

Innovate or Die

Richard J. Gerth, Senior Research Scientist, Manufacturing, Engineering and Technology Group, Center for Automotive Research, USA

Innovation is once again a hot topic as evidenced by the increasing number of articles investigating and advertisements touting innovation. Innovation as a strategic enabler undergoes an approximate 3 to 6 year cycle of popularity every 10 to 15 years. The last cycle was associated with the dot com boom of the late 1990s. In March 2007, IBM conducted a Supplier Jam on innovation with 2000 professionals from 150 organisations (IBM, 2007). And in August 2007, the Center for Automotive Research (CAR) hosted a panel called “Innovate or Die” at its 2007 Management Briefing Seminars in Traverse City, Michigan (www.cargroup.org).

Each innovation cycle is driven by a particular set of circumstances. The current focus on innovation in the automotive industry is driven by its own set of circumstances as well. First, the competitive pressures which have been growing. The global growth of Toyota surpassing GM as the number one automotive manufacturer (OEM) has been widely reported. Figure 1 shows the predicted market share growth of the foreign OEMs overtaking the North American market share of the traditional Detroit Three companies. A relative newcomer, Hyundai, has also been extraordinarily successful in North America with a 186% growth from 2000 to 2006. And it is anticipated that other car companies, such as Tata motors and Chery Automobile Company, will eventually also enter what is already a highly competitive North American and European market.

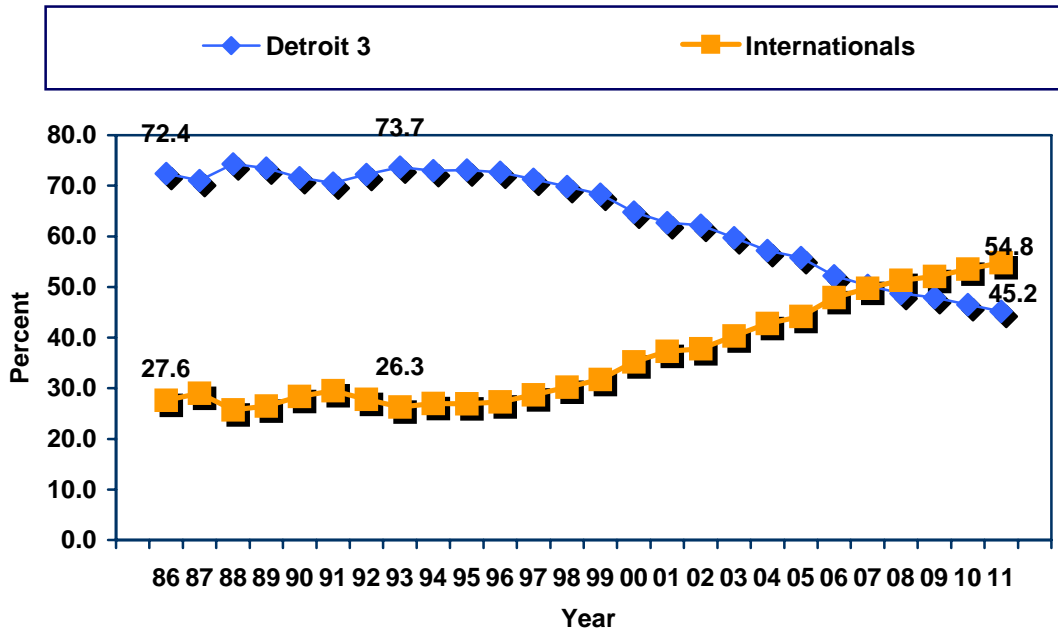
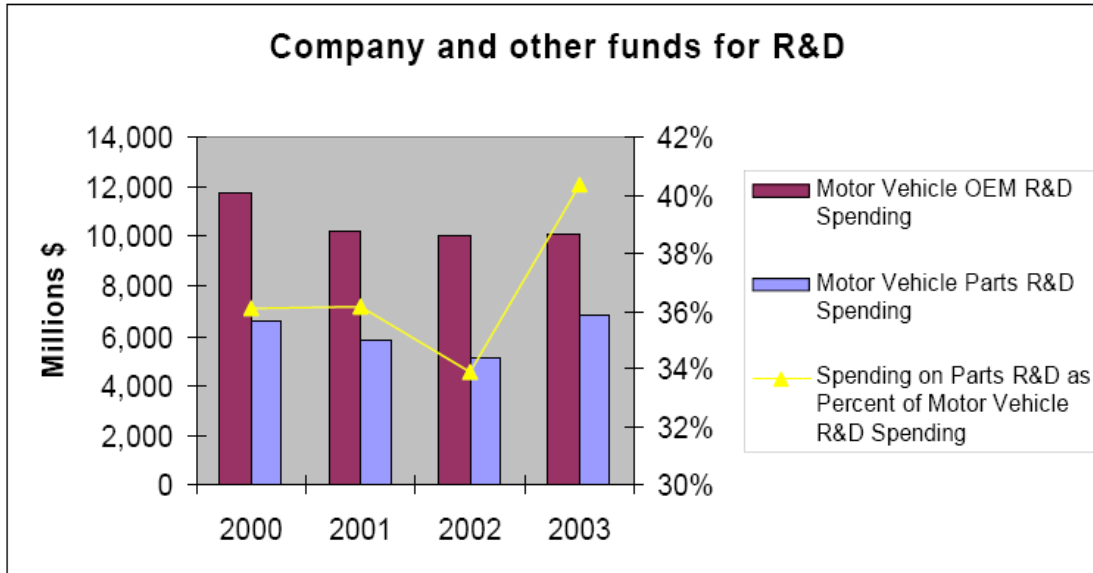


