



**Analysis of Effective Job Recruiting Tools
for Chemical Engineers within
Dow Chemical Europe**

**Andrea Ferrari, Anna Postol, Jeong-Hwan Choi,
Joanna Izdebski, Philipp Frickhinger, Rustam Vagabov
Remigiusz Smolinski**

**Jahnallee 59, D-04109 Leipzig
Tel. (+49) 03 41/98 51 60, Fax (+49) 03 41/4 77 32 43
Internet: <http://www.hhl.de>**

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1. INTRODUCTION

1.1. Chemical Industry Situation and Dow Chemical Company.

Michael S. Teitelbau argues in his article “Do we need more scientists and Engineers?” Same questions are being asked by companies employing engineers in European countries. In the Teitelbau’s article, he mentions that in this fast moving age of technology revolution, whole industries and lifestyles are changing, Chemical Engineering is no exception.¹ Chemical Engineers have become a central part of this change and must respond to the changes of chemical process industries and are doing that by adapting their skills and knowledge. Chemistry is the root of many innovations in information technology, medicine, housing, clothing, etc. The fundamental existence of Chemical Engineering is to respond to these changes and adapt to society’s needs. Many other companies are “stealing” this talent away from the chemical industries. The main goal of these industries has to be to find ways to attract engineering students and make these careers attractive relative to the alternatives, for this is the only sustainable way to ensure a steady supply and prevent a gap in engineering needs. In order to find out some of the problems in recruiting talented engineers, we need to examine and research what kinds of strategic HRM has to be conducted. To answer these questions, theoretical and experimental research is being conducted in this report. We will be focusing on the efforts of a particular firm, the Dow Chemical company, one of the biggest chemical companies.

Dow Chemical Co. is a leader in science and technology, providing innovative chemical, plastic and agricultural products and services to many essential consumer markets. With annual sales of \$40 billion, Dow serves customers in 175 countries and wide range of markets: food, transportation, health and medicine, personal and home care, building and construction, among others.

With a steady rise of the aging staff and a “talent war” for the number of graduating engineering students, Dow Chemical Co. recognizes that its company’s strategy of innovation and growth depends on the knowledge and enormous potential of its employees. In other words, on the ability to attract, develop and retain the best talented individuals who offer the right mix of skills, creativity, mindset and diversity of

¹ “Do we need more scientists?”, Michael S. Teitelbaum, The Public Interest, No. 153, pp. 40~53, National Affairs, Inc. Fall 2003

thinking. Although the company seeks to attract engineers from many different engineering fields, for the purpose of this project we will focus only on the Chemical Engineers.

1.2. Chemical Engineer Profile

To start, we have to look and see who are Chemical Engineers? Chemical Engineers build a bridge between science and manufacturing, applying the principles of chemistry and engineering to solve problems involving the production or use of chemicals. They design equipment and develop processes for large-scale chemical manufacturing, plan and test methods of manufacturing products and treat byproducts. They also supervise production. Chemical Engineers are employed in a variety of manufacturing industries other than chemical manufacturing, such as those producing electronics, photographic equipment, clothing, and pulp and paper. They also work in the healthcare, biotechnology, and business services industries.

The knowledge and duties of Chemical Engineers overlap many fields. Chemical Engineers apply principles of chemistry, physics, mathematics, and mechanical and electrical engineering. They frequently specialize in a particular chemical process such as oxidation or polymerization. Others specialize in a particular field, such as materials science, or the development of specific products such as fertilizers and pesticides, automotive plastics, or chlorine bleach. They must be aware of all aspects of chemical manufacturing and how it affects the environment, the safety of workers, and customers. Because Chemical Engineers use computer technology to optimize all phases of research and production, they need to understand how to apply computer skills to chemical process analysis, automated control systems, and statistical quality control.

Approximately 33,000 jobs were held by Chemical Engineers in 2002. Manufacturing industries employed 55 percent of all Chemical Engineers.² These industries consist primarily of chemicals, electronics, petroleum refining, paper. The remaining percentage of engineers worked for professional, scientific, or technical

² "Chemical Engineers", Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2004-05 Edition, on the Internet at <http://www.bls.gov/oco/ocos029.htm> (visited February 20, 2005)

service firms which design chemical plants and/or perform research and development for other services.

When we look at the job outlook little or no growth (0~2%) in employment of Chemical Engineers, is expected through 2012.³ Although, overall employment in the chemical manufacturing industry is expected to decline, chemical companies will continue to research and develop new chemicals, as well as create efficient processes to increase outputs of existing chemicals. Among manufacturing industries, pharmaceuticals may provide the best opportunities for jobs seekers. Many of the jobs for Chemical Engineers, however, will be in non-manufacturing industries, especially service industries such as research and testing. Although no new jobs resulting from industry growth are expected, many openings will result from the need to replace Chemical Engineers who transfer to other occupations or retire from the labor force.

Salaries of US Chemical Engineers were reviewed and an average annual income for a Chemical Engineer in the year 2002 was reported to be around \$72,490. The middle 50% earned between \$58,320 and \$88,830, while the lowest 10% earned less than \$48,450, with the highest 10% earning above \$107,520. According to a 2003 salary survey by the National Association of Colleges and Employers, bachelor degree candidates in Chemical Engineering received starting offers averaging \$52,384 a year, master degree candidates averaged \$57,857, and Ph.D. candidates averaged \$70,729. There seems to be no significant difference among salaries reported for engineers in Europe.⁴

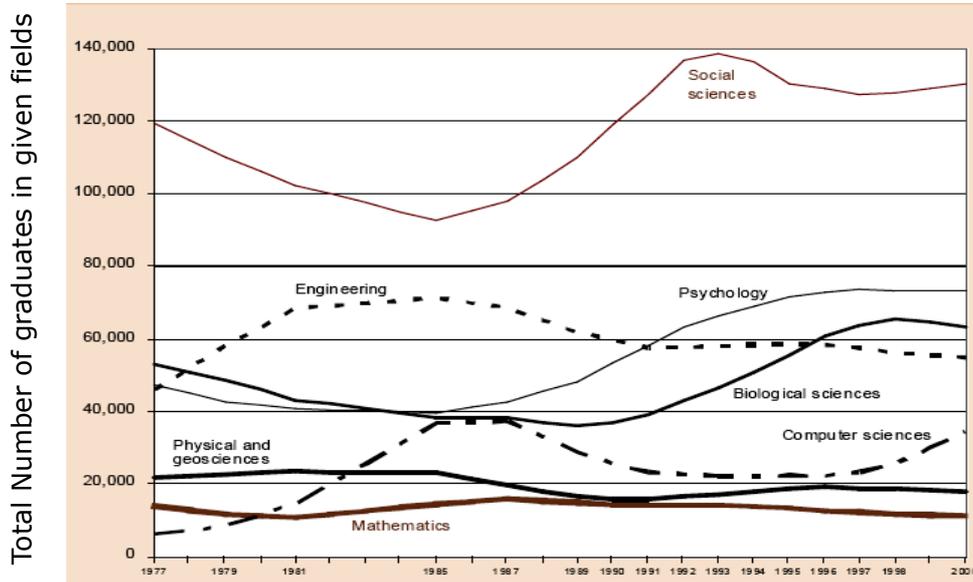
1.3. Changing Demographic Profile and Chemical Industry HR Trends

A demographic analysis was performed to See if and why there might be vacancies of Chemical Engineers in the chemical industry. In the NSF's recommendation, some of researchers (Richard Ellis and George F. McClure) argued about the data's validity in "U.S. Science and Engineering Careers outlook: Are we looking at the future in the right light?" In the demographical analysis conducted by the

³ "Chemical Engineers", Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2004-05 Edition, on the Internet at <http://www.bls.gov/oco/ocos029.htm> (visited February 20, 2005)

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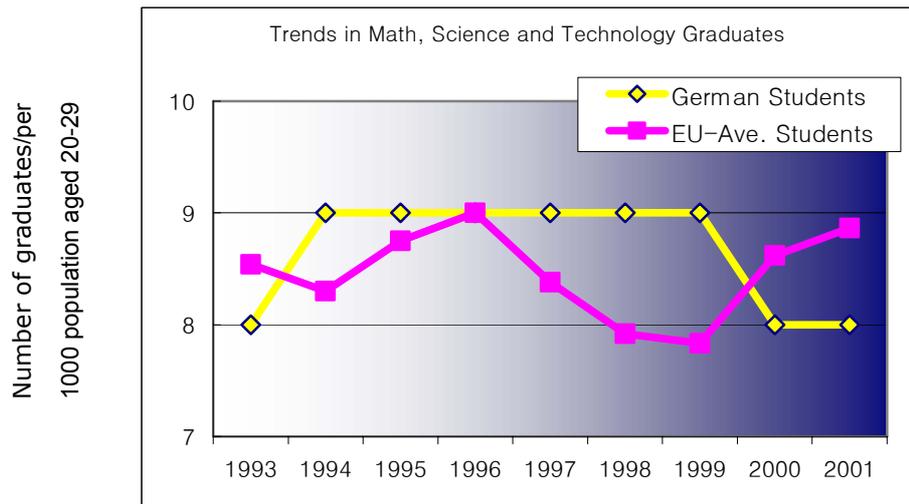
US society, there are many analyses for the demographic changes and the resulting void off engineers and scientists.⁵



Source: “U.S. Science and Engineering Careers outlook: Are we Looking at the Future in the Right Light?”, Richard Ellis and George F. McClure, NSF report, 2003

Exhibit 1. Demographic Analysis of US Science and Technology Labor Market

Looking at Exhibit 1, we observe the cyclical fluctuations among the numbers of US students majoring in different fields: Social sciences, Computer science, Biology. Psychology, however there has been no cyclical behavior among number of students majoring in Engineering since a drop in mid 1980’s.

