Occupational inheritance and the decision for a university career: a study on women IT professionals in Peru

Nadia Rodriguez-Rodriguez[1*], Kory Ponce[1] and Indira R. Guzman[2]
[1] *Universidad de Lima, Lima, Peru*
[2] *California State Polytechnic University, Pomona, California, United States of America*

Abstract

Despite the thriving job market for Information Technology (IT) professionals worldwide, Peru faces a stark gender disparity, with only 1% of women graduating from IT-related university careers. Addressing this gap requires understanding the factors influencing women's career decisions. One important aspect is the influence of familial encouragement and role modeling. This article investigates the professions or occupations of the parents of women IT professionals and their potential impact on their daughters' vocational choices, particularly in a context scarcely explored such as Peru. Through an exploratory study using a survey and a purposive sample of Peruvian women graduates from IT-related university careers, we found that fathers predominantly play a pivotal role, often with backgrounds in engineering or technical fields. This research sheds light on the importance of familial support and parental role models in shaping women's career choices in the IT field. Recognizing these influences holds the potential to boost the number of women pursuing careers in IT.

Keywords

Women in IT, occupational inheritance, Peruvian women, vocational choice, IT university careers

1. Introduction

Only 2% of women in the world graduate from Information Technology (IT) related careers; likewise, the gap between female and male students that graduate from these careers is broad: 21% and 79%, respectively [20]. In Latin America, despite the difficulties in obtaining statistics from some countries [2], the situation of women in IT is critical, according to the United Nations Educational, Scientific and Cultural Organization (UNESCO). Since 2000, the percentage of female graduates in IT fields has declined by 2% to 13%, varying by country. In the case of Peru, although universities offer numerous IT-related undergraduate programs, less than 1% of women graduate from these careers [23].

In contrast to the declining representation of women in IT, the prospects for employability in these careers are promising. It is estimated that the employment for computer science and information technology professionals will grow 11% between 2019 and 2029 in the United States

Proceedings XVI Congress of Latin American Women in Computing 2024, August 12–16, 2024, Bahía Blanca, Argentina.
* Corresponding author.
nrodrigu@ulima.edu.pe (N. Rodriguez-Rodriguez); 20183081@aloe.ulima.edu.pe (K. Ponce); irguzman@cpp.edu (I. Guzman)
0000-0001-6582-3073 (N. Rodriguez-Rodriguez); 0009-0001-7115-3544 (K. Ponce); 0000-0003-3670-7270 (I. Guzman)

[27], and that these jobs are among the highest paid in the world [10]. In Peru, according to the 2021 Occupational Demand Survey, engineers, analysts, and developers of information systems are the professionals most required by companies [19]. However, there is an anticipated shortage of IT specialists to meet this demand [16].

The current context exacerbates the challenges in the technology industry, particularly after the COVID-19 pandemic. The industry faces problems with talent availability [5], and the labor market has become increasingly competitive and demanding for a more diverse workforce. Emerging clusters of work in IT, such as cybersecurity, data analysis, artificial intelligence, and cloud computing, underscore the need for greater female representation in technology development teams. Increasing women's participation in these fields could lead to the creation of IT solutions better suited to meet diverse consumer needs, thus benefiting both society and the economy [10]. Examples of the need for addressing women's interests in technology development include speech recognition tools that fail to accurately interpret women's voices [24] and personal assistance applications that overlook emergencies predominantly affecting women, such as sexual assault or domestic abuse [18]. Consequently, given the growing need for a larger tech workforce and the benefits of diversity for innovation, increasing women's participation in IT fields is critical [15].

Failure to address this imbalance would result in women missing out on future job opportunities [6]. Moreover, the lack of female presence in IT fields undermines the sustainability and effectiveness of scientific research for society [24]. Hence, it is imperative that teams involved in technological projects encompass a diverse representation reflecting the varied needs of the entire consumer base. This is particularly striking in Western societies, where women constitute at least 50% of technology consumers, yet their participation in technology development remains relatively low [10].

