Comparative Effects of Merit Pay and Piece-Rate Pay on Organizational Commitment in Manufacturing Firms

Musiwa Omowum*, Kazeem Toyin Cynthia

Department: Business Administration and Management

Institution: Federal Polytechnic, Ile Oluji, Ondo State

***Corresponding Author**

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ABSTRACT

This study explores the comparative effects of merit pay and piece-rate pay on organizational commitment among employees in bottled water manufacturing firms in Ondo State, Nigeria. Guided by Meyer and Allen's three-component model of commitment, the research investigated how performance-based pay systems influence affective, normative, and continuance commitment. A cross-sectional survey was conducted among 246 employees, and data were analyzed using Pearson correlation and multiple regression models. The results reveal that piece-rate pay significantly predicts continuance commitment, suggesting that employees compensated based on output are more likely to remain with their organizations due to economic dependence rather than emotional or moral attachment. Conversely, merit pay—although generally well perceived—was not a statistically significant predictor of any dimension of commitment, indicating possible weaknesses in appraisal fairness or implementation clarity. These findings are consistent with previous literature in low-autonomy and routine task environments, where financial incentives often influence retention but fail to build deeper organizational loyalty. This study extends the compensation literature in developing economy contexts by emphasizing the psychological and structural nuances that shape employee responses to different pay strategies. It also offers practical implications for HR managers seeking to design compensation policies that enhance not just retention, but engagement and commitment. Limitations and recommendations for future research are discussed.

Keywords: performance-based pay; merit pay; piece-rate pay; employee commitment; affective commitment; normative commitment; continuance commitment; manufacturing sector; compensation psychology; Nigeria

INTRODUCTION

In contemporary human resource management, performance-based pay (PBP) systems are widely employed to align employee behavior with organizational goals. By directly linking compensation to individual or group performance, these schemes are designed to enhance motivation, improve productivity, and reinforce desirable work behaviors [1]. Among the various models of PBP, merit pay and piece-rate pay are two distinct approaches that reflect fundamentally different assumptions about motivation and commitment. Merit pay rewards employees based on performance evaluations over time, integrating managerial assessment and behavioral standards, whereas piece-rate pay compensates employees strictly according to their output volume, commonly used in low-autonomy, labor-intensive settings [2] [3]. While both systems aim to increase productivity, their implications for employee commitment—the psychological bond linking employees to their organizations—remain subject to debate. Organizational commitment, as theorized by Meyer and Allen [4], comprises three components: affective (emotional attachment), normative (sense of obligation), and continuance (cost of leaving the organization). Studies suggest that merit-based pay, which involves subjective assessments and broader career trajectories, may positively influence affective and normative commitment through perceived fairness and recognition [5]. In contrast, piece-rate pay, by emphasizing output over

development, may be associated more with continuance commitment driven by financial dependency than with emotional investment [6] [6] [7].

Empirical evidence on these assumptions remains mixed. On one hand, merit pay has been shown to enhance intrinsic motivation and long-term commitment, especially when accompanied by transparent appraisal systems [8] [9]. On the other hand, merit pay can introduce perceptions of bias or favoritism, reducing trust in management when not administered fairly [10]. Similarly, while piece-rate systems can stimulate productivity in repetitive tasks, they are often criticized for fostering short-termism and minimal emotional engagement with the organization [2]. The inconsistent results in the literature suggest that the effects of specific PBP schemes on different types of commitment are context-dependent, requiring industry-specific analysis. Despite the extensive research on compensation and commitment in Western and Asian contexts, there is a notable lack of studies in sub-Saharan Africa, particularly within Nigeria's manufacturing sector. Most existing research in the region has approached compensation holistically or focused on public-sector institutions, neglecting to distinguish between types of PBP [11] [12]. Additionally, few studies have empirically examined the link between reward systems and commitment in labor-intensive environments, such as bottled water or FMCG manufacturing, where remuneration schemes are rigid and standardized.

To address these gaps, this study aims to compare the effects of merit pay and piece-rate pay on employee commitment in Nigerian manufacturing firms, using empirical data from the bottled water industry. Specifically, the study investigates how these two PBP schemes influence the affective, normative, and continuance dimensions of commitment. By disaggregating the types of PBP and analyzing their psychological outcomes, the study offers a nuanced understanding of how compensation strategies shape workforce loyalty in low-autonomy, performance-driven work environments. Data were collected through structured questionnaires administered to 246 employees across 24 bottled water companies in Ondo State, Nigeria. The study contributes to both theory and practice by clarifying which types of pay structures are most effective in enhancing different forms of employee commitment, particularly in resource-constrained economies.

RELATED WORKS

The relationship between performance-based compensation systems and employee commitment has been a subject of substantial empirical inquiry, especially within the human resource management and organizational behavior disciplines. While the literature acknowledges that compensation strategies such as merit pay and piece-rate systems can influence workplace motivation and retention, their differential impact on specific dimensions of organizational commitment remains less understood—particularly in the context of manufacturing firms in developing economies.

The existing literature on performance-based pay (PBP) and employee commitment offers valuable insights but also presents several gaps that our study addresses. Boachie-Mensah and Dogbe [6] explored PBP as a motivational tool in Ghanaian manufacturing firms, finding that piece-rate and individual bonuses boosted short-term performance but not long-term commitment. However, their study treated PBP as a homogenous construct, whereas our research disaggregates it into merit pay and piece-rate pay, examining their distinct effects on affective, normative, and continuance commitment. Gerhart and Fang [2] conducted a conceptual review of PBP's impact on employee behavior in Western contexts, emphasizing alignment with task complexity and fairness perceptions. While they called for empirical validation in low-autonomy settings, our study applies these theoretical claims in Nigeria's manufacturing sector, where repetitive tasks and limited autonomy prevail. Similarly, Kuvaas et al. [7] found that merit pay enhanced affective commitment in high-autonomy European workplaces when evaluations were perceived as fair. Our study extends this by testing similar constructs in a low-autonomy, output-driven environment, revealing different dynamics, particularly in merit pay's correlation with normative commitment.

