

Gender Inequality: A Case Study of the Malaysian Renewable Energy Industry

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Abstract

Despite the rapid growth of the renewable energy sector, gender inequality continues to hinder women's full participation and leadership in this male-dominated industry. This study explores gender dynamics by comparing female and male leadership and uncovering gender-based disparities in the Malaysian solar energy industry. A qualitative approach was adopted through in-depth interviews with 15 female employees working under female leadership in the sector. Findings reveal that male leaders are generally perceived as more tolerant, approachable, and open to feedback, while female leaders are often viewed as stricter and more emotionally driven, possibly due to differing communication styles and leadership traits. Notwithstanding, reports of equal access to promotions and performance-based rewards, some participants indicated that female staffs face career limitations—particularly in technical roles—due to traditional gender expectations, pregnancy, or a lack of field opportunities. Male engineers are more frequently assigned to site visits involving physically demanding tasks, while female engineers tend to handle administrative duties, indicating role-based task differentiation rather than workload imbalance. Although most respondents felt their workplace treated both genders fairly in promotions and rewards, a few expressed dissatisfaction with female representation in leadership and technical advancement. These findings highlight the need for inclusive leadership training, targeted support for women in technical roles, and policies that dismantle workplace stereotypes. This study contributes to the growing discourse on gender inequality by contextualizing it within a sustainability-driven industry in Malaysia, offering insights for promoting gender equity in renewable energy as part of broader sustainable development goals.

Keywords: Gender inequality; Renewable energy; Leadership; Qualitative research

1. Introduction

Since the second half of the last decade, the phenomenon called #MeToo became an international concern (Klavenes et al., 2020). #MeToo phenomenon can be defined as an online, social media phenomenon which particularly support those who disclose sexual harassment and assault (Brown and Battle, 2020). Victims of unethical behaviour could now come forth and share their experience on public platforms, clearly reflecting the need for change of this international issue. Take Sweden as an example: the repercussion of the #MeToo movement affected the creation of a new law (enforced in July 2018) that prohibits non-consensual sex (Pollack, 2019).

In association with the #MeToo phenomenon, however, the issue of gender inequality has caught more attention from many scholars (See: Cunha and Lúcio Martins, 2023 in the press industry; Klavenes et al., 2020 in the football industry; Zeler et al., 2022 in public relation industry; and Metcalfe et al., 2022 in Iceland), more recently. In the Portuguese press, for

example, though female participation has been increasing, women still represent a minority in leadership (Cunha and Lúcio Martins, 2023). Take the African case as another example where glass ceiling in organizations still exists in the recent decades (Enid Kiaye and Maniraj Singh, 2013). Particularly, gender discrimination (situational factor) and family commitment (social role) serve as barriers to female in personal and career growth, despite their confidence and competitiveness.

The United Nations define gender equality as equal human rights for a peaceful, prosperous, and sustainable world. It is a pervasive issue in our culture, especially in the workplace, where men make up over 75% of executives (Coleman, 2020). While the presence of females in organisations has recently become increasingly common (due to extensive changes in culture, law and society in many nations in the recent decades), organisational cultures have limited improvement, with deep-rooted dynamics and power coalitions which prevent women's career development, equal pay and leadership (Zeler et al., 2022). The World Economic Forum, through Global Gender Gap Report, 2021, provides further justification by reporting that women represent only 27% of manager positions in 156 analysed nations. Although geographical area constitutes a dominant factor of earnings disparity, the issue is more severe among females (Adeosun and Owolabi, 2021). Building on these researches, this study analyses the gender inequality issue in the context of the renewable energy industry in Malaysia.

In the last ten years, there has been a significant surge in energy demand, primarily driven by substantial advancements in the industrial sector and expanding populations. Consequently, there has been a worldwide shift towards adopting renewable energy resources and technologies to address this heightened demand, as the depletion of fossil fuels poses a threat to the environment. Among these renewable energy solutions, solar photovoltaic (PV) systems stand out, enabling the direct harnessing of solar energy from the sun to fulfil electricity requirements.

On the other hand, as per the findings of the International Renewable Energy Agency (IRENA, 2019), the global renewable energy workforce comprises 32% women, which is a positive contrast to the traditional energy sector. However, notable disparities persist, both in well-developed markets and in areas where the reach of renewable energy is currently expanding to provide energy access. In Malaysia, women's involvement in the renewable energy sector is also limited. Figure 1 displays the gender distribution within the tactical-level positions of the renewable energy sector in Malaysia in Year 2022. The leadership gender disparity within the Malaysian renewable energy sector is notably pronounced, with a general tendency for male dominance in the held positions. This gender asymmetry has raised the first research question in our study – (1) Is there any differences between female leadership and male leadership in the Malaysian renewable energy sector?

