

Minority Business Enterprises Mastering the Supply Chain: A Perspective

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Mastering the Supply Chain: A Perspective

Summary

Minority business enterprises (MBEs) are a rapidly growing and increasingly important segment of the U.S. and global economy. From 1997-2002, the total number of U.S. companies increased by 2 million¹ and over 50% of this increase was accounted for by minority-owned firms². Minority-owned businesses are diverse, participating in a wide variety of industries – financial services, health care, construction, transportation, and other services. However, despite impressive growth in the number of U.S. minority firms, MBEs must increase their size, scale, and the economic viability of their firms if they are to compete effectively in the global economy. To accomplish this, MBEs must be assertive, innovative competitors who will not fear or retreat from globalization. This paper sets forth the business case for how MBEs can grow their companies, and cope with the challenges of national and global competition, through their participation and mastery of supply chain strategies.

Supply chains move materials, products, information and money from suppliers and their suppliers to customers and their customers – literally, from digging raw materials out of the ground to the home of the final consumer. Today, reverse supply chains also recover products and packaging for environmentally responsible recycling and disposal.

This paper explains how MBEs can become nationally and globally competitive by learning about and mastering supply chain strategies. It outlines three levels of supply-chain mastery: (1) Managing the fundamentals of the supply chain, which includes knowing the different kinds of supply chains, the associated problems, and cutting-edge solutions; (2) Addressing concerns businesses may have about supply chains; and (3) Transcending today's supply chain, by migrating away from businesses characterized by shrinking value toward new businesses and markets that offer high growth potential. To help MBEs achieve this final level of mastery, this paper introduces the Supply-Chain Life Cycle, a new framework based on our examination of MBEs and their responses to today's supply chains and the global economy.

¹ All U.S. firms refers to estimates that exclude publicly held, foreign, and non-profit firms and firms not classifiable by race or by Hispanic/Latino origin.

² Based on U.S. Census Bureau' 1997 Survey of Minority-Owned Business Enterprises (SMOBE) and 2002 Small Business Owner (SBO) survey data.

Section 1

Minority Business Enterprises: Mastering the Supply Chain

Summary: MBEs can contribute to U.S. competitiveness in the global economy. However, while the number of MBEs is growing faster relative to the number of all U.S. enterprises, their share of annual gross receipts and paid employees among U.S. firms remains relatively flat. Parity between MBEs and other U.S. enterprises on the above metrics may be reached by strengthening their mastery of the keys to entrepreneurial success: capital, education and technology (Buckley, 2002), and by improving MBE access to management skills, financing, and markets. Global sourcing and supplier consolidation make *supply chain management* a critical skill for MBEs to develop and master. Although increased global competition and global supply chains challenge many minority entrepreneurs, mastery of supply chain strategies can help them create global economic opportunities.

1.1 MBE growth and the Future of the U.S. Economy

The growth of minority-owned firms and the managerial leadership demonstrated by these companies in identifying and accessing new markets will contribute to the future competitiveness of the United States in the global economy. Minority enterprises introduce diverse perspectives and ideas in business, which are critical for identifying new opportunities and solutions in a global economy populated with a variety of cultures³.

Minority businesses can contribute to U.S. competitiveness by achieving entrepreneurial success similar to the levels seen in all U.S. business enterprises. To fulfill this promise, minority entrepreneurs must become central to the innovation and growth of the U.S. entrepreneurial economy. They must be assertive, innovative competitors who will not fear or retreat from globalization. The recent increase in the numbers of MBEs relative to all U.S. firms is a positive sign towards fulfilling entrepreneurial parity, but new and early-stage minority enterprises need to show higher rates of survival and growth.

According to the U.S. Census Bureau, minorities represented approximately 32%⁴ of the United States population in 2002, and recent data show a positive

³ Owens & Pazornik (2003). Globalization and Minority-Owned Businesses in the United States: Assessment and Prospects. Prepared for the 2003 National Minority Enterprise Development (MED) Week.

⁴ U.S. Census Bureau (2003). Annual Resident Population Estimates of the United States by Age, Race, and Hispanic or Latino Origin: April 1, 2001 to July 1, 2002, Table NA-EST2002-ASRO-03.

trend between MBEs and all U.S. enterprises in terms of the number of firms. An analysis of data from the recent U.S. Census Small Business Owners (SBOs) survey indicates that the number of MBEs increased at a higher rate than all U.S. firms between 1997 and 2002. For instance, the growth in the number of MBEs was about 50% of the growth of all U.S. enterprises⁵ between 1997 and 2002⁶ (see Table 1).

Table 1: Growth of minority-owned firms, relative to growth of all U.S. firms, 1997-2002⁷

Group	Growth in Number of firms, 1997-2002	Percentage Growth of all U.S. Firms, 1997-2002	RSE of Estimate (Percent) for Growth in Number of Firms	RSE of Estimate (Percent) for Percentage Growth of All U.S. Firms
All U.S. Firms	2,040,017	100.00%	NA	NA
All Minority	1,066,752	52.30%	NA	NA
African American	374,162	18.30%	4	NA
American Indian and Alaska Native	4,087		NA	NA
Asian	210,599	10.30%	4	NA
Hispanic	373,704	18.30%	4	NA
Native Hawaiian and Other Pacific Islander	9,578	0.50%	16	NA

Source: U.S. Census' 2002 Survey of Business Owners (SBO) and 1997 Survey of Minority-Owned Business Enterprises (SMOBE), and the Minority Business Development Agency.

Meanwhile, total annual sales and receipts, another measure of entrepreneurial activity, remains relatively flat. When the growth of annual gross receipts between minority and all businesses is compared over the 1997-2002 period, the gap widened slightly during that time. Although MBEs are increasing their gross receipts and paid employees, the growth is not keeping pace with the higher number of MBEs and of the minority population.

⁵ U.S. enterprises excludes publicly held, foreign, nonprofit and other not classifiable firms by race or Hispanic or Latino origin.

⁶ Based on MBDA adjusted data from 1997 SMOBE and 2002 SBO surveys (see Tables 1-3).

⁷ All U.S. firms exclude publicly held, foreign, non-profit and other not classifiable firms by race and Hispanic or Latino origin. Total number of minority firms and other business measures for all minorities for 2002 represent MBDA estimates by race and Hispanic origin (excluding white). In surveys produced by the U.S. Census, Hispanics may be of any race. The U.S. Census 2002 Survey of Business Owners did not provide estimates for total minority firms. MBDA estimates the number of minority firms in 2002 by adding the number of firms from all minority groups. For more information, please see methodology. Due to the exclusion of tribally held governments in 2002, data for American Indian and Alaska Native firms from the 1997 SMOBE and the 2002 SBO are not directly comparable. RSE stands for relative standard error; see methodology for implications. NA = not available.

A contributing factor to the slightly widening gap in gross receipts is the number of MBEs that entered the birth and adolescent stages between 1997 and 2002⁸. These MBEs are in a life-cycle stage where most businesses (MBE or non-MBE) are likely to fail.

Table 2a. Minority-owned firms, by number, gross receipts, and paid employees, 2002²

2002

Group	Firms (number)	RSE of estimate (percent) for firms (number)	Sales & Receipts (\$1,000)	RSE of estimate (percent) for sales & receipts (\$1,000)	Paid Employees (number)	RSE of estimate for paid employees (number)
All Minority	4,105,785	NA	\$668,261,385	NA	4,727,900	NA
All U.S. firms	22,480,432	NA	\$8,793,351,161	NA	55,427,792	NA
Minority firm % of all U.S. firms	18.30%	NA	7.60%	NA	8.50%	NA

Table 2b: Minority-owned firms, by number, gross receipts, and paid employees, 1997

1997

Group	Firms (number)	RSE of estimate (percent) for firms (number)	Sales & Receipts (\$1,000)	RSE of estimate (percent) for sales & receipts (\$1,000)	Paid Employees (number)	RSE of estimate for paid employees (number)
All Minority	3,039,033	-	\$591,259,123	2	4,514,699	3
All U.S. firms	20,440,415	NA	\$8,392,001,261	NA	58,901,412	NA
Minority firm % of all U.S. firms	14.60%	NA	7.10%	NA	7.70%	NA

Source for Table 2a and 2b: U.S. Census' 2002 Survey of Business Owners (SBO) and 1997 Survey of Minority-Owned Business Enterprises (SMOBE), and the Minority Business Development Agency.

⁸ Bernard & Slaughter (2004). *The Life Cycle of a Minority-Owned Business: Implications for the American Economy*. Prepared for the 2004 National Minority Enterprise Development (MED) Week.

⁹ In table 2a and 2b: All U.S. firms exclude publicly held, foreign, non profit and other not classifiable firms by race and Hispanic or Latino origin. Total number of minority firms and other business measures for all minorities for 2002 represent MBDA estimates by Hispanic or Latino origin only and by race (excluding white). In surveys produced by the U.S. Census, Hispanic may be of any race. The U.S. Census 2002 Survey of Business Owners did not provide estimates for minority firms. MBDA estimates the number of minority firms in 2002 by adding the number of firms from all minority groups. RSE = relative standard error; see methodology for implications. NA = not available; - represents zero.

1.2 Survival and Growth Rates of MBEs

MBEs often face entrepreneurial barriers. In general, minority-owned firms tend to be smaller and less viable than non-minority firms because they lack comparable access to management skills, money, and markets (Bates, 1997)¹⁰. Bates' "3M" model implies that MBEs will have enhanced survival and growth rates if they have greater access to the expertise, financing, and market opportunities that are the essential building blocks of business survival and growth. Buckley (2002) makes a similar argument in her study, *Keys to Minority Entrepreneurial Success: Capital, Education and Technology*¹¹.

With respect to capital, a 2004 report by the Minority Business Development Agency¹² (MBDA) noted some of the challenges that MBEs face including relationships in the commercial lending space. A growing community of minority-owned financiers and venture capital firms that are dedicated to supporting minority businesses are offsetting some of these financial limitations. However, greater financial capital alone is not the only factor necessary for MBEs to remain viable and grow, although it is indeed an essential ingredient.

Some of the latest research provides insights on the market distinctions between high-growth MBEs and other MBEs. Boston and Boston (2007) studied African-American firms that grew at least 20% annually in their number of employees for several years, and compared them to similar firms who did not achieve that level of high growth. Among their findings was that the high growth enterprises have markets that were regional, national, or international in scope, rather than local. They also found that high growth enterprises did not frequently adjust their price as the low/no growth enterprises did. On this last point, Boston and Boston concluded that high growth enterprises were not driven by a pricing strategy, since they remained consistent in price and were slow to react to market changes and volatility.

Harriet Michel, president of the National Minority Supplier Development Council (NMSDC), offers an industry perspective on markets and MBE survival and growth: "Competing either on price or on established quality features are not enough in today's competitive economy. Companies must compete on other factors such as distribution, and delivering high volume fast." Ms. Michel also suggests that MBEs strive to:

- Discover a new market niche that can be occupied, defended, and grown.
- Exit from businesses that lack growth potential.
- Make investments towards higher margin areas of a business.

¹⁰ Bates's model (1997) of Management, Money, and Markets is a framework that explains the viability and size/growth of MBEs, and it is often recognized and cited by academic researchers who study MBEs.

¹¹ Buckley, Patricia (2002). *Keys to Minority Entrepreneurial Success: Capital, Education, and Technology*. U. S. Department of Commerce's Economic Statistics Administration and the Minority Business Development Agency.

¹² U.S. Department of Commerce, Minority Business Development Agency. "Expanding Financing Opportunities for Minority Business," (2004).

