

Understanding the Women Leaders Perspective for Green Technology Innovation and Sustainable Development in Construction

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ABSTRACT



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Abstract. In recent years, construction industry has been undergoing a shift towards sustainability and green technology innovation as both are an important aspect that focus on the goals of reducing environment issues. As key-decision makers that influence others in the field of construction, women leaders play a pivotal role to put their perspective to shape the industry's sustainable future. This study aims to understand the unique perspectives and contributions of women leaders towards the green technology innovation and sustainable development in construction sector. The method of this study used a qualitative interviews and literature analysis to gather insights and experiences from women leaders that placed in several positions in construction including architects and engineers. The findings of this study are anticipated to not only contributes to a better understanding of the critical role played by women leaders in advancing green technology innovation but also to empower women leaders to drive green innovation and sustainability in construction and overcome gender related barriers.

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A. INTRODUCTION

The interest of academics and practitioners in human resources and organizational initiatives towards women's career equality has become a major issue in the last decade (Joshi et al., 2015). The reasons for increasing growth in women's equality are complex and vary across organizations, industries and countries, also including social justice, equal employment opportunity and economic goals (Kossek & Buzzanell, 2018). Leadership is one of the many topics being researched, but on the other hand, much of the literature still ignores research related to women's leadership (Bilal et al., 2021)

A number of studies show that women tend to build quality relationships with their employees so that employees can show innovative behavior without fear (Khalili et al., 2016). Women appear to be less likely to tolerate unethical practices which can explain why women seem to be more sensitive to issues related to social and nature because these issues can have moral and/or ethical considerations (Kennedy & Kray, 2013). For example, women show higher concern for the natural environment than men, while engaging in environmental behavior more often than men (Li, Wang & Sechang, 2022). According to research, the representation of female leaders on the board indirectly makes a positive contribution to company performance by increasing CSR, especially in the environmental domains, community involvement and employee relations (Liu, Y., Lei, L. and Buttner, E.H., 2020). Based on a research study from a World Bank Company survey from 16 countries, it was found that companies that have a combination of female owners or who hold executive positions are more likely to show a breadth of innovation that positively impacts company productivity and performance (Azeem et al., 2022).

The construction industry has made considerable contributions to the economy both directly and indirectly through its multiplier effects (X. Xu et al., 2019). The construction industry, which is a significant source of carbon emissions, has negative effects on the built environment, society, and the economy (Chen et al., 2021a; Lima et al., 2021). Several things are important reasons for the construction industry to promote innovation, especially green technology innovation, because of the need for environmental resilience, economic benefits, environmental investment, and social responsibility (Li, L. et al., 2022). This green innovation will help reduce environmental pressures such as climate change and create economic opportunities without compromising the ability of natural assets to provide resources for future generations and overcome the barrier of high development costs for environmentally friendly products (Song, et.al., 2023). This also related to the increasing awareness to sustainable development on a global scale due to the major environmental issues brought on by energy consumption and ecological contamination (Wu et al., 2022). Green buildings have attracted considerable attention since the concept of sustainability was introduced to the construction industry (X. Xu et al., 2019).

The construction sector is considered a male-dominated industry due to its complexity, stress on projects, and lack of safety and risk (Khan et al., 2020). There is a need in the construction management literature to draw management's attention to developing authentic leadership especially among women who have been active in managerial positions in construction companies in recent years (Lutfaller, 2019). Even though research related to leadership has been conducted widely, there is still little empirical research and models to validate the role of women's leadership in encouraging trust and connectedness between employees which leads to employee innovation behavior (Girdauskiene, 2015). In order to fill this research gap, this study will attempts to investigate the perspective from a woman leader in construction company and organization on how they perceive the ongoing issue about sustainable development and green innovation technology nowadays.

B. LITERATURE REVIEW

Leadership Theory

There are four similarities among many definitions of leadership, namely leadership is a process between leaders and followers, leadership involves social influence, leadership occurs at various levels in an organization (at the individual level, for example). For example, leadership involves mentoring, coaching, inspiration, and motivation; leaders also build teams, generate cohesion, and resolve conflict at the group level; finally, leaders build culture and generate change at the organizational level), and leadership focuses on achieving goals (Northouse, 2007).

