

Aligning Business Engineering Education with Contemporary Industry Requirements

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Abstract. *Business Engineering emerged as an academic discipline almost a century ago in response to economic demand for experts with both business and engineering expertise. The discipline has since evolved to meet the needs of the fast changing global marketplace. The impact of globalization on the architecture, governance and running of organizations has also shaped the field today. Education has responded to these changes by adapting its architecture and governance to fit international needs. This study examines the case of ESB Business School, Reutlingen University as an example of how business engineering education has been forced to adapt its architecture and governance to fit international needs in the field. Close collaboration with global academic and corporate partners has enabled the school to integrate multiple international components into its business engineering curricula. However, the overall goal remains to ensure that the business engineering education provided is aligned with the global requirements coming from industry. This exploratory industry-driven study tackles this challenge. Qualitative interviews with company representatives of international companies as well as a global industry survey were conducted to examine what study programs and what graduate skill-set are most commonly sought after by industry in different regions of the world.*

Keywords: *Business engineering, competence, employability, domain expertise.*

1. Introduction

Internationalizing a business engineering program in an integrated manner: the case of ESB Business School, Reutlingen University

Supply chains turn previously independent business actors into business partners pursuing common goals. This is true both at the level of individual companies and at the level of national economies. Study programs that seek to be industry relevant need to mirror this development. This study will focus on a venture initiated by ESB Business, Reutlingen University in Germany. The School offers two undergraduate Bachelor of Science BE programs: one in Production Management and one in International Operations and Logistics Management. Concerning the BSc. in International Operations and Logistics Management, a decision was made in 2012 to build strategic relations with partner universities.

Having analyzed market and stakeholder needs, South East Asia proved to be the key area to focus on. Business relations between Germany and South East Asia (SEA) have intensified in the past years. With trade relations and mutual direct investment growing, South East Asian countries increasingly turn into close business partners for many German companies. They possess a high economic potential and are increasingly closely integrated into global trade and supply chains. At the same time, South East Asian countries must ensure that their local labor force possesses the skills and competencies needed in the global business arena.

In 2013, funding for a 4-year project was secured from DAAD (*Deutscher Akademischer Austauschdienst* – German Academic Exchange Service) to establish an integrated double degree with the Faculty of Industry Management, University Malaysia Pahang,

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Kuantan (Malaysia) (Reutlingen University, 2013). Following the initial success, further funding was received from DAAD starting in 2015 for another 4 years' project appropriately named "Making business engineering happen in South East Asia" (in short: BE in SEA) (ESB Business School, 2015). The primary goals of this second project were twofold:

1. To establish business engineering curricula at South East Asian Universities
2. To raise or increase company awareness for business engineering in South East Asia

The key deliverable in terms of the first goal was to implement double degree BE curricula in selected South East Asian universities' curricula. Besides ESB Business School, Reutlingen, Germany, the following universities from the SEA region were chosen as academic members of the consortium:

1. Faculty of Industry Management, University Malaysia Pahang, Kuantan (Malaysia)
2. School of Business and Management, Institut Teknologi Bandung, Bandung (Indonesia)
3. Dept. Industrial & System Engineering, Ho Chi Minh City International University, Ho Chi Minh City (Vietnam)

In the case of University Malaysia Pahang, ESB Business School helped to set up an initial business engineering degree with which it then later formed a double degree. In the case of the other partners, they already offered BE programs with different specializations. The steps that were taken in all cases was to align curricula and create competency clusters to ensure that whatever individual subjects the students take, their overall competency profile fits with what all the parties, together with their stakeholders, believe to be desirable.

The second goal involves close cooperation with business partners. For this part of the project, the following critical success factors were defined:

1. Establish a BE business association with +250 members by 2019
2. Ensure companies in SEA region offer BE

related internships on a regular basis

3. Secure good employment opportunities in the SEA region

(ESB Business School, 2015)

Initial research indicated that predictably German companies in the SEA region have an understanding of BE as well as a demand for business engineering graduates. It became clear that also non-German companies could benefit from BE graduates with their combination of business and engineering know-how. However, essential would be identifying the needs of those companies, exploring their understanding of BE in order to be able to provide them with business engineering talent that could help support further economic growth.

