

Finnish Paradox of IS graduates

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Abstract

In this case study we first analyze Information Systems (IS) graduates from late 1970 to present based on their gender and compare the results with the general gender equality of graduates in Finland. Secondly we analyze how domestic IS graduates and international IS graduates differ in their careers. This paper indicates that there are couple of Finnish Paradox of IS graduates. One, the high equality and free education in the society does not guarantee gender equality of IS graduates. Vice versa, the share of women in IS education is diminishing. Two, the women's share of IS graduates of business school is higher than their share in general, but unfortunately this is not true with the international business IS graduates. Three, the international IS graduates seems to have more in-demand IS skills of employers requirements in their work.

Keywords

IS alumnus, domestic, international, gender, equality.

Introduction

Are we ready for the future? According to LinkedIn (Charlton 2019) ten most in-demand skills of 2019 employers are looking for can be divided to soft skills (creativity, persuasion, collaboration, adaptability, and time management) and hard skills (cloud computing, artificial intelligence, analytical reasoning, people management, and UX design). In many cases these demands shape reskilling requirements, which again requires political decisions and changes in companies and education.

In order to survive in the global competition a small country like Finland has to use its resources carefully. The Finnish people value education and have put efforts to build a system of free education and equal access to education which is also a constitutional right in Finland (Dickinson, 2019). We may say that Finland has focused on equality including gender equality and intellectual property in order to stay alive. But, do we have gender equality in IS education, and what has happened to it during decades?

Another way of keeping one's head above water for a small country is to be as international and networked as possible. For education provider this means, for example, establishing international programs together with partners. Joint programs gives more possibility for intercultural and interdisciplinary activities, which is one recommendation of curricula analysis of information science programs (Ortiz-Repiso et al. 2018). They also recommend to track graduate success, which is a part of our alumni survey too. We have built international programs, and in this case study we try to track and compare the graduates' success of one domestic program and two international programs.

First, we analyze gender equality of our graduates and compare the situation both nationally and internationally. Second, we compare alumni data of our domestic and international graduates.

Data collection

Data for the study was collected from the alumni database and by two surveys targeted to domestic and international students who have graduated for MSc (Econ.) degree program majoring in information systems (IS) from the university. The international alumnus' bachelor background is multidisciplinary. They have degrees from business, management, economics, and business administration or from computer science, information system, or information technology engineering. The background of the domestic alumnus is mainly in business majoring in information systems. The online surveys were made using Webropol service on late 2017. The alumnus were contacted using emails, via the Facebook and LinkedIn services. Altogether 54 international alumnus reply to the questionnaire: 36 were male and 18 were female (33 %). 121 domestic alumnus replied to the survey: 93 were men and 28 women (23 %).

The Northern Gender Equality Paradox in IS graduates

The recent study from Finland reveals that there is no big changes in division of work between men and women since 1980s (YLE 2019). But, in information and communication technology (ICT) and computer sciences 2017 there are 21 percent less women graduates than 1987. This development really worries, if we think the ongoing information revolution. At the moment, only 15 percent of ICT students in Finland are women, while in the 1980s more than a third were women. In Figure 1 Soet and Geary (2018) are showing the relation between gender equality and sex differences in (a) intraindividual science performance and (b) the percentage of women among science, technology, and engineering, mathematics (STEM) graduates. They measured the gender equality with the Global Gender Gap Index (GGGI), which assesses the equal economic, educational, health, and political opportunities for women and men. The gender gap in intraindividual science scores (a) was larger in more gender-equal countries. The percentage of women with degrees in STEM fields (b) was lower in more gender-equal countries.

