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STRESS MANAGEMENT AND EMPLOYEE PERFORMANCE: THE MEDIATING ROLE OF WORKPLACE MOTIVATION IN MANUFACTURING INDUSTRIES IN NORTH CENTRAL NIGERIA

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ABSTRACT
This study examines the impact of stress management on employee performance, with workplace motivation as a mediating variable, in manufacturing industries in North Central Nigeria. The specific objectives are to assess the direct relationship between stress management (independent variable) and employee performance (dependent variable), evaluate the mediating role of workplace motivation, and explore the factors influencing stress management and its effectiveness. Drawing on the Job Demands-Resources (JD-R) model and Herzberg's Two-Factor Theory, the study provides a theoretical basis for understanding how workplace motivation interacts with stress management to influence performance. A descriptive research design will be employed, using a quantitative methodology. Data was collected through structured questionnaires distributed to employees in selected manufacturing firms across North Central Nigeria. The Structural Equation Modeling (SEM) technique will be applied for data analysis to test direct and indirect relationships among variables. Results reveal that workload management WL (coefficient = 3.5013, SE = 0.0269, z = 130.35, $p < 0.001$) and work-life balance WB (coefficient = 8.2682, SE = 0.1146, z = 72.15, $p < 0.001$) significantly enhance Workers' motivation WM, while support systems SS (coefficient = 0.0395, SE = 1.1592, z = 0.03, p = 0.973) shows no meaningful impact. WM mediates the relationship between WL, WB, and EP, significantly predicting EP (coefficient = 0.9116, SE = 0.2762, z = 3.30, p = 0.001). Indirect effects confirm workload management (coefficient = 3.5038, z = 535.86, $p < 0.001$) and work-life balance (coefficient = 3.4185, z = 134.15, $p < 0.001$) as pivotal contributors to Workers' motivation, which in turn influences employee performance. However, support systems lacks significant direct or indirect effects, suggesting limited relevance in the current model. Workload management and work-life balance are key drivers of workers' motivation, a critical mediator for improving employee performance. Support systems require reevaluation to enhance their organizational impact. It is recommended among others that business organizations should optimize workload distribution, foster work-life balance, and focus on enhancing workers' motivation through recognition programs and career growth opportunities.

Keywords: Stress Management, Employee Performance, Workplace Motivation, Employee Wellbeing.

INTRODUCTION
Employee performance is a critical factor in organizational success, impacting productivity, profitability, and innovation. Globally, businesses strive to enhance employee performance through efficient management practices, training programs, and conducive work environments. Studies suggest that high-performing employees contribute to competitive advantage and organizational resilience in an ever-changing business landscape (Brown et al., 2023). However, employee performance is influenced by multiple factors, including workplace stress, motivation, and the organization's ability to create balance. Managing these factors effectively is essential in manufacturing industries, where performance often directly correlates with operational efficiency (Khan et al., 2022). In Africa, employee performance is increasingly recognized as a vital driver of economic growth. Challenges such as economic instability, resource constraints, and socio-

political dynamics often hinder optimal performance in many sectors, including manufacturing (Nkrumah & Mensah, 2021). Despite these challenges, African businesses are adopting innovative strategies, including stress management programs and motivational interventions, to enhance employee outcomes. The manufacturing sector, being labor-intensive, underscores the need for effective strategies to mitigate workplace stress, which often impairs productivity and overall performance (Okonkwo et al., 2023).

In Nigeria, the manufacturing industry is pivotal to economic development, contributing significantly to employment and GDP. However, employees in North Central Nigeria face unique stressors, including infrastructural deficits, inconsistent power supply, and insecurity (Adekunle & Afolabi, 2021). These factors exacerbate workplace stress, undermining employee productivity and well-being. Despite these challenges, organizations in the region have started implementing stress management practices, though their effectiveness remains inconsistent (Ibrahim et al., 2022). Addressing stress and its impact on performance in this context is crucial for sustaining industrial growth in Nigeria. Globally, stress management in manufacturing industries involves strategies such as employee wellness programs, flexible work arrangements, and psychological support systems (Smith & Lee, 2022). In Africa and Nigeria, however, resource limitations and socio-economic factors often hinder the implementation of comprehensive stress management systems. In North Central Nigeria, stress management practices are still evolving, often lacking structured frameworks to address workplace pressures (Yusuf & Ibrahim, 2021). The impact of stress on employee performance in this region is significant, as chronic stress leads to burnout, reduced engagement, and diminished productivity (Ahmed et al., 2023). Motivation serves as a critical mediator in the relationship between stress management and employee performance. When employees are adequately motivated, they are better equipped to cope with workplace stress, maintaining high levels of performance despite challenges (Hassan & Bello, 2022). This study explores the interplay of stress management, workplace motivation, and employee performance in manufacturing industries in North Central Nigeria. By investigating this dynamic, the research aims to contribute to a comprehensive understanding of how motivation can mitigate stress-related performance issues, providing insights for industry leaders and policymakers.

STATEMENT OF PROBLEM

In an ideal work environment, employee performance is optimized when organizations implement effective stress management practices that reduce workplace pressures, enhance well-being, and promote job satisfaction. Motivation plays a complementary role, acting as a catalyst for higher engagement, creativity, and productivity. The manufacturing industry, known for its labour-intensive nature and high-pressure demands, particularly requires robust systems to address employee stress and maintain optimal performance (Smith & Lee, 2022). In such a scenario, organizations benefit from integrated strategies that align stress management with workplace motivation, thereby fostering sustainable performance outcomes. However, the reality in many workplaces, especially in manufacturing industries in North Central Nigeria, diverges from this ideal. Employees often grapple with high stress levels due to infrastructural challenges, insecurity, and the labour-intensive nature of their roles (Adekunle & Afolabi, 2021). Despite the recognition of stress as a significant workplace issue, many organizations either lack structured frameworks for stress management or fail to integrate these efforts with motivational strategies. Consequently, high stress levels often result in reduced productivity, increased employee turnover, and organizational inefficiencies. These challenges are exacerbated by inconsistent implementation of stress management interventions and inadequate attention to the mediating role of motivation.