Creation of IABEP: International Association for Business Engineering Professionals

As already mentioned in the previous section, an important objective of the BE in SEA project was the set-up of an International Association for Business Engineering Professionals (IABEP). The aim of this association was further clarified through the involvement of international academic and business partners. Interest in the association has grown, leading to inclusion of new academic partners from outside the SEA region:

1. Dublin Institute of Technology (Ireland)
2. Aston University (England)
3. HAN University of Applied Sciences (Netherlands)
4. Bridgewater State University (US)
(iabep.org/about-us/academic-members/
2019)

Where it makes sense, double degree programs are being pursued with new academic partners. One has already been established with HAN University. Interest in the association is also growing on the part of business partners. The focus here remains largely on SEA.

IABEP has identified itself as an international network with a focus on business engineering with the following goals:

1. Create and promote industry awareness of business engineering internationally, and thus generate demand for BE graduates
2. Set professional standards and consistently improve business engineering practices
3. Provide an international platform for global exchange between academia, industry and practitioners.

(ESB Business School, 2015)

IABEP members subscribe to the following common understanding of BE:

Business Engineering is concerned with the integration of various aspects of business strategy (information, processes, organisation, technology) based on engineering principles to present, design and build an innovative business system for providing better products and services

In order to meet stakeholder needs, the association has defined four key areas of focus:

1. Knowledge exchange
 2. Networking
 3. Recruiting & employer branding
- (Corlett, 2018)

Moreover, a service portfolio has been created to ensure that the association can fulfil its mission:

1. Organization of annual conferences for academics and practitioners
2. Creation of a practice-oriented journal
3. Setup of a website with regular bulletins
4. Cross-border training opportunities for companies
5. Establishment of a knowledge-transfer platform
6. International student consulting
7. Promotion of internship and graduate opportunities to international BE talent

With the development of the BE in SEA project and the extension of its geographical scope, the task remains to undertake a proof of concept. Clearly, this involves such activities as reviewing the student intake on double degree programs, monitoring student internships and graduate employment, reviewing membership of companies in the IABEP association and documenting

successful service offerings. However, at this early stage of the ventures, much of this data is not available. However, to ensure that the project is aligned with industry needs, a two-fold study has been undertaken to receive input and feedback from international companies.

2. Business Engineering: A Global and Evolving Field

Business engineering emerged as an academic discipline Germany in the 1920s. The concept of “Wirtschaftsingenieur” (in the following referred to as „business engineering” or BE in short) came about in response to economic and business demand for experts with both business and engineering expertise (Zadek & Risse, 2003). Business engineering has made a significant contribution to the German business environment and the competitive edge of German companies around the world. The unique combination of engineering and business disciplines combined in a single study program (often complemented by soft skills such as communication and presentation skills or foreign languages) ensures that business engineering graduates are in high demand in the German labor market. Their unique skills combination enables them to cope with the complexities of today’s business tasks.

The discipline has evolved ever since to meet the needs of the fast changing global marketplace. Globalization has impacted the architecture, governance and running of organizations, meaning that business engineering today relies greatly on digitalization. It is considered by many as a subcategory of the business informatics field (Österle, 2013; Simatupang, Utama, & Mulyono, 2017). Others consider it as a type of organizational development, helping businesses to run more effectively and become competitive (Österle, 2013; Simatupang et al., 2017). There is underlying consensus, however, among scholars that business engineering essentially aims at optimizing performance by viewing the

business as an integrated system (Caron, Jarvenpaa, & Stoddard, 1994; Simatupang et al., 2017).

