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HOW TO INTERPRET

YOUR SPSS OUTPUT FOR CHAPTER FOUR

A section-by-section guide to reading every SPSS table and writing

it up correctly in Chapter Four Data Analysis and Interpretation

(Quantitative, questionnaire-based research)

A companion to the Final Research Paper Template Guide, the SPSS Data Analysis Guide, and the Questionnaire Preparation Guide

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ABOUT THIS GUIDE

Running the tests in SPSS is only half the job Chapter Four is judged on how well you read and explain what the output means. This guide takes you through every SPSS table you generated using the companion SPSS Data Analysis Guide, in the exact order they appear in Chapter Four, and shows you: what the table actually shows, the rule for interpreting it correctly, a fill-in-the-blank sentence template you can adapt to your own numbers, and a worked example using real values from an approved thesis.

Use this guide with your own SPSS output open beside it for every table, find the matching section below, locate the numbers described, and write your paragraph using the sentence template as a starting point.

Chapter Four Sections Covered

1. 4.1 Demographic Characteristics of Respondents (Frequencies output)
2. 4.2 Descriptive Statistics (item and construct means/SD)
3. 4.2.2.1 Regression Assumptions (normality, linearity, multicollinearity)
4. 4.2.1 Correlation Analysis (Pearson correlation matrix)
5. 4.2.2 Regression Analysis (Model Summary, ANOVA, Coefficients)
6. 4.3 Hypothesis Testing (decision table)
7. 4.4 Discussion (synthesizing everything together)

PART A INTERPRETING THE PRELIMINARY OUTPUT

SECTION 1. Response Rate and Demographic (Frequency) Tables Section 4.1

This section opens Chapter Four and is based on the Frequencies output for your demographic variables (gender, age, marital status, education, position, tenure).

WHAT THE OUTPUT SHOWS

- A Frequency table per variable, each with four columns: Frequency, Percent, Valid Percent, Cumulative Percent.
- Pie or bar charts for each variable, generated alongside the tables.

HOW TO INTERPRET IT

- Always open the section with the overall response rate: number distributed vs. number returned/usable, expressed as a percentage.
- For each demographic table, use "Valid Percent" (not "Percent") if there is any missing data, since Valid Percent excludes missing cases from its denominator and is the more accurate figure.
- Identify the single largest category in each table this is normally the one sentence worth writing for each variable (you don't need to narrate every row of every table).

SENTENCE TEMPLATE FILL IN THE BLANKS

"The study distributed [N] questionnaires to [population] and [N returned] were filled and returned, representing a [X]% response rate."

"Of the [N] respondents, the majority ([X]%) were [category], while [X]% were [other category]."

"The majority of respondents ([X]%) fall within the [range] age bracket, followed by [X]% in the [range] bracket."

Worked example (): *"The study distributed 343 questionnaires for Berhan bank employees and 318 questionnaires were filled and returned, which means 92.7% of the questionnaire is collected... the majority of respondents are male respondents that have 62.3 percent of the whole population... The majority of respondents (61.3%) were in the range of 26-35."*

⚠ ***Common mistake:*** *Don't simply repeat every number from the table in sentence form pick out the pattern (the largest group, any notably small group) and describe it in plain language; the table itself already carries the full detail.*

PART B INTERPRETING DESCRIPTIVE STATISTICS

SECTION 2. Item- and Construct-Level Descriptive Statistics Section 4.2

This section is based on the Descriptives output (Analyze → Descriptive Statistics → Descriptives) for each construct's items and its composite variable. It shows how respondents actually rated each statement.

WHAT THE OUTPUT SHOWS

- A table per construct with columns N, Minimum, Maximum, Mean, Std. Deviation one row per item, plus a final row for the total/composite mean and SD.