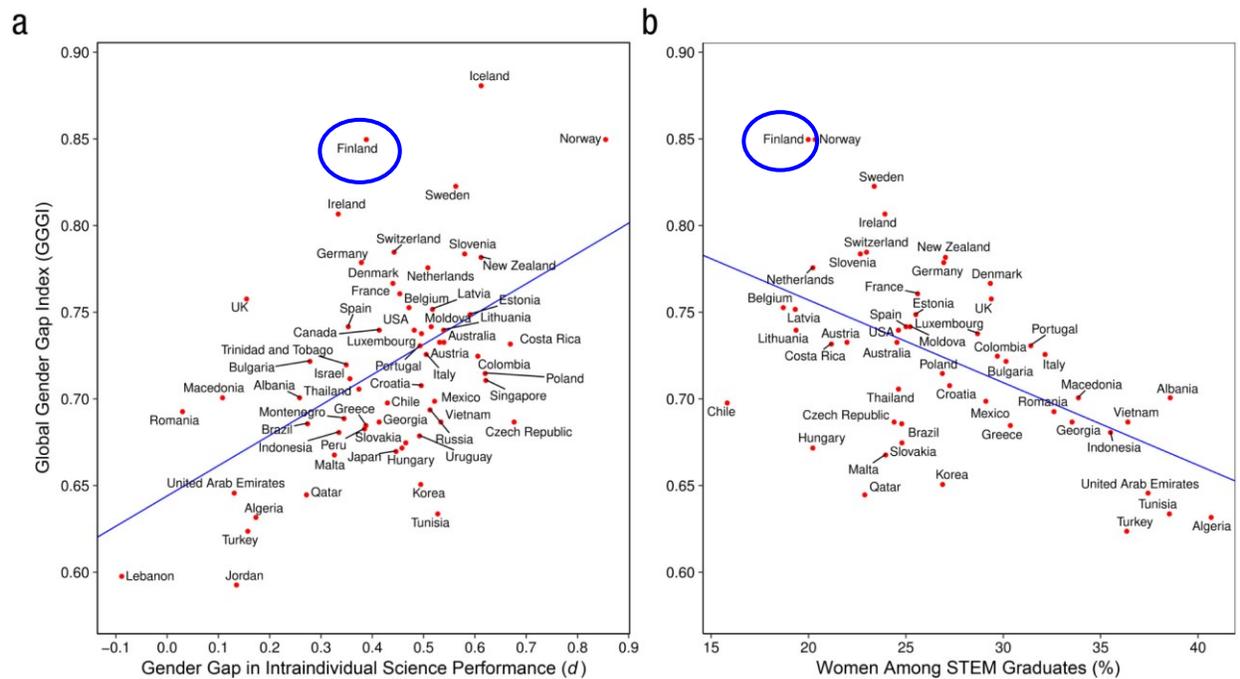


Figure 1. Stoet and Geary 2018: Global Gender Gap Index and Gender Performance (a) and Women among STEM Graduates (b)

When analyzing the gender of graduates in our case study, we find out that women's percentages from 1980's 48 percent has fallen to 33 percent in 1990s and stayed at that level the next two decades 34 percent for 2000 and 36 percent for 2010s. Unfortunately, this finding support the northern gender equality paradox in STEM education: The more equal the society, the less women are doing STEM education (Stoet and Geary 2018).

But, there is also one interesting fact behind of these 2010s figures which also contain the two international master's degree program graduates. One is a joint degree program with two other university with the 34 percentages of women graduates. In the "domestic" international program the portions is 26 percent. In the similar domestic IS program where there are only Finnish graduate the amount of women graduate is 44 percent. Almost the same as in 1980s! All these are graduates from business school majoring in IS and their degree is Master of Science in Economics and Business Administration.

The Nationality Paradox in IS graduates

IS graduates are gender-unequal, but what are the differences between domestic and international graduates. The women international alumnus' answer ratio 33 % was much closer to their portion of graduates (32 %) than with the domestic women graduates (23 vs. 36 %). Another major difference was when they got their first job corresponding to their master's program qualification level. 72 % of the domestic's graduates had it already before their graduation whereas with the international graduates only 33 % had it before their graduation. Both groups valued their major studies most useful for their professional career. Domestic graduates valued the languages studies (3,74/5,00) and international graduates valued the thesis work (3,63/5,00) the next highest importance for their professional career.

		Domestic	International
What is the nature of your work?	IT- expertise	40	43
	Management	26	19
What is your professional status?	Specialist	50	57
	Middle management	26	22
	Entrepreneur	11	7
In which field the company you are working in is operating in?	IT services	36	33
	Others, please specify	16	33
	Manufacturing	17	9
	Education	8	9
Is the company a seller or a user of IT services?	Seller	41	52
	User	59	48
How many employees are currently working within the company?	Less than 10	11	13
	'10-15	10	4
	50-500	27	19
	500-2000	16	19
	More than 2000	36	43
Can you estimate your yearly income?	Above 120	11	2
	120-90	14	4
	90-60	31	17
	60-30	42	43
	Under 30	2	7
	I do not wish to say		28

Table 2. Working conditions of IS graduates (%)

Table 2 shows in per cent that for both groups the nature of the work and their professional status was pretty similar. IT-expertise was the most popular nature of the work for the domestic (40 %) and the international (43 %) graduates, following with the management positions 26 and 19 % likewise. There are neither any enormous differences in professional status either field of the company. Interesting is to see, that international alumnus are working a slightly more on selling side and in bigger companies than their

domestics counter graduates. Estimated yearly income of domestic graduates is higher than international. Is this because there are more men in the domestic graduates or do they in general have a longer career behind and are they more in general management positions?

