"Innovation and Entrepreneurship in a Global Economy"

Introduction

When Peter Drucker wrote about innovation and entrepreneurship in the mid 1980s *(Innovation and Entrepreneurship Principles and Practices, 1985)*, America employed 10 million more people than had been predicted, and its dynamic economy was headed toward a primarily entrepreneurially inspired, innovative business culture. There was an abundance of young risk-takers who were willing to endure the ruthlessly long hours required by entrepreneurial opportunities, especially because of the potential success they offered. At the same time, big business dominated the corporate world and benefitted from a highly loyal workforce. Incorporating innovative ideas in business quickly became a highly esteemed management goal worthy of great effort. Corporate executives required their people to learn the disciplines of innovation and entrepreneurship, and Peter Drucker became their teacher.

Drucker's ideas were the panacea for institutional giants of his time, and the business climate of the 80s was ripe for adopting them. In this context, he treated both innovation and entrepreneurship in the "new entrepreneurial economy" as practices, decisive duties that could be controlled best in a systematic work environment. Unfortunately for corporate America, the bureaucratic organization structure was not able to sustain an entrepreneurial spirit, and many of the proponents left to start their own ventures.

Twenty-five years and one computer revolution later, where do these concepts stand? American business has undergone more extreme changes in *every* aspect in *every* industry than could have ever been predicted. Many center on technology, information and productivity, which Drucker steadfastly argued were less important than management. Before his death in 2004, he wrote a book called, *Management Challenges of the 21st Century*. In the chapter, *Management's*

New Paradigms, he reminds business leaders, "The center of a modern society, economy and community is not technology. It is not information. It is not productivity. It is the managed institution as the organ of society to produce results … Management is the specific function, the specific instrument to make institutions capable of producing results."

Today, innovation and entrepreneurship have changed. There are different ways of breeding, executing and practicing those concepts around the world. This paper looks at Drucker's theory, what's applicable for today and what is not. The practical reality is entrepreneurship and innovation are not manifested the same in an international marketplace. In fact, they are not all systematic as Drucker believed. For example, the U.S. and China have incubators to breed innovation and entrepreneurship, but they are not practiced similarly. Likewise, some innovations, like the Internet, are opportunistic and accidental. Originally developed by DARPA, the Defense Advanced Research Projects Agency as a means to share information on defense research between involved universities and defense research facilities, the internet quickly became the World Wide Web.

Companies tackling the global economy face unprecedented challenges and threats, as well as remarkable opportunities. Fortunately, new generations of entrepreneurs are more confident in themselves than were the baby boomers of the 80s. They are more inclined to demand instant gratification from their careers, even if it doesn't include maximizing profits. Today, entrepreneurs want to be intellectually challenged, and some even want to make a difference in society. Their motivations are strikingly different from those of their predecessors of the 1980s, which in the long-term could be a contributing factor to sustainable success.

Innovation Defined

Wikipedia defines innovation as simply, “a new way of doing something.” It may refer to incremental, radical and revolutionary changes in thinking, products, processes or organizations. A distinction is typically made between invention, an idea made manifest, and innovation, ideas applied successfully. (Mckeown 2008) Peter Drucker viewed innovation as the tool or instrument used by entrepreneurs to exploit change as an opportunity. He argued that innovation, as a discipline, is capable of being learned, as well as practiced. While he never agreed to a theory of innovation, he realized enough was known to develop it as a practice – a practice based on when, where and how one looks systematically for (innovative) opportunities and how one judges the chances for their success or the risks of their failure. From Drucker’s perspective, systematic innovation consisted of the purposeful and organized search for changes, and in the systematic analysis of the opportunities such changes might offer for economic or social innovation. As such, innovation of the 1980s took place in large corporate R&D departments, as well as academic institutions. Now when people want to innovate and be entrepreneurial, they leave the corporate world and set out on their own. They get money for their start-up ventures from a variety of sources, sometimes even mortgaging their homes. Often they take substantial risks to follow their dreams, which is where the term “lifestyle entrepreneur” was born.

