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Industry-Academia Partnerships in Germany

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In a recent article (Malhotra 1996), I argued that we in the production and operations management community should move towards greater relevance in our academic efforts. I also offered some thoughts and suggestions on how we could progress towards this objective. One of these suggestions was to interact more with the real world manufacturing and service firms in order to ensure that our problems, teaching, and research are well anchored in practice. Sometimes the initiative for such an interaction can come from the academic community, while at other times corporations can step forward and use their resources to build bridges to the academic community. I am going to describe here an example of the latter form of partnership building in an international context, and what lessons we can learn from it.

Just before DSI's 1997 Annual Meeting in San Diego, I had the unique opportunity of visiting the Daimler Benz Corporation in Stuttgart, Germany. I was also accompanied by a team of five students from the University of South Carolina. We had been invited to participate in a three-day workshop whose purpose was to foster a better partnership and collaboration between industry and academia, as well as to promote the international management associate program at Daimler Benz. Almost all of the future managers at Daimler Benz are hired from within this program, and subsequently trained for a period of 12-15 months.

Daimler Benz Corporation is one of the largest firms in Germany. In many ways, it is representative of the German manufacturing sectors's reputation for high quality products and leading-edge engineering practices. It is a parent firm that has as many as 23 different divisions and lines of business, most of which are focused in manufacturing. They also have a growing financial services division. Within manufacturing, we all know about the famous Mercedes Benz division that makes passenger cars and light commercial vehicles such as trucks and buses. Freightliner, which has the largest market share of commercial trucks in the U.S., is owned by the Daimler Benz Corporation. They are also an important partner in the Aerobus Consortium in Europe, along with manufacturing rail cars, space stations, etc. In many ways, the Daimler Benz Corporation is similar to and often compared with General Electric Corporation in the U.S. because of its diversity of businesses, its stature in international markets, and the strong presence it has within the manufacturing sector in Germany and abroad.

These workshops were initiated by Daimler Benz four years ago. They are conducted once a year, and usually attempt to assemble a truly international team of participants representing different regions of the world. As such, no more than one university from any given country is invited in any given year. There were four other universities invited to attend the workshop this year. They were McGill School of Business from Montreal, Canada; RWTH Aachen (Institute of Technology from Aachen), Germany; Stockholm School of Business from Stockholm, Sweden; and Warsaw University of Technology, Warsaw, Poland. As can be readily seen, there is a greater emphasis placed on inviting universities from the European continent. Such trends have also been repeated in the past. In fact, this was the first time Daimler Benz had ever invited a university from the U.S. This was surprising, considering the large number of excellent business, engineering, and industrial management schools that exist in the U.S.

The students accompanying me on the trip are in the second year of their study, and will graduate in May 1998. They be-

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long to our well regarded Master of International Business Studies (MIBS) program. This program has several language tracks, and for obvious reasons we selected students from the German track to represent our university at this workshop. As part of their degree program, at this time they are all pursuing six-month-long internships with such prestigious firms as Bayer, Audi, BMW, and Daimler Benz Aerospace in various regions of Germany. Apart from being fluent in German, they have also had the experience of being immersed in the German culture and work environment for an extended period of time.

The three-day workshop started with a field trip to the Sindelfingen plant located on the outskirts of Stuttgart. This plant is one of many Mercedes plants in that area, and primarily manufactures approximately 1,800 E-series and S-series cars per day. The trip through the body shops and assembly plants was an interesting and educational one. (In order to retain focus for this article, I will not discuss it in detail here.) Needless to say, the workshop participants were quite impressed with the efficiency and cleanliness with which the Mercedes factories were running.

A central activity of the workshop was to evaluate the capabilities of students from each university through a case analysis.

After the three-hour plant trip, we adjourned that evening to the Daimler Benz seminar facilities called "Haus Lammerbuckel." This is a corporate building complex about 50 kilometers from the Sindelfingen plant and perched in the Seubian Alps. Apart from conference and seminar rooms, it also has a 400-room capacity for guests of Daimler Benz, a huge dining room facility, and multiple avenues for games and relaxation of guests such as bowling alleys, heated swimming pools, saunas, table tennis, etc. Built around 1973, Haus Lammerbuckel has served Daimler Benz well over the years for hosting workshops, strategic planning and board meetings, and annual Christmas parties.

