generally adopted for retailer private brands that are significantly different from the standard product, such as segmentation and chain brands.

Produce Sector

In the produce sector, retailer private label strategies are largely geared to provide assurances regarding sensory attributes and the levels of chemical residues in products. Private brands in this sector were established much later than in the beef sector and are also less segmented in the types of branding visible on the retail shelves. Retailer brands for produce are generally associated with the integrated farming movement in France, which consumers have associated with a lower use of chemicals, and, to a lesser degree, better land stewardship. In addition, private labels are also required to meet the necessary grades specified by retailers with regard to sugar content, firmness, size, and other product characteristics.

Retailers’ cooperation with produce suppliers is less defined than with beef suppliers. Sensory attributes, much valued by consumers, are difficult for retailers to guarantee and measure and the implementation of control and the monitoring of such characteristics can be costly. However, cooperation between suppliers and retailers can be mutually beneficial and tends to reduce the quality assurance costs for retailers (Brousseau and Codron, 1998). Given the risks and uncertainties associated with growing and marketing produce, suppliers on the other hand, appreciate the guarantee of an outlet provided under the cooperation with retailers.

The retail branding scheme practiced in the produce sector is mainly of the substitution type, where the retailer draws up production standards for suppliers. The farming practices prescribed are not always precise, and sometimes it may be necessary to ascertain whether the suppliers meet the necessary standards. Production practices can be measured by maintaining a register of chemical treatments, planting dates and growth measurements, soil analysis results, and other practices. However, suppliers may be granted some leeway, for instance, if chemical treatments are employed when pest populations exceed a certain threshold. To avoid this contingency resulting

in an erosion of consumer confidence, retailers may employ a set of clear standard operating rules and ensure that suppliers are knowledgeable about the procedures to be adopted. A third party may be employed to ensure that suppliers adhere to the standard. This produce scheme does not lead to the type of extensive cooperation that exists when a retail brand product (other than the substitution type) is produced. However, retailers may also employ more complex schemes where producers and retailers mutually set standards with the view of adopting measures to enhance environmental quality as well as the safety and sensory attributes of products. Such arrangements require confidence and long-term relationships between the parties involved and may result in a well-differentiated product on the retail shelf (Codron et al., 2002).

Impact of Food Retail Changes on Food Quality Standards

The development of retail brands requires appropriate signaling to differentiate the retail brand products from standard products. To increase credibility, retailers can seek certification by a third party, providing the assurance that the branded products meet the necessary quality standards. Sanitary and environmental quality standards are usually established and monitored by governments. However, differentiation and segmentation policies of large-scale retailers may create standards that often exceed the set government standards.

The forces in play in the European meat and produce sectors are distinctly different with regard to the use of private standards. The quality and safety associated with meat products are clearly labeled and more easily understood by consumers than other food safety indicators, such as permissible chemical residue levels on produce. For both sectors, public standards, set by individual state or European authorities, form the minimal quality standards that retailers are required to meet. The meat sector is essentially a national market and is also subject to strict control by public authorities. However, the various food scares in Europe exposed weaknesses in the existing system and led to changes in public inspection policies as well as within the private sector to further reduce risks associated with foodborne pathogens. State-level authorities were created to oversee food sanitation and also set minimum standards, for example, prohibiting the use of bone meal in livestock feed.⁴ Several procedures, requiring regular inspection and annual submission of laws to the European Commission, were also put in place within the framework of the EU directive 89/397, of 1989 and amended in 1993, which provides guidelines for production, processing, storage and delivery of food products in each member country.

Unlike in the beef sector, quality differentiation in the produce sector, where sensory attributes are consumers' primary concern, is generally not accompanied by explicit labeling, although process attributes are valued and considered as contributing to the sensory attributes. Potential produce quality and safety indicators, such as levels of permissible chemical residue and other associated safety measures, are also difficult to convey through easily understood labeling. To meet consumer demand for quality, many European retailers have sought to devise appropriate labels that reflect

⁴ For example in France, the French Food Safety Agency (AFSSA) was established in 1999 to evaluate and monitor food safety risks throughout the chain, from production to ultimate consumption.

higher produce quality standards. Using the existing national and international standards as the basis, retailers have developed several private integrated farming standards (Codron et al., 2003). Some, such as the EUREP GAP (Good Agricultural Practices), have greatly exceeded public standards, incorporating product safety and quality, production process hygiene, environmental impacts, and working conditions.⁵ EUREP GAP is a collection of British, Dutch, Belgian, and Scandinavian retailers. Some retailers, such as Carrefour and Auchan, view the standard as too expensive to adhere to. French and German retailers have not incorporated the standard in their marketing strategies and instead have chosen to differentiate their products using the public standard as the basis.⁶ These retailer standards exceed the public standards in some specific ways as desired by the retailer and supported by the retailer's consumer base.

Changes in national laws regarding minimum standards of quality may affect retail brand policies.⁷ Raising minimum standards raises differentiation costs and may lead large-scale retailers to pull away from their upstream partners involved in "substitution" type brands and focus more in segments catering to niche markets. On the other hand, retailer brands may influence public standards. Due to their economic weight, retailers are a major force in driving quality standards. The diversity of retailer brand options available in stores often reflects the different retailer expectations about future changes in food quality standards. More skeptical retailers may opt for brands that cover a wide section of their shelf space, while others who expect further consumer-driven enhancements in the public standards may devise segmentation brands covering smaller sections of the shelves.

Consumer Orientation of the Food Supply Chain

Changes in consumer preferences have driven retailers to differentiate their products by creating additional value in the eyes of the consumer. The additional value generated may be designed to meet consumer demands for special tastes, healthfulness, naturalness, and convenience. The extent of perceived value will, among other factors, depend on the extent the retailer believes the supplier will be able to support the retail strategy and the extent to which the products will be perceived as good value by consumers. Therefore, food producers can join together with retailers to create value added for end users. A successful product differentiation requires understanding the consumers, developing new products, and managing relationships among the different sectors of the supply chain.

Before retailers can begin a value-creation strategy, they must develop an *understanding of consumers*. The development of trends in consumer demands opens up new possibilities for adding value and differentiating products. Successful consumer understanding implies, among other factors, understanding the mechanisms underlying consumer food choice, the trends in the development of major purchase motives, and the role of situational factors in food choice. Because of segment-specific and cultural differences, such understanding will not transfer easily from one market to another. The more a food producer aims to build a competitive advantage based on high value-added products, the more it may become necessary to concentrate on

⁵ The EUREP GAP was launched in 1997 by a group of European retailers, the Euro-Retailer Working Group, and its full membership is reserved for the retailers. Suppliers, wholesalers, and certifying organizations can be associate members.

⁶ Among others, these may include standards such as the Maximum Limit for Pesticide Residues and EU or national pesticide or environmental regulations with regard to water resources.

⁷ National regulations may also set the grades for sensory attributes, such as appearance, sugar content, and consistency. However, the discussion here has focused more on standards regarding food safety and process attributes of food.

a few markets, where the necessary degree of consumer understanding can be achieved (Madsen, 1990).

The new *product development* and differentiation process is closely linked to markets, whereby market input is provided throughout the product development process from idea generation through concept testing to the development of prototypes. In developing new food products matching modern consumer trends, it should be noted that many of the unique qualities of these products, like health effects and methods of production, are invisible to the consumer and therefore have to be communicated. In these cases, retailers must also develop a mode of communicating and informing consumers about the new product's qualities. For food producers, new product development can be seen as a way to counter increasing retailer power. But with the European retailers aiming increasingly for private label products that not only match but surpass manufacturer brands in terms of quality and value added, new product development in cooperation between retailers and producers is a field where producers and retailers can achieve competitive advantage jointly—if they manage their relationship with this aim in mind.

Therefore, *managing relationships* in the supply chain is critical to successfully launch a private label. From the perspective of food retailers, this implies managing relationships with processors and producers to ensure the retailers' call for product traceability and long-term relationships with these supply chain members. The importance of managing relationships becomes evident whenever product differentiation and value adding require changes in raw materials or primary supplies. Differentiation in primary production or early in the value chain requires segregating products throughout the value chain.

Traceability and closer cooperation between retailers and manufacturers helps bring about products that bear the retailer's mark in terms of design, positioning, and quality consistency. The availability of point-of-sale scanner data enables retailers to accumulate a wealth of information regarding sales of products and of determinants of sales that retailers control (such as price promotions and shelf allocation). Many retailers, however, have little or no knowledge of the determinants of consumer buying behavior. Manufacturers, who generally concentrate on a more narrow range of products than retailers, have a better understanding of consumer demands. Closer cooperation with upstream sectors enables retailers to draw on this expertise when developing private label products. Therefore, a successful new product development may be a collaborative effort, with frequent cooperation and communication between retailers, producers, and manufacturers.

Looking Ahead

Increased demand for quality has led European retailers to take proactive steps to maintain a loyal customer base. As evidenced by the French beef and produce sectors, European retailers effectively use a combination of private label and shelf-space management strategies to achieve this goal. As food supply chains continue to become more consumer oriented, these

strategies may be increasingly employed by retailers worldwide to meet specific demands of different consumer groups.

The use of private retailer labels places full accountability for product quality and safety on the retailer. To ensure that these retailer-branded products meet the desired quality and safety standards, retailers coordinate and develop relationships with other upstream sectors in the food supply chain. The level of coordination and cooperation depends on the desired level of product differentiation. A highly differentiated product may require complete coordination, and sometimes, integration of different sectors. Given future expectations of continued growth in retailer brands, food supply chains are likely to continue to operate in close cooperation and coordination with other upstream sectors.

Changes occurring in food retail sectors have implications for food quality and safety standards. As European consumers remain preoccupied with health and food safety issues, retail brands are often designed to assure consumers that products are safe and wholesome for consumption. The assurance is generally provided by third-party certification. In the wake of several food scares in Europe, European consumers are often skeptical of public standards. Thus, retailers differentiate products by placing a certificate on the food's label that indicates that the branded product exceeds public safety standards. Depending on the market and retailer perceptions of the market, safety standards can range over a wide spectrum. With the globalization of food markets and multinational retail chains operating across national boundaries, private standards may often be the recognized standards for business transactions in many countries. Therefore, the emergence of differentiated products and retail brands influence not only the structure of global food supply chains, but also the rules governing international marketing and trade of food products.

