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105

Exploring the efficacy of structural empowerment in breaking career progression barriers among female engineers in Malaysia

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Abstract

Purpose – As discrimination against women persists in the engineering and technical fields in Malaysia's economy at the managerial level, this study explored the efficacy of Structural Empowerment in breaking career progression barriers among female engineers in Malaysia.

Design/methodology/approach – Exploratory design and qualitative approach were employed for this study. A semi-structured interview method was used to collect the data from twenty-eight (28) purposively selected respondents. NVivo was utilized for the data analysis, which involved a thematic analysis technique.

Findings – The study has demonstrated that Structural Empowerment can be effectively employed to break career progression barriers among female engineers in Malaysia and can also play a crucial role in fostering a more inclusive environment. The study has also identified specific Structural Empowerment strategies for implementation. However, the unique context of each organization and the diverse factors that may contribute to or hinder career advancement should be considered, in creating a supportive ecosystem for female engineers' career progression.

Practical implications – Management should continuously analyse the organization's policies and practices, checking whether they are inclusive and fair. Management should implement leadership development programs that identify and nurture the potential of female engineers, and provide opportunities for them to take on leadership roles and participate in decision-making processes. Leaders and managers should be educated in recognizing and mitigating biases that may affect female career progression.

Originality/value – This study makes a contribution to the literature by suggesting that Structural Empowerment could be used to influence career progression. Furthermore, adopting the social exchange theory in promoting career progression among Malaysian female Engineers is novel.

Keywords Career progression, Career barriers, Structural empowerment, Gender bias, Malaysia

Paper type Research article

1. Introduction

Empowerment constitutes a managerial approach embedded in the organizational setting, typically characterized as actions by firms to distribute authority and decision-making across hierarchical levels (Hechanova *et al.*, 2006; Joo and Shim, 2010). According to Ahearne *et al.* (2005), empowerment refers to a set of practices that involve passing responsibility down the hierarchy so that workers gain greater discretion over how they perform their core tasks within operations. As companies increasingly seek staff who proactively tackle job challenges and generate creative solutions, empowerment gains relevance for both individuals and the

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organization (Joo and Shim, 2010). Employees who feel empowered tend to report higher job satisfaction, stronger organizational commitment and greater effectiveness in achieving performance targets (Orgambídez-Ramos and BorregoAlés, 2014). However, evidence suggests that empowerment initiatives do not always deliver the expected results in practice (Siegall and Gardner, 2000). Consequently, identifying organizational variables that foster empowerment is essential for improving managerial outcomes.

Within the broader context of empowerment, Structural Empowerment refers to the existence of social structures at work that allow individuals to achieve their work goals through access to opportunities, relevant information, support and resources (Kanter, 1993). Considered as the extent to which an organization provides its employees with the tools, resources, and support necessary to excel in their roles, Structural Empowerment has been found to predict job satisfaction (Wong and Laschinger, 2013), organizational commitment (Smith *et al.*, 2010), leadership practices (Davies *et al.*, 2018) and job stress and burnout (Laschinger *et al.*, 2013) among nursing staff.

The European Foundation for the Improvement of Living and Working Conditions (2019) reported that for the past few decades' women employees has increased significantly, but faced major issues in their career development. They further state that Women employees were experiencing both horizontal and vertical isolation when it came to senior positions. As Acker (2012) argues, it is rare to find women in top leadership positions in wealthy industrialized countries, despite advances in gender equity in education and an increasing number of women entering professions and positions long held by men. Despite many policies to increase gender equality in recent decades, gender discrimination based on gender stereotypes continues to exist. There are only 29% women in senior management positions worldwide (IBR, 2020). The World Economic Forum (2017) suggested that an average gender gap of 32.0% existed in four areas, namely, "Economic Participation and Opportunity", "Educational Attainment", "Health and Survival" and "Political Empowerment". This shows an increase from an average gender gap of 31.7% since previous years (Tabassum and Nayak, 2021). The United Kingdom has one of the worst records on gender equality at work (Conley and Page, 2018; Glassdoor, 2016) and is ranked 11th out of 18 countries in Europe in the gender equality league table (Glassdoor, 2016). In Malaysia, 50% of the population is women, but they are discriminated against and not considered in decision-making processes in society. For example, in the education sector, leadership, politics, the corporate world, and entrepreneurship, women have taken backstage (Suleman and Rahman, 2020). In Malaysia, there are notable issues concerning gender discrimination against women in leadership, especially in engineering and management roles. According to research and surveys by the Women's Aid Organisation (WAO, 2021), over 50% of women in Malaysia report experiencing gender-based discrimination in the workplace. As of recent data, women occupy about 30% of senior management roles in Malaysia, which aligns closely with averages across Southeast Asia. However, female representation on boards remains lower, with women holding around 17.6% of board seats in publicly listed companies, according to the Credit Suisse Gender 3,000 report (2021) and a Deloitte global survey in 2022. Additionally, Malaysia ranks low on global indices for gender equality in economic and political empowerment. For example, the World Economic Forum's report places Malaysia at 128th for political empowerment, indicating significant room for progress toward gender parity in executive roles. The representation of women in senior management is also limited, as companies struggle with deeply ingrained biases, and women's representation on boards remains below global benchmarks (World Economic Forum Report, 2017).