Building on this context, previous studies, predominantly conducted in developed countries, suggest that the inclination of women towards pursuing and persisting in IT-related careers may correlate with the encouragement and support they receive from their families. Particularly, the influence of fathers—especially those engaged in engineering or technical fields—appears noteworthy in motivating women to opt for IT careers. In some instances, support from teachers at school or university also plays a role, albeit to a lesser extent [1][25] [26].

In light of these findings, this article presents a section of a larger study conducted in Peru by [21], focusing on the professions or occupations of the parents of women in IT. It aims to explore whether these parental professions influenced the vocational decisions of these women in a context where the phenomenon of few women in IT has been minimally explored. Additionally, this article was developed during the execution of the Latin American Open Data for Gender Equality Policies Focusing on Leadership in STEM project, also known as ELLAS, which is funded by the International Development Research Centre (IDRC). ELLAS' purpose is to generate cross-country comparable data from Brazil, Bolivia, and Peru to assess policies and interventions aimed at reducing the gender gap in STEM, particularly focusing on leadership roles. Within this project, significant attention has been dedicated to exploring factors influencing career choices in STEM, with family-related influences identified as key determinants. For a broader overview of the project, refer to [28] [29].

Thus, the central research question guiding our study is: How do the professions or occupations of the parents of Peruvian women IT professionals influence their vocational decisions?

The following sections of this article will present related works, the methodology used, the results, the discussion, and conclude with the final findings.

2. Related works

Several investigations argue that the family is the first and most important nucleus of socialization of people. Fathers and especially those with technical or professional education in technology or some other engineering disciplines are the ones who most directly or indirectly influence young women in their choice of IT careers [1][17][22][25]. Not only the occupation of the father has an influence, but the incentives they can give their daughters to choose this type of career [9]. Other family members such as brothers, uncles, as well as teachers, also exert influence, although to a lesser degree [1].

Although no studies have been found in Peru regarding occupational inheritance to women in IT, few recent studies were found in other countries. One study from Germany by [11] documented a positive association between parental education in science, technology, engineering, and mathematics (STEM) and children's performance and participation in those fields. By analyzing representative data from standardized assessment tests in that country, they explored gender and ethnic differences in the association of parental STEM occupation and student achievement in STEM at two educational stages (fourth and ninth grade). Regarding the results of gender differences, it was found that the STEM occupation of parents is associated only with the mathematical skills of girls in fourth grade and the mathematical and scientific skills of boys in ninth grade.

Another study by [14] at an American university analyzed the influences of parents and family on the choice of an engineering career. A survey to 158 engineering freshmen was conducted to determine if any family members or mentors had a career in an engineering discipline or STEM fields. This study determined that 63% of engineering students reported at least one family member who had an engineering degree. When STEM fields are also included, this number increased to 69%. Overall, it was found that the family members who most belonged to an engineering/STEM occupation were fathers (46%), mothers (14%) and uncles (9%). Likewise, female engineering students were more likely to have an engineer mother than their male counterparts. However, a higher percentage of women surveyed reported an engineering/STEM father (42%) than a mother (19%), indicating that both father and mother are potential sources of occupational inheritance.

In a study conducted at an Ecuadorian University [4], researchers investigated the factors influencing students' selection of majors, specifically in Civil Engineering and Computer Science, during the academic term spanning from October 2022 to February 2023. The study surveyed 89 enrolled students. While the majority of respondents indicated that their major choice stemmed from personal motivation, family influence emerged as the second most common factor. Although details regarding family professions were not recorded, female Computer Science students reported feeling equally influenced by both parents (10% each). Interestingly, in the case of Civil Engineering, a higher proportion of female students reported

feeling influenced by their mothers (26.7%) compared to their fathers (20%). These results highlight the substantial impact parents may have on their children's choice of major.

