

Assignment 3

Chapter Four – Statistical Analysis and Findings Discussion

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4.1 Introduction

This chapter presents the statistical analysis and interpretation of the research findings regarding the impact of internal communication on job performance efficiency among STC employees in Riyadh. The statistical procedures adopted in this study follow the methodology explained in Chapter Three and demonstrate the practical application of quantitative analysis using IBM SPSS Statistics Version 28.

The primary objective of this chapter is to evaluate the relationship between internal communication and employees' job performance efficiency. To achieve this objective, several statistical techniques were employed, including descriptive statistics, reliability analysis, correlation analysis, simple linear regression, and hypothesis testing.

The chapter begins by presenting the demographic characteristics of the respondents, followed by an assessment of the reliability of the research instrument using Cronbach's Alpha. Descriptive statistics are then used to summarize respondents' perceptions regarding the study variables. Finally, correlation and regression analyses are conducted to evaluate the proposed research hypotheses and determine the magnitude of the relationship between internal communication and job performance efficiency.

The findings presented in this chapter provide a comprehensive understanding of the statistical relationships between the independent and dependent variables and form the basis for the discussion presented in the following sections.

4.2 Sample Profile

The simulated dataset consisted of 150 respondents, representing employees working within different departments of STC in Riyadh. The demographic profile includes gender, age, educational qualification, years of experience, and organizational position. Understanding respondents' demographic characteristics provides valuable context for interpreting the subsequent statistical analyses.

4.2.1 Gender Distribution

Table 4.1: Distribution of Respondents by Gender

Gender	Frequency	Percentage
Male	102	68.0%
Female	48	32.0%
Total	150	100%

Table 4.1 indicates that male respondents represented 68.0% of the total sample, while female respondents accounted for 32.0%. The predominance of male participants generally reflects the workforce composition commonly observed within the telecommunications sector in Saudi Arabia.

Nevertheless, the inclusion of both genders provides a balanced perspective regarding employees' perceptions of internal communication and job performance.

4.2.2 Age Distribution

Table 4.2: Distribution of Respondents by Age

Age Group	Frequency	Percentage
Less than 25 Years	16	10.7%
25-34 Years	61	40.7%
35-44 Years	49	32.7%
45 Years and Above	24	16.0%
Total	150	100%

The majority of respondents (40.7%) were between 25 and 34 years of age, followed by employees aged 35-44 years (32.7%). Younger employees below the age of 25 represented only 10.7% of the sample. This age distribution suggests that the respondents were predominantly experienced professionals actively engaged in organizational communication and operational activities.

4.2.3 Educational Qualification

Table 4.3: Educational Qualification of Respondents

Qualification	Frequency	Percentage
Diploma	18	12.0%
Bachelor's Degree	97	64.7%
Master's Degree	30	20.0%
PhD	5	3.3%
Total	150	100%

The findings indicate that the majority of respondents (64.7%) possessed a Bachelor's degree, while 20.0% held Master's degrees. Only a small proportion had Diploma qualifications or doctoral degrees. This educational profile demonstrates that respondents possessed sufficient educational backgrounds to provide informed evaluations regarding organizational communication practices.

4.2.4 Years of Experience

Table 4.4: Years of Working Experience

Experience	Frequency	Percentage
Less than 5 Years	36	24.0%
5-10 Years	63	42.0%
11-15 Years	34	22.7%
More than 15 Years	17	11.3%
Total	150	100%

Most respondents (42.0%) had between 5 and 10 years of professional experience. Employees with fewer than five years of experience accounted for 24.0%, while only 11.3% reported more than 15 years of experience. The experience profile indicates that respondents had adequate organizational exposure to evaluate communication effectiveness and its influence on job performance.

4.2.5 Organizational Position

Table 4.5: Respondents' Organizational Position

Position	Frequency	Percentage
Administrative Staff	44	29.3%
Technical Staff	53	35.3%
Supervisors	31	20.7%
Managers	22	14.7%
Total	150	100%

Technical staff constituted the largest proportion of respondents (35.3%), followed by administrative employees (29.3%). Supervisors represented 20.7%, whereas managers accounted for 14.7%. The diversity of organizational positions enhances the comprehensiveness of the simulated analysis by incorporating perspectives from multiple hierarchical levels within the organization.

Overall, the demographic analysis demonstrates that the simulated sample reflects a diverse workforce in terms of gender, age, educational qualifications, professional experience, and organizational position. Such diversity contributes to a broader understanding of employees' perceptions regarding internal communication and its influence on job performance efficiency.

4.3 Validity and Reliability Analysis

Before testing the research hypotheses, it is essential to assess the quality of the measurement instrument. Reliability and validity analyses ensure that the questionnaire consistently measures the intended constructs and that the collected data are appropriate for further statistical analysis.

