The Workplace Support Received by Young Women Engineers in Sri Lanka

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Abstract: This study aims to ascertain the factors that influence young women engineers in Sri Lanka to choose engineering as their career choice and to study the nature of workplace support they receive in a highly gendered work environment. An online self-administered questionnaire containing five-point Likert type and open-ended questions were distributed via email among a conveniently selected sample of over 200 young women engineers with less than 10 years of working experience in Sri Lanka. Eighty-two responses were received. Likert-type responses were analyzed using descriptive statistics and graphical methods, while thematic analysis was employed for responses to the open-ended question. Cleverness in mathematics and the higher reputation prevailed in the society for the engineering profession have majorly contributed to the young women engineers’ career choices in engineering. They experience a fairly supportive working environment in their workplaces. Many of them were satisfied with their salary, promotions and other professional achievements. Qualitative responses further revealed the gender-based discrimination, lesser job opportunities, industry-wise differences, fallacies on women engineers and difficulties in balancing the work-life as the other concerns in their workplaces. Although these findings cannot be generalized to the Sri Lankan industrial sector due to the use of convenient sampling, this study reveals prevailing concerns of young women engineers for the attention of the engineering fraternity and employers.

Keywords: Discrimination, Gender, Women engineers, Workplace support

1. Introduction

Technology is developing rapidly in today’s world. Hence, engineers are immensely supporting the development of the world with their knowledge and expertise. The engineering profession has received wider recognition in society due to its contribution to the betterment of the world. However, unlike other professions in society, the engineering profession is dominated by men creating a gender disparity. Such a scenario can be observed in Sri Lanka and most of the world’s countries. Due to various reasons, self-sustenance in the male-dominated engineering profession is not easy for the minority women engineers. Academic literature discussing the concerns of women engineers in Sri Lanka is also limited compared to other countries. Hence, this study investigates the factors which cause young women engineers to select engineering as their career choice. Then, this study explores the workplace support received by young women engineers in Sri Lanka for the attention of the engineering fraternity and the employers.

2. Literature Review

Severe underrepresentation and under-recognition can be seen in the women in the STEM (Science, Technology, Engineering & Mathematics) fields worldwide, thus creating the issue of gender equity, a famous news item to discuss [1]. Regarding engineering, it can be observed that women engineers are still a minority in most countries worldwide [2]. This appears mainly in the fields of construction, heavy industries and the power sector as per literature [3], [4]. According to a study in 2009, women engineers comprised only 5% of the engineers in the construction industry in the United Kingdom (UK) [3]. However, another study emphasized that, in the year 2021, 14.5% of all the engineers working in the UK were women engineers, while in the year 2018 it was 12%, demonstrating a sign of a decreasing gender disparity in the engineering profession in western countries [5]. Although studies have
not been conducted covering all the engineering disciplines country wise, few studies are available to refer to in various regions. A study conducted focusing on power sector organizations in the South Asian region in 2018 has identified that women engineers’ representation in the technical roles were in between 0.1% - 21% [4]. Further, it reveals that the composition of women in the technical staff of the selected power sector organizations in countries like Maldives, Nepal, Bangladesh, India & Pakistan were less than 10%. However, in countries like Sri Lanka, Bhutan and Afghanistan it was 15%, 16.5% and 21%, respectively. Unlike in power sector organizations, women engineers’ representation in the road construction sector in Sri Lanka was less than 10%, similar to other developing countries in the world [6]. According to the information received from the Institution of Engineers Sri Lanka (IESL), percentage of the women engineers registered in all the member categories of IESL out of the total memberships as on 16.09.2021 is 17.6%, which is still a considerably low value.

