

OCCUPATIONAL ERGONOMICS AND JOB SATISFACTION IN HOSPITALITY OPERATION: A CASE OF RESORT HOUSEKEEPERS IN NORTHERN CEBU, PHILIPPINES

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ABSTRACT

This study assessed the prevalence of ergonomic risks in the workplace and the perceived level of job satisfaction among resort housekeepers in Northern Cebu. Resorts rely on a diverse team of workers to keep operations running smoothly, yet these employees are often exposed to numerous ergonomic risks. As tourism in Northern Cebu continues to expand, tackling these ergonomic concerns is essential for safeguarding employee well-being and sustaining the efficiency of resort operations. Prioritizing ergonomic improvements not only enhances workers' health but also plays a critical role in ensuring the long-term success and smooth functioning of the hospitality sector. Using Herzberg's Two-Factor Theory as the framework, the research sought to examine the causal relationship between these two variables. Employing a quantitative approach with regression analysis, the study surveyed 97 housekeepers from medium-sized resorts to identify key ergonomic risks. These included posture, workspace design, and environmental factors such as noise, vibration, and illumination. The findings indicated that while ergonomic discomforts, particularly posture-related issues, were moderately prevalent, their influence on overall job satisfaction was minimal and statistically insignificant. This challenges the universality of Herzberg's Two-Factor Theory, suggesting that hygiene factors, such as ergonomic conditions, may not have a straightforward impact on job satisfaction in this context. The study emphasized the complexity of job satisfaction determinants within the hospitality industry, pointing to the possibility that factors beyond ergonomics might play a more significant role in shaping housekeepers' satisfaction levels. These results highlight the need for further investigation into the multifaceted nature of job satisfaction in the hospitality sector. Additionally, the research emphasizes the importance of implementing targeted ergonomic interventions aimed at improving employee well-being and productivity, even if their direct effect on job satisfaction is not immediately apparent.

Keyword: *Ergonomics, Job Satisfaction, Resort Housekeeper, Herzberg's Two-Factor Theory, Hospitality Industry.*

1. INTRODUCTION

The hospitality industry is basically service-oriented sector, and the effectiveness of its workforce plays a significant role in its success. Processes that rely on human involvement require a thorough assessment of factors affecting task

performance. The field of ergonomics focuses on how people interact with their work environment, and is important for improving both human health and overall system effectiveness. Implementing effective ergonomic strategies is essential for avoiding long-term problems like strain, discomfort, and injury, especially in jobs with frequent physical requirements. This research centers on addressing ergonomic risk factors in various resorts in Northern Cebu to identify areas for improvement that can increase both employee job satisfaction and operational effectiveness.

In districts like Northern Cebu, a popular tourist destination, the hospitality sector faces a significant demand for services that often involve considerable physical labor. Resorts employ a diverse workforce to ensure smooth operations who are routinely exposed to various ergonomic risks. Issues such as poor posture, repetitive movements, inadequate workspace design, and environmental factors like noise, lighting, and vibration are common ergonomic challenges that can adversely affect employee health and job satisfaction. As tourism in Northern Cebu continues to grow, addressing these ergonomic concerns becomes increasingly important for maintaining employee well-being and ensuring the success of resort operations.

Ergonomics is designed to mitigate work-related injuries and illnesses by adapting the work environment to fit the worker, rather than forcing workers to adapt to potentially hazardous conditions (Mishra & Narendra, 2020). In industries characterized by intense and varied physical labor, such as hospitality, the role of ergonomics is critical in preventing musculoskeletal disorders (MSDs) and other health issues resulting from poor working conditions.

1.1 Theoretical Review

To delve deeper into the impact of workplace factors on employee satisfaction and motivation, it's essential to consider how ergonomic conditions intersect with Herzberg's Two-Factor Theory. This theory categorizes workplace influences into two key areas: motivators and hygiene factors.

Motivators, which are also known as intrinsic factors, consist of components like accomplishment, acknowledgment, job type, accountability, and opportunities for personal development and progression. These factors are related to job satisfaction and stem from an individual's internal drive and positive feelings about their job. Motivators, if they are a part of the situation, can contribute to increased job satisfaction and may spur employees to excel in their work. Nonetheless, hygiene factors (external factors) consist of elements like company rules, management effectiveness, pay, social relationships, and work conditions, encompassing the actual workplace setting. Herzberg claimed that enhancing these elements may eliminate dissatisfaction but may not necessarily increase satisfaction or motivation. Instead, these elements need to reach a minimum standard in order to avoid discontent (Alshmemri, Shahwan-Akl, & Maude, 2017).

