

Mega Trends in Agriculture: Implications for the Food Distribution System

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Introduction

There are several key catalysts and drivers of change that will shape the food distribution system over the next 20 years. Visioning beyond that time frame would be pure speculation because of the complexities, interdependencies, and dynamics of technology; social and political activism; and most importantly, consumer trends. The purpose of this paper is to challenge researchers and professionals to step back, examine the macro-level trends of agriculture, and strategically access food distribution systems.

Global World Markets/Consumer Preferences

Several important factors are impacting the global agri-food industry. These factors include the growing trade of processed foods, changing consumer needs, rising disposable income, improved diets in many areas, industry consolidation, and increasing food demand in developing countries. The challenge to the food distribution system will lie in the sharp contrast between the needs of developed and developing countries.

The global food market will be comprised of two major segments. The developed countries' marketplace is large and very important but slow-growing. The marketplace of developing countries is smaller and faster-growing, with enormous potential for food imports but limited income.

This distinction can be made by drawing from the social science of psychology and, more specifically, from Maslow's (1968) hierarchy of needs. Developing countries and continents—such as China, India, and Africa—are attempting to meet basic food and survival needs at the lower end of the pyramid. These areas will be attempting to meet basic nutrition with food security in a low-cost efficient manner. The market in these areas will be a fast-growing sellers' market. The major challenge to food distributors is that a large proportion of the 3.5 billion world

population that lives on less than one dollar per day dominates this segment.

On the other hand, developed countries that historically have met the basic needs move up the pyramid toward social and self-actualization demands. Thus, convenience, entertainment value, bio-security, and health and medicine are attributes that a larger proportion of this marketplace seeks. This segment that earns 80 percent of the world GDP will be slow-growing and/or very selective as a buyers' market.

According to IFPR (1999), meat demand will be strongest in China, Latin America, and developed countries. This is contrasted to cereal food demand in India; in West, North, Sub-Saharan Africa; and in the rest of Asia. As a result of these economic and population dynamics, value-added in global agri-business will continue to shift markedly toward end produce in developed countries. In 1950, food processing and distribution accounted for 50 percent of total value-added. This figure will shift toward 80 percent as the industry approaches the year 2020. The marketing key in this environment will be for all players in the food distribution system to focus on identity preservation. Traceable products with more consumer choices are one part of that.

Food preparation time at home has been reduced from 2.5 hours in the depression era of the 1930s to one hour per day in the time frame of Elvis and "Leave It To Beaver," to under one half-hour today. By the year 2010, food preparation time at home will be under 8 minutes in most developed countries of the world.

These changes in demand will have a dramatic influence on food retailing trends. According to Royal Ahold (1999) global consolidation and growth formats will shift from regional and national to global, with just 3 to 5 players. There will be a downward trend in hyper-markets, cash and carry, and an upward movement in E-commerce, convenience, and specialty, with supermarkets remaining neutral.

Supply/Globalization

Food professionals will be required to be cognizant of changes taking place in food production or

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the supply side of the economic equation. Most developed countries' agri-managers will produce more than can be consumed. Exports will be extremely important in the agribusiness profitability equation. In the next decade, there will be an emergence of global block economies—that is, North America, South America, Europe, Asia, South Pacific, and Africa.

There will be a globalization rating and ranking game in major agricultural producing regions. North America—that is, United States, Canada, and Mexico—will be pitted against other continents. Soil and water, labor availability and productivity, infrastructure, political and financial stability, and market accessibility are some of the factors that will play a role in the rating game. For example, if South America can demonstrate political and financial stability, more food companies will seek products from that area of the world, which could then allow that continent to emerge as a dominant supplier to the world food system.

In the globalization ranking game, food companies can expect Canada, the South Pacific, Africa, and China to be competitive niche players. The case in point today is that China is very competitive in apples and apple juices, a factor that influences the structure and profitability of the apple industry in the United States. The United States, Europe, and South America will continue as dominant suppliers of food, with more integrated agribusiness making capital and human investments in these areas of the world.