HOW TO INTERPRET IT

- Interpret every mean using a defined mean-interpretation scale you must state this scale once (usually in Chapter Three, Section 3.7.1) and then apply it consistently here. A common version: 1.00-1.80 = strongly disagree, 1.81-2.60 = disagree, 2.61-3.40 = neutral, 3.41-4.20 = agree, 4.21-5.00 = strongly agree.
- Write one short interpretive sentence per item, translating the mean into the interpretation-scale category, then close each construct's table with one summary sentence using the overall/composite mean.
- Pay attention to the Standard Deviation too: a low SD (well under 1.0) means respondents answered fairly similarly; an SD approaching or exceeding 1.2-1.3 on a 5-point scale signals real disagreement among respondents worth mentioning.

SENTENCE TEMPLATE FILL IN THE BLANKS

"The mean value for '[item wording]' is [X], meaning the majority of respondents [strongly disagree / disagree / are neutral / agree / strongly agree] that [plain-language restatement of the item]."

"The total mean for the [construct name] variable is [X], indicating that respondents [agree/are neutral/disagree] that [construct name] exists/is practiced at [Organization]."

Worked example (): *"The mean value for my leader e-examines critical assumptions to question whether they are appropriate is 4.05, and that means the majority of respondents agree... The total mean for the transformational leadership variable is 3.97... the respondents agreed transformational leadership style has existed in the Berhan bank." Compare with Ethical Leadership: "The total mean...is 3.25...the respondents are neutral and that means the respondents are not sure that ethical leadership is existed or not."*

⚠ Common mistake: *A mean sitting right at a scale boundary (e.g., 3.40 vs. 3.41) should still be interpreted using the defined scale, not judgment consistency in applying your own stated scale is what examiners check for.*

PART C INTERPRETING REGRESSION ASSUMPTIONS

SECTION 3. Normality, Linearity, and Multicollinearity Section 4.2.2.1

Before presenting the regression results themselves, you must show briefly that the regression's underlying assumptions are reasonably satisfied. This is normally a short sub-section placed just before the Model Summary table.

3.1 Normality (Skewness and Kurtosis)

WHAT THE OUTPUT SHOWS

- A Descriptives table showing Skewness and Kurtosis (with standard errors) for each composite variable.

HOW TO INTERPRET IT

- Apply the accepted rule (commonly Hair et al., 2010): absolute skewness between -2 and +2, and absolute kurtosis between -7 and +7, is treated as acceptably close to normal for regression purposes.
- You do not need every value to be exactly zero you are checking that none of the values fall outside the accepted range.

SENTENCE TEMPLATE FILL IN THE BLANKS

"According to [citation], an absolute skewness value between -2 and +2, and an absolute kurtosis value between -7 and +7, is considered normally distributed. Based on the result of the above table, there is strong evidence the sample is normally distributed because the skewness values are between [range] and kurtosis values are between [range]."

Worked example (): *Skewness ranged from -1.48 to -0.51 and kurtosis from -1.24 to 2.29 across the five composite variables both comfortably inside the accepted range, so the normality assumption was reported as satisfied.*

3.2 Linearity

WHAT THE OUTPUT SHOWS

- A Normal P-P Plot of Regression Standardized Residual, with points plotted against a diagonal reference line.

HOW TO INTERPRET IT

- If the plotted points sit reasonably close to (in line with) the diagonal reference line, this supports a linear relationship between the predictors and the outcome.
- Minor scatter around the line is normal and expected; you are looking for gross, systematic departures (a strong curve or clumping), not perfection.

SENTENCE TEMPLATE FILL IN THE BLANKS

"The data is in line with the diagonal line and that shows the linear relationship between the result and predictable values."

3.3 Multicollinearity

WHAT THE OUTPUT SHOWS

- Tolerance and VIF (Variance Inflation Factor) columns in the Coefficients table (requested via Statistics → Collinearity diagnostics).

HOW TO INTERPRET IT

- Tolerance above 0.10 and VIF below 10 for every independent variable indicates multicollinearity is not a serious problem the independent variables are not so strongly correlated with each other that they distort the regression coefficients.