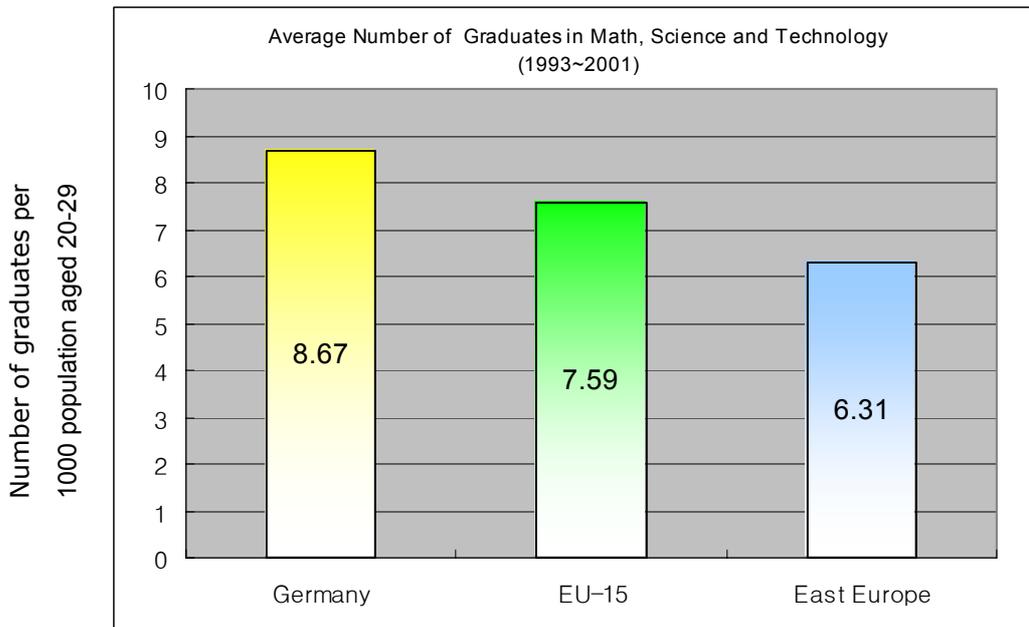


Source: Education across Europe 2003, European Communities

Exhibit 2. Trend in Math, Science and Technology Graduates in Europe

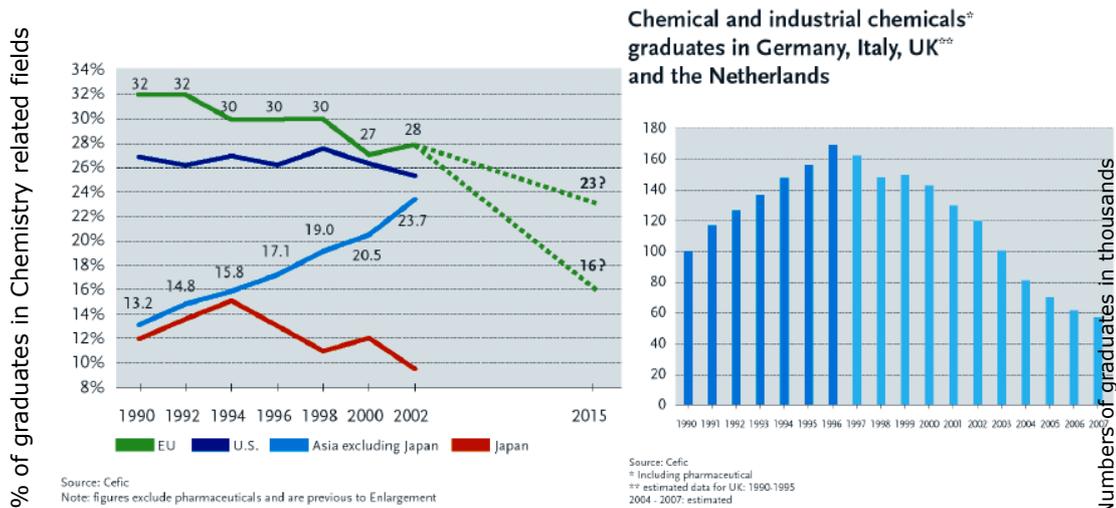
⁵ “U.S. Science and Engineering Careers outlook: Are we Looking at the Future in the Right Light?”, Richard Ellis and George F. McClure, NSF report, 2003

Looking at Exhibit 2, we see that a similar pattern holds true for the phenomenon in Europe as well. The number of graduates in Math, Science and Technology has recently dropped, and although Germany still has an above average number of Graduates in these fields (See Exhibit 3), the number of graduates in the scientific fields is dropping and is expected to drop even further by the year 2015 (See Exhibit 4). On the European graduate market, the statistics look better than anywhere else, although there exist a general declining trend, the European market shows growth in recent years.



Source: Education across Europe 2003, European Communities.

Exhibit 3. Trend in Math, Science and Technology Graduates in Europe



Source: CEFIC 2003

Exhibit 4. Anticipated Chemical Engineers Graduates in future

The dwindling number of graduates in the scientific fields combined with aging staff and an increased global need of different business activities demanding scientific expertise, Chemical Engineering experience and creativity has resulted in a fierce competition for this talent in the current global market. As already mentioned, the ever increasing size, scale and automation is requiring engineering solutions in all aspects and many different industries.

To keep up with ever-increasing competition for the long term, companies are realizing that the success of their company depends in large part on the commitment, motivation and skills of the employees. Reviews of current HR policies and strategies are conducted and successful marketing campaigns are administered in order to offer more attractive employment contracts for these young people.

2. PROJECT

Recognizing the critical role of the Universities as a source of talent is crucial to company's success, Dow Chemical Co. has devised a strategy to review Dow's existing approach to University Relations. Fourteen European Key Universities (See Appendix 1) have been identified by the company with an aim of bolstering Dow's presence and status among the targeted university's student groups. In order to better promote Dow Chemical Co.'s image, interpret the existing Dow reputation to shape a brand for the company, which will captivate the best talent from these key universities, Dow has sought assistance from the HHL Leipzig Graduate School of Management. A team of six MBA students has been assigned to identify and create the appropriate tools through which to communicate this brand.

2.1. Project Description

Dow's HR strategy is unequivocal: the company's future success depends on its ability to attract develop and retain talented individuals who offer the right mix of scientific expertise, experience and creativity. Competition for the talent that Dow seeks to hire has always been strong and is certain to increase in the future. Within the EU countries, an aging population will see a steady rise in the number of employees retiring from the workforce, while the number of students graduating in the disciplines from which Dow has traditionally recruited new talent is gradually declining.

To compound the issue still further, right now Dow Europe has a disproportionately low number of employees age under 35. Less than 17.5% of employees fall into that age category-compared to around 38% who are aged between 35 and 44. Unless the balance is restored, a "knowledge drain" is inevitable as older employees retire or move out of the company without fully leveraging their knowledge and their experience to the company's younger talented employees. Graduate recruitment is a critical component of Dow's attempts to fill that void. And, as mentioned earlier, the pool of graduate talent being targeted by Dow is declining.

In the first part of the HR project conducted by HHL students together with Dow Chemical Co. (October to December 2004), a "Market analysis on job recruiting web-sites and student networks in Europe" was done and aimed at identifying the most effective tools for reaching the best talent among Dow's key Universities in Europe.

Through identification and analysis of existing job recruiting web-sites and

student networks on the European level, this new complementary project focuses on completing research and performing analysis of activities dealing with complete list of marketing channels, as well as Benchmarking Dow's chief competitors' activities, in the field of engineering within Europe. A thorough cost analysis of the existing marketing tools has also been performed. A survey questionnaire (See Appendix 3a) has been developed and carried out in cooperation with Dow Chemical Co. In order to provide information on Interns, career preferences and the best recruiting methods for Chemical Engineers were investigated via survey. A second questionnaire (See Appendix 3b) has been designed and will be completed by the key university students at a later date. As part of the ongoing project, the second questionnaire aims at establishing a clear criteria for identifying different marketing trends and provide guidelines for implementing a European staffing plan integrating business, functional, geographic and diversity needs, as well as to define a process to keep contact with students and make them available for hiring needs. Both projects are part of the Dow European University Relations efforts, to ensure that Dow has a well-established identity profile strategy/marketing communications plan that supports strategic partnerships at key universities.

A progressive identification and analysis approach has been adopted for the first part of this Project. Specific milestones are being identified on an on-going basis and are reviewed, in order to ensure that the most appropriate directions are followed in determining the best possible marketing mix and the most effective means of achieving the best value for the money spent.

2.2. Solutions

In our effort to deliver the best results to the tasks set by Dow Chemical Co., we conducted analyses of three core elements: Benchmarking, Cost, and Efficiency. The results were incorporated in creating of an optimal marketing plan, allowing distribution of channels by maximizing effects and minimizing costs.



