# Skill Gaps in Business Education: Fulfilling the Needs of Tech Startups in Berlin

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*While numerous studies have identified skills that employers in general seek when hiring business graduates, none have examined the skills that technology startups view as important and that business graduates are perceived as lacking. Eleven expert interviews and an online survey were carried out to study the perspectives of Berlin startup stakeholders. Data triangulation and coding techniques were applied. The results suggest that soft skills are most important and often lacking among business graduates, while hard skills were perceived as less important. Based on these results, this paper offers recommendations for curriculum development of business programs.*

## INTRODUCTION

### Background and Research Objectives

Over the past few years, Berlin has seen a sizeable influx of technology investment in response to the high concentration of startup companies in the region. In 2011 alone, more than 700 technology (tech) startups were founded in the city, drawing substantial venture capital from both inside and outside of Germany (McKinsey, 2013, p. 11; Winter, 2012, p. 36). Berlin's 8,800 start-ups founded between 2005 and 2012 are employing 22,000 people (McKinsey, 2013, p. 12) and have attracted €173 million in funding in 2012 (Williams, 2013, para. 2). Berlin is also home to universities that foster startup growth through in-house incubators, contributing a number of new businesses each year. These figures lend credibility to a growing belief that Berlin is one of Europe's most important tech startup capitals (McKinsey, 2013; Williams, 2013; Winter, 2012).

Berlin's universities also produce pools of graduates each year, providing local startups with a number of freshly-educated prospective employees. But the skills that tech companies require of recent graduates are constantly undergoing change. In the IT (information technology) industry, where technical skills have historically dominated in importance, recruiters now appear to be more concerned with soft skills, such as communication, teamwork, and personal motivation (Fang, Lee, & Koh, 2005, p. 62, 63). As a result of this shift, a gap now exists between the skills taught by academia and the skills required by IT companies (Havelka & Merhout, 2009; Fang et al., 2005; Lee, Trauth, & Farwell, 1995; Nelson, 1991).

This paper presents an investigation into the specific skills that tech startups in Berlin require of recent business graduates. Many studies (Andrews & Higson, 2008; Conrad & Newberry, 2012;

Holtzman & Craft, 2010; Kavas, 2013; Maes, Weldy, & Icenogle, 1997; Rassuli, Bingi, Karim, & Chang, 2012; Shuayto, 2013; Stowe, Parent, Schwartz, & Sendall, 2012; Tanyel, Mitchell, & McAlum, 1999) emphasize specific skills that business graduates must acquire in order to contribute value once entering the workplace. Little research has been done, however, regarding these skills in the context of tech startups. This gap in the literature, therefore, provided a critical research opportunity that led to the central questions of this study: 1) What skills do Berlin tech startups need from recent business graduates? 2) Which of these skills do tech startups perceive business graduates as lacking?

To answer the research questions, 11 semi-structured qualitative interviews were conducted with stakeholders in the Berlin startup ecosystem regarding key business graduate skills. For further analysis, an online survey with similar skill-related questions was sent out to 153 Berlin tech startups, resulting in 16 responses. For the purposes of this study, the 'digital technology' industry sector, which accounts for 82% of all tech start-ups in Berlin (McKinsey, 2013, p.11), was chosen as a point of emphasis.

**Literature Review**

Maes et al. (1997) identified the essential managerial competencies and skills that managers seek when hiring recent college graduates for entry-level positions. Having identified communication as the top competency they also found that following instructions, listening, conversing and giving feedback are the most important communication skills.

Tanyel et al. (1999) surveyed 151 human resource managers/directors in southeastern United States as well as 129 university faculty to assess what they consider a necessary skill set for recent business graduates entering the workforce. Although some similarities were found between the two groups, the employers indicated that the most important skills they look for are interpersonal skills, ethical values, and responsibility and accountability, while the university faculty showed a preference for interpersonal skills, ethical values and responsibility and accountability (tie), and decision-making and analytical ability, respectively.

Andrews and Higson (2008) interviewed 30 business graduates and 20 employers in UK, Austria, Slovenia and Romania regarding the key skills and competencies that are required of the graduates in a professional environment. The study found that "hard" business-related skills, interpersonal competencies ("soft" skills) and prior work experience were considered most important by both groups.

Holtzman and Kraft (2010) surveyed 163 undergraduate business alumni of a 4-year liberal arts college in the US as well as 45 New Jersey-based employers concerning the skills that they believe are required of business school graduates. Both surveyed groups agreed that writing tasks, quantitative tasks, and knowledge of computer software are important in the work environment.

Focusing on the importance of communication, Conrad and Newberry (2012) conducted a detailed review of the literature to determine the essential outcome-based communication skills for recent business graduates. Through their research, they identified 24 skills that are most common to the literature and are considered important, based on a general categorization of organizational communication, leadership communication, and interpersonal skills. They also indicated that there is a general "lack of preparedness" (p. 118) among recent business graduates regarding these skills, despite a broad recognition of the skills' importance among working professionals and academics alike.