Occupational inheritance frequently arises from early exposure to professions [14]. Research indicates that parents' career trajectories can shape their children's vocational decisions [3]. For instance, children with family members working as engineers may be directly or indirectly introduced to the field from a young age. They can gain insights into the nature of engineering professions through educational interactions within the household [8]. This early exposure often plays a crucial role in shaping their understanding and interest in pursuing careers within the same field.

Hence, in this context of scarcity of research on occupational inheritance among women in IT in Peru, it is crucial to expand the scope of investigation to understand how familial influences, particularly from fathers or mothers with technical or engineering backgrounds, shape career choices. Gathering empirical data within Peru could provide insights into unique cultural and societal factors influencing career decisions in IT-related careers, particularly among young women. This research could potentially inform policy and educational initiatives aimed at increasing gender diversity in IT and related disciplines.

3. Methodology

To address our research question regarding the professions or occupations of the parents of Peruvian women IT professionals and whether these roles influenced their vocational decisions, an exploratory study with descriptive elements was conducted. According to [12], exploratory studies address little-studied phenomena —as in this case for the Peruvian context— and can be combined with elements of other research scopes, such as descriptive, to specify properties, characteristics and important features of any phenomenon that is analyzed, as well as trends of a group or population.

Participants for the study were selected based on specific criteria to ensure the relevance of the data, using purposive sampling. This method allows researchers to target individuals with specific characteristics, making data collection more efficient and relevant to the research objectives. However, purposive sampling can limit generalizability, as the sample is not representative of the wider population [30]. For this study, Peruvian women who had graduated from IT-related university careers, possessed at least five years of professional experience, and were currently employed in various specialized or IT management roles across different sectors were eligible for inclusion. The population was limited to women of private and public licensed universities in the department of Lima and the constitutional province of Callao. These two geographical areas concentrate around 36% of the entire Peruvian population [13] and 50% of IT-related university careers in Peru [23].

Data collection was done through a survey. A segment of the comprehensive quantitative questionnaire utilized in [21] was administered using the digital platform SurveyMonkey. The selected questions from the main questionnaire were: 1. Educational level reached by your father, 2. Your father's occupation (before retiring), 3. Educational level reached by your mother, 4. Your mother's occupation (before retiring) and 5. Who influenced your decision to study an IT-related career? The questionnaire was distributed via email to university alumni databases, shared with a community of computing professionals in Peru called the Peruvian Computing Society (http://www.spc.org.pe/), and circulated on social media platforms like LinkedIn. After

filtering the results based on informed consent acceptance, completeness of responses, and alignment of respondent demographics with the unit of analysis, 250 records were retained, resulting in a final response rate of 48.83%. The sample size was determined based on the requirements of the statistical technique used for data analysis in the larger study from which this article is drawn [21], specifically structural equation modeling [31][32].

Building upon the findings from the literature review [1][3][8][11][14][17][22][25], we hypothesized that the career choices of Peruvian women in IT professions could be influenced by their parents, with a particular emphasis on the father's professional or occupational role. Furthermore, we expected that the occupations or professions of these women's fathers would predominantly be associated with engineering or technical fields.

4. Results

To analyze the data, we first employed descriptive statistics, focusing on frequency distribution. This approach organizes scores into distinct categories and provides various visual representations [12]. Following this, the data exported from SurveyMonkey was processed using a spreadsheet application to facilitate further analysis. Regarding the demographic characteristics of the women surveyed, notable findings emerged: 73% of the women were between the ages of 24 and 40 years and most were born and attended high school in Lima. Additionally, 52% identified as single, and 64% reported not having children. Regarding their undergraduate education, approximately 78% of respondents attended private universities, while the remaining attended public institutions.