In the context of this research on resort housekeepers in Northern Cebu, ergonomic conditions are conceptualized as crucial hygiene factors. This includes aspects such as posture, workspace design, and environmental factors like noise, lighting, and vibration—all of which are integral to the physical working environment. Poor ergonomic conditions can lead to discomfort, health issues, and ultimately, dissatisfaction among employees. For instance, workers who experience musculoskeletal discomfort due to inadequate posture or workspace design are likely to feel dissatisfied with their jobs, even if other aspects of their employment, such as pay or job security, are satisfactory (Gumasing, Arreza, Guzman, & Da Costa, 2020; Ghahremani, Khademi, Nazari, Kaveh, & Abbasi, 2024).

Herzberg's Two-Factor Theory offers a useful perspective for understanding the link between workplace ergonomics and job satisfaction. The theory highlights the need to pay attention not only to internal motivators that lead to satisfaction, but also to guarantee that external and physical factors (hygiene factors) are adequate to avoid dissatisfaction (Nickerson, 2023).

1.2 Literature Review

The concept of ergonomics has been thoroughly researched in different sectors, revealing its important effects on both employee well-being and efficiency. Ergonomics is described as the field of designing workspaces, products, and systems to suit the individuals who utilize them, instead of requiring users to adjust to the surroundings. This field covers physical, mental, and structural elements to enhance workplaces and reduce the likelihood of injuries or

health issues. Sohrabi & Babamiri (2021) stated that providing ergonomic training interventions can lessen musculoskeletal disorders and enhance the quality of work-life for office workers.

In a study by Gumasing and Espejo (2020), it was revealed that workers in public school canteens in the Philippines were at high risk of musculoskeletal injuries, primarily because of poor workplace design and inadequate ergonomic practices. The researchers used scientific methods to redesign workspaces, leading to reduced musculoskeletal injuries and improved employee satisfaction. Similarly, a study conducted by Jeripotula, Mangalpady, & Mandela (2020) on surface mine workers, who face similar ergonomic hazards as hotel workers, identified significant associations between repetitive work and the development of musculoskeletal disorders, particularly lower back and neck pain. This research further supports the need for ergonomic interventions in physically demanding jobs. The hospitality industry, with its reliance on human resources, is no exception to this trend.

In the hospitality industry, the application of ergonomics is particularly crucial due to the physical demands placed on employees. Workers in this sector are often required to perform tasks that involve lifting, bending, standing for extended periods, and handling various tools and equipment. These activities, if not properly managed, can lead to musculoskeletal disorders (MSDs) and other health issues. The prevalence of MSDs among hospitality workers has been well documented in the literature. For instance, Tegenu et al. (2021) reported that 81.5% of restaurant workers in Gondar city, Ethiopia, experienced WMSDs within the past year, particularly in the upper back, lower back, elbow, and wrist. In a study by Mogol Sever (2019), several prevalent ergonomic factors affecting kitchen workers in hotel enterprises were identified, including the presence of underfoot mats, inappropriate workbench heights, and the lack of job rotation. Moreover, separate research highlighted that hotel housekeepers are particularly susceptible to musculoskeletal disorders, especially in the lower back, shoulders, and wrists/hands (Cristian Sánchez-Rodríguez et al., 2024).

The importance of addressing ergonomic issues in the hospitality industry is further underscored by the findings of Ismail, Osman, & Rahman (2020), who emphasized that ergonomically designed workplaces not only reduce the risk of injuries but also improve employee efficiency and satisfaction. The researchers noted that ergonomic interventions, such as proper workstation design, training on safe lifting techniques, and the use of ergonomic tools and equipment, can significantly enhance the physical safety and well-being of employees. These improvements, in turn, contribute to better job performance and higher levels of job satisfaction.

1.3 Research Gap

Despite the extensive literature on ergonomics in the hospitality industry, there is a notable gap in research focusing on resort housekeepers in an island part of Northern Cebu. This locale, with its thriving tourism sector, faces unique challenges due to the high influx of visitors and the resulting demand for hospitality services. The combination of physical demands placed on resort housekeepers and the environmental factors specific to the local context, such as its climate and infrastructure, highlights the need for examination of ergonomic issues in this context.

Additionally, the study will focus on medium-sized resorts in the area. Aside from their prevalence in the local setting, these resorts offer a unique environment characterized by resource limitations, limited career growth opportunities, a specific management structure, multi-tasking roles, and shared local values, all of which create distinct working conditions.

Previous studies on hospitality ergonomics have primarily concentrated on urban areas, leaving rural, tourism-dependent areas understudied. In an island part of Northern Cebu, resort housekeepers often face long working hours, fluctuating schedules tied to the ebb and flow of tourism, and a workforce predominantly characterized by limited formal training but rich in practical experience. This workforce, shaped by early entry into the labor market, may have different perceptions and experiences of occupational health conditions compared to their urban counterparts.