Stowe et al. (2012) also addressed the importance of communication skills for business graduates, though their study was specific to presentation abilities. Through a survey of approximately 350 business students, university faculty and business practitioners, the authors found that both students and faculty acknowledge the importance of presentation skills in a professional environment. Practitioners were found to have a lower view of how business schools prepare their students. Rassuli et al. (2012) surveyed 31 top employers in the Midwestern area of the US regarding the specific skills and knowledge that business graduates should possess in the workplace. The study showed that project management and risk management were not only the top activities valued by the respondent companies, but were also perceived to be the least-emphasized in business curricula. Taking a university perspective, Kavas (2013) noted that business schools are facing a number of challenges reconstructing the business curriculum so that future graduates will have a well-equipped skill set in an increasingly globalized economy. The author also

provided suggestions for improvement. Shuayto (2013) sought to determine whether MBA graduates were adequately prepared for the professional work environment with regard to business skills. The author found that while both employers and business school deans place greater value on soft skills over hard skills, employers believe that soft skills, such as responsibility and accountability, interpersonal skills, and oral communication, are "highly essential to the organization" (p. 101). He argued, therefore, that business schools should place greater emphasis on equipping future graduates with the appropriate soft skills.

The aforementioned studies suggest that business graduates lack a number of essential skills for entering the workplace, yet the research was not confined to tech startups. Furthermore, none of the studies focused on a single startup ecosystem. For these reasons, this study takes a unique approach on two fronts: 1) it focuses on business graduate skills as they pertain to tech startups; 2) it is specific to a startup ecosystem.

## METHODOLOGY

### Data Collection Methods

This study utilized two methods for collecting data—expert interviews and an online survey—to help reduce uncertainties in the data via triangulation (Jick, 1979).

The qualitative data for this study were derived from semi-structured expert interviews. Questions were predominantly skill-based and divided into 5 categories: business curriculum-based skills, analytical skills, computer skills, communication skills, and entrepreneurial skills. The business curriculum-based skills category was based on courses offered in a typical business curriculum (i.e., marketing, accounting, finance, etc.). The curriculum of Berlin's largest undergraduate business administration program was used as a reference. The targeted sample consisted of those who met *one* of the following criteria: a) currently working at a Berlin-based tech startup as a founder and/or executive, b) currently working at a Berlin-based tech startup accelerator or incubator as a founder, director, mentor, or consultant, c) currently working as a venture capitalist with a portfolio consisting of Berlin-based tech startups.

The participant selection process began with an online search (BerlinValley.com, 2013). Interview request emails were sent out with an attached brief synopsis of research objectives. After 23 potential participants had been contacted, 11 expert interviews were arranged to take place over an approximate two-month time span. For each interview that was scheduled, Table 1 categorizes the type of organization, the name of the organization, and the interview participant's role in the organization.

In parallel with the expert interviews, an online survey via Google Forms was carried out to gather additional data from startups. Compared to other survey methods, the online approach was chosen due to a number of key advantages, including a low-cost basis, short response times, control of the sample, and the ability to directly export the data into analysis software (Ilieva, Baron, & Healy, 2002).

Although the structure of the survey was very similar to that of the interview schedule, there were a few notable differences in how the questions were presented. For example, rather than presenting participants with open-ended skill-related questions, they were required to rank the importance of each skill based on a five-point Likert-type scale. The aim of this method was to save participants' time, encourage participation, and facilitate statistical analysis. Additionally, qualitative open-ended questions related to business graduate value proposition were presented at the end of the survey.

The targeted sample consisted of founders and/or executives currently working at a Berlin-based tech startup. Surveys were distributed to 153 startups; of those contacted, 16 participated in the questionnaire, yielding a 10.5% response rate.

**TABLE 1**
**CATEGORIZATION OF EXPERT INTERVIEW PARTICIPANTS**

| Type of organization | Name of organization | Interview participant's role |
|---|---|---|
| Startup | Delivery Hero | Co-Founder, CTO |
| | JoinEasy (1 interview, 2 participants) | Co-Founder, CFO<br>Co-Founder, CMO |
| | Market Logic Software (3 interviews) | Co-Founder, CEO<br>Co-Founder, VP Consulting<br>Senior VP Consulting |
| | Spotistic | Co-Founder, COO |
| University Incubator | Profund (Free University of Berlin) | Innovation Manager |
| | Centre for Entrepreneurship (Technical University of Berlin) | Consultant |
| | Humboldt-Innovation (Humboldt University Berlin) | Managing Director |
| Startup Accelerator | Berlin Startup Academy | Founder, CEO |
| Venture Capital | WESTtech Ventures | COO, Partner |

**Data Reduction**

Interviews and survey responses were analyzed through coding by way of Dedoose software. The process was split into two phases: 1) first cycle coding for general code assignments, and 2) second cycle coding for code organization and the assignment of codes to larger, overarching themes (Saldaña, 2013). Before analyzing the interview transcripts, a preset of magnitude codes was determined based on the skill-related questions from the interview schedule; i.e. each skill was assigned a similarly named code with a selectable magnitude (Miles & Huberman, 1994; Weston et al., 2001). However, participants were not asked to rate each skill based on a pre-determined scale, thus promoting an open-ended question format and allowing room for greater detail and clarification in participant responses. For analysis purposes, therefore, the selectable magnitudes for the skills were calculated as follows: 0: not important; 1: somewhat important or "it depends"; 2: important; 3: very important. The use of magnitude coding allowed much of the qualitative data to be converted to quantitative form. Answers to skill-related questions, however, were often extended and rich in detail. For these instances, descriptive codes (Miles & Huberman, 1994; Saldaña, 2003; Wolcott, 1994) were assigned.

