Business Education in The Tech-Driven Globalized Economy

Submitted to

American University of Armenia
Manoogian Simone College of Business and Economics

In partial fulfillment of the requirements for the degree of BA in Business

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Yerevan 2018

Abstract

This exploratory research was aimed at identifying skill demand in the changing economy and evaluating the effectiveness of the adaptation strategies carried by top ranked business schools against the identified skills. First, the research identified 7 highly demanded skill sets using natural language processing and analyzing job posting from Google Glassdoor, an HR platform. Second, the research identified two distinct adaptation strategies used by the Top 25 European and Top 25 U.S-based schools ranked by the Financial Times. Third, the research evaluated the strategies using online surveying methodology with the alumni of the aforementioned schools. In the first stage, the identified 7 highly demanded skill sets included data, team/collaboration, creativity, flexibility/cross-functionality, tech/digital, strategy, international communication. A difference was observed in the distribution of the skills for different education and position levels. In the second stage, two extreme adaptation strategies were identified as implemented by the schools: "Online Generalists" and "Offline Specialists. On this continuum, the U.S schools appeared to be tilting towards "Online Generalists", whereas European schools were inclined towards "Offline Specialists". However, the groups also shared several similarities in their responses. In the final stage, alumni's evaluation of the two school groups against the demanded skills revealed significant difference only with respect to international communication skills, for which the EU cluster slightly outperformed the U.S one.

***Keywords*:** Business Education, Skill Demand, Changing Economy

Acknowledgements

Special thanks to Mr. Levon Khanjian, the CEO of ITC LLC, for the provision of hardware equipment for big data processing and to Dr. Knar Khachatryan for supervision and guidance throughout the research. *All remaining errors are mine*

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Business Education in The Tech-Driven Globalized Economy

Context

Klaus Schwab (2017), a prominent economist and the founder of the World Economic Forum, coined the term "The Fourth Industrial Revolution" to describe the current state of the economy. The exponential advancement of digital technologies produces game-changing impact. Many organizations are increasingly using technology to enhance efficiency and cut costs by replacing human workers. In line with these changes, a fear is rising among scholars that such a trend might lead to a downward spiral not only for economy but also for the entire society.

The economists Andrew McAfee and Erik Brynjolfsson argue that the fourth industrial revolution can bring more inequality and completely disrupt labor markets. Yet another group of scholars have more positive attitude towards digital transformation and the new state of the economy. Research by Qurashi et. Al (2014) suggests that the net benefits of the displacement of workers by technology might outweigh the costs resulting in an increase in the number of safer and more fulfilling jobs. The likelihood of the occurrence of any of the scenarios is difficult to foresee. As historical evidence suggests, the final outcome will, most probably, be a combination of the two.

Another trend that shapes the modern economy is intensified globalization. In their book *Globalization, International Spillovers and Sectoral Changes,* Karlson et. Al (2010), define globalization as the increased global integration, where integration goes beyond markets to incorporate institutional harmonization. Three dimensions of globalization are distinguished: spatial, temporal and cognitive. As with the increased digitization, the views in respect to the effects of globalization are controversial.

Despite the debates, a consensus seems to exist concerning the importance of education in current circumstances. Education both affects and is affected by changing economic conditions. As a vast body of research suggests, in the future, talent is likely to be the most critical factor of production. This proofs the vitality of adapting education systems to meet the needs in the changing economy.

Introduction

According to the OECD Education at a Glance report (2017), the population of OECD and partner countries possessing tertiary education earn 56% more on average than adults who have completed only upper secondary education. What is alarming, however, is that the same report highlights that the expenditure on higher education and the drop-out rates in the aforementioned countries have been steadily increasing as well. The rate of increase in both of these indicators was higher than that of the return on investment (ROI) on education. This creates inefficiency. Such a pattern sounds paradoxical. Yet it can be explained by the changed structure of the modern economy as a result of the intensified globalization and the technological breakthrough suggested above. The pattern might be related to the failure of the education systems to adapt rapidly enough to fulfill the requirements put forward by major employers.

The trend of decreasing demand and diminishing efficiency was particularly notable in business education. Even though business degrees have been repeatedly reported to be the ones with the biggest number of applications and the ones that provide the most diverse post-education employment opportunities, for four years in a row, the number of applications for both graduate and undergraduate business programs in the U.S has been declining. Similar trend was observed in EU region as well. Last year 64% of the U.S MBA programs, which had top rankings in their category, received fewer applications. Under these circumstances, business

schools make rigorous attempts to alter their strategies and reverse the trend. The adaptation tactics and strategies that different schools adopt vary.

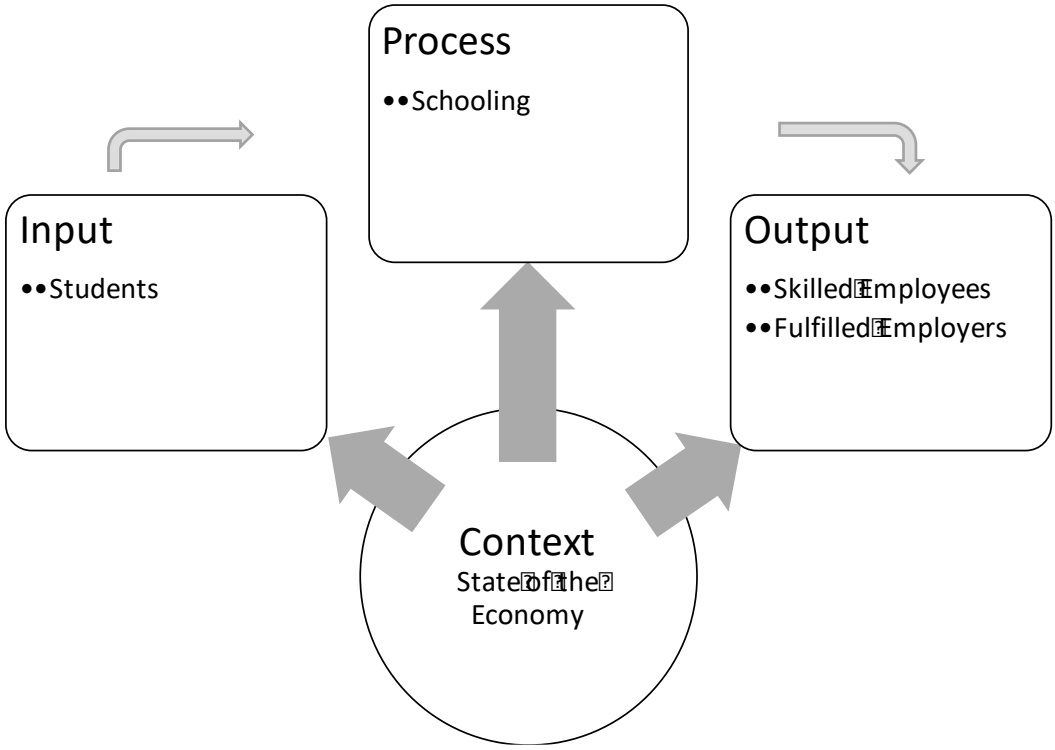
The research aims at scrutinizing various systems and evaluating these against the skills in high demand. This can be of utmost importance for identifying certain patterns leading to efficiency. Having such insights is critical for maintaining, evolving and changing the role of higher education institutions. Findings can be useful for both policymakers and education administrators adding value to the current industry-specific body of knowledge. Since particular emphasis is put on understanding the relevance and adaptability of the systems, the study can also be of interest for corporate players who seek for talent and skilled employees that are well prepared for the modern economy.

General Approach and Methodology

The research is primarily exploratory in nature with an ad-hoc evaluative component. The philosophy that the research has adopted is postmodernism, which rejects the scientific approach with an attempt at universal generalizations, arguing that there can never be one universal truth since all data are interpreted differently by different observers.

The theoretical model that the research has taken is one proposed by Scheerens et al (2011). Using cross-sectional data, the research analyzes the ecosystem of Business Education. Using Scheerens' model (Figure 1). Within the scope of the research, universities are considered to be involved in the "process" component, students are considered both inputs and outputs-in form of skilled employees, the fulfilled employers are considered as part of the output. The altered state of the economy described in the first section of the paper is the context affecting all the other variables of the model.