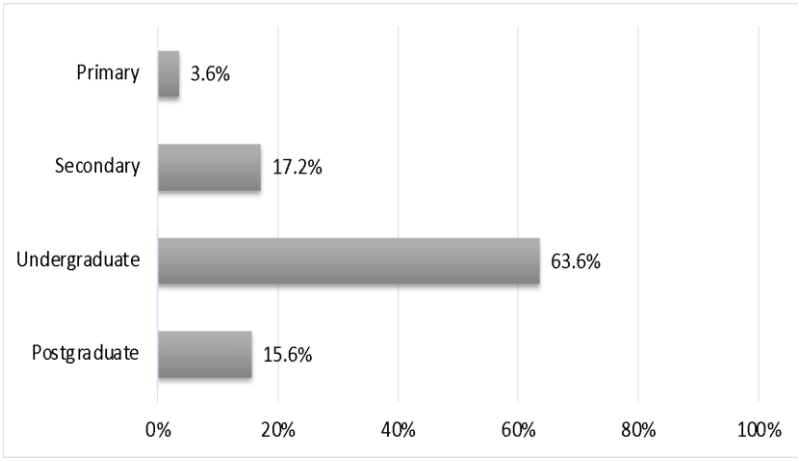

Figure 1: Educational level attained by the father.

The results revealed that among the fathers of the women studied, 79.2% had attained higher education, with 63.6% completing undergraduate studies and 15.6% further pursuing postgraduate education, as illustrated in figure 1. Conversely, a smaller proportion (20.8%) had achieved only basic education, with 17.2% completing secondary education and 3.6% stopping at the primary education level. These findings underscore the prevalence of higher educational attainment among the fathers of the women in the study.

Analysis of the fathers' occupations revealed that 22% of them were employed as engineers, encompassing various specialties such as civil, industrial, systems, electronic, and chemical, among others. Interestingly, there was no discernible pattern in terms of the distribution of engineering specialties. Following engineering, the next most common occupations included technical roles (8.4%), accountants (8%), teachers (7.2%), and merchants (7.2%). To facilitate a clearer visualization of these occupations, a word cloud was generated, as depicted in figure 2. This visual representation offers insight into the diversity of occupations held by the fathers of the women in the study.

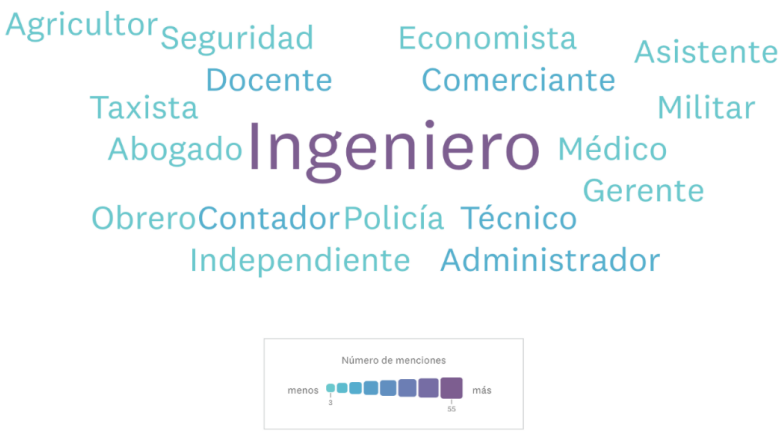

Figure 2: Word cloud about the father's occupation.

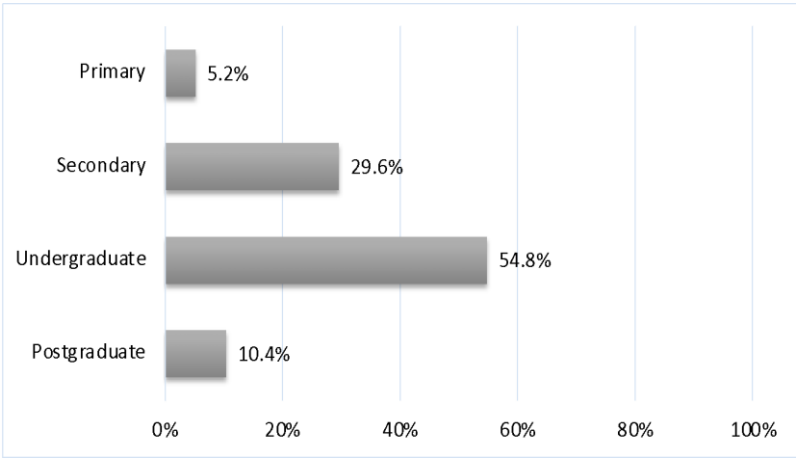

Figure 3: Educational level attained by the mother.