Exhibit 5. Solution concept

2.2.1. Competitor Benchmarking and Marketing Cost Analysis

Benchmarking is the most reliable way of measuring company's performance against that of its competitors and to identify opportunities for continuous improvement. Cost analysis is a tool that allows you to evaluate the pros and cons of engaging in a particular activity. It attempts to identify and express all the effects of the project in monetary terms. Although cost cannot be the only base for decision making, it is a valuable tool which when united with Benchmarking allows the company to incorporate the most effective and efficient strategy.

An analysis of Dow Chemical Co.'s relevant competitors was conducted based on the scope of the following activities:

- 1) Competitors' Internet recruiting using corporate website and online recruiting platforms,
- 2) The use of advertisements and job postings in Professional Magazines and Career Books in the Chemical Engineering field,
- 3) Individual cooperation with Student Organizations that nurture an interactive approach to reach the best potential talent,
- 4) Participation in Career Fairs and On-Campus presentations at various European universities,
- 5) Cooperation and Involvement with Universities such as sponsorship, academic chair endowments and funding.

Companies, considered by Dow Chemical Co., to be its relevant competitors were used, as such, through out this project and these include; Shell, DEGUSSA, Unilever, L'Oreal, BP, Bayer, Exxon, ELF, TOTAL, Colgate, Dupont, BASF.

The Benchmarking study was conducted by Internet research, telephone interviews with specific companies, universities and print media and by contacting representatives of the 14 Key European Universities. In conducting the benchmark analysis, information was gathered which was later used for the Cost Analysis of the many different recruiting and marketing tools such as:

- 1) Job postings
- 2) Advertisements and banners on recruiting web pages (i.e. Monster.com)
- 3) Professional Magazines & Career Books,
- 4) On-Campus presentations

5) European Career Fairs.

Analysis & Benchmarking of Competitor’s Corporate Web Pages

A survey of the Dow Chemical Co.’s competitors’ activities/corporate web-sites and on-line recruiting platforms was carried out. The survey evaluated content, navigation, service, contact and tests using a weighted rating system. All corporate web pages of competitors were visited and graded from 1=very poor to 5=excellent by all six team members. The results of each individual member’s survey were summarized and companies could score a maximum of 30 points.

The criteria used in the analysis were:

1. Accessibility of career page and the easiness of accessing and navigating the site
2. The appeal of the general lay out and the use of fonts, color, web design and multimedia content
3. The level of information provided on career, jobs and training programs
4. The clarity of the online application process
5. The level of Interactivity, such as the presence of chat rooms, possibility to communicate with HR staff, online communities.

The numerical grading allowed a clear ranking of the web pages. (Exhibit 6). Nevertheless, there existed limitations of the survey, due to certain subjectivity of the team members involved.

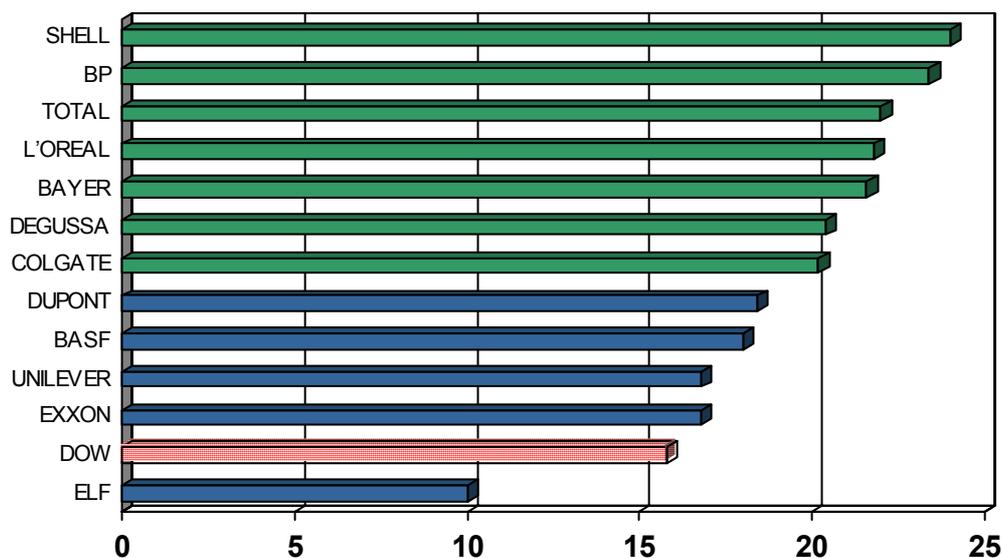


Exhibit 6. Benchmarking result of Company Web-Sites

This approach made it possible to estimate the approximate position of Dow Chemical Co.'s corporate web-site, especially their career sections. However, the validity of the data is limited because the research was conducted by students working on this project.

Internet Recruiting

It has been observed that all companies are actively pursuing potential employees using their own corporate website and the online recruiting platform. Reviewing the navigation and application process of competitor's web sites provided insight into the layout and effectiveness of Dow Chemical Co.'s web page. Dow Chemical Co. scored relatively low in comparison. This low position (See Exhibit 6) shows that there is potential for improvement. The following improvements should be performed in order to make Dow Chemical Co. website more attractive:

- 1) Software and technical improvements (Appendix 4) are recommended in order to improve the usability and navigation attributes of the Website.
- 2) Links to press releases should be established such as used by BP Company, which allow for increased depth of information about the company.
- 3) A Calendar listing On-Campus presentations and special events that are provided by Dow could be used to inform potential applicants about further interaction possibilities with Dow Chemical Europe. This is currently being done by Shell. This type of HR activity provides insights into the working environment of the company. L'oreal Company currently uses a similar concept.
- 4) A Chat line with HR staff would provide means of higher level of individual feedback and insight on the company by potential applicants.
- 5) Quarterly or bi-annually newsletters create a database of potential future employment candidates and can be used as a platform continuous communication with the future candidate. The establishment of a communication platform for chemists would allow creating of an interactive community with a free flow of information exchange and feedback. Certainly all these measures have to be carefully designed and implemented in order to have a positive result.

On-line Recruiting Platforms

The most helpful measurements of platform performance address the traffic a site attracts. The analysis showed that the most widely used Internet recruiting sites are Monster.com & Jobpilot.com(see Appendix 5). There was very little evidence that supported the use and effectiveness of special recruiting sites such as www.newscientist.com.

Professional Magazines & Career Books

All competitors reviewed were involved in placing ads and job postings in the relevant print media publications. However, due to the limited reach of the publications and the little interaction and control possible, it is not possible to determine which publications are seen as the most widely read yet. Publications which list more than one competitor include:

- 1) Karriereführer Chemie: contains placements by competitors like: BASF, Unilever, Bayer,
- 2) Eurograduate: which contains Dupont, Degussa, BP.

All media channels listed in Appendix 6, show some involvement by the given competitors. In general, it must be stated that there is a high involvement of competitors' in the field of print media in contrast to Dow Chemical Europe's use of this media.

Cooperation with Student Organizations

There seems to be medium amount of involvement in cooperation with student organizations and chemical engineers. All student organizations' benchmarking results are provided in Appendix 7, but no clear prominent student organizations could be identified, which would be of any significant importance and which has a large enough size and influence to be used in attracting a wider number of engineering students.

Cooperation with Universities

It has been observed that more companies are increasing their presence at universities (See Appendix 8), by providing on-campus presentations, scholarships, or research programs up to open financial endowment of academic chairs. It has become clear that competitors have adopted the same approach as Dow Chemical Co. to identify

one or two universities and then start to actively build a relationship with this university on the quest to locate and recruit the best talent.

Career Fairs

10 relevant career fairs have been identified in Europe in the field of chemical engineering (See Appendix 9) However there seems to be very little involvement by Dow Chemical Europe and its' competitors in this field. It has to be stated that only fairs with a relevant size and geographical reach have been selected. After having established the main communication channels, advertisement costs were identified for each relevant channel. Those results give a detailed overview of the various players and the costs.

Cost Analysis

The following methodology was used to obtain the listed results. First, a standard bundle consisting of on-line registering (100 jobs /year), advertising on-line (Banner, Newsletter /month), advertising in magazine (Full-page), one-day career fair participation (10sqm) and two hour on-campus presentation was made. Average cost of 21 on-line recruiting platform was calculated. Similar process was conducted for 11 magazines, 7 career books, 10 job fairs and 14 universities on-campus presentations.

The result of the Cost Analysis (See Appendix 10) was then calculated as an average of all relevant examples as shown in Table1:

Recruiting Web Pages	100jobs per year	€12,282
	Banner & newsletter per year	€ 1,335
Professional Magazines	1 advertisement Full page	€ 3,294
Career Books	1 advertisement Full page	€ 3,026
Career Fairs	10 sqm booth per day	€ 2,347
On Campus presentations	2 hrs	€ 899

Table 1. Average Cost of Marketing Channels

2.2.2. Efficiency Analysis.

Graduate recruitment is a critical component of Dow Chemical Co.'s attempt to fill the void for a low number of Chemical Engineering employees. Excellent education, especially at the key Universities that Dow Chemical Co.'s European University Relations Team has cooperation with, combined with a practical Internship which supplements the theory learned, provide the best value for employment success for both the employee and the employer.