Various socio-cultural factors have caused increased masculinity in the engineering profession worldwide and Sri Lanka [1]. It commences with the low enrolment of female students for engineering degree programs which eventually causes the preparation of a tiny number of competent female engineering graduates who to the job market [4]. According to the Engineering UK website, the lack of understanding and interest in engineering among young female students has demotivated them from choosing engineering as their future career [5]. Similarly, female students experience considerable opposition from society from their first decision to study in the Mathematics stream for their Advanced Level (A/L) examination, hoping to enter engineering in the Sri Lankan context. Further, Sri Lankan society believes that engineering is not meant for women and professions like medicine, teaching, and nursing are ideal for women in Sri Lanka [7]. Such perceptions also have demotivated female students from making career choices in engineering. However, that culture is slowly changing, and enrolment of female students in engineering courses has slightly increased [6].

The first female engineer in Sri Lanka, Dr (Mrs.) Premala Sivaprakasapillai mentioned in a speech that, being a female engineer was unheard of during her time. Nevertheless, she was happy about the increments in the current enrolment of female students for engineering courses [8].

Sustenance in engineering is a challenging task for most women engineers due to various socio-cultural and personal issues. According to Menezes [6], women’s role in family life has kept the engineering employers from recruiting women engineers most of the time. Compared to men, women have to spend considerable time caring for their family members, including the children. Society and the culture in most Asian countries expect that the women professionals should play the traditional role of the housewife and the mother without interruption. This pressure makes it challenging for women engineers to balance their professional and family roles [3]. Besides that, masculine culture prevailing in most workplaces has marginalized and undervalued women engineers [9]. Thus, any women engineer who enters the predominantly masculine engineering profession must somehow fit in with the existing culture if she wants to sustain herself in the field [10]. According to [4], female engineers in the power sector in the South Asian region have identified a lack of role models/networking support, limited fieldwork/training opportunities, and inadequate facilities (i.e., separate toilets/safe transportation/daycare/flex-leave) as the significant barriers to sustain in the field.

Life after marriage also creates challenges for most young women engineers worldwide. Scholars who reviewed the past literature on job challenges experienced by young women engineers after the marriage have revealed fourteen factors [12]. They were leadership, gender discrimination, sexual harassment, work-life balance conflict (working-family), child care, safety, support, health, work environment, communication, salary, transportation, leave, and women mentors. Of them, gender discrimination, child care, and work-life balance conflict were the significant factors that caused women engineers to stop working after marriage and end their professional life [11]. Moreover, it is believed and observed that women are professionally ethical, committed to their work, and less corrupt, while having better listening and soft skills and improved reputation (no gender bias to the company) [12]. However, there has been little empirical research on gender disparities in engineering which help underpin the effective preparation, coordination, and implementation of the science and technology (S&T) policies
Gender disparity in engineering must be addressed from the policy level with a clear understanding of the impact of context-specific factors affecting young female students' career choice to select engineering. Moreover, scholars should investigate the workplace support the young women engineers receive to sustain themselves in the engineering fraternity without leaving the engineering profession [14]. Based on such a requirement, this study attempts to ascertain the factors that influence young women engineers in Sri Lanka to choose engineering as their career choice. Then, this research examines the nature of the workplace support received by young women engineers in a highly gendered work environment to achieve their career objectives.

3. Methodology

Both quantitative & qualitative approaches were utilized in designing this research project. An online questionnaire was developed after referring to the available literature on women engineers in both local and international contexts. The questionnaire comprised questions to gather demographic information of the participants, closed-ended questions with 5-point Likert type responses (Strongly Disagree to Strongly Agree) and open-ended questions to freely voice the concerns of the young women engineers in Sri Lanka. The online questionnaire was administered via email and social media platforms among over 250 conveniently selected samples of young women engineers in Sri Lanka. Although the results are less generalizable in convenient sampling in which the researcher selects the most accessible subjects, scholars widely use this sampling approach due to the convenience of reaching the research participants [15]. Simple random sampling was not used in this study as the authors could not find any sources containing the contact details of women engineers in Sri Lanka who have industrial experience less than ten years.

Responses for Likert-type questions were analysed using simple descriptive statistics by assigning values of 1 to Strongly Disagree, 2 to Disagree, 3 to Neutral, 4 to Agree and 5 to Strongly Agree. Furthermore, the graphical method was used to clearly visualize the findings. Responses for open-ended questions were analysed qualitatively using an inductive thematic analysis approach.

