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Investigating Factors Influencing Career Choice of Emirati Women in the Satellite and Space Industry in the UAE

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Abstract

Purpose: The objective of this study is to investigate the factors influencing the career choice of Emirati women in the satellite and space industry in the UAE. Design/Methodology/Approach: A quantitative survey was collected from 120 employees working in 37 companies in the satellite and space industry in the UAE. Ten factors were identified from the literature review and factorial analysis. RII ranked the factors and identified their level of importance. One sample t-test identified the relation between the factors and the career choice of Emirati women in the satellite and space industry in the UAE. Correlation matrix identified the interplay between the factors. One-way ANOVA tests and independent t-tests tested the difference in perception among the respondents based on their demographic data towards the factors. Findings: Ten factors were identified and ranked in order of importance from highest to lowest: Satellite and space companies' policies; Education institutions' policies and initiatives; Familial role model; Personal beliefs; Societal role models; Government policies and initiatives; STEM education; The role of media; The role of NGOs; and cultural and societal. Seven factors are very important and three are somewhat important. All ten factors were found to positively affect the career choice of Emirati women in the satellite and space industry in the UAE using one sample t-test, $t(119) > 1.96$, $p < .05$. Originality/Value: Even though progressed and well established in the UAE, Emirati women's career choice is still affected by many factors and has not extended to its full potential, and although the career choice climate is similar for Emirati men and women in the UAE, the space and satellite industry is still male dominant. Hence, now is the time to develop Emirati women's inclusion in line with the vision and strategies of the UAE government.

Keywords

Gender, Inclusion, Satellite and Space, Emirati Women, Career Choice

1. Introduction

Career choice studies are focusing these days on accounting for the individual's character as well as the influence of the wider socio-cultural, government, and organizational context on individuals' careers choice. The individual resilience plays a major part, specifically in women thriving and developing their careers in male dominated careers, but this can only happen with support from gender inclusion strategies and organizational resilience (Bridges et al., 2021). However, investigations that aim to understand exclusion by sex in a specific industry must involve the mapping of the gendered social, cultural and other environmental mechanisms, their specific dynamics, in a specific environment, which will lead to proposed changes in practices and policies to address the improvement of women's access to male-dominated occupations (Ibáñez & García-Mingo, 2021).

Women were once a minority in the male-dominated satellite and space industry, but in the past few decades this trend has continued to change. Several workshops worldwide are focused on empowering women in the satellite and space industry, and there has been a considerable progress in female representation in this industry in the western world. Thus, the satellite and space industry is still relatively new in the United Arab Emirates (UAE), so there is no legacy of it being a male-dominated sector, therefore, it can be one of the sectors where everything is possible, including breaking gender norms, and making it an attractive industry for women.

Furthermore, for the past few years, the UAE has made great progress towards the diversification of its economy away from the dependence on oil (Alblooshi & May, 2018). In 2014, the UAE published its National Innovation Policy, where highlighted various sectors for investment, all were related to Science Engineering Technology and Math (STEM), including the space sector, and the UAE has attracted in the past few years, more Emirati women than men to STEM fields (Alblooshi & May, 2018), education and careers (DW News, 2021). However, there is a need to focus more research on Emirati women in STEM careers (Kemp, 2021), and to identify the challenges and methods to close the gender gap in STEM careers in the UAE.

On the other hand, the space economy goes beyond a focus on technology and science, the global space and satellite sector is boosting economic growth and accelerating sustainable development, and space and satellite activities drive innovation, they create new markets and industrial capabilities, provide job opportunities, and rely on academic research and development (UNOOSA, 2021). In addition, the satellite and space industry pay well, and according to the space report (Space Foundation, 2020), the global space economy increased by more than $9 billion over the year 2018, reaching $423.8 billion. Moreover, the satellite and space industry in the UAE presents a various group of functional career paths such as engineering, sales, operations, marketing, and finance.

Although there is various flow of information on technological and business

developments in this industry, no literature exists about the factors affecting the career choice of women in the satellite and space industry, nor specifically in the UAE. The researcher's aim for this publication is to highlight how Emirati women are influenced to become satellite or space professionals. Thus, more needs to be done to encourage college and post-graduates Emirati female to learn about the opportunities that the satellite and space industry offers. This study was conducted to fill this gap, with the aim to answer the following questions:

- What are the key factors that influence the career choice of Emirati women in the satellite and space industry in the UAE?
- What is the relationship between those factors and the career choice of Emirati women in the satellite and space industry in the UAE?
- What is the relation of interplay between those key factors?
- What is the difference in perception based on the demographic data, in terms of: gender; age groups, the satellite and space company type of business; the company sector; the department; the nationality origin; the STEM education background; the education level; and the position at the company of the satellite and space professional, on the factors affecting the career choice of Emirati women in the satellite and space industry in the UAE?
- What is the ranking of importance of these factors in affecting the career choice of Emirati women in the satellite and space industry in the UAE?