Another natural focal points for BE is logistics and supply chain management (SCM). By their very nature, logistical problems comprise both business and engineering aspects. The ever-growing globalization of business and the increasing importance of international supply chains have taken this need to an international level: Today, business engineers in the field of logistics must master their core disciplines, must be multi-lingual, and must possess strong soft skills in order to get along in global supply chains. Despite just some of the aforementioned specializations, business engineering curricula in higher education are generally aimed at developing generalists rather than specialists (Baumgarten, 1999). Today the core aspects of the education remain true to their origins:

1. Combined technical and business training which promotes integration
2. Interdisciplinarity as a basis for creative innovation between technology and market
3. Principles of management in technology firms

As Brettel et al. (2014) point out, integration of different areas of technology management is a growing challenge. The working environment of operations managers or business engineers is starkly characterized by cross-functional, context-based problem solving. They need to be interculturally competent in the sense that they can move fluently between different subject and functional cultures. Regarding the second point, the scholars state that to be innovative and creative, business engineers need to have specialist knowledge in multiple disciplines, organizational expertise in order to enforce innovation internally, as well as knowledge of markets in or to be able to implement new ideas in the customer and competitive environment.

Finally, management skills are required to release new technologies successfully onto the market, as well as to push through entrepreneurial decisions. Moreover, business engineers need to be able to recognize the innovative potential of current developments in technology and management as well as developing and implementing new business ideas out of this knowledge.

This basic approach in business engineering education has become a sustainable model. Business engineering lends itself to a variety of business and engineering disciplines. The portfolio of study programs offered at German higher education institutions has been growing steadily. Today 44 universities and 150 universities of applied science are listed in the CHE ranking list as offering business BE programs (CHE, 2018). The changing global architecture and governance of organizations which work in this field have provided the strong impetus for education to follow suit.

More and more BE programs worldwide have integrated international components such as study abroad and foreign internship semesters. A number of institutions have gone one step further to create joint or double-degree programmes. Such initiatives prove challenging and complex. Institutions need to consider many different factors. On a local or individual basis, they are bound by legal considerations, requirements from ministries and accreditation boards, recognition of and demand for the program on the part of key stakeholders such as students and local and international industry players.

This paper will explore some of those challenges. It will consider from an international industry perspective what academic disciplines are considered to fall under the umbrella of business engineering. When positioning a program on the market, everything from the academic status (B.Eng, BSc., etc.) to the curricula content and choice of academic and business partners needs to be recognized and sought after by key

customers and markets, be they students who enrol on the program or potential employers. To ensure success, it is crucial that the graduate profile is aligned with industry requirements.

3. Methodology

Company Interviews and Survey

The research methodology pursued in this study followed a sequential exploratory design undertaken in two phases. Qualitative data was collected primarily. The collection and analysis of quantitative data ensued in the second phase. The purpose of this mixed methods design was to develop key classifications and to identify variables which could be tested in a survey (Creswell & Creswell, 2017).

The initial qualitative part of the study took place in 2017. A student consulting group from ESB Business School undertook 13 semi-structured interviews with companies regarding the IABEP association. The aim was to explore the needs are of target industries with respect to a collaboration with universities in the field of business engineering. All of the companies questioned were international. 5 of the interviews took place with representatives from the German headquarters and the remaining 8 with representatives of South Asian companies, 4 of which were German and 1 Swiss. The experts chosen to be interviewed were either HR managers or business managers from SMEs or MNCs that have a potential vested interest in IABEP. The companies approach are either business partners of ESB Business School, members of the school's advisory board or employers of ESB alumni.

Key variables were derived from the qualitative analysis that were integrated into the quantitative survey. Together with information garnered from a literature review, a survey was designed in the second phase, which was administered in 2018 online to a larger sample of companies covering most of the academic partner regions (South East

Asia, UK, Ireland, Germany and the US). Due to a late membership to IABEP, partners in the Netherlands were not able to distribute the survey in the required time period. The company survey was administered to HR professionals and executives of companies that are in the global business network of the IABEP academic members. These companies include advisory board members, sponsors of the institutions and employers of their alumni and MBA part-time students, as well as companies that were considered to be potential members of IABEP. 41 responses were received in total to the company survey, which was an insufficient number to provide valid or reliable evidence with respect to the different categories and variables being investigated. The results, however, may be seen as indicative of the current tendencies and trends.