While Drucker was once the foremost expert on the subject of innovation, new ideas about innovation have emerged. For instance in 2004, William Lazonick, Professor in the Department of Regional Economic and Social Development at the University of Massachusetts Lowell and Director of the Massachusetts Lowell Center for Industrial Competitiveness, referred to “indigenous innovation” which is the development of a collective type of learning within the organization. The strategy driving the innovation, he argued, was set in motion socially rather than process-driven. He believed that the pursuit of innovation required much more than taking

up a practical course of action. Further, Lazonick noted that conditions for success were far too reliant on economic factors to be measured by simply having a systematic process in place as Drucker had suggested. *(Indigenous Innovation and Economic Development: Lessons from China's Leap Into the Information Age, Industry and Innovation, 12/04 issue)*

Another offshoot is "disruptive innovation," which improves a product or service in ways that the market does not expect (e.g., lower prices, designed to appeal to a new customer, etc.) Coined by Clayton M. Christensen in his 1995 article*, Disruptive Technologies: Catching the Wave,* co-written with Joseph Bower, disruptive innovations are predominantly intimidating to existing market leaders because they represent competition coming from an unexpected direction. The concept of disruptive innovation carries on a long practice of recognizing radical technical change in the study of innovation by economists.

Another method for practicing innovation involves the antithesis of what Drucker called systematic innovation. It is based upon the concept, "accidents happen." Innovation cannot always be planned, which is why this approach emphasizes how many important innovations are the byproducts of accidents. "The key is to be prepared for the unexpected," says Robert D. Austin, associate professor in the Technology and Operations Management unit at Harvard Business School. Austin's research regarding the practical implications of accidental innovation, make it difficult to deny its viability. Popular innovations discovered by accident include cellophane, Cornflakes, nylon, penicillin, Teflon and so many more.

All of these examples show the evolution of innovation as adaptations to the changing business landscape.

Entrepreneurship Defined

A little over 200 years ago, the French economist J.B. Say remarked, “The entrepreneur shifts economic resources out of an area of lower and into an area of higher productivity and greater yield.” But, who is this entrepreneur Say speaks of? In the United States, an entrepreneur was defined as “one who starts his own, new and small business,” although Drucker noted that not every new small business is entrepreneurial or represents entrepreneurship. Also, not every entrepreneurial business is innovative.

Drucker identified entrepreneurs as people who see “change” as the standard, echoing Heraclitus of Ephesus, the Greek philosopher who said, “The only constant in life is change.” Entrepreneurs regard change as essential and welcome it as beneficial to the lives of big corporations and small businesses alike. However, the kind of change implied here, Drucker clarified, is typically not the kind that can be brought about simply by deciding to create it. Rather, it is created by entrepreneurs who actively go looking for existing change in order to exploit it.

One example Drucker presented was the entrepreneurial genius behind the early days of McDonald’s. The truth was Ray Kroc never invented anything. In fact, hamburgers, French fries and soda had been available for years. Kroc simply asked the question, “How does our customer define value?” Once he had the answer, he developed, standardized and branded it. That, Drucker believed, represented entrepreneurial instinct at its best. At the same time, he thought the risk in being an innovator was that it might come with ill repute, perhaps because so few of the so-called entrepreneurs knew what they were doing. Although the McDonald’s example demonstrates that being entrepreneurial does not automatically come with a certain degree of risk, it should still be approached systematically, as well as managed. And, Drucker added, “*Above all* it needs to be based on purposeful information.”

In corporate America, this has changed dramatically. Entrepreneurship is not solely based on purposeful information. Within corporations, those who look for change are considered the troublemakers who often end up starting their own companies. Corporate organizational structures, layers and silos inhibit employee creativity, as well as thwart efforts to improve the customer experience. In many cases, they are programmed for inflexibility, leaving employees no longer agile enough to cope with change.

Innovation and Entrepreneurship in the 1980s

By the 1980s, one of America's trademark fields, heavy industry, had been losing ground for at least two decades. Further, deregulation had gained momentum in the late 1970s, and by 1980, President Carter began deregulating industries from trucking to airlines to railroads. All combined, the external environment demanded that American management shift its thinking toward a more innovative, entrepreneurial approach to business.

