Participation of university women under regulations and strategies promoting gender equity in STEM/ICT careers in El Salvador.

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Abstract

The gender gap problem focused on the low participation of women in STEM (Science, Technology, Engineering, and Mathematics) university careers has been present since the first discoveries in science and technology where it is considered that there are different causes such as stereotypes which dictate what to do and be depending on gender, role models or models to follow. These models have always been present throughout the history of mankind and have highlighted men before the different discoveries in all fields the lack of recognition of women, has caused, according to studies, women not to have a role model in the fields of their preference, among other causes that directly and indirectly generate an imbalance before the phenomenon of the gender gap in STEM **(**Science, Technology, Engineering and Mathematics), careers; However, governments, non-profit foundations, private enterprise, and educational institutions at all levels of education at national and international levels are concerned about how to improve the situation and have developed policies, strategies, and projects to reduce this gap in STEM careers. Consequently, this study seeks to answer if the presence of the female gender in STEM careers in HEIs in El Salvador is a consequence of the different public and private initiatives, for the period 2013 - 2022, for which the documentary - field research requested the collaboration of some institutions that are present in the creation of policies, foundations and Higher Education Institutions – HEIs. The study revealed with respect to enrollments there is a substantial increase from the year 2017, which allows relating and validating the data that responds to the question posed by the research.

Keywords

El Salvador, gender, equality, policy, women, STEM

1. INTRODUCTION

The research is focused on the analysis of the participation of women who opt for university careers in the STEM area (Science, Technology, Engineering and Mathematics), whose analysis is based on the statistics of enrollment and graduates of the universities participating in the research in the period of 2013 - 2022, with the objective of knowing if the increase of the female gender has a link with the training projects in STEM that foundations, private enterprise and universities design and implement to motivate young women to opt for a university career in the STEM field, some of these training projects: "Muchas Más" and Science Girl Camp that arise since 2013 are currently recognized by the Salvadoran academic population, at the same time the research mentions several causes such as the persistence of analyzing the problem from gender stereotypes, the low participation of women in areas of technology, little or no participation in events or publications, the role of role models, among other possible causes that are part of the problem about gender gap in the selection of STEM careers.

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2. BACKGROUND

In order to go deeper into the research, it is pertinent to describe the following elements that are implicit in the problem of the gender gap in the choice of STEM university careers.

2.1. Stereotype

A stereotype is an image or idea commonly accepted by a group or society with immutable character according to the Royal Spanish Academy (RSA) [1], , In fact they are ideas, expectations, or behavioral models according to gender, race or religion, which serve to comply with the roles imposed by society; from this is born the term gender stereotypes, which are beliefs about the characteristics associated with women and men that maintain gender discrimination [2], that is, they indicate a representation of being and feeling, currently some entities struggle to break this type of ties, to do things that really satisfy them regardless of whether society sees it as good or bad because it is not attributed to gender [3].

According to social role theory, stereotypical beliefs about gender groups arise because observing that each group performs different social roles infers the existence of different internal dispositions. In addition, gender stereotypes have important negative consequences because they limit the integral development of individuals, influencing their preferences, skill development, aspirations, emotions, physical condition, performance, etc. Understanding gender stereotypes helps to be clear about the different components of gender to which stereotypical generalizations refer. For example, gender stereotypes may refer to intellectual or cognitive abilities, a psychological profile or biological differences that will render unnecessary any consideration of the attributes or characteristics of certain individuals in these three aspects. Stereotypes about women's intellectual or cognitive capacities, according to which these are weaker than those of men, are often used to deny women positions in educational or professional sector [4]. Gender stereotypes are transmitted by society and, within the education system, by teachers, the hidden curriculum and the scarcity of role models, as well as by the low presence of women in science and technology and in power positions [5].

2.2. Role Models

A role model is a person who is admired and whose behavior one tries to imitate [6], therefore, it can be understood as a figure that inspires any person to follow in his or her footsteps, and even to surpass them [7].

Role Modeling Motivational Theory highlights the ways in which the power of role models can be harnessed to increase the motivation of role applicants, reinforce their existing goals and facilitate the adoption of new goals [8].

Shortage of female role models: When talking about science and technology, the vast majority of the reference’s girls hear are male. Although the contribution of women in this field is immense, especially in the field of technology, their contribution has been erased from popular culture (a good example is the narration that cinema has made of 'Bletchley Park', the British base from which the secret code of the Nazis was deciphered, where the role of women was fundamental since they were 75% of those who worked there), and that in most films they are nothing more than a distraction or an inspiration for the 'male geniuses'. This is a recurrent phenomenon in the most popular Hollywood movies when it comes to showing scientists: male scientists outnumber their female colleagues by a ratio of 2 to 1 and they are generally white, attractive, childless and unmarried [9].