Bass (2008) said that although leadership and management overlap, each requires a unique set of activities or functions. In general, managers typically perform functions related to planning, investigating, organizing, and controlling, and leaders handle the interpersonal aspects of a manager's job.

Stogdill (1948) and Mann (1959) attempted to summarize the impact of traits on leadership. Based on his review, Stogdill concluded that the five traits that tend to differentiate leaders from average followers are intelligence, dominance, self-confidence, level of energy and activity, and task-relevant knowledge.

Although gender differences in transformational leadership have been frequently researched (Eagly, Johannesen-Schmidt, & van Engen, 2003), our findings suggest that this research has not expanded to integrate additional leadership theories. As shown by a meta-analysis comparing female and male managers (Eagly et al., 2003), women outperform men on the overall transformational leadership and contingent reward aspects of transactional leadership, especially on the individualized consideration subscale, which requires behavioral Mentoring is supporting others.

Social Role Theory

Social role theory explains the influence of gender stereotypes on people's behavior. It argues that gender stereotypes not only describe how men and women should be – descriptive roles – but also influence social expectations of gender roles, thereby determining how men and women are expected to act in each situation-normative role/perspective (Eagly & Wood, 1987). This theory predicts that women will generally act more communally and less instrumentally than men in the same context, that these differences will be greater when gender is highly salient in the situation, and that gender differences will be weak or nonexistent. when society imposes formal rules and national role institutions (Ridgeway, 2001).

In post-industrial societies, men are more likely than women to find employment, especially in positions of authority, and women are more likely than men to fill caregiving roles at home and in the workplace (Eagly & Wood, 2012) . Men and women are distributed differently in social roles due to evolved physical sex differences in humans in which men are bigger, faster, and have greater upper body strength, and women bear and raise children. Sex-based roles arise from the interaction between sex differences represented by the physical attributes and behaviors associated with each sex, especially women in giving birth and breastfeeding babies and men in terms of greater upper body size, speed, and strength. , as well as variable factors represented by social, economic, technological and ecological forces that exist in a society (Eagly & Wood, 2016).

Parsons and Bales (1955) have provided an explicit analysis of the roles of women and men. These theorists describe the division of labor between husband and wife as specializing men in task-oriented (or instrumental) behavior and women in socio-emotional (or expressive) behavior. The joint researchers observed that in mixed-sex groups, men, more than women, specialized in instrumental behaviors related to task completion, and women, more than men, in socio-emotional behaviors related to maintenance groups and other specific social problems (Strodbeck and Mann, 1956). Men, more than women, are considered agentic – that is, expert, assertive, competitive, and dominant. Women, more than men, are considered communal – that is, friendly, unselfish, caring about others, and emotionally expressive. These qualities are

similar to the qualities that Parsons and Bales (1955) called instrumental and expressive (or task-oriented and socioemotional).

Women who enter male-dominated roles face a cultural mismatch between society's beliefs about what it takes to excel in those roles and stereotypes about women's attributes (e.g., Eagly and Karau, 2002). As a result, even highly qualified women may be judged to lack the attributes necessary for success. However, this belief is not inevitable. When women take on non-traditional roles, society may develop new beliefs about women's attributes, given that these beliefs partly reflect role performance. The dramatic changes that have occurred in women's roles in recent decades reflect a loosening of biosocial barriers through sharp declines in birth and breastfeeding rates combined with a shift toward work structures that favor brain over brawn. Therefore, finding convergence in male and female attributes reflects women's experiences of masculinization. Women report increasing importance on job attributes such as freedom, challenge, leadership, prestige, and power, thus becoming more similar to men (Konrad et al., 2000).