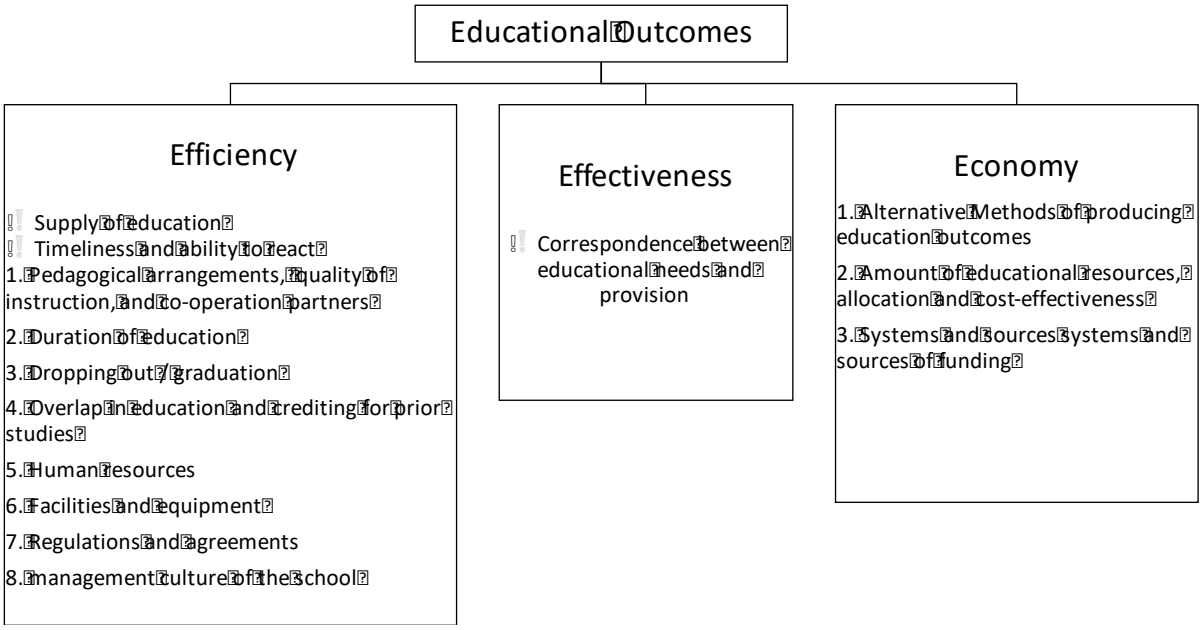
Figure 1.



Similarly, a framework developed by the Finnish National Board of Education is taken as a theoretical framework for educational outcome evaluation (Finnish National Board of Education, 1999). The framework (Figure 2) evaluates education outcomes in terms of three components: efficiency, effectiveness and economy. Since the sample of the institutions chosen for the research is based on the ranking of Financial Times, which is described in the subsequent sections, several components of the framework are already accounted for. Hence, the study focuses on the metrics for which the ranking methodology does not account – correspondence between educational needs and provision within the effectiveness sector and timeliness and ability to react and supply of education within the efficiency sector. The economic variables are out of the scope of the research, however, as mentioned above, the ranking methodology of

Financial Times incorporates them, hence, the within group homogeneity for the clusters analyzed in the research is fulfilled.

Figure 2.



In the first stage of the research, business category job postings made throughout January, 2018 on Glassdoor, a top HR platform, are analyzed to identify the most commonly mentioned skillsets that modern recruiters demand.

In the second stage of the research the adaptation strategies of the top 25 European and top 25 U.S Business Schools (Table 2.) are classified based on a few variables. The assumption is that top schools are the ones that are the most responsive to the shifts in skill demand and that they could have predicted certain skillset that would be demanded within the context of the modern economy. The analysis of the strategies of these universities can give insights both for top schools and the second- and third-tier ones that are also making attempts to modernize their systems.

In the third stage, the last graduates of the aforementioned business schools are asked to evaluate their schools for each skill identified in the first stage of the research.

The main statistical tools used for the analysis are descriptive statistics, frequency analysis, ANOVA, and comparisons of means. The method of triangulation, which assumes a use of three independent sources, is used to ensure the validity of the findings.

Skill Demand in The Modern Economy

Data and Stage-specific Methodology.

18574 job positing added throughout January by Glassdoor's 100 Employee's Choice companies (Table 1), in the business category, were analyzed to understand the most highly demanded skills among the major modern employers. The underlying assumption was that there is no reason to think that the postings made in January should be significantly different from the ones made throughout the other months.

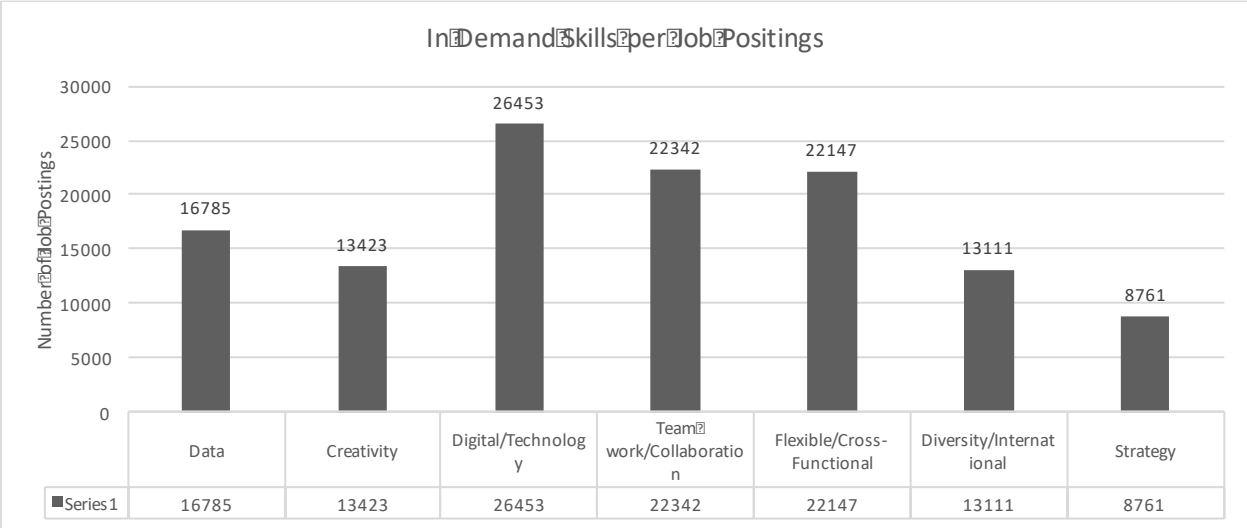
In the TextBlob library of Python programming language, Natural Language Processing tools and techniques were used to implement a frequency analysis of the postings. After cleaning the texts to account for prepositions and articles, first the most commonly mentioned words in the requirements sections were separated. The words were: data, team, creative, flexible, technology, strategy, international. The number of the words to include in the algorithm, $k = 7$, was chosen arbitrarily, taking into account the convenience for analysis. Afterwards, synonyms and plurals of the words were used to aggregate the most commonly required skills into 7 sets. The names of all software programs were also accumulated in the "technology set". The arrays of synonyms were not scrutinized in this research to avoid any possible researcher bias. However, they can be accessed and studied at any point in time in TextBlob library, via Synset's lemma_names property. The algorithm incorporated other measures of semantic

similarity as well when calculating the distance between the words for aggregation. All of the measures are also furtherly verifiable but are out of the scope of the research.

The skills were furtherly classified according to the level of job position for which they were mentioned, and the degree type that was indicated as preferred.

Analysis.

Figure 3.

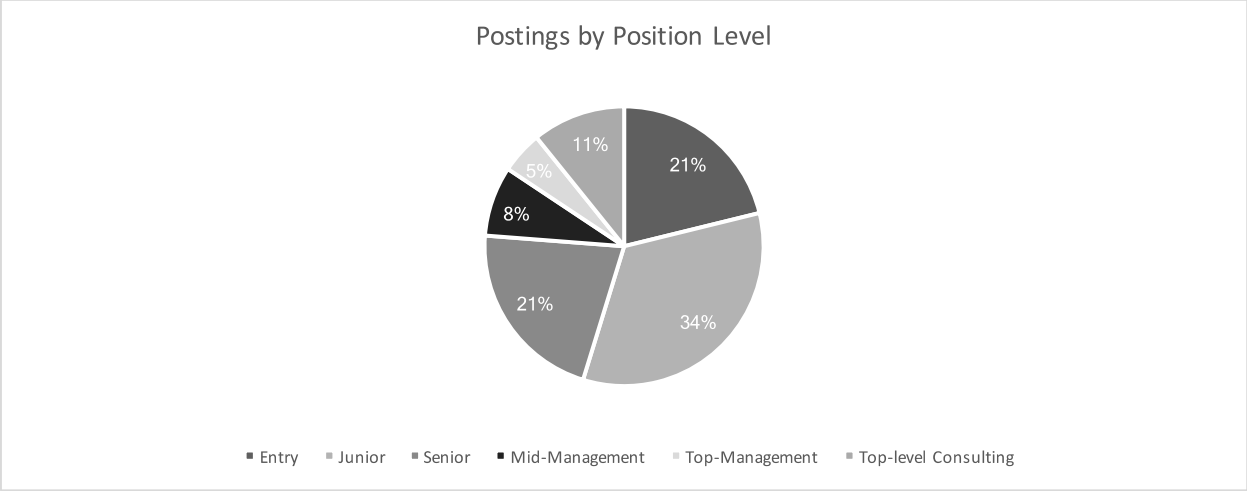


As the frequency analysis revealed, digital/tech skills were the most commonly mentioned ones with 26453 instances in the postings. The second set by frequency was team work/collaboration, with 22342 occurances. The latter was closely followed by flexibility/cross-functionality set.

The following decision rule was applied for the classification the job postings according to the skill levels:

Entry	**experience: N/A**
Junior	experience < 3
Senior	experience > 3
Mid-Management	title == "Manager" && title =! "Chief"
Top-Management	title == "Manager" && title == "Chief" || "Vice"
Top-level Consulting	title == "Consultant" || "Advisor" && title == "Senior" || "Lead" || "Chief"

Figure 4.