For most women, the dream of becoming an astronaut, scientist, engineer, or mathematician begins when they see other women succeeding in these areas. Evidence indicates that role models represent and expand new possibilities.

They encourage women to be more ambitious and adopt behaviors that lead to professional success. The study, "Female Leadership Increases Girls' Educational Aspirations and Achievement: A Policy Experiment in India [10]. finds that exposure to women leaders and role models has a direct influence on adolescent girls' career and educational aspirations [11].

2.3. Women and STEM /ICT

StackOverflow, is a website that allows you to ask programming questions for free. StackOverflow is well known in the programming world. On the one hand, it is a Q&A portal where developers help each other with their technical questions in a disinterested way. But it is also famous for its annual reports that analyze which are the most popular programming languages or the average salary of its users depending on role and country, based on a survey of 65,000 of its users. Also, the report includes demographic data, drawing attention to the fact that only 8% of the surveyed users are women.

This worrying fact is another of the many that show that the STEM professional field, in contrast to other sectors, continues to be a hostile place for women, and this is made clear to them from an early age. The STEM field is one of those areas where the presence of women is not increasing at the level it should according to their participation in society, but is even going backwards, creating what is known as the STEM gap. An estimated 30% of women in the world study STEM careers (a percentage that drops to 3% in careers related to information technology or 8% in engineering careers).

Focusing on the role of women in the world's leading technology companies, it can be seen that despite their efforts they are clearly underrepresented. At Apple women represent 33% of its workforce. If leadership positions are taken up again, this percentage drops to 29%. And when focusing on exclusively technical positions there are only 23% women, a trend that is repeated in almost all companies. At Facebook women represent 37% of the workforce, 34.2% if it is in leadership positions and 24.1% in technical positions. At Google, women make up 31.6% of the workforce, a percentage that drops to 26.1% in leadership positions and 25.7% in technical positions.

This male dominance of the sector makes it difficult for women to access leadership positions, making the female perspective in the creation and development of projects less present. On the other hand, it also means that there are few role models. Lack of role models perpetuates the stereotype that men have greater competence than women for working in this sector [12].

2.4. Inspiring women in STEM

In El Salvador, Antonia Navarro Huezo, at 19 years of age, became the first woman university graduate. First woman graduated from the University of El Salvador, she was also the first woman graduate in the Central American region. And likewise, the first woman to graduate in Engineering in all of Ibero-America.

In Guatemala, Africa Flores, is a scientist and explorer for National Geographic. She is an expert in geospatial technology and in monitoring changes in soil and water created by climate change or natural disasters.

In the United States, Cynthia Breazeal is known as a pioneer of modern computing. A female pioneer in social interaction with artificial intelligence, Breazeal created the robot Jibo. In 2014, she was awarded the George R. Stibitz Communications and Computing Pioneers Award, ¡definitely a great example for young female programmers!

However, some of these inspiring women in STEM have been invisible for centuries. Globally, women make up less than one-third of researchers and only 3% of Nobel Prizes in science have been awarded to women, notes the United Nations Organization for Gender Equality and the Empowerment of Women in a September 2020 study.

"For the Latin America and Caribbean region, in 2017, out of all researchers in engineering and technology, just 36% were women in Uruguay; 26%, in Colombia; 24%, in Costa Rica; 17%, in El Salvador; in Honduras 21.5%; and in Bolivia and Peru around 19%," the report adds [13].

2.5. Co-education

Coeducation is a form of education that aims to develop boys and girls integrally, promoting all their capabilities and eliminating barriers related to sex and gender roles [14]. The objectives of coeducation focus on correcting sexist stereotypes, proposing a balanced curriculum that eliminates sexist biases and developing all individual abilities regardless of gender [15]. Coeducation is therefore a fundamental

axis in the children's development, to seek the formation of integral persons with the aim of eradicating inequality and stereotypes, taking into account the characteristics and capabilities of each individual and thus identifying the traits that can be highlighted to achieve gender equality.

2.6. Gender equality and women's autonomy

Women's autonomy means having the capacity and concrete conditions to freely make the decisions that affect their lives. Achieving greater autonomy requires many and diverse issues, including freeing women from exclusive responsibility for reproductive and care tasks, including the exercise of reproductive rights; putting an end to gender-based violence; and adopting all necessary measures for women to participate in decision-making on an equal footing [16].