Internships offer a great opportunity to gain practical experience for the student, and the company, in return, gains many new ideas resulting in a beneficial exchange for both. This synergy was used as a base for a questionnaire survey that was carried out in cooperation with Dow Chemical Co. Interns with the aim of discovering what are the most effective marketing tools and the best way to recruit new employees. A survey questionnaire was designed (See Appendix 2a) and was distributed to Dow Chemical Company's Interns in Europe. This survey was distributed via E-mail and feedback was received from Internship students directly. The questionnaire was composed of short questions, ratings, and comments.

In this research, questions and hypotheses, described in Table 2, have been addressed to analyze the effectiveness of marketing channels

Questions	Hypothesis
What kind of marketing channels are most effective?	Internet related channels are most effective channels
What kind of industry is attractive to Chemical Engineering graduates?	Energy and petrochemical industries are most preferred for Chemical Engineering graduates
What kind of recruiting channels are active to get job information?	Internet and career books are active for getting job information
What kind of recruiting web-pages are most effective?	Monster.com is the most preferred job recruiting web-page
Are there any differences of preferred recruiting methods in different countries?	There are many differences in preferred recruiting channels in different countries

Table 2. Basic Questions and Hypothesis

About 40 Interns, from 8 different countries (Germany, France, Spain, Italy, UK, Holland, Switzerland, Scandinavia) participated in the survey (See Exhibit 7.a).

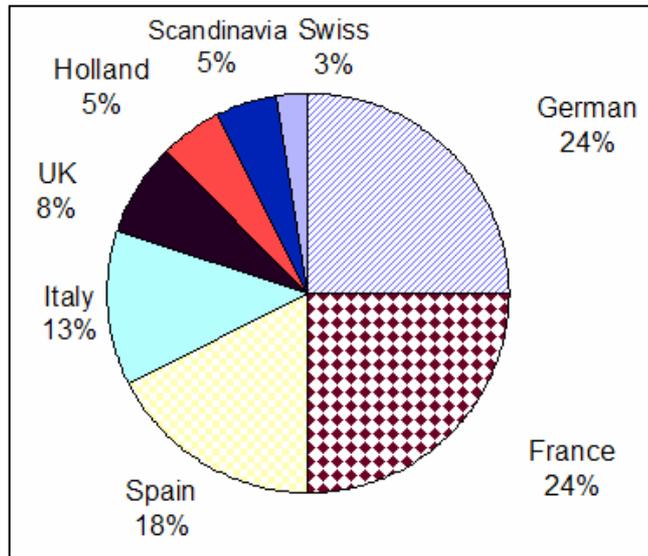


Exhibit 7.a. Nationality

The Interns provided information on themselves, their career preferences, their job search methods and suggestions as to what are the most effective methods of

securing an Internship and increasing company awareness at their university. Participants were asked to select their preferred channels of recruiting, as well as, rate the most used web-sites. Competitor actions and presence at these universities was also measured.

The average age of the participants was 24.1, there existed even split of genders, proving that there is no gender differences in selection of Interns at Dow Chemical Company. On the average, the students were in their 7th semester of study.

With 73% of Interns majoring in chemical related subjects, Chemical Engineering was the dominant major of study (52%), followed by Chemistry (29%), Process Engineering (12%), Electric Engineering (5%), and Mechanical Engineering (2%). About 25% of Interns had a second major, either in business, banking or finance. Once again, this confirms the previously described changing

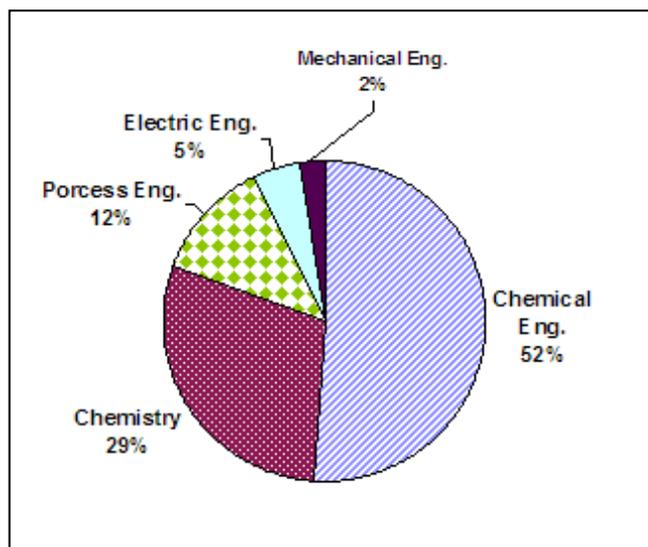


Exhibit 7.b. Major of Study Compositions

profile of Chemical Engineers today and the need for a greater variety of knowledge and skills. (See Exhibit 7.b)

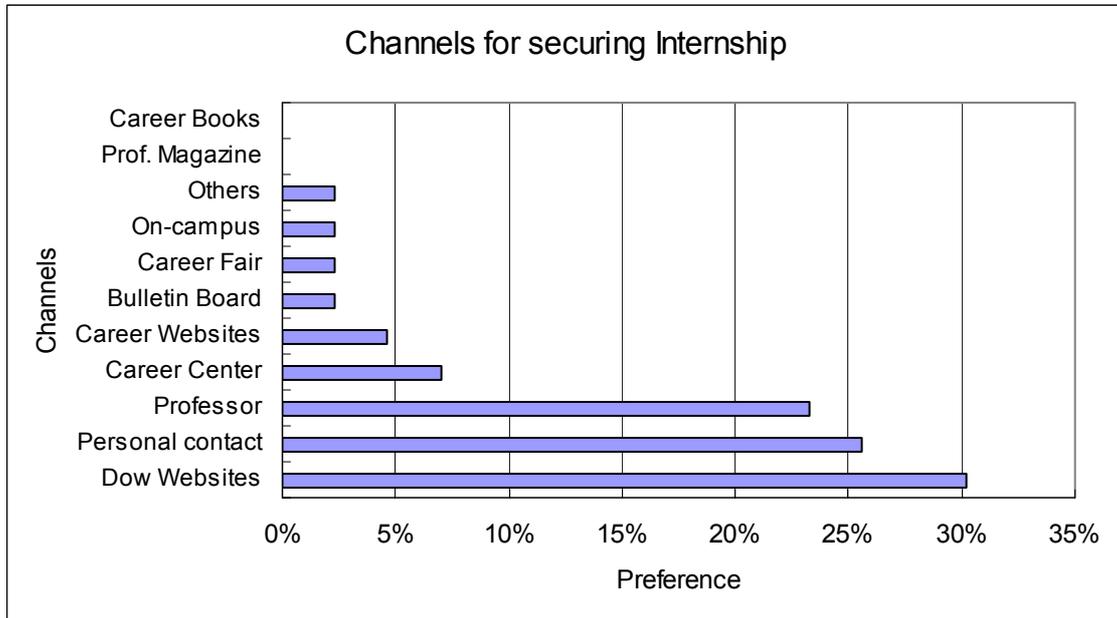


Exhibit 8. Recruiting Channels of Intern Job Information

According to the survey, company website was the most important recruiting channel leading to Internship, followed closely by personal contacts and professors. Career centers, career websites, bulletin boards, and company presentations ranked as being far less important (See Exhibit 8). These three channels represent more than 80% of total Internship recruiting channels used by Interns during job search. These findings present some conflicting results.

In retrospect, most students voiced a greater need for company awareness and suggested that a much more visible university presence was needed (See Exhibit 9), this however conflicted with the low effectiveness ranking of the company presentations. The difference between the low ranking of company presentations and an outcry for more university presence can be attributed to the low levels of company participation on campus and therefore an inappropriate venue for securing an Internship. One can assume that once companies adopt a more visible approach to increase awareness and increase on-campus participation, the effectiveness levels of company presentations will go up.

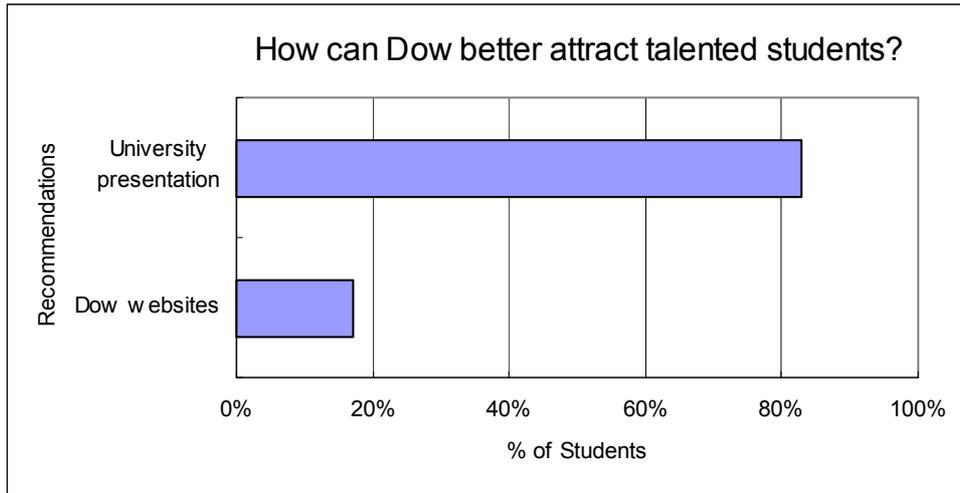


Exhibit 9. Recommendation for improving Recruiting

Professional magazines and career books, although reviewed by some students, were not an effective marketing channel.