The first cycle of coding resulted in 350 unique codes from the interview transcriptions. Second cycle coding was used to reduce this number by eliminating codes that were either insignificant or redundant (Lewins & Silver, 2007, p. 100). The codes that remained were then grouped together based on common patterns and themes (Miles & Huberman, 1994) - upon which much of the analysis is based. Three major themes were identified and were further broken down into subthemes to facilitate a clearer structure for analysis. Section 3.2 will refer to these themes.

**RESULTS AND ANALYSIS**

**Ranking Order of the Weighted Skills**
*Expert Interview and Online Survey Results*

Table 2 presents a ranking order of the skills based on the aforementioned magnitude coding system. For further analysis, each skill was categorized into two areas: "hard" skills—those that are knowledge- or technical-based (Robles, 2012, p. 453) and "soft" skills—those that involve self-management or are interpersonal in nature (Laker & Powell, 2011, p. 112).

**TABLE 2**
**RANKING OF WEIGHTED SKILLS BASED ON PERCEIVED**
**IMPORTANCE – EXPERT INTERVIEW RESULTS**

| Rank | Skill | Skill Type | Min | Max | Mean | Median |
|---|---|---|---|---|---|---|
| 1 | Microsoft Office skills | Hard | 3 | 3 | 3 | 3 |
| 2 | Presentation skills | Soft | 2 | 3 | 2.9 | 3 |
| 3 | Email writing skills | Soft | 2 | 3 | 2.8 | 3 |
|  | Teamwork skills | Soft | 2 | 3 | 2.8 | 3 |
| 5 | Problem-solving skills | Soft | 1 | 3 | 2.7 | 3 |
| 6 | Original idea contribution | Soft | 2 | 3 | 2.6 | 3 |
| 7 | Phone conversational skills | Soft | 0 | 3 | 2.5 | 3 |
| 8 | Drive to improve products/processes/services | Soft | 1 | 3 | 2.4 | 3 |
| 9 | Sales skills | Soft | 0 | 3 | 2.3 | 3 |
| 10 | Conflict resolution skills | Soft | 0 | 3 | 2.2 | 2 |
|  | Creative drive | Soft | 0 | 3 | 2.2 | 2 |
| 12 | General management skills | Hard | 0 | 3 | 2.1 | 2 |
| 13 | Project management skills | Hard | 0 | 3 | 1.9 | 2 |
| 14 | Marketing skills | Hard | 0 | 3 | 1.8 | 2 |
|  | Networking skills | Soft | 0 | 3 | 1.8 | 3 |
| 16 | Negotiating skills | Soft | 0 | 3 | 1.7 | 2 |
|  | Leadership skills | Soft | 0 | 3 | 1.7 | 2 |
| 18 | Business pitching skills | Soft | 0 | 3 | 1.6 | 2 |
| 19 | Mathematical reasoning skills | Hard | 0 | 3 | 1.5 | 1 |
| 20 | Statistical skills | Hard | 0 | 3 | 1.4 | 1 |
| 21 | Business operations skills | Hard | 0 | 3 | 1.3 | 1 |
| 22 | Controlling skills | Hard | 0 | 3 | 1.2 | 1 |
|  | Finance skills | Hard | 0 | 2 | 1.2 | 1 |
| 24 | Big data skills | Hard | 0 | 3 | 1 | 1 |
|  | Accounting skills | Hard | 0 | 3 | 1 | 1 |
|  | Programming skills | Hard | 0 | 2 | 1 | 1 |
| 27 | Investment skills | Hard | 0 | 2 | 0.9 | 1 |
| 28 | Business information systems skills | Hard | 0 | 2 | 0.8 | 1 |
|  | Human resource management skills | Hard | 0 | 3 | 0.8 | 1 |
| 30 | Web developing skills | Hard | 0 | 3 | 0.7 | 0 |
| 31 | Business law skills | Hard | 0 | 2 | 0.6 | 1 |
| 32 | Business taxation skills | Hard | 0 | 2 | 0.5 | 0 |
| 33 | ERP skills | Hard | 0 | 1 | 0.2 | 0 |
|  | *Arithmetic mean of soft skills* |  |  |  | *2.3* |  |
|  | *Arithmetic mean of hard skills* |  |  |  | *1.2* |  |

According to the interview participants, the most important skills for business graduates in tech startups are (in order of importance) Microsoft Office skills, presentations skills, email writing skills and teamwork skills (tie), problem-solving skills, the contribution of original ideas, and phone conversational skills. Of these, only one skill was categorized as "hard", suggesting a general preference towards soft

skills. Evidence of this can be seen in the soft skills' higher arithmetic mean (2.3 versus 1.2, respectively). In addition to the data above, 73% of participants indicated that business graduates should have a general skill set, as opposed to a specific one; 100% of participants agreed that business graduates must be fluent in English; 73% of participants indicated that business graduates should at least have a general comprehension of the German language.