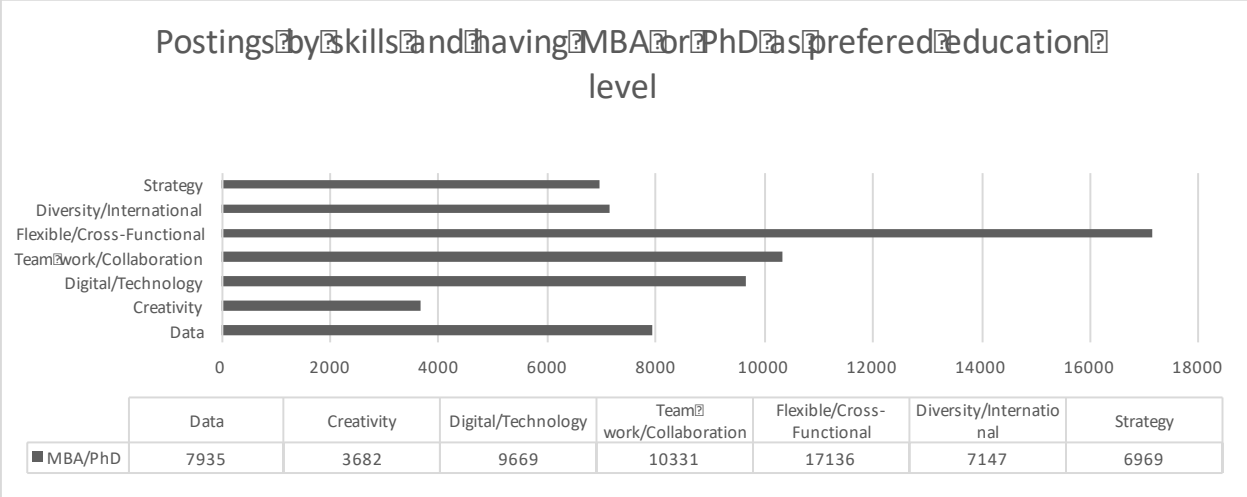


Cumulative occurrence of the specified skills in all the job postings was more than the number of job postings: 123022 words in 18574 postings. This means that per job posting, words corresponding to one of the specified skillsets appeared more than once (approximately 6.6 times). Such statistics prove the pervasiveness of the skills.

Some of the job postings mentioned certain level of education as “preferred”. 8% of the entry level jobs had MS or Professional degree as preferred. Of the 6238 junior level jobs 15% mentioned MS or Professional degree as preferred. Among the 3987 senior level jobs, 62% had MS or Professional degree as a preferred degree. In the 1503 Mid-Management postings, 69% had MBA as preferred. In the Top-Management and Top Level Consulting postings MBA and

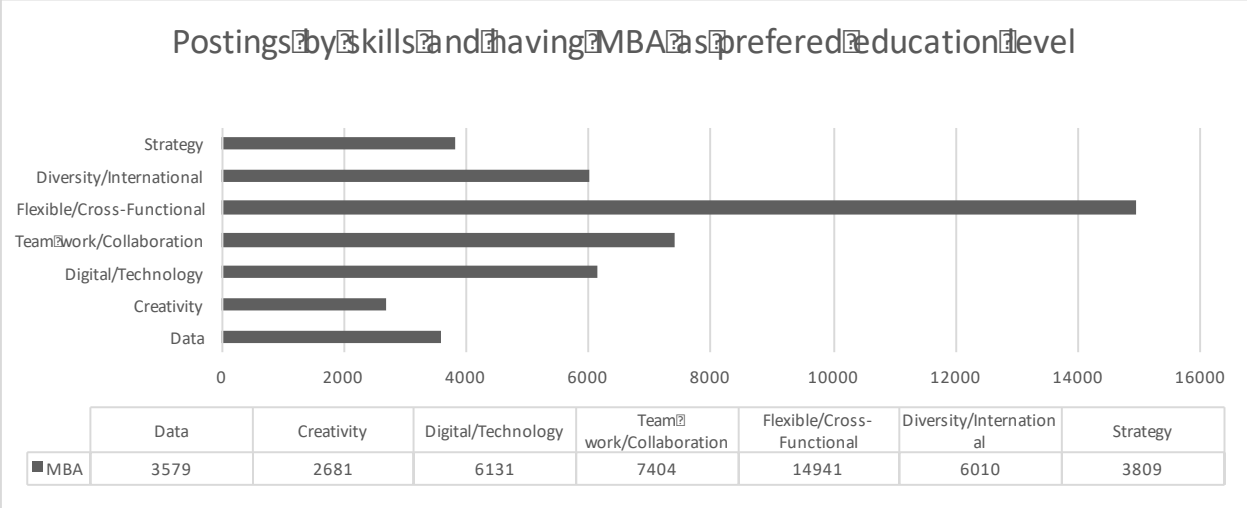
PhD prevailed: among 907 Top-Management postings 92% had MBA as a preferred degree. In the 2005 Top-Level consulting jobs 100% had MBA or PhD as preferred.

Figure 5.



	Data	Creativity	Digital/Technology	Team work/Collaboration	Flexible/Cross-Functional	Diversity/International	Strategy
MBA/PhD	7935	3682	9669	10331	17136	7147	6969

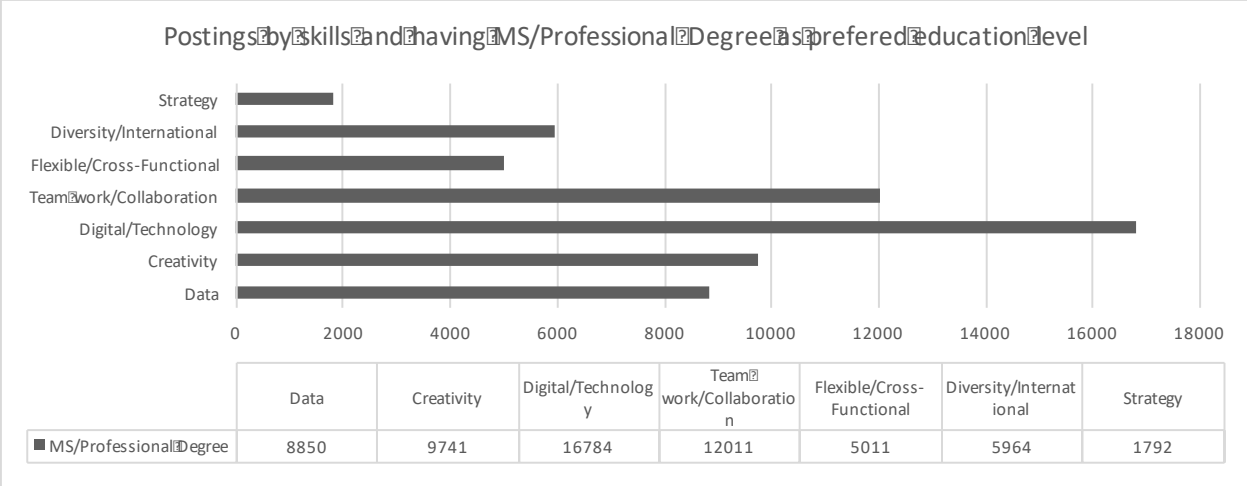
Figure 6.



	Data	Creativity	Digital/Technology	Team work/Collaboration	Flexible/Cross-Functional	Diversity/International	Strategy
MBA	3579	2681	6131	7404	14941	6010	3809

Among the job postings which had MBA or PhD as preferred degree for the position, contained flexibility/cross-functionality skillsets the most frequently. It was followed by team work/collaboration skills. Creativity was the least common skill. (Figure 5)

Figure 7.



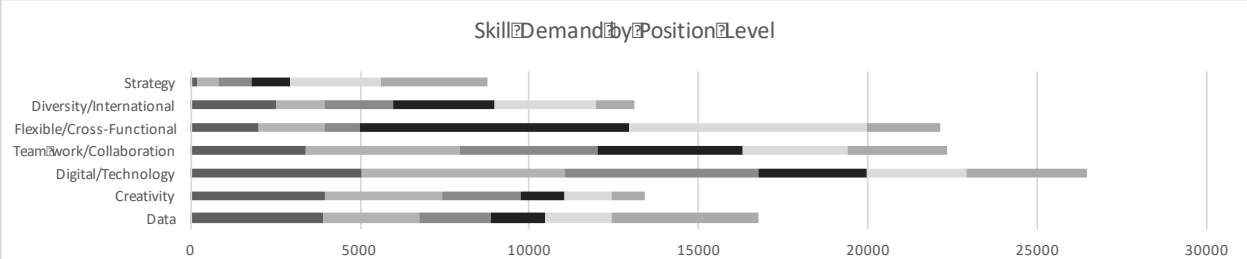
	Data	Creativity	Digital/Technology	Team work/Collaboration	Flexible/Cross-Functional	Diversity/International	Strategy
MS/Professional Degree	8850	9741	16784	12011	5011	5964	1792

The postings which mentioned MS or professional degree as preferred contained Digital/Tech skills the most frequently.