SENTENCE TEMPLATE FILL IN THE BLANKS

"All independent variables recorded a Tolerance value above 0.10 and a VIF value below 10, indicating that multicollinearity is not a concern in this model."

PART D INTERPRETING INFERENTIAL STATISTICS

SECTION 4. Correlation Analysis Section 4.2.1

This section is based on the Pearson correlation matrix and answers the more basic question behind your research questions: is there a relationship at all between each independent variable and the dependent variable, and how strong is it?

WHAT THE OUTPUT SHOWS

- A correlation matrix table: every variable listed against every other variable, with each cell showing the Pearson Correlation (r), Sig. (2-tailed), and N.
- Significant correlations are flagged in SPSS output with * ($p < 0.05$) or ** ($p < 0.01$).

HOW TO INTERPRET IT

- For each independent variable, read its R-value and Sig. value specifically against the dependent variable (ignore the independent-to-independent variable correlations for this write-up, though note them for the multicollinearity check above).
- Classify the strength of r using Cohen's (1988) guideline: .10-.29 small, .30-.49 medium, .50-1.0 large (apply the same bands to negative values, ignoring the sign for strength).
- State significance using the Sig. value directly: below 0.05 (or 0.01) means the relationship is statistically significant, not attributable to chance at your chosen confidence level.
- State direction using the sign of r: positive means the two variables move together (as one rises, so does the other); negative means they move in opposite directions.

SENTENCE TEMPLATE FILL IN THE BLANKS

"For [independent variable], the r-value is [X] and the p-value is [X], which means there is a [small/medium/large], [positive/negative] and [significant/not significant] relationship between [independent variable] and [dependent variable]."

Worked example (): *"For transformational leadership style, the r-value is 0.686 and the p-value is 0.000 which means there is a relationship between transformational leadership style and organizational performance and it is significant... for Ethical Leadership style the r-value is 0.138... the relationship is week [weak]."*

⚠ ***Common mistake:*** *Correlation only tells you a relationship exists it does not tell you one variable causes the other, and it does not control for the other independent variables. Save causal-sounding language ("affects", "predicts") for the regression section, not the correlation section.*

SECTION 5. Multiple Linear Regression Section 4.2.2

Regression output is presented and interpreted in three tables, always in this order: Model Summary → ANOVA → Coefficients. Each answers a different question.

5.1 Model Summary Table "How much does the model explain overall?"

WHAT THE OUTPUT SHOWS

- Columns: R, R Square, Adjusted R Square, Std. Error of the Estimate.

HOW TO INTERPRET IT

- R is the overall correlation between all independent variables combined and the dependent variable.
- Report Adjusted R Square (not R Square) as your headline figure it is adjusted for the number of predictors in the model and is the more honest estimate for multiple regression.
- Convert Adjusted R Square to a percentage and state plainly what percentage of the variance in the dependent variable is explained by the independent variables together and, just as importantly, what percentage is left unexplained (by other factors not in this model).

SENTENCE TEMPLATE FILL IN THE BLANKS

"R (.[XXX]) is the correlation of the independent variables with the dependent variable after all the intercorrelations are taken into account. The Adjusted R Square is (.[XXX]), which means about [XX]% of the variance in [dependent variable] was explained by the independent variables, [list them]."

Worked example (): *"R (.760) ... Adjusted R Square is (.572) which means about 57.2% of the variance in the dependent variable i.e., organization performance was explained by the independent variables, Leadership style."*

5.2 ANOVA Table "Is the model, as a whole, statistically significant?"

WHAT THE OUTPUT SHOWS

- Columns: Sum of Squares, df, Mean Square, F, Sig.

HOW TO INTERPRET IT

- Check the Sig. value attached to the F-statistic: below 0.05 means the regression model overall significantly predicts the dependent variable i.e., the independent variables, taken together, do a significantly better job of predicting the outcome than chance would.
- Report the F-value and its Sig. value together this is what justifies moving on to interpret individual coefficients.