Halfway through the 1980s, three fourths of America's 113 million workers earned their living providing services and establishing what would soon become known as the service industry. By the end of the 80s, entrepreneurship had taken off, and American managers were finally getting comfortable having shifted their focus from products to processes and from quantity to quality. It wasn't just happening in America. All across the world industries were undergoing transformation, which forced companies to begin laying the foundation for a new breed of innovation.

Right in the thick of the decade's advances, Drucker's 1985 book on innovation and entrepreneurship championed "specifically entrepreneurial" strategies that Drucker described as important, distinct and different. They were aimed at breaking down the barriers to change that

often discouraged CEOs. Resistance to change was a company's worst enemy in the 1980s, yet change was becoming increasingly unavoidable.

While each of Drucker's strategies is only briefly described, they are important to note.

1. *Being Fastest with the Mostest*. Here the aim from the start is to eventually land a leadership position being the first with the most. The entrepreneur aims at leadership if not at dominance of a new market or industry. Blackberry provides a good example. With the undeniably compelling nature of mobile e-mail, it was no big surprise that the (RIM) Blackberry unit became popular so fast. Being first-to-market, its premium pricing didn't seem as expensive as it does in today's much more competitive landscape. But, now the company is being squeezed and needs to redefine its marketing strategy.
2. *Hit Them Where They Aint*. In this strategy the innovator doesn't create a major new product or service. Instead it takes something just created by somebody else and improves upon it. Drucker called it "creative imitation" because the innovator reworks the product or service, coming up with a slightly more desirable option. Take the iPhone for example. Apple entered the market of mobile phones at a time when it was mature and saturated. But, the difference was found in the iPhone's revolutionary product design. As a cross between a mobile phone and a lap top computer, the iPhone took the market standard and turned it on its head.
3. *Entrepreneurial Judo*. In this case, the strategy's success feeds on what is unfortunately highly common among American companies: complacency. It takes what the market leader considers its strengths and turns those strengths into the very weaknesses that defeat it. In Drucker's *Innovation and Entrepreneurship, Entrepreneurial Strategies* (Corpedia Online Program), he gives this example: When the Japanese became the

leaders in numerous U.S. markets (e.g., copiers, machine tools, consumer electronics, automobiles, etc.) they always used the same strategy. If, for example, an American company saw its high profitability as its greatest strength, then it probably meant the firm focused on the high end of the market, leaving the mass market undersupplied and underserviced. The Japanese moved in with low-cost products that had minimum features and the American companies didn't even put up a fight. However, because the Japanese had taken over the mass market, they soon had the cash flow to then move in on the high-end market, too. It didn't take long before they dominated both.

4. *Changing Economic Characteristics*. Under all of the other strategies presented by Drucker, the innovator has to create an innovative product or service. In this one, the strategy itself is the innovation. Using this strategy, the company actually converts an existing product or service into something new by changing its utility, its value and its economic characteristics. Post conversion, there is new economic value and new customers, but no new product or service. It's a commonly used strategy in the high-tech industry. Pricing is one of the most successful ways to change the economic characteristics of a product or service. Drucker used the example of Yahoo's situation a few years back. With the internet designed as an information network, most providers charged access for it, (e.g. hosting an e-mail address). But, Yahoo, among others, gave away internet access because it was paid for by advertisers who ran ads the customers would see when they went online. Yahoo asked, "Who is the customer?" The answer was that the customer is the supplier who wants access to a potential customer. This changed the characteristics of the industry.

5. *Ecological Niche*. This strategy aims at control. It obtains a practical monopoly in a small area. In the most successful of the ecological niche strategies, the whole point is to be so inconspicuous that despite the product's being essential to a process; no one will likely try to compete, making them virtually immune to competition. Three distinct niche strategies fall under this category.

   One of these is called the "toll-gate" strategy. Being in a toll-gate position means once the product is developed and patented, it is in such high demand no one will do without it. An example comes from Givun Imaging, an Israeli company that developed the first ingestible video camera at a size so small it fits inside a pill. The device enables doctors to view the small intestine from the inside, helping medical professionals to diagnose cancer and digestive disorders. Used across the world, doctors couldn't do without it. More importantly, price was not an issue. Givun Imaging was the first, putting itself in one of the most desirable positions a company could occupy.