Iqbal et al. [9] examined PBP's effect on productivity in Pakistani SMEs, noting merit pay's positive influence on perceived productivity and retention. However, their study did not measure commitment directly or compare different PBP types. Our research advances this by directly assessing commitment and contrasting merit pay with piece-rate systems. Muchibi [12] studied reward management in Kenya's public sector, finding

financial rewards linked to continuance commitment and non-financial rewards to affective commitment. Our contribution lies in focusing on private-sector firms and deconstructing financial rewards to clarify their psychological impact in resource-constrained settings. Chiang and Birtch [8] highlighted cultural differences in reward effectiveness, showing merit pay's stronger effect on normative commitment among local employees in East Asia. Our study adds an African perspective, demonstrating how low-wage workers interpret merit pay as a fairness signal. Finally, Ogbonnaya et al. [13] found contingent pay effective in high-involvement UK workplaces. By contrast, our study examines low-involvement environments, revealing that piece-rate systems aid retention but fail to foster deeper commitment. Together, these extensions provide a more nuanced understanding of PBP's role in diverse workplace contexts.

This study offers a significant contribution to the existing literature on performance-based pay (PBP) and organizational commitment by addressing key limitations in previous research. While a robust theoretical foundation for PBP's general impact exists, most prior studies have not disaggregated merit pay from piece-rate pay in their analyses, nor have they extensively explored how pay systems operate within the unique contextual differences of low-autonomy manufacturing sectors. Furthermore, a critical gap lies in the limited application of the comprehensive three-component model of organizational commitment—encompassing affective, normative, and continuance dimensions—as a lens to measure the outcomes of PBP. Our research directly fills these crucial gaps by providing empirical evidence from Nigerian bottled water manufacturing firms. This study offers a differentiated analysis of how distinct PBP types (merit pay and piece-rate pay) differentially influence employee commitment across its affective, normative, and continuance dimensions. By contextualizing established motivational theories within the realities of an emerging market with its characteristic low-autonomy work environments, our research not only adds significant practical value for HR practitioners seeking to optimize reward systems in similar settings but also provides conceptual clarity for scholars by deepening the understanding of PBP's nuanced psychological impact.

METHODOLOGY

This study adopted a quantitative research approach to examine and compare the effects of two distinct performance-based pay systems—merit pay and piece-rate pay—on employee commitment dimensions in manufacturing firms. The methodological choices were informed by the need for objectivity, replicability, and statistical generalization.

Research Design

A descriptive cross-sectional survey design was employed to gather primary data from employees at a single point in time. This design is appropriate for studies seeking to measure opinions, behaviors, or outcomes related to workplace experiences [14]. It enabled the researcher to explore correlations and make comparisons between merit pay and piece-rate compensation while assessing their individual impact on the three dimensions of organizational commitment: affective, normative, and continuance [4].

Population of the Study

The target population consisted of employees in bottled water manufacturing companies located in Ondo Central Senatorial District, Nigeria. This population was chosen due to the prevalence of standardized compensation structures, dominance of low-autonomy tasks, and the industry's labor-intensive nature. A preliminary industry audit revealed 24 active bottled water firms in the region, with an estimated employee population of 750. These included administrative staff, production line workers, and supervisors. Both full-time and contract employees who had served for at least six months were eligible for inclusion to ensure they had sufficient exposure to their company's compensation system.

Sample Size and Sampling Technique

To ensure a robust and representative sample, a multi-stage sampling technique was meticulously employed, building upon a sample size of 246 respondents determined using Yamane's (1967) formula for finite

populations, with a 95% confidence level and a 5% margin of error. The sampling process began with cluster sampling, where companies were initially grouped by Local Government Area (LGA). This was followed by purposive sampling, through which only registered bottled water manufacturers employing a minimum of 15 individuals were selected, ensuring the inclusion of relevant and adequately sized organizations. Subsequently, stratified sampling was applied to categorize employees by their job function—namely, production, administration, and management—to capture the diversity of roles within these firms. Finally, proportionate random sampling was utilized to select respondents from each of these stratified categories, guaranteeing fair representation across all organizational hierarchies. This layered and systematic approach to sampling significantly reduced potential biases and enhanced the generalizability of our findings, contributing to the overall validity of the study.

Instrument for Data Collection

Data for this study were systematically collected through a structured, self-administered questionnaire, meticulously developed by adapting existing validated scales from relevant literature. The instrument was comprehensively organized into three main sections to capture diverse aspects pertinent to the research objectives. Section A was dedicated to gathering essential demographic and employment characteristics of the respondents, including age, gender, educational background, specific job role, and tenure within the organization. Section B focused on employees' perceptions of their compensation system. This section specifically measured attitudes towards merit pay and piece-rate pay, with items carefully adapted from prior empirical studies such as those by Boachie-Mensah & Dogbe (2011) and Iqbal et al. (2019) to ensure contextual relevance and reliability. Finally, Section C was designed to measure organizational commitment. This was achieved using a robust 15-item scale derived from Meyer and Allen's (1991) widely recognized Three-Component Model. This allowed for a comprehensive assessment across all three dimensions of commitment: affective commitment (e.g., "I feel emotionally attached to my organization"), normative commitment (e.g., "I feel a sense of duty to remain with this organization"), and continuance commitment (e.g., "It would be costly for me to leave this organization"). All responses across the questionnaire were captured on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), facilitating consistent and quantifiable data collection.

Validity and Reliability of the Instrument

To guarantee the rigor and reliability of the research instrument, a multi-stage validation process was meticulously undertaken. Initially, the questionnaire's content and face validity were rigorously assessed by three academic experts specializing in industrial psychology and human resource management. Their invaluable feedback led to crucial revisions, significantly enhancing the clarity and structural coherence of the questions. Following these refinements, a pilot study was conducted with 30 employees in a neighboring state (Ekiti) to evaluate the instrument's internal consistency. The reliability of each scale was subsequently measured using Cronbach's Alpha, yielding highly satisfactory results: the Merit Pay Scale registered an α of 0.85, the Piece-Rate Pay Scale an α of 0.81, Affective Commitment an α of 0.87, Normative Commitment an α of 0.83, and Continuance Commitment an α of 0.79. All obtained Cronbach's Alpha values comfortably exceeded the generally accepted minimum threshold of 0.70 [15], thereby confirming the high internal consistency and reliability of our scales for the main study.