Consolidation of Food Supply

A food executive's worst nightmare is the possible disruption of the food supply by weather, political abnormalities, and food scares—actual or fabricated. As agricultural production concentrates worldwide, slightly more than 1 million producers generate 75 percent of the output, resulting in increased risk. For example, 10 percent of the world's landmass receives too much rain and 10 percent experiences one drought in any given year. A major weather disruption in a concentrated production area—such as Iowa, which produces more corn than the Southern Hemisphere of the world—and spot shortages could result in extreme variations in price and quantity.

These consolidation trends are expected in all major areas identified previously, except in Europe where subsidies are prevalent. In the United States, 2 percent of the dairy farms generate one-fourth of

the milk production in 14 counties. Similar trends are being observed in most commodities. Overall, in the United States, 8 percent of farms are generating 72 percent of revenue. In Canada, Australia, and South Africa, less than 60,000, 80,000, and 45,000 farms, respectively, are the major suppliers of product to the food industry.

Technology

With the advent of technology (bio- and information), food systems' executives will demand and expect information on a product to ensure that a food-safety scare will not drive them out of business. Biotechnology will require that, from production to retail, a system operations approach—which follows a prescribed, well-defined path—be used to increase the likelihood of a predictable outcome (Kohl, 1999).

Major food companies—through vertical, horizontal, and virtual integration—will provide inputs and a system of management that producers will follow. Implications of this structure will have a profound impact on the marketing process. Historically, 70 percent of production has been sold as commodities for which individual producers have been responsible for marketing; 20 percent of production—mainly poultry, hog, and vegetables—has been marketed through contracts; and 10 percent—ranging from organic to specialized niche markets—has been value-added. Food distribution executives can expect a system in which 50 percent of production is contract, 20 percent is value-added, and under 30 percent has an individual responsible for marketing.

Globalization of agriculture suggests that producers be required to become the low-cost supplier at the global level. In the future, having an efficient, well-defined system from production to delivery will be critical to competing, not only in cost but valued-added.

The biotechnology revolution will reshape agriculture—affecting livestock, crop genetics, tillage systems, crop protection, individual human health, and more. As agriculture becomes more concentrated, information will be more widely available than ever before, and technologies that can add value will be adopted more quickly. Product life cycles will be shortened and will place tremendous pressure on firms' research and development activities (Boejlje et al., 1997). In the E-commerce world, the 365-day year is shortened to 40 days.

As bio- and information technologies evolve, three distinct stages will be observed. Currently, the primary objective of Stage One is to reduce cost and increase output. From 2002–06, Stage Two will include more value-added, with trait-attribute designer foods. During Stage Three, from 2006 through 2015, a whole new marketplace for agriceuticals—food and fiber products used for medical purposes—will be found. An alliance of agriculture with the medical field will be critical as currently unknown products evolve into the marketplace and consumer acceptance manifests itself.

Public Policy

In theory, we are moving to a free market. In reality, it is still and will most likely be less than a level playing field. Environmental and labor regulations, food safety, farm subsidies, intellectual and property rights, and anti-trade sanctions will play a major role in a food distribution strategic plan.

Some areas of the world—for example, some sections of Canada, the South Pacific, and Africa—are moving toward free markets. The United States and Europe are, at present, either heavily subsidizing or providing export enhancements. This trend will occur in the United States in light of a strong economy, a cheap food policy, and an attempt to save the family farm.

Throughout the next 10 years, food distribution sectors will observe the great debate over farm vs. rural policy and domestic vs. global policy. A European model of subsidies and rural policy could be prevalent in discussions of the policy issues of advanced countries. Food safety and labor regulation then will be given higher priority on agendas, possibly causing a shock effect that would ripple throughout the food distribution system.

If developed countries, such as the United States and Europe, continue to provide subsidized support, the next question is: Will these countries place emerging agricultural economies at a competitive disadvantage, thus hindering growth? Public policy is the food systems' biggest strategic risk in the next 10 years. This risk must be examined from local, regional, state, provincial, national, and international viewpoints by researchers.

Economy

"Its the economy, Stupid," a former U.S. political leader recently remarked. Yes, the U.S.

economy is a major trend in the financial health of food systems, domestically and throughout the world. At the time this paper was written, the United States was engaged in the longest business expansion in its history. Macroeconomic policy shifts; trends in the equity markets; federal debt levels; and oil, energy and consumer debt levels are economic shocks that can strategically hinder growth and alternative food systems.