2. Literature Review

This study focuses on Emirati women career choice in the STEM fields in general and in the satellite and space industry in the UAE specifically, it also helps understand how the motivations and behaviors of Emirati female academics are determined by the structural foundation of social systems that exist in the UAE culture, and situates the Emirati women in reference to both the individual and the wider socio-cultural, governmental, and organizational context, and reveal on how Emirati women enact their careers in such a multi-dimensional context. Literature on women in STEM careers has identified several interrelated factors that influence women's choice to study STEM or enter, persist, and progress a field based on STEM studies such as the satellite and space industry (Martin & Barnard, 2013). Specifically, women in male-dominated occupations, face exceptional challenges and use distinct coping strategies that affect their retention and motivation in these occupations (Martin & Barnard, 2013). Curiously, the challenges facing Emirati working women were different than for the women in the rest of the Arab countries (Shaya & Abu Khait, 2017).

2.1. STEM Education

Education is one of the most important factors that affects the job participation levels (Gallant & Pounder, 2008; Patterson et al., 2021). Furthermore, STEM professionals use their knowledge of science, technology, engineering, or math to try to make sense of how the world runs and to solve problems. STEM occu-

pations are identified in several ways, disciplines in science are classified based on the part of the universe they study such as: space sciences; earth sciences; chemistry; life sciences; and physics (Vilorio, 2014). The success of STEM enactment starts from the students' higher order thinking skills, it develops into students' academic learning achievement, and it ends with the motivation (Wahono et al., 2020). Furthermore, some people believe that STEM fields are no longer considered male-only sectors in the UAE, as young girls are participating in schools and universities STEM courses actively, outperforming boys in several cases since the adaptation of STEM in schools (Zaatari, 2019), and Emirati women have continued to outnumber their male colleagues in STEM education, despite psychological, social and gender preconceptions, as well as cultural complications in having leadership roles (Pasha-Zaidi & Afari, 2016). Nonetheless, even though female participation in secondary and tertiary STEM education has increased with the UAE's economic development goals, the workforce continues to skew male (Alzaabi et al., 2021).

2.2. Role Models

Role models significantly affect Emirati female identity formation, these roles models range from family mentors to teachers, friends, colleagues, religious and national leaders (Shaya & Abu Khait, 2017). Additionally, mentoring is an essential career support for women in male-dominated industries, and women's mentoring programs, can enable women to build support with other women across their industry which may help in challenging male dominance (Durbin et al., 2020). Kemp & Zhao (2016) found that it was the male gender (father, brother, husband, male manager) that was acknowledged by Emirati women for their support in education and employment. Hence, Emirati women stressed on the importance of female mentors in affecting their career success, and they are constantly looking up to an appropriate female role model (Al Matroushi et al., 2020). Female mentors or role models are important for gender equity and closing the gender gap in male-dominated sectors, and Emirati women in STEM fields have a big desire to be role models for other females (Alzaabi et al., 2021).

2.3. Satellite and Space Companies' Policies

The workplace environment and the organization policy play an important role in Emirati women career choice (Kemp & Zhao, 2016). Curiously, the company reputation is also a factor influencing the career choices of Emirati women in the technology sector (Howe-Walsh et al., 2020), because students want to work in a dream company and make their parents proud and happy in front of their relatives and friends (Purohit et al., 2021), and organizational attitudinal and structural factors influence mostly the enactment of Emirati women's career (Tlaiss, 2013). Specifically, Emirati Generation Y was found looking for stability in the workforce as the most important life priority and they were mostly motivated by

extrinsic rewards (Ling Lim, 2012).

2.4. Personal Beliefs

Personal characteristics, beliefs and perceptions are very important for the career choice of women. Emotional stability for engineering students is the most important factor that influence the career choice of female Emirati students, especially in the private sector (AlDhaheri et al., 2017). Additionally, the individual-level attitudes toward education influence Emirati women's careers (Kemp & Zhao, 2016), because the millennial's characteristics and ambitions in the UAE influence their career intentions (Kemp & McLoughlin, 2021). One must also note, the importance of specific personal characteristics such as the desire to be seen as a role model and the company reputation, in influencing the career choices of Emirati women in the technology sector specifically (Howe-Walsh et al., 2020). Similarly, Kemp et al. (2021) found in their study about the career calling of women STEM graduates in the UAE, that the gift of intellect, the belief in a faith, the shared community and the meaning of work affect Emirati women's career choice. Therefore, when women are intrinsically motivated, they experience work choice as an end in itself, and the result would be an increased interest and pleasure of such work activities (Fishbach & Woolley, 2022).

2.5. Societal Expectations

Societal responsibilities influence career intentions of the millennials in the UAE (Kemp & McLoughlin, 2021), and societal factors influence specifically the experiences and the conceptualizations of Emirati women career choice in the UAE (Tlaiss, 2013). Intriguingly, a societal behavior in the Arab region called "wasta" refers to a social network of interpersonal connections, linked to the social networking and family, may be used to support women's career progression (Abalkhail & Allan, 2016). There is a direct reliance of Arab women in the Gulf Region, on their spouse's family members' connections, as career facilitators, to gain access to work opportunities (Abalkhail & Allan, 2016). In the STEM education context, despite an increase in the allocation of funds for the education in the Middle East countries for a balanced national development, women are needed in the areas in which their roles are most suitable (Islam, 2019). This shows that there are equal opportunities for both genders in these countries, but the social prejudice and perception determine which types of employment are suitable for men and women (Islam, 2019; Patterson et al., 2021).