Ecofeminism Theory

Ecofeminism, like the social movement that gave rise to it, is both political activism and intellectual criticism (Buckingham, 2015). Ecofeminism argues that female domination and environmental degradation are consequences of patriarchy and capitalism. One of the main tenets of early ecofeminist thought was that the oppression of women under patriarchy was inextricably linked to the oppression and domination of nature under capitalist, colonial, and modernist forces, including the forces of Development and Science. The field has developed through an intersectional lens that considers the relationships between gender, race, class, nationality, animals, and ecology. The term 'ecofeminism' was coined in 1974 by French feminist Françoise d'Eaubonne (1974) to draw attention to the potential of women in bringing about an ecological revolution.

Developed in the early 1970s, cultural feminism reclaimed the woman-nature relationship as a liberating and empowering expression for women in caring for nature. Some cultural economists argue that women's reproductive capacity provides a biological bond with nature, making women 'closer to nature' than men. Other cultural ecofeminists argue that women's 'closeness to nature' is embedded in deep social and psychological structures, so that women's ways of thinking and moral reasoning are better suited to solving environmental problems.

Animalization or naturalization of women in a patriarchal culture where animals are seen as inferior to humans (men) thereby strengthening and giving authority to women's inferior status (Warren, 2001). Likewise, language that feminizes nature in patriarchal cultures where women are seen as subordinate or inferior reinforces and authorizes the domination of nature. Yet all cultural ecofeminists agree that women have a special and useful relationship with the physical world (body, nature) that can help end the unjust domination of women and nature. In contrast, women's identities are socially constructed, historically shaped, and materially reinforced through the interaction of racial-ethnic diversity, class, sexual orientation, age, ability, marital status, and geographical factors ('social constructivism'). Although contemporary feminism has made progress in showing the interrelationships between various forms of human oppression (e.g., sexism, racism, classism, heterosexism, ageism, ableism, ethnocentrism), all ecofeminist activists insist that feminist analysis expand to show how unjustified domination over non-human traits (or 'naturism') are associated with sexism and other human 'dominationisms' (Warren, 2001).

This approach seeks to overturn the Enlightenment/Cartesian hierarchy that privileges 'masculine' abstract rationality, which is seen as justifying the exploitation of anything weaker than itself (colonial subjects, men without property, children, and women and nature). Therefore, early ecofeminists promoted 'feminine' principles of care and cooperation (Buckingham, 2015). Proponents of this approach (such as Mary Daly, Andree Collard, and Charlene Spretnak) argue that female biology ties women closer to nature, especially when they are menstruating, conceiving, giving birth, and nursing children. This, according to cultural ecofeminists, allows women to make more sensitive decisions regarding humanity's relationship with nature.

Although the call for “sustainable development” (which is a direct challenge to the linear, modernist, economic growth-based development project paradigm) comes from grassroots circles in various corners of the world, this call is also accompanied by echoes from various parties. feminist, environmental and development experts who note the impact of development on public health and the environment (Nirmal, 2020).

Women Leadership and Organization Innovation

Leadership style, both directly and indirectly, influences organizational innovation. Leadership styles that directly influence organizational innovation include entrepreneurial, strategic and integrative leadership. Meanwhile, leadership styles that indirectly influence organizational innovation are authentic, ethical, altruistic and spiritual leadership. Leadership styles, such as transaction and transformation, influence organizational innovation both directly and indirectly (Conteras et al., 2022). Leadership itself can influence organizational climate, organizational learning, knowledge sharing and employee innovation behavior (Alblooshi et al., 2020) as well as influencing organizational practices (Jie et al., 2018).

The transformational leadership style influences innovation indirectly by improving the organizational climate and indirectly by promoting innovative work behavior from the organization's employees. At lower levels in the organization, this style is a style that has a significant impact on organizational innovation, especially through exploitative innovation activities (Alblooshi et al., 2020).

Innovative leadership is defined as the process of making changes that are relevant to solving various problems and benefiting others (Contreras, Espinosa, & Dornberger, 2022). Organizational innovation requires leadership that can encourage organizational learning, enable employee participation in decision-making processes, promote team collaboration, provide support and resources for innovation, and create an organizational climate for innovation that can accept change and risk. In this view, a leader must be able to be oriented towards various innovations in the organization and must be able to provide new ideas into tangible assets (Alblooshi et al., 2020).