Figure 1. Historical and Predicted North American Market Share of the Detroit 3 versus the International OEMs.

Second, high structural costs with flat local growth in established markets such as Japan, North America, and Western Europe, coupled with lower wages in high growth potential markets such as India, China and Eastern Europe, has led to globalisation and rapid shifting of manufacturing and other jobs from the established countries to these lower wage markets. It has also led to established OEMs outsourcing many of their functions, which were thought to be core including R&D, to their suppliers (see Figure 2).



Source: National Science Foundation, 2003

Figure 2 .Annual automotive related R&D spending by OEM and suppliers (Hill, 2007)

As a result of the above two factors, there is a global overcapacity of manufacturing facilities, with the underutilised excess existing primarily with the OEMs and their suppliers that are losing market share. This, with the abundance of private equity, has led to a large number of bankruptcies, mergers and acquisitions, as companies sell and buy assets to raise funds or increase capabilities.

Added to these economic disruptions are concerns regarding changing regulatory environments, changing consumer sentiments in response to rising petroleum prices and global climate concerns, currency fluctuations, technology uncertainties due to rapid development on new powertrain technologies, and geopolitical instability generated from global threats of terrorism and government interventions, be it in military or economic form.

Thus, it is little wonder that some companies do not feel they can take the risk of investing in innovation at this point in time. However, it is exactly now that companies must innovate and accept the potential of failure in a given effort to ensure their continued future survival. Organisations cannot survive in a high labour market in today's global economy without being innovative. The call for any company in this harsh and uncertain environment truly is "innovate or die!"

While innovation is viewed as a necessary strategic focus to be successful, it is taking on many more forms today than the traditional areas of product and process innovation. Today innovation can be found in all areas of the business from innovative labour practices to innovative business models. For example, cooptation is a term coined to describe the new practice of competitors cooperating closely on a variety of business areas to achieve competitive advantage. While joint ventures and research projects between competitors have existed in the past, they were never as comprehensive and in those areas considered to be core to the business.

For example, over the past five years CAR has developed several tooling coalitions consisting of 8 to 25 tool and mold shops. The coalition members truly cooperate within the coalition structure, while fiercely competing with each other outside of the coalition, hence cooptation. Within the coalition structure, these organisations have agreed to share manufacturing and engineering resources to level production (gaining manufacturing and engineering efficiencies). They also combine their individual capacities and quoting resources to bid jointly on jobs that are larger than any single company would be able to do. Further, a larger job of a complete sub-assembly would enable the die shops to implement functional build at the die shop level further reducing die costs. Clearly, on larger programmes, such a cooptation approach would require the customer to work more closely with the coalition enabling earlier product design input. As shown in Figure 3, it is estimated that the combination of these cooperative efforts could yield a 45% reduction in costs (Dziczek, et al., 2006).