The engineering profession has always had the somewhat unsavoury standing as the most male-dominated profession. Numerous studies have high-lighted this under-representation in many countries throughout the world, such as the United States (Reardon, 2004; SWE, 2004), the United Kingdom (Engineering UK, 2010) and India (Pareek, 2007). Women have been underrepresented in engineering, and therefore are accustomed to being in the minority. For instance, in the United States, women represent

more than half the population and 46% of the U.S. workforce, yet only 24% of those worked in science and engineering combined and only 10% of women were included in the engineering workforce (SWE, 2004). Despite some concerted attention and resources devoted to recruitment and retention of women in engineering over the last couple of decades, they are still woefully underrepresented in engineering and many related sciences. This under-representation is problematic, and women themselves are missing out on opportunities to leverage learning and develop skills in interesting and rewarding careers, explore new fields, develop new knowledge, design new solutions and benefit from the rewards of financial independence and economic equity.

Career progression is the process of advancing in one's career by acquiring new skills, knowledge and experience, and taking on more challenging roles and responsibilities. Career progression can take many forms, such as promotions, lateral moves or starting new businesses (Calinaud *et al*., 2021). Career barriers, on the other hand, are obstacles that can prevent individuals from achieving their career goals. These barriers can take many forms, such as a lack of qualifications, as well as discrimination, bias, or other systemic issues within Organizations (Cast, 2018). Breaking career progression barriers involves addressing issues related to gender, race and other forms of discrimination in the workplace (Calinaud *et al*., 2021).

Engineering plays an important role in the Malaysian economy. Malaysia has been aspiring to become a developed country for the past 2 decades. To achieve its target, it needs over 200,000 engineers. Currently, the country has 70,000 engineers registered with the Malaysian Engineering society (Malaysia Budget Statement, 2020). The Malaysian government has given a high commitment to their effort in achieving gender equality, by providing education parity, equal employment opportunity and implementing anti-discriminatory tools and regulations. Despite these efforts, discrimination against women still persists in the workplace, especially at the managerial level (Peshave and Gupta, 2017). Given the substantial contribution of the engineering and technical fields in Malaysia's economy, coupled with the rapid expansion of employment opportunities and high wages in the engineering sector, the scarcity of women in these areas remain puzzling (Johari *et al*.., 2013). From the policy maker's perspective, it may hinder the Malaysian's nation's technical workforce by failing to capture the creative energies that are potentially available among women (Johari *et al*.., 2013). Despite the increased rate of women in technical jobs, about 70% of those women who have science, engineering and technology-related degrees were not working in the sectors that use these skills, thereby contributing to a significant loss to Malaysia's economy (Ministry of Women, Family and Community Development, Malaysia, 2022). The role of Structural Empowerment for work engagement has received far less attention than that of psychological empowerment, being mainly explored in healthcare settings (Laschinger and Finegan, 2005). The interplay between Structural Empowerment and career progression for female empowerment is very limited in the literature. Besides, so far, no study has examined the effectiveness of Structural Empowerment as a tool that could be applied to break career progression barriers among female engineers in Malaysia.

This article, therefore, explores the efficacy of Structural Empowerment in breaking career progression barriers among female engineers in Malaysia. The research question posed is: *How can Structural Empowerment be effectively used to break career progression barriers among female engineers in Malaysia?* Structural Empowerment refers to the extent to which an organization provides its employees with the tools, resources, and support necessary to excel in their roles. Breaking career progression barriers refers to addressing issues related to gender, race, and other forms of discrimination in the workplace. Female engineer's empowerment in this study is conceptualized as promoting women's sense of self-worth, their ability to determine their own choices and their right to influence social change for themselves and others.