Regarding the mothers, figure 3 illustrates that 65.2% had achieved higher education, with 54.8% completing undergraduate studies and 10.4% further pursuing graduate education. Conversely, nearly 35% had obtained only basic education, with 29.6% completing secondary education and 5.2% stopping at the primary education level. A

comparison to the fathers reveals that 14% of the mothers had only attained basic education and did not progress to higher education. These findings highlight both the important proportion of mothers with higher educational attainment, while also drawing attention to the substantial proportion who had completed only basic education, in contrast to the fathers.

In terms of the mothers' occupations, as depicted in figure 4, it was observed that 25.2% identified as housewives. Following this, the most prevalent occupations included teacher (15.25%), merchant (10.8%), and secretary (8.4%). Notably, only a small percentage (3.6%) were employed as engineers or technicians. These findings shed light on the diversity of occupations held by mothers, with a notable representation of traditional roles such as housewives alongside other professions like teaching and merchant.

Figure 4: Word cloud about the mother's occupation.

When asked about the primary influence on their decision to pursue a career related to IT, respondents provided the following insights, as summarized in table 1:

- The father emerged as the most influential figure, cited by 36% of respondents.
- Following closely, 32% of participants identified their mother as an influential figure.
- Notably, prominent IT professionals, including public figures, played a substantial role, with 25.2% of respondents indicating their influence.
- Additionally, other relatives such as uncles, aunts, cousins, and grandparents collectively exerted influence on 20.4% of respondents' career decisions.

These findings underscore the diverse sources of influence shaping Peruvian women's decisions to pursue IT-related careers, including primarily parental figures, extended family members, and IT leading professionals. Notably, fathers are the primary influencers, and the majority of them have a technical professional background.

Table 1

Influencers in the decision to study the career related to IT

Influencer	Completely disagree	Disagree	Nor agree nor disagree	Agree	Completely agree
My father	31.60%	12.00 %	20.40%	19.20%	16.80%
My mother	27.20%	15.60 %	25.20%	19.60%	12.40%
My siblings	56.80%	13.60 %	16.40%	9.20%	4.00%
Other relatives (e.g., uncles/aunts, cousins, grandparents)	54.00%	9.20%	16.40%	12.40%	8.00%
School teachers	45.20%	15.20 %	21.60%	13.60%	4.40%
Leading IT Professionals	45.20%	10.40 %	19.20%	17.20%	8.00%

5. Discussion

This article aimed to investigate the professions or occupations of the parents of Peruvian women IT professionals, within a context where research on the underrepresentation of women in IT has been minimally explored. Additionally, the study sought to determine if parental professions or occupations played a role in influencing the vocational decisions of these women. Through exploring this relatively uncharted territory, the research aimed to offer valuable insights into the determinants of career choices within the Peruvian IT sector, with a specific focus on women.

The findings highlighted that the primary influencers in the decision of the women studied to pursue an IT-related career were predominantly the father, followed by the mother, aligning with previous research [1][8][11][14][17][22][25]. An intriguing revelation from the study was the notable influence of leading IT professionals, including public figures, in shaping the career decisions of the women studied. This finding suggests a growing trend that could be attributed to the widespread availability of information through the Internet and social media, which many women have access to from a young age. The visibility and accessibility of these role models in the digital sphere likely contribute to their impact on aspiring women in the IT field, inspiring and guiding them in their vocational journey. Furthermore, the study revealed that other relatives such as uncles, aunts, and grandparents also played a notable albeit lesser role in the vocational process of these women, consistent with prior literature [1]. These findings underscore the diverse array of influencers contributing to women's decisions to pursue careers in the IT sector, shedding light on the multifaceted dynamics at play in shaping their career paths.

