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Downtime reduction and process improvement in a local company: A six sigma case study

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Which the intention to improve or bring betterment in the regular processes and timely delivery of products and services, several techniques have been used in the past with differential results. However, almost none of them have proven to be as effective as six-sigma. Six-sigma is one of the most commonly practiced approaches with proven results and the quality assurance and is widely used in industries belonging to almost every sector. The theme of six-sigma is to minimize the number of defects. A local establishment is a renowned multi-dimensional business establishments ranging from aviation machinery, equipment to travel agencies, tour operation, transportation products to beverages, and the company has a pretty wide business domain. The paper will focus on the technical division and will analyze the need of improvement and what can be done using the six-sigma approach. It is believed that the six-sigma implementation in aviation equipment will significantly reduce the loss by lowering the number of defects. The paper will also discuss significant tools and techniques and their appropriate application for defect reduction and meeting the specifications set as standards.

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Numerical inference using stochastic volatility and time-series prediction on stock market prices

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In a unique approach, advanced statistical modeling techniques coupled with predictive machine-learning are blended to forecast future stock price movement. From the outset, the stock data is analyzed and "cleansed" for non-stationarity, including any underlying seasonal or trend components. The methods for characterizing the data include detrending and differentiation for normalization purposes. Next, using statistical inference techniques, hypothesis tests and confidence intervals are calculated to provide insight on potential future movement in stock price. This is further enhanced by determining volatility bands above and below the current stock price. These bands measure the variability of price movement based on historical data. For prediction purposes, two methods applied for this research include auto regressive integrated moving average (ARIMA) and artificial neural networks (ANN). Trained ARIMA models provide greater insight between relationships in the historical stock prices and future stock price movement. ANN will be used as a verificiation and confirming quality measure to the ARIMA forecast.

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