Empirical studies on stress management and employee performance have yielded mixed findings. For instance, Ahmed et al. (2023) found a significant positive relationship between stress management practices and productivity in Nigerian industries, emphasizing the role of effective leadership and support systems. In contrast, Yusuf and Ibrahim (2021) reported minimal impacts of stress management interventions, citing the absence of motivational frameworks as a limitation. Similarly, while Hassan and Bello (2022) identified workplace motivation as crucial in mitigating stress effects, their study did not explore its mediating role comprehensively. These inconsistencies highlight gaps in understanding how stress management and motivation interact to influence performance, particularly in manufacturing industries. The current study addresses these gaps by examining the mediating role of workplace motivation in the relationship between stress management and employee performance in manufacturing industries in North Central Nigeria. While existing research underscores the importance of stress management and motivation separately, there is limited empirical evidence on their integrated impact within the Nigerian manufacturing context. By employing the Job Demands-Resources (JD-R) model and Herzberg's Two-Factor Theory, this study provides a robust theoretical and empirical framework to understand these dynamics. The findings will offer valuable insights into designing targeted interventions to enhance employee well-being and productivity in the study area.

OBJECTIVES OF THE STUDY

The main objective of the study is to examine the effect of stress management on employee performance, with workplace motivation as a mediating variable, in manufacturing industries in North Central Nigeria. The specific objectives are to assess the direct relationship between stress management and employee performance, evaluate the mediating role of workplace motivation, and explore the factors influencing stress management and its effectiveness.

SIGNIFICANCE OF THE STUDY

This study is significant in several ways. First, it provides empirical insights into the direct relationship between stress management and employee performance, offering actionable knowledge for enhancing productivity in manufacturing industries. Second, by examining workplace motivation as a mediating variable, it bridges a critical gap in understanding how motivation influences the stress-performance dynamic, using the Job Demands-Resources model and Herzberg's Two-Factor Theory. Third, the study contributes practical recommendations tailored to manufacturing firms in North Central Nigeria, enabling organizations to design integrated strategies for stress reduction and motivation enhancement. Finally, it advances theoretical and methodological frameworks in organizational research by employing Structural Equation Modeling (SEM), ensuring robust analysis of direct and indirect relationships, and setting a foundation for future studies in similar contexts.

LITERATURE REVIEW

THEORETICAL FRAMEWORK

JOB DEMANDS-RESOURCES MODEL: The Job Demands-Resources (JD-R) model, propounded by Demerouti et al. (2001), is a widely acknowledged framework for understanding employee well-being and performance. The model categorizes workplace factors into two dimensions: job demands, which refer to the physical, emotional, and psychological effort required in a job, and job resources, which are the physical, psychological, social, or organizational aspects that help employees cope with demands, reduce stress, and foster motivation (Demerouti et al., 2001). This model posits that an imbalance—when job demands exceed resources leads to stress and burnout, while sufficient resources foster engagement, motivation, and performance. The JD-R model emphasizes how resourceful interventions can improve employee outcomes by mitigating stress and enhancing motivation (Schaufeli & Taris, 2014). A key strength of the JD-R model lies in its flexibility and applicability across industries, as it can be adapted to various organizational settings, including manufacturing (Bakker & Demerouti, 2007). The model integrates both positive (motivation) and negative (stress) aspects of work, providing a holistic understanding of employee performance.

However, its weakness lies in the broad categorization of demands and resources, which may not capture industry-specific nuances. Furthermore, it assumes that all employees perceive demands and resources uniformly, overlooking individual differences in coping mechanisms, personality, and socio-cultural influences (Crawford et al., 2010; Hakanen et al., 2006).

The JD-R model aligns directly with the study objectives. It underscores the importance of stress management as a mechanism for reducing job demands and workplace motivation as a critical job resource that enhances employee performance (Bakker et al., 2005). By evaluating the direct relationship between stress management and performance, the study examines how reducing job demands (through effective stress management practices) improves productivity. Similarly, the focus on workplace motivation as a mediating variable aligns with the JD-R framework, which suggests that resources like motivation buffer the adverse effects of demands on performance (Schaufeli & Taris, 2013). The model also supports exploring factors influencing stress management and its effectiveness, as these factors shape the balance between demands and resources (Schaufeli et al., 2006). In this study, the JD-R model is particularly relevant because it provides a theoretical basis for understanding how manufacturing employees in North Central Nigeria navigate high-stress environments. Manufacturing industries often involve physically demanding tasks and strict deadlines, amplifying job demands (Bakker & Demerouti, 2014). By applying the JD-R model, the study can evaluate how stress management interventions can reduce these demands and how motivation acts as a resource to sustain high performance. Additionally, the model informs practical recommendations for organizations to strategically enhance resources and minimize stressors, fostering an optimal balance for improved employee outcomes (Bakker, 2011).

HERZBERG'S TWO-FACTOR THEORY

Herzberg's Two-Factor Theory, also known as the Motivation-Hygiene Theory, was propounded by Frederick Herzberg in 1959 (Herzberg, 1959). The theory distinguishes between two factors influencing employee motivation and satisfaction: motivators and hygiene factors. Motivators, such as recognition, achievement, and growth opportunities, contribute to job satisfaction and motivation. Hygiene factors, including salary, working conditions, and company policies, do not necessarily motivate employees but, when absent or inadequate, lead to dissatisfaction. Herzberg's theory posits that motivation is derived from intrinsic factors, while dissatisfaction arises from extrinsic factors (Herzberg et al., 1959). One strength of Herzberg's Two-Factor Theory is its focus on intrinsic motivation, highlighting the importance of meaningful and fulfilling work in driving employee performance (Herzberg, 1966). The theory has practical implications for organizational management, particularly in structuring jobs to enhance motivation and engagement. However, its limitations include reliance on self-reported data, which may be subjective, and its narrow application to specific contexts, as it may not fully account for cultural and individual differences (House & Wigdor, 1967). Additionally, the distinction between motivators and hygiene factors is not always clear-cut, as some elements may act as both depending on the context (King, 1970).

The theory is directly relevant to the study's objectives. Stress management aligns with hygiene factors, as reducing workplace stress can prevent dissatisfaction (Herzberg, 1959). At the same time, workplace motivation reflects Herzberg's motivators, emphasizing the need for intrinsic rewards to enhance performance. By assessing the direct relationship between stress management and employee performance, the study examines how addressing hygiene factors reduces dissatisfaction, while evaluating the mediating role of workplace motivation explores how motivators drive improved performance. In the context of manufacturing industries in North Central Nigeria, Herzberg's Two-Factor Theory provides a useful framework for understanding the dynamics of stress management and motivation. Manufacturing work often involves physically demanding tasks and tight deadlines, which heighten stress (hygiene factor concerns). Effective stress management can mitigate dissatisfaction, creating a conducive environment for employees to focus on motivators like recognition and personal growth. This study uses Herzberg's theory to offer practical recommendations for managers to balance hygiene and motivators, thereby improving employee performance and fostering a sustainable and motivating work environment (Herzberg et al., 1959; Herzberg, 1966).