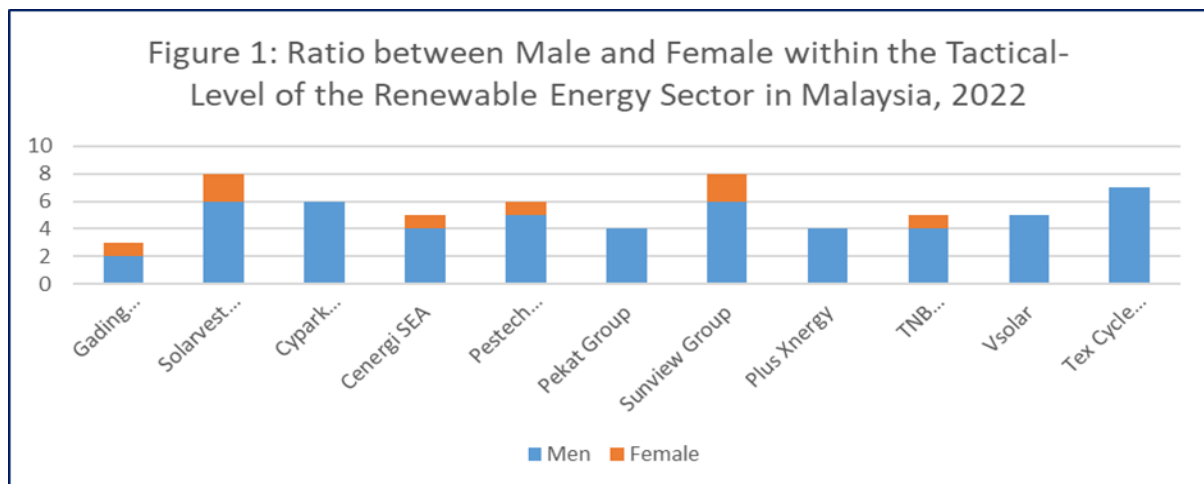


Figure 1: Ratio between male and female within the tactical-level of the renewable energy sector in Malaysia, 2022

Source: Bursa Malaysia

Apart from the tactical-level positions, men outweigh women in the technical, management, and planning positions in the renewable energy sector's major tasks (Vangchuay and Niklaus, 2021; IRENA 2019). This has led to our second research question – (2) Does gender inequality happen in the Malaysian renewable energy industry? Hence, the objectives of this paper are to (1) compare the differences between female leadership and male leadership as well as (2) reveal the gender inequality in Malaysian renewable energy sector based on the working experience of 15 female employees from the renewable energy industry in Malaysia.

Preliminary, the results of this study show that about 80% of the interviewed female employees found it difficult to work with their female leaders. This is because female leaders are more emotional and stricter than male leaders. Furthermore, female leaders requested them to work after working hours. On the contrary, male leaders are more tolerant and willing to accept the ideas from the employees. Due to the nature of work, in addition, all respondents agreed that male engineers are more frequently assigned to work at the solar panel site compared to the female engineers. However, when it comes to job promotion, rewards and site visits, both females and males deserve equal opportunities. Essentially, investigating the perception of employees on female leadership is vital to comprehend and amplify their condition in various positions and sectors. Other significance of the study include helping to eliminate obstacles to leadership, assisting entities to address issue related to gender inequality and develop framework for women professionals' internal promotion. This is especially a prevalent challenge for the renewable energy industry in its advocacy for efficiency, sustainability and diversity. Based on the recent bibliometric analysis conducted by Obaideen et al. (2023), it is found that 72% of the solar energy research papers from worldwide are within Sustainable Development Goal (SDG) 7: Affordable and Clean Energy. However, the solar energy in association to SDG 5: Gender Equality, is still limited. Although evaluating female presence in leadership positions is a fundamental step towards understanding gender inequality, such study are limited in number. For instance, Cuthbert et al. (2023) looked at leaders' (regardless of gender) gender competence (commitment to change, tendency to externalize problem of gender inequality

etc) effect on gender inequality in the industries of science, technology, engineering, mathematics and medicines (STEMM).

This study's comparison between working under male leadership and the female counterpart would provide a more direct and clear-cut reason on the gender gap. Another uniqueness of the study is its analysis on the renewable energy sector in the Malaysian context. Renewable energy is highly promising for sustainable development - one of the key pillars of Malaysia Madani. While the literature in comparing performance deviation between male-led firms and female-led firms is proliferating, it is inconclusive, implying the female's out-performance hypothesis as well as the inferior performance of women-led firms. Notably, the heterogeneity of results across regions or across groups of countries lay down the foundation for nation-specific studies (Shastri, 2024). This study examines the gender inequality issue in the renewable energy sector in Malaysia.