2.6. Cultural Factors

Cultural factors are largely responsible for preventing the employment level of Emirati females in the UAE (Gallant & Pounder, 2008). The influence of cultural orientations is important on the career's choice of Emirati women (Kemp & McLoughlin, 2021; Kemp & Zhao, 2016). Family centrality influences the career choices of Emirati women in the technology sector specifically (Howe-Walsh et

al., 2020). The persistence of various signs of stereotypes and patriarchy continue to constrain the female career in the UAE, Emirati women expressed that familial influence had a great impact on their job selection, and that Emirati women chose a career path that is considered suitable by their parents, particularly their fathers (Naguib & Jamali, 2015). Fathers in the UAE persuade their daughters that STEM disciplines are appealing career paths by using the likelihood of employment in a reputable governmental or private company (Howe-Walsh et al., 2020; Williams et al., 2013) the mothers also wants for their daughters to be successful and independent financially (Kemp et al., 2021; Alzaabi et al., 2021). Therefore, the family plays a central role in the life of both women and men and is the sole institution through which individuals inherit their and cultural identities, religion and social class, family interest overrides individual interest, and the family greatly affects the Emirati women's attitude and choices, and her ability to combine both work and family responsibilities are often acknowledged as key to having a career and remaining within the labor force (Houjeir et al., 2019).

2.7. Government Policies and Initiatives

Several studies revealed that government support affects positively and significantly the choice, inclusion, advancement, and success of Emirati women in the workforce in UAE (Eltanahy et al., 2020; Gupta & Mirchandani, 2018; Howe-Walsh et al., 2020; Kemp, 2013; Shaya & Abu Khait, 2017). However, it seems that the future of gender equity in the UAE is more positive for women in education than for employment (Kemp, 2013). Hence, the UAE Government has initiated several policies and programs to enhance participation of Emiratis in the labor market which has been dominated by the expatriates UAE residents. This target is mostly demonstrated by the Emiratization, which is an affirmative action policy of the UAE government that provides preferential hiring status to Emiratis over the UAE expatriates, it is a UAE Government initiative with a purpose to employ qualified Emirati nationals in the governmental and private sector companies (Geronimo, 2019). Emiratization is especially important for Emirati women, who take advantage from government-sponsored gender equality programs (Geronimo, 2019). However, significant gaps still exist between the UAE government targets and its accomplishments in the private sector (Forstenlechner et al., 2012; Sarker & Rahman, 2020). Furthermore, Emiratization cannot be successful without Emirati women empowerment (Yaghi, 2016). The authoritative of the political goodwill and equitable legislation, as well as the need to assess patriarchal versus Islamic values biases play a crucial role in relation to the Emirati women inclusion in the workforce (Goby, 2021).

2.8. The Role of the Media

Television and social media have been frequently used by youth to seek information regarding the job market, the various professions and knowledge about the

world around them and has a direct and indirect influence on the career selection of students (Saleem et al., 2014). Furthermore, the media affects the culturally dominant images that influence the social behavior and choices of profession when students are developing their identities (Adya & Kaiser, 2005; Blomqvist, 2010; Rommes, 2010; Vainionpää et al., 2021). Therefore, changing the media image of STEM professionals could help change the field's image. The way technology is used or seen can be a source of inclusion or exclusion. So, online messages can affect the way Emirati women are reached to inform them about STEM careers, women can be targeted via local campaigns, social media, and news media. These gender differences can result in different views and experiences of technology, contributing to the exclusion or inclusion dynamics (Vainionpää et al., 2021) and the career choice.

2.9. The Role of the NGOs

There are several organizations dedicated to representing the interests of women in the UAE, the constructive and important role played by the General Women's Union (GWU) is crucial to women's empowerment in the UAE and the region (GWU, n.d.; MNFCA, 2007). The GWU has been supporting women in the UAE through governmental strategies and initiatives. In addition, there are many other private organizations, businesses and platforms that support gender inclusion in the UAE in the workforce. Hence, NGOs in the UAE play a role in influencing female Emirati's career choice in STEM career through the role models they promote and through the initiatives that they support for gender inclusion in STEM careers.

2.10. Education Institutions Policies and Initiatives

Education institutions play a crucial role in shaping the women's interest in STEM career, from the choice to the persistence in a STEM job (Shapiro & Sax, 2011), such as the satellite and space industry in the UAE. Several studies (Alyammahi et al., 2016; Kemp & Zhao, 2016; Saji, 2016; Wang et al., 2020) revealed the importance of the educational institution's role, which influences students in the UAE to have careers in STEM. The education institution role may include the presence or absence of capable teachers, cultural biases, the choice of the teaching language, employment opportunities and the options of career progression in STEM careers (Patterson et al., 2021). In addition, Eboh (2021) found that there is no gender discrimination against women and encourages women to enroll in courses that are dominated by men in order to have gender balance in that area.