The countries of Latin America and the Caribbean must accelerate the fulfillment of the commitments assumed by governments to achieve gender equality and women's autonomy in the region, within the framework of the current complex economic context and considering the multiple challenges posed by technological, demographic and climatic transformations, maintains the Economic Commission for Latin America and the Caribbean ECLAC. "Gender inequalities are an obstacle to sustainable development, and the changes in the scenario facing the region are a manifestation of the urgency of moving decisively towards styles of development that contemplate gender equality and women's autonomy at their foundations, as well as the guarantee of the rights of all people without exception," ECLAC points out. On the contrary, ECLAC points out that women are underrepresented in the fields of science, technology, engineering, and mathematics, which limits their possibilities for better economic insertion, and, in a global context of increasing expansion and volatility of financial markets, unfavorable conditions of access to credit persist for them. The reconfiguration of economic structures resulting from the technological revolution may represent an opportunity for women in the region to achieve a more egalitarian participation in productive processes. However, if the transformations underway are not approached from a perspective aimed at eliminating the structural nodes of gender inequality, these changes will have differentiated and unequal effects, and the possibility for women to take advantage of the opportunities offered by technologies will be threatened. Without adequate public policies, women could face new risks to their insertion in the labor market under decent working conditions and be excluded from the benefits of the jobs of the future. Some countries in the region are therefore making progress in the implementation of transformative policies that seek to reduce inequalities and bring technologies closer to the whole population [17].

2.7. Gender equality policies

Equality policies establish a set of principles and criteria to be developed through actions or programs directed by the governments of each country in conjunction with public and private institutions to promote substantive equality between men and women.

2.7.1. National

El Salvador is a signatory to the following international treaties that guarantee equality, non-discrimination based on gender and a life free of violence for women: the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) and the Inter-American Convention on the Prevention, Punishment and Eradication of Violence Against Women, Belem Dó Pará. It is also a country that has ratified the following ILO conventions to promote equality between women and men in the world of work: Convention (No. 100) on Equal Remuneration (1951), Convention (No. 111) on Discrimination in Employment and Occupation (1958) and Convention (No. 156) on Workers with Family Responsibilities (1981) The country has made significant progress in its normative, institutional and programmatic frameworks to ensure respect for women's rights and gender equality. Specific examples include the creation of the Salvadoran Institute for the Development of Women (ISDEMU) in 1996; the approval of the Law against Domestic Violence (1996); the Special Comprehensive Law for a Life Free of Violence for Women (LEIV) (2010) and the Law for Equality, Equity and Eradication

of Discrimination against Women (LIE) (2011); National Equality Policy (2016-2020); the National Policy for Women's Access to a Life Free of Violence and its National Plan (2016-2020), the National Plan for Gender Equity and Equality for Salvadoran Women (2012); and the incorporation of a minimum of 30% representation (2013) of women as candidates for local government and parliament in the Law on Political Parties [18].

Gender Equity and Equality Policy (PEIG), The Ministry of Education, with support from FOMILENIO II, formulated its first Gender Equity and Equality Policy (PEIG) and its Implementation Plan for the period from September 2016 to September 2020. The policy implementation plan is organized into three major areas of intervention that are closely related and interdependent, grouped for methodological reasons as follows: inclusive non-sexist education, institutional mainstreaming, and gender violence prevention. Likewise, the internal procedures and guidelines of the governing institution of education, the curriculum, teaching methods, supervision, and evaluation systems, among others, are impacted [19]

2.7.2. International

In Argentina, the National Plan for Equality in Diversity 2021-2023, is presented as a public policy that seeks to generate concrete, effective, and sustainable transformations for overcoming gender-based inequalities, focusing on the differential impact they generate on women and LGBTI+, adopting targeted measures aimed at reversing the legal and factual obstacles faced, historically and structurally, by women and LGBTI+ for the effective exercise of all their rights. It is, in short, a duty that aims to dismantle situations of inequality and reduce the gaps that persist in different areas of social life, including education, health, work, the digital world, caregiving, public political participation, and many others [20].

Chile, Fourth National Plan for Equality between Women and Men 2018-2030, takes place in a period marked by major transformations at the global and national levels and in the specific field of gender relations, which, while opening opportunities, also imply important challenges for the quality of democracy and its institutions, and for personal and social well-being. The enactment of Law 20,820, which created the Ministry of Women and Gender Equity in March 2015, marks a milestone in the Chilean State's commitment to substantive equality between women and men. Its mandate as the governing body ensures the coordination, consistency, and coherence of policies, plans, and programs on gender equity [21].