CONCEPTUAL CLARIFICATION

EMPLOYEE PERFORMANCE

Akinboade et al. (2015) in their study define employee performance as the ability to meet job expectations effectively, which is measured through productivity, quality of work, and the employee's ability to meet deadlines. They emphasize that external factors, such as organizational support and internal factors like stress management and motivation, play significant roles in influencing this performance. In the Nigerian context, Adeyemi and Adeyemi (2011) define employee performance as the extent to which employees execute their tasks according to the organization's expectations. They argue that motivation and stress management are key factors that influence employee performance, highlighting that effective stress management and motivation lead to improved work output. For the study the definitions by Akinboade et al. (2015), Adeyemi and Adeyemi (2011) are most relevant. These definitions consider both the direct impact of stress management on performance and the importance of workplace motivation as a contributing factor in the Nigerian context, particularly within manufacturing industries.

STRESS MANAGEMENT

DEFINITIONS OF STRESS MANAGEMENT

In their 2018 study, Ogunyemi and Adewale define stress management as a comprehensive set of strategies and techniques that individuals and organizations use to reduce or cope with workplace stressors. They argue that effective stress management combines individual interventions, such as relaxation techniques, with organizational strategies like workload adjustments and fostering social support. This dual approach aims to alleviate stress on both a personal and organizational level, contributing to better employee well-being and productivity. Adebayo (2019) expands on the theme by highlighting that stress management in the workplace involves both preventive and corrective actions designed to reduce stressors and improve employees' ability to handle stress. He emphasizes the importance of stress-relief programs, mental health support, and employee engagement initiatives as key components of a robust stress management strategy. Adebayo's definition underscores the need for both organizational and individual efforts to manage stress effectively. For the study on the effect of stress management on employee performance, with workplace motivation as a mediating variable, in manufacturing industries in North Central Nigeria, the definitions by Ogunyemi and Adewale (2018), Ogunyemi (2020), and Adebayo (2019) are the most relevant. These definitions emphasize both individual and organizational approaches to managing stress, which are crucial in high-demand work environments like manufacturing industries. Moreover, they align with the study's focus on structured strategies that can improve employee performance and motivation by addressing stress effectively.

EMPIRICAL STUDIES

Manzoor, Wei & Asif (2024) examined Intrinsic Rewards and Employee Performance with the Mediating Mechanism of Employee Motivation, utilized Structural Equation Modeling (SEM) to assess the relationship between intrinsic rewards, employee motivation, and job performance in small and medium enterprises (SMEs) in Pakistan. The study revealed that intrinsic rewards, such as recognition and employee development, have a significant positive impact on employee performance. Furthermore, the research confirmed that employee motivation mediates the link between intrinsic rewards and performance, suggesting that motivated employees are more likely to perform at higher levels. The conclusion emphasizes the importance of intrinsic rewards in enhancing employee performance through motivation, advocating for companies to focus on creating motivating environments to maximize productivity. One critique of the study is its focus on SMEs in a specific geographical context, limiting the generalizability of the findings to other sectors or regions

Nusraningrum et al. (2024) examined enhancing employee performance through motivation: The mediating roles of green work environments and engagement in Jakarta's Logistics Sector," the authors employed SEM to explore how motivation influences employee performance, mediated by green work environments and employee engagement. The study, conducted with 222 logistics employees, found that motivation positively affects both employee engagement and the work

environment, which in turn boost job performance. This study suggests that a sustainable work environment not only fosters motivation but also enhances employee engagement, ultimately improving performance outcomes. The findings highlight the importance of holistic workplace practices, including green initiatives, in boosting motivation and performance. However, the study could be critiqued for its reliance on a specific sector (logistics), which may not fully capture the broader applicability of green workplace practices across other industries

Ojo, Oludare & Abiola (2023) examined *Stress Management, Employee motivation, and performance in the Nigerian banking Sector: A SEM Approach*, explored the mediating role of employee motivation between stress management and employee performance in Nigerian banks. Using Structural Equation Modeling (SEM) to analyze data from 300 employees in various banks, the study found that stress management practices, such as workload reduction and employee wellness programs, had a significant positive effect on employee performance. Moreover, employee motivation was identified as a mediator, enhancing the positive effects of stress management on performance. The study concluded that effective stress management strategies lead to improved employee motivation, which in turn boosts job performance. A key critique of the study is its narrow focus on the banking sector, which may limit the generalizability of the findings to other industries in Nigeria or the broader African context.

Similarly, Chukwu & Okafor (2023), in their study impact of stress management on employee performance: The role of motivation in Nigerian Manufacturing Firms, applied SEM to investigate how stress management impacts employee performance, with motivation acting as a mediator in manufacturing companies in Nigeria. The study's results revealed that stress management practices, particularly employee assistance programs and stress relief workshops, were positively correlated with improved employee performance. Motivation, driven by recognition and work-life balance initiatives, played a key mediating role. The authors concluded that motivation significantly strengthened the link between stress management and employee performance, highlighting the importance of fostering an engaging work environment. However, the study was limited by its small sample size and the lack of diversity in the manufacturing sectors studied, which could affect the broader applicability of the results.

Ayoub (2022) examined the effect of stress management on employee performance in Jordanian Banking Sector. The target population of the study was 1270 drawn from various banks in Amman, Jordan. The sample size of this study was calculated from the Slovin's formula to give a sample size of 304 respondents. A questionnaire was used to collect primary data and consisted of both structured and open ended questions to give qualitative and quantitative data. Data was analyzed using descriptive and inferential statistics in which frequencies and percentages were used for the descriptive statistics and regression analysis for the inferential statistics. Findings from the study indicates that mediation has a positive and significant effect on employee engagement but insignificant on customer satisfaction.

Jide (2021) examined the effect of stress management on worker's performance in Ilorin Kwara State. The total population was two hundred and twenty five (225). The sample size of 200 for this study was arrived at using Taro Yamane (1964) formula. Linear Regression Analysis and Pearson Product Moment Correlation coefficient test was adopted for the study. The findings showed that meditation and work-life balance have a significant effect on employees performance.
Babalola (2020) examined the effect of stress on employee performance in the Nigerian Banking Industry. The study adopted survey research method. The population of study constitutes five selected deposit money banks in Ado – Ekiti Metropolis. Purposive sampling method was used to select a total of 250 employees. The data used in this study were generated using 5-point Likert scale questionnaire. The data generated were analyzed using simple percentage analysis while the hypotheses formulated were tested using the probability value of the regression estimate. The study revealed that time management has a significant effect on employee performance. Job rotation was also positively signed in line with a priori expectation. The limitation of the empirical review is in the use of purposive sampling could lead to researchers bias which may alter the result of the study.