Based on the above literature review, the conceptual diagram in **Figure 1** was constructed and will be tested later. The author has identified the main factors that influence the choice for Emirati women to have a career in the satellite and space industry in the UAE, from which 20 hypotheses were drawn. Statistical formulas will be interpreted by hypothesis testing, statistical tests will be conducted, and conclusions will be drawn.

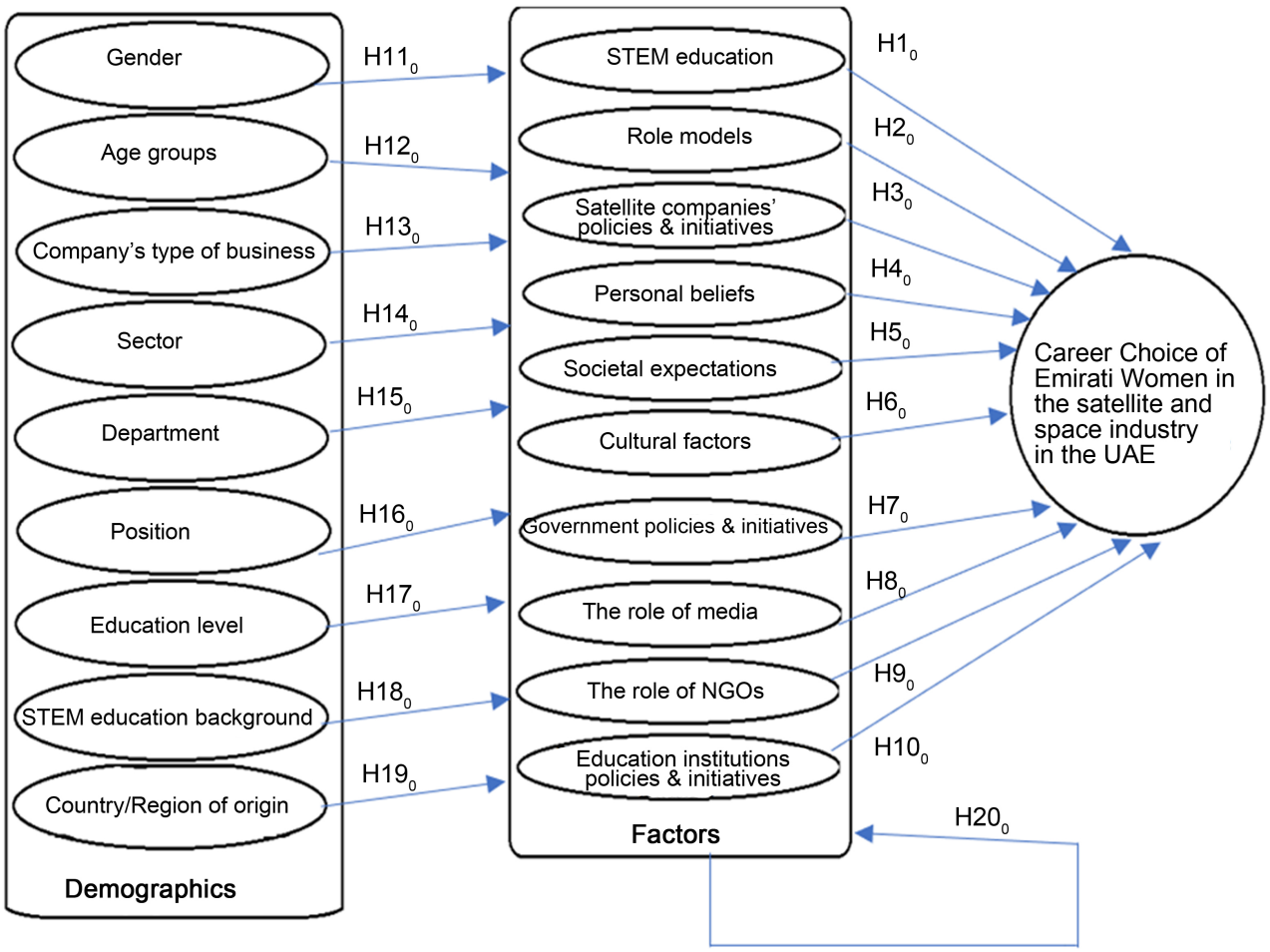

Figure 1. Research conceptual framework.

3. Procedures and Methodology

This study used non-probability purposeful sampling technique, by selecting 37 companies that conduct satellite and space related activities in the UAE. A quantitative seven-point Likert scale survey questionnaire formulated by the author was sent via electronic source Survey Monkey to 390 employees of these companies who are involved in the satellite or space sector, 120 complete responses were collected. The data were analyzed using IBM SPSS software version 28. Descriptive statistics of the collected data was also illustrated. The quantitative element of this research used the hypothetico-deductive approach as it is testing a specific theoretical model based on a series of hypotheses.