This research affirmed that Structural Empowerment does play a crucial role in fostering a more inclusive work environment for female engineers in Malaysia, and proposed strategies

that address the challenges of female engineers, organizations and societies. The study contributes to the academic literature by proposing Structural Empowerment as a potential predictor of career progression. The findings affirm the broad applicability of Social Exchange Theory (SET) across various disciplines, including gender studies and human resource research. Furthermore, applying SET as the foundational theoretical framework in examining career barriers faced by Malaysian female engineers introduces a novel perspective. This study proceeds in five sections. A review of the literature on SET, Structural Empowerment and career barriers follow this introductory section. Next, the methods employed in this study are presented, followed by results and discussion of findings section. The study's conclusion and implications then follow. Finally, the study ends with the limitations and direction for future study.

2. Literature review

2.1 Social exchange theory

SET has been used as the main theory underpinning this study owing to its relevance to the issues being investigated. SET is among the most influential conceptual paradigms for understanding workplace behaviour, whose venerable roots can be traced back to at least the 1920s. SET explains four main constituents of the social behaviour of individuals. Firstly, the framework defines reinforcement tools – i.e. the rewards/benefits and resources of exchange – underpinning individuals' motivation to engage in social interaction. Secondly, the theory posits that individuals are rational actors who weigh the costs and benefits of social interactions. Thirdly, SET suggests that individuals are motivated to maximize their rewards and minimize their costs in social interactions. Fourthly, the theory suggests that individuals are more likely to engage in social interactions when they perceive that the rewards outweigh the costs (Cropanzano *et al*., 2016).

SET has been applied to various social contexts, including interpersonal relationships, workplace dynamics and larger societal structures. It provides a framework for understanding why individuals choose to initiate, maintain, or terminate social relationships based on the perceived costs and rewards associated with those relationships. SET is an important theoretical framework explaining the relationship between psychological empowerment and turnover intentions (Blau, 1964). Key concepts and principles of SET in the social exchange literature (Mayer *et al*., 2012; Eisenberger *et al*., 2004; Riggle *et al*., 2009; Cropanzano and Rupp, 2008; Rayner and Keashly, 2005; Spector and Fox, 2010) are summarized as follows:

Reciprocity: Central to SET is the concept of reciprocity, which means that individuals expect a return for their actions. In social exchanges, people anticipate that their positive actions will be reciprocated with positive outcomes, while negative actions may lead to negative consequences. To what extent would female engineers in Malaysia expect that their positive contributions to their organizations would be reciprocated with positive outcomes, such as support and recognition systems?

Rewards and Costs: SET suggests that individuals engage in social interactions to maximize rewards and minimize costs. Rewards can take various forms, such as companionship, emotional support, material resources or even intangible benefits like love and approval. Costs may involve time, energy, emotional stress or giving up something of value. As female engineers contribute to their organization's success by giving their skills, expertise and time, would they be expecting to be adequately rewarded with favourable working conditions like their male colleagues?

Comparison Level: Individuals evaluate their satisfaction in a relationship by comparing the outcomes they receive with their expectations. If the actual outcomes surpass expectations, the person experiences satisfaction. If the outcomes fall short of expectations, dissatisfaction may occur. In comparison with their male engineers, would Malaysian female engineers perceive outcomes as lower or above their expectations?

Equity Theory: Equity theory posits that individuals are motivated to maintain a sense of fairness in their relationships, seeking a balance between the contributions they make and the benefits they receive. Would female engineers in Malaysia anticipate fair systems at workplaces that are inure to the benefit of both male and female engineers?

Power and Dependence: SET also considers the concepts of power and dependence in relationships. The person who has more power in a relationship may be able to influence the outcomes and, in turn, the satisfaction of the less powerful individual. To what extent could female engineers expect to be empowered?

2.2 Structural empowerment

Empowerment refers to "the process of gaining influence over events and outcomes of importance to an individual or group" (Fawcett *et al.*, 1994). Embedded within this definition is the assumption that empowerment can mean different things to different people and vary in form across settings and time (Zimmerman, 2000). Despite its scholarly and practical importance, empowerment remains a highly sophisticated and fluidic concept which rejects any single operationalization (Aghazamani and Hunt, 2017). Structural Empowerment refers to certain social workplace conditions and policies at work (Kanter, 1993) that facilitate access to opportunities, information, support and resources. Sometimes referred to as managerial empowerment, Structural Empowerment, focuses on how individuals with power and authority in an organization (managers) share it with those who lack (employees) (Conrad, 2017). It derives from organizational theories with the main emphasis on the delegation of power and authority. At the core of Structural Empowerment is the transition of authority and responsibility from upper management to employees (Maynard *et al.*, 2012). It is described as a fundamental determinant that influences behaviour, whereby employees with sufficient empowerment can fulfil the tasks (Conrad, 2017). Structural Empowerment implies that lower-level employees in an organization are enabled to take appropriate action through a set of structures, practices and policies within the organization that result from a flattening of the hierarchy (Seibert *et al.*, 2011). Previous studies have found that Structural Empowerment leads to innovative behaviour (Hebenstreit, 2012).