4. Results and Discussion

Eighty two (82) responses were received for the online questionnaire. Hence response rate was 32.8%.

4.1 Demographic Information

Most of the young women engineers (76.8%) who responded to this study (respondents) are 26-30 years old. 2.4% and 20.7% of respondents belong to the age groups of 20-25 years and 31-35 years, respectively. 74.4% of respondents completed their undergraduate studies at the University of Moratuwa and 11.0% at the University of Ruhuna. 4.9% and 9.8% of respondents have studied at the University of Peradeniya and other universities, respectively. The industrial experience of respondents range from 1 year to 10 years. 63.4% of respondents were employed in the private sector while 36.6% were employed in the state sector, as engineers. 12.2% of respondents work in organizations where no other female engineer works while rest of the respondents (87.8%) work in organizations where few other female engineers work. Table 1 shows the percentage-wise distribution of disciplines of the respondents.

Table 1 - Discipline wise Distribution of Respondents

| Discipline                  | Percentage (%) |
|-----------------------------|----------------|
| Chemical & Materials        | 28.0           |
| Civil                       | 24.4           |
| Electrical & Electronic     | 24.4           |
| Mechanical & Production     | 6.1            |
| Computer                    | 2.4            |
| Any Other                   | 14.6           |
| Total                       | 100.0          |

4.2 Factors Affecting the Choice of Engineering as the Career

Respondents have chosen engineering as their career based on multiple factors. Based on the responses received for Likert type statements relevant to the career choice, mean and the standard deviations were calculated. Then, they were arranged in descending order considering the calculated mean. Table 2 shows the findings of this study relevant to choosing engineering as a career. Respondents were given the below statements in Table 2 followed by the five-point Likert-type responses starting from “Strongly Disagree” to “Strongly Agree”.

Responses for Likert-type questions were analysed using simple descriptive statistics by assigning values of 1 to Strongly Disagree, 2 to Disagree, 3 to Neutral, 4 to Agree and 5 to Strongly Agree. Furthermore, the graphical method was used to clearly visualize the findings. Responses for open-ended questions were analysed qualitatively using an inductive thematic analysis approach.
According to the responses, most respondents have agreed that they chose engineering because they were clever in Mathematics. Hence, cleverness in Mathematics is the major factor that motivated the respondents to choose engineering as their career. Factors like higher reputation, love to work with technology and a higher salary are the factors which occupy the 2nd, 3rd and 4th places, respectively. The influence of parents/relations and teachers to choose engineering is the least caused factor for the career choice of responded young women engineers in Sri Lanka. Though various factors demotivated young female students in choosing engineering worldwide [5], the above factors have motivated young women engineers in Sri Lanka to choose engineering overcoming the existing socio-cultural barriers.

4.3 Workplace Support Received by Young Women Engineers in Sri Lanka

Due to the underrepresentation of women in engineering, it is mainly believed that the minority of the women engineers working in the industry do not get the required support from the workplace [16]. In such a context, this section discusses the results of the graphical analysis of the Likert-type responses received for the statements investigating the workplace support received by the young women engineers in Sri Lanka.

Professionals are getting paid for their professional work. As professionals, engineers are also getting paid by their employers. Sri Lankan society believes that the knowledge workers like engineers are a group of professionals paid higher than other professions [6]. Personal satisfaction with the amount of salary received is subjective. Young women engineers who responded to this survey have a mixed level of satisfaction regarding their salary.

According to Figure 1, out of the respondents, 45.1% were satisfied with the salary they received, 37.8% were dissatisfied, and 17.1% stayed neutral. It highlights a concern in the Sri Lankan industrial sector, affecting young women engineers too. It has been identified recently that the lower salary was a major causal factor for the migration of Sri Lankan young engineers to developed countries irrespective of gender [17].