The identified skillsets largely overlapped with the findings reported in the Future of Jobs Report by The World Economic Forum (2016). According to the abovementioned report, top 10 most demanded skills for 2020 are projected to be complex problem solving, critical Thinking, creativity, people management, coordinating with others, emotional intelligence, judgement and decision making, service orientation, and cognitive flexibility.

Similarly, the results also go in line with the research findings of another economic think tank, The Hamilton Project. The report highlights the increasing importance of soft skills, (e.g. non-cognitive skills). Citing the interviewed hiring managers, the research puts forwards “About a third of hiring managers said recent college graduates lacked data analysis and teamwork skills”.

Figure 8.



	Data	Creativity	Digital/Technology	Team work/Collaboration	Flexible/Cross-Functional	Diversity/International	Strategy
Entry	3924	3970	5075	3421	2009	2507	201
Junior	2826	3453	5986	4513	1982	1453	605
Senior	2100	2318	5723	4077	1020	2004	986
Mid-Management	1636	1284	3184	4296	7935	2983	1121
Top-Management	1943	1397	2947	3108	7006	3027	2688
Top-level Consulting	4356	1001	3538	2927	2195	1137	3160

Katz' Skills Theory

A well-tested theory that is worth considering when trying to analyze the distribution of the skill demand depending on position levels is the *Skills Theory* (1974) developed by Robert L. Katz, an American social and organizational psychologist.

According to Katz's theory, the skills that business administrators are required to have can be categorized into three types: technical, human, and conceptual. By definition proposed by Katz, technical skills imply a proficiency in a specific kind of activity- one involving methods, procedures, processes, or techniques. Such skills involve specialized knowledge, analytical ability within that specialty, and facility in using the techniques and tools relevant to that specific discipline. Human skills are defined as the professional's ability to work effectively as a team member and to build cooperative effort within the team she/he leads. Human skills imply an acceptance of the existence of perceptions, viewpoints and perceptions, which are different from their own. Conceptual skills are defined as the ones involving the ability to see the enterprise as a whole. Such skills imply a recognition of the interdependences and mutual influences of the

different functions that exist within organizations. They also assume an understanding of the environments and external relationships surrounding the organization.

According to Katz's theory, in absolute terms, possession of all three types of skills at all position levels is important. However, Katz argues that technical, human, and conceptual skills of the administrator have different relative importance at different levels of responsibility and under different circumstances. The importance of technical skills is much more pronounced at lower levels, as the level of the job increases the importance of the technical skills decreases in proportion to the increase in conceptual skills. The importance of human skills is relatively uniformly distributed. However, there is slightly accentuated importance in the middle levels.

When looking at the distribution of skill demand by position level (Figure 8) that the postings from the Glassdoor platform revealed, one can see some consistency with Katz' theory. Equating strategy skillset, as defined by the research with the conceptual skills, as defined by Katz, one can see that the frequency of these skills was relatively more for top level management and consulting positions. To a lesser extent, a similar pattern can be observed for cross-functionality/flexibility skills. On the other hand, tech skills and data skills, which overlap with Katz's definition of technical skills, were proportionately more for entry, junior, and senior levels. Similarly, considering team-work/collaboration skills as equal to the human skills, as defined by Katz, one can see a relative uniformity of distribution. From the human skills' perspective, the relatively high importance of cross-function skills and international skills among Mid-level managers, is also in consistency with Katz's theory.

However, the distributions of two components: creativity and data, somehow contradict Katz' theory. Katz' discussed creativity within conceptual skills and accentuated their importance in Top-level management yet the distribution (Figure 8) reveals a different pattern: creativity

skills are more commonly mentioned for lower levels. Similarly, data skills could be considered more of technical skills, as defined by Katz, yet their distribution does not show a tendency to diminish with the rise of position level.

Surely, a deep study of specific synonyms used in the classification would help explain the patterns with more accuracy and confidence yet general consistency is observable. Another factor worth considering is the sample size: The absolute number of different position levels included in the analysis was not the same: the sample sizes for top level positions were smaller. However, as the size of the total sample of all the postings was large, the probability of having a sample size bias is miniscule.

Higher Education in Business: Adapting to the Modern Economy

Data and Stage-specific Methodology.

Top 25 Business Schools in Europe and Top 25 Business Schools in the US ranked by Financial Time Rankings of 2017, were analyzed to understand the strategies the business schools utilize to meet the employers' needs and prepare students for the modern economy. The time-span of the analysis was 2017- the period preceding the time-span of the job postings analysis of January, 2018. The assumption is that the top schools had the competencies to predict the changes in skill demand and strategize accordingly.

The following ranking criteria comprise the basis for Financial Times ranking methodology:

- Salary today US$
- Weighted salary US$
- Salary increase
- Value for money
- Career progress
- Aims achieved
- Placement success
- Employed at three months
- Female faculty

- Female students
- Women on board
- International faculty
- International students
- International board
- International mobility
- International course experience
- Languages
- Faculty with doctorates
- Course fee (local currency)
- Course length (months)
- Number enrolled
- Company internships

The fact that the FT rankings already account for the aforementioned variables, makes the list homogeneous. It also enables a comparison of adaptation strategies without taking further measurements to account for the initial differences which would make such a comparison impossible. Besides, these criteria are relevant metrics for assessing most of the sub-dimensions of the framework developed by the Finnish National Board of Education, which is used within the scope of the research.

The information used for defining variables was derived from the official websites of the researched institutions. The assumption is that the universities do not include any wrongful information on their websites. The nature and the amount of the information included in the websites was inconsistent and frequently subjective, hence, the comparisons were made only on a limited number of variables which were available for all the schools and could be somehow quantified. The variables that comprised the cornerstone of the research include the number of new online courses offered by the schools, the number of new specialized programs added by the institutions and the number of new overseas campuses of the schools. In addition, the mission and vision statements of the companies and certain employer reports were considered. Yet the information did not provide useful insights and distinction points to incorporate into the analysis

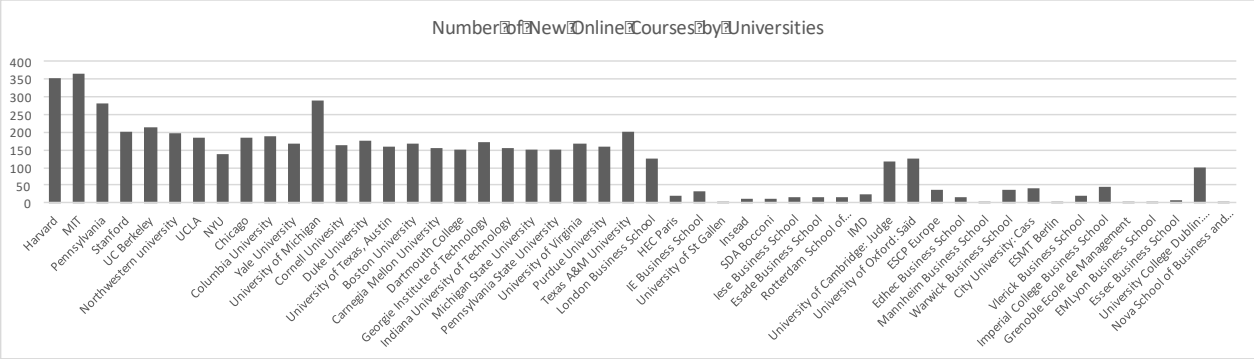
Analysis.

Table 4.

	Number of New Online Courses	*Number of New Specialized Programs*	*New Overseas Campuses*
Mean	114.48	1.96	0.46
Std Error	13.64	0.40	0.07
Median	130.50	1.00	0.00
Mode	184.00	0.00	0.00
Standard Deviation	96.43	2.85	0.50
Sample Variance	9299.03	8.12	0.25
Range	365.00	17.00	1.00
Minimum	2.00	0.00	0.00
Maximum	367.00	17.00	1.00
Sum	5724.00	98.00	23.00
Count	50.00	50.00	50.00

Based on the aforementioned three variables, two strategies were identified and named "Online Generalists" and "Offline Specialists". The distinction of the strategies correlated with the continent of the schools. The US schools appeared more likely to deploy the "Online Generalist" strategy, whereas the EU schools were more inclined towards the "Offline Specialist" strategy.

Figure 9.