4. Finding and Discussion

4.1. The scope and understanding of business engineering

The 13 company representatives interviewed by the student consultant group indicated a good understanding of the term business engineering. Out of 41 respondents to the company survey, 28 answered the question about whether they are familiar with the term business engineering positively. When asked to define the term, responses varied, but those given are generally concordant with the understanding proposed by IABEP. Most company representatives understand business engineering as developing and implementing business solutions using the knowledge from both business and technical areas in order to optimize the business. Some of those asked underline the reengineering aspect. Another important aspect that is recognized is that the areas covers planning and inputs through to execution and outputs. In terms of general scope, a number of areas such as systems design, IT infrastructure, business and operating model as well as logistics were mentioned.

4.2. Business engineering degrees – employer preferences

In the educational environment, a variety of degree programs are considered to fit under the umbrella of business engineering. In the company survey, employers were asked which degree titles they would most commonly look for when hiring a business engineering graduate (see Table 1). Business Engineering and Engineering Business Management topped the list. Process Engineering and Management Information Systems / Digital

Business Management were not commonly sought after. It is likely that many employers do not associate these degrees directly with business engineering. International Operations and Logistics Management had a surprisingly low rating even in Germany, despite the fact that ESB Business School has a well-established program in this area. The survey also threw up some regional differences. In Asia, for example, Industrial and Systems Engineering seems to be more popular than in the US or Europe.

Table 1.

Common Business Engineering Degree Program Titles Sought by Employers when Hiring

Business engineering program title	Number of mentions
Business Engineering	18
Engineering Business Management	17
Operations Management	14
Engineering Management	13
Industrial Engineering	13
Industrial and Systems Engineering	9
Supply Chain Management	6
Enterprise Engineering	5
Logistics Management	5
Engineering with Business	3
Engineering Administration	3
Enterprise Systems Engineering	3
International Operations and Logistics Management	2
Process engineering	1
Management Information Systems / Digital Business Management	1

As already mentioned, the consortium of universities in the IABEP group have established a number of double degree programs in business engineering. The degree programs offer an integrated curriculum across two regions. Students have the opportunity to carry out two internships, one at home and one abroad as well as to immerse themselves in another language and culture. Since these programs are high maintenance, it is critical for participating institutions to review their popularity and demand. 28 of the 41 company representatives stated that when recruiting business engineering graduates, they would give preference to a student with an international double degree in business engineering as opposed to a standard track

degree. This preference was justified with the reasoning that graduates of a double degree programs have more industry experience and are proficient in another foreign language. The flexibility that such graduates generally demonstrate, their intercultural competence, self-reliance and ability to succeed in two different countries and cultures were picked as criteria for success by the employers.

4.3. Relevance and value of business engineering to organizations

The qualitative interviews confirmed the relevance of business engineering to organizations. However, one interest remark that was made a few times is that is more important and better understood by the

German and European parts of the business. The survey also indicated strongly that employers have an understanding of business engineering. Furthermore, just over three quarters (32) of the survey respondents stated that business engineering is a relevant field in their company. They supported their claim with various reasons:

“In our branch, it is even with business processes important to have a technical background”;

“There are many functions for which you can use both fields of expertise”;

“Industry 4.0 demands a more general process view with the capability to deepen the knowledge in special business field if required”;

“I would consider business engineering a relevant field

as we need people who are more holistic and able to connect the dots better”;

“We need to have continuous improvement to achieve this we need to be agile and reengineer our business process as supply points change”.

Table 2 depicts the fields in which the companies questioned deploy business engineers. Logistics ranks high as field of deployment in both the interviews and survey. Project management, however, stands out as the most popular area when surveying the overall results. One might see this as a reaffirmation of the claim in scholarship that business engineers are rather generalists than specialists.

Table 2.

