

A Study on Operational Excellence, Work Environment Factors and the Impact on Employee Performance

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Abstract: This research paper focuses on understanding the impact of the Operational Excellence framework in business organizations. We attempt to answer how operational excellence (OPEX) and its subsystem strategies applied in organizations affect employee performance. It also answers how the individual or combined operational excellence subsystems impact organisational employee performance. The conclusion shows which working factors significantly affect the employee's overall work results or performance output. The impact of different work environment factors such as work set-up and location, shift schedules, scheduled leisure days, employee tenure, role and type of work is also presented. We collected two years' worth of data from an organization and performed the analysis to extract the valuable findings that will help academicians and researchers, business students, industries and organizations, and operational excellence specialists make decisions to improve performance to the operational excellence framework implemented in organizations. The research employed quantitative methods and descriptive statistics to aid the investigation. Correlation analysis, Analysis of Variance and Tukey's method are used. The new findings will help stakeholders to understand the connection between employee performance, different work factors and Operational Excellence in pursuing sustainable success and a competitive edge in their respective industries.

Keywords: Operations Excellence (OPEX); Business Process Outsourcing (BPO); Daily Management; Strategy; Problem-solving; People Development; Employee Performance.

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1. Introduction

Business process outsourcing (BPO) has become a prominent global industry in the twenty-first century [12]. This industry's swift expansion can be attributed to globalization and technological advances in communication and information (ICT). The availability of real-time data has made international business dealings more convenient and instantaneous, removing barriers and facilitating open and unrestricted trade [14]. In the Philippines, the Business Process Outsourcing (BPO) industry has been an important asset to the country's economy. The BPO industry is estimated to contribute nearly \$30 billion annually to the Philippine economy [13]. In 2019, approximately 1.3 million Filipinos were employed by 1,000 distinct BPO enterprises. Over the past few years, the BPO industry in the Philippines has expanded so rapidly that it is now considered the top outsourcing destination in the world [7]. Low labour costs, a large pool of youthful, highly qualified, and educated workers, and favourable government regulations have all contributed to the growth of the BPO industry in this country. However, the nation's ability to profit from this expansive sector depends on several crucial factors. The Philippines' competitive advantages compared to India, the leading BPO provider, and emerging BPO providers such as the People's Republic of China, Malaysia, Mexico, and

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Russia will be largely determined by the quality of the nation's continuing and potential workforce, infrastructure support, and policy environment [25].

Operational excellence is one of the methods for fostering constant enhancement in the BPO industry. Operations excellence is a management strategy that considers intangible assets and enables organizations to consistently improve overall performance [8]. This concept focuses on expansion, giving it a competitive edge that incorporates enhanced customer responsiveness, adaptability, and cost-effectiveness. Previous research has evaluated the propelling forces necessary to attain operational excellence. According to Basu [19], the critical success factors for achieving success in this endeavour include the commitment of top management, ensuring the accessibility of the necessary assets, and implementing well-designed education and training programs to equip individuals with the appropriate tools and techniques, and adopting a rigorous project management approach. Integration of economic, social, and environmental dimensions is necessary for achieving sustainable operational excellence. Organizations should evaluate their effect on these aspects and cultivate a culture of excellence and quality. Agile organizations are flexible and consider environmental, social, and economic variables. Economic impacts must be balanced with ecological and social advantages for sustainability [30]; [20]; [26]. In order to consistently provide superior products and services that exceed customer standards and remain competitive in the market, the BPO industry must integrate operational excellence strategies effectively [9]. Implemented properly, operational excellence permits business executives to make more informed decisions and fosters a constant enhancement culture among employees [10].

Although several studies already address factors that affect operational excellence, very few to none address and elaborate on the relationship between operational excellence and employee performance. This research aims to fill the current gap in the literature by using statistical techniques to determine if operational excellence and employee performance are significantly related. The relationship between operational excellence and employee performance will be explored using the following research questions:

- Do the operational excellence subsystem strategies applied in BPO industries significantly affect employee performance?
- Do the operational excellence subsystems have a significant impact on the level of employee performance?
- Does the interaction of two or more operational excellence subsystems increase or decrease employee performance?
- What other working factors have a significant effect on their performance?
- What operational strategies can be further developed using the data acquired to continuously improve the BPO industry?

Data was gathered from 2021-2022. The next parts of this paper will explore the definition of operation excellence, its subsystems, and its relationship with employee performance.

2. Theoretical Background

Operational excellence was first mentioned in Treacy and Wiersema's "Discipline of Market Leaders" (1995), in which they argued that an organization could not succeed by attempting to serve all categories of individuals. They proposed integrating three fundamental disciplines into their current operational procedure. The three fundamental disciplines are operational excellence, product leadership, and consumer intimacy. "At this time, operation excellence is defined as the strategy for organizations aiming to provide a combination of quality, price, and convenience of purchase, as well as service, that no other organization in their market or industry can match" [4]. Dahlgaard and Dahlgaard-Park [3] defined operational excellence with the acronym 4PS: excellent people, superb collaborations, excellent procedures, and excellent goods. Several definitions of operation excellence have been subsequently based on other management processes, such as Lean and Total Quality Management. There has not been a uniform term for operation excellence until now.