Table 2 - Mean & Standard Deviations Values for Responses received for Career Choice Statements

| Statement                                                                 | Mean | STD  |
|--------------------------------------------------------------------------|------|------|
| I decided to choose engineering because I was clever in Mathematics     | 4.2  | 0.77 |
| I decided to choose engineering because it is a reputed profession in the society | 4.04 | 0.74 |
| I decided to choose engineering because I love to work with technology since childhood | 3.77 | 0.93 |
| I decided to choose engineering because engineers get a higher salary    | 3.61 | 0.8  |
| I decided to choose engineering because my parents/relations/teachers forced me to do that | 2.21 | 1.13 |
According to [14], getting promotions for women in a masculine field like engineering is complicated. However, 67.1% of respondents have received promotions/increments on time, similar to their male colleagues, demonstrating a positive perception of the working environment concerning career promotions and advancements. Only 14.6% of respondents have shown dissatisfaction with their promotions/increments. Although Subri [11] highlighted the prevalence of gender discrimination in most engineering workplaces worldwide, such behaviour is less likely to be observed in Sri Lanka as per respondents' responses.

Cooperation within the workplace is essential for any professional to discharge his/her duties competently. Employees tend to leave the workplace if the workplace does not have such an environment. According to Figure 3, 72% of respondents have a positive perception of the support extended by their colleagues and superiors to perform well in the job. Only 7.4% of respondents have not experienced the supportive behaviour of their colleagues and superiors. Such supportive behaviour in the workplace help women engineers to remain in the industry without leaving the engineering profession [9].

Furthermore, the support of the subordinates and shop floor employees is also crucial for the better performance of women engineers. A graphical representation of the responses received for such a statement is illustrated in Figure 4. Similar to the support of colleagues and superiors, most of the respondents (75.7%) have received the help of their subordinates and shop floor employees in their workplaces. 4.9% negatively perceived that, while 19.5% stayed neutral.

The majority of the young women engineers (72%) who responded have mentioned that they get due respect in their workplace. Only 7.3% of respondents have highlighted their dissatisfaction on this matter, while 20.7% stayed neutral. According to Figures 3, 4 and 5, young women engineers in Sri Lanka experience a favourable working environment to perform well with their staff. This further confirms the findings in [4], emphasizing that Sri Lanka has a relatively better working environment than other South Asian countries.
A significant issue faced by women engineers worldwide is the reluctance of employers to recruit them to the engineering workplaces due to various gender-based factors [4], [6], [11]. According to Figure 6, this is further confirmed in the Sri Lankan context. 69.5% of respondents have observed the reluctance of employers to recruit women engineers. This can be observed in engineering jobs where more fieldwork is involved [11]. For such job positions, discrimination can happen against women engineers due to the demanding nature of physical strength and the requirements to work long hours.

According to Figure 7, 41.5% of respondents have experienced various discriminatory practices in the industry due to them being female engineers. 34.1% have stayed neutral, while 24.4% of respondents have shown their disagreement on this matter. The above responses show that there are still some discriminatory practices against women engineers in the Sri Lankan industrial sector, which need to be identified further through research.

The engineering profession has become challenging and stressful for many engineers working long hours, converting their work-life balance into a problematic state [3]. Many women engineers across the globe have highlighted the requirement to work long hours as engineers, which has motivated them to leave the profession at a younger age [14]. A considerable percentage of respondents (43.9%) have mentioned that they were overloaded with job-related responsibilities, and 23.2% have demonstrated their disagreement. Overloading with the job-related duties affects personal and professional development of women engineers. They confront many difficulties in balancing work-life as women have more family commitments than men [18].

**Figure 7 - Experiences on Discriminatory Practices**

According to Figure 7, 41.5% of respondents have experienced various discriminatory practices in the industry due to them being female engineers. 34.1% have stayed neutral, while 24.4% of respondents have shown their disagreement on this matter. The above responses show that there are still some discriminatory practices against women engineers in the Sri Lankan industrial sector, which need to be identified further through research.