Kanter (1993) argues that situational characteristics can either hinder or promote optimal performance, irrespective of individual traits. She defines power as the capacity to marshal resources to achieve goals, and notes that power is "on" when employees can tap into information, support, resources and learning opportunities. When these channels are unavailable, power switches "off," making effective work impossible. These channels constitute the organization's structural empowerment (Greco *et al.*, 2006; Laschinger *et al.*, 2001, 2004). Kanter further explains that such power stems from both formal and informal systems. Formal power accrues to jobs that are visible, allow discretion, and are central to the organization's mission, while informal power arises from positive relationships with supervisors, peers, and subordinates that create supportive alliances. High levels of both formal and informal power enhance access to the resources and opportunities needed for meaningful work. Formal power is rooted in job features such as flexibility, adaptability, creativity, discretionary decision-making, visibility and relevance to organizational goals, whereas informal power derives from social networks and the development of communication channels with sponsors, colleagues, subordinates and cross-functional groups (Kanter, 1993; Laschinger *et al.*, 2001, 2004).

Kanter (1993) and Laschinger *et al.* (2004) go on to state that a high level of Structural Empowerment comes from access to four structures 1. Access to opportunity refers to the possibility for growth and movement within the organization as well as the opportunity to increase knowledge and skills. 2. Access to resources refers to one's ability to acquire the financial means, materials, time, and supplies required to do the work. 3. Access to information refers to having the formal and informal knowledge that is necessary to be effective in the workplace (technical knowledge and expertise required to accomplish the job and an

understanding of organizational policies and decisions). 4. Access to support involves receiving feedback and guidance from subordinates, peers and superiors.

According to Kanter (1993) the mandate of management should be creating conditions for work effectiveness by ensuring employees have access to the information, support, and resources necessary to accomplish work and that they are provided with ongoing opportunities for development. Employees, who believe their work environment provides access to these factors, are empowered (Greco *et al.*, 2006; Kanter, 1993; Mendoza-Sierra *et al.*, 2013; Wong and Laschinger, 2013). When employees are structurally empowered, the manifestation in the organization is reflected by access to these structures facilitated by formal job characteristics (Laschinger *et al.*, 2001). Kesting and Ulhoi (2010) suggested that a lack of time, resources and information would considerably hamper employees' idea generation. According to Kesting and Ulhoi (2010), in an ideal type of organizational structure that promotes Structural Empowerment, employees can propose changes while management can delegate the decision authority to employees.

Research consistently shows that structural empowerment is closely linked to job satisfaction (Lautizi *et al.*, 2009; Wong and Laschinger, 2013). Wong and Laschinger (2013) found that nurses who perceive greater access to empowerment structures report higher satisfaction and better performance. In particular, opportunities for learning and growth are strong predictors of satisfaction (Lautizi *et al.*, 2009). Employees may be content with the core tasks of their role, yet feel frustrated if those tasks do not provide avenues for development or advancement within the organization. Access to such learning and growth opportunities is a key element of structural empowerment (Laschinger *et al.*, 2004; Lautizi *et al.*, 2009).

SET can be applied to Structural Empowerment by examining the social exchanges that occur between employees and their supervisors or managers. For example, if an employee perceives that their supervisor is providing them with the necessary resources and support to perform their job effectively, they are more likely to engage in positive social interactions with their supervisor. This, in turn, can lead to increased job satisfaction and motivation (Echebiri *et al.*, 2020).

2.3 Career progression barriers for female engineers

Career progression means moving ahead or progressing in a career, such as getting promoted to higher roles, taking on new opportunities, switching to better jobs or companies and achieving one's career aspirations. It is synonymous with career development (Calinaud *et al.*, 2021). Many gender-related barriers and biases have declined over the years, but gender stereotypes continue to create problems in the progress of women's careers (Tabassum and Nayak, 2021). The availability of opportunities for the career progressions of women continues to be negatively affected by gender stereotypes, which shape managerial behaviour and occupational outlooks in the workplace with patriarchal expectations. Tabassum and Nayak (2021) further state that gender stereotypes continue to exist and are transmitted through media, and through social, educational, and recreational socialization, which promote gender prejudice and discrimination against women. They argue that contemporary management culture does not critically engage with the social theories of gender studies, which could help in developing gender-neutral affirmative action-oriented managerial perspectives. They identify the antecedents of gender stereotypes and their impacts on the career progressions of women in management.