Studies on gender diversity show that the drive for innovation comes from women's social characteristics, which are different from men's. Women are generally more empathetic and relationship and collaboration oriented, while men are more assertive and voice oriented (Greene et al., 2003; Tang et al., 2021; Tharenou, 2001). Female directors can have a better influence on company decisions, thereby leading to increased company performance (Khandelwal et al., 2023; Pandey et al., 2022). From this perspective, female directors can influence corporate decisions by investing in innovative projects. Additionally, women may have non-traditional backgrounds and possess a high level of knowledge, qualifications and expertise associated with business groups (Pandey et al., 2022; Daily and Dalton, 2003; Hillman et al., 2002). Therefore, it tends to increase a company's innovation and creativity (Hillman et al., 2002; Daily and Dalton, 2003). Women can also enhance discussions within boards by integrating more varied opinions into complex issues and strategic decisions (Daily and Dalton, 2003).

Green Technology Innovation

Braun and Wield (1994) were the first to introduce the idea of green innovation technologies, defined as technologies and processes that improve environmental quality and reduce the use of raw materials. In contrast to traditional construction, environmentally friendly buildings have high technical requirements and emphasize specificity. In contrast to traditional construction, environmentally friendly buildings have high technical requirements and emphasize specificity. Therefore, to overcome obstacles and improve the production efficiency of the construction industry, GBT innovation is highly valued (R Zhang et al 2023).

Green innovation, or green technological innovation, aims to increase environmental benefits such as competitive advantage (Lin and Chen, 2017) and emphasizes pollution control and prevention, energy saving (Alam, 2023), waste reduction and recycling (Saetta and Caldarelli, 2023), and designing products in an environmentally friendly manner (Cheng and Yu, 2023), to name a few. Green technology innovation is advanced technology that can improve product cost performance without increasing environmental pollution (Wang et al., 2021b). Green technology aims to reduce negative impacts on the environment and encourage the use of renewable resources and economic development (L. Ni et al). From the perspective of

innovation economics, GBT innovation can improve economic performance by optimizing element allocation efficiency, reducing production costs, expanding scale, increasing market share, and benefiting from environmentally friendly technology patent licensing (Andersen, 2021; Ma et al., 2021).

Therefore, there is an important need for environmentally friendly innovation to ensure sustainable development, economic growth and competitiveness (L. Ni et al). Although green innovation provides long-term benefits to industry and is the foundation of competitive advantage and productivity, some researchers believe that green innovation is often expensive, which is why many organizations avoid it. Therefore, countries and organizations around the world must create, pass, and ensure the implementation of environmental laws, policies, and regulations for green innovation (L. Ni et al). The study by Hsu et al. (2021) and Li et al. (2022) mention the relevance of environmental regulations and policies as a driver of green innovation, when companies respond to pressure from regulatory authorities by lowering costs. In the market environment, traditional non-clean technological innovation has the advantage of profitability, and it is difficult to realize environmentally friendly technological innovation solely through market mechanisms; therefore, the role of government is very important (Borghesi et al., 2015; Lo et al., 2012; Mazhar and Elgin, 2013).

Sustainable Development

Considering the impact of the construction industry on the environment, society and the economy, many researchers have begun to explore the role of the construction industry in realizing the SDGs since the publication of the 2030 sustainable development agenda in 2015. (Opoku et al., 2022). Although sustainability has attracted attention in the construction industry for many years, academic literature exploring the industry's role in supporting the realization of the SDGs is attracting increasing attention (Opoku et al., 2022). Sustainable environmental costs depend on when the building must be demolished, because the waste from demolished buildings has a direct impact on the environment (Sharma, 2022). Sustainable buildings constructed using environmentally friendly and recycled materials will increase the overall environmental impact and positively improve human health during construction (Desai & Bhemrao, 2022). In addition, contractors' adoption of GC strategies (e.g. smart construction, building industrialization, lean construction, etc.) contributes to human-machine interaction, minimizing pollution generated during the construction process, increasing the use of recyclable materials, and achieving sustainability environment. (Opoku et al., 2022). Sustainable building materials should be used properly and perfectly in every development sector in order to achieve more sustainable development. (Sharma, 2022).

