To advise Rishi on the appropriate statistical test for comparing the average selling prices of textbooks at two Internet bookstores, we need to consider several aspects of the study design and data characteristics:

1. \*\*Objective\*\*: The goal is to determine if there is a significant difference in the average selling prices between the two bookstores.

2. \*\*Sample Size\*\*: Rishi has a sample of 10 textbooks. Although this is a relatively small sample, it's still sufficient for many statistical tests, provided we consider the assumptions of those tests.

3. \*\*Data Structure\*\*: The data involves paired observations since each textbook's price is observed at both bookstores. This implies a dependent samples scenario because the same textbooks are being compared across two different conditions (bookstores).

4. \*\*Type of Data\*\*: Assuming the prices are numerical and continuous.

5. \*\*Assumptions\*\*: For many statistical tests, we need to consider assumptions like normality of the data, independence of observations, and equal variances (homoscedasticity). Given the small sample size, we should be cautious about assuming normality, but we can proceed with tests that are robust or have non-parametric alternatives.

Given these considerations, here are the steps in the decision-making process:

- \*\*Dependent vs. Independent Samples\*\*: Since each textbook's price is paired between the two bookstores, this suggests a paired (dependent) samples scenario rather than independent samples. This is crucial because it affects the choice of test.

- \*\*Parametric vs. Non-parametric\*\*: With a small sample size, we might lean towards a non-parametric test if we're uncertain about the normality of the price differences. However, if we assume the differences in prices are roughly normally distributed, or if we want to use a parametric test for its power, we can proceed with a parametric test.

- \*\*Specific Test\*\*:

- \*\*Paired t-test\*\*: This is the most appropriate parametric test for comparing the means of two related groups. It tests the null hypothesis that the mean difference between paired observations is zero. Since we're comparing the same textbooks across two conditions, this test is suitable.

- \*\*Wilcoxon Signed-Rank Test\*\*: As a non-parametric alternative, this test would be used if we do not wish to assume normality of the price differences. It tests the median difference rather than the mean, which can be more robust for small sample sizes or when the data might not be normally distributed.

\*\*Recommendation\*\*:

Given the nature of Rishi's data (paired observations from the same textbooks at two different bookstores), I would recommend starting with the \*\*Paired t-test\*\* due to its power and familiarity in statistical analysis, assuming the differences in prices are approximately normally distributed. However, if there's concern about the normality assumption or if Rishi prefers a distribution-free approach, the \*\*Wilcoxon Signed-Rank Test\*\* would be an excellent alternative.

Before proceeding, Rishi should check the normality of the differences in prices with a normality test or a visual inspection (like a Q-Q plot or histogram). If the normality assumption holds, the paired t-test is appropriate; if not, the Wilcoxon Signed-Rank Test would be the better choice. This approach ensures that Rishi's analysis is robust and tailored to the characteristics of his data.