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THE EFFECT OF WORKLOAD AND NON-PHYSICAL WORK ENVIRONMENT ON JOB CREATIVITY OF SALES ENGINEERS IN SOUTHEAST ASIA: THE INTERVENING ROLE OF INTRINSIC MOTIVATION

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Abstract

This study aims to analyze the influence of workload and the non-physical work environment on the job creativity of sales engineers in the precision instruments industry in Southeast Asia. It further investigates the mediating role of intrinsic motivation in these relationships. A quantitative approach was employed, with data collected through a questionnaire distributed to 125 sales engineers from a multinational precision instrument company across Indonesia, Malaysia, the Philippines, and Thailand, resulting in 95 valid responses. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate that the non-physical work environment and workload have a significant positive effect on job creativity. The non-physical work environment also positively influences intrinsic motivation, whereas workload has a significant negative effect on intrinsic motivation. Furthermore, intrinsic motivation was found to significantly and positively mediate the relationship between both the non-physical work environment and workload on job creativity. These findings suggest that while a challenging workload can stimulate creativity, it may simultaneously diminish intrinsic motivation. Therefore, fostering a supportive non-physical work environment is crucial for enhancing intrinsic motivation, which in turn boosts the job creativity required to succeed in a competitive technical sales landscape.

Keywords: *Job Creativity; Workload; Non-Physical Work Environment; Intrinsic Motivation; Sales Engineer; Southeast Asia*

1. Introduction

In the rapidly advancing industrial landscape, particularly in the precision instruments sector, the role of a sales engineer has become increasingly pivotal. These professionals must blend deep technical expertise with strong commercial skills to provide value-added solutions to clients (Reunanen et al., 2018). This dual demand necessitates a high degree of job creativity to devise innovative solutions and maintain a competitive edge, especially in a growing market like Southeast Asia (Grand View Research, 2023; Statista, 2023). However, sales engineers often face significant challenges, including high workload pressure and a non-physical work environment—encompassing leadership styles, organizational culture, and digital collaboration tools—that may either stifle or stimulate their creative potential (Shao et al., 2019).

While external factors like workload and environment are critical, intrinsic motivation—the internal drive and satisfaction derived from the work itself—is a well-established catalyst for creativity (Amabile, 1997; Ryan & Deci, 2000). Previous research has often focused on R&D or manufacturing contexts, leaving a gap in understanding the unique dynamics affecting sales engineers. Moreover, most studies originate from Western contexts, which may not fully capture the cultural and organizational nuances of Southeast Asia, a region characterized by hierarchical structures and diverse management styles (Gallup, 2023).

This study addresses these gaps by examining the interplay between workload, the non-physical work environment, and intrinsic motivation on the job creativity of sales engineers in Indonesia, Malaysia, the Philippines, and Thailand. The research aims to answer: (1) How do workload and the non-physical work environment directly affect job creativity and intrinsic motivation? (2) How does intrinsic motivation mediate the relationship between these work factors and job creativity? The findings are expected to provide actionable

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insights for human resource policies and workplace strategies to foster innovation within this specialized and critical professional group.

2. Literature Review

2.1. Job Creativity

Job creativity refers to the generation of novel and useful ideas, solutions, or processes within the context of an individual's professional role (Amabile, 1996). It is not merely an individual trait but a behavior that can be significantly influenced by the work context (Shalley & Gilson, 2004). In today's dynamic and competitive environment, organizations increasingly rely on their employees' creativity to drive innovation and maintain a competitive advantage (Anderson et al., 2014). For roles like sales engineers, creativity manifests in unique problem-solving for clients, adapting technical products to specific needs, and developing innovative sales approaches, making it a critical component of job performance.