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Supermarket Expansion in Latin America and Asia

Implications for Food Marketing Systems

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Economic growth and consumer demand have allured supermarkets to developing countries, where they are replacing traditional food retail outlets and dramatically transforming existing food supply chains.

In the past decade, the number of supermarkets² increased in the two developing regions that are growing the most rapidly—Latin America and East/Southeast Asia. These two regions are home to 3 billion consumers, including about 700 million middle-class consumers, and are registering the fastest growth in food demand in the world. Rising consumption of fruits and vegetables is a key component of this growth due to factors accounted for in Bennett's Law (Bennett, 1941), which states that the food share of starchy staples declines as incomes increase.

Having rapidly penetrated the food retail sector in the two regions, supermarkets have triggered an upstream transformation of the fruits and vegetables marketing system, all the way to the farmers. Supermarkets have become major buyers of local produce in the two regions, in many cases rivaling or even dwarfing the exports from the region to the rest of the world. In countries with traditional two-tier produce markets (higher quality export market and a lower quality domestic market), local supermarkets have created a third market for intermediate to high quality products. At the same time, retailers are adding upward pressure to improve product quality and food safety in the domestic market, and the difference in quality between products destined for local and export markets is narrowing.

The Rise of Supermarkets in Latin America and East/Southeast Asia

The diffusion and expansion of supermarkets in the developing countries is driven by several factors. These factors are similar across countries and lead to similar results in the evolution of the retail sector. The determinants of the growth of supermarkets include socioeconomic factors, such as rapid urbanization, income growth, and improvements in domestic infrastructure during the 1980s and 1990s. These changes were accompanied by women entering the away-from-home workforce and thus experiencing an increase

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² We use the term “supermarkets” to indicate large self-service stores, whether as part of a chain or independent. Supermarkets are generally 350 to 4,000m² in size, and have three or more cash registers operating simultaneously, while hypermarkets are larger. Other large format stores include warehouse stores and membership clubs.

in their opportunity cost of time. Lifestyle changes reflected in rapid growth in ownerships of cars, access to affordable urban transport systems, and the acquisition of refrigerators in homes are also associated with supermarket growth. These factors are similar to the factors that have contributed to the growth of supermarkets in the United States over the past six decades.

The in-flow of foreign direct investment (FDI), induced by the liberalization of FDI regulations (APEC, 2003), has also been a key determinant in the introduction and diffusion of supermarkets in the two regions (China in 1992; Brazil, Mexico, Argentina in 1994; Indonesia in 1998). While overall FDI to each region was about \$9 billion per year in the early 1990s, by 2000 the figure had grown to roughly \$90 billion (UNCTAD, 2001). The pace of growth of U.S. FDI in Asian and Latin American food industries mirrors overall FDI growth in the two regions (BEA, 2000).

Latin America has led the way among developing regions in the growth of the supermarket component of the food retail sector. While a small number of supermarkets existed in most countries during and before the 1980s, they were primarily financed by domestic capital and tended to exist in major cities and wealthier neighborhoods. That is, they were essentially a niche retail market accounting for 10-20 percent of the national food retail sales. However, by 2000, supermarkets had risen to occupy 50-60 percent of national food retail among the Latin American countries, almost approaching the 70-80 percent share for the United States or France. Thus, in little more than a decade, supermarket development in Latin America reached a level that took five decades to reach in the United States.

The supermarket share of food retail store sales for the leading six Latin American countries averages 45-75 percent (table 4-1). Brazil has the highest share, followed by Argentina, Chile, Costa Rica, Mexico, and Colombia. These six countries account for 85 percent of the income and 75 percent of the population in Latin America. Other countries in the region have also experienced rapid growth in their supermarket sectors, but for these countries, expansion of the food retail sector started later and from a lower base. For example, supermarkets accounted for 15 percent of national food retail sales in Guatemala in 1994 and today account for 35 percent.

Table 4-1—Supermarket share in national food retail (Latin America)

Country	Supermarket share in national retail	
	Past	2001
	<i>Percent</i>	
Argentina	17 in 1985	57
Brazil	30 in 1990	75
Chile	NA	50
Colombia	NA	38
Costa Rica	NA	50
Guatemala	15 in 1994	35
Mexico	NA	45
United States	5-10 in 1930	80 in 2000

Note. NA = not available.

Source: Reardon, T., and J.A. Berdegue, 2002.

The development of the supermarket sector in East/Southeast Asia is generally similar to that of Latin America, but the “takeoff” stage of supermarkets in Asia started, on average, some 5-7 years behind that of Latin America, and it has registered even faster growth. The average share of supermarkets in overall food retail sales (urban plus rural, excluding fresh food in the ACNielsen statistics, hence excluding fruits and vegetables, fresh meat, and fish) is 33 percent for several Southeast Asian countries (such as, Indonesia, Malaysia, and Thailand), but is 63 percent for East Asian countries (Republic of Korea, Taiwan, and Philippines). As applicable in Latin America, supermarket share of national retail sales of fresh foods usually is roughly one-half of the share of sales of processed foods, hence the supermarket share is 15-20 percent in Southeast Asia and 30 percent in East Asia, excluding China. In 2001, the supermarket share of Chinese urban food sales was 48 percent, up from 30 percent in 1999 (table 4-2). Assuming the urban share of the total Chinese population to be approximately one-third, the supermarket share of national retail sales of processed foods is around 20 percent, similar to the supermarket share of overall food retail sales for Brazil or Argentina in the early 1990s. However, the rate of growth in the number of stores is three times faster in China than it was in Brazil and Argentina in the 1990s.

Three major trends have characterized the development of the supermarket sector in the two regions. First, the supermarket sector is increasingly foreign owned. In Latin America, for example, global multinationals constitute roughly 70-80 percent of the top five supermarket chains per country on average. The in-flow of FDI in the food retail sector was led by global retail multinationals. For example, in the first eight months of 2002, five global retailers (British Tesco, French Carrefour and Casino, Dutch Ahold and Makro, and Belgian Food Lion) invested 6 billion bhat, or \$120 million, in Thailand (Jitpleechep, 2002). Wal-Mart invested \$660 million over the past year in Mexico to build new stores. Licensing agreements have also added to the growth of supermarkets in Asia, without requiring FDI.

Second, the supermarket sector is undergoing rapid concentration in the two regions, mirroring trends in the developed regions. In Latin America, the top five chains per country account for 65 percent of the supermarket sector sales (compared with 40 percent in the United States and 72 percent in France). About 3 of every 10 pesos’ worth of food expenditures in Mexico are captured by Wal-Mart—rates are similar for Ahold in Costa Rica and

Table 4-2—Supermarket share in national food retail (Asia)

Country	Supermarket share in national retail	
	1999	2001
	<i>Percent</i>	
China (urban)	30	48
Indonesia	20	25
Korea	61	65
Malaysia	27	31
Philippines	52	57
Taiwan	65	69
Thailand	35	43

Source: Hu et al., 2005.

Carrefour in Argentina. Concentration in the sector results from foreign acquisition of local chains, facilitated by an in-flow of FDI.

Third, supermarkets are no longer niche operations catering only to the rich or even the middle class—they have spread well beyond to penetrate the food markets of the poor. They have also spread from big cities to intermediate towns, and, in some countries, even to small towns in rural areas. About 40 percent of Chile’s smaller towns now have supermarkets. And supermarkets are spreading fast beyond the top 60 cities of coastal China to smaller cities, including those in the poorer and more remote northwest, southwest, and the interior.

The success and proliferation of supermarkets are linked to their ability to offer low prices, allowing them to compete with—and beat—wetmarkets (produce markets in central plazas or streets) and small family-run stores. To expand beyond their traditional niches among higher income consumers, supermarket chains in Latin America and Asia emphasize price competitiveness and products of a quality consistently higher than that found in traditional marketplace. The focus on quality and product differentiation, particularly among upper income segments, is similar to supermarket strategies in Europe.³ Supermarkets have sharpened this focus by improving distributional channels through logistical improvements to the procurement process. These changes are noted both for processed/packaged goods (including processed fruits and vegetables), where large stores have a natural advantage due to economies of scale, and for fresh produce.

Fruits and Vegetables Retail Sector

The replacement of traditional markets with supermarkets has been slower in the fresh produce sector, compared with other food sectors. Small shops and wetmarkets, such as *feria libres* in Chile or *warungs* in Indonesia, continue to be convenient options for urban residents shopping for produce. However, competitive prices and higher quality produce are helping supermarkets make inroads in this area. Supermarkets offer convenient “one-stop” shopping, with an increasing range of products and services, including banking facilities, food courts, and nonfood products. Additionally, supermarkets are mimicking the sales styles and appearance of wetmarkets as a way to gain competitive edge by presenting a familiar and reassuring atmosphere to customers. In Chile, for example, some supermarkets sell fruits and vegetables in big wooden bins and emphasize personalized attention to shoppers, similar to strategies employed in the traditional *feria libres*.

Municipal government regulations designed to improve sanitary conditions and reduce urban congestion have added further pressure on wetmarkets, in effect favoring the growth of supermarkets. Wetmarkets in China, for example, are increasingly targets of municipal government regulations and pressures (Moustakerski and Brabant, 2001).

Facing competition from supermarkets and pressures from municipal governments, wetmarkets have been forced to change. In Chile and Malaysia, for example, recent movements to upgrade wetmarket facilities and improve procurement processes are emerging. Some wetmarkets have

³ The emphasis in Europe is to provide differentiated products that meet consumer perceptions of higher quality, which may generally result in higher prices.

even adopted hygienic practices and collective, large-volume procurement arrangements employed by supermarkets. Thus, suppliers to the “traditional retail sector” are facing procurement practices very much like those used in the supermarket sector. Therefore, the emergence of supermarkets in developing countries has implications for the entire food marketing system.

In Latin America, the supermarket share of the fruits and vegetables retail sector is about one-half to two-thirds of the supermarket share in overall food retail. For example, supermarkets have 50 percent of the fresh produce market in Brazil but 75 percent of overall food retail. In Argentina, the shares are approximately 30 percent (fresh produce) and 60 percent (overall retail). Still, the growth in supermarket sales of fruits and vegetables, though slower than sales of other food products, has been significant. In Brazil, fresh fruits and vegetables were sold nearly exclusively outside supermarkets during the 1980s, but now make up about 50 percent of total fresh produce sales in the country.