2.8. Strategies / Initiatives / public and private projects

Around the world, different companies, universities, and foundations are designing, developing and implementing programs, courses, bootcamps, among others, with the objective of reducing the gender gap in the selection of STEM careers, which are gradually gaining more strength and acceptance by people and especially by governments that are also creating policies to promote the development and equality of women in the STEM field.

2.8.1. National

The "*Muchas Mas*" Foundation has developed a 2021 - 2025 strategy in which the central axis of the intervention of "*Muchas Mas*" is to facilitate access to higher education and the knowledge and exercise of rights from a feminist perspective, experience has taught that, in order to break the intergenerational cycle of poverty and be masters of their lives, it is key to develop strategies that comprehensively address and sustain the needs, both academic and educational as well as economic, psychological and relational. In the 2021-2025 period, personalized scholarships will continue to be provided so that young women can access high school and university studies, strengthening the focus on STEM careers, with the objective of contributing to breaking gender gaps in these areas and expanding decent work opportunities for girls [22]. The objective of the campuses is to bring girls in these areas closer to technology and digital skills so that they are also aware of the job opportunities

offered by these training areas. At the campus they learn computer skills, reinforce their basic knowledge of science and technology subjects and broaden their study prospects [23].

The Altas Capacidades Foundation promotes a STEM program for girls in El Salvador in which they develop online programming from the early ages of 6 to 16 so that they could decide their future and contribute to the reduction of the gender gap and social inequalities. The Foundation has proposed the law for the promotion of high capacities and extraordinary talent in the Salvadoran educational system before the Ministry of Education of El Salvador - MINED, the proposed law aims at the promotion, of early, individualized, complete, and timely attention of the Salvadoran girl, boy, and adolescent with extraordinary capacities [24].

2.8.2. International

Microsoft celebrated 10 years of promoting the DigiGirlz program in El Salvador, which promotes digital female empowerment, through practical technology workshops, coding, and activities for the development of soft skills and inspirational talks, Microsoft has managed to sow curiosity and awaken interest in science and technology [25].

The United Nations Development Programs (UNDP) Gender Equality Strategy 2022-2025, enables it to help countries accelerate progress on gender equality and women's empowerment. The strategy pursues three areas: finance, digitalization, and innovation UNDP, promoting equal access to technology skills and STEM education. An example of success is the launch 2021 of Innovative Women [26], a mentoring program for women digital leaders of social enterprises in 12 Arab states. Towards better governance of digital activities, UNDP will open dialogues bringing women's rights movements, policymakers, and the private sector together to advocate for norms that uphold gender equality and women's rights in the digital sphere [27].

STEM4ALL is a joint UNDP and UNICEF platform in Europe and Central Asia dedicated to accelerating gender equality and the representation of women and girls in STEM to meet the demands of the future of work in the region [28].

3. METHODOLOGY

The type of documentary-field research, in terms of research design, is mixed and the scope of the study is descriptive.

1. Materials and methods: Some of the techniques for qualitative-quantitative data collection: are questionnaires with closed questions, structured interview in virtual/presential modality, using software that facilitates data collection.

2. Population: The population is the Higher Education Institutions (HEI) of El Salvador, which are integrated by 24 Universities, 11 specialized institutes, 11 specialized institutes, and 6 technological institutes, but for the study a profile was made highlighting some of the HEI, being the study population 6 universities 5 private and 1 public; On the other hand, for the population of national and international institutions, a profile was made for the selection of these institutions, highlighting a population of 9 among which are government institutions, foundations, non-profit organizations, and private enterprise; finally, with regard to the population of STEM careers, those registered at the national level according to the Ministry of Education - MINED are taken into account when applying the profile criteria created, the population is reduced to 8, those careers with the highest demand at the national level according to the statistics of MINED.

3. Sample: The sample for the HEI study population was obtained through non-probabilistic sampling by quotas; subsequently, the sample for the study population of the institutions was obtained through non-probabilistic sampling by convenience and at the same time it was applied by snowball; finally, for the sample of the study population of the STEM careers, the non-probabilistic sampling by convenience was applied.

4. Criteria for obtaining the sample of Higher Education institutions

- Academic offer of STEM careers
- Linkage with promotional projects in STEM/ICT training areas
- Geographic area Central

5. Criteria for obtaining the sample of the 6 STEM programs

- Highest student demand according to statistics from the Ministry of Education - MINED.