Figure 3 assesses the IT skills requirements for both groups, the value is average value from 1 to 5 scale, where 1 is not important at all and 5 is very important. The order of the IT skills importance is almost the same for both groups. But, it is interesting to see that international alumnus evaluate business intelligence and analytics as well as cloud services more important than Finnish alumnus.

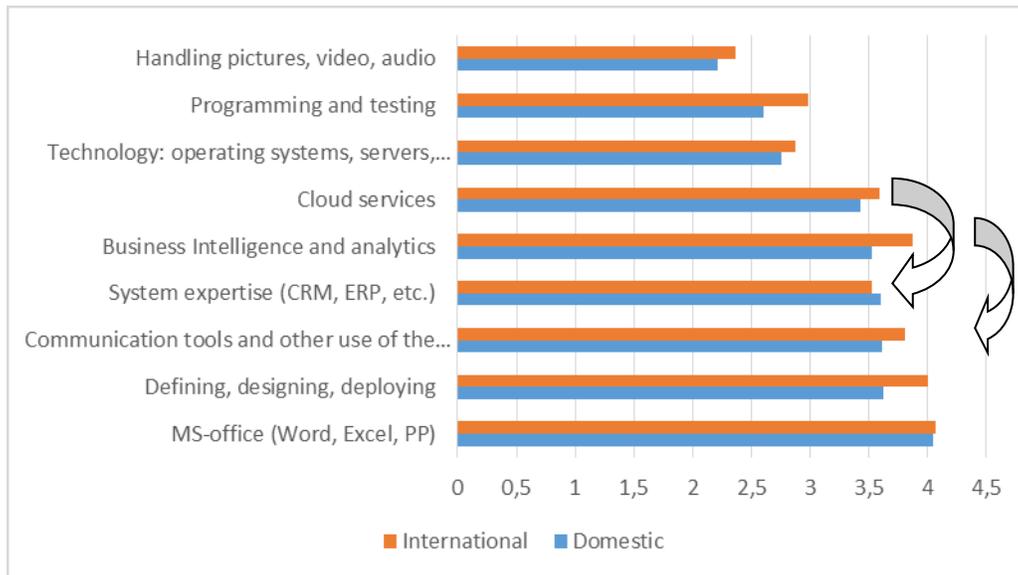


Figure 3. IT skills requirements



Figure 4. Business skills requirements

Figure 4 show the importance of business and managerial skills requirements. Again the order and importance mainly are the same. But it seems that international alumnus communicate more in English and the domestic alumnus needs more general business know-how skills. When comparing IT skills and

business skill requirements, it seems that in general international alumnus assess IT skills requirements higher than the domestic alumnus whereas with business skills requirements are almost vice versa.

Conclusion

Our results indicate that there is a couple of Finnish Paradox of IS graduates. The high equality and free education in the society does not guarantee gender equality of IS graduates. Unfortunately, the share of the women in IT and ICT education in general in Finland has diminished to 15 %. Because of the 2010 the merge of universities in Finland our department also started to educate more technical IS graduates without any business studies in their degree. Among those graduates the women percentage is only 14, which is the same as in general with the STEM graduates. This is a shame and something needs to be done and something has already started as not only technology, but also “normal” companies need diversity and broad thinking in their functions. One example of attracting women to ICT field is “Women in Tech” which activities aim to discuss how women could have a larger role in creating success stories in business and technology (Women in Tech 2018). A good example is a CEO and graduate from business school Elina Björklund explaining what going digital and going global means for women leader and for a company who defines that “online is our home base” (Women in Tech Forum 2018). We need to be innovative to attract young women to select STEM and IS education. This is one “eternal” aim of IS, but maybe today more relevant than ever before.

Based on our findings studying IS in business school with business studies included in their study curriculum in Finland is more gender equal for Finnish women than in the STEM education in general. However, international alumnus are unbalanced when it comes for gender equality. We need to be innovative to attract young women to select international IS education as we have tentative results that international alumnus do such a work which have skills required by today's employees.

The international IS graduates seem to evaluate in-demand IS skills of 2019 employers requirements in their work, such as cloud computing and business intelligence and analytics, more important than their Finnish counterparts.

We also argue, that studying in multidisciplinary learning environments make IS graduates more adaptive for changes, however this needs to be studied more deeply.

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