Does What You Study Matter? Comparison of Career Aspirations Between Female Students in Arts and Science Streams in the UAE's Higher Educational Institutions

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【Abstract】 This paper analyzes the difference in educational and career aspirations of female Emirati students in the 'arts' streams and 'science' streams in various higher education institutions in the United Arab Emirates （UAE）. Globally, women are under-represented in STEM subjects at all levels of schooling. However, in the United Arab Emirates, 56% of government university graduates in STEM fields are women （Rizvi, 2018）.

Given the country differences in women on STEM education, Stoet and Geary （2018） presents the educational-gender-equality paradox, which demonstrates that women from countries with low levels of gender equality are likely to enter STEM fields in higher education due to the lower economic stability and job security of the society. On the other hand, the case of the Gulf countries – particularly the UAE – the phenomenon begs the question of 'why so many' instead of 'why so few' given the great economic stability and job security for Emirati nationals due to rentier social contract and strong labor nationalization policies.

To better understand how female Emirati students' education choices shape their educational and career aspirations, a mixed-methods approach to triangulate interview data with survey data was employed. First, an online questionnaire was distributed from January-October 2016 through snowball sampling method in Arabic. Data collected from 161 UAE female nationals between 15 and 30 years old were analyzed by SPSS. In-depth four semi-structured interviews conducted in the UAE in 2016.

This study found that Emirati female students in both arts and science streams did not show a significant difference in their educational and career aspirations. All students reported having a strong desire to obtain advanced degrees regardless of their academic streams. In addition, the interviewed students in both arts and science tracks lacked concrete knowledge about their own job prospects and career options available for them in various industries. This study illustrates that factors such as educational and career aspirations of Emirati women are crucial factors to understand and provide a well-rounded perspective on the unique educational phenomena occurring in the UAE.

Introduction

Globally, women are under-represented in science, technology, engineering and mathematics （STEM） subjects at all levels of schooling （Burke & Mattis, 2007）. According to a 2017 UNESCO report on girls' and women's STEM education, only 35% of STEM students in higher education

globally are women（UNESCO, 2017）. In the case of the United States, a country often thought to be the global leader in the technology industry, the female share of all STEM graduates only remained at 35.5% in 2016（National Science Board, Science & Engineering Indicators, 2018）. Similarly, only 15.1% of engineering undergraduates in the United Kingdom（UK）were women in 2015, while the proportion of female students studying engineering and physics has remained virtually static since 2012（National Centre for Universities and Business, 2015）. Moreover, the results from the Programme for International Student Assessment（PISA）2015 revealed that girls were more likely to be anxious about mathematics in more than 80% of the countries surveyed, which was double the gender difference in mathematics performance（Stoet & Geary, 2013）. The issue of female underrepresentation in STEM subjects has emerged as one of the most pressing issues in global education, as countries globally shift their attention from meeting basic educational thresholds to achieving greater educational equity across various demographics.

It is also worth examining the lack of female representation in STEM from a broader socioeconomic lens. Stoet and Geary（2018）, in their study on why STEM fields lack women, presents the educational-gender-equality paradox, which demonstrates that women from countries with high levels of gender equality are less likely to enter STEM fields in higher education, while the opposite is true for women from countries with low levels of gender equality. They argue that less gender-equal countries tend to offer lower economic stability and job security, which may incentivize more female students to pursue higher-paying STEM occupations as a means to invest in a more secure future（Stoet & Geary, 2018）.