6. Criteria for obtaining non-educational institutions participating in the study

- Being a non-educational institution
- Linkage with projects, policies, and promotion strategies in STEM/ICT training.
- Geographic area Central

4. RESULTS

4.1. Statistics on women by career before and after the implementation or linkage with STEM initiatives and/or projects - Universidad Centroamericana José Simeón Cañas (UCA)

Table 1

Enrollment record by female gender for the period 2013 - 2022 - UCA

Careers	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Architecture	497	443	411	456	501	527	731	487	780	682
Civil Engineering	167	172	187	210	227	216	296	274	303	261
Electrical Engineering	38	40	48	62	68	65	93	79	71	46
Computer Engineering	0	0	0	0	122	167	244	266	310	275
Mechanical Engineering	43	44	46	54	50	68	83	92	68	40
Chemical Engineering	332	317	319	355	410	475	577	609	642	490

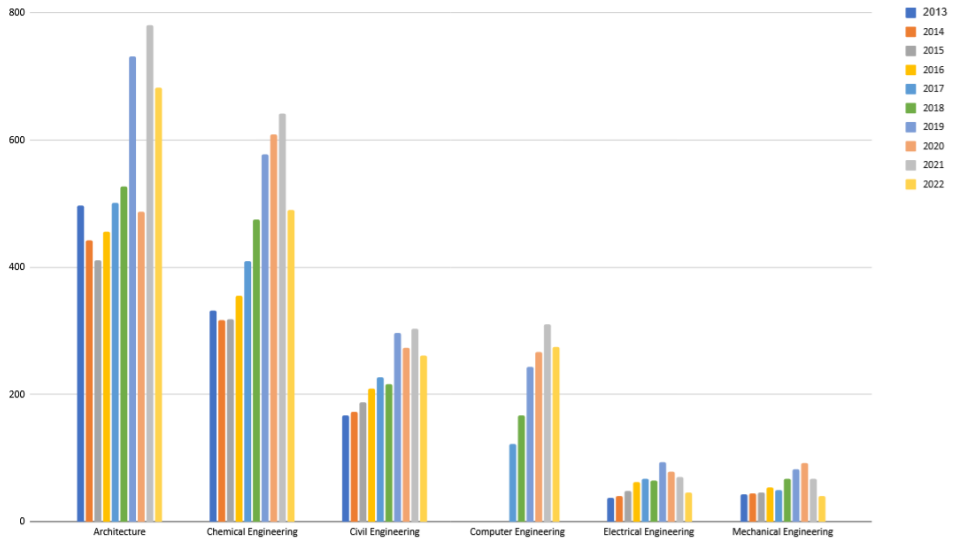

Figure 1: Enrollment statistics - UCA

Figure 1 shows the statistics corresponding to the Universidad Centroamericana José Simeón Cañas, which reflects the number of female students enrolled in the period 2013 - 2021, in some of the STEM careers. In the period 2013 - 2022 the careers with the highest demand for enrollment by young women: the career of Architecture 9.01%, 8.03%, 7.45%, 8.27%, 9.08%, 9.56%,13.25%, 8.83%, 14. 14%,

12.37%; Chemical Engineering career 7.34%, 7.0%, 7.05%, 7.85%, 9.06%, 10.49%, 12.75%, 13.46%, 14.18%, 10.83%; Civil Engineering career 7.22%, 7.44%, 8.08%, 8.08%, 9.08%, 9. 81%, 9.34%, 12.80%, 11.85%, 13.10%, 11.18%; the Mechanical Engineering career 7.31%, 7.48%, 7.82%, 9.18%, 8.50%, 11.56%, 14.12%, 15.65%, 11.56%, 6.80%; the Electrical Engineering career 6. 23%, 6.56%, 7.87%, 10.16%, 11.15%, 10.66%, 15.25%, 12.95%, 11.64%, 7.54% and the Computer Engineering career 0.0%, 0.0%, 0.0%, 0.0%, 0.0%, 8.82%, 12.07%, 17.63%, 19.22%, 22.40%, 19.87%.