**Figure 8 - Perception on Workload**

Although 43.9% of respondents have highlighted that they were overloaded with job-related responsibilities, Figures 8 and 9 demonstrate that 46.4% of respondents have agreed to the statement mentioning that they have sufficient time to pursue higher studies and Continuing Professional Development (CPD) activities for their professional development. However, 53.6% of respondents disagreed and remained neutral on the above statement. Nevertheless, CPD is a must for a professional engineer in today’s competitive work environment [19]. In such an environment, the above observation shows that approximately 50% of respondents have sufficient time to involve with higher studies and CPD irrespective of their overloaded work schedules and family commitments. It can be considered a good sign of women’s establishment in the engineering field in Sri Lanka.

**Figure 9 - Perception on the Availability of Time for Professional Development**
Dissatisfaction with the achievements persuades the women engineers to leave the engineering practice and look for other non-engineering positions in the job market [14]. According to this study, the majority of the young women engineers (63.4%) who responded to the questionnaire were satisfied with their current achievements as female engineers, in Sri Lanka. While facing many challenges and hurdles, most young women engineers have achieved a satisfactory level in their professional life. Not like men, women can do multi-tasking [12]. Such skills have supported young women engineers to perform satisfactorily in a marginalized profession.

The above results reveal that young women engineers in Sri Lanka experience somewhat supportive work place culture. Many were satisfied with their salary, promotions and other professional achievements. However, some of them experience discriminatory practices in their workplace due to them being women engineers.

4.4 More Concerns on WorkPlace Support
Eighty-two respondents did not respond to the open-ended question given in the online questionnaire as it was not a compulsory question to answer. Only 25 responses were received, and 64% of respondents out of 25 belonged to the 26–30 age group, while 20% belonged to the 31-35 age group. Hence it can be assumed that only the respondents who had concerns about workplace support and were willing to raise their voices against such concerns have responded to this question. Thematic analysis of responses received for the open-ended question regarding the concerns of young women engineers on workplace support revealed a significant theme of gender-based discrimination. Other sub-themes also closely relate to gender-based discrimination in engineering. Other identified themes were fewer job opportunities, industry-wise differences, fallacies and inability to balance the work-life. The following section discusses each theme with the support of the narrative evidence of relevant responses.

**Gender-Based Discrimination**
Gender-based discrimination is a widely discussed topic in the studies related to women engineers worldwide [11], [12], [20]. The quantitative section of this study reveals that gender-based discrimination prevails in the Sri Lankan context to some extent. Several respondents have mentioned their experiences relevant to the gender-based discrimination that happened to them in their workplaces. A respondent has highlighted it as “Gender discrimination happens in the construction industry in Sri Lanka. It prevents female civil engineers from achieving top positions in construction. Some have changed the industry and do not perform as civil engineers.” Literature also confirms that discriminatory practices widely happen in the construction industry within local and international context [6], [12], [18]. The demanding nature of the Civil engineer’s job role may be the main reason behind such practices. Women engineers who do not have the strength to face such discriminations leave the construction industry early [14].

Another respondent has expressed her concerns: “During the training period, we faced some consequences in our field. Some labourers and technical officers have a wrong eye on us as females. I think that is normal in Sri Lanka, but that must be changed. Hence most lady civil engineers prefer office work than visiting sites.” Some women engineers experienced discriminatory practices even during their industrial training periods. This behaviour was previously identified in a study focusing on senior engineers’ guidance during undergraduate training in Sri Lanka [21]. According to the respondents, this behaviour is expected in Sri Lanka. However, such practices can keep away women engineers from practising real engineering in the field. “Salary discrimination is the main issue, and sometimes they (employers) don’t even call for interviews. It took a couple of months for me to enter my first industry job.” According to the above narrative, some women engineers receive lesser salaries than their male colleagues. It also leads to the dissatisfaction of women engineers regarding the engineering profession.
**Lesser Job Opportunities**