**TABLE 3**
**RANKING OF WEIGHTED SKILLS BASED ON PERCEIVED**
**IMPORTANCE – ONLINE SURVEY RESULTS**

| Rank | Skill | Skill Type | Min | Max | Mean | Median |
|------|-------|-----------|-----|-----|------|--------|
| 1 | Teamwork skills | Soft | 4 | 5 | 4.8 | 5 |
| 2 | Email writing skills | Soft | 3 | 5 | 4.6 | 5 |
| | Creative drive | Soft | 4 | 5 | 4.6 | 5 |
| 4 | Drive to improve products/processes/services | Soft | 3 | 5 | 4.5 | 5 |
| 5 | Spreadsheet application skills | Hard | 2 | 5 | 4.4 | 5 |
| 6 | Project management skills | Hard | 3 | 5 | 4.3 | 4 |
| | Word processor skills | Hard | 2 | 5 | 4.3 | 4 |
| 8 | Phone conversational skills | Soft | 2 | 5 | 4.2 | 4.5 |
| 9 | Original idea contribution | Soft | 3 | 5 | 4.1 | 4 |
| 10 | Marketing skills | Hard | 3 | 5 | 3.9 | 4 |
| | Presentation program skills | Hard | 2 | 5 | 3.9 | 4 |
| | Conflict resolution skills | Soft | 3 | 5 | 3.9 | 4 |
| | Presentation skills | Soft | 2 | 5 | 3.9 | 4 |
| 14 | Mathematical reasoning skills | Hard | 2 | 5 | 3.8 | 4 |
| | Statistical skills | Hard | 2 | 5 | 3.8 | 4 |
| 16 | Business operations skills | Hard | 1 | 5 | 3.7 | 4 |
| | Networking skills | Soft | 1 | 5 | 3.7 | 4 |
| 18 | Business pitching skills | Soft | 1 | 5 | 3.6 | 4 |
| | Big data skills | Hard | 1 | 5 | 3.6 | 4 |
| 20 | Negotiating skills | Soft | 1 | 5 | 3.4 | 3.5 |
| 21 | Business information systems skills | Hard | 1 | 5 | 3.3 | 3 |
| 22 | General management skills | Hard | 1 | 5 | 3.2 | 3 |
| | The ability to generate new business | Soft | 1 | 5 | 3.2 | 3.5 |
| 24 | Controlling skills | Hard | 2 | 4 | 3.1 | 3 |
| | Leadership skills | Soft | 1 | 5 | 3.1 | 3 |
| 26 | Programming skills | Hard | 1 | 5 | 3.0 | 3 |
| 27 | Finance/investment skills | Hard | 1 | 5 | 2.6 | 3 |
| | Human resource management skills | Hard | 1 | 4 | 2.6 | 3 |
| 29 | Accounting skills | Hard | 1 | 5 | 2.5 | 2 |
| | ERP skills | Hard | 1 | 5 | 2.5 | 2.5 |
| 31 | Business law skills | Hard | 1 | 4 | 2.1 | 2 |
| 32 | Business taxation skills | Hard | 1 | 5 | 2.0 | 2 |
| | *Arithmetic mean of soft skills* | | | | *4.0* | |
| | *Arithmetic mean of hard skills* | | | | *3.3* | |

Online survey participants were also asked to rate the importance of each skill, albeit on a scale of 1 to 5 (1 indicating "not important" and 5 indicating "very important"), as presented in Table 3.

According to the survey respondents, the most important skills for recent business graduates in tech startups are (in order of importance) teamwork skills, email writing skills and creativity (tie), the drive to improve products/processes/services, spreadsheet application skills, project management skills, word processor skills, and phone conversational skills. Compared to the skill rankings from the expert interviews, there is a greater presence of hard skills among those at the top; however, the arithmetic mean of the soft skills outweighs that of hard skills (4.0 versus 3.3, respectively). In addition to the data above, 69% of respondents indicated that business graduates should have a specific skill set, as opposed to a general one; 100% indicated that English is the most (or one of the most) important language for working in their company; 56% indicated that business graduates should at least have a general comprehension of the German language.

*Convergence and Divergence in the Data*

There are a number of similarities between the two tables. Firstly, the arithmetic mean of the soft skills is noticeably higher than that of the hard skills in both tables, suggesting that soft skills are more important for business graduates in a tech startup environment. Secondly, many of the same skills appear in the "top ten" of each table such as Microsoft Office Skills, presentation skills, email writing skills, teamwork skills, original idea contribution, phone conversational skills, drive to improve products/processes/services, conflict resolution skills, and creative drive. Thirdly, many of the same skills were considered least important in both tables, all of which were categorized as "hard". Specifically, business law, business taxation, and ERP systems were the lowest ranked skills in each of the tables. Other low-ranked skills from both tables include accounting skills, programming skills, investment skills, and human resource management skills. Lastly, 100% of the interview participants and survey respondents agreed that English language skills are highly important in a tech startup environment.