Corporate Boards and Gender Diversity

Several studies have found that the integration of women into leadership ranks improves a number of equity-related organizational matrices, including reducing segregation, increasing pay equity and increasing career mobility for women (Cooks & Glass, 2017). In some contexts, diversity groups outperform all-male groups, especially when group members are in frequent contact and must collaborate on common goals (Knippenberg et al., 2010; Zhang & Hou, 2012). Research specific to corporate boards finds that gender diverse boards tend to be more transparent, more effective in communication practices, and more readily pursue innovation (Bear et al., 2010; Brown et al., 2002; Torchia et al., 2011).

Gender and Innovation

The literature on gender and innovation has increased in recent years (Arun et al., 2020), but this research has mostly focused on developed countries, and there are still significant differences between them (Bednar et al., 2019). In terms of the influence of gender on innovation, current research largely follows the feminist empirical tradition (Foss and Henry, 2016). Kalleberg and Leicht (1991) conducted early research that found no evidence to support the widespread assumption that women are more likely to innovate than men. DeTienne and Chandler (2007) and Sonfield et al. (2001) found that when human capital was constant, there was no difference in innovation between female and male business owners. According to the broader literature on women's labor market outcomes, gender congruence between individuals at different levels of a firm's structure is critical for women's advancement (Bednar and Gicheva, 2014; Kurtulus and Tomaskovic-Devey, 2012).

Leadership style influences innovation, according to research (Makri & Scandura, 2010; Rosing, Frese, & Bosch, 2011). Because a leadership style that is more common among female managers positively influences innovation, female representation on management teams may influence innovation. In most cases, female managers have a more inclusive, less hierarchical, and more involved leadership style (Eagly & Carli, 2003; Eagly & Johnson, 1990; Fitzsimmons & Callan, 2016). Their male counterparts tend to emphasize goal setting, while they tend to encourage participation and interaction, solicit input, and keep communication channels open. By building trust that encourages the exchange of knowledge, concepts, and information, this behavior drives innovation (Lyngsie & Foss, 2017).

Women can benefit from being innovative. Innovation often requires breaking away from tried-and-true and venturing into the unknown. Therefore, learning-oriented network strategies (Krishnan & Park, 2005) and heterogeneous network ties can support innovation (Ibarra, 1993). In addition, women participate actively in alliance and organizational activities to compensate for their still limited access to power (Kanter, 1977). In a management context, this allows women managers to draw and draw conclusions from a variety of resources and experiences, such as navigating informal organizational structures and processes that can help them avoid bureaucratic barriers to innovation.

C. RESEARCH METHOD

Qualitative data can highlight the realism occurring in the social environment, according to Van Manen (1977). Its ability to express well-defined data based on actual phenomena is one of its many qualities, along with its vast value and holism, which leaves a lasting impression on the reader. In general, qualitative data are the most effective means of explaining life events, behaviors, and systems. It establishes a link between the social reality and the meaning of perceptions, assumptions, prejudices, and presuppositions (Miles and Huberman, 1994). This qualitative study has a sample size that is manageable for data collection and processing. Its goal is not to depict or generalize the findings, as is the case with any qualitative study (Miles and Huberman, 1994). In this way, qualitative research will lead researchers to explore the concepts of justice, beauty, love, beauty, frustration, hope, and trust that are understood by respondents, behavior, and tools used in life as cultural beings (Salim and Syahrudin, 2012).