"Reversed" Gender Gap in STEM in the UAE

On the contrary, more gender-equal countries offer a more stable platform for students to explore and pursue an academic path of their interest rather than out of economic necessity. This educational-gender-equality paradox is particularly pronounced in Arab countries such as the UAE and Qatar, which are considered to have lower levels of gender equality. On one hand, some countries are beginning to pay greater attention to alleviate this gender imbalance. But on the other hand, some countries have already achieved moderate success in representing more women in STEM subjects. In fact, there has been increased attention given to women in STEM in the Arab world. According to the data gathered by UNESCO Institute of Statistics（UIS）, 34-57% of STEM grads in Arab countries are women, which is much higher than the US（35%）or Europe（18%）. Especially in the case of the UAE, the average percentage of female students in STEM fields amounted to 63% in 2015（Islam, 2017）, which is high even when compared to other GCC countries like Saudi Arabia（39%）and Bahrain（46%）（UIS, 2018）. Moreover, 56% of government university graduates in STEM fields are women（Rizvi, 2018）.

Despite this relatively high female participation rate in STEM subjects, the UAE continues to suffer from a serious disconnect between educational outcomes and employment, where students do not translate their educational outcomes into tangible employment outcomes（Ridge, 2014; Author, 2016）. Thanks to its oil-rich sources, the UAE government offers secure and lucrative public sector jobs

to its citizens, with 77% of working Emiratis working for various public, federal and local organizations (UAE Human Development Report, 2018). At the same time, the UAE currently suffers from low female workforce participation rate (35.2%), while having a relatively low unemployment rate (3.5%) (Dubai Statistics Center, 2016). Hence, these findings suggest that the majority of Emirati women - including STEM graduates - have actively chosen not to work. In other words, this is in direct contrast to many other countries where students' career aspirations dictate academic paths at the higher education level (Yu, 2017; Disco, 2018), particularly in STEM fields where the expected income is greater (Lee & Kim, 2007).

Considering this social context, it is difficult to conclude the reasons behind Emirati women's enthusiastic participation in STEM related paths. Furthermore, this phenomenon is also prominent in other GCC countries that share similar labor market structures. Thus, I investigate whether students in science streams differ in their career aspirations from students in arts streams in the UAE. By exploring the reasons why female Emirati students pursue different streams and whether students in science streams differ in their career aspirations from students in arts streams, I attempt to provide a broader explanation of the career aspirations and its implications of female students in the GCC.

Research Methods and Description of Participants

To better understand how female Emirati students' education-choice shape their career aspirations, I employed a mixed-methods approach to triangulate interview data with survey data. First, to examine educational aspirations and career prospects of UAE women, an online questionnaire was distributed from January-October 2016 through snowball sampling method. The survey was primarily conducted in Arabic, and then further translated into English. To minimize non-responses and to make the survey easier to answer, pre-coded questions were applied to most of the survey questions. The survey contained 33 items and was divided into four major parts: (1) personal data; (2) educational awareness; (3) educational acts; and (4) career awareness, based on the IPO model (Astin, 1991). Once data was collected from 161 UAE female nationals between 15 and 30 years old, SPSS was used to analyze the data.

Second, semi-structured interviews were conducted, during my fieldwork in the UAE from October 2016 to May 2018, to obtain information about the interviewee's educational background and career prospects. Total of nine men and women of UAE nationality were interviewed using the Snowball Sampling Method. However, in this paper, four Emirati women, two each from arts stream and science stream[1], who are currently attending higher education institutions in the UAE, were analyzed. Due to the sensitivity around data gathering in the UAE and the sensitive nature of educational life stories (Alfarran, 2016), an individual interview method was selected as the most appropriate given the cultural context of the UAE. Moreover, all interviews were conducted over Skype and recorded with participants' permission to provide a safe space where the participant would freely express their views on any topics discussed. Table 1 gives a summary description of respondents, including age, current status and academic major, and shows the diverse demographics of the interview participants.