Fresh fruits and vegetables typically constitute about 8-12 percent of total supermarket food sales in Latin America and Asia. Fresh produce is strategically important in attracting customers into the stores. As incomes rise, consumer demand for fresh produce is expected to grow, increasing the importance of this food category to retailers. As the demand for year-round availability of high-quality, diverse, fresh produce and value-added products in the region grows, retailer demand for these products from local producers will also grow. The conventional belief that two produce markets exist—the local market (associated with lower standards) and the export market (associated with high standards)—is changing with the emergence of local supermarkets as a new market for produce. Latin American supermarkets sell roughly 2.5 times more produce to local consumers than the quantity exported from the region to the rest of the world (Reardon and Berdegue, 2002). In Asia, sales of fruits and vegetables through supermarkets are similarly sizeable, with Chinese supermarket sales of fruits and vegetables approximating \$2 billion, compared with Chinese exports at \$1.7 billion on average over 1995-2000 (Gale, 2002). According to the Food and Agriculture Organization of the United Nations, Indonesian supermarkets sold roughly \$500 million of fruits and vegetables (nearly all bought from local farmers) in 2001. Indonesian produce exports during the period were about \$286 million.

The Changing Supply Chain

Compared with practices in North America or Europe, produce marketing in Latin America and Asia is constrained by poor institutional support and an inadequate public infrastructure (such as roads). Private infrastructure, such as packing houses, cold chain facilities, and shipping equipment linking suppliers and distributors, may also be inadequate. Risks and uncertainties, both in output and in responsiveness to incentives, prevail. The risks may arise due to lack of timely availability of sufficient credit, third-party certification, inadequate market information, and onerous regulations. These problems constrain supplier response to incentives. For example, vegetable suppliers to Hortifruti, the buying agent for the main supermarket chain in

Nicaragua, are hampered by the country's restrictions on vegetable seed imports (Gonzalez, 2002).

Therefore, supermarkets in these regions face considerable challenges in developing an efficient supply chain to support profitable sales of fruits and vegetables. In Thailand, 250 suppliers delivered perishable products directly to the backdoor of supermarkets (Ahold chain) at least three times a week in 2002. Incidents of out-of-stock were common and shrinkage in the stores was high. The lead times between the farms and supermarket shelves was up to 60 hours, and due to the lack of pre-cooling and cooled transportation, the post-harvest losses were high. It was impossible to trace products back to the farm; there was no insight into farming practices and post-harvest practices. There were no clear uniform product specifications that could be communicated throughout the supply chain (Boselie, 2002, p. 5.)

As supermarkets strive to compete in fruit and vegetables markets and to meet the varied demand of consumers, they must also develop a procurement system that reduces purchase and transaction costs and raises product quality. In many developing countries, supermarkets attempt to do this by implementing a series of changes in the marketing system, ranging from adjustments in the procurement system to technological and institutional changes.

Centralization of Procurement

As the number of stores in a given supermarket chain grows, there is a tendency to shift from a per store procurement system to a centralized distribution system serving several stores in a given zone, district, country, or region (which may cover several countries). Centralization is generally characterized by increased use of centralized warehouses. Additionally, centralization extends to procurement decision-making processes and physical produce distribution processes. Centralization can increase efficiency of procurement by reducing coordination and other transaction costs, although it may increase transport costs by extra movement of the actual products.

Large global retailers have made or are making shifts toward more centralized procurement systems in all the regions in which they operate. Wal-Mart uses a centralized procurement system in most of its operating areas. Carrefour has centralized procurement in France, and is moving quickly to centralize its procurement systems in other countries, such as Brazil, where it established a distribution center in São Paulo to serve three Brazilian States (with 50 million consumers) with 50 hypermarkets in the southeast region, and in China. Ahold centralized its procurement systems in Thailand (Boselie, 2002) and is also moving to centralize its distribution centers in Central America in the next 1-2 years via a specialized wholesaler, Hortifruti (see box on Hortifruti).

Regional chains, such as China Resources Enterprises (CRE) of Hong Kong, which operates Vanguard stores in southern China, are also centralizing their procurement systems. CRE operates approximately 456 food retail outlets in Hong Kong and mainland China, many in the provinces of Shenzhen and Guangdong. In anticipation of growth following its planned \$680-million investment in China over the next 5 years, CRE is shifting

Hortifruti, A Specialized Wholesaler for a Central American Regional Chain

Hortifruti is the “buying arm” of most of the stores belonging to the Central American Retail Holding Company (CARHCO). This company comprises 253 stores, with retail store sales of about \$1.3 billion per year in five countries. CARHCO is a joint venture of Ahold, with majority interest, and two retail chains in the region, La Fragua (based in Guatemala) in 1999, and CSU (based in Costa Rica) in 2002. Hortifruti has emerged as the regional chain’s specialized produce wholesaler for three of the five countries in which the chain operates in the region (all but El Salvador and Guatemala). Hortifruti contracts with farmers and distributes the produce to retail stores with the private label “Hortifruti” on a wide variety of fruits and vegetables. A visit to any of the Hortifruti warehouses can provide a perspective on the large scale of its operation. For example, the Hortifruti warehouse in Nicaragua contains a variety of vegetables from Costa Rica; onions from California and Canada; apples from Michigan, Oregon, Washington, and Chile; and garlic from China. About 30 percent of the produce in CARHCO stores in Nicaragua is currently imported. Although some products may come from countries in Asia, most products are imported from other countries in the region, especially Costa Rica. Most of the imported produce reaches CARHCO’s retail shelves through its main buying arm, Hortifruti.

from store-by-store procurement to a centralized system of procurement covering each province. In 2002, CRE completed construction of two large distribution centers.

Logistics Improvements

To defray some of the added transport costs that arise with centralization, supermarket chains have adopted (and required that suppliers adopt) best practice logistical technology. In accordance with these changes, supermarket suppliers are required to adopt practices and make physical investments that enable a more seamless interface with the chain’s warehouses. The “Code of Good Commercial Practices” signed by supermarket chains and suppliers in Argentina illustrates the move toward requiring the use of best practice logistics by retail suppliers (Brom, 2002). Similar trends are noted in Asia. For example, Ahold instituted a supply improvement program for vegetable suppliers in Thailand, specifying post-harvest and production practices to ensure consistent supply and improve the efficiency of their operations (Boselie, 2002).

As evident elsewhere,⁴ retail chains in Latin America and Asia increasingly outsource logistics and wholesale distribution functions, entering joint ventures with other firms. For example, the Carrefour distribution center in Brazil is the product of a joint venture of Carrefour with Cotia Trading (a major Brazilian wholesaler distributor) and Penske Logistics (a U.S. global multinational firm). Similarly, Wu-mart of China announced in March 2002 (CIES, 2002) that it will build a large distribution center to be operated jointly

⁴ For example, several Ahold chains (Stop and Shop, Tops, and Giant) in the northeastern part of the United States outsource wholesale distribution for dry goods with C&S Wholesale Grocers, Inc. located in Vermont.

with Tibbett and Britten Logistics (a British global multinational firm). Ahold's distribution center for fruits and vegetables in Thailand is operated in partnership with TNT Logistics of the Netherlands (Boselie, 2002).

Specialized Wholesalers

Changes in supplier logistics have moved supermarket chains toward new intermediaries, sidestepping or transforming the traditional wholesale system. Supermarkets are increasingly working with specialized wholesalers, dedicated to and capable of meeting retailers' specific needs. These specialized wholesalers cut transaction and search costs and enforce private standards and contracts on behalf of the supermarkets. The emergence and operation of specialized wholesalers has promoted the convergence, in terms of players and product standards, of the export and the domestic food markets.

Supermarkets naturally tend toward relationships with export and agribusiness firms in the belief that these companies can provide the requisite quality assurance, the necessary volumes, and consistent and on-time delivery. Therefore, many supermarket chains in Latin America sought to reduce reliance on traditional wholesale markets (Gutman, 2002; Farina, 2002, Mainville, 2002). Various leading agribusiness firms in the region established new divisions in their companies to cater specifically to supermarkets in their countries (Schwentesi and Gomez, 2002). Moreover, there is emerging evidence that supermarket chains sourcing imported produce tend to do so mainly via specialized importers. For example, hypermarkets in China tend to work with specialized importers/wholesalers of fruit, and in turn sell nearly half of their imported products to supermarket chains (Produce Marketing Association, 2002). Similarly, Hortifruti functions as the buying arm of most stores of the main supermarket chain in Central America (see box on Hortifruti).

However, some traditional wholesalers have upgraded their operation to meet the new demands of the retailers. For example, a number of wholesalers operating in the traditional wholesale market in Brazil set up specialized large-scale operations catering to the supermarkets (Mainville, 2002). A number of grower/packer organizations have made needed investments to interface with the logistics systems of the specialized wholesalers and/or supermarket distribution centers. These alliances between the retailer and the wholesaler or the grower/packer tend to be bound by contractual arrangements. Smaller and more regional/local chains tend to continue to rely on traditional wholesale markets.

Producer Alliances

As supermarkets are driven to reduce transaction costs and seek one-stop alliances with suppliers and wholesalers, there is a concomitant change in the organization of the upstream segments of the supply chain, including among the suppliers. This upstream change is closely associated with retailer strategies. The increasing concentration of the supermarket sector, combined with the goal of supermarkets to have year-round supplies of various fresh products, has induced a growing wave of horizontal joint ventures and other strategic alliances between produce firms in the Northern and Southern Hemispheres. Suppliers in different hemispheres that form

partnerships are no longer constrained in meeting the necessary volume and year-round demand of the retail sector. For example, Global Berry Farms was formed in 2000 as a 50/50 joint venture owned by Michigan Blueberry Growers Marketing (a cooperative) and Hortifrut (a private firm) of Chile. Global Berry Farms markets all fresh fruits for Michigan Blueberry Growers worldwide and Hortifrut's fresh fruit in the North American market. In August 2002, the two firms were joined by Naturipe, a strawberry cooperative in California (see box on cross-hemisphere alliance).

