From College to Consulting Through the Main Door: when IT Skills Make a Difference for Junior Enterprise Students

Completed Research Paper

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Abstract

For many European college students, Junior Enterprise (JE) is a popular part of the educational process that is designed to give them real life exposure to companies. Many students aspire entering the consulting field, and the JE experience becomes a way to signal their fit to potential employers. However, our analysis conducted on 768 different LinkedIn professional profiles shows stark differences between students who lack technical skills and those with strong technical skills. In particular, while higher IT skills are, on average, positively correlated with the individual probability of becoming a consultant, this positive effect is significantly moderated by gender, undergraduate major and role played within JE. Using signaling theory to explain our results, we find evidence that signals are not universal and, for some groups, high IT skills are more important than to other ones.

Keywords: Junior Enterprise, IT Skills, Consulting, Signaling Theory

Introduction

“I did not have clear ideas about what I wanted to do in the future, and – I have to admit – I did not even know what consulting was all about. I decided to join a junior enterprise because I was extremely attracted by its “learning by doing philosophy. Clearly, this experience raised my interest for consulting, which I see as a way to learn a lot about different industries and sectors”. Former Junior Enterprise consultant and board member (currently a consultant at Accenture, Italy)

“JE is a breath of fresh air compared to the seriousness and rigidity [of academic courses]”. Former Junior Enterprise consultant and vice president of JEME Bocconi (currently a business analyst at P&G, Belgium)

First started in France in 1967, Junior Enterprise (JE) is a staple of the European college experience and gives JE members first-hand practice, acting in a consultant–client – like situation, within their field of study. Typically housed within the business school at a university, JE is designed to allow students to
build practical work experiences and to bridge the divide that traditionally separates the academic from the business world. JADE, the European Confederation of Junior Enterprises, reports having 20,000 student members in fifteen countries and versions of JADE are springing up in China, the US and Brazil. In short, JE is a well-recognized component of the European educational process and its fame is widely popular among students that want to differentiate themselves from their peers and accelerate entry into the labor market, particularly those who want to enter the field of consulting.

Consulting can be classified as a two-sided market business. Organizations compete on two fronts: capturing professional mandates from clients for advisory and/or implementation services, and hiring qualified professional resources. Two-sided market theory (Parker and Van Alstyne 2000; Parker and Van Alstyne 2005) is based on the fundamental notion of two distinct user groups that meet thanks to an encountering platform. In our case, consulting acts as the two-sided platform that assembles the needs of clients looking for help and professional resources looking for a job. Other examples of two-sided businesses are: credit cards (composed of cardholders and merchants); operating systems (end-users and developers); video-game consoles (gamers and game developers); recruitment sites (job seekers and recruiters); search engines (advertisers and users).

The consulting market in Europe is significantly occupied by IT related consulting services, as annually stated by the market surveys conducted under the supervision of FEACO (European Federation of Management Consulting Enterprises). Moreover, the consulting market – not only in Europe - predominantly hires junior candidates, and welcomes them at the bottom of their professional pyramids as the process for learning the profession and the firm’s organizational practices. This hiring strategy has been extensively supported by the ILM theory (Internal Labor Market) (Doeringer and Piore 1971): because of skill specificity, customary laws and on the job training practices, consulting firms prefer to grow their professional staff from within, instead of hiring qualified people from the marketplace. Thus, the main entry door for consulting remains the bottom of the hierarchical ladder, represented by jobs offered to junior consultants.

In this paper we focus on one side of the platform, i.e. the interactions that take place between consulting and professional resources, as job seekers. Consulting firms spend significant amount of time in recruiting efforts on campuses; in the European scene, while meeting with students, they often convene with motivated, energized young college seniors that received a boost from their JE experience. Since it takes two to tango, both aspiring consultants and consulting firms must strike a balance to actively populate one of the most fervid labor markets in the economy. Thus, consulting firms are looking for compatible skill sets while interviewing young college graduates, and strong IT skills can make a difference in finding a job in the profession.

In this paper, we use signaling theory to attempt at understanding the impact of high versus low IT skills for four groups of college students: (1) those who did JE and entered consulting, (2) those who did JE and did not enter consulting, (3) those who did not do JE and entered consulting and (4) those who did not do JE and did not enter consulting. Further, we seek to understand the impact of gender, undergraduate major, and other variables in moderating the value of high IT skills for the different groups.

Having said this, our research questions are the following:

- **RQ1** – Does the enrollment in a JE enhances, other things being equal, the likelihood of being hired as a consultant?
- **RQ2** - What impacts do strong IT skills have on obtaining a Junior Enterprise affiliation and subsequently obtaining a career in consulting?
- **RQ3** - What moderates the impact of strong IT skills on obtaining a Junior Enterprise affiliation and subsequently obtaining a career in consulting?

Through this research practitioners and schools become better equipped to understand who should attend JE, the outcomes of the JE experience, and how these are different by a number of factors. This also sets the stage for future researchers to explore the skills that JE develops and to better understand the motivations and outcomes of JE versus non-JE students.

Furthermore, as we will better discuss at a subsequent stage, even if we do not claim for identifying a fully
causal effect, we attempted at partially eliminating a potential self-selection bias in the sample by conducting qualitative interviews that confirm how the large majority of students did not have the intention of embracing a consulting career before applying to a JE. Thus, we feel confident in ruling out the alternative explanation according with students self-select themselves when enrolling to a JE. Such discovery goes in the direction of a more causal interpretation.

