



Precedence of Work Environment Factors Influencing Employee Performance: A RIDIT Approach

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Abstract

Objectives: The aim of this study is to analyze the impact of work environment on employee performance and to establish the ranks and prioritize the items related to work environment (WE) in order to maximize employee performance. **Methods:** Descriptive methodology was used for the study. Association between work environment and employee performance was identified by using correlation analysis. Means of the items of WE were obtained and ranks were provided to the various factors of work environment using RIDIT analysis. **Findings/application:** The review founds the need to connect work environment with the performance of workers. The managers need to study the rankings provided to the various factors of the work environment and derive the policies or make amendments as and where needed, according to the priority of the factors. This will enhance the overall performance of the employee of the organization as suggested in the study. The uniqueness of this study is, prioritizing the items of work environment with respect to employee performance by using RIDIT analysis. Hence, firms can concentrate and give utmost importance for those items to maximize workers' efficiency and hence organization performance.

Keywords: Workplace Environment, Employee Performance, Prioritizing, RIDIT Approach

1. Introduction

Employee performance (EP) is determined by various factors. Employees can put their heart and soul for the organization if the work environment (WE) is smooth and comfortable for them. Better work environment inspires the workers and increase their efficiency. Worker's mistake rate, level of novelty and teamwork with other staffs, absence and, duration of stay in the job are influenced by the way they engage with the organization,

especially with their instantaneous setting. Numerous studies have exposed that if there is no association and mutual understanding between the workers and their immediate managers, then most of the workers leave their organization and their administrators. There is a significant relationship between works, pressure, and health consequences [1]. Studies were done for improving the behavioral work environment and the ways to stop absenteeism of workers due to issues related to well-being [2]. “WE” is all about making circumstances where employees can complete their responsibilities happily [3].

Stability between workers task and demands can be obtained by applying Ergonomics perfectly. Moreover, organizational performance will improve if there is an increase in worker efficiency, worker safety, physical and mental well-being and job satisfaction. Various aspects need to be analyzed about things which have created a situation in which a company requires its workers more than the workers require the company [4]. People operate the surrounding for their survival. Incorrect operations become as a threat and disturb employee performance. Hence workroom requires an atmosphere in which the worker accomplishes his work [5]. An active workroom is a setting in which outcomes can be attained as anticipated by the organization [6–7]. Researchers studied about the psychosocial stressors faced by the employees and analysed about those stressors, the consequences and their significant impact in the work place [8].

Various physical and mental disorders were caused which affect the performance of the workers. Recent researches focus on the factors of “work environment” and top priority is given to “psychosocial factors”. The work environment has a significant impact on the psychological and wellbeing of staffs [9]. Clients will feel happy with better work environment design. Hazards and wounds can be reduced or eliminated with better WE and expensive redesigns can be avoided. Experts from the field of Ergonomics and Psychology, create better procedures and products with their knowledge and skills. The present task of any organization is to create an environment which can motivate its employees for improving performance. All the managers in various levels are accountable for this act. They need to brainstorm and innovate new methods to create better work atmosphere in which workers feel comfortable, pleased and satisfied to perform their job. Physical and psychological well-being is affected by the work environment positively and negatively. Expectations about work environment are different and unique in the business world and it is changing in different time frame.

There are lot of changes between the relationship of employer and employee nowadays. In the present economy, employees have plenty of chances and limitless job opportunities. This situation made the condition where employers need their employees rather employees need employer. Hence, the main focus is, to realize about better work environment which is very essential to impress the employees. The output of workers is determined by WE in which they work. WE include all the features which act and react on the heart and soul of an employee. Productivity and performance of employees are optimized by physical, mental, and social environment. The ultimate aim is to create an environment where positive things are maximized and negative things are minimized by considering economic, mechanical, and psychological aspects. Effective WE motivate its workers and help to increase the growth and economy of the firm. Physical, psychological, and social aspects which impact the working conditions are included in the idea of WE.

2. Background

Excellence of work station has an influence on employee's attitude and their performance [10]. Work environment design has an influence on the employee's conduct and is vital in attaining tactical, professional purposes [11]. Enhancement in physical design of office, increases employee productivity [12]. Better results were produced by better work environments. According to American Societies of Interior Designers, employees prefer physical comfort in the office. Organizations which have a better workplace environment, accomplishes the employees' requirements help to improve their productivity [10].

