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To Quit or Stay? Determinants of Employee Turnover in the Solar Industry in a Developing Country

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ABSTRACT

This study examines the factors that influence employee turnover intentions within the solar manufacturing sector in a developing country. The primary aim is to identify key determinants, including job satisfaction, organisational commitment, organisational support, job security, compensation fairness, and work-life balance. Data were collected through a survey of 372 employees. The results indicate significant negative relationships between turnover intention and these variables, demonstrating that increased levels of job satisfaction, commitment, perceived support, job security, equitable compensation, and work-life balance are associated with reduced turnover intentions. Additionally, the study highlights notable variations in turnover intentions across different demographic groups, underscoring the importance of tailored retention strategies. These findings offer valuable insights into improving employee retention in the solar industry by fostering a supportive work environment, prioritising job security, and maintaining fair compensation practices. This research contributes to the broader understanding of employee turnover in the solar sector and provides actionable recommendations for both academic and practical applications.

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1.0 INTRODUCTION

Employee turnover poses a significant challenge for businesses across various industries, particularly when viewed through the lens of sustainable workforce management. High turnover rates can lead to substantial challenges, such as elevated recruitment and training expenses, reduced employee morale, and operational disruptions (Hayat et al., 2022). Determining the factors of employee turnover and executing effective strategies is crucial to enabling organisational stability and promoting a meaningful work environment (Bao & Zhong, 2021).

In developed countries, employee turnover has led to multiple negative impacts from the perspective of economic and social impacts (Ozkan et al., 2020). The shortage of skilled labourers threatens business in terms of sustainability and innovation, as losing skilled workers can develop gaps that are difficult and costly to address. Also, high turnover disrupts long-term projects and the continuity of organisational goals. From the managerial perspective, in developed countries, employees typically value work-life balance, career advancement, and job satisfaction (Lindfelt et al., 2018; Yu, 2018). High turnover rates may signal problems such as ineffective management or insufficient career development opportunities, potentially damaging a company's reputation.

The solar industry, renowned for its transformative impact on energy, grapples with the persistent challenge of retaining skilled employees. With the sector undergoing rapid development and continuous technological advancements, it is vital to acknowledge the factors driving employee turnover to ensure organisational success (Tyagi & Parimoo, 2017). Given its accelerated growth and the specialised expertise demanded for many roles, these challenges are especially significant in the specialised industry.

The solar energy industry has become an essential component of the global energy framework due to the increasing demand for renewable energy and the pressing need to lower carbon emissions (Samaniego-Rascón et al., 2019). As the global focus shifts towards sustainable energy alternatives, the solar sector is anticipated to play a key role in meeting future energy demands and mitigating climate change (Irfan et al., 2021). In developing nations, solar energy and other renewable sources have gained substantial support from local authorities. In Malaysia, the government has introduced a strategic plan to revolutionise energy consumption patterns and foster new business ventures within the energy market. Additionally, Malaysia's adoption of solar energy has seen remarkable growth; as of 16 August 2023, it had already surpassed the total solar energy capacity achieved in 2022 by 5% (Malaysian Investment Development Authority, 2023).

Despite its growth and significance, the solar industry encounters substantial challenges associated with employee turnover. The sector’s dynamic and fast-paced nature, coupled with the need for specialised technical expertise, results in turnover rates that are notably higher than those observed in other industries. Employees in this field often face demanding working conditions, including prolonged outdoor exposure, extended working hours, and the continuous need for skill enhancement to adapt to rapid technological progress (Habibi et al., 2024). Additionally, the relatively young demographic of the workforce and the high demand for experienced professionals exacerbate the issue. These challenges, combined with the competitive labour market for skilled personnel, make employee retention a persistent and critical concern within the solar industry.

Over time, the solar industry has undergone significant growth and transformation, yet retaining employees remains a persistent challenge. Studies reveal that turnover rates in this sector, including solar energy, consistently exceed the national averages observed in other industries (Rocha, 2024). This trend underscores the critical need to understand the underlying factors contributing to employee turnover in the solar industry and to devise effective strategies to mitigate it. From a theoretical standpoint, much of the existing research on employee turnover has focused on conventional industries, offering limited insights into the unique characteristics of the solar sector (Ng et al., 2019; Butt et al., 2020; Han, 2022). Although aspects such as job satisfaction, organisational commitment, and work-life balance have been extensively studied in other contexts, their significance and influence within the solar industry remain underexplored

(Soboleva, 2022; Nappo & Lavadera, 2024). This gap in both research and practice highlights the need for an in-depth investigation into the specific drivers of employee turnover within this rapidly evolving sector.