The remainder of this paper is structured as follows. Section 2 provides our theoretical development, Section 3 describes our methods and data, Section 4 discusses our findings and Section 5 presents our limitation, direction for future research, and conclusions.

Making Dreams Come True: The Long Awaited Path to Become Consultant

Consulting and JE: Two Tango Dancers

There is little doubt about the allure of a consulting career to college students. By one estimate, in 2015, over 200,000 consultants sold over $100b of advice and approximately 35% of this total was from technology-related work (Haffman, 2014). A key way that firms make money in consulting is through a pyramidal structure that requires a large number of junior consultants to do the work and, by billing the junior out at a 2x – 3x multiplier of their salary, distribute profits to those higher in the pyramid. It is not surprising that a number of partner in top firms regularly are compensated at over $2m per year and the possibility of these high salaries fuels the desire of college students to join the lucrative world of consulting. Another reason why consulting is attractive has to do with the nature of the job: by working for different clients, in different industries, junior consultants quickly gain experience across different work settings and facing different work challenges. This is generally perceived as a much speedier learning opportunity for young graduates as opposed to a traditional career in industry.

On the other hand, it’s not easy to get into. The number of college students who want to join consulting make part of a large pool from which top consulting firms (e.g. McKinsey, Bain, PwC among others) can be highly selective in their recruiting. Tough selection prerequisites are justified by the compelling need of bringing aboard high quality people, since they are the core part of service delivery to clients. These characteristics embrace the vast majority management consulting companies throughout US, Europe and Asia.

There are a number of flavors of JEs although most operate very similarly. European countries where JEs have a strong presence are France, Italy, Portugal and Spain, with France being the most crowded place, and the Nordic regions of the Netherlands, UK, Sweden, Denmark and Norway. Within the JE European models, students are drawn from a variety of disciplines but are largely taken from business schools. Although the specific process to become a JE member varies by country, in general, a prospective candidate submits a resume and is interviewed before being offered a position within JE for a period of time that overlaps with the student academic status. The JE acts as a consulting company, offering time and effort of its members to client organizations for an agreed price. Since members are volunteers, not receiving any compensation, resources must be sufficient for operating running costs of the association, and they are often reinvested in educational opportunities to their members, during their tenure as JE. Client organizations can vary: large corporations have a long established tradition of engaging JE on several campuses; the consulting industry in Europe has learned too the JE model, and it often outsources to the local JE data collection projects, industry analysis research or benchmarking studies, needed for delivering services to their clients. In both cases, JE members are exposed to professional services delivering, which add value to resumes and propels dreams of becoming a more qualified candidate in the job market.

JEs recruit candidates on campus with a competitive model, like consulting firms do. In most of the cases they operate as students’ associations, except in France where the government has formally recognized them and granted them an ad-hoc statute that differentiates JEs from other companies. This considerably lightens their tax burden and allows them to lower their prices compared to other service firms. Some of the volunteer students take the leadership of the association; others simply contribute to it with their time.

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1 Exceptions are in France where students working on projects may receive a small daily fee.
and professional capabilities to deliver services to clients. In some countries there is a clear and distinct role separation between leaders that manage, sell to clients and hire students, and those who simply work on projects. In addition, the organization is limited in size and members carry on seamlessly professional work for clients while running the association. In some countries JEs have a national footprint and the local on-campus JE operates as a branch office of the national body; this enhances the cooperation and integration across campuses, for resource allocation and mostly for client management.

The major difference between JEs and traditional consulting firms is the legal status: at no point JEs can be compared with a traditional employer, from this point of view. In all countries where they operate, they choose the association legal status (besides some minor discrepancies among European countries) with no employees, that hires temporary workers for temporary jobs. Moreover all JEs are headquartered on campuses: in other words, the local university gives them office space for free, access to IT campus infrastructure and services. All this significantly lowers the overhead costs of running a traditional consulting firm. Other peculiarities of JEs that are not shared with consulting firms are more interchangeable roles, a stronger sub-tasks orientation, and a significantly higher turnover rate, since the JE membership overlaps with the student status.

Being enrolled to a JE represents a chance to experiment learning-by-doing. In fact, while knowledge acquired from books, sitting in a classroom, contributes to the generation of a cultural asset, which must be converted into practical abilities later on, a real experience might have the benefit of getting closer, in terms of competencies, to what employers require (Pittaway et al. 2011)

**Job Market Signaling**

However, hiring employees, but particularly new college graduates, is fraught with information asymmetry in that the applicant knows far more about his/her skills than the consulting firm and applicants can take advantage of their information asymmetry advantage in landing a job with a consulting firm.\(^2\) Thus, the applicant engages in signaling, which is the process by which s/he conveys some relevant information about him/herself in an attempt to get the consulting firm to hire him/her (Spence 1973). At the same time, the consulting firm (potential employer) is engaging in screening, which is a process by which the consulting firm attempts to discover some information about the applicant that s/he would prefer not to reveal (Stigler 1961). A unique part about job market signaling and screening is the many-to-many relationship that exists. That is, there are multiple applicants seeking jobs with multiple firms and thus competition exists for both the applicant and the consulting firm, and this challenges consulting firms to accurately read applicant signals.