Career progression barriers for female engineers have been the subject of extensive research and analysis. Despite advancements in gender equality, women in engineering still face unique challenges that hinder their professional growth. The following provides a summary of key career barriers identified in the literature (Calinaud *et al.*, 2021; Cast, 2018; Bosak *et al.*, 2017; Tabassum and Nayak, 2021).

Underrepresentation: Women remain underrepresented in engineering fields, leading to a lack of role models and mentors. This underrepresentation can contribute to feelings of isolation and hinder networking opportunities.

Stereotypes and Bias: Persistent gender stereotypes and biases can affect how female engineers are perceived in the workplace. Preconceived notions about women's abilities may lead to lower expectations and limited career advancement opportunities.

Work-Life Balance: Balancing work and personal life is a common challenge for many professionals, but it can be particularly pronounced for women in engineering, especially those navigating family responsibilities. Stereotypes around gender roles may impact perceptions of commitment and dedication.

Lack of Mentorship: The scarcity of female mentors in engineering exacerbates the challenges for women seeking guidance in their careers. Mentorship is crucial for professional development, and the absence of role models can hinder skill development and confidence.

Implicit Bias in Hiring and Promotions: Studies show that unconscious biases can influence hiring and promotion decisions, impacting female engineers' opportunities for advancement. Recognition of these biases is crucial for creating fair and equitable evaluation processes.

Hostile Work Environment: Some female engineers report experiencing a hostile or unwelcoming work environment. Harassment, microaggressions, and discrimination can create barriers to career progression by affecting job satisfaction and overall well-being.

Limited Access to Opportunities: Women may have limited access to high-visibility projects, leadership roles and opportunities for professional development. This restricted access can impede their ability to showcase their skills and contribute to their organizations.

*Lack of Recognition***:** Female engineers may face challenges in gaining recognition for their contributions. This lack of acknowledgment can impact career advancement, as visibility and recognition are crucial components of moving up the professional ladder.

Inflexible Organizational Structures: Some organizations may have rigid structures that do not accommodate diverse needs, making it challenging for female engineers who may require flexibility in work arrangements due to family responsibilities.

Insufficient Support for Career Transitions: Women who take breaks from their engineering careers for family reasons may encounter challenges when re-entering the workforce. Limited support for career transitions can hinder their ability to resume and advance in their careers.

3. Methods

To gain deep insight and understanding of the issues under investigation, the qualitative approach to data collection was employed. Qualitative data were therefore collected using the semi-structured interview method, which is used to gather data that are used not only to reveal and understand the "what" and the "how" but also to place more emphasis on exploring the "why" (Saunders *et al.*, 2009). Semi-structured interviews also provide an opportunity to track responses and to obtain ordered explanations (Creswell, 2009), whilst enabling probing for more understanding and providing for interaction with people (Easterby-Smith *et al.*, 2012). Semi-structured interview questions, which were framed from the literature, were linked to the research question to demonstrate their relevance to the study. In all, twenty-eight (28) respondents were selected for the study. This number was considered adequate based on sample sizes adopted in previous similar investigations. The researchers were guided by the view that, rather than relying on large sample sizes to remove bias as in a quantitative study, a qualitative approach values the views of a few specific research subjects and attaches importance to what might be learned from their respective experiences (Silverman, 1998).

A non-probability sampling technique is usually adopted when the total population is unknown to the researcher or when the researcher intends to purposively choose the research participants (Saunders *et al.*, 2009). In line with this position, the purposive sampling method was used to select respondents for the interview. Respondents were chosen based on their knowledge and expertise to answer the questions posed (Bernard, 2017). They were also chosen based on the rich information they had, and their willingness and availability to

participate in the study (Etikanet *et al.*, 2016). The purposive sampling method could be used where the researcher wishes to select cases that are particularly informative and when working with very small samples. Four sample units were identified for the semi-structured interviews, namely: Industry experts from Professional Engineering Associations, Heads of manufacturing companies, Human resource experts from manufacturing companies, and Female engineers from manufacturing and engineering companies. Seven (7) respondents from each of the four sample units (mostly females to achieve relevance and objectivity) were targeted for semi-structured interviews, leading to a sample size of 28 respondents. The researcher was guided by the view that, rather than relying on large sample sizes to remove bias as in a quantitative study, a qualitative approach values the views of a few specific research subjects and attaches importance to what might be learned from their respective experiences (Silverman, 1998). Again, the sample size of 28 is consistent with previous gender studies by Pilgrim (2010), Hesse-Biber *et al.* (2016), and Buse *et al.* (2017) that used a similar sample size and benefitted from qualitative depth over broad generalization, allowing for detailed, nuanced insights, and more personal exploration through a limited number of participant interviews. Given the study's purpose and the qualitative method adopted, the sample size is sufficient because in-depth findings are expected, rather than a quantitative generalization (Arkorful *et al.*, 2023).