Overall, the differences between the skill rankings were negligible. Apart from the skill rankings, however, there was one notable difference: survey respondents placed greater importance on business graduates with a specific skill set (69%), while interview participants demonstrated a preference for a general skill set (73%).

**Descriptive Coding – Expert Interview Results**

Descriptive coding of the interview transcripts led to three prominent themes: 1) business graduate success factors, 2) business graduate skill gaps, and 3) the role of the university. Due to the high number of code occurrences, these themes were further broken down into subthemes, which can be seen in Table 4, along with some of the most commonly occurring codes.

**TABLE 4**
**THEMES, SUBTHEMES AND COMMON CODES FROM THE EXPERT INTERVIEW DATA**

| Theme | Subtheme | Common Codes |
|---|---|---|
| Business graduate success factors | Cultural fit | Smartness, analytical thinking, flexibility, openness, belief in the company, desire to learn, motivation, leadership |
| | Previous experience | Experience in a startup, in an internship, in marketing, in sales and in a chaotic environment |
| | Ideal job candidate | Experience starting something, good grades, possession of soft skills, desire to learn |
| | Unimportant skills | Skills for outsourcing, skills for experts only |
| Business graduate skill gaps | N/A | Communication skills, presentation skills, networking skills, negotiation skills |
| Role of the University | Important skills that cannot be learned in business school | General management skills, decision-making skills, project management skills, networking skills, time management |
| | Participant recommendation for business students and curricula | Presentation, entrepreneurship, marketing, negotiation, communication |
| | "Startups 101" | Idea generation, sales, pitching, customer development, programming basics, startup expectations, venture capital |

The following sections present the themes from Table 4, patterns of codes within these themes, and supporting excerpts from the interview transcripts.

*Business Graduate Success Factors – Cultural Fit*

Hiring for "cultural fit" was one of the most commonly referenced topics in each of the expert interviews, consisting of both the soft skills and intrinsic personal characteristics that serve as a critical success factors for tech startups and their employees. Because of this, many descriptive codes were used in categorizing interview excerpts, the most common of which were smartness (20), analytical thinking (13), flexibility (13), openness (10), belief in the company (7), desire to learn (7), motivation (7), and leadership (5).

Danny Holtschke, COO and Co-Founder of Spotistic, emphasized the importance of having alignment throughout the startup team and how "culture is everything…a common denominator of how you define yourself or your team or what you're working on" (personal communication, January 6, 2014). Claude Ritter, Co-Founder and COO of Delivery Hero, shared a similar viewpoint and stressed the importance of hiring smart individuals who are flexible in their thinking as well as in their skill set. He noted that "it helps if you can adapt quickly and if you're comfortable in situations that are always changing" (personal communication, December 11, 2013). Robert Langer, a consultant to startups at Technical University of Berlin's Centre for Entrepreneurship, stressed that business graduates who fit "on an emotional and on a social level" are of greater value to startups than those who have extensive academic credentials (personal communication, November 21, 2013).

*Business Graduate Success Factors – Previous Experience*

Analysis of the interview transcripts led to a number of codes related to previous experience, namely in a previous startup (7), in an internship (6), in marketing (5), in sales (4), and in a chaotic environment (4).

Tizian Bonus, Senior VP Consulting of Market Logic Software, noted that previous experience is a necessity for any business graduate hoping to work for his company, though experience in a specific field is not necessarily a deciding factor. For him, "it must be a cumulative view that… that person has some work experience and brings something to the table, some point of view" (personal communication, December 6, 2013). Alexander Kölpin, COO and partner of WESTtech Ventures, had a similar opinion in that he wouldn't consider hiring a business graduate unless the person has "some sort of track record in internships or something similar" (personal communication, December 4, 2013). Van Sang Pham, Co-Founder and CMO of JoinEasy, took this a step further and highlighted the importance of previous experience in sales, marketing and communication, "specifically some experience which targets the startup environment" (personal communication, January 8, 2014).

*Business Graduate Success Factors – Ideal Job Candidate*

Towards the end of each interview, each participant was asked to describe the ideal business graduate job candidate for tech startups. The most frequently occurring codes within this subtheme were as follows: experience starting something (5), good grades (3), possession of soft skills (3), and a desire to learn (3).

Good grades were one of the most frequently unprompted characteristics that participants look for in business graduates. Some interviewees such as Kay Iversen, CEO and Co-Founder of Market Logic Software AG, considered grades a make-or-break factor for prospective job candidates. For him, "if there is not a good exam, regardless of what it is, I would not hire them" (personal communication, November 25, 2013). Alexander Kölpin also highlighted the importance of good grades, though he also listed a number of additional qualities that make up the ideal job candidate, such as humanitarianism, involvement in the startup scene, and international experience (personal communication, December 4, 2013). Other interview participants, however, described the ideal business graduate as one who possesses a number of soft skills and a desire to learn.

*Business Graduate Success Factors – Unimportant Skills*

Although the interview participants listed a number of skills and personal attributes that are important for business graduates, they also touched on skills that they consider relatively unimportant. When probed for further clarification, participants often noted that the skills are either too advanced or are better handled by an expert. The most commonly occurring codes for this subtheme were outsourcing (9) and skills for experts only (6).