The remainder of the paper is organised as follows: Section 2 reviews the relevant literature while Section 3 comprises the details of the research methodology. The outcomes of the face-to-face interview are presented in Section 4, followed by Section 5 which provides discussion and conclusions drawn from the study, along with implications for policy.

2. Literature Review

2.1 A broad definition of gender inequality

The issue of gender inequality; or the Matilda effect - women were under-represented in scientific contributions (Knobloch-Westerwick et al., 2013); or the leaky pipeline effect - high female representation in early scientific career roles does not persist to the profession's highest levels (Alper, 1993), has received ample attention, particularly from researchers and policy makers, locally, regionally and internationally. The analyses are decomposed into various aspects, ranging from the gender inequality's definition, theories, factors, consequences, and many others. From the perspective of the European Council (Merma-Molina et al., 2019), for instance, issues related to gender inequality include exploitation of human rights of women, prolonged gender-based violence, lack of women participation in decision making of political processes, gender discrimination and stereotypes, sexism, lack of access to skilled job, limited social and economic infrastructure for a level playing field between men and women (daycare, paid parental leave, parental benefits), and budget cuts influencing firms working on these aspects. The case of the Spanish football industry serves as another example reflecting the need to tackle the issue of gender inequality. In the LaLiga's first and second division, there has been merely 10 percent in tactical level positions are women (Klavenes et al., 2020).

Theoretically, gender inequality (Spence, 1993) can be understood as a psychological concept linked to a wide range of factors for both persons and civilizations. The stereotypes and roles that society assigns to men and women are internalised during this ongoing socialisation process, which leads to differing conduct. Because of this, socialisation is not only a work for infancy, though it is important at this period; rather, it is a continuing process that is affected by the environment and personal experiences.

The gender inequality issue, particularly in term of leadership, generally exists everywhere: school (Blake and Fielding, 2023); libraries; church, especially in governance

and spiritual leadership (Dijkhuizen, 2022) and many other places. It is also important to analyse the industry or sectoral level where regions, education, geography, and marital status are determinants of gender inequality (Adeosun and Owolabi, 2021). In Spain, for instance, women communication managers' great extent of self-demand has led to challenges in achieving work-life balance as well as the implementation of successful role models (Zeler et al., 2022). Moreover, while greater educational level results in high salaries for women, married women in the United States are more disadvantageous when being paid due to the challenge in balancing between professional career and family matters – given a conflict between family activities and work-related activities, female professionals are required to sacrifice the former for the latter (Meng and Neill, 2023). Being single is also more beneficial to women ministers, compared to the men counterparts in securing the position of finance minister in Spain (Claveria and Lavezzolo, 2023). These issues on gender and marital status call for effective mentor-mentee programmes particularly to young female professionals, for the purpose of identifying remedies. Building on these studies, this paper looks at the gender inequality issues from the perspectives of employee (rather than employer): (1) Experience working under female leadership; (2) Perception towards male leadership; (3) Difference between male leadership and that of female; (4) Workload gap between women and men; (5) Barriers to promotion, rewards and site visitation opportunities.

2.2 Barriers to female on promotion, reward, site visit and other benefits

Recent studies on women's employment found that the same issues that were prevalent in the 1980s—discrimination at work (Coleman, 2020), a salary disparity, stereotypes (Coleman, 2020), discrediting, and a glass ceiling that prevents women from being visible in executive positions—remain now (Topic et al., 2019). These researches are based on the Theory of Gendered Organizations (Acker, 1990), which provides the theoretical framework for understanding the non-gender-neutral organizational structure. The logic of organizational structure, according to the authors, is made up of a variety of material and non-material forms that either directly or indirectly affect all of its female members. It is based on the intersection of accountability, difficulty of the work, and position in the hierarchy. There are employment evaluation methods, labor contracts, and work norms from a material perspective. These documents all have indicators of symbolic organization. The hierarchy stands out among the non-material components. It is a factor that causes the organization's members to have abstract distinctions.

In particular noteworthy is the gender wage disparity in Spain, which has grown as a result of COVID-19 (Peralta Huiracocha, 2021). The Association of Communication Directors (DIRCOM) conducted the ground-breaking GENDERCOM study (Moreno et al., 2018) to identify gender imbalance in communication management in Spain. The salary gap, the glass ceiling, and the career progression of women that was heavily influenced by the conflict of family reconciliation, especially after motherhood, were still persistent, according to GENDERCOM's analysis of empirical data treated statistically. This is true even though the profession is dominated by women, or perhaps precisely because of the effects of feminization.