SENTENCE TEMPLATE FILL IN THE BLANKS

"Since the significant result on the ANOVA table is [X] which is $p < 0.05$, the regression analysis proved the presence of a good degree of prediction... with F = [X] and sig = [X]."

Worked example (): *"F= 105.905 and sig=0.000" the overall regression model was reported as statistically significant.*

5.3 Coefficients Table "Which specific variables have an effect, and how strong?"

WHAT THE OUTPUT SHOWS

- Columns: Unstandardized B (and Std. Error), Standardized Beta, t, Sig. one row per independent variable, plus the Constant.

HOW TO INTERPRET IT

- For each independent variable, check its Sig. value: below 0.05 means that variable has a statistically significant effect on the dependent variable while controlling for the other independent variables in the model; 0.05 or above means it does not.
- Use the sign of B/Beta to state direction (positive = increases the dependent variable; negative = decreases it).

- Compare Standardized Beta values (not unstandardized B) across variables to identify which independent variable has the strongest relative effect the variable with the largest absolute Beta is the strongest predictor in the model.
- Write a short paragraph per variable, then a closing paragraph ranking the variables from strongest to weakest effect.

SENTENCE TEMPLATE FILL IN THE BLANKS

"[Independent variable] (B = [X], Beta = [X]) was statistically significant to influence the dependent variable, since Sig. ([X] < 0.05)."

"Looking at the Beta Unstandardized/Standardized Coefficients, the effect of [strongest variable] on [dependent variable] ([X]) is greater than the other independent variables... the second-highest is [variable] ([X]), and the third is [variable] ([X])."

"[Variable] was not statistically significant to influence the dependent variable, since Sig. ([X] > 0.05)."

Worked example (): *"Authoritarian leadership (0.573) was statically significant... Delegative leadership (0.299) was statically significant... transformational leadership is statistically significant and the value is 0.000... ethical leadership was not statically significant to influence the dependent variable, since Sig. (0.811 > 0.05)."*

⚠ ***Common mistake:*** *Don't confuse a high unstandardized B with a strong effect B values depend on each variable's original scale, so relative-strength comparisons should always be made using the Standardized Beta, not raw B.*

PART E CLOSING THE CHAPTER

SECTION 6. Hypothesis Testing Section 4.3

This section applies one consistent decision rule to the Coefficients Table's Sig. values, one hypothesis at a time, in the same order as Chapter One.

WHAT THE OUTPUT SHOWS

- No new SPSS table is generated here you are re-reading the Sig. column from the Coefficients table (Section 5.3 above) against each null hypothesis.

HOW TO INTERPRET IT

- State the decision rule once, then applies it consistently: if Sig. < 0.05, reject H0 (the effect is significant, accept the alternative hypothesis); if Sig. ≥ 0.05, fail to reject/accept H0 (the effect is not significant).
- Address every hypothesis individually and in order, quoting its exact Sig. value from the Coefficients table.
- Close with a single summary table: Hypothesis | Sig. | Result (Reject / Accept H0) this gives examiners a one-glance view of your findings.

SENTENCE TEMPLATE FILL IN THE BLANKS

"H0[X]: [hypothesis wording]. Based on the result of multiple regression (Table 4.x), the significant value for [variable] is [X], which means the P-value is [< / >] 0.05 and the null hypothesis is [rejected / accepted] and the [alternative hypothesis is accepted / null hypothesis is accepted] [variable] has a [significant / insignificant] effect on [dependent variable]."

Worked example (): *"H01: Transformational leadership has no significant effect on organizational performance... the significant value... is 0.001 which means the P-value is < 0.05 and the null hypothesis is rejected... H04: Ethical leadership... the significant value... is 0.811 which means the P-value is > 0.05 and the null hypothesis is accepted... ethical leadership style has insignificant effect on organizational performance."*

SECTION 7. Discussion Section 4.4

The Discussion section is the only part of Chapter Four where you are expected to synthesize and interpret, not just report this is where the descriptive results, the correlation results, the regression results, and the literature from Chapter Two are pulled together into a coherent narrative.