2.1. Operational Excellence

The four subsystems identified by Ward [32] are used to define operational excellence for this study. These four subsystems are problem-solving, daily management, strategy, and people development.

2.1.1. Problem-solving Subsystem

In the BPO industry, an established problem-solving system is required to guarantee the proper operation of all processes. An effective problem-solving system can assist the organization in detecting, analyzing, and quickly resolving issues on the floor, thereby minimizing operational disruptions. A lack of a problem-solving system could lead to a breakdown in operations, which would cause consumer inconvenience. Consequently, in any highly competitive industry, such as the BPO industry, an efficient problem-solving system is required to ensure that client demands are met promptly (fig.1).



Figure 1: Ward's Operational Governance Framework [32]

2.1.2. Daily Management Subsystem

Even if there are no issues, every operation requires a daily management system. This consists of three components: (1) visual controls, such as a whiteboard or a Google Sheet, on which ongoing, completed, and upcoming tasks are enumerated for monitoring; (2) accountability; and (3) leader standard work, in which leaders perform tasks to remain current on the team's progress. Implementing these three components improves operational efficiency, team performance, and customer satisfaction.

2.1.3. Strategic Subsystem

A strategic system offers a structure that aligns all company stakeholders with a common objective. Once all stakeholders know the organization's objectives, they can collaborate to identify new possibilities and hazards. The system in question relies heavily on leaders and executives of companies effectively communicating their strategies to the people who actively provide services, such as call-centre agents. In a fast-paced industry such as BPO, all company members must cooperate to easily adapt to shifting business dynamics and consumer needs.

2.1.4. People Development Subsystem

Ward [32] identified this subsystem as the most critical part of operational excellence. This subsystem involves constantly training new hires and refresher training for existing hires. A people development system ensures that the workforce is always well-equipped with the necessary skills and knowledge to meet the job demands. Not only will this help the company stay updated with new industry standards, but it is also a way to increase employee engagement, reduce turnover rates, and improve overall job satisfaction.

2.2. Employee Performance

The efficacy of employees is a crucial factor determining any BPO company's success. All businesses and organizations strive for the highest possible employee performance and always look for improvement methods. Numerous factors influence employee performance. In addition to job satisfaction, management style [6], the work environment [5]; [11], and the quality of training have a substantial influence on employee performance [2]. Based on these previous studies, it is conceivable to hypothesize that the four subsystems of operation excellence affect employee performance.

3. Method

This research will employ quantitative methods to determine if there is a significant relationship between operational excellence and employee performance. Quantitative research is numerical, and the results are often generalizable to the population of interest. This study will use correlational analysis to determine if employee performance is related to any of the four subsystems of operational excellence and overall operation excellence.

3.1. Population and Sample

The theoretical population for this study would be all employees working under a BPO company. However, due to the size of this population, the study will concentrate on a global outsourcing company in Angeles City, Pampanga. To choose a sample for this study, random sampling was conducted. Random sampling gives every member of the population an equal chance of being selected for the sample [1]. Using random sampling in this study gives an equal chance to every employee of this BPO company to be selected as a survey respondent. A total of 3,215 employees were included in the final sample.

3.2. Data Collection

A survey questionnaire was used to gather responses from the employees. The survey was conducted online. This survey questionnaire was based on the four subsystems devised by Ward [32], where the employees were asked to indicate their level of agreement for statements describing the ideal scenario for each subsystem. For example, one of the statements for the Daily Management subsystem was, “Frequent, short meetings are held at all levels in the organization to uncover and solve operational problems.” A copy of the questionnaire is included in the Appendix section of this paper. Employees can respond from 1-5, with one being “Strongly Disagree” and five being “Strongly Agree.” The higher the score, the more the company adheres to the system. Employee performance was measured using the traditional employee scorecard, adapted by the company, which rates achievement levels for each employee. Data collection was done with the consent of the employees. The data gathered was confidential and is known only to the researcher. Aside from the four subsystem questions and scorecards, respondents were also asked about their current place of work, shift, rest days, role, tenure, and work type. Respondents were also asked if they are amenable to working in a hybrid set-up in the future and what the best work set-up is for them.