In the case of the father, it was found that almost 80% of them obtained undergraduate or postgraduate higher education and that about 30% had an engineering or technical occupation.

In the case of mothers, the scenario was different, only 65% of them obtained undergraduate or graduate education and the predominant occupation was being a housewife, followed by occupations such as teacher, merchant and secretary. Occupations related to engineering or technical were very scarce in the case of mothers (3.6%). In that sense, parents would serve as role models for their children [7], to seek to become professionals in any discipline or one like that of their parents. Also, a hue of occupational inheritance would then occur from the student's exposure to stimuli or early actions carried out by parents, directly or indirectly, from their own professional practice [14].

The study's findings suggest several practical implications for educational policies and inclusion initiatives in IT. To enhance participation and retention of women in IT, it is crucial to establish role model programs and parental engagement initiatives that highlight successful IT professionals and educate parents about career opportunities. Integrating IT career exploration into the curriculum, offering targeted scholarships, and launching awareness campaigns can further reduce barriers and challenge stereotypes. Additionally, creating mentorship and networking opportunities can provide essential support and guidance. These strategies collectively aim to foster a more inclusive and diverse IT workforce by addressing both systemic and individual-level barriers.

While the findings of this study align with hypotheses derived from previous research, the study has a limitation in that its findings may not be generalized to all Peruvian women, as it only included participants from Lima and Callao. This centralization in Lima may not reflect the diverse experiences across the country. Additionally, the study could be improved by incorporating participants from public universities, who may face additional o different challenges.

6. Conclusions

This study aimed to explore the professions or occupations of the parents of Peruvian women IT professionals and assess their potential influence on vocational decisions. The findings underscore several contributions to the understanding of career dynamics in Peru's IT sector. Firstly, the study reveals that, akin to trends observed in other contexts, parental influence, particularly from fathers followed by mothers, remains a primary driver in shaping the career choices of Peruvian women professionals in IT. Moreover, the research highlights a noteworthy pattern wherein a considerable proportion of parents hold higher education degrees and pursue careers in engineering or technical fields, suggesting a potential pattern of occupational inheritance. Additionally, the study identifies a trend wherein leading IT professionals, including public figures, exert an important influence on aspirants' career decisions. This multifaceted influence ecosystem, encompassing parental guidance and external role models, highlights the complex interplay of factors shaping career pathways in the Peruvian IT sector.

It is crucial that parents with careers in engineering or technical fields are aware of the opportunities and impact of information technology in today's global society. Their understanding of these aspects can positively influence their children's career decisions, potentially fostering a pattern of occupational inheritance where children are inspired to pursue similar paths based on their parents' experiences and insights. These insights are pivotal for designing initiatives aimed at fostering greater diversity and innovation within the IT industry, particularly by increasing the participation of women. By recognizing and leveraging this

source of influence on career choices, targeted interventions to empower aspiring IT professionals can be developed.

In light of this, recommendations based on this study suggest that educational institutions and industry stakeholders should develop programs that engage both parents and their children in discussions about career opportunities in IT. Workshops, seminars, and outreach programs that target families can help demystify the IT sector, providing a clearer understanding of its scope and potential. Additionally, creating mentorship opportunities where experienced IT professionals can share their experiences with young aspiring professionals could bridge the gap between current perceptions and actual career possibilities. Moreover, organizing clubs or societies within schools and communities dedicated to IT and technology can provide a structured environment for young women to explore their interests, network with peers, and gain practical experience. These clubs can also serve as platforms for involving parents in supportive roles, further fostering an environment conducive to career development in IT.

To further enrich the study, comparisons with other parts of Latin America could offer valuable perspectives on regional differences and commonalities in educational and career challenges for women in the IT field.

