

EXPLORING STUDENT SATISFACTION IN ONLINE LEARNING USING PSPP REGRESSION

1. Overview

Client:

An online education platform offering asynchronous university-level courses across the U.S. and U.K.

Objective:

To identify which aspects of the virtual learning experience most significantly influence overall student satisfaction. The analysis aimed to inform course improvements and instructional support priorities using PSPP's regression capabilities.

2. Background

The client gathered post-course evaluation data to better understand the student experience. While ratings were generally positive, completion rates and written feedback suggested that some areas of the course delivery needed refinement. The client sought a quantitative model to explain what predicts satisfaction.

3. Data Summary

Dataset:

Survey responses from 850 students enrolled in six online courses

Key Variables:

Variable	Type	Description
Satisfaction_Score	Continuous	Overall rating (scale of 1 to 10) – dependent variable
Instructor_Feedback_Quality	Continuous	Student-rated feedback clarity (1 to 10)
Learning_Materials_Quality	Continuous	Student-rated content quality (1 to 10)
Platform_Usability	Continuous	Ease of navigating the LMS (1 to 10)
Peer_Interaction	Continuous	Quality of discussion forums and group work (1 to 10)

Technical_Support_Available	Binary	1 = Yes, 0 = No
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4. Methodology

Software Used:

PSPP (v1.6.2)

Workflow:

1. Data Preparation:

- Imported .csv into PSPP
- Checked variable formats and labeled values for binary field
- Outliers screened using Z-scores (none removed)

2. Exploratory Analysis:

- DESCRIPTIVES used to assess means, standard deviations, skew
- Pearson correlation matrix run to check multicollinearity risks

3. Linear Regression in PSPP:

- Analyze → Regression → Linear
- DV: Satisfaction_Score
- IVs: All five predictors entered simultaneously
- Checked residual plots for normality and homoscedasticity

5. Key Results

Predictor	Coefficient (β)	p-value	Interpretation
Instructor_Feedback_Quality	+0.41	<0.001	Strongest predictor of satisfaction
Platform_Usability	+0.35	0.002	Significant usability effect
Learning_Materials_Quality	+0.26	0.017	High-quality materials correlate with greater satisfaction
Peer_Interaction	+0.12	0.09	Not statistically significant

Technical_Support_Available	+0.78	<0.001	Access to support boosts satisfaction regardless of other variables
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Model Performance:

- Adjusted $R^2 = 0.68$
- All VIF < 2.0 (no collinearity issues)
- Residuals followed normal distribution (visual check)

6. Visual Outputs (via PSPP & LibreOffice):

- Regression coefficient plot with 95% confidence intervals
- Scatterplot matrix of satisfaction vs. each predictor
- Histogram of satisfaction residuals
- Grouped bar chart of mean satisfaction by support availability

7. Deliverables

- Cleaned PSPP .sav and .csv files
- Full analysis report (15 pages) featuring:
 - Statistical output with narrative interpretation
 - Key drivers of student satisfaction
 - Tables and charts for stakeholder presentation
- Slide brief (3 slides):
 - Top 3 predictors
 - Strategic implications for platform design
 - Suggestions for faculty development initiatives

8. Client Outcome

- Course designers restructured feedback modules and enhanced interface navigation
- Enabled resource reallocation from peer activity moderation to platform improvement

- Satisfaction scores increased by **11%** in the following session

9. Strategic Value Delivered

- Identified **feedback quality and usability as top satisfaction drivers**
- Enabled **cost-effective redesign of e-learning priorities**
- Demonstrated **PSPP's capability for regression-driven insights** without software costs

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