3. Statement of the Problem

In many organizations, the workplace atmosphere, its importance and its related problems are pointedly over looked [10]. Less consideration was given to the workroom environment. Employers and workers are not conscious about the effect and changing aspects of workplace environment which causes delay in work accomplishment, hindrance, increase in absenteeism and effect on personal growth, etc [10].

4. Objectives of the Study

- To understand the connection between the factors of work environment and workers' performance.
- To rank the items of work environment with respect to their impact on workers' performance.
- To analyze how Physical, Social, and Psychological work environments affect the employees' performance

5. Literature Survey

5.1. Workplace Environment (WE)

WE play an important role and are one of the vital requirements to complete any job successfully [13]. Numerous researches have tried to explain WE in diverse areas. Factors of WE were studied and researched by many researchers [14–18]. The importance of WE was explained by various scholars [19–21]. Relation between WE and Retention of workers is explained in those studies. Studies on WE were conducted to find the factors which impact employees' decision-making regarding acceptance or rejection of a job [22]. According to many researchers, WE must be taken care very seriously to reduce grievances and absenteeism [13].

Moreover, studies were conducted regarding physical surroundings, office design and their effects on employee performance [18,23–25]. Variations in existence of life, balance of work-life and issues related to well-being are influenced by the factors of WE. Behavioral environment, work place design and connectivity were analyzed by many researchers to

obtain extensive knowledge in the domain of WE [25–29]. In many studies, factors of WE were identified and the relationship between WE and EP was proved. Studies regarding collaborative knowledge work environments were conducted by many scholars [24,30–31]. Quality of WE, office personalization, employee wellbeing and effect of new work place were discussed by various researchers [32–35]. Comfort and happiness of the employees are greatly influenced by WE which impacts the success of business also [36]. The present study concentrates on prioritizing the items of WE which improve workers' performance and also identifying the impact of WE on worker performance in terms of wellbeing and satisfaction.

5.2. Employee Performance (EP)

Readiness and the sincerity of the employees impact their performance and productivity [37]. Previous studies viewed workers performance in a different manner. Few researchers claimed that attitude and behavior impact employee performance. Attitude and behavior of the workers have significant association with performance [38]. By monitoring employees' behaviors, organizations can improve work performance [39]. Task performance and contextual performance of the workers are led by the behavior of the workers [40]. Companies must have a track on the jobs of the employees to attain objectives of the organization [41]. By doing so, they can watch their employees and help them to progress and maximize their performance that various training and motivation sessions can be helpful for improving performance of the workers [42]. The performance of the workers is very much essential for improving organizations performance. Identifying the factors which affect EP and the role of WE are vital for any institution [43].

6. Methodology

The study is descriptive in nature. The population consists of employees of various manufacturing organizations, Bangalore. The sample for the study would be limited to 350 respondents and the list of workers forms the sampling frame. Each worker of the sample constitutes the sampling unit. Stratified sampling method was used for the study.

7. Analysis and Interpretation

During data collection, questionnaire was sent to 350 respondents and 273 complete responses were collected. The response rate of the survey is 78%, which is acceptable and suitable for the study. Table 1 shows the mean and standard deviation of the items representing different work environments. Seventy items were taken from Physical, Social, and Psychological work environments out of which only thirty-eight items have mean more than 3.5.

It is observed from Table 2, that the coefficient of relationship between WE and EP is equal to 0.893. Hence there exists a significant positive relationship between the items of

TABLE 1. Descriptive statistics

	Mean	Std. deviation	N
EP	3.5795	.78414	273
WE01	3.8205	.89156	273
WE02	3.8315	.83633	273
WE03	3.8132	.80776	273
WE04	3.8901	.73440	273
WE05	3.7399	.92063	273
WE06	3.8791	.98334	273
WE07	3.6886	.80562	273
WE10	4.1832	.73475	273
WE11	3.7985	1.02885	273
WE12	3.5092	1.03652	273
WE13	3.6557	1.07381	273
WE16	3.5971	1.09087	273
WE17	3.6593	.96885	273
WE20	4.3516	.73825	273
WE28	3.5971	.93084	273
WE29	3.6190	.87528	273
WE30	3.7766	.96895	273
WE31	3.5897	1.03265	273
WE33	3.6813	1.09356	273
WE35	3.6520	1.06747	273
WE36	3.7179	.93006	273
WE38	4.0952	.78009	273
WE39	4.1172	.78649	273
WE41	3.5531	.95771	273
WE42	3.6300	.96945	273
WE44	3.8901	.83733	273
WE45	3.7216	.99418	273
WE46	3.7985	.82676	273
WE50	3.5897	.95496	273
WE54	3.8278	.88888	273
WE57	3.7509	.96836	273
WE58	3.6264	1.03946	273
WE59	3.5971	1.11421	273
WE60	4.0842	.89743	273
WE61	3.8278	.90932	273
WE64	4.0989	.91219	273
WE66	3.9890	.92943	273
WE67	3.7179	.97634	273