When asked about accounting skills for business graduates, Robert Langer noted that they are least important because they are "very easy to outsource" (personal communication, November 21, 2013). Christoph Räthke, founder and CEO of the Berlin Startup Academy, shared a similar opinion when asked about skills in business law, noting that they're "not required at all. For that you hire a lawyer" (personal communication, October 25, 2013). Other participants mentioned that some of the less important skills can be brought or acquired in-house. When asked about business taxation skills, Martin Mahn, Managing Director of Humboldt-Innovation, responded, "it's not that important because you can buy this knowledge" (personal communication, November 29, 2013). Fabian Feldhaus, Innovation Manager in the ICT, Media and Creative Sector for *profund,* noted that ERP systems skills are "not so necessary… because when you are able to buy SAP or Oracle, in most parts you have an expert on this" (personal communication, November 21, 2013).

The aforementioned hard skills, though a part of the discussion, were not a main point of emphasis. Rather, participants had more to say about critical skills that business graduates are lacking, a topic that will be discussed in the next section.

*Business Graduate Skill Gaps*

After reflecting on the importance of specific skills within startups, interview participants were asked if business graduates were commonly missing any of these skills. The most commonly occurring codes

within this theme were as follows: communication skills (7), presentation skills (3), networking skills (2), and negotiation skills (2).

Fabian Feldhaus noted that presentation skills and business plan writing are often missing and that business graduates with sales skills and entrepreneurial characteristics are difficult to come by (personal communication, November 21, 2013). Robert Langer also stressed the importance of sales as "the number-one-needed skill in startups in general… It's an area where business graduates or business people in general can really help startups a lot" (personal communication, November 21, 2013). Kay Iversen, on the other hand, noted that he would prefer to "have more systematic thinking, conceptual thinking and presentation [skills]… That's the number one thing for me which I'd like to have more [of]" (personal communication, November 25, 2013). Claude Ritter agreed that business graduates are lacking presentation skills, in addition to negotiating skills and the ability to build a business case. He also noted that "it would be good to have a course that summarizes things that are crucial in a startup and then have modules for each of those things" (personal communication, December 11, 2013).

Other interview participants, however, viewed networking and negotiating as key skill gaps among business graduates.

*The Role of the University – Important Skills That Cannot Be Learned in Business School*

Some of the skills that participants considered important for business graduates were also perceived as un-learnable in the classroom. "Skills That Can't Be Learned in a Business School", the subtheme that emerged from these instances, consists of the following commonly-occurring codes: general management skills (3), decision-making skills (2), project management skills (2), networking skills (2), and time management skills (2).

When asked about the importance of general management skills, decision-making and time management, Alexander Kölpin noted that "they are the most important… but these are the [skills] you cannot really learn from [a university]…" (personal communication, December 4, 2013). Tizian Bonus also mentioned that general management skills, decision-making and time management are vital to his company, although he questioned if students would be able to acquire these skills at the undergraduate level. According to him, "It's decision-making that's important… it's one of the key things we look for. Do I think this can be taught in a business class? No, I do not believe so" (personal communication, December 6, 2013). Danny Holtschke also commented on general management skills and compared them, as well as project management skills, to "connecting the dots" between different stakeholders, "which you don't learn at university, and you can't" (personal communication, January 6, 2014). Elizabeth Morgan, Co-Founder and VP Consulting of Market Logic Software, on the other hand, noted that the only skill that can't be taught through business education isn't actually a skill at all, but rather a personal characteristic: passion (personal communication, November 26, 2013). These excerpts suggest that business graduates are not necessarily expected to build up their entire skill set at the university.

*The Role of the University - Participant Recommendations for Business Students and Business Curricula*

Many of the participants offered their thoughts on university courses that would be most beneficial for business students who want to work in a tech startup post-graduation. Some participants even provided curriculum development recommendations for business schools.

Table 5 displays the course recommendations for business students, the course implementation recommendations for business curricula, and the number of participants who made the recommendations.

Based on participant responses, presentation is the most-highly-recommended course (5 total recommendations), followed by entrepreneurship (3). Many of these recommendations also mirror some of the aforementioned top-ranked skills, such as presentation, conflict resolution, leadership, and communication. It should also be noted that two of the recommendations for students, engineering and natural sciences, are outside of a standard business curriculum. This may reflect the fact that 73% of the interview participants indicated that business graduates should have a general skill set, as opposed to a specific one.