In recent years, the United States and most domestic stock markets have had an effect on consumption. For example, according to *USA Today*, a one-dollar increase in the stock market has a 4-cent increase on consumption.

The wealth effect in the world has been increased through technology production. A word of caution to strategic planners: Productivity will ebb and flow and possibly plateau, resulting in a recession or slow growth economy that will ripple throughout the world; thus, advances and changes in the food system will be directly correlated to the health of the U.S. and world economy.

Implications for Strategic Thinkers!

The mega trends of agriculture and the economy are going to have serious implications for food system dynamics. First, the continuation of economic growth in developed countries that ripples to less-developed areas of the world will be a major assumption. In the planning horizon, the food distribution system will most likely experience the shock of a mild recession in many of the developed regions of the world. This could alter product development and delivery systems, and consumer buying habits. Perhaps academics and researchers will need to dust off old papers concerning recessions and economic instability, and their impact throughout the food chains.

Second, as technology alters output, the infrastructure changes must be examined. For example, genetically modified product segregation will require different storage, transportation, testing, and packaging systems. Will the additional revenues or reduced cost exceed the capital investment and operating cost associated with these changes and trends? Will developing countries with limited budgets seek strategic alliances with major food companies—alliances that would provide the necessary investment and human capabilities to improve ports, roads, and facilities—in order to become worldwide producers in a politically friendly distribution system in which environmental and human rights are considered?

Third, on the supply side, the question is: Given the changes in economic cycles, political and public policy changes, technology, and weather, will market conditions provide the profit incentive to attract capital and human resources? Will capital flow to other sectors that offer high rates of return with less perceived risk?

Fourth, the food system from production to processing and distribution has seen mass consolidation. Expansion in any industry—such as oil, airlines, and food systems—will come under public scrutiny if there are perceptions of possible disruptions that create large profits or threaten national and public security. In the next decade, there will be debate at national and international levels concerning the proper balance for the betterment of society.

As an industry, we must take charge of the change of key challenges to our industry. Food safety issues will continue to escalate, requiring a three-point public relations program for the public, politicians, and the press. Failure to implement such a program will slow the diffusion of innovation.

Specifically, North America must move forward in the development of a system of traceability of food product at the commodity and specialty product level. Players throughout the food chain will see the benefits of value-added from the domestic and international marketplace.

Life sciences/agricultural will double in size, with 95–97 percent of products and services currently unknown to the industry. However, an aging but educated population with large concentrations in wealth will demand and expect products that slow and reverse the aging process. Regulators and food scientists will be under intense pressure to approve and accept new technologies and processes at an accelerated rate, backed by science not emotion.

E-commerce will draw huge efficiencies and gains in the food value chain. However, successful agribusiness and food executives will develop products, processes, and feedback that are much more human-interactive. Currently, the industry is in the Model-T stages.

Finally, water scarcity—either by quantity or quality—will be the most limiting constraint in the supply and demand side of the food profit equation. Water is a basic commodity that 50 years ago was basically free. However, it now has six to eight times more perceived value than oil, and its major input drives our economy. Food systems in the future are going to place more emphasis in strategic planning, with water playing a major role in the success.

The primary purpose of this paper was to challenge food distribution professionals to think outside the boxes from a global standpoint. Some academicians and professionals might think that futuristic papers and sessions like this are superficial and irrelevant. However, this paper was written to provoke thought, challenge paradigms, and move the reader from his/her comfort zone in thinking about the future of the food system from farm to retail gate.

References

- Boejlje, Michael, Kirk Clark, Chris Hurt, Don Jones, Alan Miller, Brian Richert, Wayne Singleton, and Allan Schinckel. 1997. *Food System 21*. Department of Agricultural Economics, Purdue University, West Lafayette, IN. December.
- IFPR. 1999. "Impact Simulation." July.
- Kohl, David M. 1999. *AgriVisions: The Changing Face of Global Agribusiness*. Melbourne, Australia. September.
- Maslow, Abraham H. 1968. *Toward a Psychology of Being*. D. Van Nostrand Company.
- Royal Ahold. 1999. Wye College, University of London.