Participants of the Research

The identifies participants for this research were the middle management until top management women of the construction field company for at least 5 years. This criteria was selected under the presumption that they have experienced leadership development and they will continue to be a future leadership in the construction field. There were 6 women leaders from six company that participated in this research. Two participant were General Managers, one participant were head of section, one participant were the lead architect, one participant were the madya architect and one participant were the owner. The participants of this research came from different background. All of the participants have served at the construction field at the range of 5 years – 20 years.

Data Collection Methods

This research acquire a semi structure, in-depth interview to allow more flexibility in participant responses while maintaining a structures questioning approach (Patton, 2002). The study's dependability was increased by giving each participant the identical questions in the same order. This approach's structure reduced interviewer skill fluctuations and other interviewer effects, improving the study. Additionally, the secondary material was acquired from the internet, printed media, company records, journals, and books. Purposive sampling (homogenous sample) or interviews with identified participants were carried out with the following goals in mind: (1) to evaluate the gender balance in the management of the chosen companies and how they retain and develop their female employees to be future leaders; (2) to confirm preexisting assumptions based on theories; and (3) to identify new findings.

D. RESULT AND DISCUSSION

The following four core themes were identified, after conducting steps of analyzing phenomenological data: (1) The Role of Women in Construction Industry, (2) Gender Equality, (3) Women Leaders' Approach towards Innovation and Sustainable Development

The Role of Women in Construction Industry

Participant in this research described their experience towards different kinds of aspects of their careers. They explained what kind of job and role they have been going throughout their entire journey as a women in this career field. Through these in-depth conversations, a diverse range of experiences has emerged, illustrating the various roles women undertake, from project management to hands-on trades. Participants expressed a profound sense of accomplishment in challenging gender norms and excelling in their roles, underscoring the transformative impact of breaking through traditional barriers. However, these interviews also shed light on persistent challenges, including prevalent gender biases, stereotyping, and limited opportunities for career progression.

From the interviews that were conducted, most of the interviewees revealed that the scope of work they carried out varied as the time and duration of their career in the construction sector increased. The following are several statements that are relevant to the opinion.

"I've been at this company for about ten years. I started planning, then construction, then operational ICE. Well, after that, because there were operations, I was temporarily put aside as an architect. Well, then I became section head."

"So I've been at this company for 20 years, but in the construction sector, it's been 30 years. So, moving to here, I have been in construction for 20 years and have been general manager since 2009. But the work environment is all related to design such as design, quality control, interior, architecture, well here are all kinds of special designs."

Not only the role of women in companies but also the role of women as housewives is also a responsibility that cannot be avoided, especially if you are married and have a family. The responsibilities associated with homemaking, though traditionally gendered, are instrumental in maintaining a stable and nurturing environment for the family. Balancing professional endeavors and homemaking can pose challenges, and societal expectations often place additional pressures on women.

"Women have the same things to be take care of; family, and that shouldn't be an excuse for failure, right? That's your main job, if you do the job correctly, then take a side job. So don't let your job be abandoned, keep taking side jobs, that's wrong."

"Women who have values are not only those who are successful on the outside, but also those who don't make things chaotic inside their households, of course."

This shows that as a woman, especially a mother, her role in the household is as important as her responsibilities in the company. In a patriarchal culture where women are considered to have the nature to take care of the house and children, this task cannot be given up simply because it is one of the success factors for family unity. Therefore, several female leaders, including the sources in this research, think that this is one of the challenges for women where they must be seen to be successful inside and outside, even though on the one hand it can be seen that women play an important role in social life.

Gender Equality

Participants of this research shared their experiences while working in the construction industry that is known dominated mostly by men, highlighting both strides made and persistent challenges faced in the pursuit of gender equality. Participants shared narratives of positive shifts, pointing to the impact of workplace policies that actively support diversity and inclusivity. This emphasized on leadership that designed to empower women in every workplace since this could only happened if the leader give more recognition and space for women to grow. However, the interviews also illuminated ongoing obstacles, such as subtle biases, microaggressions, and the glass ceiling effect, which hinders women's progression into higher-ranking positions. Personal stories underscored the significance of cultural shifts within organizations, emphasizing the need for a collective commitment to dismantling gender norms and fostering a

more inclusive atmosphere. Additionally, the research revealed the intersectionality of gender equality, recognizing the unique challenges faced by women of different backgrounds.