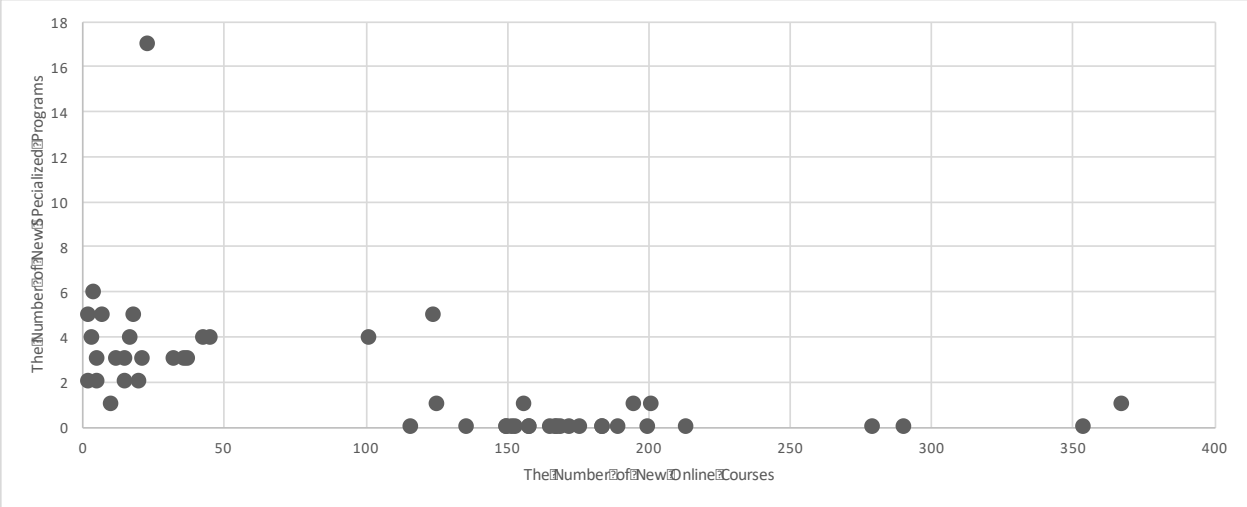


The information about the new online courses offered by the schools was derived from the online course platforms of the schools as well as 3 other major online education platforms: Coursera, EdX and FutureLearn.

None of the U.S schools included in the analysis offered less than the mean number of 115 online courses, whereas only 3 of the EU schools offered more than that. Interestingly, the three European schools that used this strategy were UK-based schools: the university of Cambridge, London Business School and the University of Oxford. Another school from the EU that offered relatively high number of online courses was the University College Dublin, an Irish business school. As one can see, all are schools which belong to the Anglo-Saxon tradition, similar to the schools in the U.S cluster.

When looking at the second variable, new specialized programs offerings, even without scaling the data, the reverse trend could be observed. The schools belonging to the EU cluster started to offer many more specialized programs, whereas the U.S schools tended to stick to the traditional program formats. Of the 33 business schools offering less than, or equal to the mean number of 2 new specialized programs, only 7 were European schools: University of Cambridge, University of Oxford, INSEAD, ESMT Berlin, HEC Paris, Grenoble Ecole de Management and Isese Business School. As for the U.S cluster, none of the schools offers more than the mean.

Figure 10.



The 3-dimensional portrayal of the strategies, which incorporates the addition of overseas campuses as well, illustrates the classification of the schools fully (Figure 11).

Figure 11.

https://plot.ly/~NKrmoyan/3/#/

Similarities Analyses and Secondary Research.

One component that was common for both clusters and for nearly all schools was the increased emphasis on entrepreneurship in nearly all program levels. Most of the schools throughout the year of 2017 have built "incubators" in which students are offered help with launching new companies. This might be a strategic response for preparing professionals who are resistant to the threat of technologies replacing human workers.

As indicated on the websites, within these entrepreneurial programs, nearly all schools offer regular workshops on modern technologies, digital business models and design thinking-topics which have gained increased popularity throughout the study period of 2017 and which, according to the descriptions put increased emphasis on developing some of the skills identified in the first stage of the research. In particular, tech, data, creativity, and team-working skills.

Part-time programs are another way schools are trying to be more flexible. “Fewer students want to take a full-time day approach, and employers want to keep high performers from walking away to earn an MBA,” says Charles Iacovou, the dean of the Wake Forest business school. According to comments shared as part of the survey, students and alumni value the experience and maturity that part-time students can introduce in a classroom. Many are older and have established careers. This strategic response might be related to students’ expectations.

It is also worth to keep in mind that the differentiation of the strategies is not solely a response to the particular skill demands identified in the first stage. These strategies also reflect the objectives of school groups, which may vary. According to research carried by Christensen et. Al. (2014), U.S Business schools are trying to attract three distinct groups — under-represented minorities, students from developing countries, and foreign-born Americans. This was said to be the primary reason for the extensive online course development of the schools. As the research showed rather than cannibalizing business school course offerings and executive education, open, online business courses appear for now to be expanding the outreach of business schools. The MOOCs provided by Wharton are reaching groups of students most commonly targeted for outreach by business schools: working professionals outside the United States and foreign-born and underrepresented minorities in the United States.

On the contrary, all the mission statements of the EU schools had at least one sentence referring to the schools’ aims to enhance their outreach worldwide. Statistics about the international student and faculty ratio are the integral parts of the websites and the representation of Asian and American students in their programs is emphasized.

In the annual survey of employers about the skills they search for in MBA students and which schools supply the most well-prepared graduates for the job market, Harvard dominated. For more than 600 recruiters, it was a top pick.

Performance Evaluation: Students' Perspectives

Data and Stage-specific Methodology.

The Graduates of the Classes of 2017 from the universities that the research analyzed were asked to evaluate the efficiency of their universities in terms of preparation for the skills which were identified to be highly demanded. Research used a brief online questionnaire as the main instrument. (Table 3).

The questionnaire was disseminated through business networking platform LinkedIn, using Premium InMail option. For EU and US universities, the replicates of the questionnaire were sent to the last members of the alumni (graduates of 2017). The alumni of all degree levels were targeted. The task was automated to make sure that the participants were chosen randomly. The process of data collection took 1 month, from March 13th, 2018 to April 13th, 2018.

Overall, the minimum number of the responses- 161 answers, was from the U.S cluster. Hence, for comparison, 161 randomly chosen responses were considered from the EU cluster as well.

Table 5: US Descriptive

	data analysis skills	*digital /tech skills*	*creative skills*	*cross-functional competences*	*international communication skills*	*strategic thinking*	*collaborative components*	*preparation for the modern working environment*
Mean	3.22	3.30	2.82	3.65	2.63	3.42	3.07	2.90
Std Error	0.11	0.11	0.10	0.10	0.09	0.11	0.12	0.09
Median	3	3	3	4	2	4	3	3
Mode	5	5	2	5	2	5	5	3
Standard Deviation	1.39	1.34	1.22	1.33	1.20	1.38	1.47	1.21
Sample Variance	1.94	1.80	1.50	1.77	1.45	1.90	2.15	1.45
Range	4	4	4	4	4	4	4	4
Minimum	1	1	1	1	1	1	1	1
Maximum	5	5	5	5	5	5	5	5
Sum	519	531	454.00	588	423	551	494	467
Count	161	161	161	161	161	161	161	161

As the descriptive statistics derived from the survey responses of the participants of the US schools revealed, American schools perform the highest for cross-functional communication, with mean value of 3.65, mode of 5 and a median of 4. The least value was observed for international communication skills, with a mean of 2.63 median of 2 and mode of 2. This contrasted the same indicator of the EU cluster. The latter one performed the highest in this category. The second lowest value appeared for creativity, with an average of 2.82, mode of 2 and a median of 3. The variance was high for data analysis skills and collaborative skills, which can be explained by different levels of demand for these skills for different programs (e.g. collaboration might be much more emphasized for management and marketing specializations, while less accentuated for the finance specialization).

Table 6: EU Descriptive

	data analysis skills	*digital /tech skills*	*creative skills*	*cross-functional competences*	*international communication skills*	*strategic thinking*	*collaborative components*	*preparation for the modern working environment*
Mean	3.20	3.45	2.83	3.33	3.83	3.47	3.19	2.88
Std Error	0.11	0.10	0.11	0.12	0.10	0.11	0.11	0.11
Median	3	3	3	4	4	4	3	3
Mode	4	3	2	5	4	4	5	4
Standard Deviation	1.35	1.25	1.38	1.48	1.21	1.33	1.45	1.40
Sample Variance	1.81	1.56	1.89	2.18	1.47	1.78	2.09	1.95
Range	4	4	4	4	4	4	4	4
Minimum	1	1	1	1	1	1	1	1
Maximum	5	5	5	5	5	5	5	5
Sum	515	556	455	536	617	558	514	464
Count	161	161	161	161	161	161	161	161

As the evaluations of the EU schools revealed, the schools in the cluster exhibited the worst performance for creativity skills. Overall, the distribution of the means was rather similar to the U.S-based school cluster, with the exception of international communication skills.

Table 7: EU ANOVA

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	120.8004658	7	17.25720941	9.365610241	2.32288E-11	2.016720061
Within Groups	2358.546584	1280	1.842614519			
Total	2479.34705	1287				

Table 8: US ANOVA

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	128.8563665	7	18.40805235	10.55888105	5.82946E-13	2.016720061
Within Groups	2231.515528	1280	1.743371506			
Total	2360.371894	1287				

As the ANOVA test performed using 95 % confidence interval indicated, there is a substantial difference between at least one of the mean evaluations of the skillsets both for the US and the EU schools. The P-value of no difference was less than 0.05.

To compare the mean performance of EU schools and US schools for each skillset, several t-tests were conducted. All the tests were performed at 95% confidence interval.

Table 9: Comparison of Means for Data Analysis Skills

t-Test: Two-Sample Assuming Equal Variances		
	EU	*US*
Mean	3.198757764	3.223602484
Variance	1.810248447	1.937189441
Observations	161	161
Pooled Variance	1.873718944	
Hypothesized Mean Difference	0	
df	320	
t Stat	-0.162847026	
P(T<=t) one-tail	0.435370835	
t Critical one-tail	1.649629305	
P(T<=t) two-tail	0.87074167	
t Critical two-tail	1.967404974	

As the relatively high p-value indicated, for data analysis skills, there was no significant difference between American and EU schools. Both clusters showed average performance compared to within cluster averages for the other skillsets. Such data is interesting since the approach towards the development of data analysis skills differed between the US and the EU clusters. EU schools have designed many new specialized programs in data analytics both in undergraduate and postgraduate level, whereas the US schools tended to stick to the general BA and MBA formats with addition of specialization options in data analytics. Of course, the evaluations were done by the general alumni, hence, they do not reflect the results of specific specialized programs.