Method of Data Analysis

Data analysis was meticulously performed using the Statistical Package for the Social Sciences (SPSS) version 25, employing a comprehensive three-step approach to derive meaningful insights. Firstly, descriptive statistics, including frequencies, means, and standard deviations, were computed to provide a concise summary of the demographic profile of the respondents and their overall response patterns. Secondly, correlation analysis was conducted using Pearson's correlation coefficient. This step was crucial for examining the strength and direction of the linear relationships between the two distinct compensation types (merit pay and piece-rate pay) and each of the three components of organizational commitment. Finally, to assess the predictive power of merit pay and piece-rate pay on the different types of employee commitment, multiple

linear regression analysis was performed. Separate regression models were constructed for each commitment type (affective, normative, and continuance) as the dependent variable. The general form of the regression model was specified as:

$$Y = \beta_0 + \beta_1 MP + \beta_2 PR + \varepsilon \quad - \quad (1)$$

Where Y represents the dependent variable (Affective, Normative, or Continuance Commitment), MP denotes Merit Pay, PR denotes Piece-Rate Pay, β_0 is the constant term, β_1 and β_2 are the regression coefficients representing the unique effect of Merit Pay and Piece-Rate Pay, respectively and ε is the error term. For all hypothesis testing, a significance level of $p < 0.05$ was established to determine statistical significance. This robust analytical framework allowed for a thorough investigation into how different forms of performance-based pay influence various dimensions of employee commitment. The study adhered to strict ethical guidelines. Informed consent was obtained from all participants, who were assured of anonymity, confidentiality, and their right to withdraw at any time. No personal identifiers were collected, and all data were used solely for academic purposes. The research received clearance from the Ethics Review Board of the host institution.

DATA ANALYSIS AND RESULTS

The study commenced with descriptive statistical analysis to explore the demographic profile of respondents and the central tendencies of key study variables—namely, merit pay perception, piece-rate pay perception, and the three components of organizational commitment: affective, normative, and continuance commitment.

Demographic Profile of Respondents

Our study successfully collected and analyzed 246 valid responses from employees across various bottled water manufacturing firms in Ondo State, Nigeria. The demographic profile of these respondents offers valuable insights into the workforce characteristics of this sector as shown in Figure 1.