WE and employee performance. In addition, coefficient of determination is observed from Table 2 and value of R^2 is equal to 0.798. Hence fluctuations in the performance of workers can be elucidated by the fluctuations in work environment items.

Based on the regression analysis, it was found that the explainable value was 0.798. This model had used 38 independent items i.e. WE01, WE02, WE03, WE04, WE05, WE06, WE07, WE10, WE11, WE12, WE13, WE16, WE17, WE20, WE28, WE29, WE30, WE31, WE33, WE35, WE36, WE38, WE39, WE41, WE42, WE44, WE45, WE46, WE50, WE54, WE57, WE58, WE59, WE60, WE61, WE64, WE66, and WE67 which were representing work environment items.

TABLE 2. Model summary^b

Model	R	R square	Adjusted R square	Std. error of the estimate	Change statistics					
					R square change	F change	df1	df2	Sig. F change	Durbin-Watson
1	.893 ^a	.798	.765	.38018	.798	24.293	38	234	.000	2.076

^aPredictors: (constant), WE67, WE05, WE13, WE16, WE03, WE20, WE11, WE54, WE33, WE12, WE04, WE17, WE64, WE06, WE46, WE28, WE07, WE29, WE50, WE44, WE39, WE41, WE02, WE35, WE38, WE10, WE42, WE66, WE30, WE60, WE31, WE01, WE59, WE36, WE45, WE58, WE61, and WE57.

^bDependent variable: EP.

TABLE 3. ANOVA^a

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	133.424	38	3.511	24.293	.000 ^b
	Residual	33.821	234	.145		
	Total	167.245	272			

^aDependent variable: employee performance.

^bPredictors: (constant), WE67, WE05, WE13, WE16, WE03, WE20, WE11, WE54, WE33, WE12, WE04, WE17, WE64, WE06, WE46, WE28, WE07, WE29, WE50, WE44, WE39, WE41, WE02, WE35, WE38, WE10, WE42, WE66, WE30, WE60, WE31, WE01, WE59, WE36, WE45, WE58, WE61, and WE57.

From the previous Table 3, it was found that only 13 items were having significant relationship with the dependent variable, “employee performance”. The items found significant were WE01, WE02, WE05, WE06, WE16, WE29, WE35, WE36, WE42, WE44, WE64, and WE66.

Only these 13 items were considered for further analysis in the present study.

TABLE 4. Coefficients^a

Model B	Unstandardized coefficients		Standardized coefficients		t	Sig.
	Std. error	Beta				
1	(Constant)	.549	.220		2.491	.013
	WE01	.095	.049	.108	1.942	.053
	WE02	-.098	.049	-.104	-1.995	.047
	WE03	.017	.041	.017	.410	.682
	WE04	.047	.047	.044	1.010	.313
	WE05	-.057	.032	-.067	-1.803	.073
	WE06	.086	.035	.108	2.457	.015
	WE07	-.028	.046	-.028	-.603	.547
	WE10	.022	.051	.020	.425	.671
	WE11	-.032	.032	-.042	-.984	.326