2.2. The Non-Physical Work Environment

The non-physical work environment encompasses the social, psychological, and organizational aspects of the workplace. A supportive environment, characterized by factors such as managerial encouragement, autonomy, open communication, and constructive feedback, is a crucial antecedent to creativity (Amabile et al., 1996; Oldham & Cummings, 1996). When employees perceive organizational support, they are more likely to engage in creative risk-taking (Hazem et al., 2021). Leadership styles also play a significant role; transformational and ethical leadership have been shown to positively influence employee creativity by fostering trust and psychological empowerment (Shafi et al., 2020; Bashir et al., 2020). Therefore, a positive non-physical environment is expected to directly foster job creativity.

2.3. Workload

Workload, defined as the amount of work an individual is expected to complete within a specific timeframe, has a complex and often paradoxical relationship with creativity. On one hand, excessive workload can act as a "hindrance stressor," depleting cognitive resources, increasing pressure, and leaving little time or mental energy for creative thought (Amalia, 2020; Hu et al., 2023). This can lead individuals to prioritize routine tasks over creative endeavors. On the other hand, a manageable yet challenging workload can act as a "challenge stressor," stimulating engagement and prompting innovative problem-solving to meet demands efficiently (Shao et al., 2019). This suggests that the relationship between workload and creativity is not linear and may depend on how the workload is perceived and managed.

2.4. The Mediating Role of Intrinsic Motivation

Self-Determination Theory (SDT) posits that intrinsic motivation—the drive to engage in an activity for its inherent satisfaction—flourishes when the fundamental psychological needs for autonomy, competence, and relatedness are met (Ryan & Deci, 2000). A supportive work environment directly nurtures these needs, thereby enhancing intrinsic motivation (Deci et al., 1989). Conversely, an overwhelming workload can undermine feelings of autonomy and competence, leading to a decrease in intrinsic motivation. As intrinsic motivation is a primary driver of creativity (Amabile, 1997; Hennessey & Amabile, 2010; Fischer et al., 2019), it is plausible that it acts as a key mechanism through which the work environment and workload affect creative outcomes. A positive environment enhances intrinsic motivation, which in turn fuels creativity, while a high workload may dampen creativity by first diminishing this internal drive.

2.5. Hypotheses

Based on the theoretical framework, the following hypotheses were formulated:

- H1: The non-physical work environment has a significant positive effect on job creativity.
- H2: Workload has a significant effect on job creativity.
- H3: The non-physical work environment has a significant positive effect on intrinsic motivation.
- H4: Workload has a significant negative effect on intrinsic motivation.
- H5: Intrinsic motivation has a significant positive effect on job creativity.
- H6: Intrinsic motivation mediates the relationship between the non-physical work environment and job creativity.
- H7: Intrinsic motivation mediates the relationship between workload and job creativity.

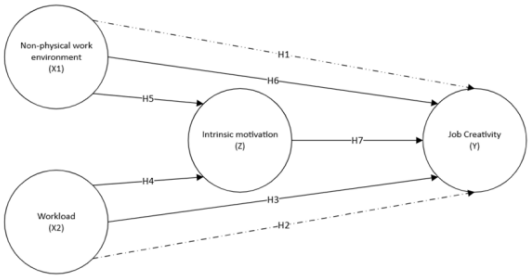

Figure 1: Conceptual Framework

3. Methods

3.1. Research Design and Sample

This study employed a quantitative approach with a cross-sectional design. The population consisted of all sales engineers (N=125) from a multinational precision instrument company (coded as XYZ) across its Southeast Asian offices in Indonesia, Malaysia, the Philippines, and Thailand. Using the Taro Yamane formula with a 5% margin of error, the required sample size was calculated to be 95. A stratified random sampling technique was used, with strata based on country, to ensure proportional representation.