The literature has generally assumed that signals are true and useful to reduce the information asymmetry held by the holder (Connelly et al. 2011). As a result, signal recipients tend to view signals as trustworthy (Heil and Robertson 1991). However, in a recent study, Dawson et al. (2016) challenges this assumption and developed a typology of signals from their work in the consulting services market place. They found that signals exist on two dimensions: veracity (accuracy of the signal) and intention (intent to send a signal). Thus, signals can be high veracity/high intention (deliberate), which refers aligns with the traditional signaling literature that signals are both trustworthy and deliberate. Signals can have low veracity/high intention, which are intentionally inaccurate signals given off by the signaler to intentionally mislead the signal recipient. Signals can be high veracity/low intention, which are true things that the signaler may inadvertently disclose. Finally, signals can have low veracity low intention, which are those signals that are unintentionally false. It is incumbent upon the signal recipient (consulting firm) to correctly interpret the signals and this may be a challenge and, at present, it is not clear how signaling works with JE participants or if any JE attributes moderate the signal.

**JE Signaling Attributes**

Given that most consulting engagements require technology skills, it is not surprising that aspiring consultants would highlight technology experience on their resume in order to signal to potential

\(^2\) Following Dawson et al. (2016), we could argue that bilateral information asymmetry exists given that the consulting firm knows far more about the “goodness” of working there than the applicant. However, the focus of this study is on knowledge of the applicant and so a discussion of bilateral information asymmetry is out of scope.

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**Role of Different Factors in Obtaining Consulting Jobs**

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recruiters that the aspiring consultant would be a good fit with the consulting firm. However, it is possible that the strong technology skills signal may be moderated (garbled) by other signals that the aspiring consultant is providing. Our research model is shown below:

**Figure 1 – Research Model**

**Gender**

Much has been written about the role of gender in business in general and, in particular, in the IT domain. Two competing schools of thought exist on the gender roles within business. One school of thought, popularized by Dennis and Kunkel (2004) in their examination of top management teams, found that gender differences were not critical. However, other research has shown stark gender related differences throughout the business world and gender differences more frequently occur in private sector IT work (Reid et al. 2008).

However, while women account for an increasingly amount of the workforce (56%) in the historically male-dominated professions such as law and medicine, the number of women in IT have continued to drop (Trauth and Quesenberry 2006). This is not surprising considering that women currently account for only about 25% of those earning a degree in IT.

While it is understandable why consulting firms would want to hire more women in order to support diversity goals (Stringer, 1995), it is equally understandable that, under the principle of gender homogeneity, consulting firms would seek to hire more male consultants given their percentage of current staffing. Hence, the gender of the individual may moderate the value of high IT skills.

**Undergraduate Major**

Consulting firms engage in both strategy work and in implementation work; Dawson et al. (2016) developed a knowledge-based typology (tacit versus explicit knowledge) to categorize IT consulting work. Explicit knowledge, which can best be thought of as a usable body of facts (Bassellier et al. 2001), can be readily captured within a database while tacit knowledge moves from a simple understanding of the task to understanding how the tasks link to process, which link to the organization (Bassellier et al. 2001). Tacit and explicit knowledge mutually coexist inside of all IT projects but can vary based on the type of the project. Projects that are high explicit/high tacit are major systems implementation projects (such as ERP implementations). Projects that are low explicit/high tacit include such things as data analytics assessments and security readiness assessments. Projects that are high explicit/low tacit would include such things as telecommunications installments. While Dawson et al. (2016) did not provide an example of low tacit/low explicit, a previous iteration of their work identified building a simple spreadsheet in that quadrant.

Given the need for some level of both tacit and explicit knowledge in the IT domain, including in IT consulting (Furst-Bowe et al., 1995; Jancura et al., 1992), it seems clear that an undergraduate major in information systems would be a valuable signal to consulting firms about the applicant’s skills with technology. Thus, the applicant’s holding of an information systems degree should provide a valuable
signal to the consulting firm, even in the presence of high IT skills.

**Role in JE**

As previously described, JE participants can either be management or delivery (or both – depending upon the model). We speculate that a JE participant in a management role is likely to be signaling an increased interest in consulting and a willingness to take on new challenges, considering the fact that a managerial role often corresponds to a more advanced career level (Hohlbein, 2008). Thus, we expect to see differences across groups based on the individual’s role in JE among those with high IT skills.

**Summary**

Given the importance of JE to consulting firms and the importance of IT to consulting, it seems clear that a student with JE experience and high IT skills is likely to be highly sought after upon graduation. What is unclear is what, if anything, moderates the strength of those signals. That is the focus of this research.

**Methodology and Data**

The method chosen to explore the research questions is CV analysis using LinkedIn profiles. Indeed, CV analysis presents several advantages (Morzinski and Schubot 2000) over other data collection methodologies. In particular, it is a “non-invasive record-review” method, since response from subjects of analysis is not required. This allows avoiding the multiple issues connected with primary data collection through questionnaires, such as response bias and the time of administering and completing the surveys for both the interviewer and the interviewee. However, data extracted from CVs are subject to the limitations of self-reported data, in terms both of homogeneity and reliability (Cañibano and Bozeman 2009).