WE12	.014	.031	.018	.454	.650
WE13	.034	.028	.047	1.205	.230
WE16	-.070	.033	-.097	-2.134	.034
WE17	.005	.035	.006	.145	.885
WE20	-.029	.043	-.028	-.681	.497
WE28	-.039	.037	-.047	-1.074	.284
WE29	.103	.046	.115	2.216	.028
WE30	-.035	.042	-.044	-.843	.400
WE31	-.011	.040	-.014	-.261	.794
WE33	.010	.033	.015	.315	.753
WE35	.060	.035	.082	1.706	.089
WE36	.096	.046	.114	2.070	.040
WE38	-.058	.049	-.058	-1.196	.233
WE39	.011	.047	.011	.231	.817
WE41	-.019	.041	-.023	-.459	.647
WE42	-.110	.040	-.136	-2.783	.006
WE44	.095	.041	.101	2.293	.023
WE45	.073	.045	.093	1.628	.105
WE46	.043	.045	.045	.958	.339
WE50	.048	.036	.058	1.347	.179
WE54	-.022	.038	-.025	-.584	.560
WE57	.093	.065	.115	1.425	.156
WE58	.077	.058	.102	1.333	.184
WE59	.024	.051	.035	.479	.632
WE60	.011	.053	.013	.217	.829
WE61	.056	.067	.065	.832	.406
WE64	-.089	.038	-.103	-2.335	.020
WE66	.095	.043	.112	2.217	.028
WE67	.296	.056	.369	5.270	.000

^aDependent variable: EP.

7.1. RIDIT Analysis for Work Environment Items

RIDIT analysis was familiarized by I. Bross, and has been used in various functional areas of business. Postulation about the distribution is not compulsory since it is distribution free [42-43]. RIDIT score can be derived with the help of mathematical methods. RIDIT analysis converts ordinal data to a probability scale. Prominently, RIDIT analysis is firmly connected to the Wilcoxon rank sum test. Mean RIDIT and Wilcoxon test statistic are directly connected.

Hypothesis that there is no significant difference between mean RIDITS across all groups using a χ^2 statistic can be tested [44]. Similar test between any group and the

TABLE 5. RIDIT values for the reference dataset

	1	2	3	4	5	
WE01	6	15	56	141	55	273
WE02	3	17	53	150	50	273
WE05	6	20	64	132	51	273
WE06	4	26	48	116	79	273
WE16	14	26	77	95	61	273
WE29	1	29	83	120	40	273
WE35	10	37	48	121	57	273
WE36	4	26	65	126	52	273
WE42	9	23	74	121	46	273
WE44	3	14	52	145	59	273
WE64	9	5	32	131	96	273
WE66	8	9	44	129	83	273
WE67	11	13	74	119	56	273
Freq	88	260	770	1646	785	3549
1/2 freq	44	130	385	823	392.5	
Ri	44	218	733	1941	3156.5	
Ri	0.012398	0.061426	0.206537	0.546915	0.889405	

reference group was defined by them. Work environment data and employee performance were chosen as reference data set. The frequencies of the responses are exposed in Table 4. The last row of reference dataset represents the RIDIT values of the reference data set for each item in the following Table 5.

RIDIT values are derived by summing the weights. Priority rankings connected with the RIDIT scores are provided in the following table.

TABLE 6. Calculation of the RIDIT values for the comparison datasets and prioritization

	1	2	3	4	5	pi	Lower bound	Upper bound	Priority ranking
WE01	0.0003	0.0034	0.0424	0.2825	0.1792	0.5077	0.4323	0.5830	5
WE02	0.0001	0.0038	0.0401	0.3005	0.1629	0.5075	0.4293	0.5856	6
WE05	0.0003	0.0045	0.0484	0.2644	0.1662	0.4838	0.4142	0.5534	7
WE06	0.0002	0.0059	0.0363	0.2324	0.2574	0.5321	0.4551	0.6091	3
WE16	0.0006	0.0059	0.0583	0.1903	0.1987	0.4538	0.3949	0.5127	12
WE29	0.0000	0.0065	0.0628	0.2404	0.1303	0.4401	0.3796	0.5005	13
WE35	0.0005	0.0083	0.0363	0.2424	0.1857	0.4732	0.4057	0.5407	10
WE36	0.0002	0.0059	0.0492	0.2524	0.1694	0.4770	0.4099	0.5442	9
WE42	0.0004	0.0052	0.0560	0.2424	0.1499	0.4538	0.3910	0.5166	11
WE44	0.0001	0.0032	0.0393	0.2905	0.1922	0.5253	0.4467	0.6039	4
WE64	0.0004	0.0011	0.0242	0.2624	0.3128	0.6009	0.5078	0.6941	1
WE66	0.0004	0.0020	0.0333	0.2584	0.2704	0.5645	0.4805	0.6485	2
WE67	0.0005	0.0029	0.0560	0.2384	0.1824	0.4802	0.4147	0.5458	8