Table 1 Description of respondents

	Survey			Interview	
	15-19	56%	ID	Current status (student)	Major
Age (n=161)	20-24	39%			
	25-30	5%	UW2	2-year University	Public relations (A)
Current status (n=161)	Student	91%	UW6	3-year University	Humanity (A)
	Employed	4%	UW3	3-year University	Engineering (S)
	Unemployed	5%	UW4	2-year University	Nutrition (S)
Major (n= 132)	Arts stream	49%			
	Science Stream	51%			

Results

The survey data revealed that more than 98% of respondents plan to pursue some form of career after finishing their undergraduate degrees. At the same time, more than 85% of respondents in both arts and science streams indicated having very strong or strong confidence in pursuing their intended career path (table 2). However, there was no statistical difference between the groups in their confidence regarding their future career paths.

Table 2 Likelihood to acquire the job by major & Planed future degree by major (%)

	Likelihood				Total (n)	P	Planed future degree				Total (n)	P
	Very low	Low	High	Very high			D	B	M	D		
Arts	0.0	14.0	64.9	21.1	100.0 (57)		3.5	19.3	35.1	42.1	100.0 (57)	
Science	0.0	13.8	55.4	30.8	100.0 (65)	n.s.	0.0	25.4	33.3	41.3	100.0 (63)	n.s.
Total	0.0	13.9	59.8	26.2	100.0 (122)		1.7	22.5	34.2	41.7	100.0 (120)	

+ $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$, N.S. No Significant
Note: D (Diploma), B (Bachelor), M (Master), D (Doctorate)

Based on the Chi-square test of group dependence, where my analysis yielded a Chi-square value of 2.737 and a p-value higher than the alpha value of 0.05, I found that there was no statistical difference between students pursuing arts and science streams in terms of their expected levels of education in their lifetimes. Regardless of their chosen academic streams, more than 30% of respondents indicated that they would like to pursue master degrees, while more than 40% of respondents indicated wanting to pursue doctoral degrees. In contrast, only 20% of respondents from arts streams and 25% of respondents from science streams indicated bachelor's degree as their expected terminal degree.

Compared to the results from the quantitative analysis, our qualitative data yielded similar findings. Overall, the selected interviewees from both academic streams showed little difference when talking

about their post-graduation plans. Two interviewees in the science stream expressed strong desire to pursue master degrees; however, their desire to pursue doctorate degrees was conditional upon major life events, such as employment, marriage, and childbirth. In other words, while the interviewees saw the value of doctorate degrees, they saw them as of secondary importance. UW6, a humanities major in the arts stream, also admitted that she is seriously considering pursuing masters degrees after her graduation.

"I think I will take master and then I will see what happens. (Why not doctor, can I ask?)

I'm focusing now in getting bachelor. Then inshallah I will go to master or doctor. Still

I don't know [if] I will continue to [onto doctorate]." (UW6)

Another interviewee (UW2) studying public relations revealed that she plans to pursue her masters while working. Similarly, to the survey results, the interviews demonstrated a high level of desire and motivation to pursue higher education beyond undergraduate credentials.

It is also found that the survey respondents pursuing different academic streams did not significantly differ in the reasons why they decided to pursue higher education. When I divided the survey responses based on the pattern matrix of a rotated principal component analysis (Table 3), I analyzed four separate categories of reasons for pursuing higher education: career-driven (component 1), family-related (component 2), social-related (component 3) and self-growth (component 4). However, in all four categories of analysis, I observed low Chi-square values in reference to the relatively small degrees of freedom, and therefore p- values exceeding the alpha level of 0.05. In other words, both groups of respondents did not show a statistically different pattern.

Table 3 The principal component analysis and purpose for attending university

	Component			
	1	2	3	4
To obtain a higher salary job	0.91	0.08	0.08	0.00
To achieve a job with a higher social status	0.85	0.07	0.08	0.09
To be eligible for a job	0.78	0.11	0.02	0.03
To respond to expectations of my family	0.09	0.90	0.06	−0.01
To match my family's social status	0.13	0.87	0.12	0.02
To form friendships	0.05	0.12	0.79	−0.01
To enjoy university life	0.11	−0.01	0.76	0.29
Didn't have anything else to do	0.02	0.18	0.58	−0.49
To develop personal values	0.09	0.06	0.14	0.88
Factor Contribution	2.20	1.64	1.60	1.10
Cumulative Contribution Rate	24.49	42.70	60.49	72.70
Principal Component Analysis, Varimax rotation used Kaiser-Meyer-Olkin = .658 $p < .001$				
Factor Correlation		.184**	.244**	.176**
	.184**		.077**	.102**
	.244**	.077**		.223**
	.176**	.102**	.223**	