**TABLE 5**
**INTERVIEW PARTICIPANT COURSE RECOMMENDATIONS FOR BUSINESS STUDENTS
AND COURSE IMPLEMENTATION RECOMMENDATIONS FOR BUSINESS CURRICULA**

| Courses recommended to business students | Number of occurrences | Course implementations recommended for business curricula | Number of occurrences |
|---|---|---|---|
| Presentation | 3 | Communication | 2 |
| Entrepreneurship | 2 | Presentation | 2 |
| Marketing | 2 | Conflict resolution | 1 |
| Negotiation | 2 | Entrepreneurship | 1 |
| Business development | 1 | Leadership | 1 |
| Business plan creation | 1 | Negotiation | 1 |
| Engineering | 1 | Practical problem solving | 1 |
| Finance | 1 | Presentation | 1 |
| Natural sciences | 1 | Sales | 1 |
| Sales | 1 | Startups | 1 |
| Statistics | 1 | | |
| Systems Theory | 1 | | |

*The Role of the University - Startups 101*

Toward the end of each interview, participants were asked the following question: for business students who want to work for a tech startup after graduation, do you believe it would be beneficial if they were offered a university course that focuses on the most practical aspects of working in a tech startup environment? Each interview participant (with the exception of Christoph Räthke, as this question was not introduced until subsequent interviews) indicated that such a "Startups 101" course would be valuable, both for the students themselves and for the Berlin startup ecosystem. Taking it a step further, some participants recommended topics/modules to be implemented into the course. Robert Langer, for example, stressed that "a nice entrepreneurial lecture that combines idea generation with trial-and-error sales pitching in a real environment…it definitely would be a break-through" (personal communication, November 21, 2013). Danny Holtschke supported this argument and took it a step further: "I think it's a great idea… [topics that should be covered are] customer development, maybe some basic programming skills… what a frontend is and what a backend is" (personal communication, January 6, 2014). When asked for his opinion on "Startups 101", Hao Qin, Co-Founder and CFO of JoinEasy, made the following statement: "Of course [it would be beneficial]… [What should be taught are] the risks and what is expected behind building up a company" (personal communication, January 8, 2014).

Although "Startups 101" was presented merely as a concept, it was introduced into the interview schedule to further understand what tech startups need from business graduates. In sum, the participants' responses to this concept suggest that graduates could be more valuable to the tech startup scene if equipped with the proper startup-related knowledge and experience.

**Descriptive Coding – Online Survey Results**

The online survey, though mostly comprised of weighted skill questions, concluded with three qualitative, open-ended questions. Table 6 displays these questions, the codes assigned to the responses, and the number of times each code occurred.

**TABLE 6**
**CODES, CODE CLASSIFICATION AND CODE OCCURRENCES OF OPEN-ENDED
ONLINE SURVEY RESPONSES**

### *What do you need out of business graduates that you're not getting?*

| Coded Response | Classification | Number of occurrences |
|---|---|---|
| Online/Mobile skills | Hard | 3 |
| Abstract thinking | Soft | 1 |
| Confidence | Soft | 1 |
| Creative problem solving skills | Soft | 1 |
| English speaking skills | Hard | 1 |
| Marketing skills (online) | Hard | 1 |
| Pragmatism | Soft | 1 |
| Self-drive | Soft | 1 |
| Smartness | Soft | 1 |
| Training specialized for startups | Hard | 1 |
| Writing skills | Hard | 1 |
| *Total number of soft code occurrences* | | *6* |
| *Total number of hard code occurrences* | | *7* |

### *Please describe the ideal business graduate job candidate for your company.*

| Coded Response | Classification | Number of occurrences |
|---|---|---|
| Desire to learn | Soft | 3 |
| Presentation/pitching skills | Soft | 3 |
| Creative | Soft | 2 |
| Marketing skills | Hard | 2 |
| Motivated | Soft | 2 |
| Passionate | Soft | 2 |
| Previous startup experience | Hard | 2 |
| Team player | Soft | 2 |
| Accounting skills | Hard | 1 |
| Confident | Soft | 1 |
| English speaking skills | Hard | 1 |
| Financial planning skills | Hard | 1 |
| Flexible | Soft | 1 |
| Hard skills | Hard | 1 |
| Intercultural skills | Soft | 1 |
| Networking skills | Soft | 1 |
| Online/mobile skills | Hard | 1 |
| Original ideas | Soft | 1 |
| *Total number of soft code occurrences* | | *19* |
| *Total number of hard code occurrences* | | *9* |

*Table 6 continued on next page*

| How can business graduates be of greater value to the Berlin startup ecosystem in the future? | |
| --- | --- |
| **Coded Response** | **Number of occurrences** |
| Found your own venture | 4 |
| Take courses that focus on startups/small enterprises | 2 |
| Learn about mobile/internet/social media | 2 |
| Work in a startup (i.e. internship) | 2 |
| Be engaged | 1 |
| Have big visions | 1 |
| Be creative | 1 |

According to the survey respondents, online/mobile skills represent the greatest business graduate shortcoming, in addition to other hard skills such as English speaking skills. Several soft skills and personal characteristics, however, were also noted as missing, such as abstract thinking, creative problem-solving, and smartness. When asked to describe the ideal job candidate, respondents appeared to favor soft skills, particularly the desire to learn and presentation/pitching skills. Furthermore, the total number of soft skill occurrences for this question was more than twice that of hard skills (19 versus 9, respectively). Respondents also provided a number of recommendations for making business graduates more valuable to tech startups in the future. "Create your own venture", for example, was the most frequently cited recommendation, followed by "take courses that focus on startups/small enterprises", "learn about mobile/internet/social media", and "work in a startup".