In any case, the usage of LinkedIn can limit to some extent these possible biases since data is publicly available, it can be disproved easily and the structure of LinkedIn profiles is more or less standard. On the other hand, the usage of LinkedIn clearly implies that all the results obtained from subsequent analysis will have validity only for the LinkedIn user population. In order to address this potential weakness, we enriched our quantitative analysis with a qualitative research performed though interviews, aimed mainly at ensuring the absence on a self-selection bias of the sample. In other words, students who apply for JEs, could be the same individuals who were willing to get a job as a consultant after graduation from the very embryonic path of their study program; we will see that this is not the case, as the large majority of respondents rejected this issue. In practice, a dataset has been manually crafted from LinkedIn queries, made of two smaller datasets of equal size: the first including only former junior entrepreneurs present on LinkedIn (X=1) and the second only non-former junior entrepreneurs present on LinkedIn (X=0) as a control or comparison group. As it will be specified in the following paragraphs, the first dataset has been created with a double stratified sampling methodology and the control dataset has been set up according to a one-to-one “matching” between subjects in order to increase model robustness and reduce bias (Stuart and Rubin 2004). The structure of the overall dataset is represented by the diagram below (Figure ).
The first step in data collection was to identify the total population size of former Junior Enterprise having a LinkedIn profile, which can easily be accessed through a Premium LinkedIn account. In order to quantify the population, a listing of the 265 Junior Enterprise operating in Europe was prepared. Subsequently, a series of queries was made through LinkedIn Advanced Search by putting each Junior Enterprise’s name in the “Company” search box and specifying “Past, not current” in order to have only the number of former Junior Entrepreneurs for each Junior Enterprise. These queries provided for a total number of 7,957 former, not current Juni or Entrepreneurs on LinkedIn.

Once obtained the total population dimension of 7,957, the second step in the data collection process was to determine the sample size to be used. Yamane’s Simplified Formula for Proportions (Yamane 1967) was used. This formula implies a 95% confidence level and a Proportion of 0.5. From this calculation, a sample of n=381 former Junior Entrepreneurs would be required. A similar result was obtained from Cochran’s Formula (Cochran 1963) for computing samples from large populations (N > 2,000). This formula resulted in a required sample size of n=384. This result is very similar to the former and thus it was the one selected in this study. No small population correction factor was applied due to the considerable dimension of the population. In addition, it is important to remember that these computations of sample sizes imply that the attributes being measured are distributed normally or nearly normally. As we will see, this assumption will not be met since the majority of the variables that will be collected are dummy variables, and as such cannot follow a normal distribution. This is why it is better to opt for the widest sample of the two methods, as a minimum.

Once obtained the target sample size (n=384), the third step was that of crafting a stratified sampling framework. Indeed, the target population was separated into homogeneous and mutually exclusive segments (strata) and then simple random sampling was used to extract the different subsamples. This method was chosen since stratified random sampling presents several advantages compared to simple random sampling (Daniel 2011), such as (1) greater ability to make inferences within a stratum and comparisons across strata; (2) smaller random sampling error; (3) sample is more representative. The proportionate stratified sampling method was chosen to foster the representative power of the sample and it was performed twice.

Indeed, firstly the sample (n=384) was proportionately divided into country-based strata and then, within each country, proportionate stratified sampling was performed again, this time into Junior Enterprise based strata. As for the country proportional stratification, the percentage of people belonging to each country was multiplied by the total sample size in order to obtain the overall sample for each country. Then the percentage of people for each Junior Enterprise was computed and multiplied by the newly found overall sample for each country. In this way, the sample is not only weighted based on country, but also Junior Enterprise, so that also their sizes are taken into account. After these preliminary procedures,
the actual data collection was made, using the LinkedIn Advanced Search, again putting the Junior Enterprises in the “Company” search box and specifying “Past, not current” as for the employee status. Once obtained the search engine result page, simple random sampling was used to select which cases to include in the sample. Indeed, random numbers were extracted and the cases corresponding to each random number were included in the sample.

Control Group

The gathering of a control group made of non-former junior entrepreneurs is fundamental in order to create the following four-boxes matrix (Figure 3), directly derived from Figure 2, which will be our quantitative basis to perform analyses. In this setting, it is important to control for differences in the covariate distribution between the base group and the control group, with the aim of increasing robustness of the model and reducing bias and standard deviation (Stuart and Rubin 2004). Thus, a “matching” technique has been used according to which, for every former junior entrepreneur, one non-former junior entrepreneur with similar characteristics was found in order to assess the impact of different factors on a consulting career; by doing so, we are confident that most of the variation observed is actually due to the variables of interest. In particular, every former junior entrepreneur was matched with one former student of the same country, same university and graduating in the same year. By doing so, we built a second perfectly matching dataset of 7,957 profiles of former non JE students, i.e our control group; finally we obtained the sample control group by replicating the same statistical extraction procedure we used for the JE sample. This is important since it provides evidence about how the variables of our interest like IT skills, gender, internship, and others have more explanatory power, given the fact that the variance is not attributable to country, graduation year and relative macroeconomic conjunction etc. Again, within the search result, random sampling has been employed through random number extraction.