Recognising the significant impact of employee turnover on organisational performance and the expansion of the specialised solar industry, this research aims to explore the factors that drive turnover within this sector. By examining these factors in the context of a developing country, the study seeks to deliver practical recommendations to help solar companies improve employee retention and achieve better organisational outcomes. The insights gained could also shape labour policies in the renewable energy industry, offering valuable strategies for enhancing workforce stability and fostering sectoral growth.

Strengthening employee retention is key to building a stable workforce, which is vital for the long-term achievement of sustainability objectives. A reliable and consistent workforce not only enhances the industry's capacity to meet its targets but also supports broader economic resilience and growth—both critical for sustainable development. From a theoretical standpoint, this study expands the body of knowledge in human resource management by analysing the factors influencing turnover intentions in a developing-country setting. Additionally, it enriches the theoretical discourse on turnover intention by incorporating an integrated motivational model, offering a more comprehensive understanding of the underlying determinants and their implications for practice.

2.0 LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Maslow’s Hierarchy of Needs

Employees are driven by a hierarchy of needs that starts with essential physiological and safety requirements and progresses toward self-actualisation. Maslow's hierarchy of needs provides a key framework for understanding these motivations, organising human needs into five categories: physiological, safety, social belonging, esteem, and self-actualisation (Gawel, 1996). According to this model, addressing employees' fundamental needs—such as job security and workplace safety—is critical for reducing turnover. When these foundational needs are not met, employees may seek alternative employment environments that offer greater stability and security (Navy, 2020). For instance, in high-risk sectors like construction, implementing robust safety measures has been shown to significantly decrease turnover rates (Dugathadasa et al., 2021).

2.2 Herzberg's Two-Factor Theory: Hygiene and Motivators

Herzberg's two-factor theory highlights that hygiene factors, such as pay and workplace conditions, are necessary to prevent dissatisfaction but do not inherently enhance motivation or long-term satisfaction (Gawel, 1996). On the other hand, motivators—such as recognition, personal achievement, and growth opportunities—are essential for cultivating job satisfaction and reducing turnover. This concept is particularly relevant in fast-evolving industries like technology, where a combination of favourable working conditions and growth opportunities plays a pivotal role in employee retention (Yousaf, 2020). Studies show that when employees feel valued and have access to development opportunities, their commitment to the organisation strengthens, leading to lower turnover rates (Bryant, 2018).

2.3 Turnover Intention Theory

The theory underscores the psychological mechanisms that influence an employee's decision to exit an organisation (Low & Panatik, 2019). It proposes that intentions to leave often emerge from employees' perceptions of job security, satisfaction with their roles, and expectations regarding their future within the organisation. Harden et al. (2016) emphasise the importance of perceived job security in mitigating turnover intentions, suggesting that employees who feel secure in their positions are less inclined to contemplate leaving, even in industries marked by frequent project turnover.

2.4 Equity Theory

Perceptions of fairness within the workplace, especially in terms of pay and career development opportunities, significantly impact employee satisfaction (Greenberg, 1988). Employees often assess their contributions to the organisation against the rewards they receive and compare these with their peers. If they perceive inequities, such as being underpaid relative to colleagues with similar qualifications or lacking fair advancement opportunities, dissatisfaction may arise, increasing the likelihood of turnover. Equity theory has been applied in the service sector to evaluate employees' intentions to leave their jobs (Naidu et al., 2023). Employees who feel undervalued or undercompensated are more likely to consider employment with competitors offering better compensation or opportunities for advancement.

2.5 Hypothesis Development

Job Satisfaction and Turnover Intention

Job satisfaction encompasses the contentment, fulfilment, or positive emotional state employees derive from their work. It reflects how individuals perceive aspects of their jobs, including responsibilities, workplace conditions, and the overall environment (De Sousa et al., 2018). Higher levels of job satisfaction are linked to more favourable attitudes toward work, whereas dissatisfaction can result in disengagement and an increased likelihood of leaving. Numerous studies have established a strong correlation between job satisfaction and turnover intentions. Employees who are satisfied with their roles, workplace atmosphere, remuneration, and relationships with colleagues are less prone to leave (Irabor & Okolie, 2019). In demanding industries like the solar sector, fostering job satisfaction is critical for retaining skilled employees. Based on this, it is proposed that:

H1: Job satisfaction is negatively and significantly related to turnover intention.