3.3. Data Analysis

This study utilized a comprehensive statistical analysis to investigate the connection between operational excellence subsystems and employee performance in the BPO industry. Descriptive statistics were calculated to summarize the scores for the four subtypes and additional variables. A correlation analysis was performed to evaluate the strength and direction of the association between these variables. The significance and impact of operational excellence subsystems on employee performance were determined using regression analysis. In addition, an analysis of variance (ANOVA) was conducted to assess the influence of factors other than operational excellence subsystems on employee performance. Post-hoc tests, such as Tukey's method, were used to group and compare the means of scores across the various categories or levels of the factors. The results of these analyses were interpreted and discussed to provide a thorough comprehension of the relationship between operational excellence and employee performance in the BPO industry. Using SPSS software, the statistical analysis was performed.

4. Results

Assessing employee performance is valuable for evaluating an organization's operational excellence. Employees are central to operations, and their performance directly affects overall productivity, efficiency, and outcome quality. By analyzing employee performance, organizations can gain insight into the efficacy of their operational processes, the engagement of their workforce, and the unity of individual and organizational objectives. Employee performance evaluation permits the identification of areas for improvement, the optimization of resource allocation, and the implementation of strategies to improve operational excellence. Understanding the connection between employee performance and operational excellence is essential for organizations pursuing sustainable success and a competitive edge in their respective industries.

4.1. Overview of Workspace Situation of Respondents

Table 1: Frequency distribution in terms of roles of respondents

Role	Frequency (f)	Percent (%)
None determined/ Applicable	560	17.4
M1 -Supervisor	213	6.6
M2 - Manager	1	.0
P2 -Intermediate	1	.0
S1 -Teammate	2344	72.9
S2 -Intermediate	97	3.0
Total	3216	100.0

Most respondents (72.9%) hold the role of S1 - Teammate, indicating a strong representation of this role in the sample (table 1). The role of M1 - Supervisor is the next most prevalent, with 6.6% of respondents holding this position. M2 - Manager and P2 -Intermediate roles have minimal representation in the sample, each accounting for less than 1% of respondents. The S2 - Intermediate role is represented by 3.0% of respondents.

Table 2: Frequency distribution in terms of work shift of respondents

Work shift	Frequency (f)	Percent (%)
None determined/Not applicable	26	.8
Afternoon Shift	353	11.0
Evening Shift	1466	45.6
Morning Shift	1371	42.6
Total	3216	100.0

The frequency distribution of work shifts among respondents reveals that the majority of individuals (45.6%) are assigned to the Evening Shift (table 2). The Morning Shift is the second most common work shift, comprising 42.6% of respondents. The Afternoon Shift has the lowest representation, with 11.0% of respondents working during this period.

Table 3: Frequency distribution in terms of the workplace of respondents

Workplace	Frequency (f)	Percent (%)
None determined/Not applicable	1	.0
Hybrid (On-Site & Work from Home)	79	2.5
On-Site	194	6.0
Work From Home	2942	91.5
Total	3216	100.0

Work setups among respondents indicate that the majority of individuals (91.5%) have a work-from-home arrangement (table 3). On-site work is reported by 6.0% of respondents, while a smaller proportion (2.5%) have a hybrid setup involving both on-site and work-from-home.

Table 4: Frequency distribution in terms of preferred work set-up of respondents

Preferred	Frequency (f)	Percent (%)
Not determined/Not applicable	18	.6
Hybrid	584	18.2
I don't know	85	2.6

Respondents show that the majority (73.5%) prefer a work-from-home arrangement (table 4). Around 18.2% of respondents prefer a hybrid setup, combining on-site and remote work. A smaller proportion (5.1%) prefer working on-site, while a small percentage (2.6%) expressed uncertainty about their preferred setup.

Table 5: Frequency distribution in terms of employee rest days

Employee rest days	Frequency (f)	Percent (%)
None determined	59	1.8
Weekdays (Mondays to Fridays)	1693	52.6
Weekends (Saturdays to Sundays)	1464	45.5
Total	3216	100.0

The frequency distribution of preferred employee rest days reveals that 52.6% of respondents prefer rest days on weekdays (Mondays to Fridays) (table 5). In comparison, 45.5% of respondents prefer weekend rest days (Saturdays to Sundays).

Table 6: Frequency distribution in terms of preferred employee tenure

Employee rest days	Frequency (f)	Percent (%)
Not applicable	561	17.4
1 - 2 Years	407	12.7
2 - 3 Years	532	16.5
3 - 4 Years	317	9.9
4 - 5 Years	118	3.7
Less than 1Year	1268	39.4
More than 5 Years	13	.4
Total	3216	100.0

The frequency distribution of preferred employee tenure shows that most respondents have less than one year (39.4%) (table 6). Additionally, 16.5% of respondents have a 2-3 years tenure, while 12.7% have a 1-2 years tenure. A smaller percentage of respondents have 3-4 years of tenure (9.9%), and even fewer have 4-5 years of tenure (3.7%) or more than five years of tenure (0.4%).