According to Henderson and Gibson (2013), in addition, persistent gender inequality in the fields of labour and care is reflected in gender differences in leisure. For instance, it is well known that women have lower levels of leisure time and quality because of their

increased overall workload as a result of their greater duties for child and elder care (Halleret al., 2013). As a result, societal role expectations, the absence of policies encouraging shared home duty or childcare coverage measures, and the disparity in quality and leisure time are all factors that contribute to it (Craig and Mullan, 2013).

Another factor preventing females from enjoying the same level, or at least close to the same level of opportunities as male, is limited access to higher education (Merma-Molina et al., 2019). For example, in the twenty-first century, despite the training given to Spanish women and despite their increased participation in education (women-men ratio is 0.57:0.43), women are plagued by obstacles in assuming tactical level of position - decision making power. The reasons of the phenomenon are two-folds: (1) Their presence at universities, particularly at degrees in science, technology, engineering and mathematics (STEM) is still limited - only 30%; and (2) Personal, occupational and family factors.

In other words, female leadership represents a work overload. The work overload not only responds to women's constant need to justify their value in organisations – which makes them self-demanding – but also to the need to demonstrate their leadership in an environment where discrimination is still perpetuated in the work environment. These aspects are typical of the cost of leadership for women, which often forces them to choose between their professional development and family life (Coleman, 2020; Moreno et al., 2021). Nonetheless, these barriers to females can be lowered or reduced by recognizing the mentor-mentee programme and hence, by encouraging female leadership participation (Meng and Neil, 2023). This will promote the visibility of female professionals, acquire their support from the senior leadership group within the company, and create an inclusive culture.

The ambiguity in challenge faced by female leaders are also reflected in the German (Debus and Himmelrath, 2024) and Spanish (Claveria and Lavezzolo, 2023) political arena. In the political process and hence the extent of representation of social groups in parliaments, candidate selection within parties as well as gender stereotypes in citizens' preference are the key pillars. The comparison on findings between the two studies reveals that while women are preferred by citizens in occupying the position of finance minister (one of the 'masculine' cabinet portfolios) in Spain; in Germany, they face obstacles being nominated (nomination becomes harder if the contestant are of ethnic minorities) as their parties' district candidates, especially in the parties with traditionalist societal policy positions.

2.3 Experience working under female leadership

To evaluate female presence in leadership positions is a fundamental step towards understanding gender inequality. In this case, Iceland, where female leadership puts itself into a society as viable and necessary, serves as a perfect example (Metcalf et al., 2022). Based on the pioneering leadership strategy themes (role modelling, inclusive discussion culture and legislated equality) and through qualitative research, the authors propose Iceland as a model case with many gains towards gender equality. Perilleux and Szafarz (2022) also highlighted the importance of role modelling in explaining the boardroom gender diversity-corporate performance nexus. They postulate that female leadership encourages female employees, increases their motivation, and increases production, making their female directors more effective – bottom-up approach and trickle-down hypothesis. The trickle-down effect theory (Mayer et al., 2009) states that female directors influence labour productivity by pursuing recruitment of female workers. These groups of scholars recognise the cost of gender diversity (leadership consists of a mixture of both male and

female) - conflict, misunderstanding, suspicions and the resulting loss of competitiveness. Efficiency was shown to be the most characteristic trait linked to female leaders, followed by affection and teamwork. Furthermore, compared to male employees, it was demonstrated that female employees had a noticeably higher degree of positive perception toward women in leadership (Hilal, 2015).

The favouritism of women leaders to their subordinate of same gender (women) is in sharp contrast to the queen bee phenomenon (QBP) (Staines et al., 1974) - women in powerful positions could act in ways that prevent other women from advancing professionally. The QBP does not hold (leader women does not fit to all dimensions of the QBP), at least in academia (see: Marini and Meschitti, 2018 for Italy; Faniko et al., 2021 for Switzerland; and Shen, 2013 for USA), particularly in the Brazilian universities in which male-predominance is strong. Anyhow, competitiveness among women draws more attention than that of men because it is an unpredictable behaviour among the former, even if it is the norm when aspiring to career progression. Take the Australian case studies (Blake and Fielding, 2023), on the mentoring needs of female middle leaders, as an example. By focusing on the female middle leaders' perceived experience and the resulting interpretation of their experience, the authors found that female leaders have mentoring needs associated with proving their worth as leaders. These mentoring needs sound to be associated with leadership identity and gender. From this respect, it is hypothesised that employees working under female leaders have mentoring needs as the latter themselves have mentoring needs.