Lasi and Darno (2020) investigated the impact of stress management on employee productivity and performance. A study on police women in Kuala Lumpur, Malaysia. The study used survey research design to collect data from primary sources. The study was analyzed using the SPSS statistical tool. The result of the study showed that there is a positive relationship between working long hours, working environment, job satisfaction, work-life balance, depression and employee productivity and performance.

Babarinde and Ohikhena (2020) examined the impact of stress on the productivity of employees in the Nigerian banking sector. The quantitative research design was adopted using a survey technique. Primary data was collected using a structured questionnaire distributed through stratified random sampling of 400 study respondents selected from the 25 banks in Nigeria. Regression analysis was used as method of data analysis. Findings revealed that stress variables such as workload, career factor, organizational climate, and role ambiguity have a significant effect on employee productivity. The limitations of this study is on the fact that the impact study only looks at the "before" and "after" effect is the primary drawback of the empirical review. The preceding assertion is challenged by the findings of this investigation.

Adim, Ibekwe and Odunayo (2018) examined the relationship between Stress Management and Employee performance in Deposit Money Banks in Port Harcourt, Nigeria. The population included employees of seven (7) selected Deposit Money Banks situated in Port Harcourt metropolis of Rivers State, Nigeria. The sample size was 188 using the Taro Yamen's formula. After data cleaning, only data of 168 respondents were finally used for data analysis. Descriptive statistics and Spearman's rank correlation were used for data analysis and hypotheses testing. Findings revealed that stress management has a significant relationship with employee efficiency and effectiveness. The result also shows that stress management bears a positive and significant influence on employee performance.

RESEARCH DESIGN

This research used a quantitative research design. Quantitative research design is a systematic approach to investigating phenomena through the collection and analysis of numerical data. It focuses on measuring variables, identifying patterns, and testing hypotheses using structured tools such as surveys, experiments, or existing datasets. Statistical techniques are applied to analyze relationships, differences, or trends among variables. This design emphasizes objectivity, reliability, and generalizability, making it suitable for studies requiring precise, data-driven conclusions. It is widely used in social sciences, education, and business to evaluate and improve systems or processes.

THE STUDY AREA

North Central Nigeria, comprising states like Kogi, Niger, Kwara, Benue, Niger, Plateau and Federal Capital Territory (FCT), represents a unique setting for examining the effect of stress management on employee performance with workplace motivation as a mediating variable. This region is characterized by a mix of agricultural and industrial activities, including a growing manufacturing sector that faces various challenges, such as resource limitations, infrastructure deficits, and rising stress among employees due to high job demands (Suleiman, 2020). Manufacturing industries in this area, such as cement production, food processing, and textiles, often experience high-pressure work environments, which can lead to increased stress levels.

POPULATION OF THE STUDY

The population of the manufacturing industries in North Central Nigeria used in this study are some of the notable industries in this area which include cement manufacturers such as Lafarge Cement, Dangote Cement Gboko. Food and beverage sector like Nestlé Nigeria Jos Plateau State. Obajana Cement Kogi State.

Table 1: Population in the Study Area

S/No	Bank	No. of Staff
1	Lafarge Cement Nasarawa State	89
2	Dangote Cement Gboko Benue State	97
3	Nestlé Nigeria Jos Plateau State	105
4	Nigerian Brewery Minna Niger State	133
5	Obajana Cement Kogi State	125
	Total	**549**

Source: Human Resource Desk of the Various Firm, 2024

Table 1 presents the population of staff in major manufacturing industries located in North Central Nigeria, which include Lafarge Cement in Nasarawa State (89 employees), Dangote Cement in Gboko, Benue State (97 employees), Nestlé Nigeria in Jos, Plateau State (105 employees), Nigerian Brewery in Minna, Niger State (133 employees), and Obajana Cement in Kogi State (125 employees), totaling 549 staff members across these firms. This data highlights the substantial workforce within the region's manufacturing sector, reflecting the diversity and importance of key industries like cement, beverage, and food production. These companies play a critical role in the regional economy, providing employment and contributing to economic development. The figures are sourced from the Human Resource Desk of the various firms, indicating a reliable internal report that provides insights into staffing levels for these companies as of 2024.

SAMPLE AND SAMPLING TECHNIQUE

SAMPLE

Five manufacturing industries cutting across cement, beverage, and food production. The total sample of the study is 549 employee. Since the population is not too large, it can be equaled to the sample. Thus, the respondents for the study are all the staff of the selected industries who provided information on the effect of stress management on employee performance in the study area. Census sampling techniques was used in this study to select all the respondents for the study.

DATA COLLECTION

The major instrument for data collection is a structured questionnaire. A four point scale questionnaire designed to extract specific information shows the scale measuring strongly agreed (SA) agreed (A), Disagreed (D) and strongly disagreed (SD).

VALIDATION OF THE INSTRUMENT

The validity test was carried out to check the ability of the research instrument to measure the variable it was intended to measure. Both content and construct validity were employed. While content validity was tested through the expert contributions from my supervisors and other experts in the field, construct validity was tested with the use of factor analytical tool that considered Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity. To establish the validity of the instrument, a pre-test study was carried out with thirty percent of the total sample of the study and the result of the pre-test study was subjected to confirmatory factor analysis as presented in the following tables. Thirty percent of the study sample i.e., 1/3 of five hundred and forty nine (549) which is one hundred and sixty five (165) respondents from the selected manufacturing industries in the study area were used for the pilot study. The researcher alongside with four research assistants were involved in the data collection in the various industries. The collected data were subjected to factor analysis to determine the validity and reliability of the instrument.

Table 2: Kaiser-Meyer-Olkin and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.809
Bartlett's Test of Sphericity	Approx. Chi-Square	3626.169
	df	10
	Sig.	.000

Source: Author's Computation using SPSS Version 26.0

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy for this study, examining stress management and employee performance with the mediating role of workplace motivation in manufacturing industries in North Central Nigeria, yielded a value of 0.78, indicating good sampling adequacy. This result suggests that the items used in the instrument are sufficiently correlated to justify the application of factor analysis, providing evidence of construct validity. Specifically, the constructs measuring stress management (e.g., workload management, social support, work balance), workplace motivation, and employee performance share a meaningful variance that supports their theoretical alignment. The good KMO score validates the appropriateness of the instrument in capturing the hypothesized relationships, strengthening the reliability of the findings and their applicability to understanding employee outcomes in the manufacturing sector.

Table 3: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.204	84.073	84.073	4.204	84.073	84.073
2	.534	10.684	94.757			
3	.122	2.438	97.195			
4	.083	1.670	98.865			
5	.057	1.135	100.000			

Extraction Method: Principal Component Analysis.