A significant challenge to the growth of minority-owned firms is that many operate as lifestyle businesses. A lifestyle business is one whose primary purpose is to provide the owner with personal income that replaces a salary, as opposed to an enterprise designed to generate employment and result in a significant economic impact. In 2002, about 32% of the U.S. population was minority, while almost 18% of all U.S. enterprises¹³ were MBEs. However, the paid employees of minority-owned firms amounted to less than 9% of paid employees in all U.S. firms, excluding non-publicly held and other not classifiable firms (see previous tables). If it is true that MBEs are more likely to hire minority employees compared to non-MBEs, a minority entrepreneur's choice to remain a lifestyle business will reduce the economic growth opportunities for the U.S. minority population. The prevalence of MBE lifestyle business increases the likelihood that MBEs will continue to take a back seat in the U.S. economy, even as minorities become a larger segment of the U.S. population.

The decision to start or expand a business with employees requires the acquisition of necessary management skills. Because there is some evidence of a relationship between having a higher educational background and achieving entrepreneurial success, an emerging number of educational programs have been designed for minority entrepreneurs that concentrate explicitly on business growth as a critical strategic priority.

1.3 The Challenge for MBE Suppliers

Supplier consolidation and global sourcing are challenging the future of today's MBEs. Supplier consolidation remains a long term obstacle to MBEs which may not have the capacity to compete for larger, bundled contracts. Although supplier diversity programs have greatly increased in number and have become very organized in their practices during recent years, most corporations are decreasing their number of suppliers and developing longer-term supplier relationships. This trend favors suppliers large enough to fulfill the needs of large global multinationals. Many MBEs are unable to offer the capacity or global footprint to meet these needs. The exception is MBEs that are strategically partnering with other firms.

For instance, as a result of a client's supplier consolidation, we encountered one minority-owned firm which found itself reduced from a tier-1 to a tier-2 supplier after having serviced a client for nearly two decades. Tier-1 suppliers provide services directly to the client, while tier-2 suppliers are providers of Tier-1 suppliers. Although the firm regularly competes with much larger suppliers in the business of sourcing operations-critical parts and equipment for utility companies, its president found himself having to sell company's services to competitors who

¹³ In 2002, MBEs represented 18 percent of all U.S. business enterprises excluding publicly held, foreign, non-profit and other not classifiable firms by race and Hispanic or Latino origin, as well as if these firms were included.

had the scale to remain a tier-1 supplier. As we will explain in a later section of the paper, supplier consolidation has made *supply chain management* even more critical to smaller firms that lack the capacity to compete for large contracts.

Many owners of growing and mature MBEs understand the value of supply chain management, and its knowledge and mastery is necessary to maintain a competitive edge in today's business environment. However, there are still minority entrepreneurs of early-stage companies, some with size and scale, who are unaware of the characteristics and complexities of the supply chain and the impacts of supply chain management techniques and strategies. Others who understand the difference may fall short of appreciating supply chain management as a necessary component of business strategy. However, there are still minority entrepreneurs of early-stage companies, some with size and scale, who are unaware of the characteristics and complexities of the supply chain and the impacts of supply chain management techniques and strategies.

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MBEs can impact positively their businesses by mastering their supply chains, but its mastery will put the management skills of many MBEs to the test. Even when supply-chain strategies are understood, much ingenuity and persistence are required to implement solutions to supply-chain problems, which are prevalent in most industries. In response to this challenge, numerous minority business owners have already dedicated themselves to the additional learning they need and the expansion of their support networks to master the supply chain.

Section 2

Supply Chains: An Introduction

Summary: Supply chains shape the economic opportunity of businesses, and they have high-stakes outcomes. Supply chain management is a set of techniques and strategies that have enabled large multinationals to compete in today's global economy. MBEs that master supply chain strategies can similarly gain a competitive edge in today's domestic and global markets.

2.1 Minority Entrepreneurs: Facing a Changing World

Minority entrepreneurs have a critical role to play in the global economy, and this role requires them as a group to face certain realities. First, business perspectives must be regional and global, because there are linkages between local economic opportunity and global trade.

A second reality that minority entrepreneurs must face is the life cycle of supply and trading systems, which have life cycles similar to products and businesses. Supply and trade systems, both domestic and global, inevitably change or perish due to innovation – the introduction of new products and methods which provide substitutes to existing products, production, and trade. These innovative products and methods need not be technologically sophisticated. Rather, these new products and methods are innovative because they change the practice of business and commerce, providing new sources of economic growth. Innovation here is not simply a new technological invention. From the perspective of business and commerce, it is an entrepreneurial act that delivers new economic value, providing it where it did not previously exist or, more typically, providing new value as a substitution for what end customers have currently available (Schumpeter, 1942).

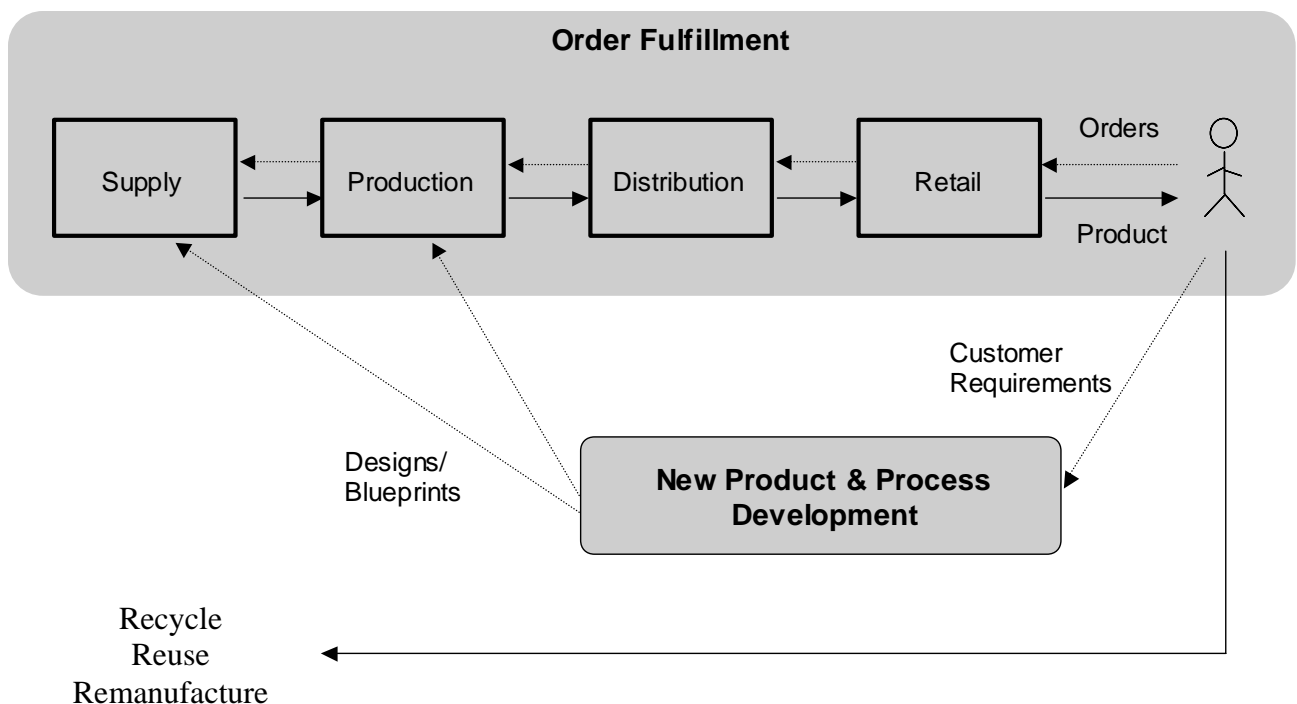
The third reality that minority entrepreneurs must face is the convergence of technology and communication which is fueling today's global competition and innovation. The flattening of the global economy, due to factors such as the Internet, is influencing companies and nations to develop their natural and historical advantages (e.g., geographic location, local talents and skills which have been mastered or can be enhanced easily relative to others) and find profitable positions within the global economy (Friedman, 2004). In other words, selecting positions and roles within global supply and trade systems will be very critical to U.S. businesses and overall U.S. competitiveness (Porter, 1985).

A final reality is the need to master *supply chain management* as a critical requirement for participation in today's global economy. Companies in a growing number of industries must understand and manage their role in a supply chain to remain viable and competitive. Increasingly, competition is also viewed as supply chain against supply chain, rather than firm against firm. Some of the leading firms in the U.S. and the world, such as Dell, UPS, and FedEx, are renowned for their supply chain prowess. Many publicly-held U.S firms have thrived in part because of their ability to manage their supply chains, and adapt to the globalization of supply chains. To succeed in today's competitive environment, minority entrepreneurs must also become similarly adept at supply chain management, and increasingly at global supply chain management. Through their mastery of the lessons of supply chain management, minority entrepreneurs can build operations that deliver high volume and/or variety products quickly through distribution channels that are either regional or global, thus increasing their business' viability and growth. Supply chain management is necessary for MBEs to compete effectively in a global economy.

2.2 Understanding and Managing Your Supply Chain

A supply chain includes all the companies involved in fulfilling a customer request – from manufacturers, their suppliers, and their suppliers' suppliers, to transporters, warehouses, wholesalers, and retailers (see Exhibit 1). Supply chains move materials, products, information and money from suppliers and their suppliers to customers and their customers. For instance, manufacturing supply chains literally stretch from digging raw materials out of the ground to the home of the final consumer and ultimately back into the ground in a landfill.

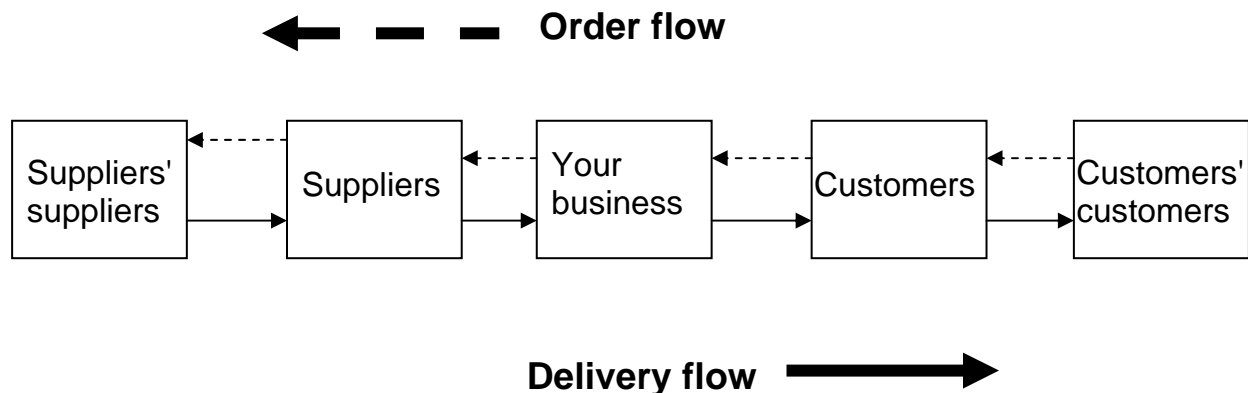
Exhibit 1: Flowchart of a generic supply chain



In large firms, effective supply-chain management programs involve personnel from multiple functions – from product and business development, to sales and marketing, operations, distribution/logistics, finance, and customer service. Effective supply-chain management programs also foster communication of these functions across companies. For example, if marketing personnel inform its company’s suppliers of their promotion plans, the suppliers can prepare capacity and inventory for the anticipated surge in demand. These suppliers, in turn, can communicate these production plans to their own suppliers so that components are delivered in time for final production. Neglecting this communication, either internally or across firm boundaries, can lead to catastrophic effects even in otherwise highly successful firms. Conversely, effective communication with supply-chain partners can significantly reduce working capital while increasing capacity and delivery performance.