Some of the young women engineers experience difficulties in finding jobs relevant to engineering. As revealed in the responses, gender-based discrimination is one of the reasons for lesser job opportunities. “Giving the opportunity is very bad in our country...Employers also say, ‘you are a girl, and we have to make a new roster if we allow you’...anyway Sri Lankan people believe "a boy can do the job better than a girl.,” especially in the private sector of the telecommunication field”. In this narrative, a respondent has also highlighted the prevailing gender-based discrimination, which made her unable to get opportunities in the telecommunication industry. Creating a gender-balanced workplace is a solution to minimize such discriminatory practices [22]. “Very reluctant to offer jobs. They think we don’t have the capacity, which is really bad.” Still, Sri Lankan society believes that women engineers are not competent enough as their male counterparts in the industry [7]. The severity of the issue is doubled when the professionals also believe the same in Sri Lanka [6]. However, blindly disregarding the female engineering candidates during the selection interviews just because of being a female cannot be justified in a gender-balanced society.

**Industry-wise Difference**

Underrepresentation of women engineers is critical in most heavy industries like construction and power [4], [6], [12]. Several respondents have highlighted the prevailing gender-based discriminatory factors, particular in several engineering disciplines. “The discrimination against female engineers depends on the field to which they belong. I have faced discrimination when trying to get into a telecommunication-related job, but never had any issue in software engineering”. According to the above excerpt, gender-based discrimination is not likely to happen in the software engineering field when compared to the telecommunication industry. She has undergone difficulties in getting recruited to the telecommunication sector. “During the internship, I worked in the manufacturing industry and faced some difficulties being a female engineer there. But at my current job, which is in the IT industry, I don’t see any differences between male and female engineers. So I believe that being a female engineer affects me differently in different industries.” As per the above narrative, another respondent has faced difficulties working in the manufacturing industry during her internship as a female engineer. However, she is okay with her current job in the IT field. Based on this experience, she emphasizes that gender-based discrimination is not severe in every industrial area for women engineers. “Employers will not always see male and female candidates are in an equal state in some engineering disciplines (e.g. site engineers in the private sector).” The construction field is also an industrial sector where female engineers confront various issues when performing their duties. Due to the demanding nature of the site work, female engineers get fewer opportunities to work on construction sites. Because of that, female engineers often work in the office environments like design offices [6]. Employers also assume that female engineers are not competent to perform site work and are not willing to appoint female engineers to such positions. This also happens to young women engineers during their internships [21].

**Fallacies on Women Engineers**

Society has different perceptions and fallacies regarding women engineers [12]. Such fallacies act as barriers to the women engineers’ professional journey. A young woman engineer has narrated her concerns as follows. “I like to say that being a women engineer in the private or government sectors is projected outside in a very wrong way. Most people in my society are unaware of it, or they blindly trust that the engineering profession is only for men and not women. Still, they (Society/clients/other men higher management) have doubts about the women engineer’s capacity and skills.” According to her, society still could not understand the actual capacity of women engineers due to the beliefs that prevailed in the past. It limits the women’s role to the housewife’s role. Nowadays, there is a lot of evidence demonstrating the success stories of competent women engineers worldwide and the local context showing that women engineers are also capable like men of practising engineering [23]. However, such sources could not penetrate deep into the contemporary social structure to change the existing fallacies on the capabilities of women engineers. Another respondent highlighted it: “Due to social norms, we are limited in a traditional framework to perform some of the tasks”. Unlike in western countries, Asian society holds traditional norms and frameworks toward women limiting their performance [1]. However, the persistence of marginalized women engineers has supported them to develop their own identities to become successful and renowned characters in the world irrespective of the existing fallacies [24].
Difficulties in maintaining Work-Life Balance