4.2. Statistics of women by career before and after the implementation or linkage with STEM training initiatives and/or projects - Universidad de El Salvador - School of Engineering and Architecture (UES -FIA)

Table 2

Enrollment record by female gender for the period 2013 - 2022 - UES - FIA

Careers	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Architecture	758	761	758	753	758	749	751	793	840	826
Civil Engineering	338	336	322	333	325	333	347	334	376	319
Computer Engineering	540	515	470	476	528	578	581	597	722	684
Electrical Engineering	60	81	82	83	73	106	110	130	130	92
Mechanical Engineering	51	69	81	74	92	115	119	126	135	95
Chemical Engineering	267	307	326	330	340	355	362	384	402	351

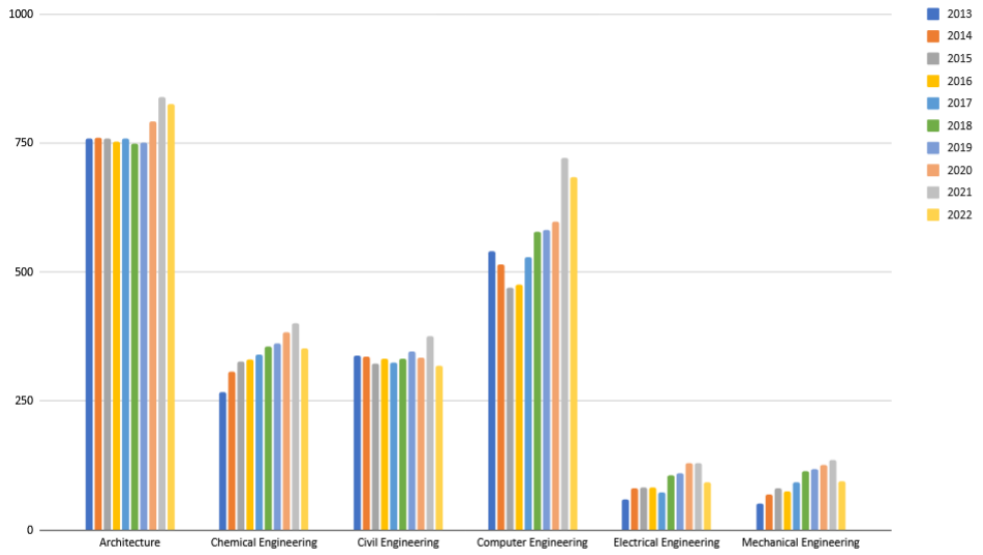

Figure 2: Enrollment statistics - UES - FIA

Figure 2 shows the statistics corresponding to the University of El Salvador, Faculty of Engineering and Architecture - FIA, which reflects the number of female students enrolled in the period 2013 - 2021, in some of the STEM careers. In the period 2013 - 2022 the careers with the highest demand for enrollment by young women: the career of Architecture 9.78%, 9.82%, 9.78%, 9.72%, 9.78%, 9.67%, 9.69%, 10.24%, 10. 84%, 10.66%; the Computer Systems Engineering major 9.49%, 9.05%, 8.26%, 8.36%, 9.28%, 10.16%, 10.21%, 10.49%, 12.69%, 12.02%; the Civil Engineering major 10.05%, 9.99%, 9. 57%, 9.90%, 9.66%, 9.90%, 10.32%, 9.93%, 11.18%, 9.49%; Chemical Engineering career 7.80%, 8.97%, 9.52%, 9.64%, 9.93%, 10.37%, 10.57%, 11.21%, 11.74%, 10.25%; Electrical Engineering career 6. 34%, 8.55%, 8.66%, 8.76%, 7.71%, 11.19%, 11.62%, 13.73%, 13.73%, 13.73%, 9.71%; the Mechanical Engineering major 5.33%, 7.21%, 8.46%, 7.73%, 9.61%, 12.02%, 12.43%, 13.17%, 14.11%, 9.93%.

4.3. Statistics on female graduates - Universidad Centroamericana José Simeón Cañas (UCA)

Table 3

Record of female graduates by gender in the period 2013 - 2022 - UES - FIA

Careers	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Architecture	18	28	23	26	28	29	21	37	29	39
Civil Engineering	5	2	9	8	2	16	1	11	9	13
Electrical Engineering	2	3	4	1	3	4	3	4	6	6
Computer Engineering	0	0	0	0	0	0	4	2	7	9
Mechanical Engineering	1	0	3	5	1	3	6	0	6	6
Chemical Engineering	12	15	14	13	14	12	18	24	20	26