I also made cross-tabulated and descriptive comparisons of the four categories. The most significant reason for pursuing higher education was for self-growth, with 100% of arts stream students and 97% of science stream students responding either 'Strongly Agree' or 'Agree'. The second most common reason for pursuing higher education was to prepare for a career, to which 79% of arts stream students and 76% of science stream students responded either 'Strongly Agree' or 'Agree'. On the contrary, the majority of students in both streams responded that family and social-related causes were not strong factors in their decision to pursue higher education, with only 30% of arts students and 41% of science students responding in the affirmative to family-related reasons and 31% of arts students and 32% of science students to social-related reasons.

	Arts	Science	Arts	Science	Arts	Science	Arts	Science
	Self-growth n.s.		Career n.s.		Family n.s.		Social n.s.	
■ Strongly disagree	0%	0%	0%	2%	20%	16%	9%	13%
▥ Disagree	0%	2%	21%	22%	50%	43%	60%	55%
▦ Agree	28%	37%	47%	46%	24%	36%	27%	31%
■ Strongly agree	72%	60%	32%	30%	6%	5%	4%	2%

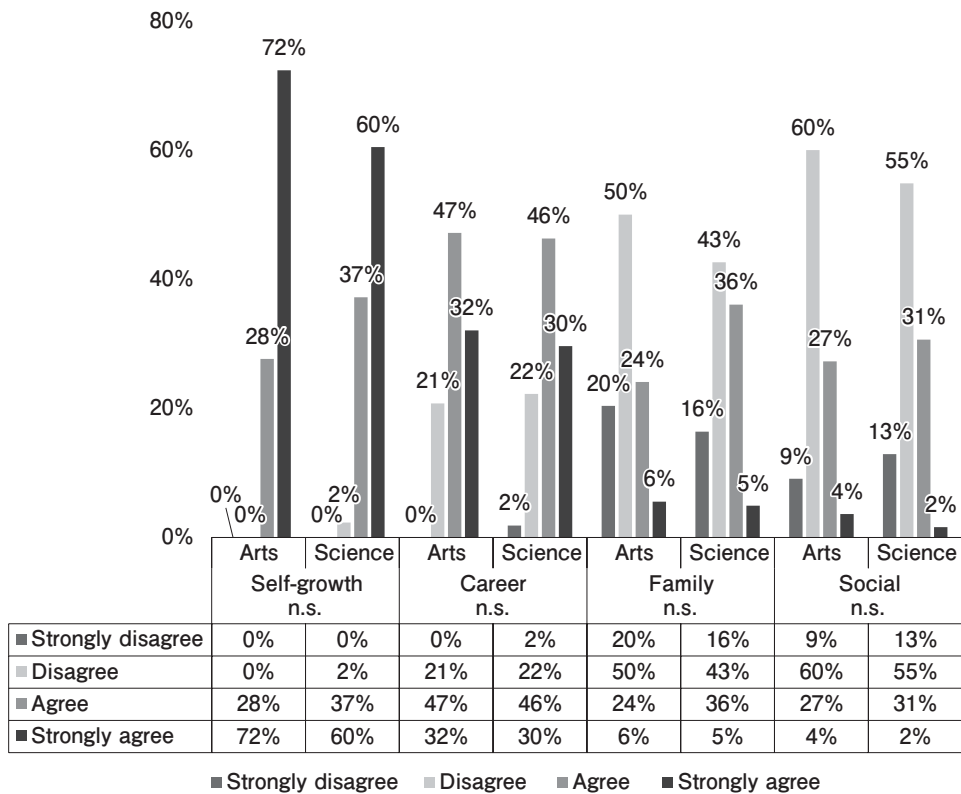■ Strongly disagree　▥ Disagree　▦ Agree　■ Strongly agree

Figure 1 The reasons for pursuing higher education

Similarly, when the interviewees were asked about why they decided to pursue higher education in the first place, they primarily pointed to the fact that it is the normal course of action for any Emiratis.