4.2. Employee Perception of Operational Excellence Subsystems Integration in the BPO Industry

4.2.1. Daily Management Excellence

Table 7: Descriptive statistics results of survey questionnaire for daily management excellence

Statement	N	Minimum	Maximum	Mean	Std. Deviation
1	3215	1	5	4.54	.709
2	3215	1	5	4.40	.858
3	3215	1	5	4.44	.835
4	3215	1	5	4.35	.847
5	3215	1	5	4.59	.658
6	3215	1	5	4.51	.716

Statement 1: Leaders at all levels in your company are engaged daily in reviewing our campaign's day-to-day status.

Statement 2: Consistent, quick meetings are held at all levels in your company to uncover and resolve operational issues.

Statement 3: Consistent, quick meetings are held at all levels in your company to discuss the status of our quality and productivity.

Statement 4: Our leaders are expected to visit us often.

Statement 5: Teammates and leaders always want to excel at their assigned tasks.

Statement 6: Helpful visual controls (diagrams, charts, colour coding) are provided by your company at all levels, providing a quick overview of the status of our work.

The descriptive statistics reveal that the employees have a positive perception of the daily management practices within the company (table 7). The mean scores for statements 1 to 6 range from 4.35 to 4.59, indicating that employees generally agree or strongly agree with these statements. The standard deviations range from 0.658 to 0.858, suggesting relatively low response variability. Overall, the data suggest that the management practices positively.

4.2.2. Strategic Alignment

Table 8: Descriptive statistics results of survey questionnaire for strategic alignment

Statement	N	Minimum	Maximum	Mean	Std. Deviation
1	3215	1	5	4.46	.728
2	3215	1	5	4.48	.747
3	3215	1	5	4.43	.790
4	3215	1	5	4.44	.786
5	3215	1	5	4.46	.769

Statement 1: Everyone at all levels in your company can demonstrate how their work and role relate to our overall organizational strategies.

Statement 2: Our strategies are linked to specific goals and tasks, making sense of our action plans.

Statement 3: Strategic action plans are provided with adequate resources.

Statement 4: All action plans and strategies are sorted by priority and are consistent with your company's overall strategy.

Statement 5: Leaders at all levels are expected to interpret and demonstrate your company strategy in a way that makes sense to everyone in their field/role.

Employees perceive a high level of strategic alignment in the company, with mean scores ranging from 4.43 to 4.48 (table 8). This indicates that employees believe their work is connected to the overall organizational strategies and that the company's strategies are well-defined and supported.

4.2.3 Coaching and Development

Table 9: Descriptive statistics results of survey questionnaire for coaching and development

Statement	N	Minimum	Maximum	Mean	Std. Deviation
1	3215	1	5	4.62	.675
2	3215	1	5	4.50	.764
3	3215	1	5	4.49	.780
4	3215	1	5	4.49	.762

Statement 1: Coaching sessions are expected and are part of every leader's responsibility in your company.

Statement 2: Everyone in your company knows who to contact when there's a problem.

Statement 3: All leaders in the organization receive training on how to coach well.

Statement 4: Everyone in your company is informed about the work and responsibilities of the other upstream and downstream departments or teams.

Employees perceive a high level of coaching and development in the company, with mean scores ranging from 4.49 to 4.62. This indicates that coaching sessions are expected and considered a responsibility of every leader. Employees also feel that there is effective communication and knowledge-sharing across different departments or teams (table 9). Additionally, leaders receive training on coaching skills, ensuring they are equipped to provide effective guidance and support to their teams.

4.2.4. Problem Solving

Table 10: Descriptive statistics results of survey questionnaire for problem-solving

Statement	N	Minimum	Maximum	Mean	Std. Deviation
1	3215	1	5	4.45	.785
2	3215	1	5	4.46	.799
3	3215	1	5	4.30	.876
4	3215	1	5	4.40	.822
5	3215	1	5	4.46	.784

Statement 1: There is an agreed-upon action plan for addressing problems when they are uncovered and identified.

Statement 2: Reporting and discussing solutions to problems rather than covering them up is common in your company.

Statement 3: Everyone in your company often solves the same problem repeatedly.

Statement 4: When a problem emerges, we can always focus on finding the root cause rather than coming up with quick fixes.

Statement 5: People work and participate together to solve problems.

Employees perceive a positive problem-solving environment in the company, with mean scores ranging from 4.30 to 4.46 (table 10). They believe there is an agreed-upon action plan for addressing problems and a culture of reporting and discussing solutions rather than covering them up. However, there is room for improvement in avoiding repetitive problem-solving and focusing on identifying the root cause rather than quick fixes. Overall, employees feel that there is a collaborative approach to problem-solving, with people working together to find solutions.