In addition to his list of strategies, Drucker offered several important caveats to emphasize the connection between entrepreneurial strategy and innovation. Stated differently, before implementing one of Drucker's strategies, it's important to make sure it's the right one. Some entrepreneurial strategies fit better in certain situations, while other strategies work better in combination with another. One entrepreneur may combine two or even three into one strategy. These are his guidelines:

- The strategies are not mutually exclusive.
- The strategies are not always sharply differentiated.
- Each strategy fits certain kinds of innovation and does not fit others.
- Each strategy requires specific behavior on the part of the entrepreneur.

- Each strategy has its own limitations and carries its own risks.

"Still, entrepreneurial strategy remains the decision-making area of entrepreneurship and therefore the risk-taking one," Drucker stated. "It is by no means hunch or gamble. But it also is not precisely science. Rather, it is judgment." Malcolm Gladwell examined that kind of judgment in his book, *Blink* (Back Bay Books, 2005). He studied rapid cognition, the kind of thinking that happens in the blink of an eye. Gladwell breaks down the two seconds anyone's mind uses to jump to conclusions about any new information being presented. He believed these instant conclusions we reach are really powerful. Since entrepreneurship comes with an element of risk, it's helpful to know when snap judgments are good and when they're not.

By the end of the 80s it had become quite clear that what was transpiring in American business went beyond "change"; it was a complete transformation that would wipe out any company that wasn't prepared to exploit it. American business was heading into its final decade before the turn of the century, and it was about to be turned upside down.

Innovation and Entrepreneurship in the 21st Century

As businesses move toward the year 2010, it's interesting to examine the strides innovation and entrepreneurship have made. For starters, innovation has all but become a necessity in today's global business setting, regardless of a company's market scope. This is due to the new reality that competition for any business extends way beyond its local area. In fact, companies that recognized this early on and nurtured innovation as the ultimate source of competitive advantage are surely reaping the benefits now.

With the proliferation of elaborate think tanks and R&D facilities overseas, it is evident that companies today are striving for an innovative climate. Yet, based on a comparative study of innovation practices, the practice of innovation is not without its extreme challenges. (*Southern*

Business Review, Spring 2004, Harper, S. M., Becker, S.W.) The study was completed using a series of interviews with corporate executives and senior innovation officers in four of the largest Chicago-area, publicly traded companies (Chicago Tribune Top 50 List, January 2003) and one government agency. The intent of the study was to learn how individuals, groups, leaders and the organizational culture are influenced by creativity (generating an idea) and risk-taking (taking action on the idea). Interview questions were based on the Innovation Equation model, Innovation = Creativity + Risk-Taking (Byrd & Brown, 2003).

The study's findings showed a key difference between those companies that referred to their culture as "highly innovative" and those that did not. *All* of the highly innovative companies had innovative processes in place. While each process had its strengths and weaknesses, the simple act of articulating a process was enough to communicate the importance of innovation to the whole company.

Preoccupations that consume the minds of today's entrepreneurs are very different from those of the 1980s. Just over a year ago, most American businesses were forced to shift back as the economy was brought to its knees at home and abroad. Although entrepreneurs are known for turning such conditions into opportunities, this crisis hit hard and shows no signs of abating anytime soon. In the book, *Webs of Innovation: The Networked Economy Demands New Ways to Innovate* (Financial Times Prentice Hall, 2001) author Alexander Loudon argued that even during recessionary times, the need for innovation persists. He recommended a concept of "networked innovation" as the way to help corporations adapt to carrying out innovation in the Information Age. Companies with ongoing commitment to innovation, he noted, are both able to take greater advantage of new markets and opportunities during boom times, and to maintain and

grow existing business during downward cycles. Companies that don't take charge of their innovation processes cannot expect to profit from innovation, he concludes.