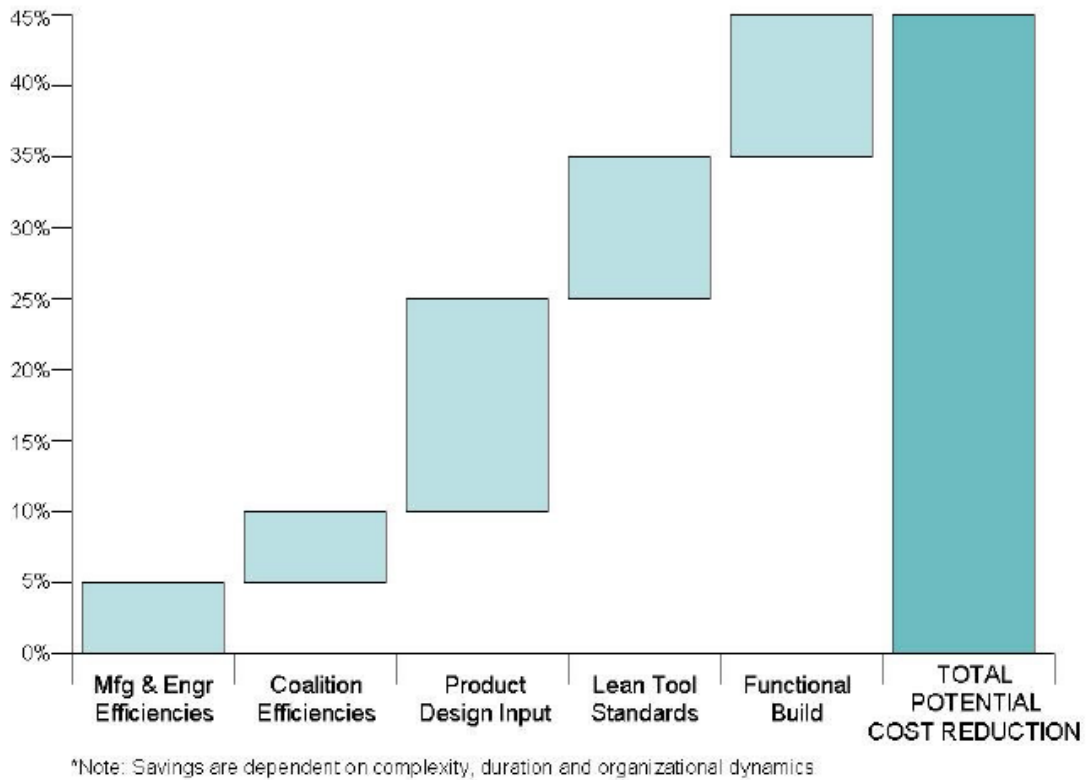


Figure 3. Potential Tool and Die Coalition Savings

Another example of an innovative business model is the Global Engine Manufacturing Alliance (GEMA), a joint venture of Chrysler, Hyundai, and Mitsubishi Motors. Many companies believe that engine and powertrain technology is core and must be kept internal to the company. However, GEMA shows how this may no longer be true, and how, by working with competitors efficiency and cost gains can be achieved. GEMA produces 3 different global engines that are common to all 3 OEMs in 5 facilities in 3 countries with an approximate total capacity of 1.8 million engines. One of their greatest innovations, developed in cooperation with the local labour union, is their three job classifications and unique work schedule. The less number of job classifications allows a great deal of labour flexibility, as everyone is trained for every job. The innovative work schedule allows for a 120 hour work week (instead of 80 hours), with 49 fewer working days per year. (Coventry, 2005; Joyce, 2005)

There is no doubt that a great deal of innovation is being generated by the automotive industry. Ford, Toyota, DCX, GM, Volkswagen, and Honda were among the top 20 R&D spenders in 2004 and 2005, spending about US \$ 38.5 billion in 2005 or about 33% of the top 20 R&D spenders

(Jurelski, et al., 2005 and 2004). Yet, often the automotive industry is not viewed as being particularly innovative. Further, there is a great deal of knowledge being generated, but not enough of it finds its way to market (see Figure 4). This exponential growth of knowledge with lower levels of use is leading to a knowledge gap.

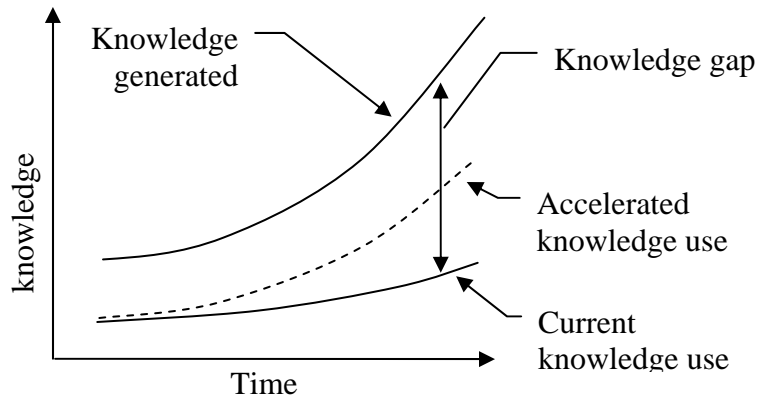


Figure 4. The Knowledge Gap.