Information Exchanges

The use of electronic data exchange (EDI) is becoming increasingly common between large chains and their major suppliers in different regions, particularly dry goods supplies. The EDI system of Wal-Mart has been and is a model for the industry,⁵ allowing Wal-Mart to send out orders, verify the receipt of orders by suppliers, schedule delivery, and provide data on sales to enable suppliers to manage inventory.

Internet exchanges are also used by chains globally to reduce coordination costs and outsource logistics operations. Similar to the way they outsource physical procurement logistics through wholesale distributors, retailers may now outsource produce transactions, distribution, and inventories through Internet exchanges.⁶ These may include Internet business-to-business (B2B) exchanges, and e-procurement and logistics services. Globally, there are several main "general" Internet B2B exchanges into which large retail chains made major investments during the late 1990s and early 2000s (see box on WorldWide Retail Exchange). Each exchange has a perishables exchange component, generally strengthened by a joint venture with an exchange specializing in perishables. As day-to-day management of perishables transactions is costly, Internet exchange services specializing in fresh produce may likely grow.

Private Standards

While fruits and vegetables retailing in Latin America and Asia previously operated with limited use of certifications and standards, emerging trends signal a rapid rise in the implementation of standards. Retailers use private standards to standardize product requirements over suppliers, who may cover many regions or countries. Standards specify and harmonize the product and delivery attributes, thereby enhancing supply chain efficiency and lowering transaction costs. Private standards of a given chain may also be designed to ensure (at a minimum) that public standards are met in all the markets in which the retail chain operates. Often, retailers may design private standards as substitutes for missing or inadequate public standards (Reardon and Farina, 2002). In this respect, private standards can function as competitive arms against other retail outlets by supporting claims of superior product quality attributes. The private standards may cover detailed quality specifications as well as food safety requirements, normally going beyond public food safety regulations. For example, Ahold's private standards are implemented across its chains in Central America, including Guatemala, where the food safety law enacted in 2001 has yet to be implemented (Flores, 2002).

⁵ Wal-Mart China is known to screen suppliers in part on their ability to interface via EDI (www.walmartchina.com, 2003).

⁶ The exception is Wal-Mart, which exclusively uses its own electronic data exchange system.

Cross-Hemisphere Producer Alliance Assures Year-Round Fruit Supply

Global Berry Farms was formed in 2000 as a joint venture between Michigan Blueberry Growers Marketing and Hortifrut of Chile. Created in 1936 and with sales exceeding \$63 million in 2000, Michigan Blueberry Growers is the single largest marketer of fresh and processed cultivated blueberries in North America. It represents over 550 producers in Michigan, Indiana, Georgia, and Florida. Hortifrut (separate from Hortifruti) is a leading bush berry grower in Chile, Mexico, and Spain. In 2002, Global Berry Farms added a strawberry supplier, Naturipe of California, to the joint venture. The combined resources of its founding partners enable Global Berry Farms to offer almost year-round delivery of the complete berry category (blueberries, blackberries, raspberries, and strawberries) to retailers in the Americas and, increasingly, in Europe (Neven and Reardon, 2002).

WorldWide Retail Exchange, the Largest Internet Exchange for Retailers

WorldWide Retail Exchange is the largest Internet-based business-to-business (B2B) exchange for food retailers and their suppliers, with annual transactions of \$9 billion. WWRE currently has 62 members including Ahold and Tesco, as key food retail “anchors.” WWRE also includes a number of Asian and Latin American retailer participants. Some participating chains from those regions include Dairy Farm International of Hong Kong, which has annual sales of \$3.7 billion from 2,160 retail outlets of diverse formats in Southeast Asia, China, and, recently, India; the Lotte Group of South Korea; Makro-Asia (Makro is based in the Netherlands); and Comerci—a joint venture with Costco operating in Mexico.

To improve its services in the fruits and vegetables sector, WWRE entered a joint venture with Agribuys in April 2001. Agribuys is an Internet B2B exchange headquartered in the United States, with offices in the United States and Japan. Agribuys specializes in fresh produce supply chain and transaction management, including orders, deliveries, auctions, and inventories. WWRE also enhanced its supply and delivery management system through a joint venture with *www.globalsources.com*, an Internet B2B network featuring 140,000 Asian suppliers and 369,000 buyers in 230 countries and territories (*www.globalsources.com*, 2002a).

The evolution of private standards in Latin America and Asia is also driven by multinational retailers striving to converge between the private standards applied by the chain in developed countries and in developing countries. At the global level, the Global Food Safety Initiative of CIES (Food Business Forum, headquartered in Paris), the global association of the top 250 retailers and roughly the same number of their major suppliers, seeks to implement a scheme to benchmark food safety standards among retailers and their suppliers worldwide by 2004. European retailers have developed

the EUREP GAP standard for farm and post-harvest level food safety and phytosanitary practices. Pick N Pay supermarkets in South Africa impose this standard on local suppliers (Weatherspoon and Reardon, 2003). Convergence of standards and practices is not only driven by retailers but also by consumers and nongovernmental organizations. For example, Greenpeace picketed Carrefour stores in Thailand in 2002 requesting that the Thai stores implement the same biotech labeling as implemented by Carrefour stores in Europe.

Contracts

The “formality” of contracts is relatively new in one of the most personalized, informal markets in the food sector, the produce sector. Produce suppliers in Asia and Latin America traditionally operated under verbal informal contracts, renewed upon continued good performance. This system is increasingly being replaced by formal contracts drawn between retailers and suppliers to guarantee supply volumes with lower risks and reduced transaction costs. Additionally, contracts ensure retailers of on-time delivery and the delivery of products with desired quality attributes. Contracts also serve as incentives to the suppliers to stay with the buyer and, over time, make investments in assets (such as learning and equipment) specific to the retailer’s specifications regarding the products.

Although supermarkets in the two regions are increasing their use of contracts, contract use still appears to be patchy. Contract use is generally limited among smaller farmers selling to the supermarkets (Lourenzani et al., 2002; Boselie, 2002). In many cases, the supermarkets may procure their produce from specialized wholesalers (under contract), direct informal relationships with growers, and traditional wholesale markets (see box on procurement strategies). Supermarkets announce the needed volumes, the procurement prices, and the requisite private standards for the products. The suppliers then vie for this market, which offers modest to moderate premiums over the traditional wholesale market. In such an arrangement, formal contracts are not used with growers and suppliers from the traditional wholesale market.

However, in conjunction with the establishment of private standards, contract use is increasing and several supermarket chains have implemented “lead” or “preferred” suppliers programs. These programs involve setting benchmarks and entering into annual contracts with suppliers. Supermarkets often maintain a list of preferred suppliers who meet the necessary specifications and are reliable and consistent. Such programs have been implemented by many multinational retailers. For example, Ahold undertook a vegetable supply chain improvement program in Thailand. This program has evolved from the objective of optimizing chain performance by reducing handling losses to concepts of HACCP management and environmental land-use practices, including reducing pesticide use (Boselie, 2002). The achievement of these later objectives required more formal contractual arrangements.

Supermarket chains may also employ intermediaries, such as Hortifruti in Central America, to set up lists of producers. This system functions as an informal contract in that the growers are selected and provided input credit

Complex Procurement Strategies Meet Supply Requirements

Supermarkets employ complex procurement strategies to meet their supply requirements. At times, these strategies may involve contracts with some suppliers to “lock in” the best suppliers for a portion of their produce and successfully communicate their private standards. This arrangement is illustrated by the citrus market in Mexico (Schwentenius and Gomez, 2002). Supermarket chains in Mexico employ a trifurcated procurement system. For about one-half to two-thirds of oranges, retailers may sign contracts with large-scale suppliers, while for one-third to one-half of the needed supply of oranges, retailers may accept deliveries by medium-sized growers directly to their distribution centers without entering a formal contract. In the latter case, retailers rely on short-term verbal agreements and an implicit understanding that the supplier is required to meet the private standards and the logistics-interface requirements. Finally, for one-tenth to one-fifth of the needed supply of oranges, supermarket procurement agents send trucks to the wholesale (spot) markets and pick the best and cheapest oranges, supplied mainly by smaller growers.

and product specifications. The growers are informed of the needed volumes and prices, delivery dates, and the required private standards of quality and safety. The intermediaries set up collection centers in different growing areas and deliver the produce to the stores from these centers. Suppliers can be delisted if they do not comply with the specifications or pay back their credit.

The changes in the food retail sector have also contributed to the establishment of voluntary codes of conduct between the involved sectors of the food supply chain. These codes, implemented in the private sector, emerged after private sector conflict and negotiations, usually under the regulatory oversight of a government competition commission (Brom, 2002). The codes are “voluntary” versions of similar codes embedded in public regulations, such as PACA (Perishable Agricultural Commodities Act) in the United States. The codes focus on requiring transparent and fair contracts, reasonable payment periods, and investments by both parties to promote convergence of logistical interfaces to increase efficiency in the supply chains. In several countries, such as Argentina (Code of Good Commercial Practices of 2001), the voluntary codes were followed by the enactment of related public regulations. Among other things, the regulations include time limits for retailer payments to suppliers.⁷ Similar voluntary codes are emerging in Costa Rica and Colombia and are also currently being considered in Brazil.

Looking Ahead

The changes taking place in produce marketing in Latin America and Asia are deeply transforming the sector. A wider variety of products associated with higher quality and safety standards are available year-round at affordable prices. With growing consumer demand and improvements in retailing, local supermarkets have emerged as an important market for locally produced fruits and vegetables. As supermarkets employ quality standards, there is a trend (with the speed varying over countries and zones) toward

⁷ Similar regulation was enacted by the Prompt Payment Law of 1993 in the United States.

convergence of local and international standards, with decreasing distinctions between products destined for the local market and the export market.

The general upgrading of standards and the modernization of the sector offers opportunity to those producers who can adapt to the changes. For example, securing contracts with Carrefour has been particularly profitable for melon growers in northeast Brazil, both for sales in Brazil and for sales to Carrefour in other countries through the international procurement system of Carrefour, as local supply contracts can be parlayed into export opportunities. However, increasing use of standards and contracts can present challenges to smaller farmers and firms in marketing their products. The higher standards demanded often require investments that the smaller firms and farms may be unable to undertake. Accordingly, the emerging evidence points to a preference by supermarkets to source from larger producers, and thus, controlling for procurement volumes, to relative exclusion of smaller farmers in Latin America and Asia. For example, ASUMPAL (a cooperative supplying salad tomatoes, with stringent specifications, to McDonald's in Guatemala) experienced a decrease in members from 330 in 2000 to 30 in 2001 to 6 in 2002 (Flores, 2002). Similarly, during the course of the 1990s, the 12 largest milk processors delisted 60,000 small dairy farmers in Brazil (Farina, 2002). The exclusion of smaller suppliers is not limited to Latin America, in 2001, the number of vegetable suppliers to Tops Supermarket (Ahold chain) in Thailand fell from 250 to 60 (Boselie, 2002).