"Women are considered second class in the world of construction, considered illogical and less capable"

"I really don't really like it when people say, "Oh, girls are complicated," and there's definitely talk like that."

From the statements above, there are several views that are still attached to women, namely their lack of ability to think logically and technically, being impractical and still being carried away by feelings and emotions. This stereotype attached to women cannot be denied still exists and continues to circulate in wider society, however, as mentioned by the interviewees, their respective companies now provide an inclusive work environment.

"How to create a comfortable working atmosphere for women, how to be supported, backed up, for example like yesterday I was on leave, that's from a material perspective, but beyond that, how can they be really comfortable discussion partners. How do they make women more comfortable working, because if they are comfortable they will be more comfortable working. If he performs well, he can continue to advance in his career."

"Yes, he is always invited to one, then he is given jobs from light to heavy, first he tries it, if he is able then he can take it to another level. So give me a chance too."

As can be seen from the statement made, even though the stigma against women is still strong, there are still companies that strive for a comprehensively inclusive work environment. Things such as being involved in discussions or decision making as well as giving responsibilities according to each individual's portion and abilities are small steps that can be taken to give respect to women and provide opportunities and space for women to grow.

It is known that an inclusive work environment will have a positive influence, especially on female employees in the construction sector which is dominated by men because there is often a lack of appreciation and opportunities given to women.

"Employee retention could be earlier if, for example, the leaders cared more. Well, for example, men might be more indifferent, it could be that their personal things just pass by like that. The comfort, happiness and welfare of employees will make the company more profitable. Because the work is more productive, more effective, more sincere. "There are different results between people who work sincerely and those who are lazy."

Employee welfare is also one of the concerns of female leaders because they believe that if the employees who work for them can be treated equally, fairly, and have their needs taken into account as well as providing benefits that take into account the condition of their employees as experienced by the fourth resource person who was given permission to bring child after birth, this is a form of care that is not widely implemented by other companies, especially those with a larger number of male employees.

Women Leaders' Approach towards Innovation and Sustainable Development

Participants of this research described their experience about their approach to green technology innovation and sustainable development in their workplace. The speakers who are leaders in their companies explained the environmental issues that are currently occurring and their perspectives and approaches to minimizing the impact of damage to the environment through building buildings that pay attention to the design and materials used.

Women have greater sensitivity to the circumstances and environment around them, including current issues. In the construction sector, the resource person, who is actually a female leader, shared her experience of going through something similar.

"In the world of construction itself, yes, yes. I mean, women are more aware of things like that. In my opinion, in the world of planning, yes. Maybe I've only just observed a few people, there's no difference between men and women. "So I see more and more in the planning department, our architects, they are more concerned about green."

"Yes, for example, my female friends also think more like, "Can this make biopores? Can it make waste."

In these two statements, it can be seen that female leaders together with other female colleagues in the planning division are more dedicated to initiating and implementing building designs that significantly lead to green building principles or environmentally friendly sustainable

buildings. Apart from that, female leaders also have more concerns about some materials and processes which still result in energy inefficiency. The following are several statements expressed by sources regarding energy inefficiency in environmentally friendly practices.

"Unfortunately there are still some materials used that do not support the environment due to several factors. For example, the indiscriminate use of wood will destroy young trees that have not yet been cut down."

"Because in fact I saw for myself, okay, the government is giving it as if it were counseling, we have to use this product like that, right, and government projects have also specified that this product is low carbon, but in reality in the field, no, it turns out it's still not yet mandatory. "So perhaps the regulatory controls and punishment rewards must be tightened."

From the statements of the interviewees it can be seen that they have concerns about the processes and systems that occur in environmentally friendly practices where there are still energy inefficiencies in several aspects such as in accommodation and the process of obtaining the required materials. In adapting Green Innovation Technology and carrying out sustainable development is presented with knowledge of the use of materials and comprehensive and detailed design planning, ranging from simple ones which can be done in any non-commercial building to some complex ones which are usually used for commercial buildings.