As far as their future job preference was concerned, most students expressed their desire to work for a petrochemical company, followed by energy, consumer goods, and automotive industries. More than 50% of students also Exhibited interest in environmental industry, thus proving that “Environmental protection” and “Safety” is a current trend, and place an important criteria in their job search (See Exhibit 10).

There was a generally low company presence at the universities, with Dow Chemical Co. ranking slightly ahead of its competitors. This suggests once again a greater need for visibility and possibility for students to interact with the company.

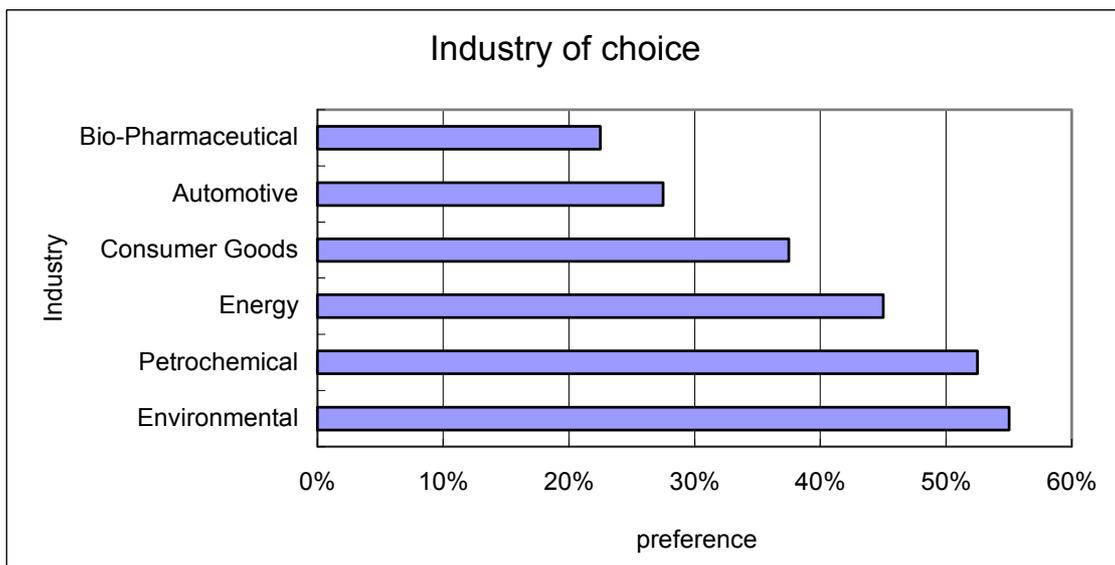


Exhibit 10. Industry Preference of Interns

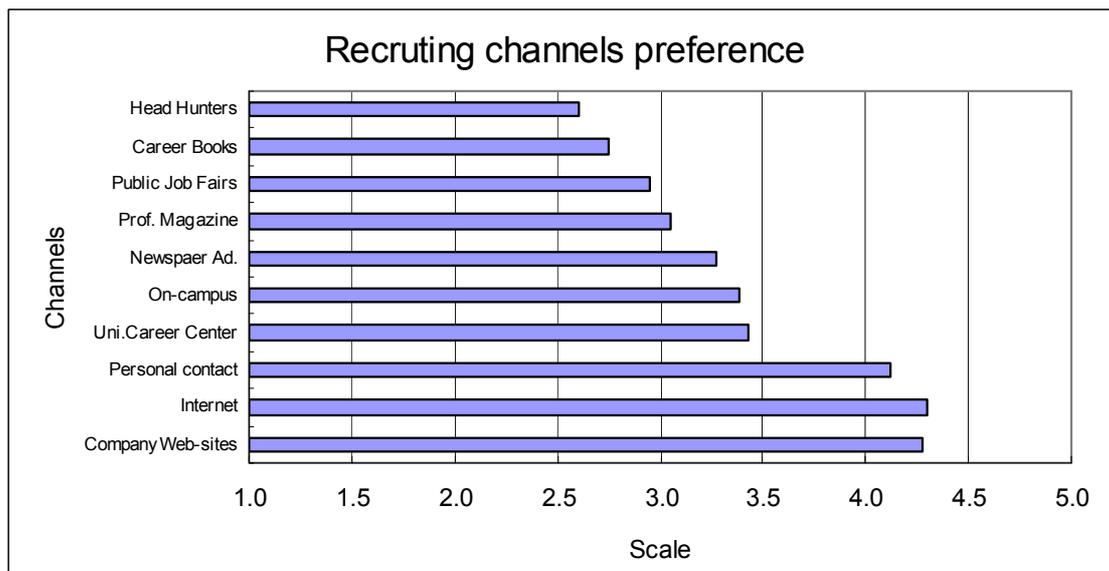


Exhibit 11. Recruiting Channel Preference of Interns

To address the question as to what kinds of recruiting channels are most effective in getting job information, a rating of different sources was used. The results showed that Dow Chemical Co. Interns found the company web-sites, the Internet and personal contacts as the most important channels used during their job search (See Exhibit 11). Slightly lower scores were received for university career centers, on-campus presentations, public job fairs, newspaper ad's and professional magazines. Professional head hunters and career books were the least likely methods used. The lower ranking of career centers and on campus presentations can, once again, be attributed to the low presence and on campus involvement among companies, even though the students would like to see that changes. Also, most universities where the Interns attended did not have any legitimate career center. This notion was further supported by data which showed that UK students, where there is a very established career center tradition, rated this channel as the most effective one.

This suggests that a company hoping to effectively market chemical graduate should focus on improving company website, especially the format, displaying the job information, registering this information on effective recruiting web-page while at the same time developing of better relationship with professors or social communities.

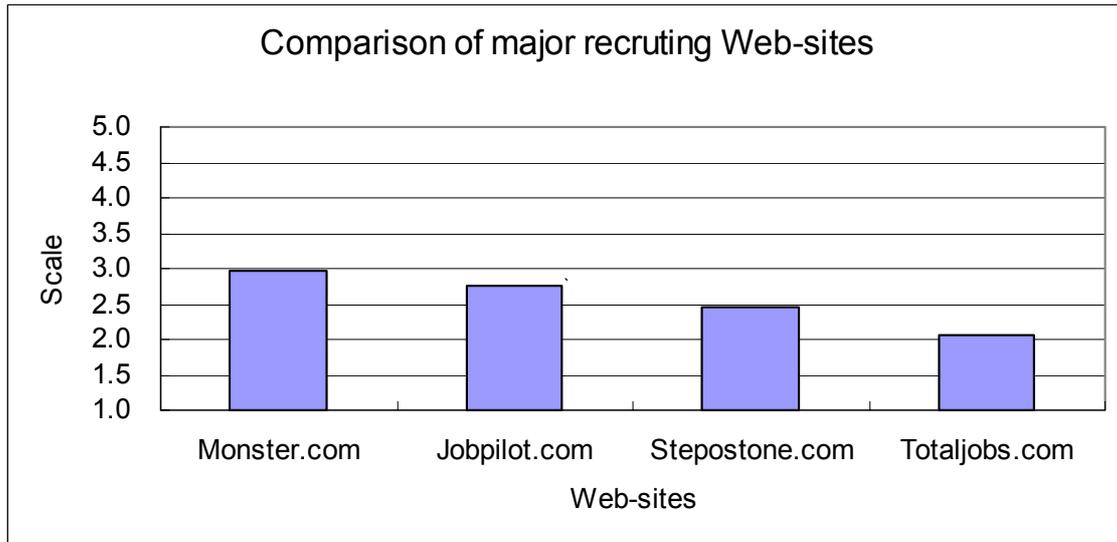


Exhibit 12. Preference of Major Recruiting Web-sites

Exhibits 12 to 14 refer to the Internet recruiting web-sites. Among the most commonly used job search websites, Monster.com was a clear top choice, followed by Jobpilot.com, Stepstone.com, and Totaljobs.com. An interesting discovery was made when comparing how these web-sites were ranked in different countries. It was observed that major differences exist in web-site preferences among various European countries. Italian students generally found their recruiting Internet sites to be of greater importance in comparison, Italian students showed little preference for this channel, but found contact with professors to be very important. This data also supports previously mentioned results where it was observed that Italian students got most their Internships through professors.