Perceived Organisational Commitment and Turnover Intention

Perceived organisational commitment describes an employee's emotional attachment and sense of loyalty to their organisation. It signifies their alignment with the organisation’s goals, dedication to its success, and desire to remain part of it (Meyer & Allen, 1997; Arasanmi & Krishna, 2019). This commitment is characterised by belief in the organisation’s mission, willingness to exert effort on its behalf, and a strong psychological bond. Consequently, the following hypothesis is proposed:

H2: Perceived organisational commitment is negatively and significantly related to turnover intention.

Perceived Organisational Support and Turnover Intention

Perceived organisational support refers to an employee's belief that their organisation values their contributions and genuinely cares about their well-being (Eisenberger et al., 1986). Research indicates that higher levels of perceived support are associated with reduced turnover intentions, making it a key factor in employee retention (Roemer & Harris, 2018). In the solar industry, where project-based work and technological advancements often create uncertainty, such support can act as a stabilising factor against turnover. Based on this premise, it is hypothesised that:

H3: Perceived organisational support is negatively and significantly related to turnover intention.

Job Security and Turnover Intention

Job security represents the assurance of stable employment and continuity provided by the organisation (Davy et al., 1997). It encompasses formal agreements ensuring the ongoing contribution of employees to the organisation (Hur, 2022). Perceptions of job security are inversely related to turnover intentions, particularly in the solar industry, where employment is often tied to specific projects. Employees who feel

secure in their roles are less likely to pursue alternative opportunities. Therefore, the following hypothesis is suggested:

H4: Job security is negatively and significantly related to turnover intention.

Compensation Equity and Turnover Intention

Compensation includes the financial and non-financial rewards employees receive in exchange for their contributions (Teo & Lee, 2016). Fair compensation is crucial in reducing turnover intentions, as employees tend to compare their earnings with those of peers (Ryan, 2023). Perceived inequities, such as lower pay relative to colleagues, can result in dissatisfaction and increased turnover. In the competitive solar industry, ensuring equitable compensation is vital for retaining employees. Accordingly, it is hypothesised that:

H5: Compensation equity is negatively and significantly related to turnover intention.

Work-life Balance and Turnover Intention

Work-life balance refers to the ability to effectively manage work responsibilities alongside personal commitments, fostering well-being and minimising stress. It entails allocating time for professional tasks, personal pursuits, social interactions, and self-care to maintain a balanced and fulfilling life (Shockley et al., 2017). Employees who experience a healthy work-life balance are less likely to consider leaving their organisation, especially in demanding sectors like solar energy (Jaharuddin & Zainol, 2019). A strong balance between work and personal life contributes to higher job satisfaction, which reduces turnover intentions. Thus, the following hypothesis is proposed:

H6: Work-life balance negatively and significantly related to turnover intention.

Proposed Research Framework

Based on the hypotheses developed above, the following research model is proposed for this study:

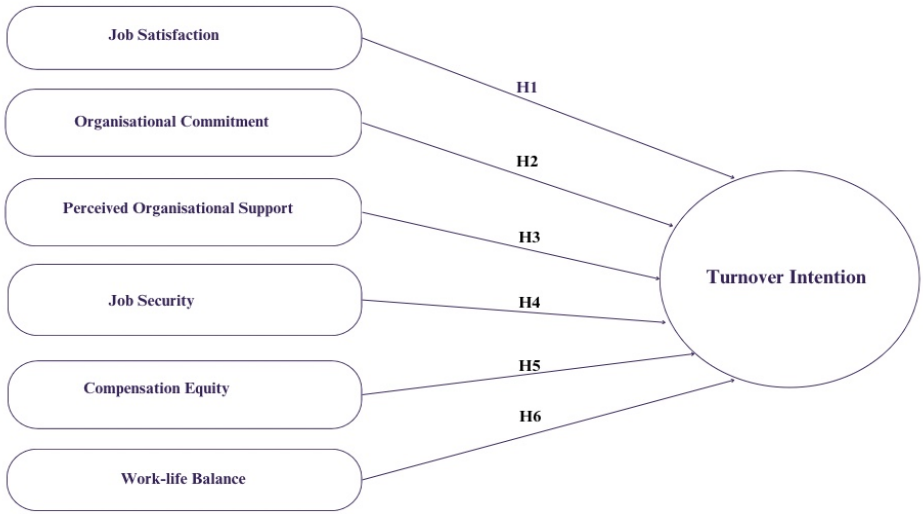

Fig. 1. Research Framework of the Study

3.0 RESEARCH METHODOLOGY

This study employed a quantitative survey method. A self-administered, closed-ended questionnaire, consisting of two sections, was used as the research instrument. Section A collected demographic information from the respondents, while Section B included measurement items for each construct: job satisfaction, perceived organisational commitment, perceived organisational support, job security, compensation equity, work-life balance, and turnover intention. A total of 45 items were adapted from existing literature (Adams, 1965; Mowday et al., 1979; Spector, 1985; Eisenberger et al., 1986; Gamble, 2008; Fisher et al., 2009; Bothma & Roodt, 2013). Respondents rated their opinions on these measurement items using a 5-point Likert scale ranging from "1 - Strongly Disagree" to "5 - Strongly Agree."

The purposive sampling approach was adopted for data collection. The targeted respondents were employees working in the solar industry in Sarawak, encompassing a diverse range of roles, from production line workers to managerial staff across various departments such as manufacturing, engineering, human resources, and administration. Only full-time employees with at least six months of working experience in the solar industry were included to ensure they possessed sufficient familiarity with their companies to provide meaningful insights for this study.

The minimum sample size required for a reliable statistical analysis as calculated using G*Power was 146 respondents. However, to enhance the reliability and validity of the empirical results, a final sample of 372 respondents was collected. Preliminary analyses were conducted to address potential issues such as missing values and straight-lining responses. All estimation procedures were performed using the Statistical Package for the Social Sciences (SPSS) version 23.

4.0 EMPIRICAL FINDINGS

4.1 Demographic Profile of the Respondents

The demographic profile of the respondents, as detailed in Table 1, indicates that the majority (148 respondents or 39.8%) belong to the 25–34 age group, a demographic frequently represented in organisations within the solar industry (see, for example, the study of Al-Habaibeh et al., 2023). Additionally, 92 respondents (24.7%) are aged 35–44, reflecting a significant proportion of mid-career professionals. Respondents under the age of 25 comprise 74 individuals (19.9%), while 45 respondents (12.1%) fall within the 45–54 age group. The smallest proportion of respondents (13 individuals or 3.5%) are aged 55 years and above.

In terms of gender distribution, a slight majority of respondents are male, with 204 individuals (54.8%) identifying as such. Female respondents constitute 163 participants (43.8%), while a small proportion (5 respondents or 1.3%) opted not to disclose their gender.

Regarding educational qualifications, the largest group of respondents hold a bachelor's degree (175 respondents or 47.0%). This is followed by 102 respondents (27.4%) with a diploma, 42 respondents (11.3%) possessing a master's degree, 41 respondents (11.0%) who have completed high school, and 12 respondents (3.2%) with a PhD.

In terms of job roles, production workers form the largest group, comprising 150 respondents (40.3%). This is followed by 98 engineers (26.3%), 61 respondents (16.4%) in managerial positions, 48 administrative staff (12.9%), and 15 respondents (4.0%) occupying other roles, which may include specialised or ad hoc positions not covered within the primary categories.

As for tenure within the solar industry, 143 respondents (38.4%) report 1–3 years of experience, while 108 respondents (29.0%) have been in the industry for 4–6 years. A total of 61 respondents (16.4%) have less than one year of experience, and 60 respondents (16.1%) have more than seven years of tenure.