4.3. Correlation and regression analysis to examine the relationship between operational excellence subsystems and employee performance

4.3.1. Correlation Analysis

Table 11: Results of correlation analysis of the operational excellence subsystems and employee performance

	Daily Management	Strategic	Coaching And Development	Problem solving
Strategic Subsystem	0.893			
Coaching And Development	0.849	0.86 8		
Problem Solving	0.853	0.901	0.868	
Employee Performance	-0.003	-0.001	0.011	0.005

The correlation analysis reveals the relationship between the operational excellence subsystems (Daily Management, Strategic, Coaching and Development, and Problem-Solving) and employee performance (table 11). The correlation coefficients indicate that there are very weak associations between these subsystems and employee performance. The Daily Management and Strategic subsystems have correlation coefficients of -0.003 and -0.001, respectively, suggesting negligible negative relationships with employee performance. Similarly, the Coaching and Development and Problem-Solving subsystems have correlation coefficients of 0.011 and 0.005, respectively, indicating weak positive relationships. These findings suggest no significant relationship between the operational excellence subsystems and employee performance.

4.3.2. Regression Analysis

The table displays the regression analysis results examining the relationship between operational excellence subsystems and employee performance. The coefficients (Coef) represent the estimated effect of each term on employee performance. The constant quantity (189.1) represents the baseline performance level of employees. The coefficients for the Subsystem of Daily Management, Subsystem of Strategic Management, and Subsystem of Coaching and Development represent the estimated changes in employee performance associated with each subsystem. Based on statistical significance, the Coaching and Development subsystem significantly negatively impacts employee performance ($P = 0.021$). This suggests that companies that emphasize coaching and development tend to have lower levels of employee performance.

The interaction terms in the analysis, such as Daily Management Subsystem*Strategic Subsystem, are designed to determine how numerous subsystems, in conjunction with one another, affect employee performance. Based on the results, the interactions of various subsystems do not significantly impact employee performance, except for the interaction of the strategic subsystem and coaching and development. The interaction term "Strategic Subsystem*Coaching and Development" describes the influence of both the Strategic Subsystem and the Coaching and Development subsystem on employee performance. The statistically significant correlation ($P = 0.044$) suggests that the combined effects of these two subsystems substantially impact employee performance. The analysis indicates that while coaching and development alone (Coef= -65.5) may negatively affect employee performance when combined with the strategic subsystem, coaching and development have a positive effect (Coef=38.6) on employee performance. Incorporating strategic practices into an organization's operations and decision-making processes will likely enhance the efficacy of coaching and development initiatives, resulting in enhanced employee performance. This finding indicates that organizations integrating strategic practices, such as strategic planning and decision-making processes, with coaching and development initiatives are more likely to observe enhanced employee performance. By integrating these two subsystems, organizations can develop a comprehensive approach that improves employees' skills, knowledge, and abilities while aligning them with strategic goals and objectives (table 12).

Table 12: Results of regression analysis of the operational excellence subsystems and employee performance

Term	Coef.	SE Coef.	T-Value	P-Value
Constant	189.1	68.9	2.74	0.006
Daily Management Subsystem	-37.9	37.0	-1.03	0.305
Strategic Subsystem	-62.1	66.8	-0.93	0.352
Coaching And Development	-65.5	28.3	-2.31	0.021
Daily Management Subsystem*Strategic Subsystem	21.3	21.5	0.99	0.322
Daily Management Subsystem*Coaching And Development	19.1	11.4	1.67	0.094
Strategic Subsystem*Strategic Subsystem	6.6	14.3	0.46	0.646
Strategic Subsystem*Coaching and Development	38.6	19.2	2.01	0.044

Daily Management Subsystem*Strategic Subsystem*Strategic Subsystem	-2.48	3.62	-0.69	0.492
Daily Management Subsystem*Strategic Subsystem*Coaching and Development	-10.61	5.46	-1.94	0.052
Strategic Subsystem*Strategic Subsystem*Coaching and Development	-4.71	3.45	-1.36	0.173
Daily Management Subsystem*Strategic Subsystem*Strategic Subsystem*Coaching and Development	1.297	0.799	1.62	0.105

4.4. Analysis of Variance (ANOVA)

Table 13: Effect of workplace environment on employee performance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Workplace	2	12548	6273.8	7.07	0.001
Error	2653	2353864	887.2		
Total	2655	2366412			

The results revealed a significant effect of workplace environment on employee performance ($F_{(2, 2653)} = 7.07, p = 0.001$). Based on the grouping information, the analysis revealed significant differences in mean performance scores between workplace environments (table 13). Employees working on-site (56.4003) have a higher mean performance score compared to those in the hybrid (on-site and work from home) with a mean of 53.5354 setups, however, these performance scores are not significantly different. Additionally, onsite and hybrid setup employees had a higher mean performance score than those working from home (49.3339) (table 14). However, only the mean score of on-site is significantly different from the performance score of those that work from home. These findings suggest that the specific workplace environment can influence employee performance, with on-site work associated with the highest performance levels, followed by the hybrid setup, and then working from home.