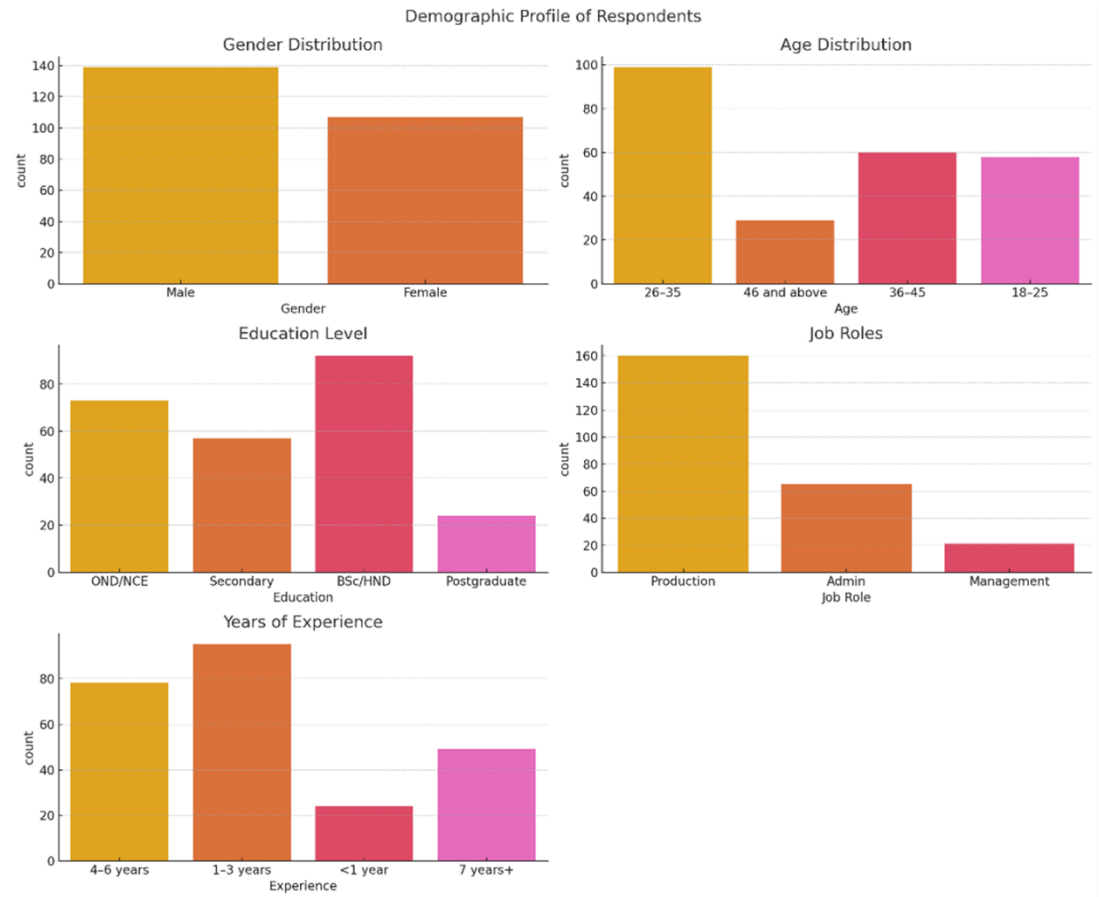

Fig. 1 - Demographic Profile of Respondents

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The gender distribution revealed a male-dominated workforce, with 55% male and 45% female respondents. This aligns with the broader trend in Nigeria's manufacturing sector, where production-related roles typically attract more male employees. In terms of age distribution, the workforce is predominantly youthful. Specifically, 25% of respondents were between 18 and 25 years old, 40% were between 26 and 35, 25% were between 36 and 45, and 10% were 46 years and above. This means a significant 65% of the workforce is under 36, consistent with national labor statistics that show young adults comprising the majority of Nigeria's manufacturing labor force. Regarding education level, the respondents displayed a moderately skilled profile. Twenty percent held a Secondary School Certificate, 30% possessed an OND/NCE, 40% had a BSc/HND, and 10% had a Postgraduate Degree. The majority, therefore, had at least a tertiary qualification. The breakdown of job roles reflected the industry's operational nature. Production staff constituted the largest group at 60%, followed by administrative staff at 30%, and management staff at 10%. This distribution is consistent with the labor-intensive requirements of the bottled water manufacturing industry. Finally, the years of experience within the workforce indicated a fairly stable environment. Ten percent had less than 1 year of experience, 45% had between 1 and 3 years, 30% had between 4 and 6 years, and 15% had 7 years or more. This means that a substantial 75% of the respondents had accumulated over one year of experience in their current roles.

Descriptive analysis was further performed on the quantitative variables using the mean and standard deviation to assess central tendencies and variability as shown in Table 1.

Table 1 - Summary Statistics of Key Study Variables

Variable	**Mean**	**Standard Deviation**
Merit Pay	3.56	0.62
Piece-Rate Pay	3.24	0.69
Affective Commitment	3.64	0.51
Normative Commitment	3.40	0.48
Continuance Commitment	3.10	0.58

Interpretation of the descriptive statistics provides valuable insights into the perceptions of performance-based pay and organizational commitment among the sampled employees. Merit Pay emerged with the highest mean score of 3.56, suggesting a generally positive perception among respondents regarding performance evaluation and the recognition of their efforts through merit-based rewards. This indicates that employees largely view the system of linking pay to individual performance positively. Piece-Rate Pay, while still relevant, received a moderately lower mean score of 3.24, indicating a less favorable perception compared to merit pay, yet still demonstrating its presence and influence within the compensation structure.

Regarding the dimensions of organizational commitment, Affective Commitment recorded the highest mean score of 3.64. This high score reflects a strong emotional attachment that employees feel towards their organizations, suggesting a genuine identification with and involvement in the company. Normative Commitment followed closely with a mean of 3.40, indicating that a significant portion of employees feel a moral obligation or a sense of duty to remain with their current organizations. In contrast, Continuance Commitment scored the lowest mean at 3.10. This lower score suggests that fewer employees are staying with the organization primarily due to perceived high costs associated with leaving (e.g., loss of benefits, difficulty finding new employment). This implies that while cost-benefit considerations play a role, they are not the dominant factor in employee retention compared to emotional attachment or a sense of obligation. This initial trend suggests that while both pay systems are recognized, merit pay appears to foster stronger emotional and moral bonds compared to piece-rate systems. The data also imply that workers are not predominantly tied to their jobs by necessity, but rather by psychological investment—though this will be tested further in the regression analysis.

Correlation and Regression Analysis

To explore the nature and strength of relationships between pay systems (merit pay and piece-rate pay) and employee commitment dimensions (affective, normative, and continuance), Pearson correlation and multiple regression analyses were conducted. The results provide insight into both the directionality and predictive value of the independent variables. A Pearson correlation matrix was computed for all continuous study variables. The results are summarized in Table 2

Table 2 - Correlation Matrix Overview

	Merit Pay	**Piece-Rate Pay**	**Affective Commitment**	**Normative Commitment**	**Continuance Commitment**
Merit Pay	1.000	-0.02	0.06	-0.04	-0.10
Piece-Rate Pay	-0.02	1.000	0.00	0.11	0.15
Affective Commitment	0.06	0.00	1.000	-0.01	0.12
Normative Commitment	-0.04	0.11	-0.01	1.000	0.01
Continuance Commitment	-0.10	0.15	0.12	0.01	1.000

In interpreting the correlation analysis, it is noteworthy that the observed relationships between variables were generally weak, suggesting that while some associations exist, they are not particularly robust. Specifically, piece-rate pay exhibited a small, yet positive, correlation with continuance commitment (r=0.15). This modest relationship suggests that employees compensated based on their output might experience a slightly increased inclination to remain with the organization, potentially driven by the perceived financial necessity or the direct link between their effort, output, and immediate earnings. This aligns with a scenario where the direct financial implications of leaving could be a more salient factor for individuals whose income is tied to production volume. Conversely, merit pay demonstrated very weak associations across all three dimensions of organizational commitment. There was a marginally positive correlation with affective commitment (r=0.06), which, while negligible, might hint at a fleeting positive emotional response when merit is recognized. More interestingly, merit pay showed a slightly negative correlation with continuance commitment (r=−0.10). This inverse relationship, though weak, could imply that employees who perceive their pay to be merit-based might feel less constrained by the costs of leaving, potentially because their skills are recognized and deemed transferable, reducing the perceived financial risk of seeking opportunities elsewhere.

Furthermore, the inter-correlations among the three commitment dimensions themselves were also weak. This finding is significant as it supports the theoretical premise that affective, normative, and continuance commitment are indeed somewhat independent constructs, rather than highly overlapping or synonymous. This independence underscores the importance of disaggregating commitment types in analyses, as factors influencing one dimension may not similarly influence others, and vice versa. The overall weakness of correlations suggests a complex interplay of factors influencing both pay perceptions and commitment, warranting further investigation through more sophisticated multivariate analyses. These preliminary insights warranted deeper exploration using multiple regression models. To assess the predictive power of merit pay and piece-rate pay on each of the commitment types, three separate multiple regression models were constructed. The results are summarized in Table 3:

Table 3 – Summary of Regression Models

Model 1 - Affective Commitment	**Model 2- Normative Commitment**	**Model 3 - Continuance Commitment**
$R^2 = 0.004$, Adjusted $R^2 = -0.004$	$R^2 = 0.014$, Adjusted $R^2 = 0.005$	$R^2 = 0.031$, Adjusted $R^2 = 0.023$
Merit Pay $\beta = 0.054$, $p = 0.314$	Merit Pay $\beta = -0.027$, $p = 0.590$	Merit Pay $\beta = -0.091$, $p = 0.132$
Piece-Rate Pay $\beta = 0.003$, $p = 0.947$	Piece-Rate Pay $\beta = 0.078$, $p = 0.084$	Piece-Rate Pay $\beta = 0.123$, $p = 0.023$