"Well, regarding green building construction, this is what I also asked the glass vendor. Indeed, green building is closely related to architectural finishing, architectural finishing that is exposed to a certain percentage of the sun. Do you want it to be open or seem massive, or transparent, or heavy, or light. That's the expression of the building. So there are many types of glass that we have to choose wisely."

"Green technology mainly uses natural wood and environmentally friendly finishing materials such as saving on the use of solid wood with more environmentally friendly substitute materials (plywood, HMR, MDF, particle board)."

Companies often carry out several activities to promote environmentally friendly concepts, this is to instill good habits in their employees.

"Finally we have a green habit. For ourselves, we are encouraged and introduced to the term green habit. Electricity, electricity. AC, if you don't use it, the electricity is turned off. "Because if it's still plugged in and it's still on, it's still a waste of five percent energy."

"Well, for mechanical electrical paming like that, later it will be like used water, it will be stored, used again, there will be processing; "The waste itself becomes clear water but is not suitable for use, so it can be used to water plants, to flush toilets."

From this statement, the resource person who is a female leader plays an important role in implementing 'green' or environmentally friendly habits in the surrounding environment. They actively encourage sustainable practices such as managing electricity by deactivating unnecessary electronic equipment and integrating the concept of green habits in daily life. The statement given also highlighted the leadership role of women in managing technical aspects such as recycling used water so that it can be reused in daily activities which shows sensitivity to efficient waste and resource management.

E. CONCLUSION

This research aims to determine the perspective of women leaders in Green Technology Innovation and Sustainable Development practices in the building construction sector. Furthermore, this research has two research questions, namely how gender equality is implemented in the building construction sector and what is the role of women leaders in Green Innovation Technology and Sustainable Development in the building construction sector. This study uses a qualitative approach with thematic methods. The data in this research was collected through in-depth interviews with 6 sources who were women who held positions from middle manager to top manager in companies in the building construction sector with a minimum of more than 5 years of work experience.

The first finding has the theme "The Role of Women in the Construction Sector" providing an illustration of the wide range of responsibilities that female leaders have. Not only have they succeeded in achieving a position as a leader in the company where they work, but

they are also able to balance their roles in the professional world and the home environment. In the face of patriarchal culture, women leaders are able to prove that they can involve themselves in all walks of life, leading with superior technical abilities and leadership wisdom that brings positive impacts.

The second finding has the theme "Gender Equality" which describes a positive change in paradigm in the construction sector. Stereotypes that have negative and detrimental connotations towards women are gradually diminishing, creating a more inclusive work environment than in previous centuries. Female leaders are initiators in creating fair working conditions and ensuring the welfare of employees, especially female employees, who sometimes require more attention because of their biological conditions. By promoting gender equality, the construction sector becomes a place that supports growth and development of capabilities regardless of gender.

The third finding has the theme "Women's Attitudes towards Innovation and Sustainable Development" which illustrates that female leaders in the building construction sector not only act as professionals but also care about environmental issues. With in-depth technical knowledge, they can design innovative solutions that include aesthetic, functional, cost-effective and sustainable aspects. Women leaders also engage in environmentally friendly practices implemented in daily activities, further demonstrating their commitment to a sustainable lifestyle.

Overall, these findings provide the view that the role of women leaders in the building construction sector is not just a representation of gender equality, but rather as a pillar for sustainable development and environmentally friendly technological innovation. They not only create an inclusive organizational structure, but also bring transformation to environmentally friendly practices in everyday life. Women leaders in the construction sector lead with a technical approach as well as an emotional approach so that in the future this sector moves in an inclusive and sustainable direction.

Apart from that, this research only focuses on private construction development companies and does not involve state-owned development companies which are known to be more hierarchical and do not involve much top management who have more authority to make strategic decisions. The author suggests that future research involve state-owned development companies to accommodate organizational frameworks that may be more complex

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