Table 14: Effect of a scheduled employee rest day on employee performance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Employee Rest Day	1	3761	3761.4	4.26	0.039
Error	2618	2314136	883.9		
Total	2619	2317897			

The analysis of the effect of a scheduled employee rest day on employee performance revealed a significant difference in mean performance scores based on the rest day ($p = 0.039$) (table 15).

Table 15: Effect of employee role on employee performance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Role	4	323149	80787.3	104.82	0.000
Error	2651	2043263	770.8		
Total	2655	2366412			

Table 16: Effect of employee tenure (in years) on Employee performance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Tenure	6	113726	18954.3	22.29	0.000
Error	2649	2252686	850.4		
Total	2655	2366412			

The analysis of employee tenure (in years) on employee performance shows a significant effect ($F = 22.29, p < 0.001$). This suggests differences in mean performance scores across different tenure groups. Table 16 indicates a significant effect of employee role on employee performance ($F(4, 2651) = 104.82, p < 0.001$). This suggests statistically significant differences in the mean performance scores across different employee roles.

The results indicate significant differences in mean scores among the roles. Employees in the S1 - Teammate role is significantly different in terms of employee performance compared to the other roles, with a mean performance score of 101.492. The M1 - Supervisor role has a lower mean performance score (84.957) than the S1 - Teammate role but significantly differs from the S2- Intermediate (41.309). However, there are no significant differences between the P2 - Intermediate (18.845) and M2 - Manager roles (18.845), but it is significantly different from the S1- Teammate role. These findings suggest that the S1 - Teammate role tends to have the highest mean performance score, while the M1 - Supervisor and S2 - Intermediate roles have relatively lower mean scores than others.

The Tukey method grouping analysis and 95% confidence reveal significant differences in mean performance scores across tenure groups. Employees with tenure of 1-2 years (57.2975), 2-3 years (55.5978), 4-5 years (54.9558), and 3-4 years (54.0325) have similar mean performance scores and are significantly different from employees with less than one year of tenure (39.9718). Furthermore, employees with more than five years of tenure (49.1407) have a significantly different mean performance score than all other tenure groups. These findings indicate distinct differences in employee performance based on tenure, with employees having more than five years of tenure showing a relatively lower mean performance score than other groups (table 17).

Table 17: Effect of employee work type on employee performance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Work type	7	208261	29751.6	36.50	0.000
Error	2648	2158151	815.0		
Total	2655	2366412			

The analysis of employee work type on employee performance shows a significant effect, as indicated by the F-value of 36.50 and p-value of 0.000. This suggests that different work types have a notable impact on employee performance. Tukey's method reveals significant differences in employee performance among different work types.

The back office - content mod work type shows the highest mean performance score of 121.996, significantly different from the voice, back office, and blended work types. Meanwhile, the L2 – Backoffice (114.454), email and chat (106.190), L2 – Blended (104.727), Voice (98.624), and Back Office (90.675) work types do not show significant differences in mean scores among them, but they are significantly different from the blended work type, which has the lowest mean score of 82.850. These findings suggest that the back office - content mod work type yields the highest employee performance, while the blended work type has the lowest performance level (table 18).

Table 18: Effect of employee work schedule on employee performance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Work Sched	2	8301	4150.7	4.66	0.010
Error	2634	2347088	891.1		
Total	2636	2355389			

The statistical analysis indicates that work schedule significantly affects employee performance ($F_{(2, 2634)} = 4.66, p = 0.010$). Using the Tukey method and a confidence level of 95%, the classification analysis reveals significant differences in mean scores between various work schedules. The afternoon shift has a substantially higher mean performance score (56.8567) than the morning and evening shifts (50.7447 and 51.6682, respectively). However, there is no statistically significant difference between the mean scores of the morning and evening shifts. The Afternoon Shift has the highest mean performance score, whereas the Morning and Evening Shifts have relatively lesser mean scores.

5. Discussion

Most respondents hold the position of S1- Teammate (72.9%) and are assigned to the Evening Shift (45%), according to an overview of their workplace circumstances. Many respondents (91.5%) have a work-from-home arrangement, and the majority

of respondents favoured work arrangements (73.5%). A slightly greater proportion of respondents favour weekdays (52.6%) as their rest days than weekends (45.5%). The survey results indicate that employees view multiple aspects of the organization positively. The average scores for daily management excellence range from 4.35 to 4.59, indicating a high degree of agreement with statements regarding leadership participation, discussions, and visual controls. The range of mean scores for strategic alignment is 4.43 to 4.48, indicating a high confidence level in the relationship between work and organizational strategies. The range of average scores for counselling and development initiatives was 4.49 to 4.62, indicating that coaching sessions, knowledge-sharing, and leadership training are highly valued. The mean scores for problem-solving strategies ranged from 4.30 to 4.46, indicating a positive perception of action strategies, resolution reports, and collaborative problem-solving.