2.4 *Perception towards male leadership*

Perilleux and Szafarz (2022) also recognize the good performance particularly the financial performance, under the male-dominated, apart from the female-dominated leadership. This finding is totally in contrast to that of Lemoine and Blum (2021) (who integrate the gender role congruity theory that recognizes the effect of gender stereotype, with the servant leadership theory) - effect of servant leadership on firms' performance is stronger under women leadership than that of the men's counterpart. Notably, servant leadership model prioritises help and development given to others, while sharing power (Liden et al., 2008); and de-emphasizing glorification of leader (Hale and Fields, 2007). It is interesting to note that such a positive environment, postulated by the theory, renders different outcomes (firms' performance), under different genders of leadership.

Women are more frequently evaluated on the basis of their appearance than on the basis of their accomplishments and workplace conduct, which is not the case for males (Cikara et al., 2011; Heflick et al., 2011; and Lee-Badgett and Folbre, 2003). Furthermore, women who work in male-dominated environments or who are competitive and ambitious are viewed as unfeminine, but men who work in environments where women predominate are not perceived as unmasculine but rather as the leaders (Lee-Badgett and Folbre, 2003). In the football industry, for instance, the acceptance of unacceptable behaviour exists in the workplace of football entities (Klavenes et al., 2020). This is, however, perceived by women as normal because to them, the environment they work in has traditionally been dominated by male. This was supported by male who think that they were brought up with these behaviours, making them difficult to rectify.

2.5 Difference between Male and Female Leadership

It is generally accepted that male and female possess different communication and leadership styles (Zeler et al., 2022). The idea that men and women generally perceive the world differently and, thus, communicate differently may be the cause of differences between male and female managers (Bass and Avolio, 1994). For women, the world is a network of relationships where they can find and validate support and agreement. According to Tannen (1990), however, men view the world as consisting of individuals within a hierarchical social structure, wherein life is a competitive struggle for success, the acquisition of independence and an edge over others, and the prevention of power loss. Compared to women leaders, who seem more likely to care for their followers as persons, male leaders are more likely to focus on the shortcomings of their followers (Bass and Avolio, 1994). Men adopt a command-and-control style of leadership that emphasizes hierarchy, dominance, and competitiveness, according to literature on masculine and feminine leadership styles (Klenke, 2004). Women, on the other hand, are described as cooperative, nurturing, empowering, and team-oriented. As a result, the dominance or “advantage” of male in the aspect of workplace behaviour (women’s acceptance of their unacceptable behaviour like sexual harassment or sexual assault) does not mean that women are relatively inferior.

In terms of leadership, feminine traits perform better (Esser et al., 2018). The findings indicate that the mixed communication style is preferred. It means that women should learn to communicate in a way that is both empathic and near to the receiver (feminine style) in addition to using straightforward, clear, and transparent language (masculine style). Women in positions of responsibility for communication are more likely than men to possess traits like authenticity, adaptability, persistence, a balanced personality, and emotional intelligence, demonstrating the existence of diverse organizational styles and methods (Tannen, 1997). Effective leadership requires these qualities (Offermann and Foley, 2020).

Accordingly, women have historically been better at cultivating sociability, sensitivity, and empathy when it comes to features of expressivity and socialisation (attributes for expressing feelings), whereas men identify themselves with features of instrumentality (attributes for tasks), such as independence, power or control, and ambition (Evans and Diekmann, 2009). Female communication managers in Spain, for example, claim to have a democratic, inclusive leadership style with a strong emphasis on empathy and understanding for their team. It might be connected to the fact that women exhibit better emotional expression and understanding than males do in a variety of studies. Despite this, female workers still favour male managers because they view female supervisors as being more demanding. The high level of self-demandingness of female communication managers in the workplace, according to the interviewees, is to blame. While male authentic leadership on affective organisational commitment as well as tacit knowledge sharing was higher than that of the female counterpart, trust tends to be found in female leadership but not in male leadership - the chain of disseminating implicit ideas and information is not found in the latter.

However, Echabe (2010) had counter-argued that statement by documenting that nowadays, there is no difference between men and women, from the expressivity and instrumentality point of view. Instead, they are analysed based on social, work and professional roles. Ferreira (2017) also agrees with the notion that gender inequality in career

choice, subsequent performance and leadership, does not result from gender differences but is due to social reasons like family expectation.