3.2. Data Collection and Measurement

Data were collected via an online questionnaire using Google Forms. All variables were measured using a 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree). The instruments were adapted from established research:

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- **Non-Physical Work Environment (10 items):** Adapted from Nguyen & Pham (2021), measuring aspects like emotional support, recognition, and job security.
- **Workload (10 items):** Adapted from Li & Zhang (2021), covering dimensions like work volume, deadline proximity, and emotional resilience.
- **Intrinsic Motivation (10 items):** Adapted from Ryan & Deci (2020), focusing on satisfaction, skill development, and alignment with personal values.
- **Job Creativity (10 items):** Adapted from Ryan & Deci (2020), assessing freedom in decision-making, innovative work approaches, and constructive feedback.

3.3. Data Analysis

The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 3 software. This method was chosen for its suitability for complex models and non-normal data distribution. The analysis involved two stages: evaluating the measurement model (outer model) for reliability and validity, and testing the structural model (inner model) to assess the hypothesized relationships.

4. Results

4.1. Respondent Profile

Respondents' Profile		*Frequency*	*Percent*
Gender	Male	59	62.10%
	Female	36	37.90%
	Total	**95**	**100.00 %**
Age	22-26 Years	24	25.30%
	27-31 Years	30	31.60%
	32-36 Years	26	27.40%
	37-41 Years	11	11.60%
	42-46 Years	4	4.20%
	Total	**95**	**100.00 %**
Negara	Indonesia	37	38.90%
	Malaysia	21	22.10%
	Philipines	11	11.60%
	Thailand	26	27.40%
	Total	**95**	**100.00 %**
Marital status	Single	65	68.42%
	Married	28	29.47%
	Separated/Divorced	2	2.11%
	Total	**95**	**100.00 %**
Education	Bachelor's degree (S1/DIV/BA/BS) /ปริญญาตรี	51	53.70%
	Diploma (D3)/Por Wor Sor/Associate Degree	39	41.10%
	Master's Degree/ (S2)ปริญญาโท	5	5.30%
	Total	**95**	**100.00 %**

Table 1 : Respondent Demography

Of the 95 respondents, 62.1% were male. The largest age group was 27-31 years (31.6%), followed by 32-36 years (27.4%). The majority held a bachelor's degree (53.7%) and were single (68.4%). The geographical distribution was Indonesia (38.9%), Thailand (27.4%), Malaysia (22.1%), and the Philippines (11.6%).

4.2 Measurement Model

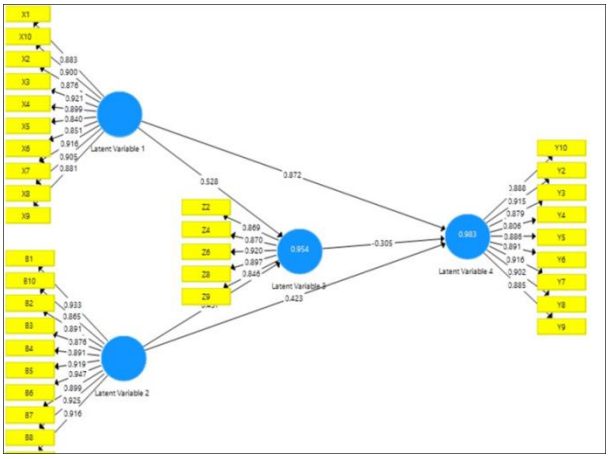

Figure 2: PLS-SEM Path Analysis Results

	Cronbach's Alpha (α)	rho_A (Dijkstra-Henseler)	Composite Reliability (CR)	AVE
Non-physical work environment	0.967	0.968	0.973	0.764
Workload	0.976	0.977	0.98	0.812

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Job Creativity	0.960	0.961	0.966	0.736
Intrinsic motivation	0.925	0.928	0.943	0.766

Table 2 : Construct Reliability and Validity

The measurement model demonstrated strong reliability and validity. All outer loadings exceeded the recommended threshold of 0.7. Cronbach's Alpha for all constructs was above 0.92, and Composite Reliability (CR) was above 0.94, indicating excellent internal consistency. The Average Variance Extracted (AVE) for all constructs was above 0.73, confirming convergent validity. Discriminant validity was established using the Fornell-Larcker criterion, where the square root of the AVE for each construct was greater than its correlation with other constructs