A central activity of the workshop was to evaluate the capabilities of students from each university through a case analysis. These cases were actual strategic or manufacturing related projects that had either already been partially implemented or were currently under consideration by the Daimler Benz board of directors. For example, one case study focussed on whether Mercedes should build a plant in the Far East as part of its expansion into the Asian markets. The major benefit would be a saving in transportation costs and the avoidance of the huge tariffs that would otherwise be incurred when cars are imported into the country.

Another case study was within the domain of Daimler Benz Aerospace, and focussed on the product lines and strategies that Airbus Consortium would need to develop in order to better compete with the merged Boeing-McDonnell Douglas behemoth. A third case study focussed on creating the pricing structure and strategies for the Daimler Benz buses and trucks in Europe, with the objective of gaining a bigger market share. The fourth case study focussed on evaluating two different production monitoring methods that could be used for assessing the finished quality of assembled body parts.

Finally, the fifth study was based on understanding how the capacity of an engine plant could be expanded by 50% to meet future demands. Each case was moderated by a senior Daimler Benz manager who had been involved in some capacity with their own project as it was conceptualized and implemented in the past.

The students were divided into five teams, with one representative from each country on any given team. These teams were formed on the first night of the workshop. On the basis of mutual consultation and discussion, students from each university were allowed to select the case project that would be of most interest to them. As an ice breaker, a group game was played where each team built within 40 minutes an "egg launching" contraption with paper and tape materials. The team that could launch a hard-boiled egg the farthest without breaking it would be the winner. Students learned about the personalities of their team members, and how well they could work together in achieving a common team goal.

The entire second day was consumed in creating solutions to the case studies. The professors accompanying the student teams could visit and observe different case discussion sites, but were generally discouraged from participating in the decision-making process. Instead, the professors held a panel discussion with another set of managers from the manufacturing plants. The agenda was to foster a mutual exchange of ideas, and also to identify opportunities for future collaborative research and consulting work between the firm and the universities. A tour of the Daimler Benz research center in Ulm was arranged in the afternoon to further promote this objective.

The case moderators stayed with the students the entire day. They answered their questions, and kept supplying them with the relevant data as requested by the team members. At the same time, the case moderators could observe the thought processes and educational backgrounds of students in detail. As the case solutions were created, students also made decisions on how to present the solutions the following day to all the workshop participants, other Daimler Benz executives, and members of the international management associate program. The presentation styles, and the management of internal conflicts of opinions and personalities, varied from team to team. It was easy to see that not all teams achieved a similar degree of cooperation between the team members. Different cultural and educational backgrounds, along with varied work experiences, translated into interesting group dynamics and interactions.

Thus, from the Daimler Benz perspective, the workshop was not only a wonderful opportunity to showcase the corporation in a very positive light, but also to examine the strengths and weaknesses of educational programs of target universities. Wherever possible, the senior managers who served as the case moderators were able to identify desirable future managers from this year's participants. For these managers, not only was the analytical thinking important, but also how well they functioned in a group setting.

Based on my participation in the workshop and discussions with Daimler Benz managers, I offer the following observations that hopefully provide some insights into how this company is trying to become more competitive, and also forge better

academia-industry partnerships. While one company does not speak for the entire manufacturing industry in Germany, there is anecdotal evidence and other reasons to believe that these trends and observations may not be isolated or limited to Daimler Benz alone (Limprecht and Hayes 1980; Serrill 1997).

Future managers are frequently hired from engineering schools rather than predominantly from business schools as is usually done in the U.S.

Even though only two schools in this year's workshop were from engineering institutions, the proportion has been larger in some of the previous years. In addition, invitation to a workshop does not necessarily mean that hiring patterns are evenly distributed among all the participating universities. Several of the international management associates who I met and who are currently working for Daimler Benz were engineers. The insistence of German firms on a sound technical background or other related skills for their managers, is consistent with how line workers spend several years in apprenticeship training programs and as "practicants" in the firms where they eventually get hired. Consequently, it is not only the engineers and supervisory managers, but also the production workers who are well informed about the financial and marketing aspects of their company's business strategy in the long run.