As a summary, despite the progress made, there are still ample rooms for improvement in achieving real equality rather than veil equality, as direct discrimination has given way to more subtle, but no less serious, kind of indirect discrimination. Pertaining to the review on gender inequality, it is unclear whether there are differences between men and women leadership or not, particularly, in the context of expressivity, instrumentality, family expectation, appearances etc. Furthermore, the extant literature had documented study on gender inequality in the educational sector, corporate sector and others alike. However, limited studies focusing on the renewable energy sector, are observed. Moreover, while the literature in comparing performance deviation between male-led firms and female-led firms is proliferating, it is inconclusive, implying the female's out-performance hypothesis as well as the inferior performance of women-led firms. Notably, the heterogeneity of results across regions or across groups of countries lay down the foundation for nation-specific studies (Shastri, 2024). This study extends the literature by analysing the potential differences between working under men and women leadership by focusing on the Malaysian renewable energy sector, one of the promising sectors for the developing nation's sustainable economic growth and sustainable environment. With the focus on females, the study extends the growing body of literature which focuses on the process of leadership identity, instead of leadership development.

3. Methodology

3.1 Research design

Qualitative approach has been employed in this study to examine the gender inequality issues and perception on female leadership in the Malaysian renewable energy industry. Particularly, a total of 15 female employees, working in the solar energy industry, were approached for participating in the focus group discussion or interview.

3.2 Study subjects

By using the purposeful design method, there are total of 15 out of 38 female employees expressed their willingness to participate in the interview. The inclusion criteria (i) worker who entered Malaysian renewable energy sector and (ii) female employees under female leadership.

3.3 Interview outline

The interview outline is determined by consulting two expert's opinions for pre-interview. The interviewees were asked (questions) based on the respective themes, in a rotation basis, about the gender inequality issue, under female leadership in the Malaysian renewable energy industry. Particularly, the sub-themes consist of (1) experience working under female leadership, (2) perception towards male leadership, (3) workload gap between women and men, and (4) barriers to promotion, reward, and site visit.

3.4 Data collection

There are few rounds of communication with interviewees on purpose and significance of the study in advance and scheduled the interview time at their convenience time. The data collection took place in the form of focus group discussion (FGD) or interview. A total of two groups of FGD sessions were carried out, in which each session, with two interviewers and seven to eight interviewees, took approximately an hour of time duration. The interviews were recorded, which were kept strictly confidential. The researchers remain neutral in collecting the data.

3.5 Data analysis

Upon collecting data from the four sub-themes, they were then being typed in the Microsoft Word, according to the opinion given by the interviewees. Two researchers independently reviewed the interview notes, summarized and extracted the important notes based on the theme present. Based on the data collected, answers given by most of the interviewees are almost similar across the two interview sessions. Qualitative data is considered sufficient to conduct the analysis, once it reaches the saturation point. Hence, the researchers conclude that the data collected are sufficient to reflect the gender inequality issue, under females' leadership, in the Malaysian renewable energy industry.

3.6 Ethical review

This study was reviewed and approval by Ethical Clearance Committee at University of Tunku Abdul Rahman. All interviewees have been noticed and signed the consent letter. The researcher promise that all the information will kept confidently.

4. Results

The composition of workers in the Malaysian renewable energy sector is dominated by male, rather than female. This phenomenon is due to the issue in attracting and retaining female workers within the field. There are several reasons for women to leave the Malaysian energy sector. The most prominent reasons are gender inequality and the perception of female leader. The data collected via the online focus group discussion were analysed thematically. All discussion being conducted in Bahasa Melayu, except for session which was conducted in English because two participants are Chinese. The sub-themes of topics consist of (1) working experience under female leadership, (2) perception towards male leadership, (3) workload gap between women and men, (4) Barrier to promotion, reward, and site visit.

In this study, 15 female employees were enrolled in the participant list. The majority are Malay, except for two Chinese participants, all aged between 21 and 30. The same distribution applies to their marital status. All interviewees possessed a bachelor's degree.

Table 1: Characteristics of interviewees

Female No.	Age	Ethnicity	Marital Status	Highest Education Level
F1	21-30	Malay	Single	Bachelor's degree
F2	21-30	Malay	Single	Bachelor's degree
F3	21-30	Malay	Single	Bachelor's degree
F4	21-30	Malay	Single	Bachelor's degree
F5	21-30	Malay	Single	Bachelor's degree
F6	21-30	Chinese	Single	Bachelor's degree
F7	21-30	Malay	Single	Bachelor's degree
F8	31-40	Malay	Married	Bachelor's degree
F9	21-30	Malay	Single	Bachelor's degree
F10	21-30	Malay	Single	Bachelor's degree
F11	21-30	Malay	Single	Bachelor's degree
F12	21-30	Malay	Single	Bachelor's degree
F13	21-30	Malay	Married	Bachelor's degree
F14	21-30	Malay	Single	Bachelor's degree
F15	21-30	Chinese	Single	Bachelor's degree

Theme 1: Working experience under female leadership

From the first sub-theme, more than 80% (n=12) of the respondents have expressed their difficulty working with female leader. First, it was found that female leaders always had high expectation on them yet with limited guidance provided. Hence, female leaders could easily get frustration if the subordinates could not meet their high expectation. Furthermore, most of the female leaders were inconsiderate, they would expect the subordinates to work for 24 hours per day and 7 days per week. The respondents expressed that their female leaders always contacted them on weekends or public holidays for work which they found their personal life has been disrupted. Additionally, all respondents (n=20) agreed that female leaders were more emotional than male leaders. Female leaders could easily bring their negative emotions or feelings to work especially when they faced some personal problems.