Recent research conducted by the Kauffman Foundation in Kansas City reports that 70 percent of respondents believe entrepreneurship is the answer to getting America out of its present financial calamity. Eighty percent are in favor of government allocating resources that would strongly support entrepreneurship to develop and grow in the United States. But, it's one matter to believe entrepreneurship is the answer and quite another to practice it. Over 70 percent of survey respondents answered that the financial predicament had just brought one challenge too many to the entrepreneurial spirit. While almost 50 percent see opportunities, only half of that 50 percent would consider investing time in a startup over the next five years. These may be our future entrepreneurs.

If entrepreneurs are going to be an integral part of the answer to the world's turbulent times, if they are destined to be the opportunity diggers and job creators, then it will probably come from those who lean more to the creative side. According to Professor Jean-Claude Larreche, Professor of Marketing at INSEAD in Fontainebleau, France, creative entrepreneurs can weather this crisis better than traditional companies can. "It's not the creative entrepreneurs, but it's the large companies that are being challenged. Creative companies can survive any condition," says Larreche.

Speaking at the World Knowledge Forum in Seoul, South Korea (11/19/08), Larreche used Virgin Atlantic as his shining entrepreneurial example. Richard Branson, founder and entrepreneurial architect of the Virgin Group, embarked on his first business venture in 1967 at the age of 17. Branson started his second business three years later. It was a mail-order retail record company: Virgin Mail. Three years after that he expanded to establish Virgin Records.

What can now be called a Virgin empire contains a conglomeration of wholly owned subsidiaries and outside partnerships. Branson actually maintains a controlling interest in every company he starts, which contradicts Drucker's theory that entrepreneurs aren't interested in ownership. What gives him such a unique entrepreneurial spirit? For one, he advocates social responsibility by sticking to his belief that employees' personal needs come first (social responsibility) and, while others cannot figure out how, he still manages to avoid layoffs. Also, Branson believes in the power of informal communication. Each of his companies is kept small and controllable even though they're run under a conglomerate structure. Virgin is diversified in countless directions, with interests in airlines, retail stores, a travel group, an entertainment group, a hotel enterprise, financial services, cinemas, radio stations and much more. The man is doing something right, and many believe a large part of it is his earnest consideration of his employees.

Brought to the World Knowledge Forum via satellite, Branson didn't deny how bad the financial crisis was, but he did agree that with it comes enormous opportunity. One of his underlying messages was that tapping into opportunity would come more easily to companies that keep themselves flexible, because when a company determines it's time to move it's going to want to move quickly.

Branson also thinks companies with available cash have a responsibility, to both their country and their company, to invest the cash. Not excluding Virgin from this responsibility, at the time of the Conference, oil prices and airline stock prices were falling. Branson divulged he was looking at whether the time was right for Virgin to branch out to South Korea, Russia or Brazil. He sees it as a cleansing. "The best companies with the best products and services survive in a crisis. You will see companies all around you going bust and you'll benefit from that,"

Branson says. Concluding his speech, the message came directly from the mind of a true entrepreneur, "I've always believed there is no point in going into business unless you're going to make an enormous and positive difference." While these words might be inspiring and admirable, they are far different motives than the entrepreneur described by Drucker. In Branson's case, there is great drive to make his mark in the world, but – on his terms – which seem to carry a great deal of ego. Drucker's entrepreneur thrived on systematizing, organizing and bringing change to corporate giants.

Innovation on a Global Scale

Innovation as a practice has come a long way since Drucker shared his ideas in the 1980s. For starters, any present-day discussion about innovation is likely to include references to international initiatives.

Also, due to the global economy, measuring innovative performance has moved to the top of corporate executives' agendas. In fact, global innovation now has a formal means of measurement. The Global Innovative Index, conceived and developed by INSEAD Business School and World Business, is a formal model built to better see which nations are currently meeting the challenges of innovation. The GII ranks the world's best and worst performing economies from the standpoint of innovation, as well as providing insights into nations' strengths and weaknesses in their innovation-related policies and practices.

The availability of this Index means business leaders can more assuredly make revealing comparisons and critical decisions because their research is based on concrete data. Why is the Index likely to become increasingly important as we move further into this new century? Since the GII shows to what degree individual nations and regions currently respond to the challenge of innovation, it will begin to paint a picture of what constitutes success and what does not.

