



Supply chain management needs flexibility as global demographics change and emerging countries expand their middle class.

Population trends have vast and wide-ranging impacts, affecting everything from economic patterns to the balance of political power. The ability — and flexibility — to adapt to these shifts, however incremental, will determine a company's degree of success and access to opportunities for many years to come. There is no time like the present to determine what this will likely mean for supply chain management.

Our research at the Center for Global Business Studies at Penn State's Smeal School of Business in University Park, Pennsylvania, has identified three main characteristics of population change that will affect business practices in the coming decades.

The Changing

Differential Population Growth Rates

Worldwide population is on the rise; however, the increase is not happening symmetrically across the globe. Some of the countries that can least afford to support a burgeoning citizenship will find their resources stretched to the limit. At the same time, some developed countries will battle the problem of a declining birthrate combined with an aging population, resulting in a very lean workforce.

Projections by the United Nations show a continued increase in global population (but a steady decline in the population growth rate of developed countries and other regions) from its current 7 billion to a population that's expected to reach between 7.5 billion and 10.5 billion by 2050. From a business standpoint, we cannot focus primarily on the simple statistics of an increase in global population. After all, matters of population and market growth are not stationary or carved in stone — rather, they are like clouds that will shift in the winds of inevitable change. We cannot allow ourselves to be caught unprepared to deal with issues that can be reasonably predicted if one examines all of the available data.

According to the European Commission's research study, *The World in 2025, Rising Asia and Socio-Economic Transitions*, the center of gravity of world production has already begun to move toward Asia. The group composed of China, India and Korea will have as much

90 percent will be living in developing countries. A growing middle class has political and social implications in addition to the obvious consumer-based needs and desires. For instance, developing countries in Africa and the Middle East have a large population of young people (often referred to as the "youth bulge"). This population will easily fill manufacturing and assembly jobs at lower salary scales, keeping costs low, but the potential trade-off is that there could be social and political unrest in these regions. Supply management professionals using suppliers in these countries must keep risk management strategies top-of-mind, and be sure to have alternate suppliers in other countries.

The effects of the growing middle class are especially evident in the shifting food patterns and consumption in developing countries, as incomes and access to food once only common to the world's largest cities increases. According to the U.N.'s Food and Agriculture Organization, the

growth rates. Meanwhile, in India, North Africa and the Middle East, population growth rates are on the rise. The salary scale in these regions will decline with a corollary shift of labor operations to these countries, necessitating changes and increases in domestic distribution patterns. Already we see a major increase in auto production in the Middle East and European manufacturers importing components from Middle East sources.

Urbanization and the Growth of Megacities

Two major pattern shifts can be identified as a result of these demographic changes: increased urbanization and immigration. Predictably, the effects will be most pronounced in those regions that are both least developed and experiencing the highest rate of population growth. Managing these new population flows and the megacities that result will strain the resources of these countries and others.

Winds of POPULATION GROWTH

By Fariborz Ghadar

market power in terms of gross domestic product (GDP) as the European Union (EU). And with the addition of Japan, Thailand, Taiwan, the Philippines and Indonesia, the share of Asia in 2025 is expected to reach more than 30 percent of the world GDP and surpass that of the EU (estimated at slightly more than 20 percent). Before 2025, China could become the second world economic power and India the sixth economic power of the world. The present pattern of trade will no doubt be supplemented by regional trade and investments that will dramatically change supply chains.

In 2030, the "global middle class" (with an estimated income between US\$4,000 and \$17,000 per year) could account for 1 billion people, of which

share of staples such as cereals, roots and tubers is declining, while that of meat, dairy products and oil crops in rapidly developing countries is rising. Between 1964-1966 and 1997-1999, as household incomes rose, per-capita meat consumption in developing countries rose by 150 percent, and milk and dairy products consumption rose by 60 percent. By 2030, per-capita consumption of livestock products could rise by another 44 percent. The present supply chain will have to take into account the refrigeration needed for such a shift in fresh meat and dairy consumption.