However, there was a respondent who had a contradictory point of view - support female leader as more superior than male. Although female leaders were much stricter and fussier compared to male leaders but these characteristics could push subordinates to be more productive and efficient at work. Thus, female leaders are more powerful to lead them to be success.

Theme 2: Perception towards male leadership

All respondents (n = 15) expressed very positive perceptions towards male leadership based on their past experiences. They stated that male leaders are more lenient, open, and friendly. Male leaders were more considerate and willing to listen to the subordinates' problems, opinions, and suggestions. Most of them focus on results and individual performance, fostering an environment where subordinates were encouraged to take initiative and work independently. Furthermore, male leaders often adopted a straightforward communication style, which could lead to clear expectations and less ambiguity in tasks and responsibilities. Male leaders might project a strong sense of confidence and authority, which could be reassuring for teams that thrived under firm direction and structure.

Theme 3: Workload gap between women and men

Visitation to solar power plant is important to know about how solar energy can benefit homes or businesses. Thus, the visit are a crucial part of any solar project, as they help to ensure not only a smooth installation, and long -term effectiveness of the system. It is an in - person inspection of a proposed location for a solar project completed by a solar professional, usually the project engineer. Under renewable solar energy industry, the workload gap between women and men is different.

All respondents (n =15) also agreed that male engineers are more likely to be assigned to work for site visit, compared to female engineer. Some site visits, especially for solar panel installation, required physical endurance, require physical endurance, such as walking long distances, climbing scaffolding, or working in rough terrain. Hence, the company perceived male engineers as better suited for physically demanding tasks. On the other hands, female engineers were assigned to handle administration tasks such as budgeting the cost of solar panel installation, planning for solar panel installation, and dealing with the customers regarding the installation and maintenance of solar panel. Thus, the overall workload between male and female engineers was equally distributed in the company.

Theme 4: Growth opportunities in term of promotion, reward, and site visit

Women make up only 22% of workforce in the energy sector and 32% in the renewable energy sector. Despite the gender gap, women are still able to grab more opportunities in term of promotion, reward, and site visit in the energy field. Around 80% (n= 12) of respondents disagreed that women get fewer opportunities in term of promotion, reward, and etc than man. They found that their leaders in the company were fair in evaluating their work performance regardless their gender. Everyone deserved equal opportunities for promotion and rewards. However, there were three respondents who expressed their dissatisfaction on their career advancement in the company. One of them explained from her own perspective that female staff had less chances to be promoted due to their marital status and pregnancy and another two respondents thought that female staff were hardly to be promoted in the technical department because most of the tasks were dominated by male staff.

Table 2: Themes identified through interviews with female employee

Theme	Quotations	Interviewees
Working Experience Under Female Leadership	"My female leader is stricter. They always set higher expectation and tight schedule to follow."	[F1, F4]
	"My female leader would like to call me at night, after working hours."	[F1]
	"My female leader is emotional. She will lose her temper in front of us due to her personal matters."	[F2, F5, F10]
	"My female leaders always asked in detail with coaching, sometimes we need to find our own solutions."	[F6, F7, F8]
	"Women is more outspoken than a man. Differences are in terms of skill of managing people and how they interpret the information to their team. Thus, my female leader is more powerful to lead us to be success".	[F12]
Perception Towards Male Leadership	"Male leaders are more lenient, open and friendly. They are willing to teach me step by step."	[F6, F7, F8]