1.4 Statement of the Problem

Given such unique circumstances, this study aims to fill the research gap by investigating the specific ergonomic challenges faced by resort housekeepers in Northern Cebu. This shall identify and analyze specific ergonomic problems associated with posture, workspace design, lifting tasks, noise, vibration, and illumination in order to

understand the physical demands and health risks associated with the working environment of the employees and its predictive effect to job satisfaction. Moreover, the study seeks to validate Herzberg's Two-Factor Theory by examining how ergonomic conditions impact job satisfaction and will offer recommendations for improving working conditions to enhance employee well-being and productivity.

2. METHODOLOGY

The research employed a quantitative approach to assess the ergonomic problems faced by resort housekeepers in Northern Cebu. Quantitative research, involves systematically collecting numerical data and applying statistical, mathematical, or computational approaches to investigate phenomena. Specifically, the study utilized quantitative explanatory design with regression analysis to determine the predictive relationship of ergonomic factors to job satisfaction. The questionnaire was divided into three parts: the first part gathered demographic information about the respondents, such as age and gender; the second part focused on ergonomic risk factors related to posture, workspace, lifting tasks, noise, vibration, and illumination; and the third part assessed job satisfaction.

The study was conducted among 97 resort staff from various medium-sized resorts in Santa Fe, Bantayan Island, Cebu, who held functional roles in housekeeping. The respondents were selected using stratified-random sampling technique, in which the number of respondents selected per resort (stratum) is proportional to the actual distribution in the population. The sample size was determined using Slovin's formula, with a desired margin of error set at 5%. The total population of resort housekeeping staff was based on the resorts' employee records.

The study adhered strictly to ethical research standards, ensuring the protection of respondents' rights and welfare. Informed consent was obtained after fully explaining the study's purpose, with respondents free to withdraw at any time without consequences. Confidentiality was strictly maintained, with identities removed from data and securely stored. Participation was voluntary, with no impact on respondents' employment or relationship with resort management.

The data collection process involved distributing structured questionnaires to the respondents, which were pre-tested to ensure clarity and reliability, resulting in a Cronbach's alpha score of 0.75, indicating high internal consistency. The collected data were analyzed using jamovi software version 2.3. Descriptive statistics, including frequency distribution, weighted mean, and standard deviation, provided insights into the respondents' demographics and responses to ergonomic problems encountered and job satisfaction. Additionally, linear regression was used to analyze the predictive power of the model to the variances of overall job satisfaction. The tests of significance were conducted at 95% confidence level.

3. RESULTS AND DISCUSSION

The discussion is organized into three sections. The first section presents, analyzes, and interprets the respondents' demographic profile, focusing on age and gender. The second section examines the ergonomic challenges faced by resort staff, including issues related to posture, workspace design, lifting tasks, environmental factors such as noise, vibration, and lighting, as well as job design and job satisfaction. The final section presents the results of the predictive analysis, assessing the relationship between ergonomic factors and the respondents' job satisfaction.

3.1 Demographic Profile

To provide depth and breadth to the study, it is crucial to collect data about the respondent's demographic characteristics. Thus, this part emphasized the importance of respondent's perception based on their demographics by extracting the age and gender.

As presented in Table 1, the demographic profile of the respondents revealed that the majority of resort employees in Northern Cebu were young adults, with 38.1% of the respondents aged 18-28 years. This finding aligns with the current trends in the hospitality industry, where younger workers are increasingly taking on entry-level positions that require physical labor. The gender distribution showed that 57.7% of the respondents were females, which is common in the local hospitality industry, wherein women are more likely to be employed in the sector due to the nature of the tasks involved, which often resemble domestic work.

Table -1: Respondents’ Demographic Profile

Frequencies of Age Profile			
Age Profile	Counts	% of Total	Cumulative %
18-28	37	38.1 %	38.1 %
49-58	19	19.6 %	57.7 %
39-48	28	28.9 %	86.6 %
29-38	11	11.3 %	97.9 %
>58 years	2	2.1 %	100.0 %
Frequencies of Gender Profile			
Gender Profile	Counts	% of Total	Cumulative %
F	56	57.7 %	57.7 %
M	41	42.3 %	100.0 %

3.2 Ergonomic Risks and Job Satisfaction

The findings from the descriptive assessment of ergonomic risks reported by resort housekeepers—covering aspects such as posture, workspace, lifting tasks, noise, vibration, illumination, and job design, as well as their levels of job satisfaction—are summarized in Table 2.