The decline in the number of small producers supplying supermarkets is particularly of concern in Latin America and Asia, where millions of rural poor seek agricultural diversification and urban markets as an escape route from poverty. Therefore, local governments and donors need to consider policies aimed at enhancing the ability of small farmers to compete in the changing retail food sectors. For example, a small-farmer vegetable cooperative in Purrarque became the vegetable supplier for a regional chain in southern Chile, with the help of INDAP, the Chilean Agricultural Development Agency.

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Global Food Manufacturing Reorients To Meet New Demands

Chris Bolling and Mark Gehlhar¹

Consumer-driven adjustments in food supply chains are shaping the strategies and realignments of food manufacturing firms as they strive to take advantage of the shifting and new demands of global consumers.

Global food manufacturing comprises a wide array of industries, each using different inputs and producing goods that require specific marketing expertise and brands for individual markets. Unlike other manufacturing industries, such as the automobile industry, the chemical industry, and the pharmaceutical industry, the food industry is not dominated by large firms with manufacturing facilities in a few locations. Rather, manufacturing activities are dispersed across the globe, as manufacturers prefer to locate their production units relatively close to their consumer base. Both large and small food firms have unique advantages that allow them to coexist in common markets. In the United States, for example, the largest firms are further expanding and, at the same time, many smaller firms are entering the market (Rogers, 2001).

Size, degree of product diversification, and ownership structure are important characteristics of food companies. Some companies are publicly owned, others are privately owned, while others, known as cooperatives, are owned by producers of raw agricultural commodities. Regardless of the size or the ownership structure, successful firms establish a recognized identity by manufacturing products noted for their quality, value, or other attributes desired by consumers. Firms with flexible organizational structures that enable adjustments at various stages in a supply chain are particularly well suited for reorienting themselves in continuously changing markets.

Capital constraints for investment abroad and member resistance to organizational changes render cooperatives less likely to compete globally (Gehlhar et al., 2004). Accordingly, some cooperatives are experiencing difficulties, but others are emerging as players in the global marketplace in part because of their members' willingness to produce products better suited for the supply chain. Given their link to other members of the supply chain, producer-owned cooperatives would seem to be well equipped to respond to changing consumer demand.

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Factors Affecting Firm Size and Orientation

The structure of an industry is influenced by the history of its firms, current brand acquisition patterns, geographic coverage, and propensity or resistance toward expansion, which may be determined by antitrust regulations and firm objectives. The global food industry is characterized by many types of food manufacturing firms operating with different market orientations. Some produce only for a local market while others have extensive geographic coverage. Other important features of firms are diversity in terms of size and uniqueness of products and brands.

History's Role

A firm's history and origin can endow it with long-lasting advantages. Simply being the first in a market has contributed to the success of some of the world's largest food corporations. Large-scale commercial food processing and retailing originated in Western Europe and the United States, and the two regions today account for 35 of the world's 50 largest food manufacturing firms (app. 1). The most renowned food companies today were founded in the late 1800s and early 1900s, an era noted for the Industrial Revolution and rising household incomes. As many households could no longer afford the time to process farm products, entrepreneurs aided by greater access to capital from private and public sources capitalized by launching new food companies. This change spurred strong growth in commercial processing in the United States and Western Europe. Today, large volume of commercial food sales in these markets also allows U.S. and European firms to continue to introduce new products and establish brand loyalty in home markets (table 5-1).

Table 5-1—U.S. and Western Europe share of 2002 world food sales

	United States	Western Europe	Rest of world
	<i>Percent</i>		
Bakery products	25	33	42
Dairy products	22	35	43
Chilled foods	14	29	57
Confectionery	25	34	42
Dried food	14	11	75
Frozen food	37	32	31
Canned food	28	24	48
Sauces, condiments	23	19	58
Snack foods	39	18	43
Oils and fats	10	28	62
Ice cream	29	29	41
Ready meals	40	33	27
Pet food	38	30	31
Noodles	8	2	90
Baby food	31	25	43
Pasta	16	37	47
Spreads	23	34	43
Soup	42	25	33
Meal replacement drinks	66	11	22
Total packaged food	24	29	47

Note: Western Europe includes the EU-25, Turkey, Switzerland, Norway, and Iceland.

Source: Euromonitor, 2003.

The three largest food companies, Nestlé, Kraft, and Unilever, continue to have their highest volumes of sales in products they established early in their history. The Nestlé Company, founded in 1865 in Switzerland by Henri Nestlé, initially focused on infant nutrition and later expanded to other milk-based and confectionery products. Nestlé is now the world's largest food company and continues its focus on its initial core products. In 1903, James Kraft began a wholesale cheese business in Chicago that later became Kraft Foods. It is now the leading food company in North America. Unilever's roots can be traced to the 1930 merger between a Dutch margarine manufacturer, Margarine Unie and the British company, Lever Brothers, a company that had previously diversified into ice cream from soap. Currently, Unilever is the global leader in ice cream and oils and fats.

Companies have long realized the need to differentiate their products from those of competitors to retain and expand their customer base. Initially, technology employed by food processing firms was relatively unsophisticated and could easily be replicated by competing firms. Thus, firms find it essential to establish brands as a way to preserve product identity and prevent displacement by competitors using similar processing technology. For example, Kraft Foods would not have attained its global presence without its famous brands, patented trademarks, and the longstanding goodwill earned from consumers. In the food industry, such intangible assets are often more important than capital and technology, and may generate higher returns (Reyner, 2000).

Brand Acquisition

In today's global food market, it is uncommon for firms to use the introduction of new products and brands as a strategy for expansion. Rather, food companies typically expand by acquiring existing brands. Most of the largest food manufacturers entering new markets in recent years have employed this strategy. U.S. firms entered foreign markets through acquisitions, and foreign firms entered the U.S. market by acquiring familiar U.S. brands.²

Large diversified companies have achieved growth by accumulating premium brands in their core product categories. Firms vie for leadership positions in new markets by acquiring products and high-performance brands. For example, Nestlé and Unilever compete in ice cream markets globally by acquiring the most successful brands. In 2000, Unilever acquired the U.S. ice cream manufacturer Ben and Jerry's Homemade Ice Cream. Nestlé, on the other hand expanded its ice cream core business by acquiring General Mill's stake in Ice Cream Partners USA, giving it ownership of the premium Häagen-Dazs in the U.S. market. In 2002, Nestlé also acquired a majority stake in Breyer's Grand Ice Cream, further expanding its popular brands in the U.S. ice cream sector.

Firm rivalries in U.S. and foreign markets often drive brand acquisition strategies. For example, as Nestlé acquired a pet food company with highly recognizable brands in the United States, the U.S.-based Mars Company counteracted by acquiring pet food brands in the Western European market.³ A strategy combining technology and branding has helped Unilever differentiate its oils and fats products against its rival ConAgra in the U.S.

² For example, Unilever's acquisition of the successful meal replacement drink (Slim Fast) significantly helped the company in this product category in the U.S. market.

³ Nestlé acquired Ralston Purina in 2001, which was followed by Mars acquiring Royal Canin in 2002 and regaining its global market share.

market. This strategy has been particularly helpful in allowing Unilever to compete with ConAgra's strong domestic margarine brands.

Geographical Expansion

As mentioned earlier in this report, geographical expansion is becoming more important as a future growth strategy as the North American, Japanese, and Western European markets become saturated and incomes and population grow more rapidly outside these regions. U.S. and European firms are increasingly seeking stronger footholds in Latin America and Asia. In addition to helping firms expand sales, a wider geographic coverage helps firms mitigate the effects of temporary economic downturns in individual regional markets.

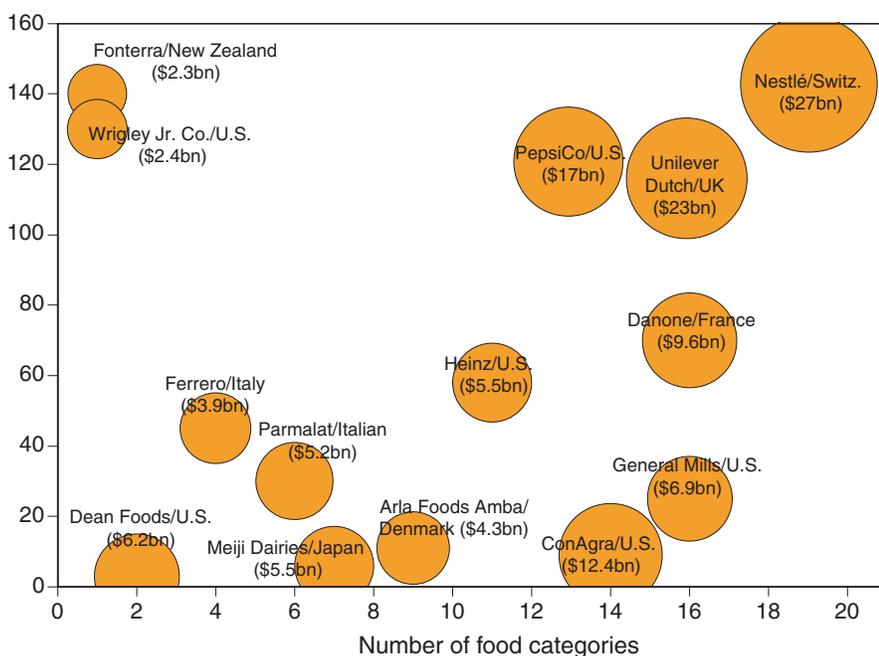
Some food manufacturing firms seek geographic expansion, while others tend to operate in regional markets (fig. 5-1). A more specialized firm with wide geographic coverage can reap benefits from economies of scale in sales and distribution. In some cases, geographic specialization helps firms focus on specific tastes and preferences of a region using differentiated local brands. Yet, in other cases, large multinational companies have both a wide geographic coverage and a diversified product portfolio.