NVivo software was used to analyse the data, employing the thematic analysis technique, which involved identifying patterns among textual data sets, and usually used to analyse interview data (Yin, 2013). At the initial stage of the analysis, the researcher read and re-read the transcribed data closely to familiarize with the data. Afterwards, clear labels or codes were developed, which helped to identify and distinguish important features of the transcribed data. The next stage involved the search for themes and their interpretations. The themes were identified based on similarities and pattern of responses. The themes were further reviewed and refined. The readjusted themes were then used for the analysis. The analysis process was followed sequentially; however, it was also recursive in some cases as the researcher had to go back and forth, negotiating themes and finding extracts from the transcribed data to support the analysis.

4. Results and discussions

A total of twenty-eight (28) female respondents from the selected sample units were approached individually by the researcher for semi-structured interviews. All 28 respondents willingly granted recorded interviews lasting about 40 min each. Table 1 below illustrates the types and numbers of respondents who participated in the study.

The goal of this article was to explore the efficacy of Structural Empowerment in breaking career progression barriers among female engineers in Malaysia. The research question posed (how could Structural Empowerment be effectively used to break career progression barriers among female engineers in Malaysia?) yielded the following outcomes;

Table 1. Types and numbers of respondents

Type of respondents	Size of organization	No. of respondents
Industry Experts from Engineering Professional Associations in Malaysia	Large	7
Heads of Manufacturing Companies	Large	7
Human Resource Experts from Manufacturing Companies	Large	7
Female Engineers from Manufacturing Companies	Large	7
Total		28

(1) Role of Structural Empowerment in breaking career progression barriers

All respondents generally agreed that Structural Empowerment can play a crucial role in fostering a more inclusive environment within organizations. The general view was that where there is gender equality in organizations and both male and female engineers are accorded the same exposure and opportunities, there is job satisfaction, trust and clear career progression paths. This view supports Wong and Laschinger (2013), who observed that the more nurses perceive they have access to workplace empowerment structures, the more satisfied they become with their work, and report higher performance.

A Human Resource Director respondent made the following observation:

> Structural Empowerment indeed is a very strong tool which when used advisedly, can bring about great satisfaction among female engineers. The Malaysian Government should legislate that all organizations should put in place policies, systems and structures which promote equal opportunity and the occupational rights of every individual. Such a policy from Government will induce motivation and a consequent productivity. The whole country will benefit.

Another respondent stated:

> Organizations should put in places structural changes that promote career progression barriers for female engineers that address both organizational and societal challenges. The focus must not only be based on only organizational needs but also on the needs of the broader society.

(2) How to use Structural Empowerment effectively to break career barriers:

4.1 Equal access

Majority of respondents shared the view that Management of Organizations must ensure that female engineers have equal access to training and development opportunities just as their male colleagues have. When female engineers perceive access to resources and opportunities, they are encouraged to perform better. Some respondents proposed that management should provide mentorship programs, leadership training, and skill development initiatives that empower them to advance in their careers. This view corroborates the position of Kanter (1993) that power is "on" when employees have access to lines of information, support, resources, and opportunities to learn and grow. When these "lines" or sources are unavailable, power is "off" and effective work is impossible.

A female engineer respondent put it this way:

> Firms must give same access, same training and traveling opportunities, same training, same information, same promotional opportunities, same procedures in climbing the career ladder to both its ladies and its gentlemen.

The respondents' views were also found to be consistent with Laschinger *et al.* (2004) and Lautizi *et al.* (2009) who concluded that access to opportunities to learn and grow is an important component of Structural Empowerment.

4.2 Accountability

Asked if they perceived accountability as a strategy that could assist in promoting career progression, some 80% of respondents responded in the affirmative. There were suggestions that leaders of various departments should be held accountable for achieving gender diversity goals. Others proposed frequent auditing and regular review of progress by managers to ensure continuous improvement in the performance of female engineers. A few respondents suggested that female engineers must be made accountable for their performance through more frequent self-appraisals.

4.3 Supportive organizational culture

Respondents were unanimous that promoting a supportive organizational culture where equality and diversity are celebrated will promote career progression. Such a culture will motivate female engineers to aspire to the top.

The Head of an Engineering company stated:

> Our current orientation is to encourage open communication and create an environment where female engineers can voice their concerns without fear of reprisal.

Majority of respondents agreed that an organizational environment where employees are made to feel comfortable expressing their views freely, including open communication, will augur well for fairness, equality, trust and self-motivation, leading to career progression.