References

[1] Adya, M. and Kaiser, K. M. “Early determinants of women in the IT workforce: a model of girls’ career choices”. Information Technology & People People 18.3 (2005): 230–259. doi:10.1108/09593840510615860

[2] Asociación para el Progreso de las Comunicaciones y Programa de Derechos de las Mujeres, La mujer y las tecnologías de información y comunicación, 2015. URL: https://www.genderit.org/sites/default/files/informe_beijing20_apc_0.pdf

[3] M. Carnasciali, A. E. Thompson, T. J. Thomas, Factors influencing students' choice of engineering major, in: 2013 ASEE Annual Conference & Exposition, Atlanta, Georgia, 2013, pp. 1-36.doi: 10.18260/1-2--19601

[4] J. Chicaiza, S. Segarra-Morales, G. Rodríguez, F. Cevallos, Perceptions of the gender gap in higher education and how to improve female students’ integration: A case study in two engineering majors of UTPL, in: CEUR Workshop Proceedings, 3607, 2023.

[5] Colomo-Palacios, R., Yahia, N. Ben, Larrucea, X., and Casado-Lumbreras, C. “Is the Gender Gap Narrowing in Higher Education Computing Studies the Case of Norway, Spain, and Tunisia.” Revista Iberoamericana de Tecnologias Del Aprendizaje 15.4 (2020): 336–343. doi:10.1109/RITA.2020.3033211

[6] S. H. Contreras-Ortiz, V. V. Ojeda-Caicedo, L. Marrugo-Salas, M. S. Contreras-Ortiz, A Model for the Development of Programming Courses to Promote the Participation of Young Women in STEM, in: TEEM'21: Ninth International Conference on Technological Ecosystems for Enhancing Multiculturality, TEEM'21, 2021. doi:10.1145/3486011.3486432

[7] B. L. Dorie, T. R. Jones, M. C. Pollock, M. E. Cardella, Parents as Critical Influence: Insights From Five Different Studies (Other), in: Proceedings of 2014 ASEE Annual Conference & Exposition, Indianapolis, Indiana, 2014.

[8] M. B. Dorie, M. E. Cardella, Engineering Childhood: Knowledge Transmission Through Parenting, in: 2013 ASEE Annual Conference & Exposition, Atlanta, Georgia, 2013.

[9] Gabay-Egozi, L., Shavit, Y. and Yaish, M. “Gender differences in fields of study: The role of significant others and rational choice motivations.” European Sociological Review 31.3 (2015): 284–297. doi:10.1093/esr/jcu090
[10] Gorbacheva, E., Beekhuyzen, J., Vom Brocke, J., and Becker, J. “Directions for research on gender imbalance in the IT profession.” European Journal of Information Systems 28.1 (2019): 43–67. doi:10.1080/0960085X.2018.1495893
[11] T. Gutfleisch, I. Kogan, Parental occupation and students’ STEM achievements by gender and ethnic origin: Evidence from Germany, Research in Social Stratification and Mobility 82 (2022). doi: 10.1016/j.rssm.2022.100735
[12] Hernández Sampieri, R., Fernández-Collado, C., & Baptista Lucio, P. (2010a). Metodología de la Investigación (5.ª ed.). McGraw-Hill.
[13] Instituto Nacional de Estadística e Informática, Censos Nacionales de Población y Vivienda, 1940, 1961, 1972, 1981, 1993, 2007 y 2017, 2021a. URL: https://www.inei.gob.pe/estadisticas/indice-tematico/growth-and-size-of-population/
[14] M. E. Jarvie-Eggart, A. M. Singer, J. Mathews, Parent and family influence on first-year engineering major choice, in: ASEE Annual Conference and Exposition, Conference Proceedings, 2020. doi:10.18260/1-2--35035
[15] Main, J. B., and Schimpf, C. “The Underrepresentation of Women in Computing Fields: A Synthesis of Literature Using a Life Course Perspective.” IEEE Transactions on Education 60.4 (2017): 296–304. doi: 10.1109/TE.2017.2704060
[16] ManpowerGroup, Cerrando la Brecha de Habilidades: Lo que los trabajadores quieren, 2020. URL: http://shorturl.at/dikw4
[17] I. Miliszewska, E. M. Sztendur, E. M., Girls from low socio-economic backgrounds: Factors influencing their interest in ICT study and career, in: 15th Americas Conference on Information Systems 2009, AMCIS 2009, 2009, pp. 3335–3347.
[18] A. S. Miner, A. Milstein, S. Schueller, R. Hedge, C. Mangurian, E. Linos, Smartphone-Based Conversational Agents and Responses to Questions About Mental Health, Interpersonal Violence, and Physical Health, JAMA Intern Med. 176 (2016) 619-625. doi: 10.1016/j.jemermed.2016.07.024
[19] Ministerio de Trabajo y Promoción del Empleo, Encuesta de Demanda Ocupacional Resultados al 2021, 2021. URL: https://www.gob.pe/institucion/mtpe/informes-publicaciones/1780659-encuesta-de-demanda-ocupacional-resultados-al-2021
[20] OECD Statistics, Distribution of graduates and entrants by Field, Education at a Glance, 2019. URL: https://stats.oecd.org/Index.aspx#
[21] N. Rodríguez-Rodríguez, Trayectoria académica y desempeño profesional: un estudio sobre mujeres peruanas de tecnologías de la información, Ph.D. thesis, Pontificia Universidad Católica del Perú, Lima, Perú, 2023.
[22] S. Smith, E. Sobolewska, J. Bhardwaj, K. Fabian, Exploring women’s motivations to study computer science, in: Proceedings - Frontiers in Education Conference, FIE, 2018. doi:10.1109/FIE.2018.8658768
[23] Superintendencia Nacional de Educación Universitaria, Estadísticas de Universidades por Programa de Estudio 2021, 2021. URL: https://www.sunedu.gob.pe/sibe/
[24] M. Tasmin, N. Ahmed, T. Motahar, Gender Disparity in Computer Science Education in Bangladesh: A Study of Women’s Participation in Computer Science, in: 2019 IEEE