All kinds of business owners are surprised by the magnitude of cost saving and enhanced performance of their operations, once they commit to implementation of leading-edge supply-chain management practices. For an MBE to achieve this value, its owner or management team should begin by mapping the enterprise's supply chain. A supply chain map clearly shows a focal business and all other businesses involved in fulfilling a customer request. With the focal business in the center of the diagram, suppliers and the suppliers' suppliers are on the left and customers and the customers' customers are on the right (see Exhibit 2).

Exhibit 2: Sample map of a supply chain



One set of arrows from left to right indicates deliveries between different companies in the supply chain: from the suppliers’ suppliers, through the focus business, to the customers’ customers. Another set of arrows in the opposite direction indicates the order requests between supply chain companies: from the customers’ customers back to the suppliers’ suppliers. A specific kind of product or

service defines a supply chain. Hence, a business may belong to multiple supply chains, consistent with its different offerings.

When MBEs complete supply chain maps for specific products or services, they accomplish three things. First, a supply-chain map draws attention to the other products and services the MBE needs to deliver value, as well as to the subsequent value added to the MBE's products or services. Second, it reveals other companies who could be partners in improving the MBE's internal effectiveness and its external contributions to the supply chain. Third, it provides the focus for group discussion and brainstorming about supply-chain opportunities and risks.

2.3 Minority Business Enterprises: Mastering the Supply Chain

MBEs need to achieve three levels of supply-chain mastery to establish growth and leadership in today's global economy. First, by managing the fundamentals of the supply chain (Section 3) MBEs can partner effectively with other companies in the supply chain to achieve greater capacity and agility. Second, MBEs can take a proactive stance, and seek companies that are at risk of receiving poor quality, delivery disruption, or poor service from suppliers, and use supply chain management fundamentals to address those needs (Section 4). Third, transcending today's supply chain (Section 5) means, in part, that MBEs should take notice of how their supply chains are changing, and then either move to higher value propositions or gain entry to other supply chains that have higher growth potential.

Section 3

Level I Supply Chain Mastery: Managing the Fundamentals of the Supply Chain

Summary: Supply chains exhibit remarkable variation, but they can be categorized based on two types of uncertainty or risk. We will use a framework to distinguish supply chains by these two types of risk (demand and supply) and thus divide supply chains into four categories. The first level of supply chain mastery involves understanding these categories and matching solutions and processes to it. Not long ago, this first level was sufficient for business growth. However, in today's globally competitive environment, this knowledge can only keep a company viable. The next level of supply chain mastery offers a greater competitive edge, assuming there is already an understanding of the supply-chain management fundamentals.

3.1 In Which Supply Chain(s) Does Your Business Operate?

Supply chains and supply chain management tools are not one-size-fits-all. Rather, they exhibit remarkable variation, particularly based on two types of uncertainty or risk. First, supply chains may be defined by their demand risks. According to Fisher (1997), some products have customer demand that is relatively stable over time, while for other products, it is highly unstable. Customer requests for stable demand products can be forecasted quite accurately, and hence the demand for these products is low risk. Examples include essential products that satisfy basic customer needs, such as athletic socks, white dress shirts, pasta, and certain breakfast cereals. In contrast, when products have unstable customer demand, their demand is high risk. Forecasting the timing and volume of customer requests for these products is notoriously difficult, resulting in either insufficient or excessive amounts of inventory. Examples include consumer electronics, apparel, toys, or music, which have a specialized or current fashion appeal. In sum, a supply chain can be defined by product demand that is either low risk or high risk.

Supply chains can also be defined by their supply risks (Lee, 2002). Supply processes have low risk when they are highly reliable. Examples include cut-and-sew operations, simple assembly, chemical manufacturing, and other production processes that involve established and well-understood technologies. Supply processes have high risk when they are less reliable and subject to disruption. Examples include development processes for cutting edge electronics, nanotechnologies, and weather-dependent processes such as some agricultural products.

Lee (2002) highlighted the fact that these product (or service) characteristics give rise to four categories or “boxes” (see Exhibit 3) that describe quite distinct supply chains. He called this notion “The Uncertainty Framework,” and noted that it helps bring into focus the needed capabilities for different kinds of supply chains. This framework divides supply chains according to different types and levels of uncertainty or risk.

Leading companies today understand the supply chain box in which they operate¹⁴. Furthermore, they recognize that the problems associated with each box vary, and therefore the solutions they employ have to be chosen appropriately. In subsections 3.2-3.5, we describe each box, note some of their common problems, and highlight cutting-edge solutions. In subsection 3.6, we summarize what these problems and solutions mean for MBEs, and note that partnering and technology investments impact each of the four supply-chain boxes.

¹⁴ Recall that since supply chains are product or service specific, many companies operate in more than one box of the framework.

Exhibit 3: Modified Uncertainty Framework – due to Lee (2002)

Supply/Demand Risk	Demand: <u>Low Risk</u> (Functional Products)	Demand: <u>High Risk</u> (Innovative Products)
<p>Supply: <u>Low Risk</u> (Stable Processes)</p>	<p>Box 1</p> <p>Established production and distribution processes</p> <p>Established products and established markets</p> <p>Current examples: Boxed pasta, breakfast cereals, athletic socks</p>	<p>Box 2</p> <p>Established production and distribution processes</p> <p>Leading-edge products or new markets</p> <p>Current examples: Desktop computers, fashion apparel</p>
<p>Supply: <u>High Risk</u> (Evolving Processes)</p>	<p>Box 3</p> <p>Established products that satisfy basic needs</p> <p>Unreliable or easily-disrupted production and distribution processes</p> <p>Current examples: Cutting-edge technology and some agricultural products</p>	<p>Box 4</p> <p>Leading-edge products or new markets</p> <p>Unreliable or easily-disrupted production and distribution processes</p> <p>Current examples: High end servers, nanotechnology products</p>

3.2 Solutions for Box 1 (Low Risk Demand, Low Risk Supply)

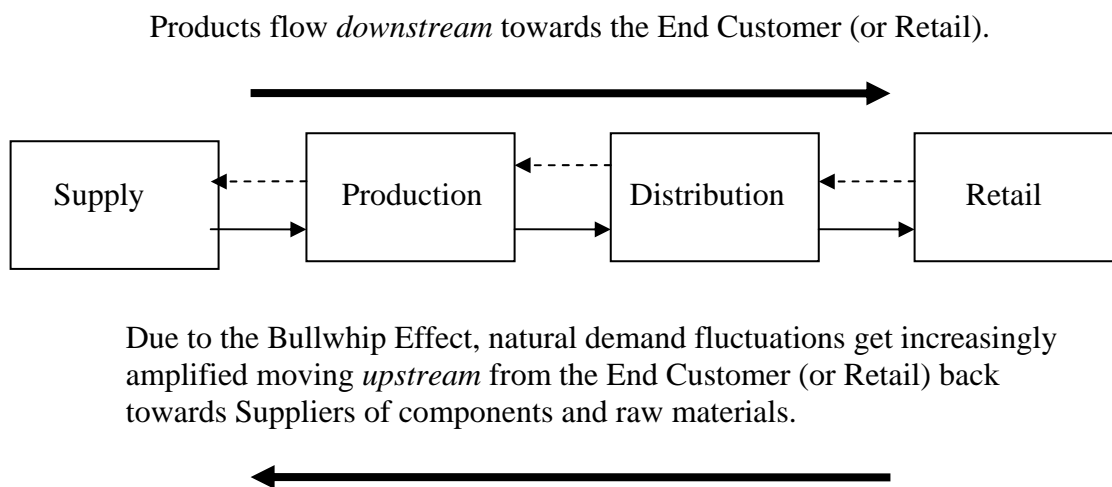
One might expect that supply chain management is easy in Box 1, and it is compared to Boxes 2, 3, and 4. Demand is predictable and supply is stable, thus both demand risk and supply risk are low. Unfortunately, there are still problems. First, the low supply chain risks that make Box 1 desirable tend to commoditize these products, and therefore managers continually strive to introduce new product variations, and employ price promotions and other initiatives to differentiate their

products. These initiatives in turn create higher levels of demand risk (i.e., uncertainty and variability in demand). We will discuss this issue in detail in Section 5. Second, firms that lack direct contact with the end customer in supply chains experience remarkable fluctuations in demand. In spite of end-user demand that is known to be quite stable, suppliers in Box 1 supply chains encounter significant volatility in customer orders that wreck havoc on their operations.

In fact, the variability of demand often gets increasingly amplified as one moves away from contact with the end customer (e.g., retail) and up the supply chain (e.g., towards components and raw materials). Suppliers receive orders that fluctuate much more widely than at the contact point with the end customer. This phenomenon is often called the “Bullwhip Effect” (Lee, Padmanabhan, & Whang, 1997), because the pattern of fluctuations is like a whip used to herd cattle, where a small snap of the wrist creates a huge swing at the end of the whip (See Exhibit 4).

The Italian pasta industry provides a fascinating example. Dry pasta is a staple food item in Italy that has relatively consistent retail demand, but because of price promotions at the retail level, grocery stores experience peaks and troughs in sales. Their suppliers, who are often independent distributors, face larger peaks and troughs as grocers react – or over-react – to these fluctuations. Distributors are supplied by central distribution centers, which for similar reasons face even more severe peaks and troughs. These wild fluctuations are all the more remarkable because consumer demand is so flat (Hammond, 1994).

Exhibit 4: Summary of the Bullwhip Effect



Increasing distortions between upstream orders and actual downstream needs at the point of sale increase costs throughout the entire supply chain and degrade its delivery and quality performance.

When we have described the bullwhip effect over the past decade to managers of suppliers and other companies upstream from final point-of-sale, they consistently respond: "This describes my company's experience – *every day*." The consequences of this effect for end customers include higher prices to compensate for higher inventory and shortage costs, as well as higher transportation and other costs throughout the supply chain, not to mention lower delivery and quality performance.

Firms facing the bullwhip effect must cope with wide fluctuations in demand, apparently caused by the poor decision making of supply chain partners. Yet leading companies have worked with partners to employ several powerful initiatives that reduce the demand fluctuations experienced within the supply chain. These include a host of acronyms that represent efforts to share information, coordinate planning and forecasting, share decision-making, and even share work. One of these, Coordinated Planning, Forecasting and Replenishment (CPFR), is a tool to share information about demand and production plans, as well as plans for promotions and other demand-management techniques. A variation on CPFR is Vendor Managed Inventory (VMI), which is an approach suppliers can use to manage inventory at their customers' sites.

MBEs that operate in Box 1 must understand these initiatives and be ready to implement them, just to keep pace with Box 1 supply chains. Furthermore, some firms have successfully approached their supply chain partners with an offer to lead a CPFR or VMI effort. This initiative may be difficult to sell to a partner because it requires the partner to share information that is potentially sensitive. Yet it can be worth the effort because customers who collaborate at this level with their suppliers will be significantly less likely to switch suppliers over time. The trust required to implement these initiatives cannot easily be replicated. In sum, Box 1 solutions call for aligned incentives and information, both within the firm and externally with supply chain partners.

3.3 Solutions for Box 2 (High Risk Demand, Low Risk Supply)

Box 2 supply chains are those in which the supply processes are fairly straightforward, but the products exhibit a high-tech or fashion component that allows firms to differentiate themselves and earn higher margins. Many of these products require very long development and production lead times. The design process for fashion apparel items, for instance, often begins nearly two years prior to the selling season. And the production lead times for the textiles and cut-and-sew operations can be more than eight months, not to mention long delivery times from suppliers to retail stores. But the selling season may only last a few months before the next season begins or the next product variation is introduced. Forecasting demand of fashion goods over a year in advance of the selling season is incredibly difficult. Suppliers therefore regularly see wildly fluctuating orders, with sharp peaks followed by deep falls and order cancellations, as retailers try to react to the inevitable variations associated with such products.