According to the literature, work-life balance is a significant concern for women engineers worldwide [3]. Few respondents also have highlighted their experiences relevant to work-life balance in a highly gendered work environment. “Top management in my workplace does not pay special attention to me considering that I am a woman. But since we have more responsibilities at home than a male employee, it is difficult to balance family and working life.” According to her, women have more responsibilities in their personal life than a typical male employee has in his personal life. Although women engage in occupations nowadays, they have to perform their traditional roles of cooking, housekeeping, babysitting, etc. The culture of the extended working hours in the engineering profession has also created many struggles for women engineers to balance their professional and personal life [25]. This respondent has highlighted that the top management of her company has not paid particular attention to her considering her gender. At that point, she expects special consideration and supportive assistance from the top management of her company to balance her work-life. Although many highlighted that women and men should be treated equally in professions, women expect special attention and a flexible working schedule to balance their work lives. “It is hard sometimes to balance a professional career and the personal life.” This excerpt also emphasizes similar matter of the difficulties in balancing the work-life. Young women engineers face these struggles with marriage and, later on, with motherhood [25]. It was identified that a considerable number of women engineers who confront the issues of balancing-work life have decided to leave the engineering profession [3]. Hence, it can be considered a timely requirement to identify the strategies followed by successful women engineers in Sri Lanka to balance their work-life as an academic study and disseminate the same in the society to guide the young women engineers in Sri Lanka. It will be helpful for the young generation to climb the career ladder as successful engineering professionals.

5. Conclusions

Not like other professions, women are still underrepresented in the field of engineering in Sri Lanka. Based on the views of a group of young women engineers in Sri Lanka, this study derived the following conclusions. A mix of factors like cleverness in mathematics, a higher reputation in engineering, love to work with technology, and higher salary have motivated the young women engineers to choose engineering as their future career. Influence from parents/relations/teachers had a lesser impact on their career choice. Young women engineers in Sri Lanka experience fairly supportive workplace culture. Many of them were satisfied with their salary, promotions and other professional achievements. However, some of them experience discriminatory practices in their workplace due to being women engineers evidencing the prevalence of gender-based discrimination in the engineering field of Sri Lanka. Qualitative responses of the young women engineers further revealed that gender-based discrimination, lesser job opportunities, industry-wise differences, fallacies on women engineers and difficulties in balancing the work-life are the other concerns in their workplaces.

Using convenient sampling and a small sample size have limited the generalizability of the findings focusing on all young women engineers in Sri Lanka. However, this study can be considered as an eye-opening study to create a dialogue among the engineering community to support young women engineers.

These findings should be investigated further in future studies with the assistance of professional bodies relevant to the engineering profession to generate solutions to the problems faced by women engineers in the Sri Lankan industrial sector to assist them in achieving professional success. More actions should be taken to increase the enrolment of women in engineering degree programs and to support young women engineers to sustain themselves in the engineering field as competent professionals without leaving the engineering practice.

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References

1. Meiksins P., Layne P., Beddoes K., Lewis M., Masters A., and Deters J., “Women in Engineering: A Review of the 2018 Literature,” SWE Magazine, 2019.
2. Hersh M., “The Changing Position of Women in Engineering Worldwide,” IEEE Trans. Eng. Manag., Vol. 47, No. 3, 2000, pp. 345–359, doi: 10.1109/17.865903.

3. Watts J. H., “‘Allowed into A Man’s World’ Meanings of Work-Life Balance: Perspectives of Women Civil Engineers as ‘Minority’ Workers in Construction,” Gender, Work Organ., Vol. 16, No. 1, 2009, pp. 37–57, doi: 10.1111/j.1468-0432.2007.00352.x.

4. “Pathways to Power; South Asia Region Baseline Assessment for Women Engineers in the Power Sector,” 2018.

5. “Gender Disparity in Engineering - Engineering UK | Inspiring Tomorrow’s Engineers,” 2021.

6. Menezes D., “Of Struggles, Truces and Persistence: Everyday Experiences of Women Engineers in Sri Lanka,” J. Int. Womens. Stud., Vol. 19, No. 2, 2018, pp. 123–139.

7. Wahid M., “Why are Women A Minority in Engineering?,” Daily News, Colombo, Jan. 2020.

8. “The Institution of Engineers Sri Lanka - Lady Engineers of Sri Lanka,” Digital SLEN.

9. Ayre M., Mills J., and Gill J., “‘Yes, I Do Belong’: The Women who Stay in Engineering,” Eng. Stud., Vol. 5, No. 3, 2013, pp. 216–232, doi: 10.1080/19378629.2013.855781.