"It's very natural to continue studying at least till the university here." (UW3)

"I have to go to university or...I'll waste my time." (UW4)

However, all four interviewees shared the sentiment that there is a sense of duty to give back to the

country and to their communities:

> "Also, my country...is giving me everything I want and... I want to give back some of
> what they gave me. Because they are giving everything to us for free. By studying and
> being effective person in my community... I want to work. So, I can be a part of my
> community." (UW4)

Moreover, another level of analytic framework also employed, where I examined whether various demographic factors - such as high school grades, parents' education levels, and socioeconomic status - help to indicate a student's preference for either arts or science stream. However, no statistically significant differences between the two groups of students based on these factors was observed. Overall, the analytic results from this study do not definitively indicate the determinants of an educational stream choice for young Emirati female students.

Discussion and Recommendations for Further Research

While the data demonstrate that female Emirati students pursuing different academic streams do not differ in their career aspirations and reasons for pursuing higher education, this study points to a potentially more fundamental issue of the inapplicability of conventional theories in explaining female Emirati students' aspirations and motivations. In order to better understand how and why Emirati women choose their academic streams, this study suggests a strong need to develop a new framework for thinking about how young Emirati female students make decisions about their academic and career paths - one that carefully considers the uniqueness of the local social, economic, and political context. Accordingly, I offer several explanations for why this study could not find significant differences in career aspirations between students from different academic paths.

Table 4 shows the cross-tabulated data between survey respondents' chosen academic majors and their intended careers. The most commonly chosen academic major was engineering, with a total of 26 respondents. Among the engineering majors, five hoped to be high-ranking government officials, while four hoped to be government or public company employees. However, only three students selected computer programmer or engineer as their intended choice of career. The second most common major among the respondents was medical sciences, with a total of eight students. Interestingly, medical students selected a wide range of intended careers, ranging from government or public employee to housewife, but not a single student selected medical professional as their intended choice of career. At the same time, the respondents who wished to become a medical professional were studying academic majors unrelated to the medical profession, such as arts and design, mass communication and public relations, and environment and health sciences. Typically, in the UAE, these academic majors do not offer the kind of training necessary to pursue a medical profession, unless a student changes transfers into a more relevant program.

Furthermore, I found that none of the respondents who wanted to become business owner was studying business administration. This mismatch between their chosen major track and intended career

Table 4 The respondent's chosen academic majors and their intended careers in the future