Along the same lines, many questions are being asked about measuring entrepreneurship. When two disciplines are so closely aligned, as are innovation and entrepreneurship, shouldn't entrepreneurship play some role in such a measurement? For example, there are countries that have enormous success with innovation, yet they often have trouble getting these products to market. To get actionable information, we need to look at entrepreneurship and innovation interchangeably and develop an index to reveal the linkage between them on a global basis. Mounting concern over lack of access to global entrepreneurial measurements became the catalyst for the Entrepreneurship Indicators Project, a group that began to address these issues in 2008.

How is a country's entrepreneurship measured? Total number of patent acquisitions, new start-ups, and number of publicly traded companies is a starting point. But, there are missing links that the EIP seeks to fill as it develops comparable measures of entrepreneurship and the factors that enhance or impede it. Led by Tim Davis of the Organization for Economic Cooperation and Development (OECD), the group believes that if entrepreneurship is the process leading to the creation and growth of a business, then *creation* and *growth* must be measured.

Innovation: U.S., Switzerland and Israel

Ranked by number of start-ups, the top three countries are U.S. (#1), Israel (#2), and Switzerland (#3). The innovative strengths and challenges of three distinctive countries, all with comprehensive ratings within the GII's top 20, provide further insight to innovation and entrepreneurial potential in the global marketplace.

Strengths

United States: Innovative Strengths (Ranked #1, Score: 5.80)

The U.S. remains far ahead of its rivals for a number of reasons, but it doesn't mean the country doesn't face its share of question marks at home and abroad. In spite of challenges, these are the noted U.S. strengths:

- Has a strong environment for innovation
- Is superior when it comes to exploiting this environment
- Constantly building on its human capital
- Universities and research establishments attract top thinkers
- Generous funding opportunities (U.S. venture capital dwarfs other nations')
- Adept at deploying technology (Accounts for up to 80 percent of U.S. productivity gains since the turn of the century)
- Demanding customer base

Switzerland: Innovative Strengths (Ranked #6, Score: 4.16)

Even in Switzerland, a country known for being risk-averse, entrepreneurship as a field of study is finally gaining acceptance and momentum. Clearly globalization is the reason the country has lost ground and fortunately the Swiss realize it requires an innovative response. This country's strengths are:

- Innovative performance has been amongst the best.
- Occupies a top position in knowledge-intensive market services which attracts many people trained in science and engineering
- Has a very strong basic research capacity
- Public funding is widely available

Israel: Innovative Strengths (Ranked #18, Score: 3.68)

There is no better "poster country" for keeping up the entrepreneurial spirit than in Israel. Consider a country that faces warlike conditions daily, with little hope of resolve. Yet, that seems only to drive its motive to innovate. Part of the reason is because Israel is learning their lessons well. They used the wisdom they gained in the early 2000s to make them leaner, meaner and smarter.

The country's real strength is in developing cutting edge products that are also creative. Many observers think that the reason they are so capable is because their mentality doesn't fit the corporate mentality, nor are they in it for the long haul. They set up small companies and work effortlessly to make it profitable for five to six years, only then to move on to a new project. Other innovative strengths characteristic of Israel include:

- Supportive of risk-taking with a powerful drive to succeed
- Highest number of engineers per capita (Double that of U.S. and Japan)
- Powerful economy from the ground up
- Pioneering technology sector – boasting the highest concentration of high-tech companies in the world outside of Silicon Valley
- Strong ties to Silicon Valley and U.S. academic and research institutions
- Successive governments have invested in education
- Fostered the highest R&D spending of any industrialized nation
- Developed effective investment incentives

Challenges

United States: Innovative Challenges

- Must stay aware of global landscape changes as China and India emerge as economic powers

- Needs to produce more scientists and engineers from within
- Must improve the quality of an aging communication and transportation infrastructure
- Tends to exhibit hostility since 9/11, which shows through in diminished enthusiasm when welcoming newcomers

The global outlook presents ominous challenges to America's companies and their innovation health. Although the United States remains on top of the Global Innovation Index Rankings, the truth is America's innovation has been steadily declining since the mid-1980s. Now, there are very real threats coming from China and India.