Variables Collected

Several variables were collected based on a template of coding categories from the LinkedIn profile of each member of the sample. More specifically, we have: (1) Socio-demographic data, which include gender, age, country; (2) Education-related data, which identifies the university attended; its start and end date (graduation), are of bachelor education, dummy for study abroad, eventual bachelor exchange
program; the same features are collected both for eventual master and advanced study programs; (3) JE membership data, divided by specific JE, start and end year of the enrollment in the JE, role performed in JE, dummy for having been a member of a JE national confederation with start/end year and role, dummy for having been a member of a JE international confederation with start/end year and role; (4) Internship and student jobs data, that stratifies in dummy whether a student did an internship, how many, dummy for having done it abroad, internship length, start and end date, sector, and the same variables for student job; (5) Career-related data, composed of employment role, employer company, its sector, dummy for employment abroad, start and end year, dummy for having a career as a consultant; (6) Additional skills and extra-curricular activities, that include how many languages are known, dummy for membership in other associations (non-JEs), and IT skills.

With respect to IT skills, we specify that this variable is ordinal and is equal to 1 (high) if the person has programming skills or knowledge of advanced packages such as SAS, Stata, Autocad, Labview, or Mathematica identified in their profile. Otherwise, it is coded as 0. We made the assumption that basic Office products were the baseline for what is required for consulting (Jancura et al., 1992), and any additional software expertise (e.g. SPSS or R) would be additionally beneficial. We adopted this strategy based on the belief that, if the individual has experience with advanced programming languages, that they would believe it to be a key signal to employers and would include it on their profile. Given that these advanced languages are typically taught in upper division courses, we assumed that the individual likely also had basic office tools such as Word, Excel and Powerpoint.

In our analysis we control for several things. First, given the variation in JE in different countries, we opt to control for it in order to ensure that country-level differences will not obscure differences. Second, we control for both student employment (jobs that the student may have had during college) and internships (formally designated for class credit) since they may significantly alter the JE signal.

**Method**

Given that the aim of this paper is to investigate whether IT skills have a determinant influence on the probability of being employed as a consultant and establish if gender, study field, and role covered in JE (of course only for those who took part in JEs) act as positive or negative moderator in the model. In other words, we build on a model where the finding a job as a consultant is the dichotomous dependent variable, IT skills is our ordinal independent variable, and gender, undergraduate major, role covered in JE are other regressors we want to explore in order to investigate eventual boundary conditions of the main relationship under analysis.

The “Consulting” dummy variable assumes a value of 1 when the individual has both a work experience within a consulting firm and presents specific consulting related job titles. For the sake of this research, not only “management consulting” and “strategic consulting” companies were included within the definition of the consulting dummy variable, but also companies in “IT consulting”, “Marketing Consulting”, “Economic Consulting”, “Financial consulting” and “HR consulting” were considered relevant.

Moreover, it is not enough to be part of a consulting firm to be a consultant. For this reason, it was deemed appropriate to consider within the Consulting variable definition only those people who presented titles typical of consulting jobs, such as “consultant”, “analyst”, “associate”, “principal”, “partner” or “director” in order to exclude support staff, such as members of the IT and HR department.

After we conducted our analysis, we reached out to several for JE members to share our results and to get them to help us better understand our results. Where appropriate, we have added this quotes to allow their voices to be heard.

**Results and Interpretation**

We conducted our analysis in multiple steps and each of the results is shown below.

**Results**

**Impact of JE Participation to Consulting Job / Impact of High IT Skills of JE Participants to Consulting Job**
We first analyzed the effect of participating in JE with obtaining a job in consulting (see Table 1).

|                | Coef.     | Std. Err. | z       | P>|z|   |
|----------------|-----------|-----------|---------|-------|
| **Core variables** |           |           |         |       |
| JE participation | .2678633** | .1256523  | 2.13    | 0.033 |
| High IT Skills   | .21969*   | .1285144  | 1.71    | 0.087 |
| **Controls**     |           |           |         |       |
| Gender           | .1055203  | .1305813  | 0.81    | 0.419 |
| French Nationality| .0071086  | .1508407  | 0.05    | 0.962 |
| Social Scientist | -.0619371 | .1469343  | -0.42   | 0.673 |
| Internship       | .1481702  | .1592961  | 0.93    | 0.352 |
| Student Employment| -.0159926 | .1406093  | -0.11   | 0.909 |
| _cons            | -1.634.341| .2060249  | -7.93   | 0.000 |

N=768, all sample. Power of the Model (% of correctly predicted observations)=89.19%

Note: *= significance at 0.1 level or below; **= significance at 0.05 level or below; ***=significance at 0.01 level or below

**Table 1 – JE Participation and High IT Skills Results**

As shown, those who participated in JE were more likely to go into consulting that those who did not (p=.033). This provides evidence that we expect that many students hope is true: participation in JE is more likely to lead to a career in consulting.

One of our interviewees (who later joined a Paris-based consulting firm elaborated on this finding by saying:

“During my academic experience, I was looking for something more than pure study. After 6 months in the US for the exchange program, I realized that there is much more than books and theories. I really appreciated the American teaching method while there, with case studies and team projects; thus, I needed to find something similar to give me the right motivation once I came back home. This led me to our campus JE. During my first year of Master of Science I was still undecided among consulting, audit, investment banking or industry. Then, what I really appreciated about JE was working in a team of smart people and dealing with very different projects, industries and companies. I was convinced I would have found a similar environment in a consulting firm”.

Interestingly, it highlights what many of our respondents said: while they were originally only hoping to gain some practical experience and most had not considered jobs in consulting, a surprising number of our JE respondents later attributed their time with JE as a motivating factor for being consultants.