Table 10: Comparison of Means for Digital/Tech Skills

t-Test: Two-Sample Assuming Equal Variances		
	EU	*US*
Mean	3.453416149	3.298136646
Variance	1.561878882	1.798059006
Observations	161	161
Pooled Variance	1.679968944	
Hypothesized Mean Difference	0	
Df	320	
t Stat	1.074883623	
P(T<=t) one-tail	0.141618314	
t Critical one-tail	1.649629305	
P(T<=t) two-tail	0.283236627	
t Critical two-tail	1.967404974	

Despite the clear distinction in approach towards cultivation of digital skills in the American and European clusters, there was no evidence of statistically significant difference between the mean evaluations of the clusters for the development of digital skills. This might suggest that weather the schools rely on extensive use of online courses, or if they choose to design new programs specialized in digital technologies does not affect the average performance of the schools as perceived by the alumni of all programs. Of course, since no data is available about the particular courses, curricula alterations and the approach towards digital tools within the programs, no solid conclusions can be reached in this regard. The statistics could have been different for individual programs.

Table 11: Comparison of Means for Creative Skills

t-Test: Two-Sample Assuming Equal Variances		
	EU	*US*
Mean	2.826086957	2.819875776
Variance	1.894565217	1.498602484
Observations	161	161
Pooled Variance	1.696583851	
Hypothesized Mean Difference	0	
Df	320	
t Stat	0.042784297	
P(T<=t) one-tail	0.482950083	
t Critical one-tail	1.649629305	
P(T<=t) two-tail	0.965900165	
t Critical two-tail	1.967404974	

As the t-test indicated, the difference in evaluations for creativity is insignificant for the US and EU schools. For both school clusters, the number was lower than the mean evaluation value of the means observed for the skillsets (for the US cluster, it is 3.2, for the EU cluster it is 3.33). Such a finding can serve as a timely alarm for both clusters since creativity was one of the skills that appeared with high frequency for different position levels and for different degree levels.

Table 12: Comparison of Means for Strategic Thinking

t-Test: Two-Sample Assuming Equal Variances		
	EU	*US*
Mean	3.465838509	3.422360248
Variance	1.775388199	1.895496894
Observations	161	161
Pooled Variance	1.835442547	
Hypothesized Mean Difference	0	
Df	320	
t Stat	0.287938479	
P(T<=t) one-tail	0.386790114	
t Critical one-tail	1.649629305	
P(T<=t) two-tail	0.773580227	
t Critical two-tail	1.967404974	

Table 13: Comparison of Means for Collaboration Skills

t-Test: Two-Sample Assuming Equal Variances		
	EU	*US*
Mean	3.192546584	3.068322981
Variance	2.093944099	2.151552795
Observations	161	161
Pooled Variance	2.122748447	
Hypothesized Mean Difference	0	
Df	320	
t Stat	0.764984779	
P(T<=t) one-tail	0.222422199	
t Critical one-tail	1.649629305	
P(T<=t) two-tail	0.444844397	
t Critical two-tail	1.967404974	

In terms of strategic skills, although the U.S cluster got slightly higher evaluations, no statistical significance was observed between the two clusters (Table 12). The same was true for the collaborative skills but in this case with insignificant dominance of the EU cluster (Table 13).

Table 14: Comparison of Means for International Communication Skills

t-Test: Two-Sample Assuming Equal Variances		
	EU	*US*
Mean	3.832298137	2.627329193
Variance	1.465450311	1.447748447
Observations	161	161
Pooled Variance	1.456599379	
Hypothesized Mean Difference	0	
Df	320	
t Stat	8.957848927	
P(T<=t) one-tail	1.3929E-17	
t Critical one-tail	1.649629305	
P(T<=t) two-tail	2.78579E-17	
t Critical two-tail	1.967404974	

As the t-test revealed, the probability of no difference between the means for international communication skills, is very low (less than 0.05), hence, there might be difference between the performance of each cluster. The mean evaluation for the development of international communication skills is higher for the EU cluster. This correlates with the strategic choices that the clusters make. The EU schools tended to open many overseas campuses in the U.S, Asia, Latin America as well as in different European countries, the U.S schools rarely invest in overseas campuses and tend to respond to the trend of globalization by adding online options. However, such a correlation should not necessarily be related to the adaptation. To furtherly explore the difference another set of statistics were collected and tested.

Using Similar Web, a digital marketing research tool, the English language admission pages of all the schools included in the sample were analyzed. Geographic data of these pages' visitors was collected (Figures 11 and 12). The time-span was consistent with the research period: the quarter of January, February and March of 2018. It was also an active admission period when students visit university websites frequently.

Figure 11.

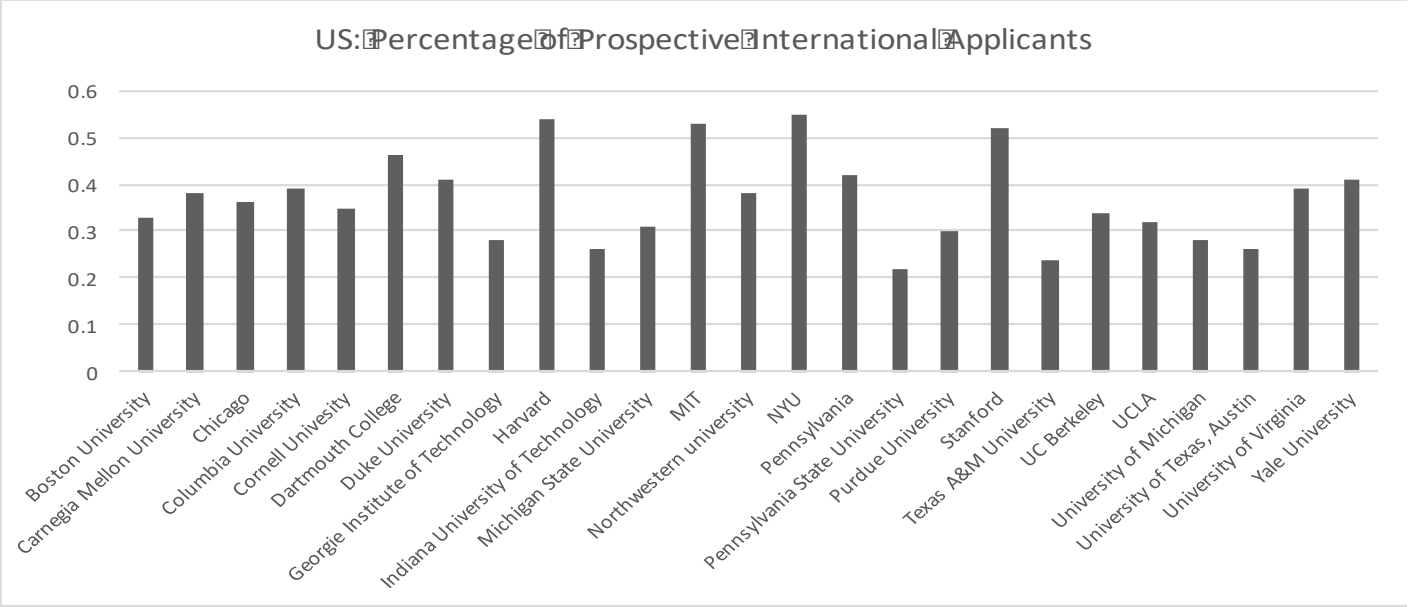
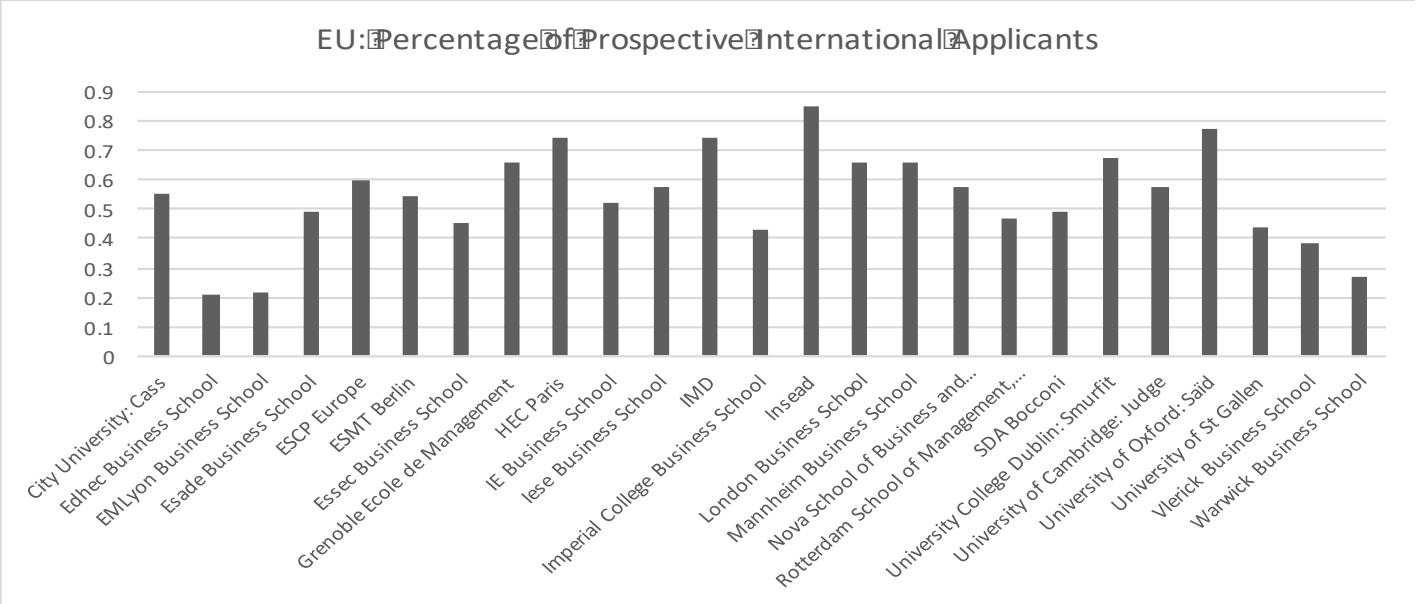