Companies must investigate the relationship between operational excellence and employee performance. Understanding the impact of Daily Management, Strategic, Coaching and Development, and Problem-Solving subsystems on employee performance enables organizations to increase productivity, optimize performance outcomes, and propel organizational success. It enables the identification of opportunities for improvement and creation of targeted strategies to foster a positive work environment and empower employees.

The correlation coefficients indicate that these subsystems have modest associations with employee performance. Specifically, the correlation coefficients for the Daily Management and Strategic subsystems are -0.003 and -0.001, indicating negligible negative relationships with employee performance. This suggests that modifications to these subsystems are unlikely to substantially affect employee performance. In addition, the subsystems of Coaching and Development and Problem-Solving have correlation coefficients of 0.011 and 0.005, indicating extremely faint positive relationships. Although these relationships are positive, they are also quite weak, indicating that advances in these subsystems may not result in substantial improvements in employee performance. These findings suggest that operational excellence subsystems may have limited direct influence on employee performance and that other factors or variables may play a greater role in determining performance outcomes (fig.2).

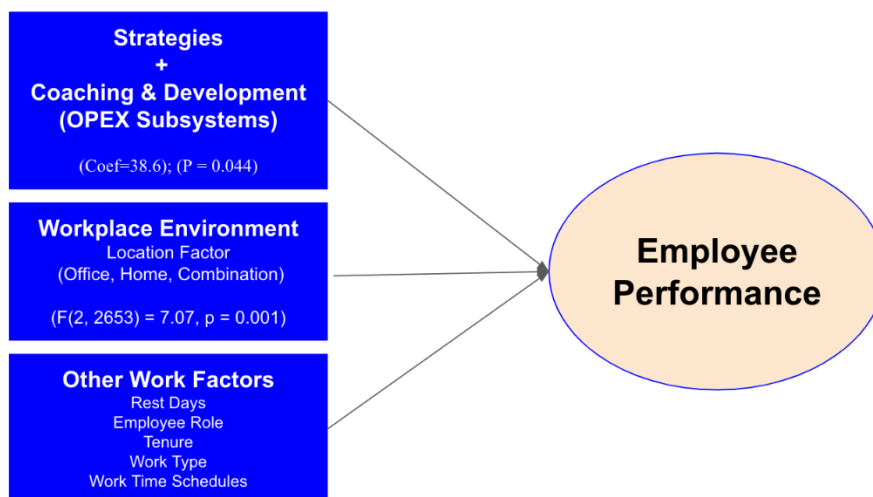


Figure 2: Diagram of the Factors Affecting Employee Performance

The regression analysis was conducted to strengthen the results of the correlation analysis [29]. The regression analysis examined the relationship between operational excellence subsystems and employee performance. The findings indicate that the Coaching and Development subsystem significantly negatively impacts employee performance (Coef = -65.5, P = 0.021). However, when combined with the Strategic Subsystem, coaching and development positively affect employee performance (Coef = 38.6, P = 0.044). This suggests integrating strategic practices with coaching and development initiatives can enhance employee performance.

The other subsystems, Daily Management (Coef= -37.9, P = 0.305) and Strategic Management (Coef = -62.1, P = 0.352), do not significantly impact employee performance. The implications of the regression analysis results for organizations seeking to enhance employee performance through operational excellence are significant. The finding that the Coaching and Development subsystem has a significant negative impact on performance suggests that businesses should evaluate their coaching and development initiatives closely to ensure they are effective and aligned with strategic practices. Integrating strategic subsystems with mentoring and development can result in positive outcomes, highlighting the significance of aligning employee development efforts with larger organizational objectives.

There could be several explanations for the absence of significant correlations between operational excellence subsystems and employee performance. A potential cause is the intricate nature of employee performance, which is influenced by myriad factors in addition to strategies of operational excellence subsystems [21]. Individualized skills, drive, fulfilment in work, company culture, and outside influences can all impact employee performance [16]. This study's analysis of operational excellence subsystems may have captured only a portion of the overall influences on employee performance.

ANOVA was performed to examine the relationship between various factors and employee performance. The results indicate that workplace environment ($F(2, 2653) = 7.07, p = 0.001$), scheduled employee rest day ($F(1, 2618) = 4.26, p = 0.039$), employee role ($F(4, 2651) = 104.82, p < 0.001$), employee tenure ($F(6, 2649) = 22.29, p < 0.001$), and employee work type ($F(7, 2648) = 36.50, p < 0.001$) have significant effects on employee performance. In addition, the classification analyses revealed significant differences in mean performance scores across categories within each factor, indicating that these factors influence employee performance.