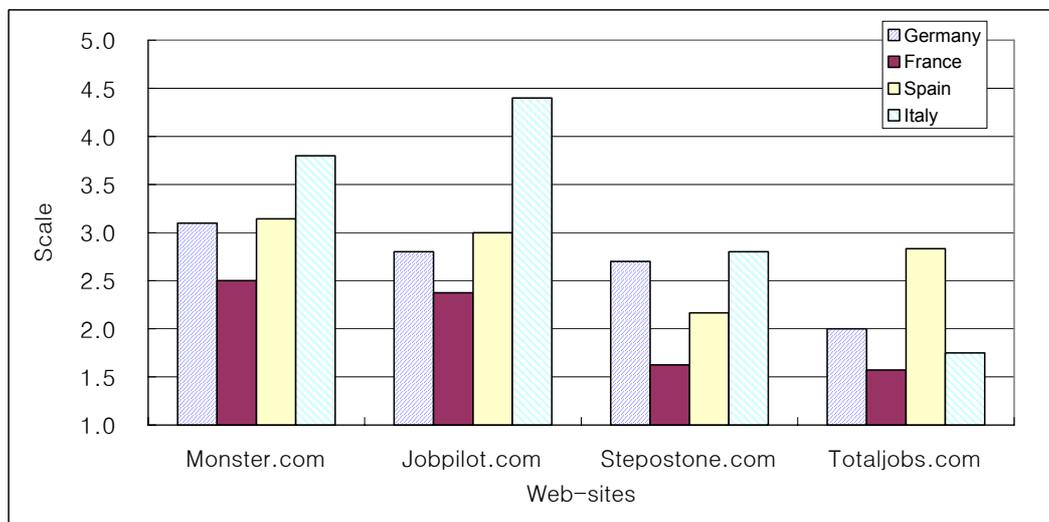


Exhibit 13. Preference of Major Recruiting Web-sites through Countries

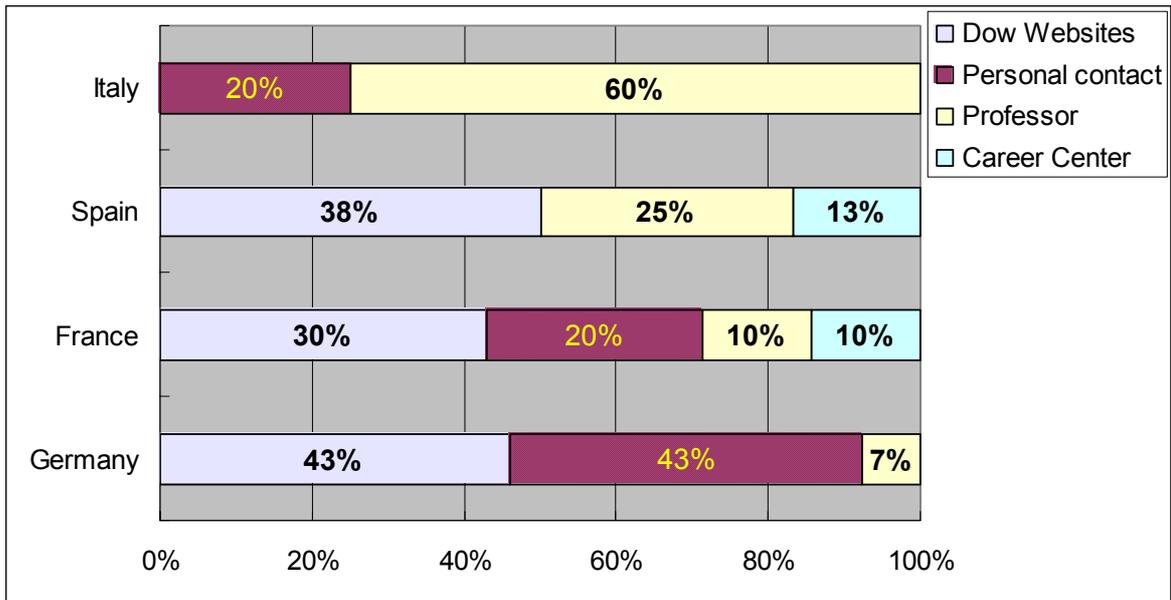


Exhibit 14. Recruiting Channel Preference of Interns Through Countries

Most Interns expressed their desire to continue working at Dow Chemical Co. after their Internship. The size and global presence of the company were the key attributes. Advancement opportunities, irrespective of nationality, International assignments, transfer of know how, participation in projects and the friendly atmosphere s were all very important criteria among the job seeking Interns.

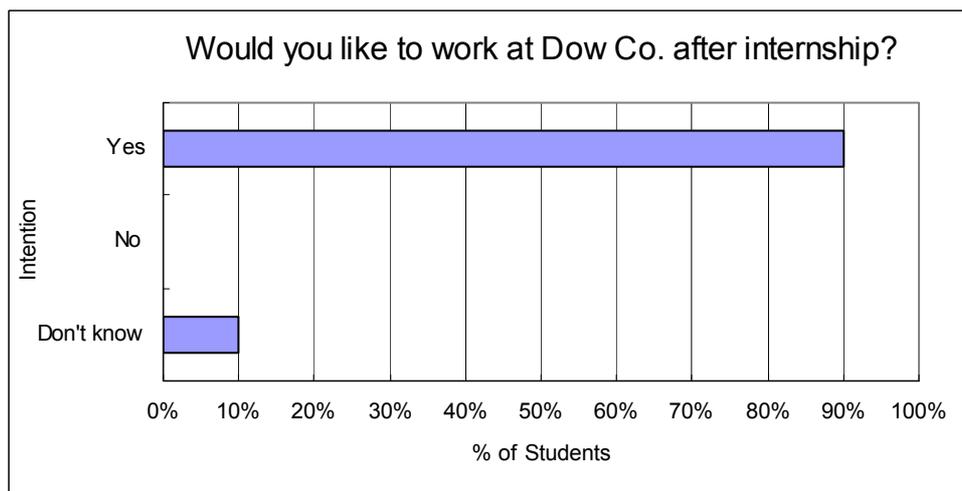


Exhibit 12. Intention of Continuing Job at Dow Chemical Company

The results from the Intern survey can be interpreted to show the preferred channels of marketing used in job and internship search. However, the information

gather contained some limitations as far as brand image of Dow Chemical Co. is concerned. Since the Interns are already employed by the company they do not have objective views about the company image in general. Therefore another survey will be conducted at a future date, using a broader and more unbiased pool of students from 14 key universities (See Appendix 3-b).

2.2.3. Marketing Plan

In today's market, companies no longer compete just on price, product nor package. The real competition is for talent. Dow Chemical Co. has a well-established identity profile strategy plan to support strategic partnerships at key universities. It is critical to have an established network of trained and skilled Dow people who are recognized as role models and portray Dow Chemical Co.'s best face. Based on the results of the Benchmarking, Cost and Efficiency Analysis a portfolio of tools has been developed that will allow the best way to communicate the brand to the target audience and gather talent in order to sustain growth and profitability. In looking at the overall approach from external and internal communications programs to branding, positioning and staffing operations the marketing plan creation should bring Dow Chemical Co. greater success in its recruiting and retention initiatives by integrating the following marketing strategies.

Internet Marketing

With most job seekers utilizing the Internet in their job search, recruitment Web sites are a necessity in positioning of the company as an employer of choice and enabling it to attract top talent. The enhancement suggestion provided in the Benchmarking Analysis earlier in this report, will allow Dow Chemical Co. to create a unique web page and provide total student satisfaction. This venue of advertising not only showcases the company but can be effectively used to reach a diverse, creative and technically savvy audience of Chemical Engineering students.

On-line Recruiting Platforms

An on-line recruiting platform enables employers to easily manage job listings, applications and college recruiting process across multiple sites using a single user interface. This facilitates recruiting process and saves time and effort.

Recruitment Advertising and Marketing

Marketing is all about reaching and influencing the candidates -- wherever they are, whatever they view, read, hear or see. It's about delivering the right message to the right audience in the right media -- newspapers, professional magazines, career books , posters, etc. Brochures, posters and other printed materials are critical to company's success at career fairs and university presentations. Although personal communication is more effective, Media marketing can be used to stimulate interest and personal communication through its effect of behavioural and personal attitudes. A promotional budget should be determined based on specific objectives and tasks performed to meet these objectives for each university. The objective and task method used allows management to see the relationship among the money spent, exposure levels, trial rates and regular usage. (Appendix 10)

Personal Selling

Personal contact is the essence of developing relationships because it is directed toward achieving mutually satisfying results between employers and employees, which sustain and enhance future interactions.

Beyond Dow Chemical Co.'s own University Relations Team and recruitment marketing staff, strategic partnerships and alliances should be formed to provide an effective mix of advertising, creative thinking and branding Dow Chemical Co. as an employer of choice. Stronger sustainable relations between HR and university Professors, at identified specific universities, University Career Centers (if existing) and with Student bodies, such as E-fellows, are the most effective tool in creating best value and achieving a competitive advantage by securing top talent at those universities. Internal personal selling methods might include company newsletters listing job openings/vacancies as well as an Employee Acquisition Program which would give an incentive for an existing employee to bring in more employees.

University Public Relations

Responding to the outcry for an increased presence at Universities, Dow Chemical Co. should optimize this channel to boost its image and gain credibility. It is essential for Dow Chemical Co. to focus on an array of on-campus activities. These may include Company presentations, Creation of competition, Field trip, Student Scholarships and Monetary donations.

Company Presentation involves direct contact with students and company representatives, allowing for a free flow exchange of information and establishing a relation. Company presentation also have a hidden benefit, they can be used as a platform for collection of resumes and creation of a database for future student employment. In addition, they allow for distribution of print media and marketing of up-and-coming Dow Chemical Co. events, such as job fairs and Dow Chemical Competition.