For Model 1, neither merit pay nor piece-rate pay significantly predicted affective commitment. The R^2 value indicates that these pay schemes explain less than 1% of the variance in emotional attachment to the organization. Thus, factors like workplace culture or supervisor support may be stronger predictors here. For Model 2, Piece-rate pay had a marginally significant effect ($p \approx 0.08$) on normative commitment, implying a weak sense of moral obligation may exist when compensation is tightly linked to effort. However, the model's predictive power remains low ($R^2 = 1.4\%$). Model 3 was the only one with a statistically significant predictor. Piece-rate pay was a significant positive predictor of continuance commitment ($p = 0.023$). This suggests that employees on output-based pay are more likely to remain with their organizations due to economic dependency, not emotional or normative reasons.

Correlation Heatmap

Lighter colors indicate stronger correlations. Notice that the highest value lies between piece-rate pay and continuance commitment, further supporting the regression outcome. Each cell in the matrix displays the Pearson correlation coefficient (r) between the variables on its corresponding row and column. The color intensity and shade (ranging from blue for negative correlations to red for positive correlations, with white for near-zero correlations) visually indicate the strength and direction of these relationships as seen in Figure 3.

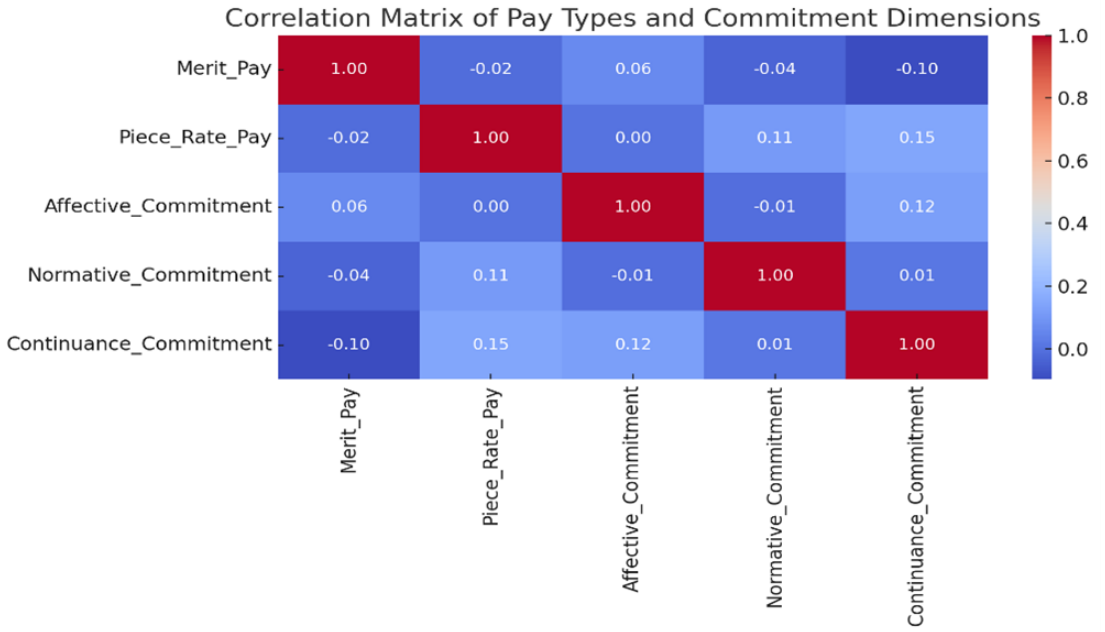

Fig. 3 – Correlation Matrix of Pay Types and commitment dimensions

The analysis of the correlation matrix reveals crucial insights into the relationships between pay types and organizational commitment dimensions within Nigerian bottled water manufacturing firms. A general observation across the matrix is the predominance of weak or negligible correlation coefficients (ranging primarily between -0.10 and +0.15) between the distinct pay types (Merit Pay and Piece-Rate Pay) and the three dimensions of employee commitment (Affective, Normative, and Continuance). This initial finding is significant, indicating that these specific pay structures do not, in a simple linear fashion, strongly co-vary with employee commitment in this context. The diagonal elements, as expected, consistently show a perfect correlation of 1.00, representing a variable's correlation with itself.

Delving into the specifics of Merit Pay, its relationship with Affective Commitment ($r = 0.06$) is a very weak positive correlation. This suggests an almost non-existent tendency for higher perceived merit pay to foster stronger emotional attachment to the organization, potentially challenging common assumptions or hinting at the influence of other mediating or moderating factors in this specific environment. The correlation between Merit Pay and Normative Commitment ($r = -0.04$) is an extremely weak negative association, practically zero, indicating no discernible linear link to an employee's sense of moral obligation to stay. More notably, Merit

Pay shows a weak negative correlation with Continuance Commitment (r = -0.10). This subtle inverse relationship could imply that employees who feel their performance is duly recognized and rewarded through merit pay might perceive themselves as having higher market value, thereby feeling less constrained by the financial implications of seeking alternative employment. This suggests that for these employees, intrinsic motivators or other commitment forms might take precedence over purely cost-benefit considerations for remaining with the firm. Furthermore, the correlation between Merit Pay and Piece-Rate Pay (r = -0.02) is virtually zero, suggesting they operate as independent compensation mechanisms.

