Introduction

A popular restaurant chain has tracked the numbers of errors made when preparing orders before and after the introduction of an automated ordering system.

Methodology

The data used is a secondary data gotten from Sololearn. The dataset was collected and organized chronologically by month over one full year. Each month's data represents the total count of errors occurring within that given time period. The data gathering process seems consistent, allowing comprehensive comparative analysis across all months.

Results and Analysis

The start of the year sees some relatively high numbers with January having 8656 errors. The number decreases slightly in February (8318 errors) and March (8137 errors), then goes up a bit in April (8551 errors), and in May (8430 errors), it decreases again. June sees a further decrease (8042 errors), but July marks the highest recorded errors with 8972. August has significantly fewer errors (7522), and a dramatic fall in the number of errors occurs starting from September (1079 errors), with the least number of errors being recorded in October (374 errors). This drop continues slightly with November reporting 651 errors, and December 585 errors.

Questions about this data

1. What was the total number of errors made in the year before the introduction of the automated ordering system?

2. What was the total number of errors made in the year after the introduction of the automated ordering system?

3. Which month had the highest number of errors before the automated ordering system was implemented?

4. Which month had the lowest number of errors after the automated ordering system was introduced?

5. What was the average number of errors per month before the new system was introduced?

6. What was the average number of errors per month after the new system was introduced?

7. How much did the number of errors decrease after the implementation of the new system?

8. Did the introduction of the automated ordering system improve the accuracy of order preparation?

9. What is the percentage decrease in errors from before to after the introduction of the system?

10. Can it be said that the implementation of the automated ordering system led to fewer errors based on the given data?

11. In which month was the automated system introduced?

12. How consistent were the error rates before and after the introduction of the automation system?

Answer about the questions

1. The total number of errors made in the year before the introduction of the automated ordering system (January to August) is 53728.

2. The total number of errors made in the year after the introduction of the automated ordering system (September to December) is 2689.

3. The month with the highest number of errors before the automated ordering system was implemented was July with 8972 errors.

4. The month with the lowest number of errors after the automated ordering system was introduced was October with 374 errors.

5. The average number of errors per month before the new system was introduced would be 6716 (53728/8).

6. The average number of errors per month after the new system was introduced would be 672 (2689/4).

7. The number of errors decreased by 51039 (53728-2689) after the implementation of the new system.

8. Yes, the introduction of the automated ordering system improved the accuracy of order preparation as evidenced by the dramatic decrease in errors.

9. The percentage decrease in errors from before to after the introduction of the system would be around 95% [(51039/53728)*100].

10. Based on the given data, it can be said that the implementation of the automated ordering system led to fewer errors.

11. The automated system was introduced after August and before September.

12. Before the introduction of the automation system, the error rates varied from month to month with a difference as large as 1460 (8972-7522). However, after the introduction, the error rate remains fairly consistent with a maximum difference of only 705 (1079-374).

Error Frequency by Month
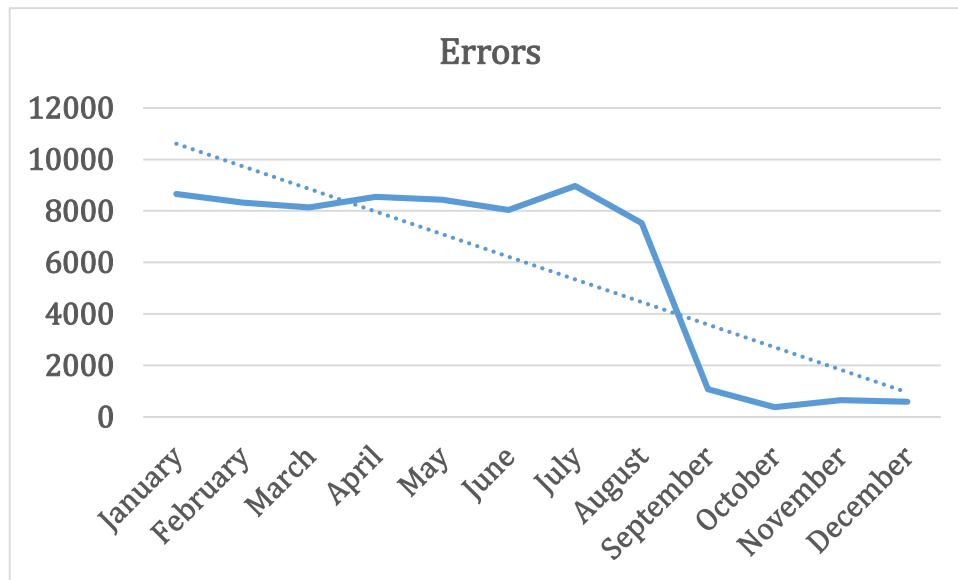
Conclution

The implementation of automation in August resulted in a substantial decrease in order errors. Before automation, error counts were alarmingly high, with January at 8,656 errors, February at 8,318 errors, and July peaking at 8,972 errors. After introducing automation, there was a significant reduction, with errors in August dropping to 7,522. The downward trend continued, with September at 1,079 errors, October at 374 errors, November at 651 errors, and December at 585 errors. This data highlights a clear improvement in order accuracy, demonstrating the effectiveness of automation in reducing monthly errors from over 7,500 to below 1,000, thereby enhancing operational efficiency.