Major	Accountant or Actuary	Architect or urban planner	Artist, Designer, Actor or entertainer	Government or public company employee	Private company employee	High-ranking government official	Business executive	Business owner or proprietor	Aaalim din	College Professor / Scientific researcher	Computer programmer or analyst / Engineer	Homemaker / housewife	Lawyer (attorney) or judge	Military service	Medical professionals	School teacher	Social, Welfare or recreation worker	Translator or interpreter	Writer or Journalist	Total (n)
Arts and Design	0.0	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	0.0	100 (6)
Engineering	3.8	11.5	7.7	15.4	0.0	19.2	0.0	11.5	0.0	3.8	11.5	0.0	0.0	0.0	0.0	3.8	3.8	7.7	0.0	100 (26)
Information Technology	0.0	0.0	7.1	14.3	7.1	7.1	0.0	21.4	7.1	14.3	0.0	0.0	0.0	7.1	7.1	7.1	0.0	0.0	0.0	100 (14)
Business Administration	0.0	9.1	9.1	9.1	0.0	18.2	0.0	0.0	0.0	9.1	18.2	0.0	9.1	9.1	9.1	0.0	0.0	0.0	0.0	100 (11)
Environment and Health Sciences	0.0	0.0	0.0	9.1	0.0	0.0	9.1	18.2	0.0	18.2	0.0	0.0	9.1	9.1	18.2	9.1	0.0	0.0	0.0	100 (11)
Medical Sciences	0.0	12.5	0.0	37.5	0.0	0.0	0.0	0.0	0.0	25.0	12.5	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100 (8)
Mass Communication and Public Relations	0.0	0.0	12.5	12.5	0.0	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	12.5	25.0	0.0	12.5	12.5	0.0	100 (8)
Humanities and Social Sciences	0.0	5.9	0.0	5.9	5.9	11.8	0.0	11.8	5.9	11.8	0.0	0.0	0.0	5.9	11.8	17.6	0.0	5.9	0.0	100 (17)

Note: Aaalim din indicates religion scholar: ʿaalimʾ (scholar), ʾdinʾ (religion)

paths stands in contrast to the earlier finding, where they believed they had a very high likelihood of acquiring the jobs in their intended fields. In other words, I find that female Emirati students do not necessarily connect their academic majors to their intended career paths regardless of what they chose to study. This provides one possible explanation for why the study was unable to find a significant difference between the career choices of students in arts and science streams.

We can also better understand the reasons why so many female Emirati students pursue STEM-related academic paths by analyzing three different contextual characteristics of the UAE society. First, in its efforts to diversify its economy away from oil and create a globally competitive knowledge-based economy, the UAE government has been aggressively investing in its growing technology, aviation, and renewable energy sectors, which has created a huge demand for a STEM-educated national workforce (Said, 2016). To this end, the UAE government has heavily promoted STEM-related academic paths and careers for the past decade by investing in various STEM-focused scholarships, academic programs, and education-to-job pipelines. This pattern was also observed in the interviews. For example, an engineering-major interviewee explains the reason why she chose the science stream:

> "[When] we were in high school…Medicine and engineering [were] the top two
> majors that people choose to go…So, I wanted to [pursue] medicine at first, but it
> didn't work out, so my second option was engineering, since medicine and engineering
> are the top majors here in general …both of them are respected jobs [in the UAE]. Very
> respected jobs." (UW3)

Second, the UAE's gender-segregated education system may have helped to remove the gendered perception around STEM subjects, making it easier for female students to pursue STEM subjects. Typically around the world, the gender imbalance in STEM majors and careers has helped to solidify the perception that STEM is a masculine and male-dominated field (Cech, 2013; Stoet & Geary, 2018). At the same time, various studies have found statistically significant achievement differences between men and women, where boys tend to score higher in mathematics and science and girls in reading and writing (OECD, 2016). However, on their research on Saudi Arabian women, Le Renrd (2008) argues that gender-segregated institutions help to create separate gendered public spheres for Saudi women and men. Accordingly, ironically in the case of the UAE, the segregated nature of public schools may have diminished the gendered stereotypes in choosing academic specializations. In the case of the UAE, individual interest, talent, or aptitude may have played a bigger role than the gendered for female Emirati students to decide on a STEM-related career. For example, when UW2 was asked about why she decided to pursue an arts stream at her university, she answered the following:

> "Because I thought… [the science stream was] not my style…And then, I thought, I
> need to raise my marks. So because [arts stream] is…easier [to gain acceptance] than
> [the science stream…I chose the arts stream]" (UW2)

At the same time, UW4, who attended an arts-stream high school and is now currently pursuing a science stream at her university, also said the following:

"...If you are humanity track student and you get high［grades］in your final year... you can come into［the science stream］. So I changed... to［the arts stream because］... why should I make things difficult for me if I can get high marks in［the arts stream... and still... go study the science stream at university?］That's what I thought that time."
（UW4）

UW3, who admitted choosing the science stream due to its respectability in the UAE society, embodies this point, as she had transferred twice before settling on an engineering major.