Fields in which Business Engineers are Deployed in the Companies Surveyed

Field of deployment	Number of mentions
Interview results	
Logistics	3
Production	2
Strategic Purchasing	2
Project Management	2
Process Management	2
Production Controlling / Lean	3
IT	1
HR	1
Internal Consulting	1
R&D	1
Technology and performance materials technics	1
Survey results	
Project Management	25

A range of responses were given to the question of how business engineers benefit or would benefit the organizations, a question only posed in the survey. Some of the most poignant answers are listed below:

“Combination of scientific/analytical skills and creativity”;

“Drive process improvement internally and externally”;

“[...]bring a more process oriented approach towards planning and execution”;

“Improve efficiency, reduce waste and reduce logistics costs”;

“Broad knowledge and skills in managing the business. Ability to look on big picture in order to make decision”.

A clear message emerging from the survey is that business engineers, with their understanding of technical and business processes, add particular value at interfaces within organizations. Employers consider the solid, broad education that business engineers have to be an enabler. A point clearly expressed in the survey is that business engineers often have the ability to see the “big picture” in terms of problem solving and

decision-making. Finally, employers value the contribution of business engineers to process improvement. A number of respondents stressed that business engineers benefit their organizations by driving efficiency and innovation. 4.4 Necessary domain expertise

In terms of hard skills, the areas required from business engineering graduates by potential employers strongly correlate with those needed for the most common fields of deployment of business engineers listed in the previous section.

Table 3.

Domain Expertise Required by Employers

Required domain expertise	Number of mentions
Logistics / Supply Chain / Production Planning	19
Project Management	8
Process reengineering	3
Product management and design	3
Technology management	3
Purchasing	2
Strategic management	1
Transport legislation	1
Financial skills	1

A key requirement mentioned by employers was that business engineers should be good all rounders: they should integrate soft and hard skills, in particular combining know-how with good people management. Good analytical skills were also underlined as being a key success factor. This is a point that comes up in the next section, since analytical skills have been categorized as soft skills within the scope of this study.

4.5. Necessary soft skills

To be able to work fluidly across cultures, business engineers need to be proficient in, at least, one foreign language. Unsurprisingly, English as lingua franca tops the list of the most required language (see table 4). With respect to other languages, the needs differ according to the regions or countries in which the given company operates. The location of the company's headquarters appears also to

play a role in terms what language skills are required to succeed in the organizations.

German language skills are ranked second to English in the list of employer requirements. However, one must bear in mind that the majority of employers expressing the need for German language skills in the survey are themselves based in Germany. What the company survey highlights is that companies based in Europe typically require fluency in one or more European languages, whereas those based in Asia logically seek graduates with proficiency in Asian languages. The main exception thrown up by the survey is the US. In this case, proximity to South America most likely accounts for employers expecting graduates to be fluent in Spanish or Portuguese.

Table 4.
Language skills considered necessary by employers

Required language skills	Number of mentions
English	28
German	10
Chinese	6
Spanish	5
Japanese	3
French	2
Portuguese	2
Polish	1
Indonesian	1

Regarding other soft skills, a list of competencies was created on the basis of a literature review. Most of the competencies

listed are derived from the study into the profession of a business engineer conducted by Baumgarten and Schmager in 2011.

Table 5.
Employers' means and rankings – extent of agreement that the named competencies are important for the success of a business engineer in the given organization

Competence	Mean	N	Rank
Communication skills	4,79	34	1
Ability to work in a team	4,60	35	2
Analytical thinking	4,57	35	3
Customer orientation	4,56	35	4
Self-motivation	4,54	35	5
Responsibility	4,49	35	6
Conflict management	4,49	35	7
Decision-making	4,48	33	8
Flexibility	4,47	34	9
Integrity	4,47	32	10
Goal orientation	4,46	35	11
Leadership skills	4,29	35	12
Learning aptitude	4,27	33	13
Self-awareness	4,26	34	14
Assertiveness	4,19	32	15
Creativity	4,03	35	16
Mobility	4,00	35	17
Intercultural competence	4,00	34	18
Ecological thinking	3,89	35	19

*Answers were rated on a 5-point Likert scale,
1 = not at all important; 5 = extremely important*

Although 7 years lie between the studies, there is a strong correlation between the data. The 2018 survey ranks leadership skills higher. Where analytical skills closely followed by responsibility topped the list in the 2011 study, the employers asked in the recent survey

consider communication and team skills to be most essential. Customer orientation, self-motivation, decision-making and flexibility are perceived similarly in terms of importance. Ecological thinking, mobility and intercultural competence or internationality

retain low ranking positions despite globalization and developments in sustainability.