There were also views from a quarter of respondents that organizations should make available the right resources, information and programs that would develop and improve the skills and competencies of female engineers.

One Industry expert had this to say:

> I will be happy to see in the foreseeable future, Companies collaborate with external organizations, industry groups, and educational institutions to create a supportive ecosystem for female engineers. This can involve joint initiatives, scholarships, and advocacy for gender diversity in the engineering field

These findings are consistent with previous studies by Hebenstreit (2012), who found that Structural Empowerment, manifesting in a supportive organizational culture, leads to productive and innovative behaviour.

4.4 Organizational policies

There was a popular view among respondents that regularly reviewing and revising organizational policies to ensure they are gender-inclusive will go a long way to improve career progression. This view calling for regular policy review is consistent with Kanter's (1993) position that the mandate of management should be creating conditions for work effectiveness by ensuring employees have access to the information, support, and resources necessary to accomplish work and that they are provided ongoing opportunities for development.

A respondent observed: "Organizational policies should not remain static in this era of fast-paced changes. Organizations must regularly review and reflect on their existing policies to see if it is consistent with reality and if the policies are gender-progressive and promote gender-equality and fairness"

Another respondent stressed the need for regular review of compensation packages. She stated: "*It is only fair and motivating that there should be equal pay for equal work. Policies that tend to contradict this expectation should be changed immediately. Where is the justification for paying male engineers more than female engineers? Unfavorable pay policies are inimical to female engineers must change immediately"*

4.5 Establishing standards

About two-thirds of respondents were of the view that establishing standards to measure the representation of female engineers at various levels within the organization would help monitor career progression of female engineers. A female engineer stated.

> Engineering Organizations must establish metrics to measure the representation of female engineers at various levels within the organization.

One head of the organization stated:

> I think we have to start promoting work-life balance by emphasizing the importance of work-life balance and well-being. We should begin to implement policies that support a healthy work-life balance, recognizing that this is crucial for both career satisfaction and productivity.

These views support the work of Cast (2018), who saw career barriers taking many forms, such as a lack of qualifications, as well as discrimination, bias, or other systemic issues within Organizations such as the non-existence of standards that monitor and measure career progression among females.

4.6 Flexibility

All respondents were of the view that implementing flexible work arrangements to accommodate the diverse needs of female engineers, including options for flexible working hours, remote work and part-time arrangements, was a supportive organizational strategy that could promote career progression of female engineers. One female engineer lamented:

> Female engineers through no fault of theirs, have to double as mothers, wives, child bearers and play other roles imposed by socio-cultural systems of our society. So why can't they be given a little leeway to combine those roles with the work they are trained to do? Is it fair that male engineers who do not have such socio-cultural roles are preferred and perceived as better engineers? I don't think this is fair. Did we choose our gender? No we did not. Our gender was imposed on us. Why must we suffer? Why are we victims of femineity?

These views are in tandem with Echebiri *et al.* (2020) who suggested that if an employee perceives that their supervisor is providing them with the necessary resources and support to perform their job effectively, they may be more likely to engage in positive social interactions with their supervisor, which in turn, can lead to increased job satisfaction and motivation.

4.7 Diversity programmes

Majority of respondents endorsed the establishment and promotion of diversity and inclusion programs that specifically address the unique challenges faced by female engineers. There was a popular opinion that organizations should include mentorship programs, networking events and fora where experiences and insights can be shared amongst female engineers from other organizations.

The head of one Engineering Company proposed the following:

> Engage in initiatives that promote STEM education for girls at the grassroots level. By encouraging interest in STEM fields from an early age, the industry can work towards creating a more diverse talent pipeline.

Another respondent, Human Resource Director, suggested the following:

> Showcase successful female engineers as role models within the organization. Highlight their achievements and contributions to inspire others and demonstrate that career progression is attainable for women in engineering

These views appear to support MentorNet (2019) assertion that women are missing out on opportunities to leverage learning and skills in interesting and rewarding careers, exploring new fields, developing new knowledge, designing new solutions and benefiting from the rewards of financial independence and economic equity.

SET was used as the underpinning model for the research. Key concepts and principles of SET in the social exchange literature (Mayer *et al.*., 2012; Eisenberger *et al.*, 2004; Riggle *et al.*, 2009; Cropanzano and Rupp, 2008; Rayner and Keashly, 2005; Spector and Fox, 2010) were investigated. Respondents were unanimous in their responses.