The researcher used a quantitative case study to check the practical application of the main study with 36 additional complete responses collected from men and women working in the satellite and space industry in the UAE, these respondents were different than the respondents of the main study. This case study supported the results of the analysis and provided new insights.

Factor analysis was used to identify unobservable variables that are reflected in the observed variables and also used for data reduction (Hancock et al., 2018).

The method utilized within this study was the Confirmatory Factor Analysis (CFA) with principal axis factoring based on Eigenvalues greater than one with specifying the loading values based on the sample size. A two-tailed one sample t-test was conducted to identify the existence of the relation between the ten different factors that were identified in the literature review and the career choice of Emirati women in the satellite and space industry in the UAE, by testing the mean of the ten independent variables (factors) with the neutrality value of the scale "4", this will test $H1_0$, $H2_0$, $H3_0$, $H4_0$, $H5_0$, $H6_0$, $H7_0$, $H8_0$, $H9_0$, $H10_0$. Correlation matrix was used to answer the research question about the relation of interplay between the factors and test $H20_0$. The Relative Importance Index (RII) technique was used to determine the overall ranking of the factors according to their importance, in affecting the career choice of Emirati women in the satellite and space industry. Furthermore, because the researcher wants to test the nine demographic variables' effects on each of the ten factors by testing the nine demographic hypothesis $H11_0$, $H12_0$, $H13_0$, $H14_0$, $H15_0$, $H16_0$, $H17_0$, $H18_0$, $H19_0$, one-way ANOVA tests and independent t-tests were used to test the 90 corresponding sub-hypotheses, this will help in understanding the difference in perception among the respondents based on their demographic data towards the factors affecting the career choice of Emirati women in the satellite and space industry in the UAE. The one-way ANOVA tests were followed by post-hoc Tuckey Honestly Significant Difference (HSD) test to find in which pair of demographic variable-factor lies the significant difference.

4. Findings and Discussion

4.1. Data Analysis

4.1.1. Sample Analysis

The data sample analysis in Table 1 showed that 86.7 percent of respondents are male, whereas only 13.3 percent are female. This indicates a male domination of the satellite and space industry professionals in the UAE. Most of the respondents (45.8 percent) belong to the age group of 34 - 45, and 83.3 percent of all respondents are above 35 years old, which indicates a sufficient level of seniority and expertise among respondents. The majority work in a satellite operator (60 percent). The majority (50.8 percent) work in the semi-government sector. The majority (40 percent) work in the commercial department as sales. The majority (29.2 percent) are managers. The majority (49.2 percent) have master's degree. Furthermore, 75 percent of the respondents have a STEM education background, this clearly shows the importance of having a STEM education background to work in the satellite and space industry in the UAE. Lastly, the Arab region excluding the UAE origin dominate the background region of origins, representing 42.5 percent of the respondents.

4.1.2. Reliability Test

The Cronbach's α values of the ten constructs indicate that the data collected from the questionnaire varies between acceptable and good, with average value of .767.

Table 1. Demographic and characteristics of the studied sample.

Demographic item	Demographic character	Frequency (n), $N = 120$	Frequency (%), $N = 120$
Gender	Female	16	13.3%
	Male	104	86.7%
Age group	18 - 24	0	0%
	25 - 34	20	16.7%
	35 - 44	55	45.8%
	45 - 54	38	31.7%
	55 - 64	4	3.3%
	65+	3	2.5%
Company's type of business	Satellite operator	72	60.0%
	Space agency	0	0%
	Space center	1	.8%
	Telco	15	12.5%
	Satellite system Integration	14	11.7%
	Satellite equipment distributor	8	6.7%
	Satellite teleport	10	8.3%
Company sector	Government	10	8.3%
	Private	49	40.8%
	Semi-Government	61	50.8%
Department	Operations	14	11.7%
	Engineering	26	21.7%
	Support	1	.8%
	Sales	48	40%
	Marketing	2	1.7%
	Management	25	20.8%
	Administration	2	1.7%
	Finance	0	0%
	Human Resources (HR)	2	1.7%
Position	Entry Level	15	12.5%
	Manager	35	29.2%
	Senior Manager	15	12.5%
	Director	10	8.3%
	Senior Director	9	7.5%
	Managing Director	8	6.7%
	Vice President	17	14.2%
	Chief Officer	11	9.2%

Continued

Education level	Technical	3	2.5%
	Baccalaureate	2	1.7%
	Bachelor	52	43.3%
	Master's	59	49.2%
	Doctorate	4	3.3%
Major of studies	STEM education	90	75%
	Non-STEM education	30	25%
Country/Region of origin	Emirati	14	11.7%
	From Arab countries except UAE	51	42.5%
	European	13	10.8%
	African	6	5%
	Asian	34	28.3%
	North American	2	1.7%
	South American	0	0%
	Australian/New Zealander	0	0%

4.1.3. Descriptive Analysis

The results of the descriptive analysis in Table 2 for the ten computed variables and their mean ranking indicate the order of agreement of the respondents with the ten factors from highest to lowest as follows: satellite and space companies policies (M = 5.746, SD = .782), role model (M = 5.583, SD = .679), education institutions initiatives and policies (M = 5.553, SD = 1.273), government policies and initiatives (M = 5.423, SD = .922), personal beliefs (M = 5.127, SD = 1.016), the role of NGOs (M = 5.123, SD = .994), the role of media (M = 5.085, SD = .875), STEM education (M = 4.997, SD = 1.273), cultural factors (M = 4.451, SD = 1.075), societal expectations (M = 4.37, SD = 1.085).