**Convergence and Divergence in the Coded Data**

The coded responses from the expert interviews and the online surveys share several similarities. Firstly, interview participants and survey respondents appeared to agree that soft skills/attributes are most important for business graduates in tech startups. Specifically, presentation skills, smartness/intelligence, teamwork, a desire to learn, abstract thinking, creativity, and flexibility were all regarded as highly important by both groups. Secondly, many interview participants and survey respondents agreed that previous startup experience is a valuable asset for business students who want to work in a tech startup after graduation. "Experience starting something" was also a highly-regarded plus point. Thirdly, participants from both groups noted that business students could benefit from a university course that focuses on startups. Specifically, 91% of the interview participants agreed that a "Startups 101" course would be helpful. Although online survey respondents were not asked about "Startups 101", two respondents—unprompted—stated that a course with a focus on startups/small enterprises would make business graduates more valuable to tech startups in the future.

There was, however, one notable difference in the data sets. In general, survey respondents seemed to place greater emphasis on the importance of hard skills compared to the interview participants. Online/mobile skills, English speaking skills, online marketing skills, and training specialized for startups were all mentioned as skill gaps according to survey respondents. No interview participants, however, cited these as missing skills. Furthermore, some survey respondents described the ideal business graduate as one who possesses hard skills such as accounting, finance, and marketing. No interview participants, however, made references to these skills when describing the ideal job candidate.

**DISCUSSION AND RECOMMENDATIONS**

**Conclusions and Recommendations for Business Schools**

This study provided a ranking order of the skills considered most important for business graduates in Berlin tech startups. Perhaps more importantly, the study also highlighted a number of skills that these graduates are perceived as lacking. Based on these findings, one implication for business schools is that

the business curriculum itself may be a source of the problem. Indeed, "management educators in business schools struggle to revise and update the curricula to produce graduates with the skills and abilities they need to enter the business world and contribute effectively to their organizations" (Tanyel et al., 1999, pg. 33). Still, one may argue that certain skills, such as those that are interpersonal in nature, simply cannot be learned in the classroom. Conrad & Newberry (2012), however, challenge this argument and even contend that these skills are not only learnable, but teachable in the classroom (p. 119).

The skills that this study found to be most relevant for business graduates—and particularly those skills that were viewed as missing—should therefore serve as the starting point for any proposed changes to business curricula. In particular, careful attention should be given to those skills that can be incorporated into existing courses. Soft skills such as presentation, idea pitching, email writing, team building, and conflict resolution have the capability to be built into a number of existing business courses. One could contend, however, that many of these skills are already being emphasized in business curricula, but this paper argues that these skills should be emphasized in a way that is also relevant to startups. In learning these skills, business students should have a firm understanding of what is expected in a startup environment, how to handle those expectations, how to manage change and remain flexible, how to communicate with various internal and external stakeholders, and how to meaningfully convey their ideas, among others. The benefits of such training would be twofold: 1) business graduates would be better prepared for the startup environment, thus increasing their value proposition, and 2) startups would have better access to human capital that is geared specially towards their needs.

Regarding the hard skills presented in this study, many are already being taught in business schools, however, their relevance in the context of startups must be taken into account. Web-based skills are a particularly important point of emphasis as they can be integrated into a number of existing courses. Collaboration systems software such as Google Docs, for example, is common among tech startups and should be utilized in the classroom. Some academic institutions, in fact, are experimenting with these systems to better prepare students for online collaboration in the workplace (Rienzo & Han, 2009, p. 123). Acquiring these skills at the university, therefore, would likely be advantageous for those business students who aspire to work for a tech startup. Additionally, the courses that were considered relatively unimportant for business graduates, such as business law and business taxation, must also take into account the needs of startups. Although many of the study's participants indicated that these skills are specifically for experts who are often external professional service providers, an understanding of their relevance in the context of startups could prove valuable by helping graduates to better communicate with those experts.

Business schools should also consider implementing a course that focuses on the needs of startups. Indeed, 91% of those interviewed indicated that such a "Startups 101" course would be beneficial to both students and the Berlin startup ecosystem as a whole. Participants also provided suggestions for key areas of emphasis, including idea generation, sales, pitching, customer development, and programming basics. These suggestions, combined with some of the higher-ranked skills presented in this study, should serve as a foundation for shaping the course. However, further research is necessary before setting any changes in motion. Specifically, more expert interviews with tech startups are crucial for gaining a better understanding of how the course should be structured.

**Limitations and Recommendations for Further Research**

This study was limited to 11 expert interviews and a relatively small online survey. Therefore, it is exploratory in nature and the results alone do not necessitate changes to business curricula. Further research in this area is required.

The study did not focus on startups of any particular size or growth phase. The scope of this paper, therefore, is relatively broad relative to its sample size and make-up. Additionally, this study took into account the views of some individuals who, though involved in Berlin tech startup scene, work outside of the startups themselves; i.e. startup incubators/accelerators and venture capitalists. This also broadened the scope of the research. Furthermore, no interviews were conducted with university faculty regarding

their thoughts on business graduate skills gaps, as well as potential problems with and future plans for business curricula.

It is therefore recommended that future research in this area employ a narrower project scope. For example, one option would be to assess the skill gaps of business graduates as they pertain to startups in a specific life-cycle phase (company formation phase, development phase, growth phase, etc.).

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