Figure 12.



As one can see (Figures 11 and 12), the pattern correlates with the evaluation of the clusters in regards to international communication competences: in the EU cluster, the number of international visitors was higher compared to the U.S. The mean percentage of the international visitors of the admission pages was 54% in the EU cluster and 36% in the U.S. cluster. The statistical test (Table 15) for significance with a p-value of less than 0.05, revealed a high probability of significant difference in mean numbers. However, the variance in the EU cluster was relatively higher as well, which can be explained by the relative heterogeneity of the European schools as well as the region itself as opposed to the U.S- a single state.

Moreover, there was an interesting pattern observed in the geographic location of the visiting students. Even though English language programs' admission pages were studied, ethno-linguistic similarities and common colonial histories appeared to be determinant factors of the mutual student flows between countries. The flows between the U.S and the U.K based schools was the highest. Spanish and Portuguese schools were visited more from the continent of Latin America. French schools appeared popular among African markets. Also, the European schools

were, in general, visited more from Asian destinations than the U.S ones. Some correlation appeared with the existence of overseas campuses and the flow of visits from the host countries: French schools which are the ones with the most campuses in Asia got more visits from that region. One can see that such a difference correlates with the schools' objectives described in the previous section as well.

However, it is worth keeping in mind that since the absolute number of visitors for each school was unknown, the results cannot be fully validated. On the other hand, not all the visitors were necessarily prospective students. Yet a general pattern is observable and it gives rise to certain questions worth researching.

Table 15: Comparison of International Visitor Percentages

t-Test: Two-Sample Assuming Equal Variances		
	EU: Percentage of Prospective International Applicants	*US: Percentage of Prospective International Applicants*
Mean	0.5408	0.3692
Variance	0.026907667	0.009082667
Observations	25	25
Pooled Variance	0.017995167	
Hypothesized Mean Difference	0	
df	48	
t Stat	4.522664304	
P(T<=t) one-tail	2.00446E-05	
t Critical one-tail	1.677224196	
P(T<=t) two-tail	4.00892E-05	
t Critical two-tail	2.010634758	

Table 16: Comparison of Means for Preparedness for The Modern Working Environment

t-Test: Two-Sample Assuming Equal Variances		
	EU	*US*
Mean	2.881987578	2.900621118
Variance	1.954736025	1.452562112
Observations	161	161
Pooled Variance	1.703649068	
Hypothesized Mean Difference	0	
df	320	
t Stat	-0.128086468	
P(T<=t) one-tail	0.449080501	
t Critical one-tail	1.649629305	
P(T<=t) two-tail	0.898161002	
t Critical two-tail	1.967404974	

For the overall preparedness of the modern economy, there was no significant difference between the two clusters. However, an interesting observation is that for both clusters, the means for the overall preparedness of the modern economy (Table 16), were lower than the means of the means of the 7 seven skillsets included in the analysis. This may indicate that the students' expectations from the universities go beyond the development of highly demanded skills. This may also suggest that after graduation students do not enter job markets with much confidence about their readiness to perform their job tasks even though they evaluate their possession of the demanded skills to be relatively high. At this point it is interesting to consider students' expectations.

Research Limitations

Stage 1.

The time range chosen for the analysis was limited and too specific. Even though no evidence exists suggesting that postings made throughout January should anyhow differ from postings made during other months of the year, it might be the case that a certain unknown

pattern exists that affects the types of job postings made throughout the period of analysis. If such a pattern exists, it might have skewed the results.

The fact that the companies were all successful, top ranked companies might have affected the representation of the skills. The lack of confidence in the representativeness of the sample limits the capacity of the research to make generalizations concerning skill demands for the entire economy.

Although the list of the companies from which the skills were derived included both public and private companies from various industries, the slight over-representation of companies belonging to particular industries might have affected the frequency of occurrence of certain skills.

All the job postings were English language postings. Although there is no reason to assume that there should be any difference since the companies were international, the possibility of unidentified differences exists. Moreover, although, in the digitized world, the fields of text mining and natural language processing are gaining popularity as research methodologies, they have some inherent limitations in their representativeness of the underlying meanings. The use of language itself is subjective and prone to perceptual biases.

Stage 2.

Because of the unavailability and incomparability of data, the classification of the adaptation strategies of the universities, has been done based on limited criteria. There might be several other differences, such as course curricula changes, syllabi adjustments, etc. which the analysis did not reflect fully.

Stage 3.

The evaluation done by students was based on a survey, which is a subjective means of measurement. It shows the perceived acquisition of the skills. Different alumni members may have different ways of estimating the level of skill development. It might be affected by their expectations, their prior possession of the mentioned skills as well as their satisfaction with their current professional achievements.

On the other hand, the method is vulnerable to non-response bias. People who decided to answer might have different characteristics from the people who have chosen not to participate.

The representation of the alumni from each school is also unknown. Hence, there is a possibility that some of the school alumni were underrepresented, which furtherly limits the evaluations' validity and generalizability.

Ultimately, since no comprehensive data was available about the population size of the 2017 alumni of all the schools, the sample size was chosen based on the responses. It might be the case that the sample size is not big enough to enable generalization of the evaluations of the schools.

Discussion

The study revealed a plethora of insights. Perhaps it gave rise to more questions than answered them yet it is not the limitation but the beauty of exploration. Some of the findings were supported with solid facts and validated with three sources, whereas others were more inconclusive and susceptible to certain biases. The first part of the research where the skill demands were identified was more rigorous and supported by theories. As an answer to the question of what are the skills that companies look for in business professionals most of all, the

research revealed 7 skillsets that appeared with high frequency. The demand for skills varied depending on position level and the accompanying degree requirement. More specific skills, such as data and digital competences were more frequent for low level positions, whereas strategic skills were more common in top management positions. The soft skills, such as team work and cross-functionality were more uniformly distributed. Such a distribution exhibited notable consistency with Katz's well-tested Skills Theory and proved its timelessness. This also to some extent correlated with degree requirements.

The second part of the research which concentrated on the scrutiny of the adaptation strategies that universities implement had more limitations yet it revealed certain invaluable insights for further research. The top 25 EU and U.S Business Schools. First of all, at general strategic level, schools were successfully classified into "Online Generalists" and "Offline Specialist" two distinct strategic "bundles". The former concentrates on provision of increased number of online courses and keeps traditional BA/BS/MBA program formats, while the latter one focuses on development of specialized MS programs in particular fields and on expansion of operations in overseas markets. The analysis of the outliers was also interesting. The schools within the European cluster coming from the Anglo-Saxon tradition exhibited more similarities with the U.S-based schools. Similarly, the older the schools the more likely they were to have generalist strategies.

Going back to the educational outcome evaluation framework developed by the Finnish National Board of Education, one can see that the research indeed provided some insights about the metrics which were within the scope of the research –correspondence between educational needs and provision within the effectiveness sector and timeliness and ability to react and supply of education within the efficiency sector. It appeared that the performance of EU and U.S-based

schools did not have as much of significant difference. The only skill set for which the EU cluster significantly outperformed the U.S one was the set of international skills. Whether such a difference was due to the identified strategic differences, or whether this was due to certain geographic and cultural characteristics inherent to each cluster, the research could not answer. Also, there seemed to be certain differences in the objectives of the schools, which could also affect the results yet need to be studied furtherly.

Another interesting finding that can be alarming for both clusters was the relatively low performance with respect to creativity skills. The universities show similar approaches in course development aimed at cultivating such skills. Taking into account the evaluations, they might consider changing their tactics. However, as for any of the other "soft" skills, for creativity as well, it is worth also considering that the role of the schools is only one side of the coin. Some research (Heckman & Katz, 2012) suggests that these skills correlate with personality differences much more than with training.