Table 1. Demographic profile of the respondents

Demographic Characteristic	Category	Frequency (N = 372)	Percentage
Age	Under 25 years	74	19.9%
	25 - 34 years	148	39.8%
	35 - 44 years	92	24.7%
	45 - 54 years	45	12.1%
	55 years and above	13	3.5%
Gender	Male	204	54.8%
	Female	163	43.8%
	Prefer not to say	5	1.3%
Educational Level	High school	41	11.0%
	Diploma	102	27.4%
	Bachelor's degree	175	47.0%
	Master's degree	42	11.3%
	PhD	12	3.2%
Job Role	Production Worker	150	40.3%
	Engineer	98	26.3%
	Manager	61	16.4%
	Administrative Staff	48	12.9%
	Others	15	4.0%
Tenure in the solar industry	Less than 1 year	61	16.4%
	1 - 3 years	143	38.4%
	4 - 6 years	108	29.0%
	7+ years	60	16.1%

4.2 Assessment of the Measurement Model

The results of the reliability analysis assessed using Cronbach's alpha, for all variables are presented in Table 2. Variables are considered reliable if their Cronbach's alpha values exceed 0.70 (Taber, 2018). The findings indicate that Cronbach's alpha values for all variables range from 0.73 to 0.84, demonstrating an acceptable level of reliability. Thus, the variables are deemed suitable for hypothesis testing. Among the variables, turnover intention exhibits the highest reliability, with Cronbach's alpha value of 0.84.

Table 2. Cronbach's alpha results

Variable	Number of Items	Cronbach's Alpha
SAT	8	0.82
COM	9	0.79
SUP	7	0.81
SEC	5	0.76
EQUI	6	0.75
BAL	4	0.73
INT	6	0.84

Note: SAT = job satisfaction, COM = perceived organisational commitment, SUP = perceived organisational support, SEC = job security, EQUI = compensation equity, BAL = work-life balance, INT = turnover intention.

4.3 Assessment of the Proposed Hypotheses Using Regression Analysis

Table 3 summarises the results of the hypothesis testing conducted using regression analysis. The decision to reject or not reject the hypotheses was based on t-statistics and p-values. Given that the proposed hypotheses are one-tailed (left-tailed), the t-statistic values for each hypothesis must exceed 1.645, or the p-values must be less than 0.05 at the 5% level of significance. Overall, all the proposed hypotheses (H1 to H6) were supported at the 5% significance level. Specifically, job satisfaction ($t - 4.00, p = 0.000$), perceived organisational commitment ($t = -3.67, p = 0.000$), perceived organisational support ($t =$

$-2.63, p = 0.009$), job security ($t = -2.50, p = 0.013$), compensation equity ($t = -2.57, p = 0.011$), and work-life balance ($t = -2.44, p = 0.015$) were found to negatively affect the turnover intention of workers within the solar industry in Sarawak.

In terms of the magnitude of the effects of the independent variables on turnover intention, the findings suggest that job satisfaction is the strongest predictor of turnover intention ($\beta = -0.32$), followed by perceived organisational commitment ($\beta = -0.29$), work-life balance ($\beta = -0.25$), perceived organisational support ($\beta = -0.23$), and job security ($\beta = -0.22$). Compensation equity has the smallest impact ($\beta = -0.20$).

Table 3. Regression analysis results

	Hypothesis	Coefficient (β)	Standard Error	*t*-value	*p*-value	Decision
H1:	SAT → INT	- 0.32	0.07	- 4.00	0.000**	Supported
H2:	COM → INT	- 0.29	0.06	- 3.67	0.000**	Supported
H3:	SUP → INT	- 0.23	0.08	- 2.63	0.009**	Supported
H4:	SEC → INT	- 0.22	0.08	- 2.50	0.013**	Supported
H5:	EQUI → INT	- 0.20	0.07	- 2.57	0.011**	Supported
H6:	BAL → INT	- 0.25	0.09	- 2.44	0.015**	Supported

Note: Asterisk (**) indicates significance at a 5% level of significance. SAT = job satisfaction, COM = perceived organisational commitment, SUP = perceived organisational support, SEC = job security, EQUI = compensation equity, BAL = work-life balance, INT = turnover intention.

4.4 Discussions on the Findings of the Regression Analysis

The negative relationship between job satisfaction (H1) and turnover intention underscores a crucial element of employee retention in the solar industry: the importance of fostering a fulfilling work environment. Employees who feel satisfied with their roles, work conditions, and opportunities for growth exhibit lower intentions to leave. This aligns with Herzberg's Two-Factor Theory, which emphasises the dual importance of hygiene factors (e.g., salary, safe working conditions) and motivators (e.g., recognition, personal growth). Such findings are in line with the literature in which the presence of growth opportunities plays a critical role in retention (Yousaf, 2020).