4.1.4. Normality Test

The skewness values for the ten independent variables range from −.822 to .167. This indicates that all frequency distributions were moderately skewed. The kurtosis values range from −.475 to .897, which indicates fewer data on the tails of frequency distribution. As a result, the ten variables can be considered to follow a normal distribution.

4.1.5. Factor Analysis

1) The Kaiser-Meyer-Olkin Measure and Bartlett's test

Before conducting CFA, the Kaiser-Meyer-Olkin Measure (KMO) and Bartlett's test were employed to determine the sampling acceptability. The KMO value was reported as .779, indicating that the use of FA is appropriate. The result of Bartlett's test for sphericity is significant, with a chi-square value of χ^2 (49, 120) = 3676.496, $p < .05$, indicating that the correlations between the statements were sufficiently large for Principal Component Analysis (PCA).

Table 2. Descriptive statistics of the ten factors (independent variables).

	Min	Max	Mean		Std. Dev	Var.	Skewness		Kurtosis		Mean Rank
			Stats.	Std. Error			Stats.	Std. Error	Stats.	Std. Err.	
STEM Education	1.00	7.00	4.997	.1162	1.273	1.620	−.822	.221	.124	.438	8
Role Model	3.63	6.88	5.583	.062	.679	.461	−.737	.221	.353	.438	2
Satellite And Space Companies Policies	3.00	7.00	5.746	.0714	.782	.612	−.727	.221	.675	.438	1
Personal Beliefs	2.00	7.00	5.127	.093	1.016	1.032	−.664	.221	.657	.438	5
Societal Expectations	2.00	7.00	4.37	.099	1.085	1.176	.167	.221	−.370	.438	10
Cultural Factors	2.00	7.00	4.451	.098	1.075	1.156	.398	.221	−.071	.438	9
Government Policies and Initiatives	2.00	7.00	5.423	.084	.922	.851	−.697	.221	.897	.438	4
The Role of Media	3.00	7.00	5.085	.08	.875	.765	.108	.221	−.475	.438	7
The Role of NGOs	2.00	7.00	5.123	.091	.994	.987	−.575	.221	.123	.438	6
Education Institutions Initiatives and Policies	3.20	7.00	5.553	.081	.887	.787	−.420	.221	−.414	.438	3

2) Principal Component Analysis.

For the sample size of this study of 120, the largest loading factor for each variable should be .5 (Field, 2009). Therefore, all loadings less than .5 were suppressed in the output, and 14 components had Eigenvalues greater than 1. CFA extracted ten factors solution with Eigenvalues ranging from 12.153 for component 1, which explains 24.306 percent of the total variability in the data, to 1.309 for component ten which explains 2.619 percent of the total variability in the data. New factors were defined afterwards based on the interpretation of the statements included (Field, 2009). Ten statements have blank values and were disregarded because their loadings were less than .5 in the Rotated Component Analysis (RCA). **Table 3** shows the results of the interpretation of the rotated components for the ten new identified factors from the factor analysis.

4.2. Hypothesis Testing

4.2.1. One Sample T-Test

A two-tailed one sample t-test was calculated for the ten new factors from CFA. The null and alternative hypotheses are as follows: Ho: $\mu - 4 = 0$, Ha: $\mu - 4 \neq 0$. (μ is the mean). **Table 4** shows that the mean scores for all the variables are less than the midpoint of 4, $t(119) > 1.96$, $p < .05$. Therefore, it can be concluded that there is no statistical evidence that any of the factors are considered "neutral" in importance and therefore, the null hypotheses are rejected and the alternative hypotheses H1a, H2a, H3a, H4a, H5a, H6a, H7a, H8a, H9a and H10a are accepted.

Table 3. The new identified factors after component rotation.

Component	Factor
1	Cultural and societal
2	Personal beliefs
3	The role of NGOs
4	Satellite and space companies' policies
5	Education institutions policies and initiatives
6	Societal role model
7	STEM education
8	Familial role model
9	Government policies and initiatives
10	The role of media

Table 4. One sample t-test results.