Cutting-edge solutions to Box 2 problems include mass customization, postponement, and gathering early order information. *Mass customization* is a set of production techniques that allows a firm to manufacture customized products, which should entail much higher unit costs, at close to the very low cost of items produced by mass production techniques. One tool for doing this is *postponement*, or delaying final customization, which often requires redesigning the product so that the customized colors or components can be added quickly and inexpensively late in the process, or even in the distribution channel.

Benetton, for instance, changed the order of operations for its knit shirts so that the shirts were knitted before dyeing, rather than dyeing the thread before knitting. This allowed them to store inventory of undyed knitted shirts, and then to react quickly to changing tastes in color. Finally, some firms are creatively soliciting customer feedback on their products before the selling season so that they manufacture products that seem likely to sell well and avoid producing ones that seem unlikely to sell.

3.4 Solutions for Box 3 (Low Risk Demand, High Risk Supply)

In Box 3, products are fairly standard, and demand is reasonably predictable, but the supply processes are risky. Certain agricultural products come to mind because they are weather dependent. One might include sourcing standard products, say athletic socks, from new and risky sources. Over time, these sources may become less risky as firms learn the culture, business practices and supply routes, and thus they shift to Box 1.

Solutions to address the supply risks of Box 3 include supply options or futures contracts that lock-in price and delivery. In this case, the supply risk is transferred to other firms, but often at a cost. Two other approaches include an electronic market (exchange) that reaches more suppliers, and pooling inventory and other resources to hedge the uncertainty. For instance, Internet-based exchanges, such as auctions, are becoming a familiar method to solicit bids from multiple suppliers. MBEs are often on the supplier end of auctions, and they recognize the power and problems associated with them¹⁵. One benefit for buyers is that exchanges can mitigate supply uncertainty by providing access to backup suppliers. A similar idea is the pooling of inventory and resources to mitigate supply risks. For example, when supply risks are high for specific products or services, some companies form cooperative agreements and share resources to handle possible supply disruptions.

¹⁵ See Pyke & Johnson, 2003 for a discussion of the risks and benefits for both buyers and suppliers.

3.5 Solutions for Box 4 (High Risk Demand, High Risk Supply)

Box 4, of course, presents the most significant risks – high demand risk and high supply risk. These products are so cutting edge that the market response can be highly uncertain, and furthermore the processes of supplying the products are cutting edge and uncertain as well.

Some solutions from the previous three boxes can be helpful in Box 4, but we have found that two approaches are most powerful. The first is to use a combination of postponement and pooling/hedging. In other words, as in Box 2, design the product, as much as possible, to create the ability to postpone customization until late in the process. This helps mitigate the high demand risk. Then, use the Box 3 tools of pooling and hedging on the supply side to reduce the high supply risk. Some high-tech firms always maintain a second source of supply, even if it is higher cost and lower quality, so if there is a disruption with their primary supplier, they have a backup. MBEs can take advantage of the opportunity to be this second source of supply, if they don't win the primary contract.

The second approach is to design products using platforms and standard modules. Such designs use common components and subassemblies, much like common subroutines in software development, and piece them together with advanced components to create new, perhaps customized offerings.

3.6 Summary of Level I Supply Chain Mastery for MBEs

Exhibit 5 summarizes the problems and solutions associated with each of the supply chain types, from subsections 3.2-3.5. The solutions in each box, although distinct, involve some kind of coordination or partnership with other companies in the supply chain. The solutions, effectively, help manage the variation and shocks due to demand risk and supply risk, which are both present in all supply chains but at varying levels. One of the benefits of supply-chain coordination and partnerships is that they enable participating companies to be more agile in their responses to supply chain risks. Such coordination assumes that the participants develop the metrics and incentives to keep their interests aligned.

Exhibit 5: Supply Chain problems and solutions

<p style="text-align: center;">Box 1</p> <p>Problem:</p> <ul style="list-style-type: none"> - The bullwhip effect <p>Solutions:</p> <ul style="list-style-type: none"> - Alignment of incentives and information among supply chain partners - Coordinated planning, forecasting and replenishment (CPFR) - Vendor managed inventory (VMI) 	<p style="text-align: center;">Box 2</p> <p>Problems:</p> <ul style="list-style-type: none"> - Long and uncertain development and lead times - Highly uncertain demand patterns - Short selling season <p>Solutions:</p> <ul style="list-style-type: none"> - Mass customization - Postponement of final customization - Early orders from customers
<p style="text-align: center;">Box 3</p> <p>Problem:</p> <ul style="list-style-type: none"> - Highly uncertain supply - Disruption risk in supply <p>Solutions:</p> <ul style="list-style-type: none"> - Pooled inventory and resources - Exchanges to extend reach of suppliers and inventory - Contracts that manage risk by locking in factors such as price and delivery 	<p style="text-align: center;">Box 4</p> <p>Problems:</p> <ul style="list-style-type: none"> - All problems associated with Boxes 1 to 3 <p>Solutions:</p> <ul style="list-style-type: none"> - Postponement of final customization - Pooling of suppliers to hedge uncertainty - Platforms and modular designs that allow for postponement of final customization

In today's business climate, achieving the necessary levels of supply chain coordination and partnership often requires online exchange. Years ago, the ability to link electronically into the systems of another company offered a competitive advantage, and it was a differentiator that created business opportunities. Today, this ability to link electronically with other companies' systems is a requirement for supply-chain participation in many business sectors and a prerequisite before consideration will be given on a contract bid. Developing trust and aligned incentives are obviously essential for effective coordination and partnership, but technological competency is also critical. The proper kinds and levels of sophistication for electronic business-to-business collaboration must be present to perform supply-chain agreements.

Most MBEs, like most of all U.S. firms, are small businesses earning less than \$100,000 in annual gross receipts. Thus, there is limited capital and time available to invest in technology. Fortunately, the Internet is the foundation of business-to-business communications, and Internet systems and services are developing in ways that are suited to a variety of needs.

Some basic points about implementing technologies for supply chain participation:

- More feasible options exist than small business owners may initially suspect.
- Particular kinds of customers, suppliers, regions, or business sectors will gravitate to certain technologies, standards, and features/languages, which should be investigated as part of the vendor or product selection process.
- Some vendors offer free training and demonstrations of technology because they want small business customers.
- Less expensive options can entail compromises (e.g., the vendor hosting sensitive business data) that will be unacceptable.

Section 4

Level II Supply Chain Mastery: Selling the Value of a Shorter and More Reliable Supply Chain

Summary: Once MBEs have mastered the fundamentals of supply chain management (Level I) they will have both the skills and credibility to create new contract opportunities. By using supply chain mastery to find new business opportunities, MBEs can address global sourcing or supplier consolidation. In the case of global sourcing, Level II mastery entails the presentation of your company as a valuable alternative to low-cost suppliers in distant countries. For supplier consolidation, Level II mastery requires MBEs to develop a customized value proposition for buyers rather than bid on proposals that emphasize cost in the narrowest terms. Both approaches similarly refocus negotiations from price to total value.

4.1 Selling the Value of a Shorter and More Reliable Supply Chain

In some situations, local suppliers have advantages over a global supply chain. Global sourcing can result in longer lead times, quality concerns, and other management challenges. For example, one relatively small domestic company paid over \$200,000 in air freight when its supplier in Asia gave notice that a delivery would be too late for the prime selling season. By offering flawless execution and performance, short lead times, cost efficiencies, and excellent quality, MBEs can represent a valuable alternative to distant global suppliers and other domestic providers.

MBEs can represent a valuable alternative to distant global suppliers by offering flawless execution and performance, short lead times, cost efficiencies, and excellent quality.

Of course, many firms have successful experiences with suppliers located in other countries. However, by offering flawless execution and performance, short lead times, cost efficiencies, and excellent quality, MBEs can represent a valuable

alternative to distant global suppliers or other domestic providers. Additionally, MBEs can leverage their local advantage by providing additional services – such as frequent delivery or consolidation of several vendor shipments – to enhance their value proposition. Local knowledge of customer preferences or government regulation can also increase the value of an MBE's offerings. The following set of questions, developed during Executive Training programs held at the Tuck School of Business, illustrate how MBEs can approach their customers and potential customers.

- Is there a risk of late deliveries from a distant low-cost supplier?
 - Every manager we have taught or talked to has responded in the affirmative.
- What if there is a major supply chain disruption?
 - These are not far-fetched, and managers are concerned.
- Can low-cost providers deliver frequently and in a way that is best optimized to the customer?
 - Many low-cost suppliers have large minimum order quantities, and there are hidden costs, such as customs clearance, associated with inbound logistics.
- What is the full cost of a late delivery?
 - Air freight and other expedited shipments, assembly line shutdowns, lost sales, bad will, lost customers, and future revenues, etc.
- Is there a risk of poor quality?
 - Every manager we have discussed this with has responded that they are worried about receiving components or products that do not measure up to their current quality standards.
- What is the full cost of poor quality?
 - Additional inspection, assembly line shutdowns, bad will, lost sales, lost customers, etc.
- What if exchange rates move such that the cost of buying from the global supplier increases dramatically?
- If you decide to source from a global supplier, do you think it is wise to maintain a second, domestic source of supply?
- Can global suppliers provide value-adding services that help customers use the product or service?

Questions which encourage customers to also focus on the potential risks of global sourcing open the door for MBEs to discuss adding real value by becoming a customer's center of domestic insurance. During Dartmouth College's Tuck School of Business Executive Training program for MBEs in supply chain management, one Native American entrepreneur said that she approached her customers with this exact value proposition. In fact, her company went to potential customers who were considering buying components from China and, in effect, told them: "We will be your China. We know that you're fearful of the risks of buying from China, and yet you want the low unit costs. We operate on a reservation, and our costs are very low. But our quality is high, and our lead times are very short. Look at the full cost and risks, and consider us as your low risk, low cost, high quality alternative."

"We will be your China... Look at the full cost and risks, and consider us as your low risk, low cost, high quality alternative." Native American firm, Indian Country.

MBEs can provide valuable alternatives to global sourcing by broadening their negotiations to include total value, e.g., reminding buyers global supply chains face considerable costs when there are disruptions in delivery or when quality problems are discovered after long-distance delivery is complete. In addition to using this total-value perspective in response to global sourcing, MBEs can also use this approach in response to supplier consolidation. We will provide an example in the next subsection.

4.2 Service to Relieve the Buyer's "Pain"

MBEs that are not sufficiently large for a tier-1 contract can generate other contract opportunities by using their modest size and their mastery of supply-chain fundamentals to execute a two-step move. The first step is to identify special supply concerns that cause the buyer "pain." The second step is to provide services that relieve this pain. Entrepreneurs who offer unparalleled service for subtle (yet irritating) buyer problems create opportunities by broadening negotiations from price to a wider spectrum of value that the supplier can deliver.

Intraline, a wholesale distributor of maintenance, repair and operational materials (MRO) owned by a Pacific Islander, provides an excellent example of this strategy. President Pete Varma of Intraline had invested in business-to-business communications technologies, so that he could tie the company electronically to customers and seamlessly do business with them. For five to six years, Varma invested time and effort in understanding the relevant technologies that would simultaneously make the Intraline's internal operations efficient and enable them to interface with other companies for effective supply chain participation. For instance, Intraline's decision to implement an Enterprise Resource Planning (ERP) system was motivated by interests in saving long-run administrative costs. Varma

viewed ERP also as a continued evolution and extension of the company's initial manual bookkeeping process to record, manage, and control costs. In addition, Intraline invested in XML because it is the critical software language for the business in which they compete.