Table 2. Descriptive Results on Ergonomic Problems and Job Satisfaction

	Mean	SD	Skewness		Kurtosis	
			Skewness	SE	Kurtosis	SE
Workspace	2.82	0.785	-0.19514	0.245	-0.625	0.485
Job Design	2.65	1.010	0.39639	0.245	-0.902	0.485
Posture	2.86	0.784	0.00686	0.245	-0.607	0.485
Noise, Illumination, Vibration	2.72	0.864	0.27342	0.245	-0.808	0.485
Lifting Tasks	2.77	0.930	0.33774	0.245	-0.982	0.485
OVERALL ERGONOMIC RISKS	2.76	0.724	0.38430	0.245	-0.950	0.485
JOB SATISFACTION	3.10	0.430	0.30330	0.245	-0.461	0.485

Based on the data presented, the study revealed that posture-related issues were the most common ergonomic problem, with a weighted mean of 2.86 and standard deviation of 0.784, indicating moderate discomfort. This finding aligns with observations that resort housekeepers are exposed to prolonged sitting and standing, especially during peak days, leading to back and neck pain. The frequent occurrence of posture-related discomfort highlights the need for ergonomic interventions such as training on proper body mechanics and the redesign of workstations to support better posture. Workspace-related problems were also considerable, with a weighted mean of 2.82 and a standard deviation of 0.785, indicating moderate discomfort. The respondents reported issues such as inadequate chairs and tables, limited movement due to small workspaces, and poor ventilation. The findings may suggest that while these issues exist, employees may have adapted to their work environments over time. Lifting tasks showed a similar trend, with a weighted mean of 2.77 and a standard deviation of 0.930. Respondents reported muscle strain, soreness, and back pain due to frequent lifting of heavy loads and improper lifting techniques. These findings supported the importance of proper training on safe lifting techniques and the use of ergonomic tools to reduce the physical strain associated with manual handling tasks. Environmental factors, including noise, vibration, and illumination, moderately impacted job satisfaction, with a weighted mean of 2.72 and a standard deviation of 0.864.

Respondents reported moderate levels of eye strain, headaches, and stress due to flickering lights, high noise levels, and vibrating tools. Lastly, job design issues, though slightly less problematic with a mean of 2.65 and a standard deviation of 1.010, still contributed to moderate discomfort.

Overall, the mean score for ergonomic risks was 2.76, with a standard deviation of 0.724, indicating that the housekeepers experienced moderate discomfort across the various ergonomic factors assessed. In contrast, the mean score for overall job satisfaction was slightly higher at 3.10, with a lower standard deviation of 0.430, suggesting that despite the ergonomic challenges, the housekeepers generally maintained a moderate level of job satisfaction. The low standard deviation values indicated the results were mostly consistent throughout the values.

Moreover, as presented in Table 2, the results for skewness and kurtosis can be considered approximately normal. The skewness values are close to zero, indicating that the distributions are relatively symmetrical, while the kurtosis values are slightly platykurtic. Although these findings deviate slightly from a normal distribution, with flatter peaks and slight skewness, the deviations are still within the acceptable range for approximate normality.

3.3 Predictive Analysis

The result of linear regression analysis testing the causal relationship between ergonomic risks and job satisfaction is presented in Table 3.

Table 3. Regression Results

Model Fit Measures		
Model	R	R ²
1	0.156	0.0244

Model Coefficients - JOB SATISFACTION				
Predictor	Estimate	SE	t	p
ERGONOMIC RISKS	0.0929	0.0602	1.54	0.126

Based on Table 3, the analysis reveals a weak positive correlation between ergonomic risks and job satisfaction, as indicated by the correlation coefficient (R) of 0.156. The coefficient of determination (R²) is 0.0244, meaning that ergonomic risks explain only 2.44% of the variance in job satisfaction.

The model's estimate for ergonomic risks is 0.0929, with a standard error of 0.0602, suggesting a small positive effect on job satisfaction. The t-value for ergonomic risks is 1.54. However, the p-value associated with this predictor is 0.126, which is greater than the conventional significance threshold of 0.05. This indicates that the observed relationship between ergonomic risks and job satisfaction is not statistically significant at the 5% significance level.