4.6. *The importance of work experience*

Practice-orientation is a key element of most business engineering programs. Higher education institutions try to achieve this with various offerings: deploying professors and lecturers from industry, integration company projects, industrial placements or practical theses into curricula. With the set up of IABEP and double degrees, ESB Business School and its academic partners have sought

to find ways of cooperating more closely with international companies to create value. According to the study conducted by Baumgarten and Schmager in 2011, international internships were ranked second as being a practice-oriented success criterion. The results of the survey, however, show that work remains to be done in order to convince companies of the value add of international internships and company projects (see table 6). Such activities are very complex to establish, but the return on investment is not yet clear to industry stakeholders.

Table 6.

Employers' means and rankings – extent of agreement that the named work experience types are important for the success of a business engineer

Work experience	Mean	N	Rank
Domestic internship	3,71	35	1
Previous work experience	3,57	35	2
International internship	3,34	35	3
University project with a company	3,26	35	4
Social community work	3,09	35	5

Answers were rated on a 5-point Likert scale,

1 = not at all important; 5 = extremely important

4.7. *Future cooperation between industry and academia*

Despite the cautious approach evidenced in the previous section with respect to expanding collaboration between universities and in terms of company projects, 10 out of the 13 company representatives interviewed, stated they would definitely be interested in joining the IABEP network. The remaining 3 remained skeptical, but did not outrightly reject membership. 31 out of 41 respondents to the company survey stated that they would be interested in involving groups of international students in company-based projects. Moreover, when asked what, if any, areas they would like to expand their current cooperations, the company representatives most commonly responded in the area of research projects. Student consulting and recruitment were also mentioned as areas for further cooperation.

5. Conclusion and Recommendations

This study has confirmed that industry understands broadly what business engineering is. With respect to specializations, there are differences in what is being sought by companies. Company representatives show agreement that they are looking for generalists with technical and business expertise who can work at interfaces and who understand the big picture. Project management and logistics / supply chain are key areas for deployment. The domain expertise required by companies corresponds strongly to these areas of deployment. While communication, analytical skills and the ability to work in a team top the list of soft skills needed, several employers stated the importance of graduates being able to integrate both hard and soft skills to manage people and operations well. Finally, the companies questioned still seem cautious with respect to international internships and

company projects in terms of the extent to which they contribute to the success of a business engineer. However, over three-quarters of those asked, showed a willingness to expand current university cooperations, above all, in terms of research projects, but also with respect to recruitment and student consulting. To conclude, there is strong interest from industry to cooperate in a network like that offered by IABEP. There is clearly no one fit for all, so it will be important to offer services tailored to the needs of the given companies. One area where there is strong consensus is regarding the importance of business engineers and the value that they bring to organizations.

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Appendix A

Sample questions: Employers' interview protocol

GENERAL POSITION AND FIELD(S) OF INTEREST

IABEP defines Business Engineering as the integration of business aspects with engineering principles, leading to a genuinely cross-disciplinary approach to tackle the business problems of today. Business engineers are competent in various fields of expertise such as business processes and information systems, supply chain management, production management and industrial engineering, global leadership and entrepreneurial thinking as well as performance management. They combine these fields of expertise with a strong engineering background that enables them to find innovative solutions to complex business problems. IABEP aims at promoting the idea of business engineering in the above sense.

Can you see what this is about? Would you consider Business Engineering a relevant field within your company? Do you have employees working in interfacing processes of business and engineering?
Yes/No

Would it be beneficial for you to join IABEP? What are your expectations, potential contributions and concerns? We wish to clarify that in the following by firstly examining the role of business engineering in your company.