Examining the relationships involving Piece-Rate Pay, there is an absence of a linear relationship with Affective Commitment (r = 0.00), indicating that this pay structure alone does not influence emotional attachment. However, Piece-Rate Pay exhibits a weak positive correlation with Normative Commitment (r = 0.11), subtly hinting that a direct link between effort, output, and immediate earnings might foster a greater sense of reciprocal obligation or reliance on the current system, thus contributing to a feeling of duty to remain. The strongest, though still relatively weak, non-diagonal correlation is observed between Piece-Rate Pay and Continuance Commitment (r = 0.15). This modest positive association is intuitively plausible, as individuals whose income is directly tied to their production volume might experience a stronger financial constraint or perceive higher costs in leaving their current role, given the established earning mechanism. This could signify a reliance on the existing structure for their livelihood, increasing their likelihood of staying out of necessity. Regarding the inter-relationships among the commitment dimensions themselves, the correlations are notably weak. Affective Commitment and Normative Commitment (r = -0.01) show virtually no correlation, implying their largely independent nature. Similarly, Normative Commitment and Continuance Commitment (r = 0.01) also demonstrate practical independence. While Affective Commitment and Continuance Commitment (r = 0.12) have a weak positive correlation, suggesting a slight co-occurrence, they largely remain distinct. These findings largely support the theoretical premise of Meyer and Allen's model, where these three types of commitment are distinct constructs.

In conclusion, the correlation matrix strongly suggests that within the specific context of Nigerian bottled water manufacturing firms, direct linear relationships between the explored pay types and organizational commitment dimensions are generally weak. This implies that simple direct associations are not the primary drivers of commitment. Instead, other unexamined variables such as fairness perceptions, leadership quality, work-life balance, organizational culture, job design, or the presence of high-involvement work practices are likely more influential, potentially acting as moderators or mediators. Piece-rate pay shows a slightly more discernible, albeit still weak, positive association with continuance and normative commitment compared to merit pay, hinting that for employees in these roles, financial dependency and a sense of direct reciprocity linked to output might play a role in their decision to stay and their sense of duty. Conversely, merit pay, surprisingly, has a negligible or even a very weak negative correlation with continuance commitment, suggesting it may not bind employees through fear of loss but might, instead, empower them. Finally, the three dimensions of organizational commitment appear to function largely as independent constructs in this context, reinforcing the distinctiveness of Meyer and Allen's model. This correlation analysis provides a foundational understanding but critically underscores the need for more complex statistical models, such as the multiple regression analysis previously mentioned, to explore predictive relationships and account for other influencing variables, given the overall weak correlations observed. It strongly suggests that the motivational impact of PBP on commitment in this specific low-autonomy manufacturing setting is nuanced and warrants deeper investigation beyond simple bivariate relationships.

Mean Comparison Chart

The Mean Comparison of Pay Perceptions and Commitment Dimensions bar chart in Figure 4 offers a clear visual representation of average scores on a 1-5 Likert scale, where higher bars denote stronger agreement or presence of a given dimension. Across all five variables, mean scores consistently fall above the 3.0 midpoint, clustering between approximately 3.10 and 3.65, indicating that respondents generally hold moderate to moderately high positive perceptions.

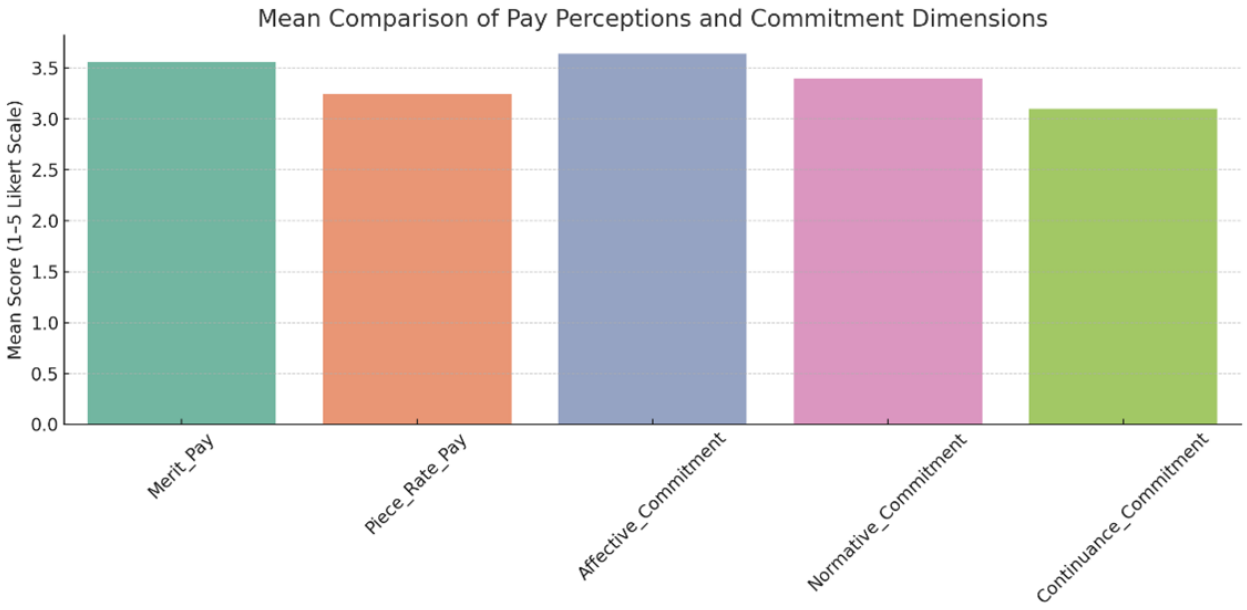

Fig. 4 - Mean Comparison of Pay Perceptions and Commitment Dimensions

Regarding Pay Perceptions, Merit Pay exhibits a higher mean score of approximately 3.55 (specifically 3.56 from previous data) compared to Piece-Rate Pay's mean of about 3.25 (3.24 previously). This suggests that employees generally perceive the merit pay system more positively, implying a greater satisfaction with performance evaluation and reward recognition linked to overall contribution. While still above average, the lower score for Piece-Rate Pay indicates a less favorable, though still relevant, perception, potentially stemming from concerns about income stability, production pressure, or a lack of non-monetary recognition inherent in such a system. The inference here is a clear preference for a more holistic, performance-based reward system over a purely transactional, output-driven one, or perhaps reflects challenges in the practical implementation of piece-rate schemes. The bar chart in Figure 4 reveals that while merit pay (3.56) is perceived more favorably than piece-rate pay (3.24), it lacks statistically significant predictive power, unlike piece-rate pay, which has a modest effect on continuance commitment (3.10). Additionally, affective commitment (3.64) scores highest among commitment types, followed by normative (3.40) and continuance (3.10).

