**Business Applications**

Name of Student

Institution

Courses

Name of Professor

Due Date

**Part 1**

The firm can expect a lead time of approximately 4.45 weeks on average, with a standard deviation of around 1.07 weeks. The coefficient of variation indicates the relative variability, suggesting a 24.07% variation from the mean. The firm may use this information in inventory management, supplier management, customer service, and cost management. Understanding the lead time distribution helps in setting appropriate reorder points and safety stock levels. Assessing the lead time variability helps in evaluating the reliability of the supplier and considering alternative suppliers. Predicting lead times aids in providing accurate delivery estimates to customers. Efficient inventory management can reduce holding costs, and insights from lead time analysis can contribute to cost-effective decision-making.

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| --- | --- | --- | --- | --- |
| Lead Time (Weeks) | P(X) | Lead Times | squared difference | sqd diff. \* P(X) |
| 3 | 0.20 | 0.6 | 2.1025 | 0.4205 |
| 4 | 0.35 | 1.4 | 0.2025 | 0.070875 |
| 5 | 0.30 | 1.5 | 0.3025 | 0.09075 |
| 6 | 0.10 | 0.6 | 2.4025 | 0.24025 |
| 7 | 0.05 | 0.35 | 6.5025 | 0.325125 |

|  |  |
| --- | --- |
| Expected Lead Time (Mean): | 4.45000 |
| Variance: | 1.14750 |
| Standard deviation: | 1.07121 |
| Coefficient of variation: | 24.07223 |

**Part 2**

The extremely low probabilities in the microprocessor quality assurance scenarios suggest that the likelihood of the entire shipment being returned, especially with lower defective rates, is highly improbable. The firm might use this information to assess the risk associated with defective microprocessors and make decisions about quality control measures and supplier relationships.



**Part 3**

Based on the evidence, the company seems to be meeting its goal of having no more than an average of one scratch per box of 16 phones. The calculated average is below the target, and the probability of observing at least as many scratches is relatively low.



**Part 4**

The probabilities indicate the likelihood of different scenarios involving defective hard drives. The technician has a moderate chance of having enough hard drives to replace 3 defective ones.



**Part 5**

The probabilities provide insights into the timing of online orders, allowing the company to anticipate order arrivals and plan accordingly.



**Part 6**

The mean and standard deviation values, along with the low probability of prices below $2.21, offer insights into the cost variability and potential risks associated with exceptionally low-cost transactions. Assuming normality, the analysis allows for a probabilistic assessment of transaction costs, aiding in decision-making and risk management. Continuous monitoring of daily costs is advisable to track variations and identify potential outliers. Further statistical analysis, such as hypothesis testing, can provide more robust conclusions about the normality of the cost distribution.