Firms with a global presence almost always have extensive expertise in certain product categories, which provides them with inherent technological and marketing advantages. Product category expertise helps manufacturers strengthen relationships with worldwide retailers demanding higher quality and reliable suppliers. Nestlé, with extensive geographic reach, relies on the strength of its core products—baby foods—to gain a foothold in new

Figure 5-1

Food firms: Size and orientation

Number of countries



Note: Dollar amounts are values of packaged food sales only, in billions.

Source: Euromonitor, 2003.

markets (table 5-2). Nestlé's success in the global baby food market is partly due to its extensive research and development program in infant food formulation. Similarly, smaller firms have relied on product development and marketing expertise to help them become global players. For example, the Wrigley Jr. Company, which specializes in confectionery, and the Fonterra Group, which specializes in dairy, sell their products in over 140 countries.

Most companies continuously seek new markets to expand their sales. PepsiCo is focusing on expanding its snack foods sales in Eastern Europe and Asia. Danone is developing a stronger presence in Africa and the Middle East through investments in fresh dairy products and bakery products. Similarly, Heinz is capitalizing on strong growth potential in Eastern Europe and Asia-Pacific by strengthening its presence in those regions through local acquisitions and joint ventures. Italy's leading confectionery company, Ferrero, is expanding its operations in North America, Australia, Asia-Pacific and Eastern Europe. Firms that have not previously had much exposure outside their home markets are also exporting geographic expansion. Arla Foods Amba, Europe's largest cooperative operating mainly in Western Europe, is venturing out to the Middle East with the establishment of a subsidiary in the United Arab Emirates. Meiji, a leading Japanese dairy, ice cream, and baby food manufacturer, is targeting Southeast Asia through its subsidiaries in Indonesia and Thailand.

Resistance to Firm Expansion

A multinational firm's quest for geographic expansion may at times be constrained in certain foreign markets. National firms with a long historical

Table 5-2—Global sales share of top six manufacturers by product category, 2002

	Nestlé	Kraft	Unilever	PepsiCo	Danone	Mars
	<i>Percent</i>					
Confectionery	9.0	5.6				9.4
Bakery products	0.5	3.0	1.0	1.2	1.7	
Ice cream	8.9	0.1	19.3		0.2	1.9
Dairy products	4.4	3.7	0.3		4.8	
Savory snacks	0.1	3.0		32.4	0.3	0.3
Snack bars	3.1	4.0	5.7	9.9	1.3	1.7
Meal replacement drinks	0.2		38.7			
Ready meals	9.7	5.7	3.0	0.2		0.8
Soup	6.9	0.2	17.3			
Pasta	4.6	3.1	0.1	0.4		
Noodles	1.3	0.4	1.3			
Canned food	0.7	0.6	1.1	0.4		
Frozen food	6.1	2.6	4.2			0.4
Dried food	2.3	3.2	3.3	0.2		0.8
Chilled food	0.9	2.6	0.2			
Oils and fats	0.3	0.4	13.4		0.6	
Sauces, dressings, condiments	3.0	4.3	10.7	0.8	0.7	0.7
Baby food	16.9	0.2	0.2	0.1	2.6	
Spreads	0.6	2.2	7.1		0.2	0.4
Dog and cat food	25.7	0.5				24.0

Source: Euromonitor, 2003.

presence in a country establish strong customer loyalties, making it more difficult for foreign firms to enter these markets. For example, multinational firms have a more difficult time expanding to Scandinavian countries, where national firms lead in total food sales (app. 2). Similarly, local companies lead in total food sales in East Asian countries, where consumers traditionally show strong support for locally owned and managed companies. For example, nationally owned companies make up the top four food manufacturing firms in Korea (Lotte, Nong Shim, Namyang Dairy Products, and Cheil Jedang) and Japan (Meiji, Morinaga, Yamazaki, and Snow Brand).

In addition to customer loyalty to local manufacturers, resistance toward foreign firms is also influenced by national regulations regarding foreign direct investments. Liberalization of investment laws in many developing countries has greatly enhanced the ability of multinational manufacturers to locate in these countries, particularly in Latin America, where the leading manufacturing companies are Nestlé, Unilever, Danone, and other multinationals. In contrast, investment laws in many Asian countries are more restrictive, requiring substantial participation by local entities and the use of local raw materials. This factor has partly contributed to the slower penetration of multinational manufacturers into Asian markets.

Sometimes resistance to foreign firm expansion is reflected by local efforts to block mergers and acquisitions. For example, Nestlé's takeover of the U.S. Hershey company in 2002 was prevented by legal stipulations attached to the takeover by authorities in the State of Pennsylvania, under strong pressure from the local public. More often, oppositions to mergers and acquisitions involve Federal competition authorities.⁴ Acquisition approval requires meeting various criteria that serve to allay concerns regarding the likelihood of increased industry concentration following the acquisition.

Food Manufacturers Lean Toward Focused Growth

Food companies today are increasingly sharpening their focus and rationalizing their portfolios, in sharp contrast to portfolio expansion strategies of past decades. Globalization and consolidation in the food retail sector has forced leading food manufacturers to take necessary actions to improve their competitiveness. Many companies have chosen to expand in those areas where they have the greatest competency through selective acquisitions and divestitures of many of their noncore product categories.⁵ For example, the Heinz Company in 2002 reorganized to stay focused on what it calls "power brands" in condiments, frozen meals, and snack foods. As part of its restructuring, it sold some of its noncore categories, such as pet food and canned soups and vegetables, to Del Monte Foods. Many specialized firms, such as Wrigley and Ferrero, are reluctant to expand beyond core products. These firms have historically not been active in acquisitions. Ferrero has resisted the temptation of going public to raise capital for acquisition of other brands, and has instead invested a higher share of sales on research and development leading to expansion of existing brands into new products.

Given the trend toward focused growth, no food manufacturer commands a substantial share of total world processed food sales. In fact, Nestlé, the largest

⁴ The U.S. Federal Trade Commission considered blocking the merger between Nestlé and Dreyers as it believed it would eliminate competition and raise prices for super-premium ice cream. In order to gain approval for the takeover of the pet food manufacturer Ralston Purina, Nestlé had to sell two of Ralston's dry cat food brands.

⁵ A notable example is the acquisition of Bestfoods in the United States by Unilever in 2001. This was followed by a period of almost no further acquisition activity, but over 30 disposals, many related to the Bestfoods acquisition.

food manufacturer, accounts for only 3 percent of global packaged food sales (table 5-3). The world's top 25 firms together account for less than 25 percent of global packaged food sales. However, as a consequence of focused growth, concentrated markets are visible at specific product and country levels.

Firm dominance is most evident within a market sector covering a firm's core categories in individual countries. For example, shares of total packaged food sales for Nestlé range from 1.3 percent in Asia-Pacific to 6.3 percent in Latin America. But Nestlé's shares are substantially higher in its core baby food products, exceeding 60 percent in Latin America. At a more detailed subproduct/country level, Nestlé has a near-monopoly position (over 91 percent) in baby milk formula in Brazil, where it has marketed its products using popular local brands. Similarly, market shares for other core products in regional markets are much higher, with Nestlé capturing almost 60 percent of the dehydrated soup market in Russia, almost 50 percent of the milk market in the Philippines, and 40 percent of the cat food market in the United States.

Food manufacturers may choose to focus on different core products in different markets. Similar to Nestlé, Unilever, the world's second largest food manufacturer, has extensive geographic coverage. However, Unilever's market shares vary considerably in core products in specific markets. For example, in the Western European ice cream market, Unilever captures almost 60 percent of total ice cream sales in Austria (table 5-4). Unilever's market shares for the impulse category are even higher, accounting for over 81 percent of total individual-bought nonstore sales in Austria.⁶ In contrast, in Norway, Unilever is not visible in the ice cream sector.

The same is true for Unilever's core products in other markets. Although, its oils and fats market in the Asia-Pacific region is generally weak due to strong

⁶ The "impulse" category refers to sales from vending machines, street-side kiosks, and other outlets where ice cream is sold in individually packaged pieces.

Table 5-3—Nestlé's market share at regional, country, and product levels

Product category		Total packaged food					
Market		<i>Global</i>					
Market share %		3.2					
Market	<i>W. Europe</i>	<i>E. Europe</i>	<i>N. America</i>	<i>Latin America</i>	<i>Asia-Pacific</i>	<i>Africa and Middle East</i>	
Market share %	4.0	2.3	2.3	6.3	1.3	5.8	
Product category	Confectionery	Soup	Pet food	Baby food	Dairy products	Bakery products	
Market	<i>Global</i>	<i>Global</i>	<i>Global</i>	<i>Global</i>	<i>Global</i>	<i>Global</i>	
Market share %	9.0	17.3	25.7	13.0	4.4	0.5	
Market	<i>W. Europe</i>	<i>E. Europe</i>	<i>N. America</i>	<i>Latin America</i>	<i>Asia-Pacific</i>	<i>Africa and Middle East</i>	
Market share %	12.5	25.7	30.7	60.7	5.2	1.5	
Market	<i>U.K.</i>	<i>Slovakia</i>	<i>United States</i>	<i>Brazil</i>	<i>Philippines</i>	<i>Israel</i>	
Market share %	20.2	52.5	31.0	82.4	37.2	8.0	
Product category	Chocolate	Dehydrated soup	Cat food	Milk formula	Milk	Biscuits	
Market	<i>U.K.</i>	<i>Russia</i>	<i>United States</i>	<i>Brazil</i>	<i>Philippines</i>	<i>Israel</i>	
Market share %	24.6	58.9	40.0	91.2	48.3	42.4	

Source: Euromonitor, 2003.