Concerning *reciprocity*, there was consensus among respondents that although female engineers had expectations that their positive actions would be reciprocated with positive outcomes, female engineers lacked support in their organizations and were hardly recognized or rewarded for their positive contributions. Considering *Rewards and Costs* as an ingredient of SET, respondents generally suggested that though female engineers contributed to their organization's success by giving their skills, expertise and time, they were often not rewarded

with favourable working conditions like their male colleagues. Respondents considered *Equity theory* and observed in the main that though female engineers in Malaysia anticipated fair systems at workplaces, which augured well for both male and female engineers, female engineers benefited less. Similarly, concerning *Comparison Level*, there was a common view among respondents that in comparison with male engineers, Malaysian female engineers perceived outcomes as lower than their expectations. With respect to *Power and Dependence*, the female engineers interviewed suggested that they had less power in their respective organizations to influence outcomes, and expected to be empowered in various ways such as having equal access to training like male engineers, being given exposure, regularly reviewing their progress to ensure continuous improvement, and by promoting diversity and inclusion programs that specifically addressed their unique challenges.

The successful application of SET in the study confirms that it is one of the most influential conceptual paradigms for understanding workplace behaviour as espoused by Mayer *et al.*, (2012) Cropanzano *et al.*, (2016). SET further assisted in providing an answer to the research question. The findings suggest that the core SET concepts discussed above can be applied by management to enable Structural Empowerment in organizations, which could assist in breaking career progression barriers among female engineers in Malaysia.

5. Conclusion

This article explored the efficacy of Structural Empowerment in breaking career progression barriers among female engineers in Malaysia. The research question (how can Structural Empowerment be effectively used to break career progression barriers among female engineers in Malaysia?) was adequately answered by the proposed strategies as to how Structural Empowerment could be effectively used to break career progression barriers among female engineers in Malaysia. The strategies include: promoting a supportive organizational culture (where diversity is celebrated, and employees feel comfortable expressing their views, including open communication); reviewing and revising organizational policies to ensure they are gender-inclusive; establishing standards to measure the representation of female engineers at various levels within the organization; holding leaders accountable for achieving gender diversity goals, regularly reviewing progress to ensure continuous improvement; ensuring that female engineers have equal access to training and development opportunities; implementing flexible work arrangements to accommodate the diverse needs of female engineers, including options for flexible working hours, remote work and part-time arrangements; and establishing and promoting diversity and inclusion programs that specifically address the unique challenges faced by female engineers.

This study has therefore demonstrated that Structural Empowerment can be effectively employed to break career progression barriers among female engineers working in Malaysia. When this is done, it could help create a supportive ecosystem for female engineers' career progression. Furthermore, it is essential to consider the unique context of each organization and the diverse factors that may contribute to or hinder career advancement.

6. Implications

Theoretically, this study made the following contributions. According to the literature, Structural Empowerment has been found to predict job satisfaction (Wong and Laschinger, 2013), organizational commitment (Smith *et al.*, 2010), leadership practices (Davies *et al.*, 2018; Wong and Laschinger, 2013) and job stress and burnout (Laschinger *et al.*, 2013) on nurse staff. This study makes a contribution to the literature by suggesting that Structural Empowerment could be used to predict career progression. Additionally, the usage of SET as the anchor theory of this study, which focused on the career barriers confronting Malaysian female Engineers is novel. Thus, this study confirmed the extensive applicability of SET to various disciplines, including gender and human resource studies.

For practical and managerial implications, engineering organization leaders should systematically examine organizational policies and practices related to recruitment, promotion and professional development, assessing their inclusivity and fairness to ensure they do not inadvertently contribute to career progression barriers. Management should also prioritize policies that support a healthy work-life balance, acknowledging its importance for both career satisfaction and productivity. Further, leadership development programs should be established to identify and foster the potential of female engineers, offering them opportunities to assume leadership roles and participate in decision-making processes. Additionally, management should implement training initiatives to address unconscious bias, educating leaders and managers to recognize and mitigate biases that may impact career advancement. Executing these strategies requires a comprehensive, sustained effort from management, human resources and employees across all levels. Continuous assessment and refinement of these initiatives, informed by feedback and outcomes, are essential to effectively dismantle career progression barriers for female engineers in Malaysia.

7. Limitations and future research

Since gender stereotyping and gender discrimination are dynamic, perhaps the researcher could have considered the longitudinal rather than the cross-sectional approach that was employed. The longitudinal approach could have traced historical changes and developments in the field, which would have enriched the analysis. Future research may consider addressing this.

As it were, employing the qualitative approach to the study implies limited generalization. The female engineers studied were selected on a non-probability (purposive) sampling basis and the sample size of 28 female engineers was small, in addition to the non-statistical thematic analysis that was used. The combined effect of the foregoing is that they limit the generalizability of the findings. Future research may focus on the quantitative approach to improve generalization or employ mixed methods for more robust and far-reaching outcomes.

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