	Test Value = 4						
	t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
			One-Sided p	Two-Sided p		Lower	Upper
Cultural and societal	4.620	119	<.001	<.001	.414	.236	.591
Personal beliefs	16.905	119	<.001	<.001	1.493	1.318	1.668
The role of NGOs	12.379	119	<.001	<.001	1.123	.943	1.302
Satellite and space companies' policies	20.721	119	<.001	<.001	1.746	1.579	1.913
Education institutions policies and initiatives	21.007	119	<.001	<.001	1.69	1.530	1.849
Societal role model	16.774	119	<.001	<.001	1.383	1.22	1.547
STEM education	8.117	119	<.001	<.001	1.179	.891	1.467
Familial role model	19.840	119	<.001	<.001	1.575	1.418	1.732
Government policies and initiatives	12.789	119	<.001	<.001	1.233	1.042	1.424
The role of media	11.605	119	<.001	<.001	1.183	.981	1.385

4.2.2. Correlation Matrix

Table 5 shows that the correlation among all ten variables, it indicates that the

highest correlation is between the two factors cultural and societal and government policies and initiatives where $r(118) = .49$, $p < .05$, which is still considered as a weak correlation (Akoglu, 2018). Moreover, most correlations have values between .5 and .25 and are considered as weak correlation and some correlations have values between 0 and .25 and are considered to have no relationship (Akoglu, 2018). Therefore, the null hypothesis $H20_0$ is accepted.

4.2.3. Relative Importance Index (RII)

The RII was calculated to determine the weighted value of each of the variables. It was computed by applying the formula hereafter (Aziz et al., 2016): (RII) = $\sum W/(A \times T)$. Table 6 shows the ranking of the factors with their level of importance.

4.2.4. Demographic Hypothesis Testing

The nine hypotheses related to the demographic data collected from the survey and their 90 sub-hypotheses corresponding to each of the ten factors, were tested using one-way ANOVA and t-tests to determine whether there are any significant statistical differences in perception towards the ten factors affecting the career choice of Emirati women in the satellite and space industry, based on nine

Table 5. Correlation test between the ten independent variables (factors).

	Cult. and soc.	Pers. belief	Role of NGO	Sat. and space comp.	Edu inst.	Soc. role model	STEM edu.	Fam. role mod.	Gov.	Media
Cultural and societal	1	.322	.273	.214	.275	.097	.241	.247	.490	.403
Personal belief	.322	1	.374	.452	.279	.374	.171	.350	.400	.287
Role of NGOs	.273	.374	1	.318	.412	.395	.119	.241	.241	.288
Satellite and space comp	.214	.452	.318	1	.297	.375	.204	.364	.332	.357
Educat. instit.	.275	.279	.412	.297	1	.276	.206	.243	.258	.464
Societal role model	.097	.374	.395	.375	.276	1	.303	.318	.131	.343
STEM	.241	.171	.119	.204	.206	.303	1	.279	.189	.191
Familial role model	.247	.350	.241	.364	.243	.318	.279	1	.304	.348
Gov.	.490	.400	.241	.332	.258	.131	.189	.304	1	.405
Media	.403	.287	.288	.357	.464	.343	.191	.348	.405	1

Table 6. Relative importance index and rank of importance for the ten factors.

Factors	Sum	Mean	RII	Rank of importance
Cultural and societal	529.67	4.414	.631	10
Personal beliefs	659.2	5.493	.785	4
The role of NGOs	614.75	5.123	.732	9
Satellite and space companies' policies	689.5	5.746	.821	1
Education institutions policies and initiatives	682.75	5.69	.813	2
Societal role model	646	5.383	.769	5
STEM education	621.5	5.179	.741	7
Familial role model	669	5.575	.796	3
Government policies and initiatives	628	5.233	.748	6
The role of media	622	5.183	.74	8

demographic variables. The results indicated that there is no significant statistical difference in perception towards the ten factors for the following seven demographics, at p values > .05, except for the following cases: based on sector towards the factor cultural and societal $F(2,117) = 3.556$, $p = .032$, and societal role model $F(2,117) = 3.22$, $p = .044$; based on department towards STEM Education, $F(7,112) = 2.118$, $p = .047$; based on position towards societal role model, $F(7,112) = 2.297$, $p = .032$; based on education level towards cultural and societal factors, $F(4,115) = 2.86$, $p = .027$; and based on origin towards STEM Education, $F(5,114) = 2.459$, $p = .037$.

Furthermore, Tuckey HSD post-hoc test to one-way ANOVA were conducted to identify between which pairs the statistical difference lies, the results show that: government sector employees ($M = 6.05$, 95% CI [5.60, 6.495]) perceived the cultural and societal factor as more important than semi government sector employees ($M = 5.283$, 95% CI [5.056, 5.51]), $p = .033$; doctorate education background ($M = 5.583$, 95% CI [4.75, 6.417]) perceive the cultural and societal factor more important than baccalaureate education background ($M = 3.222$, 95% CI [−1.013, 7.457]), $p = .039$; employees with African origins ($M = 3.583$, 95% CI [1.322, 5.844]) perceived STEM Education as more important than employees with Asian origins ($M = 5.632$, 95% CI [5.144, 5.121]), $p = .038$.