Varma took a proactive response to take advantage of his company's modest size and remain competitive against larger companies. He used the fact he was the company's owner when soliciting business because, normally, much larger companies are too vertical and departmentalized to establish close levels of customer intimacy and high levels of decision-making authority in one person. When Varma as the owner met with potential clients, they knew they were dealing with the decision maker. While visiting with clients, he listened and paid attention to the customer's needs with respect to supply risk.

Varma focused on what his company could do to "take away the buyer's pain," whether it was on-demand services, managing logistics, or managing waste. By developing an intimate understanding of the customer's pains, Varma could suggest services that were, "off the menu" (our words), i.e., contract options that were not coming to mind for the buyer.

4.3 Competing on Total Value, Never Price Alone

The strategies for addressing buyer fears and pains will vary for different MBEs and their customers. But they share some common imperatives: Stand out and differentiate your business rather than conform easily to solicitations that focus primarily on price, and become the valued supplier who takes care of the buyer's special needs. This is not a recommendation to be insensitive to price, because in today's business environment companies must always be sensitive to price.

MBEs who have achieved Level I mastery have developed skills that create options, enabling strong competition on multiple performance factors which include price, and the next Level II mastery entails the presentation of capabilities from the prior mastery level. Obviously, Level I mastery is not required to make Level II promises to buyers. However, real Level I mastery allows an MBE to make a total-value promise with credibility (i.e., the systems, performance, and reputation to back up the promise). An offer to be a viable domestic alternative to a low-cost supplier in China will not be credible, for example, if the offering company has lead times and quality issues that are not in the company's control.

The second level of supply chain mastery can plausibly be seen as trading price for value-added services. In other words, buyers accept a higher price, but they get additional value and service in areas that address their critical pains and fears. MBEs who have achieved Level I mastery can convincingly shift the sourcing decision from price to value, which might include factors such as delivery, quality, customer service, or life-cycle costs.

It takes ingenuity, persistence, and negotiation skill to move some buyers from a mindset of price to total value. Fortunately, many minority entrepreneurs are remarkably skilled in the salesmanship that must be matched with Level II supply chain strategies. Thus, it takes a decision not to compete on price alone and an ability to sell and execute the supply of total value to customers. It takes ingenuity, persistence, and negotiation skill to move some buyers from a mindset of price to total value.

It takes ingenuity, persistence, and negotiation skill to move buyers from a mindset of price to total value.

Section 5

Level III Supply Chain Mastery: Transcending Today's Supply Chain

Summary: The very latest supply chain strategies take into account the value migration within a supply chain and the need to migrate over time towards higher-value positions and markets. Thus, Level III supply-chain mastery is acquiring the skills to transcend beyond today's supply chain. This includes skills in plotting a course through the competitive forces producing continual value migrations, and skills to address escalating expectations that create new value-fulfilling opportunities. Level III mastery also includes skills in "value assembly," i.e., acquiring, merging, and/or partnering with other companies to deliver additional customer value.

5.1 Value Migration

The value of a company's position in the supply chain will shift over time. If the company's managers neglect these shifts, often they will discover, over time, the value of their position has eroded beneath them.

Value migrates in a supply chain due to a combination of factors, including changes in customer needs, competition, globalization, and technology changes. Global competition is intense for U.S. domestic suppliers who compete predominantly on price. Consequently, managers must attend to value migration and be engaged in how to alter and upgrade the value propositions of their companies. Remaining stationary as value migration occurs is a route to business stagnation and failure.

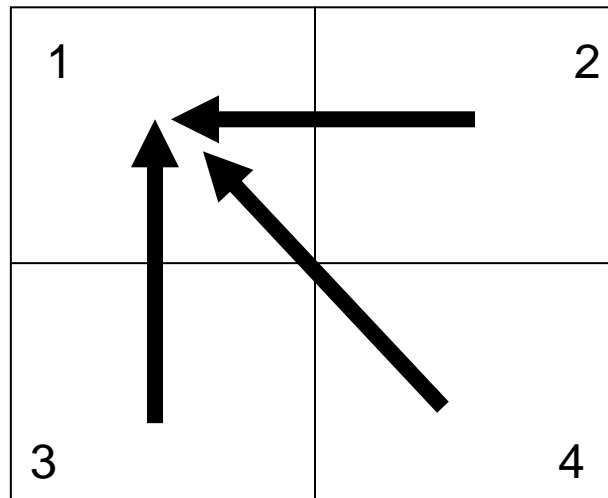
In today's global economy, managers of MBEs must attend simultaneously to their company's value propositions, how these value propositions are changing, and the high-potential value propositions their companies might offer in near- and longer-term future. Thus, Level III supply chain mastery is acquiring the skills to transcending today's supply chain. MBEs with this advanced expertise will act on the forces of competition which produce continual value migrations, and they can respond to escalating business expectations that occur from factors such as regulatory mandates. At this advanced level of supply-chain mastery, MBEs will also need skills in "value assembly," i.e., acquiring, merging, and partnering with other companies to deliver customer value in high-potential markets, rapidly and with sufficient scale.

5.2 Continual Change

One set of issues in Level III supply-chain mastery is managing the rhythm of commoditization and innovation within supply chains, which is driven by ongoing competition. To explain these dynamics, we return to the four-box framework that distinguished different kinds of supply chains according to the level of demand risk and supply risk. When we add competition and changing profit margins, the result is a model we call the Supply Chain Life Cycle, which explains how the risks and rewards of value propositions change in supply chains over time.

First, competitive pressures tend to shape and drive different kinds of supply chains towards the characteristics of Box 1: a commodity product or service with low risk demand and low risk supply, which subsequently has lower margins. Supply-chain problems normally arise from uncertainty, or risk, in either demand or supply. The most common form of risk is variability. The more variable (e.g., unstable, unreliable, or fluctuating) demand or supply is within a supply chain, the more likely are higher costs, the potential for disruption, and other operational performance challenges. Most supply-chain solutions essentially take away, or reduce, this variability and risk. Consequently, as more firms adopt and perfect these solutions for a given supply chain, demand and supply risks are dampened and the supply chain's characteristics shift towards Box 1 (See Exhibit 6a).

Exhibit 6a : Commoditization within Supply Chains – Enhanced from Lee (2002)



So there is a dilemma. Level I strategies reduce variability and help firms manage their supply chains. However, as more firms learn these tools, they begin to look like commodities, even with high levels of variety. For example, if a minority-owned equipment supplier uses common components that can be customized at the last instant, it can deliver at low cost a very high level of variety that is characteristic of many Box 2 supply chains. If the supplier is the first in its

market to implement this strategy, it will have a more effective system of profit making than its competitors since it can offer the variety that customers want at lower cost. But when all firms in that market have learned the practice, the playing field in that Box 2 supply chain will be leveled, or all firms will in effect shift toward or into Box 1.

When there is widespread adoption of new supply-chain solutions within Boxes 2-4, the result is commoditization and an associated increase in price-dominant competition. These put downward pressure on profit margins and create significant challenges for business owners to earn profit. With globalization, these commoditization forces intensify with the entry of comparatively low-cost suppliers from other countries. In the United States, for instance, it is no longer sustainable to assume competition will remain local, and this makes Box 1 supply chains even more competitive for domestic firms. Altogether, widespread adoption of supply-chain solutions and increased domestic and international competition produce commoditization forces, which drive existing products and services towards competition where price dominates and profit margins shrink. In other words, as a result of commoditization forces, the value proposition of existing products and services will increasingly migrate towards price.

In response to commoditization, entrepreneurs regularly seek ways to innovate and differentiate from existing companies, products, and services so that they can obtain higher levels of profit. Minority entrepreneurs are no different, and many have effectively resisted or turned back commoditization in their supply chains and its associated reduction in profit margins.

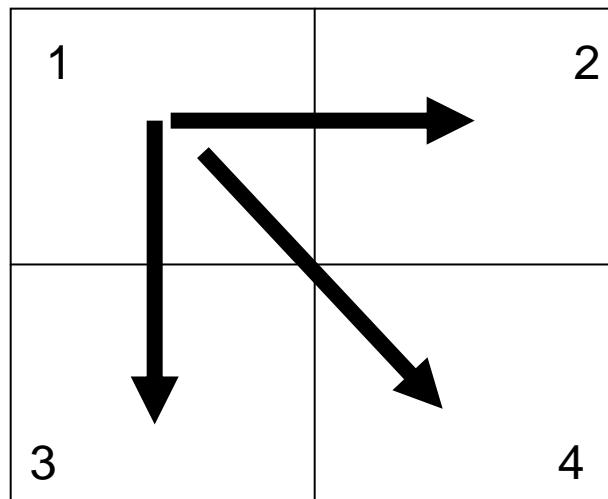
One example is Liberty Power, a Hispanic-owned firm which provides retail electricity to businesses and government agencies. CEO David Hernandez co-founded the company in 2001 after the deregulation of the electricity provider industry, which is a commodity business. Electricity generated from entirely different technologies is alike, and the electricity provided to all U.S. residents and offices in the United States is fundamentally the same, irrespective of the generating source, transmission route, and delivery location. Furthermore, the transmission of electricity still remains under significant government regulation, and electric current, once generated, cannot be stored. These conditions produce a market where end consumers would naturally choose their electricity provider based solely on price.

However, similar to the Level II supply-chain strategies discussed in Section 4, Liberty Power turns the focus of its customers in the supply chain from price/cost to total value. By providing excellent customer service, contracts that can fix the price of electricity during peak times, and customized invoices that are aligned with clients' accounting software, Liberty has been successful in attracting new customers and expanding its reach to different regional markets. In effect, the company is moving a Box 1 supply chain with commodity characteristics towards a Box 2 supply chain, which has increased demand variability but also higher margins and greater potential for market growth.

In the life cycle of supply chains, competitive pressures to innovate are operating against commoditization forces. Together these forces create an endless cycle and tug-of-war between rival companies in the same business. As commoditization forces drive supply chains away from Boxes 2-4 towards Box 1 (Exhibit 6a), differentiation forces drive supply chains away from Box 1 towards Boxes 2-4 (Exhibit 6b). Consequently, the competitive advantage of value propositions within a supply chain migrates, moving towards price in response to commoditization and moving towards other value propositions (e.g., specific kinds of delivery and quality performance) in response to competitive differentiation, or innovation.

While rival companies seek to remain competitive with each other by imitating product features, services, and supply chain solutions, each company also seeks to differentiate itself. The company that successfully does so will gain a temporary economic advantage until competing companies catch up. However, the rewards of innovation are not without risk. Introducing novelty in either a company's product/service or its processes/supply chain produces, respectively, heightened demand risk or supply risk. The operational challenges and solutions of these heightened risks were discussed in Section 3.

Exhibit 6b: Competitive Differentiation within Supply Chains - Enhanced from Lee (2002)



One key aspect of Level III supply chain mastery is anticipating this supply chain life cycle and knowing when to aggressively pursue a position in Box 1 by reducing demand or supply risk, and when to aggressively pursue a position in Box 2 by product/service innovation, or in Box 3 by process/supply-chain innovation. Business owners should weigh carefully the significant management challenges associated with pursuing *both* product/service and process/supply chain innovations simultaneously (Box 4). Firms that achieve Level III mastery understand and manage the risk/reward tradeoffs of the Supply Chain Life Cycle.