The findings suggest that on-site work is associated with higher mean performance scores, suggesting that the tangible workplace positively influences employee performance. The shared physical space facilitates teamwork, instant problem-solving, and real-time communication, enhancing operational excellence. According to the research by Kamarulzaman et al. [24], the physical office workspace substantially affects employees' attitudes, behaviours, satisfaction, and work performance. Temperature, water quality, lighting, and noise must be considered by top management, along with indoor air quality, thermal convenience, the layout of individual workspaces, workplace colours, interior plants, levels of dust and biological contaminants, and indoor carbon monoxide concentration. Although not substantially dissimilar, the hybrid arrangement provides the advantages of face-to-face interaction and flexibility, striking a balance between cooperation and remote work convenience [23]. Due to difficulties in remote communication, diminished social interaction, and potential distractions, working from home results in lower average performance scores. The study by Babapour Chafi et al. [17] found that the main benefits of remote work were increased flexibility, autonomy, work-life balance, and individual performance. At the same time, the primary disadvantages were social factors such as isolation and lost camaraderie.

High-scoring roles, such as S1 - Teammate, contribute positively to operational efficiency. These high-performing positions effectively execute tasks, achieve goals, and produce quality results. Their consistent performance facilitates the simplification of processes, the reduction of errors, and the optimization of resource utilization, resulting in enhanced operational efficiency. Roles with poor performance, such as M1 - Supervisor and S2 - Intermediate, can impede organizational collaboration and cooperation. These roles may have difficulty coordinating with other team members, providing guidance or support, and fostering a cohesive workplace. This can lead to communication lapses, delays, and diminished efficiency in cross-functional operations, affecting operational excellence.

The analysis demonstrates distinct differences in employee performance according to length of service. Compared to employees with less than one year of tenure, those with 1-2 years, 2-3 years, 3-4 years, and 4-5 years of tenure have similar and higher mean performance scores. Nonetheless, employees with more than five years of tenure have a significantly lower mean performance rating than all other tenure categories. This suggests that younger employees perform better, possibly because they are more enthusiastic and motivated. On the other hand, longer-tenured employees may face obstacles such as fatigue or skill stagnation, resulting in a decline in performance. Studies by Ng & Feldman [27] and Gagliardi et al. [22] substantiate these findings.

There are significant differences in employee performance between employment types. The back office - content mod work type has the highest mean performance score of 121.996, outperforming the voice, back office, and blended work types by a significant margin. In contrast, the blended work type has a mean score of 82.850, significantly lower than the other work types. These results suggest that employees in the back office - content mod work type tend to achieve the highest levels of performance, possibly due to the nature of their tasks, specialized skills, or their level of autonomy [28]. In contrast, blended work may present obstacles or difficulties that contribute to a decline in performance. By recognizing the strengths and limitations of different work types, instituting tailored training and support for employees in blended roles, and coordinating work assignments with individual strengths and preferences, organizations can use these insights to optimize operational excellence.

Several factors account for the higher mean performance score in the Afternoon Shift compared to the Morning and Evening Shifts. Afternoon shifts may be favoured by the natural human circadian rhythms, accounting for comparable levels of alertness and cognitive functioning during this time [31]. Baethge and Rigotti [18] found that morning and evening shifts harm workload interruptions, decreasing performance satisfaction, forgetfulness, and irritability. It can be concluded that the afternoon shift may gain efficiency and productivity from a more established routine and familiarity with their tasks. The research conducted by Aiswarya and Kinslin [15] demonstrates that shift work has a negative impact on various factors. Their study stated that

shift work negatively impacts employee performance, quantity of sleep, quality of sleep, health condition, family, and social life, and should be taken into account as a large factor that affects the overall performance of an organization.

6. Conclusion

In conclusion, the survey and analysis results emphasize various organizational factors that affect employee performance. The operational excellence subsystems, such as Daily Management, Strategic Management, Coaching and Development, and Problem-Solving, exhibit weak correlations with employee performance, indicating that they exert little direct influence if analyzed separately from other work factors in terms of employee performance. Integrating strategic practices with mentoring and development initiatives can improve employee performance output. The environment in the workplace, employees' scheduled leisure days, employee role, tenure, and the type of work workers do have been proven to significantly impact employee performance. The physical workspace in offices positively influences the work output, whereas remote work arrangements can decrease performance scores. High-performing roles contribute positively to operational efficiency, whereas longer tenure and certain categories of work may have a different effect on performance. In addition, employees working the Afternoon Shift have a higher mean performance score than those working the Morning and Evening Shifts. These findings provide organizations with valuable insights into enhancing the implementation of operational excellence systems and optimizing employee performance by aligning development efforts with strategic practices and considering various performance-influencing factors. Any business organization must consider these new findings when implementing operational excellence frameworks within their organizations and when creating processes and strategies related to the workplace and space. As not one isolated working factor or OPEX framework impact work performance optimally, complementing the systems with other factors that enhance performance is key.

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