Taking the first row in Table 6 which has the variable OB01, the value of 0.0003 is derived from Table 5 by multiplying the frequency of 6 (from the row marked WE01 in Table 5) by the reference group RIDIT values of 0.012398 (found in the bottom row of Table 5) and

then dividing by the value of N (273) (from the last column of Table 5). RIDIT scores were obtained by adding the weights from the five columns. Statistically, the average RIDIT value will be 0.5. Those items with comparatively more response of 5 and 4 will tend to have a RIDIT value of larger than 0.5. Those items with relatively more responses of 2 and 1 will have a RIDIT value of less than 0.5. Subsequently, the higher the RIDIT value is the higher priority the sample places on the item will be. We allocate priority rankings to the items with the highest priority going to the maximum RIDIT value. The Kruskal–Wallis ‘W’ was calculated to be 84.825. Because the value of W (84.825) is significantly bigger than $\chi^2 (13-1) = 22.362$, it can be understood that the opinions about the scale items among the respondents vary statistically. It is nonparametric and based on ranks. It is used to test whether there are significant differences among two or more groups of the items of work environment. This test does not demand that the data should be normal. Perhaps the ranks of the data values were used for analysis.

From the RIDIT ranking analysis (Table 6), it was identified that out of all the work environment items, the item which states, “Cooperation, support, and empowerment exist in the organization” was given utmost priority by the respondents followed by the item which states, “Compassion, respect and understanding exist in the organization”, “My organization is training and development focused”, “There exists strong leadership from the top management” whereas the least priority was assigned to the item which states, “In the organization conflicts resolved in a fair way”. Using RIDIT analysis, the overall ranking of the items of work environment was shown in Table 6.

8. Discussion

There exists a significant positive relationship between the items of work environment and employee performance. In addition, the study established the priority ranks of the items of work environment in order to maximize employee performance. According to the results, companies need to concentrate more on creating a work environment where cooperation, support, compassion, respect, and understanding exist always in the organization in order to improve the performance of the employees. Moreover, an organization needs to focus on training and development to improve employee performance. Employees need to sense challenged and to be given assignments that motivate, test, and stretch their capabilities. Better selection and connection of team members also play a vital role to improve employee performance.

The administrative team of the organization needs to offer an environment in which morality and honesty are valued. State of the art technology needs to be used and the employees need to be trained to expertise in various fields. Staffs need to feel accepted and treated with courtesy, listened to, and invited to express their thoughts and feelings by the top management. Organizations need to have a fun and productive atmosphere so that employees feel happy to work there. Workers need to have optimistic working relationships among them. Conflicts need to be resolved in a fair-minded way in the organization. In many studies, factors of WE were identified and the relationship between WE and EP was proved. But the uniqueness of this study is, prioritizing the items of WE with respect to

EP by using RIDIT analysis. Hence, firms can concentrate and give utmost importance for those items to improve the efficiency of staffs and thus organization performance.

9. Limitations and Future Scope of the Study

This study was aimed to assess the impact of work environment on employee performance in manufacturing industries of Bangalore city in India. In spite of valuable outcomes of the present study, this study possesses few limitations. One major limitation of the study is that the findings cannot be generalised as the sample represented in the study belongs to a specific geography and demography. Future studies are suggested to extend the geographical area and increase the sample size for more in-depth conclusions. Second limitation is that of the identified factors as the present study may have not accessed few crucial factors due to the infrastructural restrictions. Future studies need to explore more extensive literature reviews to get other significant factors of work environment that may have a significant influence on employee performance. Another limitation lies in the sample domain selected for the study. Future studies may try the explored factor and its influence in different industry verticals. Last but not the least; the time always has its constraints and limitations in academic researches. That was true for the present study also.

10. Managerial Implications

The findings of the present study, in its present state, do have the ability to influence the HR decision making for the manufacturing industries similar to the nature of the sample represented. The managers need to study the rankings provided to the various factors of work environment and derive the policies or make amendments as and where needed according to the priority of the factors. This will enhance the overall performance of the employee of the organization as suggested in the study. Priority rankings should be used by the managers to decide their course of actions as to which one to focus more and which one later. This will also improve the organizational efficiency as a whole.

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