5.3 Escalating Expectations

The second key dimension of Level III supply-chain mastery is anticipating and responding to escalating expectations in business, which create leading-edge problems that need to be solved. Solving these most challenging problems often produces higher profit margins and offers greater market growth potential, especially when compared to solving well-understood problems that generally have lower barriers for others to compete. However, many leading-edge business problems ultimately become routine problems over time, thus attracting more competitors and subsequently lower margins.

Regulatory mandates are one source of rising business expectations. Numerous companies are facing new regulatory issues as they become global; and multinational companies have an increasing variety and complexity of regulations to manage. Different countries, of course, have different regulations to which foreign companies must adapt, and furthermore these regulations are continually changing. Although it may at first seem counter-intuitive, such regulatory constraints are, in fact, creating business opportunities for companies that can provide services that meet these new regulations.

Legislative changes arising from a heightened sense of societal awareness or responsibility will often escalate business requirements. For example, regulatory mandates occurring now in the European Union (EU) are fundamentally changing how the concept of "supply chain" is defined. One EU directive called Reduction of Hazardous Substances (ROHS) requires electronics manufacturers, resellers, and others to participate in the reclamation of substances that can endanger human health and/or damage the environment. In the past, companies were "done" with a product once it has been shipped. Today, companies in the electronic industry doing business in the EU must share in the costs of collecting, remediating, and recycling their products. This path of reclaiming products for re-use or treatment before ultimate disposal is referred to as the "reverse supply chain."¹⁶

D.W. Morgan, Inc., based in northern California, is an Asian Pacific Islander-owned business that specializes in supply-chain consulting and outsourced logistics services for Fortune 1000 companies. The company's clients include companies such as Cisco and Hewlett-Packard, which are directly impacted by the ROHS directive. Founder and CEO David Morgan, a Filipino, sees the additional constraints that many of his clients are facing due to the diverse set of regulations they encounter across countries. He is making it his priority to focus on the supply-chain issues that arise from these complex sets of legal requirements. Consequently, the ROHS directive and reverse supply chains are among the areas that his company helps clients successfully execute. These areas encompass some of the most complex challenges that his major clients face, and specializing in these

¹⁶ For instance, see *Business Aspects of Closed-Loop Supply Chains: Exploring the Issues* (2003). International Management Series: Volume 2. Papers from the International Conference on Closed-Loop Supply Chains (May 31-June 2, 2001, in Pittsburgh, Pennsylvania). Carnegie Bosch Institute.

leading-edge areas helps make the services of companies like D.W. Morgan, Inc. highly valued and profitable.

As regulatory mandates create new business opportunities abroad, they also contribute opportunities to create global partnerships. This can be observed through the U.S. minority businesses that follow the needs of their large multinational clients in selecting partners in other countries. For instance, the D.W. Morgan company is also engaged in partnering opportunities with black-majority firms in South Africa. In 2004, South Africa passed the Black Economic Empowerment Act (2004) that addresses the economic disparities caused by the apartheid system. Because of this act, foreign firms will be asked to have global partnerships with companies owned by people of color in South Africa.

The South African requirement may provide opportunities for MBEs whose entrepreneurs possess both cultural affinity and economic interest in establishing commercial partnerships with people of color in that country. However, having a clear and competitive value proposition to offer non-white South African business owners is critical. A cultural affinity African-Americans might perceive, for instance, will not be sufficient to guarantee success in forming partnerships with black South Africans. However, in some cases it might contribute to increased access and understanding that could lay the foundations for business partnerships.

Aspen Group, Inc., an African-American owned human resources management firm, has also partnered with foreign companies by following the escalating expectations of its multinational clients. Led by CEO Armentha "Mike" Cruise, Aspen Group serves clients such as IBM, Bank of America, and Lockheed Martin. The company supports clients by providing staffing needs in other countries, among other services. Aspen sometimes must respond quickly to customers' needs. This was the case when IBM asked Cruise to fill a number of positions in Australia on short notice. Cruise and her employees accepted and met the challenge. In addition, Aspen has recently opened an office in India to serve the management and staffing needs of U.S. businesses with operations in that country.

Aspen Group is a member of the National Minority Supplier Development Council (NMSDC), which has counterpart organizations in several other countries that can facilitate networking to assist MBEs in developing partnerships abroad. Aspen Group CEO Cruise has used these networks to gain business partners in Brazil, a country with one of the largest black populations in the world. In 2002, Brazil established its own affirmative action program to address the economic and education disparities of Afro-Brazilians from others. However, it is both the economic opportunity of Brazil and its national commitment to affirmative action that drives opportunities for MBEs and others to partner with Afro-Brazilian owned companies. This combination produces significant economic opportunity in Brazil for MBEs such as the Aspen Group.

Many large multinationals have business relationships in Brazil due to its growing industrial base and consumer markets. However, like South Africa, Brazil

is different from the United States in terms of its experience with racial and ethnic diversity. While Brazil has achieved remarkable social integration across skin colors, it has significant disparities between Afro-Brazilians from non-Afro-Brazilians in education and income. Brazilians with African descent make up over a majority of the country, but often do not identify with the term "black," referring to themselves according to the myriad skin colors that reflect Brazil's diverse racial mixture. Nevertheless, evidence of racial awareness has been rising in recent years with the recognition of the country's severe economic and education divides that are clearly associated with skin color. Brazil's economy is producing a growing Afro-Brazilian middle class with more discretionary income and a greater willingness to identify itself as "black,"¹⁷ and this creates opportunities for U.S. minorities to partner with Brazilian business owners who might see some cultural affinity.

Broad-based legislation such as the regulatory mandates for product recovery and recycling (i.e., the ROHS directive) in the European Union and the affirmative action mandates of South Africa and Brazil can escalate the expectations imposed on businesses. At the same time, broad-based legislation can create opportunities for delivering new value through the advancement of leading edge supply-chain practice and the development of new supply-chain partners.

5.4 Value Assembly

When value migrates in the supply chain due to competition, or when there are escalating expectations for delivering value, many small- and medium-sized companies will not have the capabilities or resources to respond adequately. Further, when there is fierce domestic or global competition, response to value migration and escalation must be swift. Frequently the response must also have sufficient scale in terms of geographic reach and product/service volume. To remain competitive under these conditions, many small- and medium-sized companies will need to rely on partnering and teaming with other companies through alliances, joint ventures, or mergers and acquisitions. Through these different approaches, modest-sized companies can most quickly assemble the means to deliver greater value to customers with the appropriate scale and geographic reach.

The assembly of value through various forms of integration with other companies can extend influence and economic impact in the supply chain. At the most basic level, small suppliers can band together to perform larger-volume service contracts they cannot obtain or perform alone. Integration can also mean building larger portfolios of customers or portfolios of products/services, as well as expanding operations or supply networks regionally or internationally. Further, integration can represent a strategic move to include a different part of the supply chain that offers higher growth potential. For example, a company might integrate "forward" to merge with a customer's business, or it might integrate "backward" to

¹⁷ For example, see Jordan (2000): *Marketers Discover Black Brazil --- Despite Their Huge Numbers, Blacks Are Just Emerging As Distinct Consumer Group*. Wall Street Journal. (Eastern edition). Nov 24, 2000. pg. A11.

merge a supplier's business. Integrating either forward or backward in the supply chain is referred to as vertical integration. An MBE might also perform horizontal integration, partnering, or merging with other companies that serve complementary functions. For example, a company that performs product development might partner with a marketing firm, a distribution/logistics firm, a finance firm, and/or a customer service firm, to create new product/service offerings.

Minority entrepreneurs can make these business-to-business linkages through events sponsored by MBDA or a variety of other minority supplier council meetings, some which target specific projects and industries. In some cases, the supplier diversity programs of large companies play a mediation role in helping MBEs find partners who can deliver complementary value. In obtaining global partnerships, MBEs have taken advantage of the National Minority Supplier Development Council (NMSDC), as noted earlier, which has sister organizations in Brazil, Canada, South Africa, and the United Kingdom.

Assembling the partners or integrating to deliver value to customers also has financial implications. Small- and medium-sized companies will likely need access to private equity or venture capital to grow or enter high-potential market areas. To get access to this financing would require giving up equity in the business, something many entrepreneurs are reluctant to do. In its first few years of operations, Liberty Power considered raising equity capital by relinquishing some of the owner's interest. However, the Minority Business Development Agency, through its capital access program, introduced CEO David Hernandez to numerous funding sources. Today the company is in solid financing position and is prepared to pursue expansion opportunities. Regardless of the capital a company may need to transcend a supply chain position, MBEs should learn how to perform valid economic valuations of their businesses and other businesses. MBEs with this knowledge are better prepared to merge or acquire other businesses and add value to today's supply chain's end-customers. A valid economic valuation is also relevant when selling parts of a business to fund new initiatives that will transcend a specific supply chain position.

Level III supply chain mastery encompasses the skill of "value assembly," along with the skills of managing both value migration and escalating expectations within supply chains. Minority entrepreneurs who have achieved Level III mastery know when and how to exit supply-chain positions with decreasing opportunities. They also know when and how to enter and develop new supply-chain positions that offer increasing value to both end-customers and their own enterprises.

Section 6

Minority Business Enterprises: U.S. Champions in the Global Economy

Summary: The three levels of supply chain mastery enable MBEs to improve their capabilities within supply chains (Level I), to form viable niches within supply chains (Level II), and to migrate towards high-potential market areas as supply chains evolve (Level III). In addition to these three levels of mastery, there is a revolutionary path of creating a new supply chain from scratch as illustrated by two successful companies, Dell and Zara. This path expresses the soul of business innovation, entrepreneurship, and economic growth. We further illustrate this path by looking at minority business efforts taking place today on an Indian reservation in rural South Dakota.

6.1 Re-inventing the Supply Chain

When outlining the three levels of supply-chain mastery, we have presumed actions within existing supply chains. An entrepreneur can also re-invent the supply chain. Although this path is more uncertain and has more risk than adapting within existing supply chains, when successful, it results in significantly greater competitiveness and profit.

Dell Computer's supply chain model is a classic modern example of supply chain reinvention. It developed a novel approach to sourcing, assembling, and delivering the various components of a personal computer system, doing it virtually through masterful orchestration of supplier networks rather than developing, manufacturing, or storing its own system components. This created a competitive advantage that challenged other computer makers and put some out of business.

Another example is Zara, a Spanish clothing company. It can design, produce, deliver, and display its designer clothes in hundreds of its stores across several dozen countries worldwide, all steps occurring in just 15 days. Its clothes move from design to the shelf much faster than other boutique clothiers, offering greater variety of designer clothes, at a pace that was previously unheard of. Zara, like Dell, developed its own supply chain rather than relying on established supply chains. Zara's system runs counter to the conventional wisdom in the apparel supply chain. First, instead of partnering extensively with other companies, Zara maintains all critical functions (i.e., from design to shelf) in house. Furthermore, these functions are almost all performed locally, rather than by global sources.

Through effective management of its own unique supply chain that was created from scratch and perfected over many years, Zara has outperformed other clothiers both operationally and financially. For instance, from 2001-2004, while many of its competitors experienced poor financial performance, Zara's sales and income grew at an annual rate of over 20%¹⁸.

Dell and Zara's innovations were not technological, per se. Their innovations were re-inventions of supply chains that were economically superior to the existing supply chains in their industries. These innovations also raised expectations and value for customers, and produced significant economic growth for the innovating companies. Furthermore, the customer value demonstrated by these new supply chains exposed weaknesses in the customary supply chains, or at least made the value of customary supply chains less satisfying to their customers. Thus, companies attached to the customary supply chains are placed at greater risk, with reduced growth rates and, most likely, reduced survival rates over time. Companies that do not adopt, imitate, or join the new economically superior supply chain model quickly enough, may have to exit that market or perish.