The structural model showed good predictive power, with R^2 values of 0.956 for Job Creativity and 0.966 for Intrinsic Motivation. The results of the hypothesis testing are summarized below:

Hypothesis	Path	β	T-Stats	P-Value	Result
	Direct Effects				
H1	Work Env -> Creativity	0.528	2.939	<0.05	Supported
H2	Workload -> Creativity	0.872	11.057	<0.05	Supported
H3	The non-physical work environment -> intrinsic motivation.	0.423	3.998	0	Supported
H4	Workload -->intrinsic motivation.	-0.305	2.3	0.022	Supported
H5	Intrinsic motivation -> on job creativity.	0.457	2.518	0.012	Supported
	Indirect Effects				
H6	Work Env -> IM -> Creativity	0.528	2.939	<0.05	Supported
H7	Workload -> IM -> Creativity	0.457	2.518	<0.05	Supported

Table 3 : Hypothesis Testing Results (Direct and Indirect Effects).

5. Discussion

The findings of this study provide several key insights into the drivers of job creativity among sales engineers in Southeast Asia. Firstly, a supportive non-physical work environment—characterized by emotional support, recognition, and autonomy—is a powerful direct driver of both intrinsic motivation and job creativity. This aligns with Self-Determination Theory (Ryan & Deci, 2000) and prior research emphasizing the role of a positive context in fostering creative performance (Amabile et al., 1996).

Interestingly, workload demonstrated a dual effect. It had a strong positive direct influence on job creativity, suggesting that a challenging workload can act as a stimulant, pushing sales engineers to devise innovative solutions to meet targets. This supports the notion that some level of pressure can be beneficial (Shao et al., 2019). However, workload also had a significant negative impact on intrinsic motivation, indicating that while employees may rise to the creative challenge, the pressure simultaneously erodes their internal drive and job satisfaction, a finding consistent with the Job Demands-Resources model (Bakker & Demerouti, 2007).

The significant mediating role of intrinsic motivation is a crucial finding. It acts as the pathway through which a positive environment translates into higher creativity. It also helps explain the complex effect of workload; while workload may directly spur creativity, its negative effect on intrinsic motivation could, in the long run, undermine this creative output. This highlights the delicate balance managers must strike between setting challenging goals and preventing burnout.

Managerial Implications: Organizations in the precision instruments sector should prioritize creating a supportive non-physical work environment. This includes training managers to provide emotional support and constructive feedback, fostering a culture of recognition, and granting sales engineers sufficient autonomy. To mitigate the negative effects of workload, companies should ensure that demands are challenging but manageable, and provide adequate resources and support systems to prevent the erosion of intrinsic motivation.

Limitations and Future Research: This study is limited by its cross-sectional design, which does not allow for causal inferences. Future research could employ a longitudinal design to track these dynamics over time. The study was also conducted within a single multinational company, which may limit the generalizability of the findings. Future studies could replicate this model across different companies and industries in the Southeast Asian region.

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6. Conclusion

This research demonstrates that for sales engineers in Southeast Asia, both a supportive non-physical work environment and a challenging workload are significant predictors of job creativity. However, the relationship is complex, with workload negatively impacting the intrinsic motivation that is vital for sustained creative performance. Intrinsic motivation serves as a critical mediator, amplifying the positive effects of a good work environment and highlighting the potential long-term cost of excessive workload. Therefore, to cultivate a creatively thriving sales force, companies must not only set challenging goals but also invest heavily in building a psychologically supportive and empowering workplace.

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26. **Appendices** (Jika Ada)
27. *Petunjuk: Lampiran digunakan untuk materi tambahan yang terlalu detail untuk dimasukkan dalam badan utama artikel, seperti daftar lengkap*

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28. **Appendix A: [Judul Lampiran]** [Isi lampiran A di sini.]

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