	"Male leaders are always strict to the point, without complain. They are not emotional, compared to female leader."	[F4, F10]
	"Male leaders are willing to listen to us and discuss, if needed."	[F3]
	"Male leader is easier to deal with, for as long as you can complete your task on time."	[F6]
	"Male are rational, compared to female."	[F15]
Workload Gap Between Women and Men	"Most of the male engineers are assigned with heavier duty than female engineers."	[F12]
	"Although the female engineers' tasks are more towards handling administration task, the overall workload between female engineers and the male engineers, is equal."	[F10]
Growth opportunities in term of promotion, reward, and site visit	"Our leader is fair enough, either women or men. They will give higher position based on their contribution and skill provided, not judge based on gender. We get the equal opportunities in terms of reward and promotion."	[F1, F11, F14]
	"Our company recruited more female worker than male worker. So, we get the equal treatment regardless of the gender."	[F2, F3]
	"Our position in company is based on our qualification, not based on gender."	[F7, F15]
	"Although women did not contribute directly for the success of projects as they primarily handle administrative tasks in the projects' preliminary stage, their effect of work cannot be ignored."	[F8, F10]
	"I have less site visit opportunity and need to take up a lot of admin tasks, compared to male colleagues; even though I am an engineer."	[F4]
	"Women will get fewer opportunity than man because female staff will marry and pregnant, it will distort the production process, especially under renewable energy sector."	[F6]
	"It is depending on task given. Most of the technical related tasks are dominated by man. So, women don't have / have less opportunity to go for higher position."	[F9]

Discussions

Generally, results of the study are three-fold. First of all, female employees do not prefer to work under the females' leadership because to them, these leaders are demanding, emotional and strict, compared to the male counterpart who are perceived to be lenient, open, friendly, rational, flexible, less emotional, straight-to-the point and thus, easy to deal with. The result is in line with those of Lee-Badgett and Folbre (2003) as well as Klavenes et al. (2020). It is, however, in sharp contrast to those of Perilleux and Szafarz (2022) as well as Mayer et al. (2009). The inconsistency could be explained by the failure of the interviewees to experience and discuss on their female leaders' positive characteristics like encouraging and motivating employees, as discussed by the authors, based on the role modelling theory as well as trickle-down theory.

It is also found that, in the Malaysian renewable energy sector, there is an equal workload between male and female, though the former is assigned with tasks that are more exhausting, in nature, such as site visitation and others alike; while the latter is assigned with administrative tasks that are less exhausting. The result totally supports the findings of Tannen (1997) as well as Evans and Diekmann (2009). On one hand, the authors documented those women in positions of responsibility, are more likely than men to possess traits like sensitivity, empathy, authenticity and persistence (Tannen, 1997), which are crucial to the

completion of administrative task. For instance, an accountant of a company must be sensitive and persistent in checking as well as in auditing accounts, which tend to involve ample number of figures and sets of figures. On the other hand, men are identified with features of instrumentality (attributes for tasks), such as independence, power or control, and ambition (Evans and Diekmann, 2009), all of which are inevitable during a site visitation on a project.

Furthermore, the study reveals a mixed result on the opportunity given to female, for promotion, reward and site visit. On one hand, it is found that both male and female are given an equal treatment as judgement made, by superior, is based on the employees' ability but not their gender – there is no difference between gender on promotion (Echabe, 2010; rather, it is based on social, work and professional role (Ferreira, 2017). However, it is also found that female tend to have less opportunity for higher position due to pregnancy, lower level of education and others – females tend to be gender discriminated (Merma-Molina et al., 2019; and Spence, 1993).

5. Conclusion

In view of the importance of gender equality to the United Nations' sustainable development goals and Malaysia's Madani concept this study aims to analyse the gender inequality issue from the perspective of difference between working under male and female leadership; as well as in the aspect of revealing the issue in the context of Malaysian renewable energy sector. The results, based on a qualitative approach (interview and focus group discussion), reveal that (1) female employees prefer to work under the male's leadership; (2) Workload given to male and female is, in general, equal; and (3) there is a mixed finding on opportunity given to female for promotion, reward and site visitation.

These findings have a few managerial suggestions. First, given the finding that the Malaysian renewable energy sector employees prefer to work under male leadership, the female leaders may consider to adopt transformational leadership characterized by lenient, open, friendly, rational, flexible, less emotion, and straight-to-the point. All these characteristics are well matched with the transformational leadership style - leaders inspire and motivate subordinates to achieve a collective goal, promote individual growth and development, and facilitate positive transformation within an organisation (Karakitapoğlu-Aygün et al., 2024). Secondly, companies may actively challenge stereotypes and unconscious biases that may cause employees to favour male leaders over female leaders. Promotions could be meritocratic, ensuring that leadership positions are conferred based on performance, contributions, and competencies, rather than gender. Additionally, companies may consider offering awareness programs and training on the importance of effective leadership rather than gender-based leadership preferences. By promoting leadership effectiveness over gender preference, companies can nurture a diverse, fair, and inclusive workplace where the best leaders regardless their gender, who are given chances to excel. On the other hand, these findings could serve as an insight not only for the Malaysian policy maker, in tackling the gender inequality issue but also extend the literature by looking at the issue in the context of the Malaysian renewable energy sector. It is believed that to Malaysia, a developing country, gender equality plays an important role in the renewable energy industry which advocates efficiency and sustainability, for a sustainable development.

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