

OPTIMISE INVENTORY LEVEL WITH VISUALIZATION

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ABSTRACT

Inventory Planning aims at optimizing inventory levels. The aim of inventory optimization is to scale back the holding and maintenance costs, without neglecting the customer satisfaction level. In other words, inventory optimization helps to scale back inventory while improving service level. To avoid the costs of overstocking, many sellers use just in time while stocking. With this strategy, you order only what you'd wish to satisfy immediate demand. Using JIT stocking as your primary inventory management technique has the potential many |to avoid wasting"> to save lots of lots of your business plenty of cash, but it comes with risk also.

I. INTRODUCTION

Logistics is an integral part of our everyday life. "Logistics" was originally use as an military term which defined as "a branch of military science having to do with producing, maintaining and transporting material, personnel and facilities." in Oxford English Dictionary. However, with the times goes by, in the modern days, it is used in a business term. Logistics and supply chain management are now firmly established as critical business concerns. Today it influences more than ever a large number of human and economic activities. The term logistics, which comes from the French word "logis" meaning dwelling, originally designated the art of organizing the transportation. Resupplying, and housing of the troops of an army (that of Napoleon) Increasingly, supply chain management is being recognized as the management of key business processes across the network of organizations that comprise the supply chain Some products have been increased in demand while others less so. it's important for companies that manage many products to size how the impact of the disruptions, also because the anticipated gradual recovery from its effects, should be applied to its measurement of inventory. By measuring stock available, over stock, under stock and dead stock regularly will assist you be more on top of things of your inventory and provide products customers want. In traditional stock management, ratios like inventory turnover and margin of profit return on inventory investment were wont to measure inventory performance. Both of those metrics require a series of calculations.

II. OBJECTIVE

The above objective is based on finding inventory level using if else statement and visualization on the basis of demand and stock. To find whether its overvalued or undervalued

- If the previous stock quantity is less than order stock quantity its undervalued stock
- If the previous stock quantity is more than order stock quantity its overvalued stock

III. RELATED WORK

Securing the optimum retail product availability rates creates the basic prerequisite for its sale, i.e. for achieving the desired transaction with the customer. Directly affecting sale (Dubelaar et al., 2001), where each reduction by 3% may contribute to 1% turnover decrease (ECR Rus, 2009),[5] product availability draws an increasing attention of large retailers and manufacturers. In relation to this, numerous initiatives have been introduced, including the Efficient Customer Response concept, based on the “Quick Response Strategy”. Research results and case studies are published and conferences are organized under the auspices of the ECR organisations. Product availability in retail stores is often described and analysed through out-of-stock problem (Ettouzani et al, 2012),[3]

Where the OOS rate was also most frequently used as its basic indicator. Attention has been devoted to its measuring (Roland Berger Consultants, 2003; Gruen, Corsten, 2007), [1] identifying (Papakiriakopoulos et al., 2009; Papakiriakopoulos, Doukidis, 2011) main root causes (Fernie, Grant, 2008; Ehrental, Stolzle, 2013), effects (Gruen, 2007; Musalem et al., 2010), and customer responses in out-of-stock situations (van Woensel et al., 2007; Zinn, Liu, 2008).[10] From the customer’s point of view, Roland Berger Consultants (2003, p. 8) define the given problem as “A product not found in the desired form, flavour or size, not found in saleable condition, or not shelved in the expected location”. [4]

In inventory management, service level is the expected probability of not hitting a stock-out during the next replenishment cycle or the probability of not losing sales. The service level is determined in a company by the level of stocks.[7] Therefore, The safety stock level must be high enough to cover vendor’s delivery times, sufficient enough to cover customers’ demand, but not so high that your company loses money because of high carrying costs.[2]

The main reason is because demand fluctuations and is not enough consistency to predict future variability. Retailers and producers are trying to record a high level of satisfaction within the client basis which will maximize sales.[9] Although at the same time maintaining a high level of stock is expensive and presents different risks such as: storage, expiration and lowering of prices.[6] The higher level of stocks the higher the risks and costs will be recorded. In the retail sector setting a high level of service is imperative. Companies that set their goals at the level of 95% do this because the level of service is a key factor in assuring the fidelity of the clients.[8]

IV. METHODOLOGY

A. VISUALIZATION

visualization is the discipline of trying to understand data by placing it in a visual context so that patterns, trends and correlations that might not otherwise be detected can be exposed. Python offers multiple great graphing libraries that come packed with lots of different features.

B. IF ELSE STATEMENT

The if..else statement evaluates test expression and will execute the body of if only when the test condition is True . If the condition is False , the body of else is executed. Indentation is used to separate the blocks.