Based on the aforementioned definition of Business Engineering, in which field (department, value chain activity) are business engineers deployed in your company?

In which (of those) fields would a (potential) collaboration add most value?

Could you think of a specific focus market of your company, in which IABEP partners could support you?

Do you consider academic or industry partners as more important/attractive for your business engineering needs?

BUSINESS NEEDS

Do you have existing co-operations with company networks or universities? Please specify

How does the current co-operation work?

What projects do you work on together?

What would you further improve in this co-operation? What aspects do you miss?

Do you have any (further) expectations from an International association of Business Engineers? What would drive you to join the association? What would be the biggest advantage for you?

POTENTIAL CONTRIBUTIONS

Now that we have talked about your business engineering needs and potential benefits by joining IABEP, it would be valuable to determine what contributions you could make for the association. In order to do so we should clarify your field(s) of expertise in business engineering first.

In your opinion, is it more suitable for your company to contribute to IABEP by "providing" the respective expert for a project or could you think of any other factors?

LIMITATIONS

What are your main concerns regarding the association?

Do you see any limitations regarding projects under the scope of IABEP?

Are there any possibilities to overcome these limitations? Any measures to be taken in advance?

OPERATIONAL ASPECTS

In the following we wish to crystallize how IABEP could operate on a day-to-day basis and how the organization could be structured.

How important is the international nature and scope of IABEP for you?

Considering your previous professional experience, do you have any recommendations on structuring the association in terms of local or centralized coordination, steering board, supervisory board amongst others? Which organizational structure do you deem most appropriate?

Appendix B

Sample questions: Employers' survey

DEFINING ENGINEERING

BUSINESS AND

UNDERSTANDING ITS RELEVANCE FOR INDUSTRY

Are you familiar with the term business engineering?

How would you define business engineering?

Different countries and institutions award business engineering degrees with different titles. When hiring a business engineer, what are the most common degree titles you look for?

- Industrial Engineering
- Engineering Management
- Engineering Business Management
- Engineering with Business
- Enterprise Engineering
- Industrial and Systems Engineering
- Operations Management
- Logistics Management
- Supply Chain Management

A number of institutions in our network offer 4-year double degrees with partner universities. Students learn, at least, one foreign language and spend 2 years at the partner institution. They conduct a minimum of 2 internships, one at home and one abroad. When recruiting, would you give preference to a student with an international double degree in business engineering as opposed to a standard track degree? If so, why? If not, why not?

Do you consider business engineering a relevant field within your company? Do you have employees working in interfacing processes of business and engineering?

Based on your aforementioned definition of Business Engineering, in which field (department, value chain activity) are business engineers deployed in your company?

In what way does / would employing a business engineering graduate benefit your organisation?

REQUIRED COMPETENCY AND EXPERIENCE

What 'domain expertise' or hard skills topics do you feel are important for the success of a business engineer in your organisation?

What soft skills do you feel are important for

the success of a business engineer in your organisation?

Responsibility

Customer orientation

Goal orientation

Self-motivation

Analytical thinking

Problem-solving

Communication skills

Creativity

Ability to work in a team

Conflict management

Assertiveness

Flexibility

Decision-making

Integrity

Self-awareness

Ecological thinking

Mobility

Intercultural competence

Learning aptitude

Leadership skills

Scale 1 – 5 (1= not at all important; 5 = extremely important)

What other soft skills do you feel are important for the success of a business engineer in your organisation?

When choosing to employ a graduate for a business engineering field, in which languages do you think it is important that they are proficient?

How important do you feel the following work experience is for graduates?

Domestic internship

International internship

Social / community work

Previous employment

University project with a company

Scale 1 – 5 (1 = Not at all important; 5 = extremely important)

Would you give preference to a graduate who had work experience in your organisation?

INTEREST IN COOPERATION

Would you be interested in involving groups of international students in company-based projects? If yes, please elaborate what these

could look like.

Do you cooperate with national / international universities? Please elaborate on the nature of the cooperation.

Are there areas in which you would like to expand (e.g. recruiting, research projects, student consulting)?