Turning to Commitment Dimensions, Affective Commitment registers the highest mean score among all variables at approximately 3.65 (3.64 previously), signifying a strong emotional attachment and identification with the organization's goals—a positive psychological bond. Normative Commitment follows with a mean of about 3.40, suggesting a notable sense of moral obligation or duty to remain, possibly rooted in reciprocity or cultural values of loyalty. In contrast, Continuance Commitment records the lowest mean at approximately 3.10. While above neutral, this score indicates that employees are less likely to remain primarily due to prohibitive costs of leaving (e.g., loss of benefits, difficulty finding new employment). This pattern (Affective > Normative > Continuance) leads to the inference that emotional connection and a sense of duty are more potent drivers of employee retention in these organizations than calculative, cost-benefit considerations. Employees appear to want to stay and feel obligated to stay more than they feel forced to stay. A comparative inference across pay and commitment reveals that Affective Commitment holds the highest mean score, closely followed by Merit Pay. While this visual proximity might suggest a favorable relationship, it's crucial to recall that mean comparisons do not establish causal or strong correlational links, as evidenced by the weak associations observed in the prior correlation matrix. Nevertheless, the relatively higher scores for affective and normative commitment, particularly when juxtaposed with continuance commitment, align with a workforce potentially more driven by intrinsic motivation, a sense of belonging, and duty rather than solely by external constraints.

In summary, the bar chart provides a clear visual snapshot of average perceptions, highlighting a preference for merit-based pay over piece-rate pay and underscoring that emotional attachment and a sense of duty are

more prevalent forms of commitment than commitment driven by perceived exit costs. While these insights illuminate average tendencies, it remains essential to integrate these findings with more advanced analyses, such as correlation and regression, to fully understand the intricate strength, direction, and predictive power of relationships between these variables. This holistic approach is vital given the nuanced and potentially complex motivational impact of PBP on commitment in this specific low-autonomy manufacturing setting.

This study yields several critical takeaways regarding the impact of performance-based pay on employee commitment within low-autonomy manufacturing environments, particularly in the Nigerian context. Firstly, a significant finding is that employees clearly recognize and differentiate between merit-based and piece-rate reward systems, indicating a nuanced understanding of how their compensation is structured. Secondly, the analysis reveals that only piece-rate pay significantly predicts continuance commitment. This suggests that in such settings, piece-rate compensation primarily serves to anchor employees through financial dependence—a calculative decision based on perceived costs of leaving—rather than fostering genuine organizational loyalty or emotional attachment. Thirdly, despite being perceived positively, merit pay does not significantly predict any form of commitment (affective, normative, or continuance) in this low-autonomy manufacturing context. This surprising result could be attributed to factors such as opaque performance evaluation systems, a lack of perceived fairness in the merit distribution, or limited promotional and career development opportunities that might otherwise reinforce a sense of loyalty or attachment. In light of these findings, the results strongly imply that in labor-intensive environments characterized by limited employee autonomy, the effectiveness of pay-for-performance strategies in meaningfully impacting organizational commitment is contingent upon their careful alignment with employee expectations, robust role clarity, and transparent, equitable implementation processes. Without such alignment, PBP may only serve to financially bind employees rather than cultivate deeper forms of commitment.

DISCUSSION

This study set out to examine and compare the effects of two widely implemented performance-based compensation systems—merit pay and piece-rate pay—on the three dimensions of organizational commitment in manufacturing firms. The findings offer valuable insight into the nuanced relationship between reward systems and employee attachment in a low-autonomy, output-driven sector.

Merit Pay: Low Predictive Power Across All Dimensions

Despite respondents rating merit pay higher than piece-rate pay (Mean = 3.56 vs. 3.24), regression analyses showed no significant association between merit pay and any of the commitment types. This contradicts earlier studies such as Kuvaas et al. [7], who reported that merit-based rewards increase affective commitment when employees perceive the performance evaluation as fair and developmental. A plausible explanation for the inconsistency may be low transparency or trust in performance appraisals within the sampled firms, rendering merit pay psychologically ineffective. Moreover, Gerhart and Fang [2] suggested that merit pay's effectiveness depends on job complexity and autonomy—two factors often lacking in routine manufacturing roles. In our study, the weak and statistically insignificant impact of merit pay suggests that without organizational support, feedback mechanisms, and fairness perceptions, such pay structures fail to generate commitment, particularly affective and normative forms.

Piece-Rate Pay: A Double-Edged Sword

The only significant predictor found was piece-rate pay on continuance commitment ($\beta = 0.1233$, $p = 0.0227$). This result confirms the findings of Iqbal et al. [9], who reported that performance-based financial incentives are more likely to bind employees economically than emotionally in resource-constrained settings. Piece-rate systems often increase short-term performance and retention but fail to foster emotional or value-based organizational ties [6]. The implication is that employees may stay out of necessity rather than loyalty, a condition that poses risks for long-term engagement, especially when more lucrative alternatives arise. Organizations relying solely on piece-rate schemes may see high retention but low morale and innovation.

The results offer partial support for Meyer and Allen's [4] Three-Component Model of Organizational Commitment, showing that compensation systems may selectively reinforce only some aspects of commitment. While continuance commitment can be financially incentivized, affective and normative dimensions appear to require deeper motivational strategies, such as employee involvement, recognition, and fairness in reward allocation. This aligns with findings by Ogbonnaya et al. [13], who argued that contingent rewards need to be paired with supportive HR practices (e.g., developmental feedback, participation in decision-making) to generate affective commitment. For HR managers in manufacturing firms, these findings underscore the need to move beyond output-based pay as the sole engagement strategy. Merit pay systems must be redesigned to include transparent performance metrics, regular feedback, and clear pathways for advancement to effectively influence employee attitudes. Piece-rate pay, while effective for short-term performance, should be complemented by non-monetary strategies to enhance affective loyalty.