In the solar industry, intrinsic motivators often hold greater significance, as employees tend to value their contributions to sustainability. Companies can harness this motivation by connecting job roles to the broader mission of combating climate change. Initiatives such as structured career development programmes and mentoring opportunities not only enhance satisfaction but also provide employees with a sense of purpose (Gawel, 1996). Additionally, addressing repetitive tasks or lack of autonomy through task enrichment initiatives—such as offering decision-making power or opportunities for innovation—can significantly boost engagement and retention.

A strong sense of perceived organisational commitment (H2) similarly plays a pivotal role in reducing turnover intention. This commitment reflects an emotional connection to the companies, often built on shared values and mutual respect. The current findings align with past studies that addressed the importance of employees' emotional attachment and psychological bond with the organisation (Meyer & Allen, 1997). Supporting social exchange theory, the findings suggest that reciprocity strengthens employee loyalty. When employees feel their efforts are recognised and their needs met, they are more inclined to remain engaged. Solar companies can nurture perceived organisational commitment by fostering a culture of trust, inclusivity, and alignment with the company's vision. Leadership is central to this effort; leaders who demonstrate integrity, fairness, and genuine care for employees inspire loyalty. Practical measures—such as involving employees in decision-making, organising team-building activities, and maintaining regular communication about organisational goals—can further align employees with the company's mission.

Celebrating achievements and connecting them to individual contributions enhances employees' sense of belonging, reinforcing their commitment.

The current study demonstrates that organisational support (H3) is negatively related to employee intention to leave (Roemer & Harris, 2018). Employees who feel appreciated and supported by their companies are less likely to consider leaving. This includes access to resources, recognition, and development opportunities. Creating a supportive environment is critical in the solar industry, where skilled labour and project-based roles are integral. Companies can bolster perceived support through initiatives such as regular feedback systems, recognition of employee milestones, and offering flexible work arrangements. Leadership empathy plays a vital role here; leaders who engage with teams, address challenges and show genuine concern for well-being contribute greatly to perceptions of support. Tailoring growth opportunities to align with individual career goals further strengthens employees' connection to the companies.

Job security (H4), often seen as a fundamental need, also negatively correlates with turnover intention (Davy et al., 1997). Uncertainty about future roles pushes employees toward more stable opportunities, aligning with Maslow's Hierarchy of Needs, where job security satisfies the basic need for stability and safety (Navy, 2020). To address this, solar companies should prioritise transparent communication about project timelines, career opportunities, and workforce planning. Offering extended contracts or permanent positions across projects can alleviate job security concerns. Additionally, creating structured redeployment strategies that enable employees to transition seamlessly between projects reinforces confidence in long-term employment. These measures reduce turnover intentions and enhance morale, as employees feel assured about their future within the company.

Addressing compensation equity (H5) targets a tangible and often contentious aspect of employment: reward fairness. Employees who perceive their pay and benefits as equitable, both internally and compared to industry standards, exhibit stronger loyalty. This finding aligns with equity theory, highlighting fairness as a key driver of satisfaction and behaviour (Ryan, 2023). Solar companies can stay competitive by benchmarking compensation packages regularly and ensuring parity within similar roles. Transparency in performance incentives, bonuses, and non-monetary benefits—such as health plans, wellness programmes, or additional leave—further strengthens perceptions of fairness. Offering retention bonuses or stock options for specialised roles can reinforce loyalty, particularly in a high-demand labour market.

Finally, work-life balance (H6) has become a defining factor in employee retention. Such a finding is in line with the literature in which employees who manage personal and professional responsibilities effectively report higher satisfaction and reduced turnover intentions (Shockley et al., 2017; Jaharuddin & Zainol, 2019). Given the demanding project timelines and fieldwork common in the solar industry, addressing these challenges is essential. Flexible work arrangements, such as hybrid schedules or remote options for eligible roles, can significantly enhance work-life balance. For field employees, reducing workload intensity during peak periods and offering compensatory time off are practical measures. Wellness programmes, childcare support, and mental health resources demonstrate a company's commitment to holistic employee well-being. Such initiatives improve morale and foster long-term loyalty, ensuring a stable and motivated workforce.