Reliability refers to the consistency and stability of the measurement instrument, while validity evaluates whether the questionnaire accurately measures the variables it is designed to assess. In this study, internal consistency reliability was evaluated using Cronbach's Alpha coefficient, whereas sampling adequacy and construct validity were examined through the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity.

4.3.1 Reliability Analysis Using Cronbach's Alpha

Cronbach's Alpha is one of the most widely accepted statistical measures used to evaluate the internal consistency of questionnaire items. It determines the extent to which multiple items measuring the same construct produce similar scores.

Cronbach's Alpha Interpretation Guide

Cronbach's Alpha	Reliability Level
Below 0.60	Poor
0.60-0.69	Acceptable
0.70-0.79	Good
0.80-0.89	Very Good
Above 0.90	Excellent

Table 4.6: Cronbach's Alpha Reliability Statistics

Variable	Number of Items	Cronbach's Alpha
Internal Communication	10	0.912
Job Performance Efficiency	10	0.894
Overall Questionnaire	20	0.925

The results presented in Table 4.6 demonstrate a high level of internal consistency among the questionnaire items. The Internal Communication construct achieved a Cronbach's Alpha coefficient of 0.912, indicating excellent reliability according to commonly accepted statistical standards.

Similarly, the Job Performance Efficiency construct produced a Cronbach's Alpha value of 0.894, reflecting very good internal consistency. Furthermore, the overall questionnaire achieved a Cronbach's Alpha coefficient of 0.925, exceeding the recommended threshold of 0.70. These findings demonstrate that the questionnaire is suitable for subsequent statistical analyses.

4.3.2 Construct Validity Assessment

Construct validity evaluates whether the questionnaire items adequately represent the theoretical concepts under investigation. Prior to conducting factor analysis, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity are commonly performed.

Table 4.7: KMO and Bartlett's Test

Test	Value
Kaiser-Meyer-Olkin (KMO)	0.908
Bartlett's Chi-Square	1827.451
Degrees of Freedom	190
Significance (Sig.)	0.000

The Kaiser-Meyer-Olkin statistic obtained in this study is 0.908, which exceeds the recommended minimum threshold of 0.60. This indicates that the sample is highly adequate for multivariate statistical analysis. Bartlett's Test of Sphericity yielded a Chi-Square value of 1827.451 with a significance level of $p < 0.001$. The statistically significant result confirms the existence of meaningful relationships among the questionnaire items.

Together, these findings demonstrate that the data satisfy the assumptions required for factor analysis and further multivariate statistical procedures. Consequently, the questionnaire possesses satisfactory construct validity.

4.3.3 Item Reliability Analysis

An examination of the corrected item-total correlations was conducted to determine the contribution of each questionnaire item to the reliability of its corresponding construct. Corrected item-total correlation values exceeding 0.30 generally indicate acceptable consistency between an individual item and the overall construct.

Table 4.8: Corrected Item-Total Correlation

Item	Corrected Item-Total Correlation	Status
IC1	0.713	Acceptable
IC2	0.741	Acceptable
IC3	0.687	Acceptable

Item	Corrected Item-Total Correlation	Status
IC4	0.772	Acceptable
IC5	0.764	Acceptable
IC6	0.695	Acceptable
IC7	0.738	Acceptable
IC8	0.721	Acceptable
IC9	0.749	Acceptable
IC10	0.768	Acceptable
JP1	0.701	Acceptable
JP2	0.733	Acceptable
JP3	0.684	Acceptable
JP4	0.746	Acceptable
JP5	0.758	Acceptable
JP6	0.719	Acceptable
JP7	0.724	Acceptable
JP8	0.737	Acceptable
JP9	0.748	Acceptable
JP10	0.756	Acceptable

All questionnaire items exceeded the recommended threshold of 0.30, with values ranging from 0.684 to 0.772. These results demonstrate that each item contributes positively to measuring its corresponding construct. Consequently, no questionnaire items required deletion or revision prior to conducting the remaining statistical analyses.

4.3.4 Summary of Reliability and Validity Analysis

The statistical analyses conducted in this section provide strong evidence that the research instrument demonstrates excellent psychometric properties. Cronbach's Alpha coefficients exceeded the recommended threshold for all constructs, indicating high internal consistency. Similarly, the KMO statistic confirmed excellent sampling adequacy, while Bartlett's Test of Sphericity demonstrated that the observed correlations among questionnaire items were statistically significant and appropriate for multivariate analysis.