Furthermore, the assumptions were verified to establish validity of the regression model. The residual analysis indicated that the errors are normally distributed, as evidenced by the Shapiro-Wilk test result of 0.095, where $p > 0.05$. Furthermore, the residuals appear homoscedastic, as evidenced by the spread of residuals in the plot shown in Figures 1 and 2. The maximum Cook's Distance is 0.0674, which is well below the common threshold of 1, suggesting that there are no influential outliers affecting the model. The Variance Inflation Factor (VIF) result of 1.0 indicates that there is no evidence of multicollinearity. Additionally, the Durbin-Watson statistic of 1.96, where $p > 0.05$, suggests that there is no significant autocorrelation, meaning the independence of errors is achieved. The residual plots in Figures 1 and 2 suggest that the assumptions of the linear regression model were reasonably met.

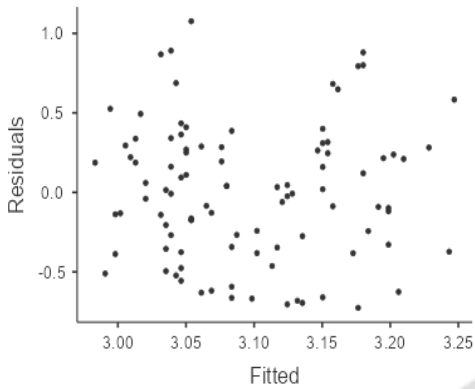


Fig -1: Residual Plot (Fitted)

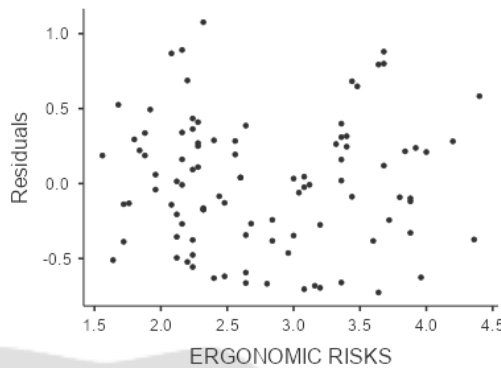


Fig -2: Residual Plot (Independent Variable)

The findings revealed that resort housekeepers in Northern Cebu report slightly higher job satisfaction despite moderate exposure to ergonomic risks. This counterintuitive result suggests that non-ergonomic factors like supportive management, work-life balance, and social interactions may outweigh the physical demands of the job. The positive, though insignificant, correlation between ergonomic risks and job satisfaction indicates that housekeepers might have adapted to the physical challenges, viewing them as a normal part of their work.

These findings detract from Herzberg's Two-Factor Theory, which posits that ergonomic risks, as hygiene factors, should negatively impact job satisfaction. However, the slight positive correlation suggests that housekeepers do not perceive these risks as strongly negative, possibly due to habituation or other mediating factors. This aligns with research by Park and Bae (2023) and Shan, Liu, Gu, and Zhao (2022), who highlight the role of non-ergonomic factors like decision-making participation, work stress, and organizational commitment in mitigating the impact of occupational risks on job satisfaction.

The low predictive power of ergonomic risks on job satisfaction suggests that other motivators, such as achievement and recognition, are likely playing a significant role, consistent with Herzberg's theory. The absence of statistical significance might indicate a threshold effect, where ergonomic risks only impact job satisfaction when perceived as severe. In the broadest sense, these findings underscore the complexity of job satisfaction, where physical demands may be overshadowed by positive workplace factors, allowing housekeepers to maintain a moderate level of satisfaction despite ergonomic challenges.

4. CONCLUSIONS

This study has provided valuable insights into the ergonomic challenges faced by resort housekeepers in Northern Cebu. Based on the result, it was concluded that there are some notable ergonomic issues present in the workplace. The findings revealed that posture-related issues, workspace constraints, lifting tasks, environmental factors (noise, vibration, illumination), and job design contribute to moderate ergonomic discomfort among resort housekeepers. Posture-related issues emerged as the most prevalent ergonomic problem which are common in the housekeeping role. Furthermore, despite these challenges housekeepers have managed to maintain a moderate level of job satisfaction.

The insignificant causal relationship between ergonomic risks and job satisfaction challenges Herzberg's Two-Factor Theory. While a slight predictive effect suggests other factors may mitigate ergonomic risks, the positive correlation diverges from Herzberg's propositions, indicating the theory is only partially supported in this context. This complexity suggests the need for further research to fully understand the interplay between ergonomic risks, job satisfaction, and other influencing factors.

To help address these issues, resort management should implement regular ergonomic inspections to assess and improve work environment conditions. Additionally, conducting periodic evaluations of both ergonomic risks and job satisfaction is essential for promptly identifying and addressing emerging issues. Training programs focused on proper posture, safe lifting techniques, body mechanics, and ergonomic principles are also recommended to help

housekeepers reduce physical strain and prevent workplace accidents. Given the current moderate job satisfaction levels, even modest improvements in working conditions could lead to significant positive outcomes for employees.

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