Certainly a contributor to the gap is the uncertainties mentioned above that can lead some companies to be overly cautious in developing and executing an innovation. Further, many innovations do not see the market because of a number of organisational impediments. Also, transfer of knowledge from the automotive industry to other industries and vice versa is very difficult. While many of these may be known, it is instructive to see the many complexities an organisation must balance to be truly competitive.

The first of the organisational impediments is called the innovator's dilemma (Christensen, 2000) and relates to an organisation's inability to pursue disruptive innovation. When a company listens to its customers and invests in technologies that better meet the customers' needs and promise relatively large profit margins, the company can be exposed to disruptive technologies. Disruptive technologies are those technologies that initially do not perform well relative to the existing technology along the current metric (sustaining technologies), but offer something that is valued by a relatively small market. For example, the 5.25-inch floppy performed poorly on a cost per megabyte basis relative to the 8 inch drive used in the mini mainframe market of the time. But it offered size and power efficiencies that were valued by the small desktop market. The 8-inch drive manufacturers were listening to their customers (who wanted less cost per megabyte), not investing large amounts of money in new, simpler technologies that had relatively small

margins, and not entering small insignificant markets. However over time, disruptive technologies gradually grow in capabilities to meet the needs to the previous customers. This is true when technologies grow faster in capability than market demand. Companies can overcome this apparent contradiction by being aware of the inherent barriers preventing them from developing or pursuing disruptive technologies, and developing an environment and approval process that allows disruptive technologies to develop, despite their initial business short comings.

Another organisational hurdle is usually the strong desire to have an innovation process that is amenable to the financial and control needs of the organisation relative to the inherently high risk activity of innovation (Kanter, 2006). Using the standard business planning, budgeting, and review paradigm can strangle an innovation effort. Thus, often innovation efforts are established outside of the mainstream of the business. But then, it may be difficult to fold the innovation efforts results back into the mainstream business. Further, there is the danger of creating two classes of corporate citizens, those responsible for developing new innovations (but being allowed to fail and adjust to changing circumstances) and those responsible for paying for the companies profits and overhead (and meeting budgets, timelines, and deliverables). Failure to understand these conflicting forces will lead to great innovations being killed during implementation.

Sometimes a company will place the best technical people in charge of an innovation effort, instead of the best leaders (Kanter, 2006). Innovation requires a team. The team requires a strong leader who can motivate the team, understands interpersonal relationships, and can communicate internally, but more importantly externally to the rest of the organisation. The leader has to make efforts to find partners in the mainstream business to ensure commercial success. Developing the proper team takes at least 24 months, but often a company's career advancement path has shorter timing rotating the leaders too early from the project. Companies need to apply time and resources to carefully develop their innovation leaders of tomorrow.

While overcoming these organisational hurdles can lead to successful innovation, thereby reducing the knowledge gap within a company, there are many innovations that have been developed that have not found their full commercial potential. To further reduce the knowledge gap, CAR is working with the Detroit Renaissance to create the Mobility Research and Development Cooperative, with the mission to help automotive companies export their innovations to other industries and identify innovations from other industries that are applicable

within the automotive sector. The Cooperative will focus on Tool and Die technology, Energy, Vehicle Infrastructure Integration, and new business incubation. Many companies are aware of the benefits of cross-industry innovation, but are ill-equipped to take full advantage of it. The cooperative will help organisations efficiently overcome some of these difficulties and thereby reduce the knowledge gap.

The automotive industry is under going enormous changes. The tremendous competitive, market and government forces are not going to abate over the next several years, but more likely to increase. Innovation is a necessary strategy for all companies to remain prosperous, especially in light of the low wage countries. And innovation is not only found in products, manufacturing processes, and services, but also in strategy, business models, processes, labour agreements, and any other aspect of the business. However, there are numerous challenges and internal hurdles that must be overcome. The good news is that there are many innovation strategies that could be successful. And there is much to be learned from other industries. The new business forces acting on the industry are challenging traditional beliefs, and only those capable of adaptation will survive.

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