We next analyzed the importance of IT skills to those entering consulting and found evidence about the importance of high IT skills to those entering the field (p=.087). This confirms one of the basic tenants of CIS major at the university level. While basic IT skills are helpful, higher levels of IT skills provided an added boost to the chance of getting a consulting job and we suspect that many students undertake study of these advanced skills to enhance their job prospects. One former JE member who later joined PwC, an international consulting firm, in Paris explained by saying:

“In a junior enterprise, you are project manager, but when you go into a consulting firm, you are just an analyst...after the JE your expectations are high and can also not be met once you are in the consulting firm. The JE experience allows obtaining soft skills such as establishing a mutually advantageous relationship with the client, speaking openly with peers and managing time. But IT skills must be pre-owned”.

**Moderating Impact of Gender of High IT Skills for JE Consultants**

The gender differences between those with high IT skills is striking (see Table 2).
Role of Different Factors in Obtaining Consulting Jobs

Coef.  Std. Err.  z  P>|z|

**Core Variable**

| Variable            | Coef    | Std. Err. | z    | P>|z| |
|---------------------|---------|-----------|------|-----|
| High IT Skills**    | 0.5465875 | 0.2188026 | 2.50 | 0.012 |

**Controls**

| Variable             | Coef    | Std. Err. | z    | P>|z| |
|----------------------|---------|-----------|------|-----|
| French Nationality   | -0.2670643 | 0.2735098 | -0.98 | 0.329 |
| Social Scientist     | -0.0548283 | 0.261831  | -0.21 | 0.834 |
| Internship           | 0.390615  | 0.2863829 | 1.36  | 0.173 |
| Student Employment   | 0.0075229  | 0.2240027 | 0.03  | 0.973 |
| Managerial Role      | -0.0535724 | 0.255711  | -0.21 | 0.834 |
| _cons                | -1.471633  | 0.3930602 | -3.74 | 0.000 |

N=242, only males who were in JEs. Power of the Model (% of correctly predicted observations)=86.36%

*Note: *= significance at 0.1 level or below; **= significance at 0.05 level or below; ***=significance at 0.01 level or below

Table 2 – Gender Impacts

For women, high IT skills provide no additional leverage to obtaining a position in consulting after JE while, for men with high IT skills, their chance of getting hired increases (p=.559 and p=.012 respectively). Despite the rhetoric from consulting firms about wanting to hire more women with STEM degrees, it would appear that one of the most important skills – high IT skills – is not salient. Given the relatively low number of women in the IT field or taking an undergraduate MIS major, the net effect of this is that the relatively few women who have undertaken the major have no increased chance of getting a consulting job, despite a marked advantage for men. Unfortunately this would seem to square with a series of recent studies recently profiled within the Harvard Business Review which showed that, if a single woman (or person of color) is in the final applicant pool for a job, the woman has statistically no chance of being hired and the authors attribute this to a bias on the part of the recruiter to maintain status quo (mostly male) (Johnson et al. 2016).

Moderating Impact of Undergraduate Major of High IT Skills for JE Consultants

High IT skills are not statistically significant for those with a social sciences major (p=.757) and this suggests that recruiters may view high IT skills and a social sciences major as substitutes. That is, recruiters appear to view those with high IT skills and a social sciences major as no better than those with low IT skills and a social sciences major. However, for those without a social sciences degree, high IT skills significantly effect employment as a consultant (p=.027) (see Table 3).

Coef.  Std. Err.  Z  P>|z|

**Core Variables**

| Variable            | Coef    | Std. Err. | Z    | P>|z| |
|---------------------|---------|-----------|------|-----|
| High IT Skills**    | 0.365586** | 0.2421409 | 2.22 | 0.027 |

**Controls**

| Variable             | Coef    | Std. Err. | Z    | P>|z| |
|----------------------|---------|-----------|------|-----|
| Gender               | 0.2209476 | 0.2584107 | 0.86 | 0.393 |
| French Nationality   | 0.4492413 | 0.4002321 | 1.12 | 0.262 |
| Internship           | 0.8888696* | 0.4882172 | 1.82 | 0.069 |
| Student Employment   | -0.0412756 | 0.2587257 | -0.16 | 0.873 |
| Managerial Role      | 0.0845702  | 0.3247283 | 0.26 | 0.795 |
| _cons                | -2.843352  | 0.6461128 | -4.40 | 0.000 |

N=220, only non-social scientists who were in JEs. Power of the Model (% of correctly predicted observations)=87.73%
Note: *= significance at 0.1 level or below; **= significance at 0.05 level or below; ***=significance at 0.01 level or below

Table 3 – Undergraduate Major Impacts

This argues for a substitution perception within the mind of recruiters in that a social sciences major is perceived to be a good substitute for high IT skills and students do not achieve better outcomes by obtaining high IT skills after they have decided on a social sciences major. JE member that joined PwC’s Milan office with a social science major:

“…prior IT skills were not required in the interview stages I went through in consulting [for a full time job]: recruiters were just enough satisfied with the JE background as a quality proof of the regular capabilities in using standard IT packages. During the JE experience we all improved our “pianists” capabilities with our PC keyboards, I became more confident and also quicker in working with the regular packages”.