Table 5-4—Unilever's market share at regional, country, and product levels

Product category		Total packaged food					
Market		<i>Global</i>					
Market share %		2.7					
Market	<i>W. Europe</i>	<i>E. Europe</i>	<i>N. America</i>	<i>Latin America</i>	<i>Asia Pacific</i>	<i>Africa and Middle East</i>	
Market share %	4.2	1.4	2.7	3.6	0.9	3.0	
Product category	Ice cream	Soup	Replacement drinks	Sauces, condiments	Oils, fats	Spreads	
Market	<i>Global</i>	<i>Global</i>	<i>Global</i>	<i>Global</i>	<i>Global</i>	<i>Global</i>	
Market share %	19.3	32.9	38.7	10.7	13.4	7.1	
Market	<i>W. Europe</i>	<i>E. Europe</i>	<i>N. America</i>	<i>Latin America</i>	<i>Asia Pacific</i>	<i>Africa and Middle East</i>	
Market share %	30.5	25.7	49.9	32.6	4.4	22.0	
Market	<i>Austria</i>	<i>Poland</i>	<i>United States</i>	<i>Argentina</i>	<i>Indonesia</i>	<i>South Africa</i>	
Market share %	59.6	38.4	50.1	43.0	37.2	46.6	
Product category	Impulse	Instant	Slimming drinks	Catsup	Spreadables	Yeast-based spreads	
Market	<i>Austria</i>	<i>Poland</i>	<i>United States</i>	<i>Argentina</i>	<i>Indonesia</i>	<i>South Africa</i>	
Market share %	81.2	76.5	79.1	76.8	83.9	94.9	

Source: Euromonitor, 2003.

competition from Japanese brands, Unilever accounts for more than a third of Indonesia's oils and fats market. Strong colonial ties of the Dutch-based firm and the use of a single well-recognized brand (Blue Brand) has allowed Unilever to capture nearly 84 percent of Indonesia's spreadable oils and fats market. Similarly, Unilever's focused category management strategy has also been highly successful, with the Knorr brand of soup in Europe, and with the Hellman's brand of catsup and condiments in Latin America.

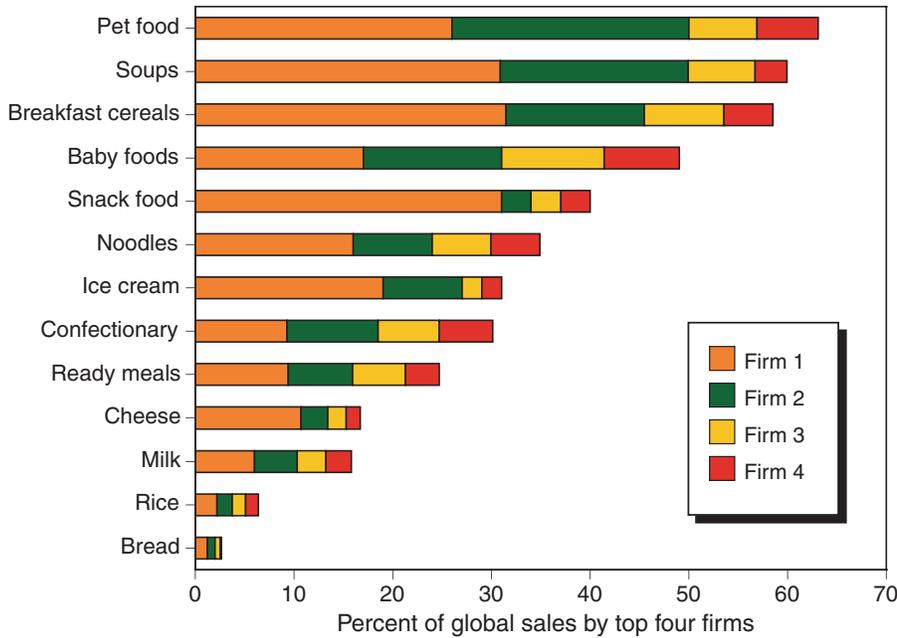
The trend for the largest firms to focus and acquire brands in core categories has contributed to higher firm concentration among certain high-margin products with globally recognized premium brands. For example, the markets for pet food, soups, breakfast cereals, and baby food are heavily concentrated with the top four firms accounting for over 50 percent of global sales (fig. 5-2). Nestlé alone accounts for 26 percent of global baby food sales, with brands such as Enfamil, Gerber, and Similac dominating the world market. Similarly, Campbell's, Knorr, and Maggi brands together account for nearly 50 percent of global soup sales. Small firms have been less successful in markets, such as soups, where differentiation is achieved through heavy advertising of popular brands.

Role of Producer-Owned Firms in Evolving Food Markets

As restructuring continues in the global food industry, producer-owned firms, also known as cooperatives, have taken on new roles in response to the changing marketplace. Some of the largest U.S. cooperatives face financial constraints, raising concerns about their viability, but others thrive by making necessary adjustments to adapt to new consumer-driven forces in the market. Given these mixed signals, the outlook for cooperatives in the

Figure 5-2

Higher market concentration in sales of branded products



Source: Euromonitor, 2003.

evolving world food industry appears to be unclear. In some cases, it may even appear that the inherent business structure of a cooperative is an impediment to success.

In contrast to investor-owned firms, cooperatives are owned and controlled by members who also share the benefits of the organization. While the primary purpose of cooperatives is to generate benefits for their members, they are also considered a means of correcting or mitigating market failures (Rogers and Petraglia, 1994). Therefore, public policy has generally been geared toward differential treatment of cooperative business entities in the United States and other countries.⁷

Historically, agricultural cooperatives have emerged as an avenue for producers to market farm products. Currently, some cooperatives struggle to sell their products, as they lack coordination mechanisms and operate with little information about market conditions and consumer preferences. At times, these cooperatives are faced with oversupplies, which in turn depress market prices for their products. Some agricultural cooperatives have looked to expand to value-added products to capture a greater share of consumer sales. However, the experience of Ocean Spray Cranberries proves this strategy may not guarantee success if supply control is not coordinated with demand. While Ocean Spray enjoyed growing consumer popularity, overproduction in the 1990s, resulting from lack of supply control pushed cranberry growers toward financial ruin (Ananor-Boadu et al., 2003).

Some other cooperatives involved in value-added products have not been able to compete and respond to market signals as well as investor-owned firms. For example, Tri Valley Growers was the largest fruit and vegetables cooperative in the United States, competing directly with Hunts, Heinz, Campbell’s Soup, and

⁷ The Capper-Volstead Act of 1922 gave U.S. agricultural cooperatives limited exemption from antitrust laws. In addition, the 2002 Farm Act and other ongoing USDA programs address issues related to rural development and cooperative business.

Del Monte. It purchased raw products at a noncompetitive price from its members and sold processed goods through a diversified portfolio of marketing channels. But because of its overly generous payment to producers, it accumulated excessive debt and was forced to declare bankruptcy in 2000. Despite its generous payments to members, the cooperative business structure did not directly contribute to Tri Valley Growers failure (Sexton and Hariyoga, 2004). Rather, it was unable to meet shifting consumer demand for different tomato-based products and generate sufficient revenues to cover its expenses.

Overdiversified portfolios have affected some of the largest U.S. cooperatives in recent years. As previously discussed, many of the large global food firms have restructured to attain the right portfolio size and focus. However, U.S. cooperatives have been slow to make the necessary restructuring decisions. Agway, once the largest U.S. cooperative, ranking 97th on the Fortune 500 list, filed for bankruptcy in 2002. Similarly, too vast a portfolio led Farmland Industries to sell its assets and declare bankruptcy in 2003.

Although these examples highlight failed agricultural cooperatives, it is not clear that the cooperative business structure is itself an impediment. Some cooperatives are taking the necessary steps to realign their operations to meet consumer demands. For example, the U.S. cooperative Sunkist Growers has started sourcing products from foreign producers to meet retailer and consumer demand for year-round supply of citrus. Similarly, other cooperatives are performing successfully in global markets. The Fonterra Dairy Cooperative of New Zealand and Danish Crown of Denmark have strong international orientations, each exporting over 80 percent of its products.

A characteristic common among successful international cooperatives is close vertical and horizontal coordination from primary production to final consumers. The cooperative structure of a vertically integrated firm enables it to tailor products to specific markets and respond to changing consumer demands at the farm level and higher. Second, greater vertical and horizontal coordination enable a firm to reduce transaction costs while enhancing product quality. The cooperative business structure is best suited for producing and marketing certain agricultural commodities, such as meats, dairy, and horticultural products, with strong backward links to the producers.

The Danish livestock cooperative has successfully evolved in response to changing consumer demands. As with all successful food firms, the cooperative is supported by a strong research and technology base, and an organizational framework that allows quality-assured products to be developed as desired by consumers. In 1998, Danish Crown and Vestjyske Slagterier, another Danish cooperative, merged to create the largest hog producing and slaughter cooperative in Europe.⁸ Despite an inherent cost disadvantage due to limited natural resources, this cooperative operates an exceedingly well coordinated supply chain management system from genetics in primary hog production to processing and exporting final products. The strength of the cooperative lies in its superior knowledge of different foreign markets and close coordination along the supply chain, which enables it to respond to specific consumer needs. For example, the cooperative raises pigs for the UK market that must conform to special animal welfare and food safety requirements. Farmers contracted for the UK market are paid premiums, subject to meeting the additional requirements.

⁸ The company accounts for 50 percent of Denmark's total exports and is the world's largest exporter of pork, with sales reaching more than \$2 billion in 2002.

Similarly, the cooperative structure has successfully propelled New Zealand's dairy cooperative into prominence in international markets. The Fonterra Cooperative Group is heavily export oriented. It is the world's leading dairy exporter and the 12th largest dairy product manufacturer. Owned by 13,000 dairy farmers, Fonterra is fully vertically integrated and manages dairy herds, manufactures milk products, and distributes final products in retail markets. It integrates packaging, transportation, shipping and quality control. Similar to the success of Danish Crown, Fonterra's success has much to do with superior knowledge of milk production, processing technology, and consumer markets, and its vertically integrated structure.

Despite strong competition from multinationals, such as Danone, Parmalat, and Nestlé, Fonterra has become a global company, marketing dairy ingredients and consumer dairy products for retail and food service through a strong research base, a flexible integrated supply chain, and key business alliances with companies in foreign markets.⁹ Marketing dairy products internationally requires flexibility in tailoring products to specific markets, a strength of Fonterra. While servicing markets with strict requirements, such as the UK, Fonterra maintains tight control over the raw products. In other markets with less stringent regulations, Fonterra may resort to outsourcing within the supply chain.