The creation of Dow Chemical Competition, modelled on Business School Case Challenges, which calls for submission of a research paper to be examined by a panel of judges and selection of the best entry, further deepens student involvement with the company and allows for clear performance review of participating individuals. This can be essential in a successful recruiting process. Dow Chemical Co. can involve participation of a single key university or involve all of the key universities in the competition. The competition can be a vital part of the future recruiting process, as well as arouse interest and create excitement for the image of the company.

Field trips to Dow Chemical Co. sites are an excellent way to build better HR relations and an effective way for students to discover for themselves what the company image is all about. They provide transparency and allow for a high degree of interactivity between Dow Chemical Co. employees and students.

Student Scholarships and Monetary donations towards purchase of research and technical equipment are another form of a very welcomed and effective way of securing a beneficial mutual relation between Company and the University.

The challenges faced by the companies today and the questions that they must answer if they are to capture the most talented students vary according to the channel and the strategy they use. The examples described above show many different ways that a company can be successful capturing and retaining talented individual and the marketing strategy for recruiting may include all or some of the examples listed above.

Appendix 9 shows a sample marketing plan that could be used by Dow Chemical Co. to target Chemical Engineering students at a particular key university. A marketing plan allows for comparison of relative expenditures (cost), and outcomes (effects) associated with two or more selected courses of actions. These actions studied over time, essentially doing more of what works and less of what doesn't, allow for improving the strategy on on-going bases. Total cost of all marketing activities cannot

exceed Dow University Relations Team marketing budget⁶. Local variations between key universities are possible.

3. CONCLUSION

It is anticipated that there exist serious “Lacks of talent” among Science and Engineers in the European labor market. Based on a special survey conducted by GECC (Graduating Engineer & Computer Careers) it can be commented that good news continues to roll in for graduating engineering and computer science students. Coupled together with a 30-year low unemployment rate and an increased interest in restocking corporate talent pipeline, graduates can expect lots of interest from employers who are fighting the so-called “War for talent”.

As chemical companies see continuous decline of Chemical Engineering students, they recognize that in order to remain successful in this industry, a constant effort to maintain competitive strength relative to the rest of the industry becomes a necessity. Maintaining competitive strength today requires appraisals of results achieved in marketing, financial and human resource management. An analogy of a wheel can be used to represent a marketing plan and to highlight the importance of establishing a balance of best marketing variables or channels in business practices today. The spokes represent these different various channels that make up the marketing plan. If one or two of the spokes becomes loose, then the entire wheel is weakened and will eventually break down.

Dow Chemical Co. needs to differentiate itself from competition. It needs to become a premier employer at selected universities. It needs to attract talented and dynamic people who will become future leaders within the company. To do this, it must create a strategy that will allow it to maintain a successful position ahead of competition and establish a strong and sustainable relationship with both the institutions and the students.

We hope our project will provide insight for Dow Chemical Co. to take a step in the right direction.

⁶ The exact figures are confidential

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Appendix 1. Key Universities

UNIVERSITY	COUNTRY
Universidad Politecnica Catalunya	Spain
BUTE BUdapest	Hungary
MLU Halle-Wittenberg	Germany
TU Hamburg-Harburg	Germany
Claude Bernard Lyon - CPE	France
University of Cambridge	UK
KU Leuven	Belgium
TU Delft	Netherlands
Imperial College	UK
Politecnico di Milano	Italy
Universität Dortmund	Germany
RWTH Aachen	Germany
TU Eindhoven	Netherlands
ETH Zurich	Switzerland

Appendix 2. Benchmarked Recruiting Web-sites

<p>Recruiters</p> <p>Jobpilot http://www.jobpilot.de Monster http://www.monster.com StepStone http://www.stepstone.com</p>	<p>Graduates</p> <p>EUROGRADUATE http://www.eurograduate.com/ The Graduate http://www.thegraduate.co.uk Online-Graduate http://www.online-graduate.co.uk/ Gradunet http://www.gradunet.co.uk/ Graduateengineer http://www.graduateengineer.com/ Insidecareers http://www.insidecareers.co.uk/</p>
<p>Recruiting Websites</p> <p>Totaljobs.com http://www.totaljobs.com Workthing.com http://www.workthing.com/ Prospects.ac.uk http://www.prospects.ac.uk Topjobs.com http://www.topjobs.co.uk</p>	<p>Student Networks and Organizations</p> <p>AIIESEC http://www.aiiesec.org BEST http://www.best.eu.org Bonding http://www.bonding.de/ Campus Chancen http://www.campusconcept.de/ Cluster http://www.cluster.org/ Gesellschaft Deutscher Chemiker http://www.gdch.de/gdch.htm IAESTE http://www.iaeste.org/ Uni-Partners http://www.uni-partners.de/frameset.jsp?kontext=main UNITECH http://www.unitech-International.org</p>
<p>Engineers and Chemists</p> <p>ChemieKarriere.de http://www.chemiekarriere.net/ ChemIndustry.com http://www.chemindustry.com/ The ChemNet.com http://chemnet.com Absoluteengineers http://www.absoluteengineers.co.uk NewScientistJobs.com http://www.newscientistjobs.com Chemie.de http://www.chemie.de/ ChemJobs.net http://www.chemjobs.net/ Cen-chemjobs.org http://www.cen-chemjobs.org/ ICheme.org http://www.icheme.org/ Scenta http://www.scenta.co.uk/ Justengineers.net http://www.justengineers.net/ Chemsoc http://www.chemsoc.org/ Industrie.de www.industrie.de Chemistry.org http://www.chemistry.org</p>	<p>On-line Magazines</p> <p>Uni Magazin http://www.unimagazin.de Handelsblatt Junge Karriere http://www.jungekarriere.com/ Hochschulanzeiger.de http://www.faz.net/s/hanz.html Alma-mater.de http://www.alma-mater.de Berufstart.de http://www.berufstart.de Karrierefuehrer http://www.karrierefuehrer.de/ Karriere.de http://www.karriere.de</p>

Appendix 3-a. Survey Questionnaire for Interns

Questionnaire for Dow Chemical Co. Interns

Dear Intern,

Your feedback is very important to us. Please take few minutes to answer the following questions. Your answers will allow us to develop a more successful recruiting process at Dow Chemical Co. We appreciate any additional comments or suggestions you might give us. After completion, please return the document via E-mail (mba_project2@hhl.de) no later than April 30, 2005. Thank you for your cooperation!

Name:	Workplace:	Department:
Age:	Gender: Male Female	Semester of Study:

1. What is your Major of study?

- Commercial Chemistry Natural Sciences Chemical Eng. Mechanical Eng.
 Electric Engineering Electronic Eng. Civil/Construction Eng. Other specify:

2. Which University are you studying at?

3. What country do you come from?

4. How did you find out about the Internship with Dow Chemical Co. ?

- Professor University Career Center Univ. Bulletin Board Career Fairs
 Professional Magazines On-campus recruiting Personal Contacts Career Books
 Dow Web-site Other Web-sites Other

5. Which Chemical industry are you interested in?

- Energy Petro Chemical Bio/Pharmaceutical Consumer Goods
 Research Institute Automotive Other

6. Which companies have on-campus presentations at your University?

	Not important				Very important
1. Company Web-site	<input type="checkbox"/>				
2. Internet	<input type="checkbox"/>				
3. University Career Center	<input type="checkbox"/>				
4. Career Books	<input type="checkbox"/>				
5. On-campus recruiting	<input type="checkbox"/>				
6. Professional Magazines(journals)	<input type="checkbox"/>				
7. Personal Contacts	<input type="checkbox"/>				
8. Newspaper Ad's	<input type="checkbox"/>				
9. Public Job Fairs	<input type="checkbox"/>				
10. Head Hunters	<input type="checkbox"/>				

8. Please list the most important recruiting Web-Sites used by you .

	Not important				Very important	
1. monster.com	<input type="checkbox"/>					
2. jobpilot.de	<input type="checkbox"/>					
3. stepstone.com	<input type="checkbox"/>					
4. totaljobs.com	<input type="checkbox"/>					

Please list any other recruiting sites used by you

1)

2)

3)

9. Do you visit any professional(Chemistry or Engineering) recruiting sites?

If yes, list which ones

None

10. Do you read any professional (Chemistry/Engineering) Magazines or Journals?

If yes, list which ones

None

11. Have you looked at any Career Books?

If yes, list which ones

None

12. Would you like to work full time at **Dow Chemical Co.** after your Internship?

Thank you for taking the time to participate in this survey. !

*** Please save this file and sent it to mba_project2@hhl.de**

Appendix 3-b. Survey Questionnaire for Students

Questionnaire for University Students

Dear Students,

Please take few minutes to complete the following questionnaire. Your answers will allow us to understand job preferences among your peer group, and help us determine the best ways in which a company can bolster its presence and status among high potential students like you. Recognizing the critical role of Universities as a source of such engineering talents, HHL MBA students together with Dow Chemical Co. are investigating key elements that would allow for establishing a strong and sustainable relationship with your institution and students. Your answers will remain confidential and never be opened to the public. We appreciate any additional comments or suggestions you might give us. After completion, please return the document to us. If you have any questions, please send an E-mail to mba_project2@hhl.de. Thank you for your help and cooperation!