WHAT THE OUTPUT SHOWS

- No new table this section draws only on results already presented earlier in Chapter Four.

HOW TO INTERPRET IT

- Open by restating, in one or two sentences, which independent variables were found to have a significant effect and which did not, based on the Coefficients table.
- Rank the significant variables from strongest to weakest effect using the Standardized Beta values, and state this ranking explicitly.

- Explicitly compare your findings against at least two or three of the specific empirical studies you reviewed in Chapter 2.2 state whether your result agrees or disagrees with theirs, and offer a plausible reason for any difference (context, sample, industry).
- Close by connecting the descriptive findings (Section 4.2) to the regression findings e.g., note whether a variable respondents rated highly present (high mean) also turned out to have a significant effect, or whether the two point in different directions, and explain why that might be.
- End the section by explicitly stating that the research questions from Chapter One have now been answered.

SENTENCE TEMPLATE FILL IN THE BLANKS

"Multiple linear regression results show the independent variables influence [dependent variable]; by looking at the Beta Unstandardized Coefficients, the effect of [variable] is greater than the other independent variables... Among the independent variables, [variable] was not statistically significant..."

"This finding is [consistent / inconsistent] with [Author, Year], who found that [their finding], possibly because [contextual reason]."

Worked example (): *"The higher effect belongs to the authoritarian leadership style and the second higher effect belong to the transformational leadership style and finally, the third-place effect belongs to the delegative leadership style... the remaining independent variable ethical leadership style doesn't affect organizational performance."*

QUICK-REFERENCE TABLE: SPSS TABLE → CHAPTER 4 SECTION

Use this table to quickly locate which SPSS output feeds which part of your write-up.

SPSS Output	Chapter Four Section
Frequencies (demographic variables)	4.1 Demographic Characteristics of Respondents
Descriptives (construct items + composites)	4.2 Descriptive Statistics
Descriptives Skewness/Kurtosis	4.2.2.1 Normality
Regression Normal P-P Plot	4.2.2.1 Linearity
Regression Coefficients Tolerance/VIF	4.2.2.1 Multicollinearity
Correlate → Bivariate (Pearson matrix)	4.2.1 Correlation Analysis
Regression Model Summary	4.2.2 Regression Analysis (R / Adjusted R^2)
Regression ANOVA	4.2.2 Regression Analysis (model significance)
Regression Coefficients	4.2.2 Regression Analysis (individual effects) & 4.3 Hypothesis Testing
(synthesis of all of the above)	4.4 Discussion

CHAPTER FOUR WRITE-UP CHECKLIST

Before considering Chapter Four's interpretation complete, confirm:

- The response rate is stated at the very start of Section 4.1, before any demographic breakdown
- Every demographic table has at least one interpretive sentence highlighting its dominant category
- Every construct's descriptive table is interpreted item-by-item using a clearly defined mean-interpretation scale, then summarized with the composite mean
- Normality, linearity, and multicollinearity are reported and interpreted before the Model Summary table
- Every independent-to-dependent variable correlation is interpreted for both strength (Cohen's guideline) and significance
- The Model Summary's Adjusted R^2 is translated into a plain-language percentage-of-variance-explained statement
- The ANOVA table's F and Sig. values are reported before any individual coefficient is discussed
- Every independent variable's B/Beta and Sig. are interpreted individually, and the variables are ranked by strength using Standardized Beta
- Every hypothesis has an explicit reject/accept decision, quoting its exact Sig. value
- The Discussion section compares findings against at least two or three specific empirical studies from Chapter Two, not just the topic in general
- The Discussion explicitly reconnects back to and answers each research question from Chapter One