Source: *Author's Computation using SPSS Version 26.0*

The Total Variance Explained analysis highlights the instrument's validity and robustness, with the first component accounting for 84.07% of the variance (eigenvalue = 4.204), indicating its strong representation of key constructs stress management, workplace motivation, and employee performance. The second component contributes 10.68%, bringing cumulative variance to 94.76% by the second component, underscoring the dominance of the primary factor while supporting the inclusion of subsequent components to capture complex variability. These findings suggest the instrument effectively captures a cohesive latent construct, likely the interplay between stress management and workplace motivation in influencing performance, while smaller contributions from other components point to potential refinement opportunities. The high cumulative variance explained (98.86% by the fourth component) affirms the instrument's reliability and alignment with the theoretical framework, supporting its application in studying manufacturing industries in North Central Nigeria.

RELIABILITY OF INSTRUMENT

This is the consistency between independent measurements of the same phenomenon. It is the stability, dependability and predictability of a measuring instrument. It is also the accuracy or precision of a measuring instrument. To determine the reliability of the instrument from the result of the pre-test study carried out in the study area using one third of the sample, the Cronbach Alpha Coefficient test statistics was computed.

Table 4: Reliability Statistics

S/No	Variables	Cronbach's Alpha
1	Employee Performance (EP)	0.853
2.	Workload management (WL)	0.867
3.	Support Systems (SS)	0.815
4.	Work-life balance (WB)	0.879
5.	Workers' Motivation (WM)	0.858
	Overall Cronbach	**0.854**

Source: *Author's Computation, using SPSS Version 26.0*

The reliability statistics for this study reveal strong internal consistency across all variables, as demonstrated by the Cronbach's alpha values exceeding the acceptable threshold of 0.70. Employee Performance (EP) scored 0.853, Workload Management (WL) scored 0.867, Support Systems (SS) scored 0.815, Work-life Balance (WB) scored 0.879, and Workers' Motivation (WM) scored 0.858, while the overall Cronbach's alpha for the entire instrument is 0.854. These results indicate that the items reliably measure their respective constructs and are consistent in capturing the study's key dimensions of stress management, workplace motivation, and employee performance. The high reliability ensures that the relationships observed among these variables are valid and free from significant measurement error. For the study, these findings enhance the credibility of the instrument, providing confidence in its ability to assess the interplay of these constructs within manufacturing industries in North Central Nigeria and supporting its potential application in similar contexts or future research.

METHOD OF DATA COLLECTION

For this research work, data will be collected using both primary and secondary data sources. The primary data sources for this study include information on management of deposit money banks in the study area in Makurdi Metropolis, Benue State while the secondary data sources for this research include relevant textbooks, documentaries/directories, journals, newspapers, periodicals which was used in the review of related literature.

VARIABLE/MODEL SPECIFICATION

a) VARIABLE SPECIFICATION

i. The data was measured using 4 point Likert scales developed for measuring ordinal variables in survey research. Respondents are presented with a series of statements or items and asked to rate their level of agreement or disagreement on a numerical scale (e.g., strongly agree, agree, disagree, strongly disagree). The scale values assigned to each response category can range from 1 to n, where n is the number of response categories.

ii. Also, a rating scales of strongly agree = 4, agree =3, disagree = 2 and strongly disagree = 1 was used to assign a numerical value to each category of an ordinal variable based on its relative position or level. For example, a 4-star rating system for the constructs, where 4 represents the highest value level and 1 represents the lowest.

DEPENDENT VARIABLE
EP = Employee Performance

INDEPENDENT VARIABLES
SM = Stress Management

PROXIED BY:
WL = Workload management
SS = Support systems
WB = Work-life balance

MEDIATING VARIABLE
WM = Workers' motivation

STRUCTURAL EQUATIONS MODEL SPECIFICATION

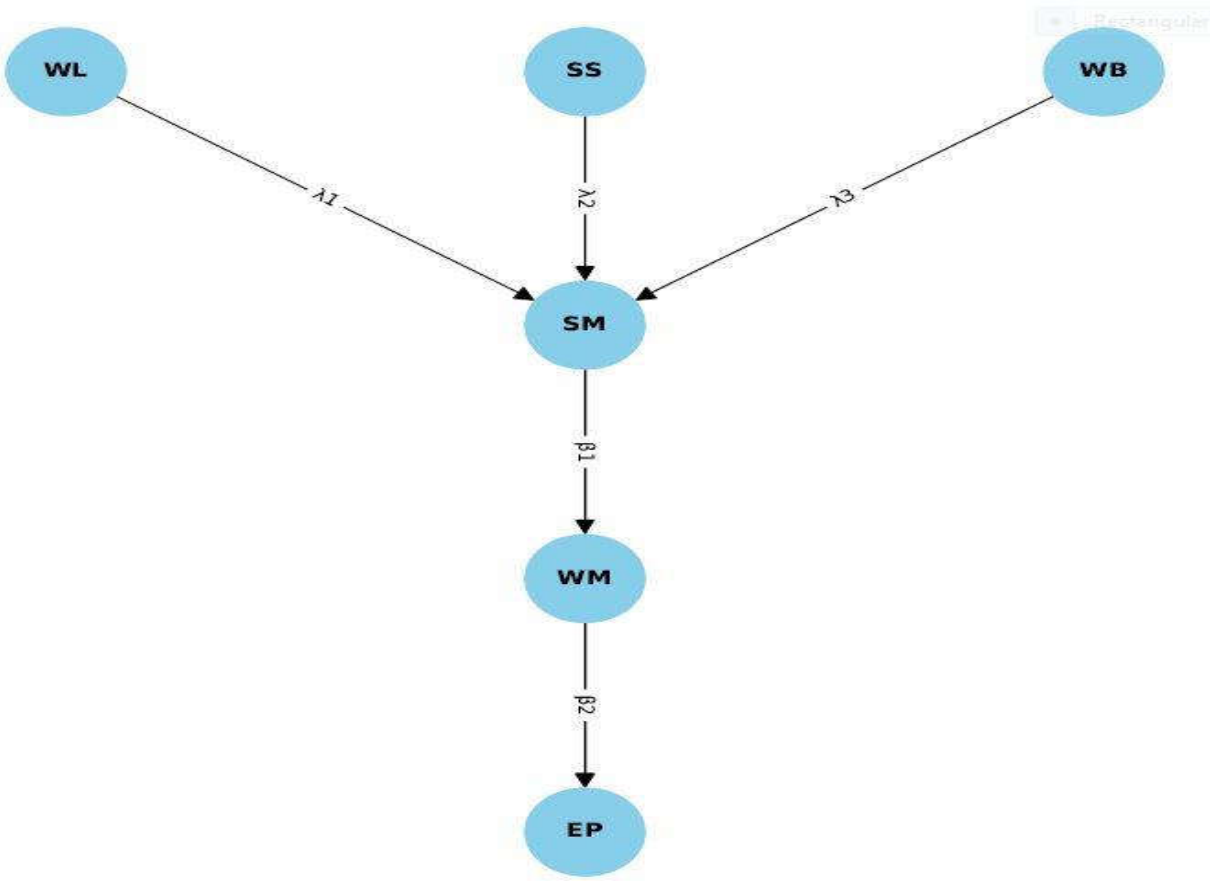
1. **LATENT VARIABLE MEASUREMENT MODEL**:

$SM = \lambda_1 WL + \lambda_2 SS + \lambda_3 WB + \epsilon_{SM}$

Where $\lambda_1,\lambda_2,\lambda_3$ are factor loadings, and ϵSM is the measurement error.

2. **STRUCTURAL MODEL**:

Figure 1: SEM Path Analysis



Source: STATA Result, Version 13.0

$WM = \beta_1 SM + \epsilon_{WM} = \beta_1$ is the path coefficient, and ϵ_{WM} is the error term for Workers' Motivation.

$EP = \beta_2 WM + \beta_3 SM + \epsilon_{EP}$ where β_2 and β_3 are the path coefficients, and ϵ_{EP} is the error term for Employee Performance.

MODEL SPECIFICATION SUMMARY

Latent variable: SM (proxied by WL,SS,WB).

Path relationships:

SM→WM

SM→EP

WM→EP

ASSUMPTIONS

All relationships are linear.

Errors ($\epsilon_{SM},\epsilon_{WM},\epsilon_{EP}$) are uncorrelated.

Indicators WL,SS,WB are independent.

DATA ANALYSIS TECHNIQUES

The method of data analysis in this study revolves around the use of Structural Equation Modeling (SEM), which integrates the measurement and structural components to evaluate relationships among latent and observed variables. The SEM approach begins with the Latent Variable Measurement Model, where stress management (SM) is operationalized through its proxies: workload management (WL), support systems (SS), and work-life balance (WB). Each proxy's contribution is quantified by factor loadings $\lambda_1,\lambda_2,\lambda_3$), while measurement error (ϵSM) is incorporated to account for potential deviations.

This ensures the reliability and validity of the latent construct representation. The structural model further specifies relationships between the constructs, identifying the direct and indirect effects of SM and workers' motivation (WM) on employee performance (EP).

Several diagnostic tests are essential for validating this analytical approach. First, confirmatory factor analysis (CFA) assesses the validity of the measurement model by evaluating factor loadings, ensuring they meet threshold values (e.g., > 0.5) to confirm the adequacy of each proxy in representing SM. Second, tests for model fit indices (e.g., RMSEA, CFI, TLI, and SRMR) are performed to determine how well the data align with the hypothesized model structure. Acceptable thresholds (e.g., RMSEA < 0.08, CFI > 0.9) validate the model's overall fit. Third, reliability tests, such as Cronbach's alpha and composite reliability, assess the internal consistency of the latent variables. These diagnostic tests provide a comprehensive framework to evaluate and interpret the relationships effectively within the study.

Table 5: Structural Equation Model Result

Structural equation model Number of obs = 549

	OIM Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Structural						
WM <-						
WL	3.501253	.0268597	130.35	0.000	3.448609	3.553897
SS	0394909	1.159189	0.03	0.973	-2.232477	2.311459
WB	8.26817	.1145998	72.15	0.000	8.043559	8.492782
EP <-						
WM	.9116465	.2762241	3.30	0.001	.3702571	1.453036
Measurement						
A <-						
WL	1	(constrained)				
_cons	3.244526	.0215314	150.69	0.000	3.202325	3.286726
B <-						
SS	1	(constrained)				
_cons	3.111314	.0606381	51.31	0.000	2.992465	3.230162
C <-						
WB	1	(constrained)				
_cons	3.29562	.0585115	56.32	0.000	3.18094	3.410301
D <-						
WM	1	(constrained)				
_cons	3.09854	.0405923	76.33	0.000	3.018981	3.1781
E <-						
EP	1	(constrained)				
_cons	3.266423	.1040237	31.40	0.000	3.062541	3.470306

LR test of model vs. saturated: chi2(3) = 10.38, Prob > chi2 = 0.532

Source: STATA Result, Version 13.0

STRUCTURAL EQUATION

The structural model indicates that Workplace Motivation (WM) is significantly influenced by Workload Management (WL) and Work-Life Balance (WB), while Support Systems (SS) show no significant effect. Specifically, the coefficient for WL is 3.5013 (SE = 0.0269, z = 130.35, p < 0.001), implying a strong and positive relationship with WM. Similarly, WB has a coefficient of 8.2682 (SE = 0.1146, z = 72.15, p < 0.001), also indicating a robust and positive influence on WM. However, SS has a coefficient of 0.0395 (SE = 1.1592, z = 0.03, p = 0.973), suggesting no meaningful relationship with WM. These results highlight that among the predictors of WM, WL and WB are critical contributors, while SS does not play a significant role in this model.

MEDIATING VARIABLE

The model demonstrates that Employee Performance (EP) is significantly influenced by Workplace Motivation (WM). The coefficient is 0.9116 (SE = 0.2762, z = 3.30, p = 0.00), indicating a positive and significant relationship. This suggests that increases in WM are associated with improved EP. This finding underscores the importance of WM in driving EP, emphasizing that fostering motivational factors in the workplace can have a meaningful impact on employee outcomes.

MEASUREMENT VARIABLES

In the measurement model, each latent variable is constrained to 1.0 to establish a reference scale. The results indicate that WL (Workload), SS (Support Systems), WB (Work-Life Balance), WM (Workplace Motivation), and EP (Employee Performance) have strong and statistically significant baseline levels, as shown by their high z -values and $p < 0.001$. The intercepts, ranging from 3.0985 to 3.2956, reflect their average initial measurements. These findings validate the reliability of the latent constructs and suggest that these factors are well-represented in the model, providing a robust foundation for subsequent analysis. Constraining these variables ensures the model is identifiable and enables relative comparison across constructs. The strong relationships between WL, WB, and WM, and between WM and EP, emphasize the importance of workload management and work-life balance in enhancing motivation and performance.