This study highlights that while merit pay (3.56) is perceived more favorably than piece-rate pay (3.24), it lacks statistically significant predictive power over any commitment dimension, unlike piece-rate pay, which modestly influences continuance commitment (3.10). Affective commitment (3.64) remains the strongest among commitment types, followed by normative (3.40) and continuance (3.10), suggesting that commitment extends beyond financial incentives, requiring fairness, trust, and meaningful engagement.

Table 4 - Multiple Regression Summary (Coefficients and P-values)

Commitment Type	**Variable**	**Coefficient**	**P-Value**	**R^2**	**Adjusted R^2**
Affective Commitment	Merit Pay	0.0537	0.3144	0.0042	-0.0040
	Piece-Rate Pay	0.0032	0.9467		
Normative Commitment	Merit Pay	-0.0270	0.5895	0.0136	0.0054
	Piece-Rate Pay	0.0779	0.0836		
Continuance Commitment	Merit Pay	-0.0905	0.1323	0.0305	0.0225
	Piece-Rate Pay	0.1233	0.0227		

Significant at 5% level

However, the findings are limited by the sample's restriction to bottled water firms in a single state, potentially affecting generalizability. The study also relied solely on quantitative metrics, omitting employees' subjective views on fairness, trust, or satisfaction, as well as psychological or cultural moderators like power distance or job insecurity. Future research should incorporate qualitative methods to explore why employees may distrust merit systems and examine perceived organizational justice as a mediator. Expanding studies across different industries and regions could provide broader comparative insights into pay-commitment dynamics. Ultimately, while piece-rate pay shows a measurable link to continuance commitment, merit pay's perceived value does not translate into predictive power, reinforcing that commitment is shaped by more than monetary rewards alone.

CONCLUSIONS

This study examined the comparative effects of merit pay and piece-rate pay on the three components of organizational commitment—affective, normative, and continuance—among employees in bottled water manufacturing companies in Ondo State, Nigeria. The findings provide nuanced insights into the limitations and potential of performance-based compensation in shaping employee commitment in labor-intensive sectors within developing economies.

This study provides crucial insights into the nuanced relationship between performance-based pay (PBP) and organizational commitment, particularly within the under-researched context of low-autonomy manufacturing environments in a developing economy. Our most notable and statistically significant conclusion is the positive effect of piece-rate pay on continuance commitment. This finding indicates that employees

compensated directly based on their output are more likely to remain with their organizations due to economic considerations or the perceived stability of income. This reinforces earlier research by Iqbal et al. (2019) and Boachie-Mensah and Dogbe (2011), which suggests that output-based compensation, while potentially improving productivity and retention, may not inherently cultivate loyalty or emotional attachment. This reliance on economic necessity over affective or moral engagement, however, signals a significant risk: such employees may readily depart for better-paying opportunities, thereby threatening long-term organizational stability and engagement.

Conversely, our findings present a discrepancy with prior literature concerning merit pay's lack of impact on employee commitment. Contrary to expectations derived from studies in higher-autonomy or Western contexts (e.g., Kuvaas et al., 2018; Gerhart & Fang, 2014), merit pay did not significantly predict any form of commitment in this study. This divergence is likely attributable to factors prevalent in low-autonomy settings, such as a lack of transparency in appraisal systems, limited employee autonomy in task structures, or perceived inequities in how merit is defined or rewarded. These results imply that, in such environments, merit pay may fail to trigger intrinsic motivation or emotional loyalty, potentially because employees view evaluations as subjective or politicized. This offers a key departure point from studies conducted in more professionalized, Western, or white-collar contexts where performance-based systems have been consistently shown to influence affective commitment.

The presence of inconclusive results for merit pay's relationships with affective and normative commitment suggests that other variables may mediate or moderate these dynamics. Potential factors include perceived organizational justice, supervisor support, career growth opportunities, and job satisfaction or role clarity, none of which were controlled for in this study. Consequently, future research should employ qualitative methods to gain a deeper understanding of employee perceptions of fairness and transparency, integrate moderator variables such as psychological empowerment or leadership style, and explore industry-wide comparisons to ascertain if these trends persist in other low-autonomy manufacturing sectors. A longitudinal approach would also be invaluable for assessing the durability of commitment over time under varying compensation schemes.

It is crucial to acknowledge the limitations of this study. Our findings are constrained by the geographic and industry scope, having been conducted solely in bottled water firms in Ondo State, Nigeria, which may limit generalizability across Nigeria or to other industries. The quantitative-only approach restricts a deeper understanding of rich employee experiences and the specific organizational context. Potential self-report bias may exist, where respondents' attitudes could be over- or under-reported due to social desirability or concerns about employer surveillance. Furthermore, uncontrolled confounding factors, such as other HR practices (e.g., recognition programs, promotion fairness), were not accounted for, potentially influencing observed commitment levels. Recognizing these limitations, we strongly advocate for triangulated, cross-method research in future endeavors to provide a more comprehensive picture.

These findings carry significant implications for both HR practice and theory. For HR practitioners in manufacturing and similar labor-intensive industries, our study highlights that piece-rate pay can be useful for retention but is insufficient for fostering genuine loyalty or engagement. Moreover, merit pay schemes must be meticulously coupled with transparent evaluation systems, consistent employee feedback, and robust recognition structures to be truly meaningful and impactful. An overreliance on purely financial incentives without adequately addressing fairness and underlying motivational factors risks cultivating only shallow, economically driven commitment. For theory, this study contributes to refining Meyer and Allen’s (1991) commitment framework by empirically demonstrating that different pay types uniquely influence distinct commitment dimensions, particularly in settings characterized by job routine and significant economic constraints.

In final summary, this research concludes that piece-rate pay positively influences continuance commitment, thereby underscoring its utility in employee retention. However, merit pay, despite being viewed favorably by employees, does not significantly enhance affective or normative commitment in the sampled context. Crucially, the study expands existing literature by demonstrating the context-sensitive nature of pay-

commitment dynamics, particularly within developing, low-autonomy environments. Therefore, future studies must integrate variables pertaining to employee perceptions and employ longitudinal designs to better understand how compensation truly translates into sustainable organizational loyalty, emphasizing the importance of strategic compensation alignment with organizational culture, fairness, and employee expectations, rather than merely performance metrics.

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