10. Faulkner W., “Doing Gender in Engineering Workplace Cultures. I. Observations from the Field;” Eng. Stud., Vol. 1, No. 1, 2009 pp. 3–18, doi: 10.1080/19378620902721322.

11. Subri U. S., “A Review of Job Challenges Factors for Women Engineer,” Int. J. Acad. Res. Bus. Soc. Sci., Vol. 8, No. 9, 2018, pp. 1450–1455, doi: 10.6007/ijarbsv/v8-9/4834.

12. Devi B. D., Golden S. A. R., and Regi S. B., “Challenges Faced By Women Engineering Graduates In Construction Industry,” Int. J. Disaster Recover. Bus. Contin., Vol. 11, No. 1, 2020, pp. 3182–3190.

13. Ghiasi G., Larivière V., and Sugimoto C. R., “On the Compliance of Women Engineers with A Gendered Scientific System,” PLoS One, Vol. 10, No. 12, 2015, pp. 1–19, doi: 10.1371/journal.pone.0145931.

14. Fouad N. A., Chang W. H., Wan M., and Singh R., “Women’s Reasons for Leaving the Engineering Field,” Front. Psychol., vol. 8, No. JUN, 2017, pp. 1–11, doi: 10.3389/fpsyg.2017.00875.

15. Jager J., Putnick D. L., and Bornstein M. H., “More Than Just Convenient: the Scientific Merits of Homogeneous Convenience Samples,” Monogr. Soc. Res. Child Dev., Vol. 82, No. 2, 2017, pp. 13–30, doi: 10.1111/mono.12296.

16. Ramachandran B., Ramanathan C., and Khabou M., “Advancement of Women in Engineering: Past, Present and Future,” 2020, doi: 10.2139/ssrn.3683980.

17. Wijesinghe D. P. S. and Jayawardane V. P. T., “The Determinants of Migration of Sri Lankan Young Engineers to Australia - A Case Study,” KDU J. Multidiscip. Stud., Vol. 3, No. 2, 2021, pp. 113–122.

18. Smith A. E. and Dengiz B., “Women in Engineering in Turkey - A Large Scale Quantitative and Qualitative Examination,” Eur. J. Eng. Educ., Vol. 35, No. 1, 2010, pp. 45–57, doi: 10.1080/03043790903406345.

19. Hansen K. L. and Zenoiba K. E., “Chapter 3,” in Civil Engineer’s Handbook of Professional Practice, John Wiley & Sons, Inc, 2011, pp. 63–93.

20. Rincon R., Korn R. M., and Williams J. C., “Examining Gender Bias in Engineering in India,” ASEE Annu. Conf. Expo. Conf. Proc., 2019, doi: 10.18260/1-2–32777.

21. Wijesinghe P. and Jayawardane T., “Guidance from the Senior Engineers during the Undergraduate Training-A Case Study,” J. Univ. Ruhuna, Vol. 8, No. 2, 2020, pp. 83–92, doi: 10.4038/jur.v8i2.7941.

22. Wilson D. and VanAntwerp J., “Left Out: A Review of Women’s Struggle to Develop a Sense of Belonging in Engineering,” SAGE Open, Vol. 11, No. 3, 2021, doi: 10.1177/21582440211040791.

23. Nietzel M. T., “Meet The World’s Most Influential Women Engineers,” 2021.

24. Verdin D., “The Power of Interest: Minoritized Women’s Interest in Engineering Fosters Persistence Beliefs beyond Belongingness and Engineering Identity,” Int. J. STEM Educ., Vol. 8, No. 1, 2021, pp. 1–19, doi: 10.1186/s40594-021-00292-1.

25. Maji S., “‘Doing Men’s Jobs’: A Commentary on Work-Life Balance Issues Among Women in Engineering and Technology,” Metamorph. A J. Manag. Res., Vol. 18, No. 1, 2019, pp. 68–75, doi: 10.1177/0972622519854887.