Moderating Impact of JE Role of High IT Skills for JE Consultants

High IT skills are significant for those who had a managerial position within JE but not for those who did not (p=.045 and p=.594 respectively) (see Table 4).

| Coef. | Std. Err. | z | P>|z| |
|-------|-----------|---|-----|
| **High IT Skills** | **.3948381** | **.1965806** | **2.01** | **0.045** |

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N=295, only JE participants who covered a managerial position. Power of the Model (% of correctly predicted observations)=87.12%

Table 4 – JE Role Impacts

Among those JE participants with high IT skills, those undertaking a leadership role in the JE were no more likely to obtain positions in consulting versus those who did not take a leadership role. This is somewhat surprising as we would assume that most of those who undertook a leadership role within JE did so in order to increase their chances of getting a consulting position upon graduation.

Interpretation

Our interpretation follows and, where appropriate, we have added some quotes from our respondents to personalize the interpretation. 3

Under traditional signaling theory, signals are understood to be information conveyed between the signaler and the signal recipient in order to reduce the information asymmetry that favors the signaler (Spence 1973). This is particularly important in the job market since the hiring firm (signal recipient) has faced with potentially hiring an unskilled worker or a shirker (Spence 1973). As such, the need for signaling is high and students, as the signaler, understand this and seek to create a host of favorable

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3 As a purely practical scope management tactic, we focus our interpretation on those who joined JE and later took a consulting position. However, we acknowledge and embrace one of our anonymous reviewers who suggested that the paper could be enriched with a discussion of the other quadrants of our study.
signals to boost the potential for receiving a job offer from the desired firm.

It is not surprising that both JE experience and high IT skills are critical signals provided by students and are easy to rationalize under signaling theory. Under signaling theory, a student who participates in JE is likely trying to signal both knowledge of what consulting entails as well as an interest in consulting. Following the typology provided by Dawson et al. (2016), we interpret this signal to be both high in veracity and high in intentionality (traditional signal). Thus the signal is correct (student has engaged in JE) and intentional (student is intentionally trying to convey competence) and should, following the signaling theory, improve the student’s chance of obtaining a sought after job in consulting.

High IT skills are also an important signal, given the amount of IT work that underlies most consulting engagements and we believe that, like with JE experience, these signals are both also high in veracity and high in intentionality (traditional signals). By undertaking a rigorous course of study that includes advanced programming languages and packages, the student is likely signaling two things: s/he is willing to work hard and that s/he is intelligent based on an assumption that these attributes would be important to a consulting firm. Thus, these signals work the way that they are commonly believed to operate and reduce the risk of the consulting firm in making a hiring mistake.

For those undertook JE, we also sought to examine gender as a moderator to the traditional signal of having high IT skills. As we noted, having high IT skills is, when looking at men and women combined, a deliberate disclosure that would increase the chance of the JE participant landing a job with a consulting firm. However, it is clear that these signals work differently for men and women. For men, we argue that this is also a traditional signal (high veracity and high in intentionality) since it directly benefits the man in obtaining a consulting job after a JE experience. Given that consulting firms are concerned with the problem of shirking, hiring a man to join the heavily male-dominated industry is likely to be a low risk choice.

For women, we argue this signal is an inadvertent disclosure signal (high veracity but low intentionality). Unlike other signals, an inadvertent disclosure signal increases (rather than decreases) the information asymmetry problem (Dawson et al. 2016) with the recruiter. We speculate that a recruiter, confronted with few women with high IT skills, may fall victim to the bias of the recruiter in maintaining the status quo (Johnson et al. 2016) and the women may be inadvertently signaling that they would not fit into the male-dominated industry.

Undergraduate major also moderates the relationship between high IT skills and finding a job in consulting. For student’s with a social sciences major, high IT skills is not statistically associated with obtaining a job in consulting after graduation but it is statistically associated for those with a non-social sciences major. We suspect that consulting firms may think that either high IT skills or a social sciences degree are sufficient to be a successful consultant and, in some ways, view high IT skills and a social science degree as acceptable substitutes for each other. Thus, we suspect that students with high IT skills and a social sciences major may be providing an inadvertent disclosure signal (high veracity and low intentionality) and perhaps the signal could be that the student’s major plus high IT skills may be perceived as being too academically focused rather than sufficiently socially rounded in order to be accepted as a consultant. Similarly, we suspect that those with high IT skills and a non-social sciences degree may be providing a traditional signal and correctly and intentionally signaling that s/he has both technical skills (high IT skills) but is also conversant in more than just business (non-social sciences major). This provides an interesting contrast with prior research by Furst-Bowe et al. (1995) and Jancura et al. (1992) and bears further examination.

Finally, we examine the differences among those with high IT skills who simply worked as a consultant for the JE versus those who also took on a leadership role within JE. Surprisingly, those who took on a leadership role in addition to their role as a consultant were no more likely to obtain a position in consulting versus those who did not take a leadership role. On the surface this would appear to be counterintuitive. But, upon having a deeper understanding of consulting, this is a logic finding and can be

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4 At least in part, this finding may be unique to Europe which tends to have more of a liberal arts orientation towards college than the US which tends to be more vocationally-centric.
explained with signaling theory. As we noted, junior consultants form the bottom base of the consulting pyramid and have to work their way up through the organization in order to be successful. This requires someone who is fully intent on being competent as a consultant and doing technical things in order to succeed. As we discussed previously, a JE consultant (only) will providing a traditional signal by being only a consultant: I am competent (high veracity) and I am only interested in the craft of consulting (high intentionality). Thus, the signal is traditional and reduces the worry that the recruiter may have on the JE member not really being interested in consulting.