One-tailed t-tests results showed that there is difference in perception, in statistically significant levels, based on the gender towards only three factors: the female ($M = 5.75$, $SD = .719$) perceived the role of NGOs factor as more important compared to the male ($M = 5.026$, $SD = .998$), $t(118) = 3.537$, $p < .05$; the female ($M = 6.167$, $SD = .609$) perceived familial role model factor as more important compared to the male ($M = 5.484$, $SD = .87$), $t(118) = 3.022$, $p < .05$; and the female ($M = 6.146$, $SD = .86$) perceived Government Policies and Initiatives factor as more important compared to the male ($M = 5.093$, $SD = 1.016$), $t(118) =$

3.93, $p < .05$. Another one tailed t-tests showed that employees with STEM Education background ($M = 5.494$, $SD = 1.407$) perceived the factor STEM Education as more important, than those with non-STEM education background ($M = 4.233$, $SD = 1.755$), $t(118) = 3.987$, $p < .05$.

Lastly, a case study was conducted using the same methodology as the main study with 36 respondents, it validated most of the hypotheses of the main study, out of a total 101 hypotheses and sub-hypotheses, 10 were not supported (9.9 percent) and 91 were supported (90.1 percent).

5. Findings, Implications, Limitations, Recommendations for Future Research and Conclusion

5.1. Findings

The results show that all ten factors positively affected the career choice of Emirati women in the satellite and space industry in the UAE. In addition, the relation between those factors is weak to non-existent. Moreover, the results of testing the difference in perception among the respondents based on their demographic categories with respect to each of the ten factors, show that the only significant difference in perception between the respondents based on their gender, age groups, organization type, sector, department, position, education level, STEM background and origin, towards the ten factors affecting the career choice of Emirati women in the satellite and space industry in the UAE, is found in ten pairs of demographic-factor, namely: gender and societal role model factor, gender and familial role model factor, gender and government policies and Initiatives factor, sector and cultural and societal factors, sector and societal role model factor, department and STEM education factor, position and societal role model factor, education level and cultural and societal factors, STEM education background and STEM education factor, origin and STEM education factor. Specifically, the female perceived the role of NGOs factor, the familial role model factor and the government policies and initiatives factor as more important compared to the male, and the employees with STEM education background perceived the factor STEM education as more important than those with non-STEM education background. Moreover, the government sector employees perceived the cultural and societal factor as more important than the semi government sector employees, the employees with doctorate education background perceived the cultural and societal factor as more important than employees with baccalaureate education background, and the employees with African origins perceived the factor STEM education as more important than the employees with Asian origins. Furthermore, Satellite and space companies' policies rank as the most important factor. The second most important factor was education institutions' policies and initiatives followed by familial role model which ranked third, then personal beliefs ranked fourth, followed by societal role model which ranked fifth, followed by government policies and initiatives that ranked sixth and the factor STEM education that ranked seventh in order of

importance. Notably, all these seven factors should be interpreted as very important. Followed by the three remaining factors which were interpreted as somewhat important, the role of the media factor ranked eighth, the role of NGOs factor ranked ninth, and finally the factor cultural and societal ranked tenth in order of importance.

5.2. Implications

This research is the first to examine and analyze the factors that affect the career choice of Emirati women in the satellite and space industry in the UAE, it is also the first to apply RII to rank the order of importance and identify the level of importance of the factors affecting Emirati women's career choice in a STEM field, and the first to understand the relation of interplay between those factors and the difference in perception based on demographic variables. The results suggest that this study has significantly contributed to the understanding of the degree to which these factors can be usefully applied in the context of Emirati women's career enactment in STEM fields in the UAE in general, and in the satellite and space industry in the UAE specifically.

The findings offer meaningful insights into the importance of each of those factors and have paved the way for other researchers and interested governmental, educational, or organizational institutions to further investigate and improve the factors that affect the gender inclusion of Emirati women in the satellite and space industry in the UAE or to use this study for their initiatives and strategies.

5.3. Limitations of the Study

The main limitations of this study are: the small size of the sample collected of 156 complete responses, many responses were incomplete and discarded; the collection of the questionnaire responses from the participants, especially from the Emirati nationals, because most of them work in the public sector in the UAE and are not very accessible; Emirati women in the satellite and space industry are few in numbers compared to the men, and therefore most respondents were male; the inexistence of previous studies on this topic.

5.4. Recommendations for Future Research

Future researchers are encouraged to: use both qualitative and quantitative methods, gain more detailed and rich data with expanded and larger samples; study the effect of introducing a mitigating or moderating variable such as STEM education; study the determination of the glass ceiling effect for the Emirati women working in the satellite and space industry in the UAE; study the effect of introducing a minimum quota for Emirati women in the satellite and space companies in the UAE; study gender inclusion in other trendy technological sectors such as Artificial Intelligence (AI), cyber security, digital, etc; study the role of social media networks and marketing effect on Emirati women's motivation to work in a male dominant environment, such investigation needs to compare the

usage of social media in the UAE by Emirati women, and its impact on Emirati women's career choice.

5.5. Conclusion

Having advanced STEM education over the last years, the UAE is moving towards closing the gap on gender inequalities in the STEM fields. In addition, labor force contribution is growing fast, and the society and government are playing a major role. Furthermore, social media nowadays, has been shown to empower women's career choices and individuality. The findings of this study can contribute to a database that may help understand the current gender inclusion ecosystem in the UAE for the satellite and space industry, and identify gender discrepancies in this industry, because it is an exciting time to be working in the space and satellite industry.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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