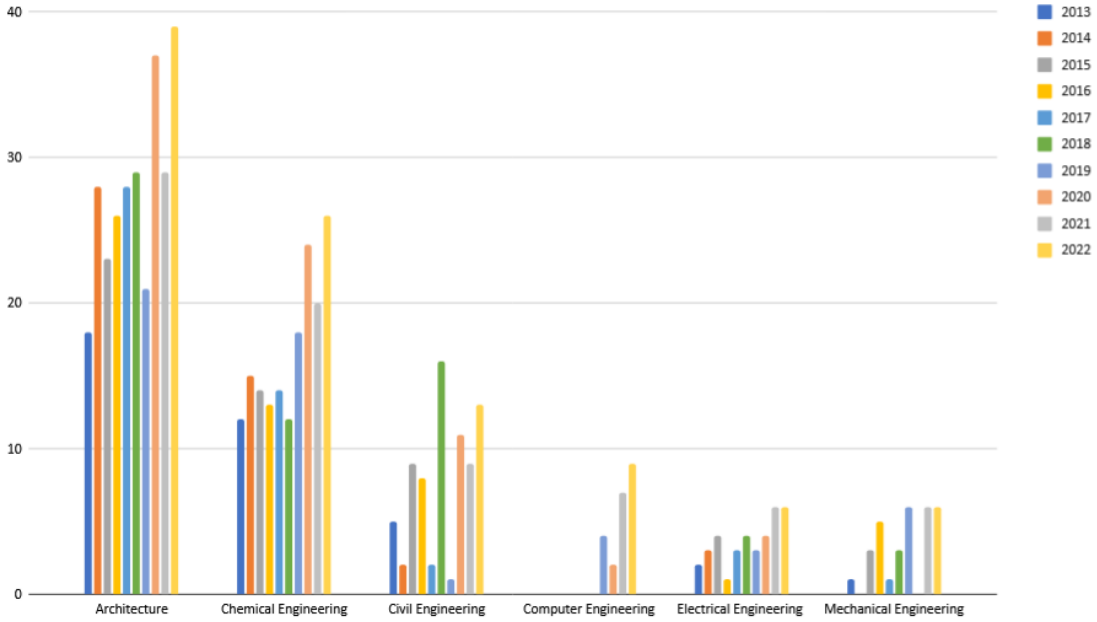

Figure 3: Statistics of female graduates - UCA

Figure 3 shows the statistics corresponding to the Universidad Centroamericana José Simeón Cañas, which reflects the number of female students graduating in the period 2013 - 2021, from some of the STEM careers. In the period 2013 - 2022 the careers with the highest demand for graduates by young women: the career of Architecture 6.47%, 10.07%, 10.07%, 8.27%, 9.35%, 10.07%, 10.43%, 7.55%, 13.31%, 10. 43%, 14.03%; Chemical Engineering major 7.14%, 8.93%, 8.33%, 7.74%, 8.33%,7.14%,10.71%, 14.29%, 11.90%, 15.48%; Civil Engineering major 6.58%, 2.63%, 11.84%, 10.53%, 2. 63%, 21.05%, 1.32%, 14.47%, 11.84%, 17.11%; the Electrical Engineering career 5.56%, 8.33%, 11.11%, 2.78%, 8.33%, 11.11%, 8.33%, 11.11%, 16.67%, 16.67%; the Mechanical Engineering career 3. 23%, 0.0%, 9.68%, 16.13%, 3.23%, 9.68%, 19.35%, 0.0%, 19.35%, 19.35% and the Computer Engineering career 0.0%, 0.0%, 0.0%, 0.0%, 0.0%, 0.0%, 0.0%, 0.0%, 18.18%, 9.09%, 31.82%, 40.91%

4.4. Statistics on female graduates - Universidad de El Salvador - Faculty of Engineering and Architecture - (UES - FIA).

Table 4

Record of graduates by female gender in the period 2013 - 2022 - UES - FIA

Careers	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Architecture	12	20	30	25	27	34	41	14	38	27
Civil Engineering	5	7	6	6	13	10	10	4	9	13
Computer Engineering	25	15	23	10	20	15	18	12	22	14
Electrical Engineering	0	0	1	2	5	0	2	0	3	7
Mechanical Engineering	0	3	1	1	2	0	0	1	1	3
Chemical Engineering	12	1	6	11	11	9	16	17	14	16