"［in my first year of college］I used to［study］geoscience, and then I switched to chemical engineering and then I switched to mechanical［engineering］because I love ［practical things］... where we go to labs and try doing the experiments. It doesn't actually happen that much in other majors."（UW3）

The interviews clearly show that the interviewees' academic aptitude and personal interests during their secondary schooling influence their chosen academic paths more strongly than the perceived relevance of academic paths to their career aspirations. Hence, in order to better understand the determinants of their decisions to pursue a specific academic stream, we must also examine their attitude towards learning and educational experience.

Even though the existing literature tends to focus on the importance of academic achievements, parents' socioeconomic status, and parents' education levels in shaping students' career aspirations and academic choices, one must recognize that parents' socioeconomic status does not play a significant role in the UAE's context, as previously demonstrated in the quantitative portion of this study. In addition, it is also difficult to ascertain the effects of parental education on their children in the UAE, as higher education has only become widely available in the past three decades and therefore do not yet serve as a widely applicable demographic measure. But at the same time, parents' perception of education as well as the level of parental engagement on children's education may play a significant role in female Emirati students' career aspirations and academic choices, considering the enduring importance of family and tribal culture in the UAE's social context. This study recommends further academic exploration of various parental influence on female Emirati students' career aspirations and education choices.

Third, it should also not be considered that there is a societal disconnect between Emirati's educational attainment and their job and social status. For instance, as Ridge（2015）pointed, Emirati men have low educational attainment, particularly at the higher education level. Only 37.9% of employed Emirati men above the age of 15 have post-secondary or tertiary education, while 40% have secondary education and 22.1% have less than secondary education（Dubai Statistics Center, 2015）. In 2017, the male student enrollment at Zayed University, one of the largest federal universities in the UAE, only made up 10% of the entire undergraduate and graduate student body, while another higher education institution with the most significant male representation in the UAE - the Higher Colleges of Technology - had only 38% male students. However, above 90 percent Emirati male participated to their labor force with the social welfare system afforded to Emirati nationals also help

to solidify Emiratis' economic stability. Given the low educational attainment rate of Emirati males in higher education and the contrasting high labor force participation rate, as well as the high-income level, we can find that there is little positive correlation between educational attainment, jobs, and income levels (see Author, 2020). The disconnect between Emirati's educational attainment and their job and social status, must be affecting the education and career choices of not only women but also other counterparts. No doubt to say, more research is needed to find out how and to what extent this disconnect affects Emirati's education and career choices.

Limitations

This study is not without its limitations. First, there is a possibility that the survey results were affected by social desirability bias, which is often prevalent in studies on the Arab Gulf states. In the quantitative section of the study, the participants' responses were generally positive in their educational and career outlook. The interview data yielded a more nuanced perspective; however, all of the responses were favorable. Given the overwhelming evidence for positive responses, this suggests a possibility for social desirability bias, which might have positively skewed the findings and analyses. Second, a more robust study with bigger sample sizes and more culturally appropriate and contextually targeted questions is needed to better understand the motivations behind female Emirati students' career aspirations.

Endnotes

1   The concept of science stream and arts stream in the UAE is similar to the concept of Rikei (science stream) and Bunkei (arts stream) in Japan. As in Japan, arts and science streams are decided in the second year of high school. However, the difference is that academic performance is a major factor in dividing arts and science rather than the interest of students themselves. The characteristics of the Arab region, including the UAE, is the high occupational prestige of the STEM sector job. Because of this, the popular academic filed of higher education is STEM, therefore, science stream in high school, which entitles students to apply for STEM subject, cannot be selected if it does not have good academic performance. And because of this, students in science are generally considered excellent students.

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