It requires a different mindset to re-invent supply chains that are economically superior to the customary supply chains within a particular industry. This mindset, or attitude, requires imagining how value could be delivered to the end customer without using existing conventions. As numerous MBEs have experienced, the dominant supply chains within an industry can be difficult to access and present few opportunities for new entrants who want to gain influence. The leading supply chains of many industries have long histories, or have companies whose dominant influence shapes the supply chain. Consequently, for a new entrant, a reasonable course of action is to look for ways to fit and adapt to conditions the existing supply chain provides. There is, however, the higher risk option to re-invent a competing supply chain "out of whole cloth," without regard for tradition and assuming today's supply chains for a product or service will one day be made obsolete by new economically superior supply chains.

The re-invention path is plagued with complexity and uncertainty and, thus, the result is at risk of being neither viable nor economically superior. At the same time, if there is success the windfall can be enormous. Today's prominence of Dell and Zara as supply-chain innovators might create the false impression this path requires plentiful resources or unique capabilities. In fact, the opposite was true for these two firms. Each company had very humble beginnings – assembling computers in a dorm room for Dell, and a single retail store for Zara. Dedication to re-inventing their supply chain made these humble companies into global champions.

¹⁸ See Harvard Business Review article by Ferdows, Lewis, & Machuca, (2004: 94).

6.2 Businesses and Supply Chains from Scratch

Companies with scarce resources and lacking natural advantages might be the most likely to re-invent supply chains, because conventional options regularly do not serve them. Thus, they need to invent new opportunities, and this necessity produces an environment where ground-breaking innovation can emerge.

We believe this to be the case for Lakota Express, a full-service management and direct marketing company owned by a Native American woman in rural South Dakota. Situated on the Pine Ridge Indian Reservation, Lakota Express is located in an area that lags far behind the rest of the United States in jobs and the infrastructure needed to create businesses and employment. In areas such as this, economic opportunity is starkly absent. In a community marked by extreme unemployment and an absence of basic resources to start and grow a business, Karlene Hunter founded Lakota Express to create jobs and economic opportunity for the future¹⁹.

After ten years in business, Lakota Express is now part of a joint venture with firms in the United States and China. The enterprise began with its founder armed only with her education and the confidence of experiencing how that education can open doors. In the initial stages of Lakota Express, a visit to the Indian reservation by heads of large corporations, hosted by a U.S. president, sought to bring economic opportunity to Pine Ridge, but yielded no follow up or assistance. Ms. Hunter began to build Lakota Express literally from the ground up because the reservation lacked sufficient water and sewer facilities, and these had to be installed to open the Lakota Express office. Even today, the nearest small market is about 85 miles distant.

Since the Indian reservation and the surrounding areas of rural South Dakota lacked networking opportunities to grow a business, Ms. Hunter began networking and partnering in distant places. She found partners in Washington, D.C., and Dallas, Texas. Through these partners, Hunter visited China, where she saw an opportunity to add value to the outsourced data-entry operations situated there. Seeing quality control as a high-potential niche that could add value to the data-entry operation, she created an economically viable way to enter this business and hence the global economy. Unable to find networks to grow her business locally, Ms. Hunter created opportunity for Lakota Express through a joint venture developed through her personal networking relationships.

A Chinese firm, situated in Zhuhai, a relatively rural area with limited economic opportunity, performs data entry for U.S. businesses. Although the Chinese company's data-entry clerks are very technically competent, they are not deeply familiar with names, locations, and other handwriting content from the United States. Consequently, their work is sent to Lakota Express in South Dakota

¹⁹ Our information on Lakota Express comes from interviews with founder and CEO Karlene Hunter and additional written sources (e.g., "Lakota business goes offshore and back," *Indian Country Today*, June 13, 2006).

to perform error-checking. Ms. Hunter finds much in common between rural America and rural China. Both areas are severely lacking in economic opportunity, but the residents there are hungry for it. Through Lakota Express, Ms. Hunter is now exploring the marketing and sale of Native American food products in China. She is also exploring the use of advanced-degree technical staff in China -- talent Lakota did not have access to and likely could not afford in the United States.

Both CEO and founder Karlene Hunter and Lakota Express executive Mark Tilsen note that Native Americans were unable to participate in the Industrial Revolution, but they can participate in the Information Revolution. Wars and displacement in the 19th century kept many Native American tribes from participating in the great shifts from an agricultural economy to an industrial economy. Today, however, they can participate in the great shift to an information economy. Due to the installation of a broadband Internet connection and the development of the staff's web-based and computer application skills, Lakota Express takes part in the global economy from one of the most desolate areas of rural America.

6.3 Innovators and U.S. Champions in the Global Economy

To grow the economic significance and impact of their businesses, minority entrepreneurs must be assertive, innovative competitors who will not fear or retreat from globalization. In fact, they must embrace globalization, and MBEs must see themselves as future U.S. champions in the global economy. Many MBEs are already doing so. To be assertive and innovative competitors in the global economy, minority entrepreneurs need to develop and practice the three levels of supply-chain mastery. Hopefully some MBEs will take the most groundbreaking step of re-inventing their supply chains. This final step is the work of innovation and entrepreneurship in its purest form. Businesses who create economically superior supply chains are taking the path towards becoming national and global business champions.

Lakota Express may be at the start of such a journey, forming what could one day become a gateway that provides materials, products, services, information, and money between rural America and rural China. The concept of a gateway between rural America and rural China, led by U.S. minority groups, might be more plausible than it might appear on the surface. Emphasis is sometimes placed on the competitive advantage of the inner city (Porter, 1995), due to the concentration and visibility of U.S. minority groups in urban areas. However, there are also concentrations of U.S. minority groups in rural areas, which often go relatively unnoticed: the locations of many Native American reservations, the Black Belt Region in southern states that are predominantly African American, and additional areas throughout the United States where Hispanics and Southeast Asians live isolated from the economic development of America's cities. The economic development of rural areas also gains significance to the extent that new U.S. immigrants and others settle outside large cities and suburbs with significant industrial infrastructure.

Producing an economic gateway from rural America to rural communities in China and elsewhere is indeed ambitious. There are many ways from which MBEs can choose to become champions for the United States in the global economy. Whatever directions they choose, we believe that some groundbreaking re-invention of supply chains will be necessary by the most dedicated of MBEs. We see in Karlene Hunter and Lakota Express some key attributes and values of these MBEs: passion for creating and exploiting opportunity; a combination of self-reliance and community values; and persistence in the face of significant barriers, adversity, and resource constraints.

To produce this kind of groundbreaking business innovation is difficult. Success is never assured and, if achieved, it may be short lived in the face of fierce global competition. Nevertheless, Lakota Express exhibits a taste for opportunity-seeking and innovation that more minority business must emulate to become champions in the global economy.

Section 7

Conclusion

U.S. competitiveness in the global economy is strengthened by the growth and leadership of minority business enterprises. While MBEs are growing at a faster rate relative to the number of all U.S. enterprises, their share of annual gross receipts and paid employees remain relatively flat. MBEs have an opportunity to become an overall larger component of the U.S. economy---and this requires participating more fully in global trade. This paper illustrates how imperative it is that MBEs understand supply chain management in order to reach this goal.

Supply chain management is a set of techniques and strategies that enable companies to compete in today's global economy. These strategies include:

- Managing the fundamentals of the supply chain;
- Selling the value of a shorter and more reliable supply chain; and
- Transcending today's supplying chain --no longer competing solely on price but promoting a higher value proposition.

Through several case studies, this paper highlights MBEs that have developed and mastered these techniques and have gained economic advantages over their competitors. They are experiencing the benefits that accrue from understanding where their companies fit within the life cycle of their supply chains and anticipating how the value propositions within their business will change due to competition and innovation. If other minority entrepreneurs do the same, then economic prosperity can be enhanced in communities throughout the nation.

Methodology

Minority-Owned Firms

The source for the number of minority-owned firms for 1997 is the U.S. Census Bureau's Survey of Minority-Owned Business Enterprises (SMOBE). The Census 2002 Survey of Business Owners did not provide data for minority-owned firms, but included data on firms owned by five separate minority groups (African American, American Indian and Alaska Native, Asian, Hispanic, and Native Hawaiian and Other Pacific Islander).

MBDA calculates the number of minority firms by adding up the five minority groups reported in the 2002 Survey of Business Owners (SBO). The total number of minority firms is slightly overrepresented because businesses that are owned by Hispanic or Latinos may be of any race. In addition, in accordance with the Office of Management and Budget guidelines, each owner in 2002 had the option of selecting more than one race, therefore, businesses could be tabulated in more than one racial group. Owners that reported more than one race may be counted more than once in the report. Figures for 2002 annual receipts and paid employees of minority-owned firms are calculated using the same methodology as for the number of minority-owned firms.

American Indian and Alaska Native

The data on firms owned by American Indian and Alaska Natives from the 1997 SMOBE survey is not directly comparable to the data from the 2002 SBO survey. New questions in the 2002 SBO survey may have allowed for the exclusion of tribally-owned firms that may have been included in the 1997 survey.

Relative Standard Errors

The relative standard error (RSE) of an estimate is a measure of the reliability or precision of that estimate. Relative standard error is defined as the ratio of the standard error to the survey estimate. For example, a relative standard error of 10 percent implies that the standard error is one-tenth as large as the survey estimate.

The RSE of an estimate is calculated by dividing the standard error of the estimate by the estimate itself. This quantity is expressed as a percent of the estimate..

When a RSE is not available for a particular estimate, we cannot define with precision the ratio of the standard error of the estimate.

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Appendix

Summary of MBEs highlighted in this paper (in alphabetical order)

Aspen Group, Inc.

Aspen Group, Inc. is a full-service human resources management firm headquartered in Silver Spring, Maryland. Founded in 1988 by President and CEO Armentha "Mike" Cruise, Aspen has grown from a small temporary staffing agency to a global supplier of human resources solutions.

Aspen, an African American-owned firm, serves many Fortune 1000 companies and government agencies, among other entities. Cruise has expanded the company and maintained its competitive edge by adding value to its human resources services, keeping up with technology aligned with clients' needs and taking advantage of the opportunities of globalization.

Aspen added value to its services by looking at areas in the supply chain generating higher profit margins. She aligned the new services with the company, such as background checking, training, facility management, and outsourcing, and created a full-service management firm.

The National Minority Supplier Development Council introduced Aspen to government officials and potential partners in the United Kingdom, South Africa, and Brazil. As a result, Aspen has created a partnership with a human resources firm in Brazil, with whom they share profits on a project basis.

Aspen has also provided human resources services in many countries where its Fortune 1000 clients have operations. This led the company to open a branch in India, which will be operating in August this year. The new office in India will increase Aspen's capacity to provide human resources services 24 hours a day and seven days a week. The company is also looking at opportunities to expand in China in addition to its seven offices located throughout the nation in the northeast, south and west coast.

Aspen Group Inc., 1100 Wayne Avenue, Suite 1175, Silver Spring, MD, 20910, 1-800-550-6289

D.W. Morgan

D.W. Morgan is a supply chain consultant, transportation and logistics service provider for many of the Fortune 1000 companies. The company was founded in 1990 by David W. Morgan and his wife, Palmyra Morgan. The Filipino-owned firm is located in Pleasanton, California.

Morgan introduced whole-process management services to its Fortune 1000 clients. By overseeing every connection in its client's supply chain, from procurement of raw materials to distribution of finished goods, Morgan improves efficiencies and reduces costs to clients.