5.0 IMPLICATIONS OF THE STUDY

The findings offer significant implications for both theoretical advancements and practical strategies in managing turnover within the solar industry. From a theoretical perspective, the study validates established frameworks such as Herzberg's Two-Factor Theory, equity theory, and social exchange theory, situating them within the unique context of the solar industry. It underscores the interconnected roles of job satisfaction, perceived organisational support, and work-life balance in employee retention, suggesting that these factors must be addressed holistically for optimal effectiveness. Additionally, the findings extend the

applicability of turnover theories to industries characterised by project-based roles and innovation-driven environments. This highlights the need for models incorporating distinctive variables, such as the impact of technological disruption and cyclical employment patterns, to reflect the realities of such dynamic sectors better.

In terms of practical implications, solar companies must adopt a comprehensive and balanced approach to retention, addressing both intrinsic and extrinsic motivators. On the intrinsic side, providing growth opportunities and connecting employees' roles to a meaningful purpose, such as contributing to sustainability, fosters deeper engagement. Extrinsic factors, including equitable pay and job security, also play a critical role. To address the uncertainties inherent in project-based work, companies should prioritise transparent communication, offering clarity about career opportunities and long-term workforce planning. Structured career paths and redeployment strategies can ensure continuity and alleviate employees' concerns about job stability.

Moreover, enhancing work-life balance is essential for boosting employee satisfaction and reducing turnover. Flexible work arrangements, wellness programmes, and leadership that prioritise well-being can help create a supportive environment. These measures are particularly effective in addressing the challenges of demanding project timelines and fieldwork, which are common in the solar industry. Beyond individual initiatives, fostering a culture where employees feel valued and aligned with the company's vision is paramount. In purpose-driven industries like solar energy, where the mission often resonates personally with employees, such alignment can amplify commitment and loyalty.

6.0 CONCLUSION, LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

This study identifies six key factors influencing turnover intentions: job satisfaction, perceived organisational commitment, perceived organisational support, job security, compensation equity, and work-life balance. Together, these findings provide actionable insights for improving employee retention in the solar industry. Addressing these factors holistically enables companies to reduce turnover rates, foster workforce stability, and cultivate a more engaged and motivated team.

For solar companies, effective retention strategies must balance both intrinsic and extrinsic motivators. Fair compensation, supportive leadership, and initiatives targeting job security and work-life balance are particularly critical. Aligning organisational practices with employee expectations reduces attrition and enhances the company's reputation as an employer of choice. Such alignment strengthens employee loyalty and ensures a stable workforce capable of driving innovation and supporting the mission of advancing renewable energy solutions. By implementing these strategies, solar companies can build a resilient team equipped to meet the challenges of this dynamic industry.

On a broader level, the study significantly contributes to academic understanding by offering a practical framework for reducing employee turnover. It validates established theories while adapting them to the unique context of the solar industry. Future research should continue to refine and expand upon these strategies, ensuring their relevance in a rapidly evolving sector. Investigating emerging factors, such as the role of the adoption of technology or the impact of hybrid work models, could provide deeper insights into retention dynamics.

Despite its valuable contributions, this study has several limitations that should be acknowledged. First, the data was collected at a single point in time, which limits the ability to establish causal relationships. Additionally, the findings are based on data from companies in the solar industry in Sarawak, Malaysia, potentially restricting their generalisability to other regions or industries. Moreover, while the study extensively analysed internal organisational factors, it did not delve deeply into external influences, such as industry competition, economic conditions, or regulatory changes, which could also affect turnover intentions.

To address these limitations, future research should explore broader and more diverse datasets, including multiple companies or organisations and regions (for example, West Malaysia), to enhance the generalisability of findings. Longitudinal studies could track changes in turnover intentions over time, offering richer insights into the causal relationships between retention strategies and employee outcomes. Additionally, incorporating external factors, such as market trends and policy changes, could provide a more comprehensive understanding of the turnover phenomenon.

By building on these findings and addressing the limitations, future studies may offer even more robust and actionable frameworks for companies seeking to retain top talent and maintain a competitive edge in the renewable energy sector.

7.0 CONTRIBUTION OF AUTHORS

The authors confirm equal contributions to each part of this work. All authors reviewed and approved the final version of this work.

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9.0 CONFLICT OF INTEREST STATEMENT

All authors declare that they have no conflicts of interest.

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