Finally, although the economic aspects, as defined by the Finnish Educational Outcome Evaluation Framework were out of the scope of the research and the metrics included in the ranking methodology of the Financial Times made it possible to disregard the possible economic differences within European and within the U.S-based school groups, when trying to interpret the results it is worthy to consider some of the economic differences. As some secondary research suggests, EU schools mostly outperform the U.S ones (GMAC, 2018). On the other hand, some lower ranked schools also outperform some of the top ranked ones. Hence, when trying to evaluate the effectiveness and "fitness-for-purpose" of the strategies implemented by the Top schools more holistically, such factors must undoubtedly be scrutinized and takin into account.

The field of change management, in general, is one of utmost relevance in the rapidly

changing economy. It is important that education administrators conduct such research on a regular basis to be able to remain competitive and fulfill their missions of cultivating knowledge and enhancing perspectives.

Conclusion and Further Research

All in all, the study was an ad-hoc exploration of the changing skill demand in the modern economy as well as the responses of the Top Business Schools (according to the Financial Times rankings). It also attempted to evaluate the strategies deployed by the Schools according to the perception of the students. However, the research was not aimed at suggesting any causal relationships. There were several assumptions that comprised the basis for the research, hence, all the findings should be interpreted keeping in mind the assumptions.

For further research in the field, several approaches may be taken. One logical continuation of the research can be the design of a comprehensive adaptation strategy evaluation framework that schools can apply to align their strategies to their objectives, or, that accreditation agencies can incorporate in their school ranking methodologies.

Alternatively, deep research can be done in the direction of any of the three stages included in the research. The results about the skill demand acquired in the first stage may be cross-validated furtherly and an algorithm may be developed specifically fit for the purpose of skill demand identification. The school classification may be continued for 2nd and 3rd tier schools to see if the distinctive results for the strategies hold. Afterwards, the schools can be evaluated using the surveying methodology proposed in the third stage. Ultimately, the simplistic survey instrument may be furtherly developed to become more comprehensive and to enable more reliable evaluation.

Post-Research Remarks

After the time-period of the research, some more scrutiny was done of the schools' strategic changes in regards to the quantifiable variables- online courses, specialized programs, and overseas campuses. It was interesting to see certain convergence of strategies. Some of the EU "Offline Specialist" schools started to actively develop online courses during the months of March and April of 2018, while some of the U.S "Online Generalist" courses added announcements about new specialized program developments for the September of 2019. A couple of U.S schools also made some announcements about their intentions to open campuses in China and Singapore. This reinforces the idea of unprecedented speed of change that the economy faces. On the other hand, this gives two interesting ideas for further research – that is, the strategic interactions between the EU and U.S-based schools and the study of the perception of online courses as substitutes, or complements.

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Tables

Table 1: 100 Top Employers: Glassdoor Employee's Choice Awards

1	Facebook
2	Bain & Company
3	Boston Consulting Group
4	In-N-Out Burger
5	Google
6	lululemon
7	HubSpot
8	World Wide Technology
9	St. Jude Children's Research Hospital
10	Ultimate Software
11	SAP
12	McKinsey & Company
13	Keller Williams
14	E. & J. Gallo Winery
15	Salesforce
16	Power Home Remodeling
17	Delta Air Lines
18	Academy Mortgage
19	The Church of Jesus Christ of Latter-day Saints
20	H E B
21	LinkedIn
22	DocuSign
23	Southwest Airlines
24	NVIDIA
25	Fast Enterprises
26	AvalonBay Communities
27	Nestlé Purina
28	Blizzard Entertainment
29	Paylocity
30	Intuit
31	Adobe
32	NewYork-Presbyterian Hospital
33	VMware
34	SAP Concur
35	Boston Scientific

36	Forrester
37	Kimpton Hotels & Restaurants
38	Johnson & Johnson
39	Microsoft
40	Ellie Mae
41	Hilton
42	Yardi Systems
43	Smile Brands
44	Progressive Leasing
45	Memorial Sloan Kettering
46	Texas Health Resources
47	Protiviti
48	Oshkosh Corporation
49	Wegmans Food Markets
50	SpaceX
51	Discount Tire
52	Eli Lilly and Company
53	NIKE
54	Monsanto Company
55	United Airlines
56	Electronic Arts
57	Zillow
58	Capital Group
59	Roche
60	3M
61	REI
62	Procter & Gamble
63	Kronos Incorporated
64	Kwik Trip
65	Yahoo
66	Arm
67	Northwestern Mutual
68	Guidewire
69	Capital One
70	Trader Joe's
71	Hyatt
72	Chick-fil-A
73	Extra Space
74	Slalom

75	J. Crew
76	Stryker
77	Deloitte
78	Toyota North America
79	T-Mobile
80	Travelers
81	CDW
82	Aurora Health Care
83	Accenture
84	Apple
85	Darden
86	QuikTrip
87	Taylor Morrison
88	Insperity
89	Cisco Systems
90	Massachusetts General Hospital
91	Kaiser Permanente
92	Ceridian
93	Adidas
94	Morrison Healthcare
95	Shell
96	Starbucks
97	Liberty National Life
98	Walt Disney Company
99	KPMG
100	BAYADA Home Health Care

Table 2: Top 25 Business Schools in the U.S and Top 25 Business Schools in Europe, FT Rankings

Ranking	Country	University/Business School	Website
1	US	Harvard	http://www.hbs.edu/
2	US	MIT	http://mitsloan.mit.edu/
3	US	Pennsylvania	https://www.wharton.upenn.edu/
4	US	Stanford	https://www.gsb.stanford.edu/
5	US	UC Berkeley	http://www.haas.berkeley.edu/
6	US	Northwestern university	http://www.kellogg.northwestern.edu/
7	US	UCLA	https://www.anderson.ucla.edu/
8	US	NYU	http://www.stern.nyu.edu/

9	US	Chicago	https://www.chicagobooth.edu/
10	US	Columbia University	https://www8.gsb.columbia.edu/
11	US	Yale University	https://som.yale.edu/
12	US	University of Michigan	https://michiganross.umich.edu/
13	US	Cornell Univesity	https://business.cornell.edu/
14	US	Duke University	https://www.fuqua.duke.edu/
15	US	University of Texas, Austin	https://www.mccombs.utexas.edu/
16	US	Boston University	http://www.bu.edu/questrom/
17	US	Carnegia Mellon University	https://tepper.cmu.edu/
18	US	Dartmouth College	http://www.tuck.dartmouth.edu/
19	US	Georgie Institute of Technology	https://www.scheller.gatech.edu/
20	US	Indiana University of Technology	https://kelley.iu.edu/
21	US	Michigan State University	https://broad.msu.edu/
22	US	Pennsylvania State University	https://www.smeal.psu.edu/
23	US	University of Virginia	http://www.darden.virginia.edu/
24	US	Purdue University	http://www.krannert.purdue.edu/
25	US	Texas A&M University	http://mays.tamu.edu/
1	UK	London Business School	https://www.london.edu/
2	France	HEC Paris	http://www.hec.edu/
3	Spain	IE Business School	https://www.ie.edu/business-school/
4	Switzerland	University of St Gallen	https://www.unisg.ch/
5	France	Insead	https://www.insead.edu/
6	Italy	SDA Bocconi	http://www.sdabocconi.it/
7	Spain	Iese Business School	https://www.iese.edu/
8	Spain	Esade Business School	http://www.esade.edu/
9	Netherlands	Rotterdam School of Management, Erasmus University	https://www.rsm.nl/
10	Switzerland	IMD	https://www.imd.org/
11	UK	University of Cambridge: Judge	https://www.jbs.cam.ac.uk/
12	UK	University of Oxford: Saïd	https://www.sbs.ox.ac.uk/
13	FR / GB / DE / ES / IT	ESCP Europe	http://www.escpeurope.eu/
14	France	Edhec Business School	https://www.edhec.edu/en
15	Germany	Mannheim Business School	https://www.mannheim-business-school.com/en/
16	UK	Warwick Business School	http://www.wbs.ac.uk/
17	UK	City University: Cass	https://www.cass.city.ac.uk/
18	Germany	ESMT Berlin	https://www.esmt.org/
19	Belgium	Vlerick Business School	https://www.vlerick.com/en
20	UK	Imperial College Business School	https://www.imperial.ac.uk/business-school/
21	FR / RU / GE	Grenoble Ecole de Management	https://en.grenoble-em.com/
22	France	EMLyon Business School	http://www.em-lyon.com/en
23	France	Essec Business School	http://www.essec.edu/
24	Ireland	University College Dublin: Smurfit	http://www.smurfitschool.ie/
25	Portugal	Nova School of Business and Economics	http://www.novasbe.unl.pt/

Table 3: Survey Instrument

On a scale of 1 to 5 do you agree with the following statements?

[1 - strongly disagree, 5 - strongly agree]

1. My university program helped me develop digital/technologic skills
2. My university helped me develop data analysis skills
3. My university program helped me develop creative skills
4. My university program helped me develop cross-functional competences
5. In my university, I had a chance to be exposed to a diverse environment where I could develop international communication skills
6. My university program helped me develop strategic thinking
7. My university program incorporated a lot of team work and collaborative components
8. Overall, my university program prepared me for the modern working environment

Please indicate the level of your program

1. BA/BS
2. MA/MSc/Professional Degree
3. MBA
4. PhD