For D.W. Morgan, globalization poses a challenge to companies because its product and distribution systems need to comply with new and diverse regulations from different countries. Among these, a new European Union regulation entitled, Reduction of Hazardous Substances (ROHS) restricts the use of certain hazardous substances in electrical and electronic equipment. D.W. Morgan has seized this as a new opportunity to provide clients with solutions that can meet new directives.

Moreover, changes in the South African constitution are opening the doors for South African Black-owned enterprises. In recognition of new opportunities there, Morgan has been working on partnering with a Black-owned firm in South Africa, and will be making that announcement soon. The company also has a subsidiary in Singapore, and a call center in Germany.

Some of Morgan's clients include, Cisco Systems, Adept Technologies, Philips Electronics Hewlett-Packard, Lockheed Martin Corp, SBC Communications, Johnson & Johnson, UAL Corp., B.F. Goodrich, and Chevron Texaco.

D.W. Morgan, 6685 Owens Drive, Pleasanton CA 94588, 1.800.628.1321.

Intraline Inc.

Founded in 1989, Intraline is a wholesale distributor of maintenance, repair, and operation (MRO) materials. The company sources and supplies MRO products which keep its clients' facilities and equipment running. This Pacific Islander-owned firm is headquartered in Burlingame, California.

In addition, Intraline specialized service solutions include: supply chain management, inventory management, strategic sourcing, warehousing, distribution, on-demand services, logistics, integrated supply solutions and supplier managed inventory (SMI) replenishment. The company's clients are in the power utility, oil and gas refinery, telecommunications, health care, and transportation industries. Many of these customers have facilities located nationwide as well as overseas.

Intraline has differentiated itself in the competitive market of wholesale distribution, by adding enhanced services and aligning these services and pricing with its customers' needs

Intraline Inc., 379 Beach Road, Burlingame, CA 94010, 650-340-9133

Lakota Express

Lakota Express, Inc. is a full service management and direct marketing company headquartered in the Oglala Sioux reservation of Pine Ridge, in Kyle, South Dakota. The firm was established in 1996 by founder and CEO Karlene Hunter.

Hunter made a commitment to start the business after she quit her job teaching in college, because she recognized the large impact a private business would have in creating jobs and contributing to the economic sustainability of the reservation. The company is located in an Empowerment Zone.

Hunter said that it was a challenge to start the business on the reservation because the area is remote and had no infrastructure to support the business. She said that while it may take 90 days to open a business anywhere else in the United States, it takes between one-and-a-half to two years to start a business on the reservation. Hunter built her company from scratch, from digging the trenches and bringing in fast Internet connectivity to the reservation, to constructing a 6,000 square foot office building.

Today the company provides the following services: management and marketing consulting, strategic planning, customer service, telemarketing, database management, quality control, surveys, direct mail, fundraising, event coordination and online registration, and web development and marketing, among others. Its clients include tribal government entities, federal agencies, and small businesses.

Under Hunter's leadership, Lakota Express added new services and created new supply chains. While most call center jobs were being outsourced to China, Lakota Express found a new opportunity to remain competitive by offering quality control to companies operating in China. Through a partnership with USE Inc., based in Dallas and with facilities in Zhuhai, China, Lakota Express now provides quality control for data entry products imputed in China.

Lakota Express' partnership with USE Inc. also opened opportunities for new enterprises. Hunter is currently exploring how it can leverage the talent of information technology professionals in China to expand Lakota Express' services. Hunter has also created a new company, Blended Solutions Group, in partnership with USE Inc and Native American Management Services, based in Washington, D.C., to explore opportunities to market products in China. Among these, the company is planning to launch a new dry meat product, buffalo snacks, in October, which will be marketed in the United States and China.

Lakota Express, 287 Water Tower Road, P.O. Box 287, Kyle, SD 57752, 605-455-2187

Liberty Power

Liberty Power provides electricity to businesses and government agencies in New York, Maryland, Washington, D.C., and Texas. The company, based in Florida, is the only national electric provider that is Hispanic-owned. It was founded by David Hernandez, Roshena Ham, Alberto Daire, and Eliezer Hernandez in 2001. David Hernandez and Ham, both former Enron employees, saw an opportunity to serve a niche market of small and medium-size businesses which Enron was reaching but not in a profitable way.

As a result of deregulation of the electricity industry, Liberty Power has been providing electricity in states that have opened the market of retail electricity to competition. In 2002, Liberty Power started providing clients with electricity, and by 2005 it generated revenues of \$100 million. It is planning to gross \$2 billion in sales within the next few years.

Liberty Power has attracted new clients by adding a value to the commodity it serves. The company prides itself in providing excellent customer service, affordable electricity, the flexibility of contracts that can lock in prices of electricity during peak times, as well as customized invoices aligned with the client's accounting software. The company is also exploring the possibility of partnering with other companies to provide additional services to clients. Liberty Power serves many small, medium, and large businesses and government agencies, including JC Penney, New York Life, and Lowe's.

Liberty Power was initially funded with capital from the partners themselves, family, and friends. To expand operations, Hernandez searched for other funding sources. The Minority Business Development Agency introduced Hernandez to financing sources. Hernandez has been successful in obtaining the funding the company needed without sacrificing its minority ownership and it is now financially solid with no debt in its capital structure.

Liberty Power, 800 W. Cypress Creek Rd., Suite 330, Ft. Lauderdale, FL 33309, 1- 866-769-3799

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Quintus R. Jett is a visiting associate professor at Dartmouth College, where he has taught management, statistics, and operations research in the Thayer School of Engineering. He has also taught operations management in the MBA and executive MBA programs of Rice University in Houston, TX.

Professor Jett studies new forms of organization that rely largely on individual autonomy and peer-to-peer communication rather than top-down, bureaucratic controls. He holds a Ph.D. in Organization and Management Theory from Stanford University. He also holds a M.S. in Industrial Engineering from Stanford and a B.S. in engineering from the University of Pennsylvania. Jett's experience includes employment at IBM and at NASA/Caltech's Jet Propulsion Laboratory, as well as work with management consulting firm Accenture on its study of how companies respond most effectively to market uncertainty in the global electronics industry.

Professor Jett has publications in *Academy of Management Review*, *Advances in Strategic Management*, and other scholarly journals. A forthcoming publication co-authored with Dr. Liisa Välikangas of the Woodside Institute, entitled "Innovation Independence," explains when managers should offer autonomy rather than payment to enhance the creativity and initiative demonstrated by employees.

M. Eric Johnson

M. Eric Johnson is Director of Tuck's Glassmeyer/McNamee Center for Digital Strategies and Professor of Operations Management at the Tuck School of Business, Dartmouth College. His teaching and research focuses on the impact of information technology on supply chain management.

He has published recent articles on security and collaboration in the *Financial Times*, *Sloan Management Review*, *Harvard Business Review*, and *CIO Magazine*. He is particularly interested in the supply chain challenges faced by industries with short product life cycles such as computers, toys, and apparel. His research articles have appeared in such academic journals as *Management Science*, *Operations Research*, *IEEE Transactions on Engineering Management*, *Production and Operations Management*, *Manufacturing and Service Operations Management*, and *Transportation Science*.

Before joining Tuck, Johnson taught for eight years at the Owen Graduate School of Management, Vanderbilt University. He was previously employed by Hewlett-Packard Co. and Systems Modeling Corp. He has consulted for diverse companies

such as Sprint-Nextel, Lucent, Mattel, Hewlett-Packard, Accenture, Pepsi, DHL, The Parthenon Group, Campbell-Hausfeld, Fleetguard, and Kulic&Soffa. Johnson has served on numerous editorial boards including *Production and Operations Management*, *Management Science*, *Interfaces*, *Operations Research*, *International Journal of Logistics Management*, and *Manufacturing and Service Operations Management*. He holds a B.S. in Industrial Engineering, B.S. in Economics, an M.S. in Industrial Engineering and Operations Research from Penn State University, and a Ph.D. in Industrial Engineering from Stanford University.

David F. Pyke

David Pyke, Benjamin Ames Kimball Professor of the Science of Administration, came to Tuck in 1987. He earned his undergraduate degree at Haverford College and his MBA at Drexel University. He obtained both a Masters and Ph.D. from the Wharton School, University of Pennsylvania. In the spring of 2002, he was named associate dean for the MBA program, and is currently responsible for all academic aspects of the MBA program at Tuck, including the management of the curriculum, admissions, the leadership program, and coordination of appropriate committees.

In addition to teaching the core Operations Management course and an elective in Improving Manufacturing at Tuck, he teaches in many of Tuck's executive education programs and has held visiting professorships at the International University of Japan, Helsinki School of Economics, the Wharton School, and WHU in Germany.

Professor Pyke's research interests include supply chain management, pricing, inventory systems, low cost country sourcing, sales & operations planning, manufacturing in China, production management, and operations strategy. He has co-authored two books and has published numerous academic papers.

He has consulted for The Rand Corporation, Accenture, Corning, DHL, Eaton, Markem, McLean-Fogg, Lemmon Company and Black & Decker, among others. He serves on the Board of Directors of GW Plastics. He is a scientific advisor for SignalDemand and for SeeControl.

Tuck School of Business at Dartmouth

Founded in 1900, the Tuck School of Business at Dartmouth College is the first graduate school of business in the United States and one of the top management schools in the world.

Tuck's faculty members are outstanding scholars with a passion for teaching and research. At the cutting edge of their disciplines, they are highly regarded for their expertise in key areas of business enterprise.

Tuck combines the intellectual and competitive strength of a large university with the soul of a tightly knit community. The school offers only one degree program – the full-time MBDA. Such focus allows Tuck to offer outstanding support to its students and faculty. In addition to its MBA program, Tuck offers a select array of executive education and other non-degree programs, like the Tuck Minority Business Executive Program, now in its 28th year, and similar programs held in partnership with the Minority Business Development Agency (MBDA).

Minority Business Development Agency

The U.S. Department of Commerce's Minority Business Development Agency (MBDA) is the only Federal agency established to foster the establishment and growth of minority-owned businesses in America. Created in 1971, MBDA provides services to African American, Asian/Pacific Islander, Hasidic Jew, Hispanic, and Native American/Alaskan entrepreneurs. Since its inception, MBDA has provided business development services to minority entrepreneurs and developed research and information about the minority business community.

MBDA's mission is to achieve entrepreneurial parity for minority business enterprises (MBEs) by enhancing their growth and expansion. The agency coordinates and leverages public and private-sector resources in support of its mission.

Over the past several years, MBDA has focused on providing business services to minority entrepreneurs who are pursuing accelerated growth. These entrepreneurs are well-positioned to impact the local economies by creating jobs and generating significant revenues, and expanding into national and global markets.

Tuck School and MBDA Partnership

Through a grant from the U.S. Small Business Administration, the Tuck School of Business and the Minority Business Development Agency (MBDA) have been working in partnership on a number of programs designed to enhance the effectiveness, efficiency, and growth of minority-owned businesses. Among these, Tuck faculty members conduct research studies that explore issues related to the emergence, survival and prosperity of minority-owned businesses and their future impact on local and global economies. The current study entitled, "Minority Business Enterprises: Mastering the Supply Chain," is the third research paper written in collaboration with MBDA.

In partnership with MBDA, Tuck also provides executive training for minority business enterprises (MBEs) as well as training for business development consultants in its network of funded agencies. In fiscal year 2006, Tuck added two special minority executive programs, which focused on mastering the supply chain. Through these executive training program, MBDA's MBE clients learn from some of the best faculty in the world, including some of the country's leading supplier diversity professionals, and network with successful minority-owned businesses, potential suppliers, customers, and partners.