4.4 Descriptive Statistics

Descriptive statistics were employed to summarize respondents' perceptions regarding the study variables. The analysis included the calculation of the arithmetic mean and standard deviation for each questionnaire item using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

The mean score indicates the average level of respondents' agreement, whereas the standard deviation measures the dispersion of responses around the mean. Higher mean values indicate stronger agreement with the statement, while lower standard deviation values suggest greater consistency among respondents.

4.4.1 Descriptive Statistics for Internal Communication

Table 4.9: Descriptive Statistics for Internal Communication

Code	Statement	Mean	Std. Deviation	Level
IC1	Management	4.21	0.69	High

Code	Statement	Mean	Std. Deviation	Level
	communicates organizational goals clearly.			
IC2	Information is shared promptly.	4.14	0.72	High
IC3	Communication channels are effective.	4.08	0.74	High
IC4	Employees receive adequate work-related information.	4.26	0.65	High
IC5	Feedback from supervisors is constructive.	4.11	0.76	High
IC6	Departments communicate effectively with each other.	3.98	0.82	High
IC7	Organizational announcements are communicated clearly.	4.18	0.71	High
IC8	Employees can easily communicate with supervisors.	4.15	0.69	High
IC9	Communication improves teamwork.	4.29	0.63	High
IC10	Overall communication supports daily work.	4.23	0.67	High

Overall Internal Communication

Variable	Mean	Std. Deviation
Internal Communication	4.16	0.71

The descriptive statistics indicate that respondents generally expressed positive perceptions regarding the effectiveness of internal communication within STC. The overall mean score was 4.16, indicating a high level of agreement.

The highest-rated statement was IC9 (Communication improves teamwork) with a mean score of 4.29. The lowest mean score was recorded for IC6 (Departments communicate effectively with each other) at 3.98. Although this value still falls within the high agreement category, it suggests that interdepartmental communication represents an area for further improvement. The standard deviations, ranging from 0.63 to 0.82, indicate considerable consistency among respondents.

4.4.2 Descriptive Statistics for Job Performance Efficiency

Table 4.10: Descriptive Statistics for Job Performance Efficiency

Code	Statement	Mean	Std. Deviation	Level
JP1	I complete my assigned tasks efficiently.	4.31	0.61	High
JP2	I consistently meet work deadlines.	4.24	0.67	High
JP3	I maintain high work	4.27	0.65	High

Code	Statement	Mean	Std. Deviation	Level
	quality.			
JP4	Communication improves my productivity.	4.18	0.70	High
JP5	Team cooperation enhances my performance.	4.34	0.58	High
JP6	I solve work problems efficiently.	4.16	0.73	High
JP7	I understand my work responsibilities clearly.	4.36	0.56	High
JP8	Organizational communication reduces work errors.	4.12	0.74	High
JP9	I receive sufficient information to perform my job effectively.	4.20	0.69	High
JP10	Overall, I am satisfied with my work performance.	4.25	0.66	High

Overall Job Performance Efficiency

Variable	Mean	Std. Deviation
Job Performance Efficiency	4.24	0.66

The descriptive statistics indicate a high level of perceived job performance efficiency, with an overall mean score of 4.24. The highest-rated item was JP7 (I understand my work responsibilities clearly), with a mean score of 4.36. The lowest mean value, 4.12, was observed for JP8, indicating that although employees generally agreed that communication reduces work errors, further improvement may still be possible.

Overall, respondents reported favorable perceptions toward both Internal Communication and Job Performance Efficiency. The consistently high mean values suggest that employees perceive communication practices within STC as generally effective and believe these practices contribute positively to their individual performance.

4.5 Hypothesis Testing

4.5.1 Pearson Correlation Analysis

Pearson Correlation Analysis was conducted to examine the direction and strength of the linear relationship between Internal Communication and Job Performance Efficiency. The Pearson correlation coefficient ranges from -1 to +1, where values closer to +1 indicate a strong positive relationship.

Pearson Correlation Interpretation Guide

Pearson (r)	Relationship Strength
0.00-0.19	Very Weak

Pearson (r)	Relationship Strength
0.20-0.39	Weak
0.40-0.59	Moderate
0.60-0.79	Strong
0.80-1.00	Very Strong

Table 4.11: Pearson Correlation Matrix

Variables	Internal Communication	Job Performance Efficiency
Internal Communication	1.000	0.781
Job Performance Efficiency	0.781	1.000
Sig. (2-tailed)	-	0.000
N	150	150

The Pearson Correlation Analysis revealed a strong positive relationship between Internal Communication and Job Performance Efficiency ($r = 0.781$, $p < 0.001$). The significance value is below 0.05, demonstrating that the observed relationship is statistically significant. Therefore, the null hypothesis of no relationship between the two variables is rejected.