Future managers are hired on the basis of their capabilities with respect to analytical skills, ability to solve unstructured problems, and ability to function in team settings.

The time and effort expended by Daimler Benz in identifying future managers is considerably more than what is typically involved in visiting university campuses and making hiring decisions on the basis of a short interview. Daimler Benz was truly trying to understand the capabilities of potential recruits at a deep multi-faceted level. This approach is fundamentally more sound, and affirms the value they place on attracting and retaining the best candidates in the market place. Over time, this initial investment pays for itself again and again.

Research and Development (R&D) activities are quite central to the mission of the firm.

Daimler Benz spends an inordinately large amount of its resources on corporate research and technology development activities. Apart from in-house operations, several collaborative projects are also carried out with technical universities and polytechnics. All research is applied in nature, and spans several diverse areas in research centers located around the globe. There is a central research center in Ulm and several others scattered throughout Germany in cities such as Berlin, Frankfurt and Munich. The laboratories are organized according to their distinctive competencies. The center in Shanghai, China carries out research on packaging microelectronics. A research center for information systems has been established in Bangalore, India, and another one in Palo Alto, California for housing the "society and technology" group that forecasts the kind of cars and other products that will be in demand in years to come. Together, these research centers have kept Daimler Benz on the cutting edge of technology and produced several industrial innovations. For example, CAD wire frame and virtual reality models are used to create and analyze new vehicle designs. Safer braking systems are implemented with the help of planar technology. Buses that provide zero emissions and a smooth ride are designed to operate on fuel cells. New technologies are also being created in the areas of more fuel-efficient diesel and aircraft engines, high-performance fiber reinforced composite materials, telematics and telecommunications, environmentally sensitive new materials based on natural agricultural products, etc. Such a broad based commitment to research and development is very much an integral part of the strategic planning at Daimler Benz.

There exists a dual focus on cost reduction as well as engineering innovations.

The culture at Daimler Benz seems to have definitely shifted away from just engineering great products to also focusing on the cost of product designs. The challenge is thus to achieve a balance between cost control and leading edge product designs that provide the firm a competitive advantage in terms of its product quality, performance, and reliability. This dual focus may perhaps partially account for how Daimler Benz turned a $3 billion loss in 1995 into a $1.65 billion gain for the first six months of 1997 (Serrill, 1997).

Future growth and management hiring plans are driven by a strong global vision.

The German economy is very much dependent on global trade. Much of the growth at Daimler Benz is fueled by opening up foreign markets, and in many cases building or acquiring manufacturing plants overseas. The latest example of this overseas expansion is the Alabama plant of Mercedes that exclusively builds the M-series sports utility vehicles. Such actions, along with aggressive marketing campaigns in global markets, have allowed Daimler Benz to increase its exports by 25% since 1995. As global supply chains start circling the globe, there is an ever increasing need for smart and well-qualified individuals to manage these complex operations and supply chains. In order to be successful and identify profitable opportunities as they emerge, these managers truly need to possess diverse international backgrounds and engage in an "out of the box" thinking. The international management associates program of Daimler Benz and its associated workshops is a very good starting step in identifying such managerial talent.

There is much that we can learn and implement from the management hiring, and R&D practices of German firms such as Daimler Benz. They constantly strive to interact on multiple dimensions with universities and other centers of learning. Such an interaction creates synergistic research projects, future employees, and an exchange of ideas on how these potential future employees can be better trained to fit the needs of the industry. I can think of few other instances in which relevancy of academic efforts can be better served.

If judiciously used, corporate funding for institutions of higher learning can generate valuable human capital and a "win-win" situation for both the firm as well as the academic community. In turn, this human capital and the knowledge created with it often becomes the intangible wealth of a corporation. There are few better ways

to nurture and grow that capital than to start out with good seeds for the future crops of executives. A long-term perspective is needed in order to truly subscribe to this view point. However, one cannot afford to think otherwise in today's changing world where boundaries between nations have shrunk, and where the ability to nurture and grow such human capital may be the only way to profitably compete and survive in the long run. ■

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