A major function of these differential population growth rates means we will see declining demand and productivity in the EU, Japan and South Korea following their respective lowered population

If the recent trends continue, by 2025, the United States and Europe will have lost their scientific and technological supremacy in specific areas to Asia (China and India will have caught up with or even overtaken the triad, composed of the developed markets of Japan, North America and Western Europe) even if they still appear among the principal world powers in R&D. However, according to the European Commission research, their relative weight in terms of R&D investments could significantly fall in comparison to emerging Asia. India and China could thus account for approximately 20 percent of the world's R&D, which translates to more than double their current shares. Where will the new product designs originate?

The Changing Winds of **POPULATION GROWTH**

Depending on immigration policies in industrialized countries and on the policies of emerging countries, one can imagine that we will move from today's brain drain (mainly toward the United States and Western Europe) to a more balanced brain circulation of young researchers among many regions of the world. It has been estimated by the European Commission that 645,000 Chinese students and 300,000 Indian students will study abroad in 2025, a sign that these countries continue to gain ground in the global knowledge area. However, unlike the prior trend that began in the 1970s, these educated students will now return to their countries instead of joining the ranks of working professionals, major academics and researchers responsible for building many of the U.S.'s major institutions and successful companies.

These significant trends toward urbanization and immigration will cause changes in the labor supply, with infrastructure and services in these megacities within developing countries needing to be significantly fortified. By 2025, only three of the 25 top global megacities will be in the developed world. Among Western European cities, only Paris will be numbered in the top 30 megacities. The top five after Tokyo will likely be Mumbai, Delhi, Dhaka, Sao Paulo and Mexico City. However, to reach megacity status, many of these cities will need substantial investments in infrastructure, including distribution and supply nodes.

Express parcel shipper UPS, in Atlanta, has seized the opportunities inherent in

increased urbanization by buying TNT Express in Hoofddorp, Netherlands, adding TNT's substantial regional network to its own vast global one. Rival FedEx will now need to complement its fleet of planes with increased domestic distribution capabilities in the countries where it does business to ensure market share. Meanwhile, the upside to all of this is that express delivery is allowing smaller companies to run the long global supply chains favored by big companies. Right now, large companies such as DHL and UPS dominate the delivery industry, but as urbanization increases in emerging countries, these companies are turning to the small carriers to handle the final end of deliveries. The streets and city layouts in many of the emerging countries were not designed for large trucks, so smaller vehicles will naturally have easier navigation in these areas.

Aging of Certain Populations

However, of all the dimensions of population change, perhaps none will have a greater impact than those related to age. According to the U.S. Census Bureau, one of every five people in the world will be age 60 or older by 2050. Abetting this trend in certain regions are the dual forces of declining birthrates and increasing longevity, resulting in an aging and soon-to-be-declining labor force that will ultimately give way to lowered national productivity.

Of all the countries in the world, Japan has the highest proportion of elderly citizens relative to its working population. By 2025, the elderly are expected to account for one-third of Japan's adult population; by midcentury, its working population is expected to decline by more than 37 percent.

This has far-reaching ramifications for country competitiveness. While China is currently a low-cost labor hub, as labor costs shift due to a foreseeable aging population, countries like India and Vietnam will become attractive manufacturing alternatives.

The rates and patterns of consumption change as populations age. According to

research by Harry S. Dent Jr., in his book, *The Roaring 2000s*, personal spending increases through ages 20–30 and peaks around age 46 ½. As an example, older populations have been shown to use less oil, meaning that the cost of certain raw materials will shift. Speaking of energy, a significant U.S. shift will be supply chain modifications in industries from petrochemical to fertilizer, with cheap and abundant natural gas, as the country enhances its role as a major world bread basket and meat producer.

Future Implications

On the positive side, businesses will have an unprecedented opportunity for meeting the needs presented by a new demographic makeup. New lifestyles and rapidly changing consumer preferences will generate new marketing opportunities. Businesses can play a significant role in mediating intergenerational differences by creating employment opportunities for older workers, deploying new technologies to enable higher productivity at older ages and linking labor groups across countries.

Between the present and the future, the reality is that these three main characteristics of population change — differential population growth rates, urbanization and immigration, and aging populations — will combine to translate into a fundamentally altered business environment.

Supply management executives need to consider all of the far-reaching effects of demographic shifts as they look at transforming supply networks around the world. In the coming years, we will see a strengthening of supply chains among emerging countries, and an increase in specialized supply chains. There's no time like the present to look directly into the winds of change and know how to approach the coming horizon. **ISM**

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