Switzerland: Innovative Challenges

Some of the barriers the Swiss are working on removing include lack of innovation education, excessive regulation and risk-aversion. Other challenges include:

- Innovative performance has weakened in recent years
- Increased globalization of R&D
- Boosting innovative capacity of SMEs and removing obstacles to their growth
- Tertiary education participation is very low meaning reforms to university system are necessary
- Falls short with respect to academic staff

Israel: Innovative Challenges

One of the best moves Israel could make right now would be to focus on narrowing the time gap between R&D and final product. Other innovative challenges:

- Political situation drags down competitiveness rating
- Sales, distribution and marketing capabilities are weak
- No domestic market for its products as majority of sales are abroad

The Global Innovation Index

Measuring innovation performance internally, nationally and/or globally is a prudent method for determining the rights and wrongs of innovation strategy and for determining under what conditions the strong companies thrive. The framework of the GII model uses eight pillars that are grouped in two categories:

Inputs: Aspects that enhance the capacity of a nation to generate ideas and leverage them for innovative products and services.

Outputs: The ultimate benefits the nation derives from the inputs – more knowledge creation, increased competitiveness and greater wealth generation.

Each pillar offers quantitative and qualitative data that make it possible to go below the surface of the raw rankings. Only then can any interpretation be made about how and why a given country responds to innovation. Furthermore, this is the first year of this ranking. The analysis of this year in combination with subsequent years will evolve into more definitive patterns and trends.

Five "Input" Pillars

1. Institutions and Policies
    - Independence of judiciary
    - Demanding regulatory standards
    - Prevalence of laws relating to ICT
    - Quality of IPR
    - Soundness of banks
    - Quality of scientific research institutions
    - Quality of management/business schools

- Legal obstacles to foreign labor
- Time required to start a business
- Time required to obtain licenses
- Rigidity of employment index
- Investor protection index
- ICT priority for government

2. Human Capacity
    - Brain drain
    - Quality of human resource approach
    - Quality of math and science education
    - Graduates in engineering
    - Graduates in science
    - Population 15-64
    - Urban population
    - Schools connected to the internet
3. Infrastructure
    - Quality of general infrastructure
    - Quality of national transport network
    - Quality of air transport
    - Fixed line penetration
    - Mobile penetration
    - Internet penetration
    - International bandwidth

- ICT expenditure
- Personal computer penetration
- Mobile price basket

4. Business Markets and Capital
    - Access to loans
    - Sophistication of financial markets
    - Issuing shares in local share market
    - Corporate governance
    - Buyer sophistication
    - Customer orientation of firms
    - Domestic credit to private sector
    - FDI net inflows
    - Gross private capital flows
    - Gross capital formation
    - Extent of clusters
    - Commercial services imports
    - Manufactured imports
    - Private investment in ICT
    - Informal economy estimate
5. Technological Sophistication
    - Country's level of technology
    - E-Participation index
    - E-Government index

- Government procurement of advanced technology
- Internet use by businesses
- Competition among ISP providers
- Company technology absorption
- Telecom revenue
- Secure internet servers per 1,000 people
- Spending on R&D
- Royalty and license fee payments
- Business/university R&D collaboration

Three "Output" Pillars

6. Knowledge
    - Local specialized research and training
    - Nature of competitive advantage
    - Quality of production process technology
    - High-tech exports
    - Manufactured exports
    - ICT exports
    - Insurance and financial services
    - Patents registered (domestic and non-domestic)
    - Royalty and license fee receipts
7. Competitiveness
    - Growth of exports to neighboring countries
    - Intensity of local competition

- Reach of exporting in international markets
- Commercial services export
- Merchandise exports
- Goods exported
- Service exports
- Listed domestic companies

8. Wealth
    - Final consumption expenditure
    - GDP per capita, PPP
    - GDP growth rate
    - Industry, value added
    - Manufacturer, value added
    - International migration stock
    - Value of stocks traded
    - FDI net outflows

Global Innovation and Entrepreneurship: Future Forecast

Based on the current information available, innovation and entrepreneurship will continue to expand in the future across borders, because of the existence of these six circumstances: global market conditions, entrepreneurial mindset, eroding confidence in established institutions, shifting business environment, international collaboration and environmental/technological advancements.