4.5.2 Simple Linear Regression Analysis

Simple linear regression analysis was conducted to determine the extent to which Internal Communication predicts Job Performance Efficiency among STC employees in Riyadh. Internal Communication was entered as the independent variable, while Job Performance Efficiency was entered as the dependent variable.

The estimated regression equation based on the simulated results is: Job Performance Efficiency = $1.224 + 0.725 \times$ Internal Communication.

4.5.2.1 Model Summary

Table 4.12: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.781	0.610	0.607	0.412

The coefficient of determination, R Square, was 0.610. This indicates that Internal Communication explains approximately 61.0% of the variance in Job Performance Efficiency. The remaining 39.0% may be attributed to factors not included in the model, such as leadership style, motivation, training, technological support, workload, organizational culture, reward systems, and individual employee characteristics.

4.5.2.2 Analysis of Variance

Table 4.13: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	39.303	1	39.303	231.700	0.000
Residual	25.102	148	0.170	-	-
Total	64.405	149	-	-	-

The ANOVA results show that the regression model was statistically significant, with an F-value of 231.700 and $p < 0.001$. Therefore, the model containing Internal Communication provides a significantly better prediction of Job Performance Efficiency than a model containing only the constant.

4.5.2.3 Regression Coefficients

Table 4.14: Regression Coefficients

Model	Unstandardized B	Std. Error	Standardized Beta	t	Sig.
Constant	1.224	0.201	-	6.090	0.000
Internal Communication	0.725	0.048	0.781	15.222	0.000

The unstandardized regression coefficient for Internal Communication was positive and statistically significant ($B = 0.725$, $t = 15.222$, $p < 0.001$). This means that a one-unit increase in the Internal Communication score is associated with an estimated 0.725-unit increase in Job Performance Efficiency. The standardized Beta coefficient of 0.781 demonstrates a strong standardized effect.

4.5.3 Testing the Research Hypothesis

Null Hypothesis (H0): Internal communication has no statistically significant impact on job performance efficiency among STC employees in Riyadh.

Alternative Hypothesis (H1): Internal communication has a statistically significant positive impact on job performance efficiency among STC employees in Riyadh.

Table 4.15: Summary of Hypothesis Testing

Hypothesis	Statistical Evidence	Decision
H1: Internal Communication has a statistically significant positive impact on Job Performance Efficiency.	Beta = 0.781; B = 0.725; $t = 15.222$; $F = 231.700$; $p < 0.001$	Supported

Since the significance value was lower than 0.05, the null hypothesis was rejected and the alternative hypothesis was supported. Therefore, the statistical evidence supports the conclusion that Internal Communication has a statistically significant positive impact on Job Performance Efficiency among STC employees in Riyadh.

Although the regression model demonstrates a strong predictive association, the cross-sectional design does not by itself establish definitive causality. Other organizational and individual factors may also contribute to employee performance.

4.6 Chapter Summary

This chapter presented the statistical analysis and interpretation of the simulated research data concerning the impact of Internal Communication on Job Performance Efficiency among STC employees in Riyadh. The analyses were conducted using statistical procedures corresponding to IBM SPSS Statistics Version 28.

The demographic analysis covered 150 respondents from different genders, age groups, educational qualifications, levels of professional experience, and organizational positions. Reliability and validity tests demonstrated excellent psychometric properties. Internal Communication achieved a Cronbach's Alpha of 0.912, Job Performance Efficiency achieved 0.894, and the overall questionnaire achieved 0.925.

The KMO value was 0.908, while Bartlett's Test of Sphericity was statistically significant at $p < 0.001$. These findings confirmed that the data were suitable for further statistical analysis. All corrected item-total correlations also exceeded the acceptable threshold.

Descriptive statistics showed positive employee perceptions of both variables. Internal Communication achieved an overall mean of 4.16, while Job Performance Efficiency recorded an overall mean of 4.24. Pearson correlation analysis identified a strong and statistically significant positive relationship between the variables ($r = 0.781$, $p < 0.001$).

Simple linear regression analysis confirmed that Internal Communication significantly predicted Job Performance Efficiency. The model explained approximately 61.0% of the variance in Job Performance Efficiency ($R^2 = 0.610$), and the overall regression model was statistically significant ($F = 231.700$, $p < 0.001$).

Accordingly, the null hypothesis was rejected and the alternative hypothesis was supported. The results indicate that effective internal communication is positively associated with employee performance efficiency. Clear communication of organizational objectives, timely information sharing, constructive feedback, accessible communication channels, and effective coordination may contribute to improved teamwork, productivity, task completion, and overall work quality.

As stated at the beginning of this chapter, all numerical findings are based on a simulated dataset developed for academic demonstration and should not be interpreted as results obtained from an actual STC employee survey.