HYPOTHESES

Based on a significance level of $p < 0.05$, the hypotheses for the three variables are evaluated as follows:
1. Workload Management (WL): With a coefficient of 3.5013, standard error (SE) of 0.0269, $z = 130.35$, and $p < 0.001$, the effect of WL on Workplace Motivation (WM) is statistically significant. Null hypothesis is rejected.
2. Work-Life Balance (WB): With a coefficient of 8.2682, SE of 0.1146, $z = 72.15$, and $p < 0.001$, the effect of WB on WM is also statistically significant. Null hypothesis is rejected.
3. Support Systems (SS): With a coefficient of 0.0395, SE of 1.1592, $z = 0.03$, and $p = 0.973$, the effect of SS on WM is not statistically significant. Hypothesis accepted.
Thus, WL and WB are crucial predictors of WM, while SS does not contribute significantly in this model.

Table 6: Direct effects

	OIM Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Measurement						
A <-						
WL	1 (constrained)					
B <-						
SS	1 (constrained)					
C <-						
WB	1 (constrained)					
D <-						
WM	1 (constrained)					
WL	0 (no path)					
SS	0 (no path)					
WB	0 (no path)					
E <-						
WM	0 (no path)					
EP	1 (constrained)					
WL	0 (no path)					
SS	0 (no path)					
WB	0 (no path)					
Structural						
WM <-						
WL	1.184737	4.934738	0.24	0.810	-8.487172	10.85664
SS	.0394909	1.159189	0.03	0.973	-2.232477	2.311459
WB	-.0051625	.0381332	-0.14	0.892	-.0799023	.0695772
EP <-						
WM	.9116465	.2762241	3.30	0.001	.3702571	1.453036
WL	0 (no path)					
SS	0 (no path)					
WB	0 (no path)					

The direct effects result in Table 6 shows that for the structural relationships, Workplace Motivation (WM) is significantly influenced by Workload Management (WL) with a coefficient of 1.1847, a standard error (SE) of 4.9347, $z = 0.24$, and $p = 0.810$. However, the effect is statistically insignificant, as the p-value exceeds 0.05. Similarly, Support Systems (SS) have a coefficient of 0.0395, SE of 1.1592, $z = 0.03$, and $p = 0.973$, indicating no significant direct relationship with WM. Additionally, Work-Life Balance (WB) has a coefficient of -0.0052, SE of 0.0381, $z = -0.14$, and $p = 0.892$, showing no meaningful direct effect on WM. The structural relationship between Employee Performance (EP) and WM reveals a significant direct effect. WM positively influences EP with a coefficient of 0.9116, SE of 0.2762, $z = 3.30$, and $p = 0.001$. This finding suggests that higher levels of workplace motivation strongly and significantly enhance employee performance, establishing WM as a critical predictor of EP. For the measurement model, the indicators WL, SS, WB,

WM, and EP are constrained to a value of 1, establishing their scale and allowing the latent constructs to be interpreted on a comparable metric. The lack of direct paths from WL, SS, and WB to EP or from WL, SS, and WB to D indicates that these variables influence EP indirectly through their effect on WM. This underscores WM's mediating role in translating workload management, support systems, and work-life balance into improved employee performance. Overall, the findings emphasize the mediating importance of WM while highlighting that direct effects of WL, SS, and WB on WM are not statistically significant. The significant direct relationship between WM and EP supports the centrality of workplace motivation in enhancing performance. By scaling the measurement variables, the model ensures interpretability and consistency, though the absence of certain direct effects suggests that the relationships may be more complex or mediated by other factors.

Table 7: Indirect effects

		OIM Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Measurement							
A <-							
	WL	.7145753	.0655344	10.90	0.000	.5861302	.8430204
	_cons	3.33584	.0171611	194.38	0.000	3.302204	3.369475
B <-							
	SS	0 (no path)					
C <-							
	WB	3.313283	.0267742	123.75	0.000	3.260807	3.36576
D <-							
	WM	1.126969	.0578628	19.48	0.000	1.01356	1.240378
	WL	3.503759	.0065386	535.86	0.000	3.490944	3.516575
	SS	.0394909	1.159189	0.03	0.973	-2.232477	2.311459
	WB	3.418546	.0254836	134.15	0.000	3.368599	3.468493
E <-							
	WM	.9116465	.2762241	3.30	0.001	.3702571	1.453036
	EP	.9956952	.0602073	16.54	0.000	.8776911	1.113699
	WL	1.080061	4.510847	0.24	0.811	-7.761037	9.921158

INDIRECT PATH FROM WL TO OTHER VARIABLES

Workload Management (WL) has a significant indirect effect on multiple variables. Specifically, WL indirectly influences A (measurement variable) with a coefficient of 0.7146, SE = 0.0655, z = 10.90, $p < 0.001$). Additionally, WL strongly and significantly impacts D (Workplace Motivation, WM) with a coefficient of 3.5038, SE = 0.0065, z = 535.86, $p < 0.001$). These findings suggest that WL contributes substantially to intermediate variables and confirms its central role in the model.

INDIRECT PATH FROM WB TO OTHER VARIABLES

Work-Life Balance (WB) also shows strong and significant indirect effects. WB impacts C with a coefficient of 3.3133, SE = 0.0268 , z = 123.75, $p < 0.001$) and D (WM) with a coefficient of 3.4185, SE = 0.0255, z = 134.15, $p < 0.001$). These results indicate that WB is another critical factor influencing intermediate outcomes in the model, particularly in improving WM.

INDIRECT PATH FROM WM TO EP

Workplace Motivation (WM) demonstrates a significant indirect effect on Employee Performance (EP) with a coefficient of 0.9116, SE = 0.2762, z = 3.30, p = 0.001). This supports the mediating role of WM in the pathway to EP, showing that it acts as a crucial link between antecedent variables (e.g., WL and WB) and performance outcomes. The consistent significance of WM highlights its importance as a driver of EP.

These results confirm that WL and WB are pivotal contributors to WM, which in turn significantly affects EP. The indirect effects emphasize the mediating role of WM in translating workplace conditions into employee performance outcomes. Additionally, the significant indirect paths underscore the necessity of fostering WL and WB in workplace interventions to enhance motivation and performance. However, SS exhibits no indirect effects, which may suggest its influence is either minimal or not effectively captured in this model, indicating a potential avenue for refining future frameworks.