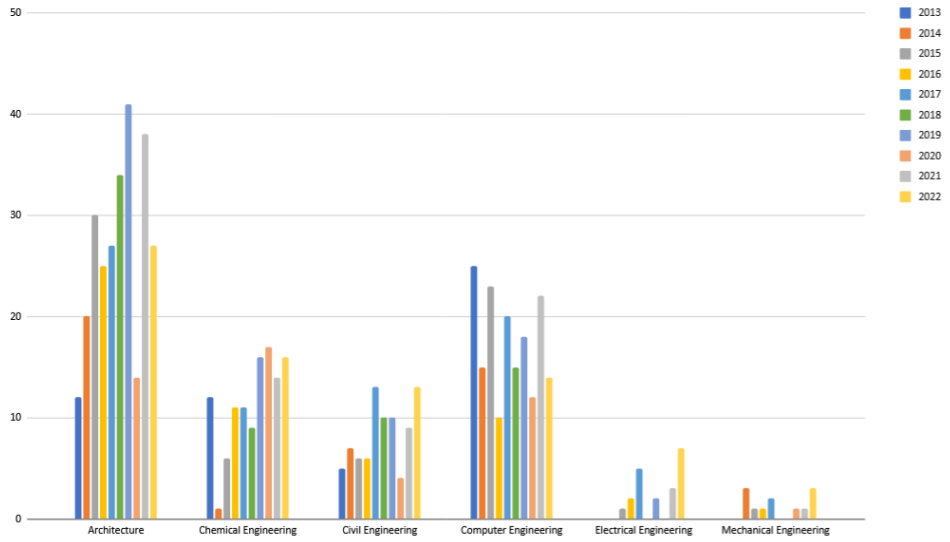

Figure 4: Statistics of graduates - UES - FIA

Figure 4 shows the statistics corresponding to the University of El Salvador of the Faculty of Engineering and Architecture - FIA, which reflects the number of female students who graduated in the period 2013 - 2021, from some of the STEM careers. In the period 2013 - 2022, the careers with the highest demand for graduates by young women are Computer Systems Engineering 14.37%, 8.62%, 13.22%, 5.75%, 11. 49%, 8.62%, 10.34%, 6.90%, 12.64%, 8.05%; Architecture 4.48%, 7.46%, 11.19%, 9.33%, 10.07%, 12.69%, 15.30%, 5.22%, 14.18%, 10.07%; Chemical Engineering 10.62%, 0. 88%, 5.31%, 9.31%, 9.73%, 9.73%, 7.96%, 14.16%, 15.04%, 12.39%, 14.16%; the Civil Engineering career 6.02%, 8.43%, 7.23%, 7.23%, 7.23%, 15.66%, 12.05%, 12.05%, 12.05%, 4.82%, 10.84%, 15. 66%; Mechanical Engineering major 0.0%, 25.0%, 8.33%, 8.33%, 8.33%, 16.67%, 0.0%, 8.33%, 8.33%, 8.33%, 25.0%; Electrical Engineering major 0.0%, 0.0%, 0.0%, 5.0%, 10.0%, 25.0%, 0.0%, 10.0%, 0.0%, 15.0%, 35.0%.

5. DISCUSSION AND CONCLUSION

In figure 1 - 2 referring to enrollments, it is visualized in the period from 2013 - 2022, an increase and decrease year after year, but from 2017 onwards it is possible to visualize a substantial increase year by year in the selected STEM careers: Architecture, Civil Engineering, Chemical Engineering, Computer Engineering or Computer Systems, Mechanical Engineering and Electrical Engineering for which the current study considers that the projects carried out by foundations and universities play a fundamental role as a factor responsible for the increase in enrollments in STEM careers in Higher Education Institutions in El Salvador, since some of the foundations such as Muchas Más intensifies its efforts in the STEM area in 2017 added to this other projects betting on STEM arise; however in the year 2022 a drop in enrollments is visualized in all the careers mentioned above and for the 2 universities selected for the study Universidad Centroamericana José Simeón Cañas and Universidad de El Salvador, so the current study considers a new starting point for another research and that allows to know the cause that may justify the decrease by female students, since the foundations and university

continue efforts in the development of programs, strategies, among others that allow to break the gender gaps in the selection of a STEM career by women in El Salvador.

As for figure 3 - 4 referring to the percentage of graduates of the selected careers Architecture, Civil Engineering, Chemical Engineering, Computer Engineering or Computer Systems, Mechanical Engineering and Electrical Engineering, it is proportional to the percentage of income, so it is concluded that the students complete their undergraduate studies until they obtain their university degree.

6. PROPOSAL

Profile design of the young woman who chooses STEM/ICT careers, which will make it possible to describe personal characteristics, general knowledge, technical knowledge, communication skills, and attitudes in order to make young women visible and provide follow-up so that they can select a university career in accordance with their profile, and will also serve as a tool to reduce the gender gap in the selection of a STEM/ICT career for their professional practice.

7. REFERENCES

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