University name:	Major:	Study Semester:
Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female	Age:	
Are you currently looking for a Job or Internship? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> No, but interested		
Have you made already Internship experience? <input type="checkbox"/> Yes (times) <input type="checkbox"/> No		

1. How important are these criteria in your Job Search?

	Not important					Very important				
	1	2	3	4	5	1	2	3	4	5
1. Corporate Culture	<input type="radio"/>									
2. Flexibility in your job	<input type="radio"/>									
3. Challenging work / Opportunity	<input type="radio"/>									
4. Salary	<input type="radio"/>									
5. Employee benefits (insurance, pension, vacations, sabbatical etc)	<input type="radio"/>									
6. Promotion	<input type="radio"/>									
7. Company image	<input type="radio"/>									
8. Company growth potential	<input type="radio"/>									
9. Self-development opportunity	<input type="radio"/>									
10. Work location	<input type="radio"/>									
11. Job stability	<input type="radio"/>									
12. International exposure	<input type="radio"/>									
13. Corporate environmental responsibility	<input type="radio"/>									

2. Which industry do you want to work in?

1. Petrochemical	<input type="checkbox"/>	4. Plastics	<input type="checkbox"/>	7. R&D institutes	<input type="checkbox"/>
2. Bio-chemical	<input type="checkbox"/>	5. Automotive	<input type="checkbox"/>	8. Consulting	<input type="checkbox"/>
3. Pharmaceutical	<input type="checkbox"/>	6. Construction	<input type="checkbox"/>	9. Other _____	

3. Are you familiar with the below listed companies? How attractive are these companies? Will you apply to these companies?

Company Name	Yes, I'm familiar with the company	Very Attractive					Not Attractive					I will apply to this company
		1	2	3	4	5	1	2	3	4	5	
Dow Chemical Co.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="radio"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No									
Shell	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="radio"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No									
BASF	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="radio"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No									
DEGUSSA	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="radio"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No									
Bayer	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="radio"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No									
Exxon-Mobil	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="radio"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No									
BP	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="radio"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No									
Dupont	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="radio"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No									

4. How important are the following channels in your job search? (Please rate them accordingly)

	Not important					Very important
	1	2	3	4	5	
1. Company Web-site	<input type="radio"/>					
2. Internet	<input type="radio"/>					
3. University Career Center	<input type="radio"/>					
4. Career Books	<input type="radio"/>					
5. On-campus recruiting	<input type="radio"/>					
6. Professional Magazines(journals)	<input type="radio"/>					
7. Personal Contacts	<input type="radio"/>					
8. Newspaper Ad's	<input type="radio"/>					
9. Public Job Fairs	<input type="radio"/>					

5. How important are the following recruiting web-sites in your job search?

	Not important					Very important
	1	2	3	4	5	
1. Monster.com (Monster.de)	<input type="radio"/>					
2. Jobpilot.de	<input type="radio"/>					
3. Stepstone.com	<input type="radio"/>					
4. Totaljobs.com	<input type="radio"/>					
5. Workthings.com	<input type="radio"/>					
6. Other _____	<input type="radio"/>					

9. Please list which professional Web-sites (Chemistry or Engineering), do you use?

- Yes, list which ones _____
 None

10. Please list which professional Magazines do you read?

- Yes, list which ones _____
 None

11. Please list which Career Books do you read?

- Yes, list which ones _____
 None

12. What are the most recommendable recruiting activities in your University? (Choose 2~3)

1. Posters	<input type="checkbox"/>	5. Field trips to company	<input type="checkbox"/>	10. Professor recommendation	<input type="checkbox"/>
2. Company Presentations	<input type="checkbox"/>	6. Career Fairs	<input type="checkbox"/>	11. Career books	<input type="checkbox"/>
3. Scholarship Programs	<input type="checkbox"/>	7. Professional lecture	<input type="checkbox"/>		
4. Student Contests	<input type="checkbox"/>	8. Sponsorship	<input type="checkbox"/>	Other _____	

13. Please give us your suggestions, how a company might attract other talented students at your University?

* Please leave your E-mail address if you wish to receive recruiting information from Dow Chemical Co. .

- Thank You for taking the time to complete this questionnaire! -

Appendix 4. Technical Improvement for Dow Chemical Co. On-line Recruiting Platform

„Candidate Profiler” and online application demonstrates improvement potential

- Job type:** poor and not understandable (administrative and technicians are in the same category. What is “campus recruiting”? What is “cooperative”?)
- Job function:** very confusing. Why are there the 3 times “finance” choices?
- Educational level:** “none” should be replaced by something nicer for example “middle school”
- Layout:** legal question for confirmation of accuracy should be placed at the end or at the beginning of the application. What are “AQ1, ZQ1” in front of the questions? When the option is “other”, there is no way for the applicant to specify which “other” so it is not very useful.
- Work experience:** what is “other functions”
- Online profile:** there is no need to have the profile online if a new application requires to input again almost all the data. Use a better storing software for personal data.
- Attachments:** CVs are copied and pasted. No pictures can be attached. Pictures are normally used in Europe.
- Online application - page 6/8:** “already employed by this company” is confusing. Replace it with: “Only for Dow current employees”. What is GPA? (non-American students are definitely confused)
- Online application - page 7/8:** it is not there
- End of online application:** there is no confirmation that the application has been sent. Before submitting the application there should also be a message so that the applicant has the chance to re-check the application before sending it.

Appendix 6. Benchmarking Results of Press Media

Media Pack Professional Magazines

	Circulation Numbers				Display Unit 18								Loose insert per 1000
	Double Page	Full Page	3/4 page	Half Page	Quarter Page	Display Unit 18	Cover Files	1st right hand	1st double page	Bound insert	Loose insert per 1000		
New Scientist	15,123,344	9,133,344	5,034,400	2,681,040	1,073,040	9,524,956	9,703,200	19,413,400		5,180,000	265,000		
Process	34,880	5,116,000	3,637,000	1,779,000	680,000			6,015,000		5,180,000	5,180,000		
Chemie Technik	30,114	4,940,000	3,240,000	1,330,000	300,000	790,000		3,850,000		5,180,000	5,180,000		
Chemical Engineering & Technology	n.a.	990,000	590,000	300,000				990,000		5,180,000	5,180,000		
Chemie Ingenieur Technik CIT	6,800	3,583,000	2,480,000	1,330,000	910,000	510,000	4,090,000	3,850,000		5,180,000	200,000		
Materials International	n.a.	All ads up to full page or 2,960 insert size 200,000											
AIChE	n.a.	855,556	754,000	599,000									
Ingwers Gulinbea	n.a.	1,165,000	649,970	373,056			2,620,000	2,165,000			1,250,000		
Chemie & Industry	8,214	4,815,770	2,957,596	1,615,326	942,270		2,967,420	2,882,200					
Chemistry World	44,000	4,250,470	2,917,206	1,499,636	525,026	489,000		3,764,400		2,919,950			
The Chemical EngineerICE	20,000	7,256,456	3,983,816	2,321,536	1,436,966			3,943,416			2,312,200		

Career Books

14334 07530

	Circulation Numbers				Display Unit 18								Loose insert per 1000
	Double Page	Full Page	3/4 page	Half Page	Quarter Page	Display Unit 18	Cover Files	1st right hand	1st double page	Bound insert	Loose insert per 1000		
Karrierleiter Chemie	20,000	2,900,000	2,190,000	1,580,000	1,090,000			14,880,000					
Jugend Karriere	180,000	29,049,000	14,024,000	7,924,000	4,499,000					118,000	90,000		
Inside Careers	n.a.	2,722,966											
Hot 200	26,000				1,090,000								
Seniors & Nonprofits Career Toolkit	15,000	2,460,000						4,275,000			5,200,000		
GradJobs	n.a.	4,914,946	2,763,506	1,550,506	870,236			2,876,800			3,164,400		
Europacareers	n.a.												

Limitation Notes: Prices are for most basic form of advertisement only. Use of different colors will increase rates. Some rates on negotiation basis only.

Appendix 9. Marketing Recommendation

University Marketing Plan Sample

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Cost
On-Campus													
Company presentation													250.00 €
Field-Trip to Dow plant													*
Dow Ambassador (Scholarship)													4.000.00 €
Poster (A8-site)													1.000.00 €
Dow Chemical Competition													9.000.00 €
University Chair Encourment													10.000.00 €
Print Media													
Career Books (Hobsons, Eurograduate)													9.028.00 €
Newsletter (Handzblatt)													9.294.00 €
Online													
Job Postings (http://www.monster.de/)													12.282.00 €
Career Fair													2.647.00 €
Cost													59.199.00 €

TEAM STRUCTURE OF DOW CHEMICAL COMPANY PROJECT

HHL...

	<p>Philipp Frickhinger E-mail: philipp.frickhinger@mba.hhl.de Nationality: German</p>
	<p>Andrea Ferrari E-mail: Andrea.Ferrari@mba.hhl.de Nationality: Italian</p>
	<p>Anna Postol (Dow Scholar) E-mail: Anna.Postol@mba.hhl.de Nationality: Polish</p>
	<p>Joanna Izdebski E-mail: joanna.izdebski@mba.hhl.de Nationality: USA</p>
	<p>Dr. Rustam Vagabov E-mail: rustam.vagabov@mba.hhl.de Nationality: Russian</p>
	<p>Jeong-Hwan Choi E-mail: jeong-hwan.choi@mba.hhl.de Nationality: South Korean</p>