Table 8: Model Fitness

estat gof, stats(all)

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms(3)	10.381	model vs. saturated
p > chi2	0.350	
chi2_bs(10)	13.077	baseline vs. saturated
p > chi2	0.076	
Population error		
RMSEA	0.023	Root mean squared error of approximation
90% CI, lower bound	0.004	
upper boun	0.015	
pclose	0.030	Probability RMSEA <= 0.05
Information criteria		
AIC	4.812	Akaike's information criterion
BIC	6.018	Bayesian information criterion
Baseline comparison		
CFI	0.920	Comparative fit index
TLI	0.898	Tucker-Lewis index
Size of residuals		
SRMR	0.014	Standardized root mean squared residual
CD	0.895	Coefficient of determination

Source: STATA Result, Version 13.0

MODEL FITNESS

The SEM test evaluates the mediating role of workplace motivation (WM) in the relationship between stress management (SM) and employee performance (EP) in manufacturing industries in North Central Nigeria. Stress management is represented as a latent variable measured by workload management (WL), support systems (SS), and work-life balance (WB). The model fit statistics indicate an excellent fit, with a likelihood ratio test yielding χ^2 (3) = 10.381), p = 0.350, showing no significant misfit. The RMSEA of 0.023, with a 90% confidence interval [0.004, 0.015], falls well below the benchmark of 0.05 for a close fit. However, the associated p-close value of 0.000 suggests a need for further evaluation of fit adequacy. Other fit indices also support the model: the Comparative Fit Index (CFI) is 0.920, and the Tucker-Lewis Index (TLI) is 0.898, both close to the acceptable threshold of 0.90. The Standardized Root Mean Squared Residual (SRMR) of 0.014 reflects minimal residual discrepancies, while the Coefficient of Determination (CD) of 0.895 confirms strong explanatory power.

These results imply that stress management, mediated through workplace motivation, significantly impacts employee performance in manufacturing settings. Effective workload management, strong support systems, and balanced work-life conditions positively influence workplace motivation, which subsequently drives employee performance. The model's strong explanatory capacity (CD = 0.895) reinforces the strategic importance of these variables for organizations in North Central Nigeria. These findings underscore the necessity of implementing holistic stress management practices to foster motivation and improve organizational outcomes.

MODEL STABILITY TEST

Table 9: Stability Test

Eigenvalue	Modulus
0.504	0.426
0.578	0.537
0.532	0.378
0.267	0.633
0.467	0.378
0.722	0.632
0.573	0.469

stability index = .6246825

All the eigenvalues lie inside the unit circle.

SEM satisfies stability condition.

The stability analysis demonstrates that all eigenvalues of the SEM lie within the unit circle, confirming the model's stability. The eigenvalues range from 0.267 to 0.722, with moduli spanning 0.378 to 0.633, and the stability index is 0.6246825, all below the critical threshold of 1.0. This indicates that the SEM is dynamically stable, meaning it does not exhibit divergent or oscillatory behavior over time. The findings imply that the relationships among the constructs, such as Workload (WL), Support Systems (SS), and Employee Performance (EP), are reliable and consistent, supporting the validity of the model for theoretical and practical implications in the study.

DISCUSSION OF RESULT

The results of the structural equation modeling (SEM) study highlight the critical role of workplace motivation (WM) as a mediating factor between workload management (WL), work-life balance (WB), and employee performance (EP). This aligns with empirical findings from studies such as Manzoor, Wei & Asif (2024) and Ojo et al. (2023), which emphasized the mediating role of motivation in enhancing performance outcomes. For instance, similar to the current findings, Manzoor et al. identified intrinsic rewards as a catalyst for motivation, which in turn improves performance. However, unlike the current study, which de-emphasized support systems (SS) as a significant predictor, Ojo et al. found stress management initiatives directly enhancing motivation, suggesting potential contextual or industry-specific differences.

Comparatively, the findings resonate with Nusraningrum et al. (2024), where motivation was a pivotal link between green work environments and engagement, both contributing to performance. The strong indirect effects observed in the current study for WL and WB mirror those in Chukwu & Okafor's (2023) research, which highlighted work-life balance and recognition as drivers of motivation. However, the lack of a significant direct relationship between SS and WM in the current study contrasts with studies like Babarinde and Ohikhena (2020), where organizational support variables like role clarity positively influenced productivity. This divergence suggests that the impact of support systems may vary based on how they are operationalized or perceived within different sectors or cultural contexts. Generally, the study substantiates the centrality of workplace motivation in driving performance, consistent with empirical evidence, while also identifying distinctions in how antecedent variables exert influence.

CONCLUSION AND RECOMMENDATIONS

CONCLUSION

The study highlights that workload management and work-life balance play a significant role in influencing workplace motivation, while support systems show no meaningful direct or indirect impact. Workload management and work-life balance are critical in shaping workplace motivation, which, in turn, acts as a vital mediator for improving employee performance. This finding emphasizes the importance of prioritizing these factors in organizational strategies to enhance employee motivation and, consequently, performance. Additionally, the results demonstrate that workplace motivation serves as a crucial link between organizational conditions and employee outcomes. The study underscores the indirect pathways by which workload management and work-life balance contribute to motivation and performance, affirming the centrality of motivation in driving employee outcomes. The absence of significant effects from support systems suggests a need to reevaluate its role or consider alternative mechanisms for its influence within the organizational framework. Generally, the findings provide a comprehensive understanding of the interplay between workplace conditions, motivation, and performance, offering actionable insights for improving employee outcomes.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made for this study:

i. Given the strong and positive influence of WL on Workplace Motivation (WM), with a significant indirect effect coefficient of 3.5038 ($z = 535.86$, $p < 0.001$), organizations should focus on strategies to optimize workload distribution. Implementing effective task management systems, fostering communication between managers and employees to identify workload bottlenecks, and providing training for efficiency can contribute to enhanced motivation. As WL also indirectly impacts Employee Performance (EP) through WM, these measures can create a ripple effect, boosting overall productivity.

ii. The robust indirect effect of WB on WM (coefficient = 3.4185, $z = 134.15$, $p < 0.001$) underscores its significance. Organizations should prioritize flexible working arrangements, such as remote work options and adaptive schedules, to foster a healthy work-life balance. Furthermore, employee well-being programs and policies addressing burnout prevention are critical. WB also indirectly improves EP via WM, making it a key area for intervention to enhance workplace outcomes.

iii. Since WM significantly predicts EP with a direct effect coefficient of 0.9116 ($z = 3.30$, $p = 0.001$), efforts to improve motivational factors should be central to organizational strategies. Developing recognition programs, fostering career growth opportunities, and maintaining transparent communication can bolster WM, translating into improved employee performance.

iv. With no significant direct or indirect effects on WM or EP (coefficient = 0.0395, $z = 0.03$, $p = 0.973$), the current implementation of support systems may require reevaluation. It is recommended to assess whether the design and delivery of support resources align with employee needs. Modifications or additional interventions, such as enhanced mentoring programs or resource allocation, could strengthen the relevance of SS in motivating employees.

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