However, those who undertake a leadership role in JE may be sending an opportunistic signal (low veracity and high intentionality) which serve to increase information asymmetry (Dawson et al. 2016). These signals are more complicated as the signaler thinks they are signaling one thing (e.g. really interested in consulting and want to contribute more) but are actually signaling something. Thus, the signal is intentional as the JE member wants to signal something. However, the veracity of the signal is low since the leadership consultant may be incorrectly signaling that they are not really interested in consulting as much as they are interested in being in-charge. This increases the information asymmetry problem since the recruiter is left to determine if the leadership-based JE member really likes consulting or simply likes being in-charge. Given the need for junior consultant to work a great deal of hours in the business of consulting, it may suggest that the former JE leader may quickly grow discontented with the practice of consulting and either shirk or simply take a different job. This aligns with Hohlbein (2008) in his analysis of leadership roles.

In summary, JE job market signaling are much more complicated than previously known and this presents a challenge to both those advising JE members as the JE members themselves.

Contributions, Limitations and Conclusion

This research makes several theoretical and practical contributions. First on the theoretical, it highlights the importance of understanding Junior Enterprise as a key educational component of college for European students. Because so many students undertake the JE experience, it is important for scholars and practitioners to understand what it entails in order to properly incorporate it into the educational process. However, this comes with a caution: not all JE programs are the same and care needs to be taken to understand the specifics of the JE experience in order to understand its role. However, in response to our first research question, it appears that JE enhances the likelihood that the JE member will be hired as a consultant.

Second, this research shows the importance of high IT skills for those who wish to enter consulting in Europe. All other things being equal, those with high IT skills are more effective at signaling their potential success in the consulting field. It also reinforces the need for students wishing to enter consulting to have strong IT skills and answers our second research question.

Third, the research shows that the differential impact of moderators on the idea of strong IT skills for those wishing to enter consulting. We uncovered several factors that moderated the impact of strong IT skills for those entering consulting. In particular, we found that strong IT skills were unimportant for women while they were very important for men. Additionally, we found that a social science degree and high IT skills appear to be a substitute for each other and we found no evidence of additional benefit from having both a social science degree and strong IT skills. Finally, we found that adding a management role to the JE experience provides no additional benefit for those with high IT skills. Combined these findings answer our third research question.

Fourth, we found ample evidence to show that signaling works differently for each of the moderators. This confirms major aspects of the typology of signaling proposed by Dawson et al. (2016) but further work is necessary to understand more aspects of this. However, it is clear that job market signaling for JE members is not straightforward and is fare more nuanced than previously known.

There are numerous contributions from a practical standpoint.

First, it appears that much of the attraction of JE was based on a perception that current IS curricula is not practically grounded and students worry about the “real world” application of what they learn in class. In this way, JE fills a valuable role for both students majoring in liberal arts as well as those who have a more vocational orientation in their major. It also shows that adopting a liberal arts major is not a
deterrent for joining JE and eventually accepting a job in consulting. However, additional research is necessary to understand how successful liberal arts majors are as compared to more vocational majors in the consulting world if both have JE experience.

Second, and mistakenly, our research shows that JE experience on a resume is attractive for consulting firms. Thus, regardless of its actual benefit, recruiters in consulting seeing the benefit of JE. We can speculate numerous reasons for this including that it signals the consulting firm that the student understands consulting or potentially that it shows that the student can “hack” consulting. Either way, for students who want to go into consulting, JE offers an unmistakable advantage.

Third, it suggests that JE organizations should consider moving even more closely to a consulting model as consulting firms think of JE as a version of consulting. This would seem to help both the consulting firm (to better “test drive” the JE member) as well as the JE member (in gaining even more practically relevant experience. While we readily acknowledge that this can be carried too far and JE becomes the “junior varsity” for the consulting firms, there is clearly a greater level of involvement that can happen and could benefit both the JE member and their eventual employers.

Finally, it highlights that some of the softer skills, including team work, entrepreneurial skills, deadlines, multitasking and others, are perhaps best learned in a place like JE which forces a real world context to them rather than the more academic form of them. While we do not know for sure, we suspect that the “real world” learning and execution of these skills is a major attraction to JE members and consulting firms.

As with all research, this research has certain limitations. First, we have no way to confirm what students put in their LinkedIn profiles were correct but have no reason to suspect that there was widespread attempts to falsify it. Thus, we believe our data is accurate. Second, while we matched our JE population with a non-JE student with the same major at the same school with the same graduation date, we acknowledge that perfect matching is not possible and that all students will have some variation in their experience.

The fact that a college degree helps with future employment is unquestioned. Also unquestioned is the popularity of both the JE program as a pivotal college experience, particularly for those who wish to enter the consulting field upon graduation. While signaling theory offers some insights into how students successfully enter the consulting field, much work remains to be done to understand the myriad of signals, intentional and unintentional and high/low veracity, and how they impact the likelihood of obtaining a position in consulting. Further, this research both shows the value of JE from a practical standpoint and offers insights on how to improve both JE and the European academic curricula. The size and growth of JE programs, plus many students demand it.
References