International Conference on Engineering, Technology and Education (TALE), Yogyakarta, Indonesia, 2019, pp. 1-7. doi: 10.1109/TALE48000.2019.9225981.
[25] Trauth, E. M. “Odd girl out: an individual differences perspective on women in the IT profession.” Information Technology & People 15.2 (2022): 98–118. doi: 10.1108/09593840210430552
[26] S. V. Turner, P. W. Bernt, N. Pecora, Why women choose Information technology career, Annual Meeting of the American Educational Research Association, 2002.
[27] U.S. Bureau of Labor Statistics, Computer and Information Technology Occupations: Occupational Outlook Handbook: U.S. Bureau of Labor Statistics, Occupational Outlook Handbook, 2020. URL: https://www.bls.gov/ooh/computer-and-information-technology/home.htm
[28] C. Maciel, I. Guzmán, R. Berardi, B. Branisa, N. Rodríguez, L. Frigo, L. Salgado, E. Jiménez, S.A. Bim, P. Cabero, Plataforma de datos abiertos para promover políticas de igualdad de género en STEM, Proceedings of the 51st Annual Meeting of Western Decision Sciences Institute, Oregon, United States of America, 2023.
[29] R. Berardi, P. Auceli, C. Maciel, G. Dávila, I. Guzmán, L. Mendes, ELLAS: Una plataforma de datos abiertos enfocada en mujeres líderes en STEM en el contexto de América Latina, Proceedings of 17th Women in Information Technology, Porto Alegre, Brasil, 2023, pp. 124-135. doi:10.5753/wit.2023.230764
[30] Hernández Sampieri, R., Fernández Collado, C., & Baptista Lucio, Advantages and disadvantages of purposive sampling. In: Metodología de la investigación, 5th ed., Mc Graw Hill, México, MX, 2010,pp. 394-402.
[31] R. Kline, Principles and Practice of Structural Equation Modeling, 4th ed., The Guilford Press, New York, NY, 2016.
[32] R. E. Schumacker y R. G. A. Lomax, A Beginner’s Guide to Structural Equation Modeling, 4th ed., Routledge, New York, NY, 2015.