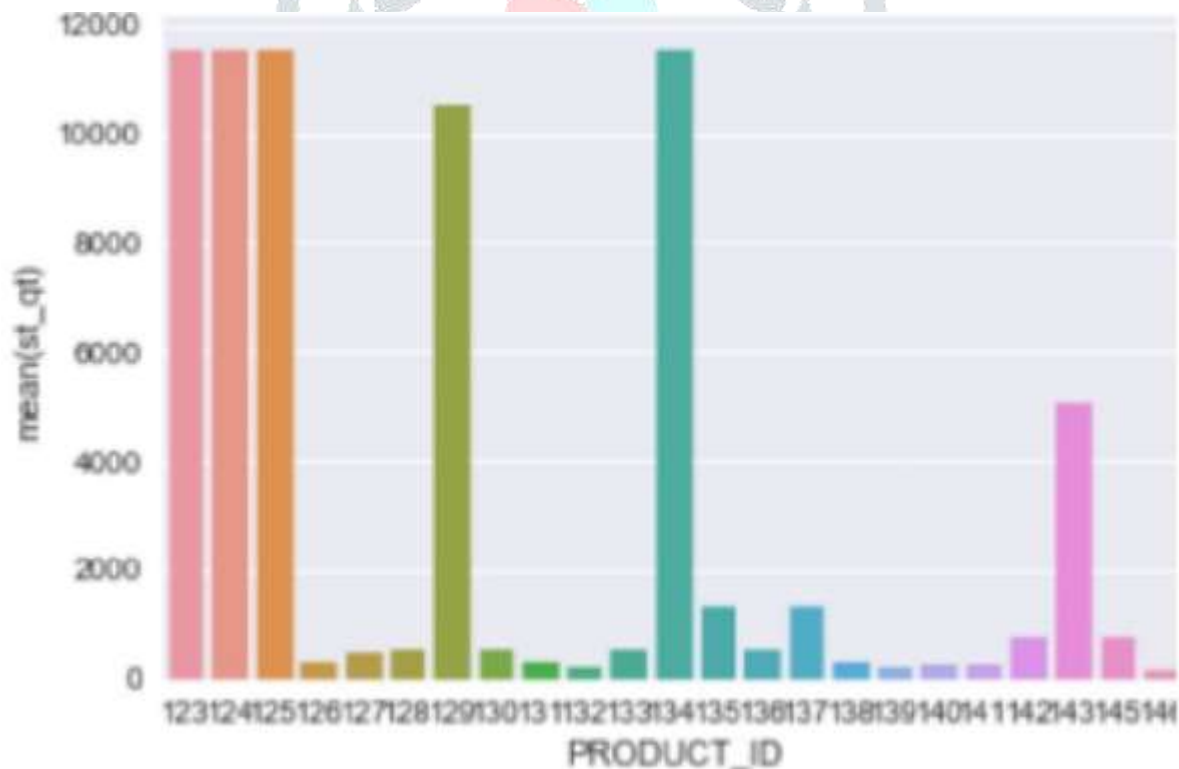
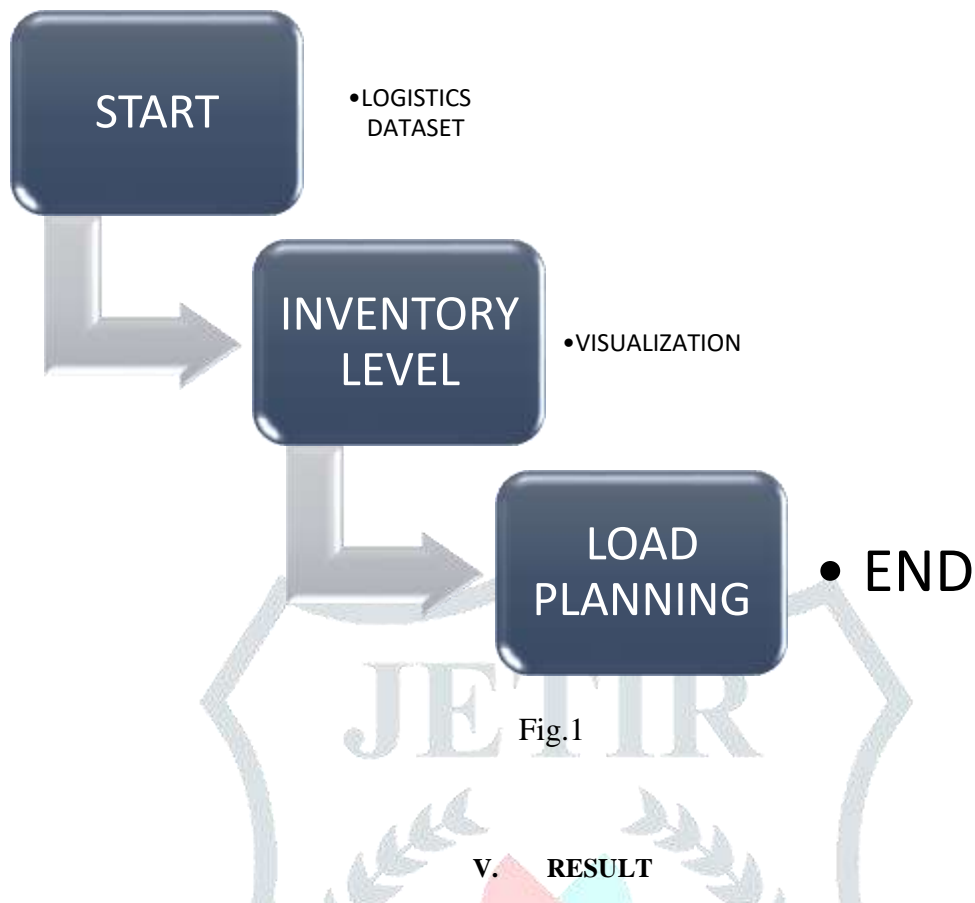