1. *Global market conditions*. Trade barriers are easing. Economies are interdependent. Communication via the Internet has never been easier or more accessible. These

conditions drive political reform, cultural transparency, social progress and a great deal of wealth creation.

2. *Entrepreneurial mindset*. Entrepreneurs have the ability to see, understand and take advantage of evolving markets. The entrepreneur's ability to think differently, use insights, see what others don't, envision what doesn't yet exist, and identify opportunity when it's ripe – these are the prized qualities of today's entrepreneur. Wayne Gretzky of national hockey fame helped state it succinctly when he said, "I skate to where the puck is going to be, not where it's been."
3. *Eroding confidence in established institutions.* The recent world economic meltdown is removing any last confidence that most people had in governments and large enterprise banks and other financial entities. The resulting mistrust will lead to reinventing ourselves as individuals, communities, countries and societies. As such, many more entrepreneurs will be joining the field.
4. *Shifting business environment.* Large-scale firms are synonymous with bureaucracy which tends to stifle innovation. In response, the business environment is shifting to accommodate the needs of its rapidly changing market players. Innovation and entrepreneurship are beginning to flourish around the world and will likely take the form of much smaller, yet bolder companies. Knowing and catering to this is how entrepreneurial ventures beat corporate giants to the punch. Any company, large or small, that continues down the same path it has always taken will find it to be a losing proposition.
5. *Entrepreneurial collaboration.* Also, on a global scale, there will be more entrepreneurial collaboration, which in turn will make shared innovation between

countries a far more common occurrence at the company to company level – not just at universities and research institutions. One of China's approaches for creating an innovative nation is the Technology Business Incubator (TBI). China's mission is to nurture "technopreneurs" and technology-based start-ups. Business incubation is considered a viable option for countries that want to expand economic opportunities.

6. *Growth of environmental and sustainable engineering technologies.* A growing consciousness about the value of protecting our world will fuel the demand for products and services that can accomplish this goal.

In Drucker's world and for the past couple of decades, an exodus of people moved "West" for a good education and often ended up staying because of the rich opportunities that existed. But now, these opportunities are not limited to the West. Opportunities are international in scope, and people are choosing to return to their homeland to utilize their newly acquired talent and to build fortunes with it, and elevate global competition. The demand for innovation on an international scale and for the entrepreneurship that accompanies it will focus increasingly on being more purpose-driven. With intention at the helm, innovation and entrepreneurship will adapt to accommodate the changing focus of the drive to live a better life, do good, save the planet and make money. It's no longer about information as Drucker thought. It's about building a better world and a better life through innovation with a purpose.

Book Chapters:

Drucker, P.F. (1999) "Management's New Paradigms", *Management Challenges for the 21st Century*, Harper Business, New York, pp. 1-41

Drucker, P.F. (2004) "August", Maciariello, J.A., *The Daily Drucker*, Harper Business, New York, pp.16-23

Drucker, P.F. (1985) "The Practice of Innovation", *Innovation and Entrepreneurship Practice and Principles*, Harper & Row, New York, pp. 19-33

Drucker, P.F. (1985) "The Practice of Entrepreneurship", *Innovation and Entrepreneurship Practice and Principles*, Harper & Row, New York, pp. 141-188

Drucker, P.F. (1985) "Entrepreneurial Strategies", *Innovation and Entrepreneurship Practice and Principles*, Harper & Row, New York, pp. 207-243

Electronic Sources

Claiborne, C.B. (2007) "Innovation: A Necessity of the New Global Business Paradigm, *International Journal of Business Research*, http://findarticles.com/p/articles/mi_6773/is_6_7/ai_n28522943/?tag=content;col1

Global Innovation Index: More on methodology
http://www.managementtoday.co.uk/news/610009

UXL Encyclopedia of World Biography (2003)
http://findarticles.com/p/articles/mi_gx5229/is_2003/ai_n19151605/?tag=content;col1