As evident from these examples, the key to success lies with cooperatives developing an understanding of their markets and having an integrated structure that allows them to cater specifically to individual markets. Moreover, gaining thorough knowledge of markets and developing an ability to cater to markets is only possible if cooperatives limit their focus to a few sectors. With sound business decisions and appropriately sized portfolios, the cooperative business structure is very well suited for the global food industry. An allegiance to suppliers, control and flexibility of the supply chain, product traceability, member loyalty, and the growing positive attitudes of consumers toward cooperatives portend well for future growth possibilities. Recent changes in consumer values and preferences offer cooperatives, which have close ties to primary producers, the opportunity to market specific product attributes, such as organic and free range. For example, Fonterra has promoted its brands through its wholesome image of cows feeding off natural New Zealand pastures, the image simultaneously reinforcing its rural identity while signaling the product to be high quality, healthful, natural, and ecologically responsible.

Looking Ahead

A wide range of food firms with diverse orientations and sizes are expected to remain sustainable as they make greater strides to specialize and better cater to consumer demands. In doing so, food manufacturers will adjust to consumer demand signals as transmitted via the retail sector, which is increasingly becoming consolidated. Both large and small firms with specific expertise are now able to enter the market through alliances with retailers. These current market trends indicate a positive outlook for the coexistence of diverse manufacturing firms.

⁹ In 2002, Fonterra Group formed an agreement with Dairy America, a marketing company representing major U.S. cooperatives, for exporting skimmed milk powder from the United States. It established the first commercial production of milk protein concentrate in the United States with an agreement with Dairy Farmers of America.

With increasing consumer demand for higher value products, food firms are likely to secure or increase their market shares in value-added products in which they have greater competencies. These demand patterns have led to a focused growth strategy among many food firms, which in turn has contributed to a more concentrated regional market for specific products. While the largest multinational food companies will likely become even larger in the next decade as they continue to expand in developing countries, the increasing diversity in consumer demand presents opportunities for many small firms to successfully compete in the same markets. Establishing brand names may remain a significant barrier for small firms, but small-scale manufacturing involving expertise in specific processing technologies of different ingredients and flavorings offers potential for new entrants.

In the evolving global food industry, food manufacturers have to continuously reorient themselves to remain competitive. Firms that respond to market signals are better able to adjust and maintain their positions in the industry. Manufacturers with flexible organizational structures that enable them to adjust the production process at various stages in response to consumer demands will be well suited to compete in the world food market. A flexible organizational structure is possible if firms operate in close coordination with producers and other sectors of the food supply chain. Therefore, producer-owned cooperatives involved in value-added production activities have the potential to succeed in global food markets.

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Appendix Tables

Appendix 1—World's leading food manufacturing firms

Rank based on 2002 food sales	Company name	Country of registry	Packaged food share of firm's total sales
			<i>Percent</i>
1	Nestlé	Switzerland	51.7
2	Kraft Foods	USA	30.4
3	Unilever	UK/Netherlands	50.2
4	PepsiCo	USA	61.2
5	Danone	France	73.9
6	Mars	USA	50.4
7	Kellogg	USA	97.7
8	ConAgra Foods	USA	81.0
9	Heinz Co.	USA	58.2
10	Campbell Soup	USA	90.4
11	General Mills	USA	87.1
12	Dean Foods	USA	100.0
13	Hershey Foods	USA	99.0
14	Parmalat	Italy	66.3
15	Cadbury Schweppes	UK	43.9
16	Ferrero SpA	Italy	100.0
17	Bimbo	Mexico	96.0
18	Meiji Dairies Corp.	Japan	86.6
19	Morinaga Milk Industry	Japan	na
20	Sara Lee	USA	28.6
21	Yamazaki Baking Co.	Japan	92.9
22	Lotte Group	South Korea	100.0
23	Wrigley Jr. Co.	USA	100.0
24	Arla Foods Amba	Denmark	94.2
25	Snow Brand Milk Products	Japan	90.0
26	Sodiaal SA	France	89.3
27	Pfizer Inc.	USA	6.3
28	George Weston Ltd.	Australia	na
29	Nissin Food Products Co.	Japan	100.0
30	Barilla G. R Flli SpA	Italy	100.0
31	Interstate Bakeries Corp.	USA	100.0
32	Procter & Gamble Co.	USA	10.5
33	Bristol-Myers Squibb Co.	USA	9.8
34	Lactalis/Groupe	France	85.5
35	Ezaki Glico Co Ltd.	Japan	na
36	Fonterra Co-operative Group	New Zealand	40.1
37	Hormel Foods Corp.	USA	79.3
38	United Biscuits (Holding) Plc.	Belgium	na
39	Ajinomoto Co. Inc.	Japan	na
40	Bongrain SA	France	na
41	Abbott Laboratories Inc.	USA	7.1
42	Perfetti Van Melle Group	Italy	100.0
43	Orkla Group	Norway	28.8
44	Morinaga & Co.	Japan	na
45	Del Monte Foods Co.	USA	78.6
46	Friesland Coberco Dairy Foods	Netherlands	na
47	Tine Norske Meierier BA	Norway	na
48	Meiji Seika Kaisha Ltd.	Japan	65.4
49	SanCor Cooperatives Unidas	Argentina	na
50	Ting Hsin International Group	China	na

Note: na = not available.

Source: Euromonitor, 2003.

Appendix 2—Leading packaged food manufacturers by country

Country	Firm 1	Firm 2	Firm 3	Firm 4
Argentina	Danone	SanCor Cooperative	Nestlé	Ancor
Australia	Nestlé	Goodman Fielder	Cadbury Schweppes	Campbell Soup
Austria	Unilever	Benalandmilch	Kraft Foods	Ferrero
Belgium	Danone	Unilever	Nestlé	Kraft Foods
Brazil	Nestlé	Unilever	Parmalat	Danone
Bulgaria	Obedinena	Kraft Foods	Boni Oborot	Nestlé
Canada	Kraft Foods	Saputo	Maple Leaf Foods	Parmalat
Chile	Nestlé	Soprole	Unilever	Empresas Carozzi
China	Ting Hsin	Uni-President	Long Fong	Hai Pa Wang
Colombia	Alpina	Nestlé	Parmalat	Productos Naturales
Czech Republic	Nestlé	Hame	Danone	Unilever
Denmark	Arla Foods Amba	Danish Crown Amba	Unilever	Toms Fabrikker
Egypt	Nestlé	Cadbury Schweppes	Salvala	Hayed Saeed
Finland	Valio Oy	Fazer Oy	Ingman Foods	Unilever
France	Danone	Nestlé	Lactilis	Unilever
Germany	Unilever	Nestlé	Ferrero	Kraft Foods
Greece	Philippou	Chipita	Unilever	Friesland Coberco
Hong Kong	Nestlé	Garden	Golden Resources	Nissen
Hungary	Pick Szeged	Unilever	Friesland Coberco	Parmalat
India	Gujarat Cooperative	Unilever	Danone	GlaxoSmithKline
Indonesia	Indofood Sukes	Nestlé	Unilever	Friesland Coberco
Ireland	Unilever	Glanbia	Cadbury Schweppes	Kerry
Israel	Tnuva Central Co-op	Nestlé	Vadash	Strauss-Elite
Italy	Barilla	Unilever	Nestlé	Ferrero
Japan	Meiji Dairies	Morinaga	Yamazki Baking	Snow Brand Milk
Malaysia	Nestlé	Friesland Coberco	Jasmine Food	Yep Hiap Seng
Mexico	PepsiCo	Bimbo	Nestlé	Ganaderos
Morocco	Centrale Laitier	Montedison	Indusalim	Margarinerie
Netherlands	Unilever	Campina Mekunia	Friesland Coberco	United Biscuits
New Zealand	Fonterra	Goodman Fielder	Heinz	Danone
Norway	Tine Norske Meirerier	Orkla	Kraft Foods	Nestlé
Philippines	Nestlé	San Miguel	JG Summit	Unilever
Poland	Unilever	Danone	Nestlé	Cadbury Schweppes
Portugal	Unilever	Nestlé	Fonterra	Nutrinvest
Romania	Napolact	Topway	Prodlacta	Kraft Foods
Russia	Cherkizovo	Nestlé	Wimm Bill Dann	Babayevsky
Saudi Arabia	Nestlé	Al Marai	Danone	Abdul-Kadir
Singapore	QAF	Nestlé	Faser Neavel	Kraft Foods
Slovakia	Nom Ag	Henkel	Nestlé	Kraft Foods
South Africa	Tiger Brands	Unilever	Nestlé	Danone
South Korea	Lotte	Nong Shim	Namyang Dairy	Cheil Jedang
Spain	Danone	Nestlé	Sos Arana	Unilever
Sweden	Arla Foods Amba	Orkla	Unilever	Spira AB
Switzerland	Migros	Nestlé	Unilever	Chocoladefabriken
Taiwan	Uni-President	Wei Chuan Foods	I-Mei Foods	Kraft Foods
Thailand	Nestlé	Saha Pathana	Friesland Coberco	Unilever
Turkey	Ulker Gida	Unilever	Nestlé	Eti Gida
Ukraine	Shepetovsky	Cherkasskaya	Keivsky	Kamenents
United Kingdom	Unilever	Cadbury Schweppes	Mars	Nestlé
United States	Kraft Foods	PepsiCo	ConAgra	Dean Foods
Venezuela	Empresas Polar	Cargil	Parmalat	Kraft Foods
Vietnam	Haihaco	Kinh Do	Generics	Vietnam Dairy

Source: Euromonitor, 2003.

Worldwide, the market for food delivery stands at \$83 billion, or 1 percent of the total food market and 4 percent of food sold through restaurants and fast-food chains. It has already matured in most countries, with an overall annual growth rate estimated at just 3.5 percent for the next five years. Two tiers for online food delivery. Two types of online platforms have risen to fill that void. The first type is the "aggregators," which emerged roughly 15 years ago; the second is the "new delivery" players, which appeared in 2013. With the top five global players having reached a combined valuation of more than \$10 billion, the key question is what a sustainable level of profitability will be for the online-food-delivery business models. New Directions in Global Food Markets / AIB-794. Economic Research Service/USDA. Table 1-1 "Global food sales, 2002. Retail stores Food service Total. Billion dollars. Fresh food 531 382 913. Processed products 1,762 1,420 3,182.