Fig 2. BARPLOT of product id and stock quantity

In the above figure product id and stock quantity are plotted using bar plot in seaborn. From this we can identify the level of stock maintained in each product. Barplot is useful for looking at a set of data and making comparisons. For example, it's easier to see which items are taking the largest chunk of your budget by glancing at the above chart rather than looking at a string of numbers. They can also shows trends over time, or reveal patterns in periodic sequences The collection, presentation, analysis, organization, and interpretation of observations of data are known as statistics. The statistical data can be represented by various methods such

as tables, bar graphs, pie charts, histograms, frequency polygons, etc. In this article, let us discuss what is a bar chart, different types of bar graphs, uses, and solved examples.

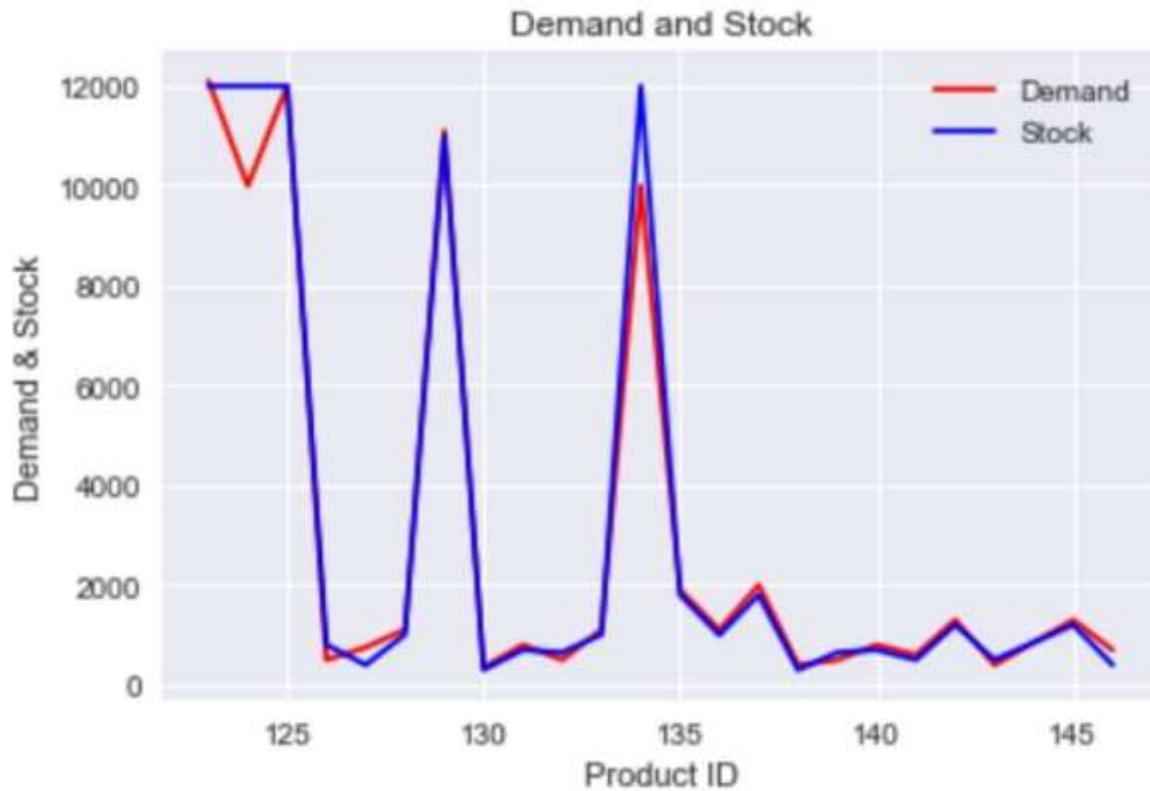
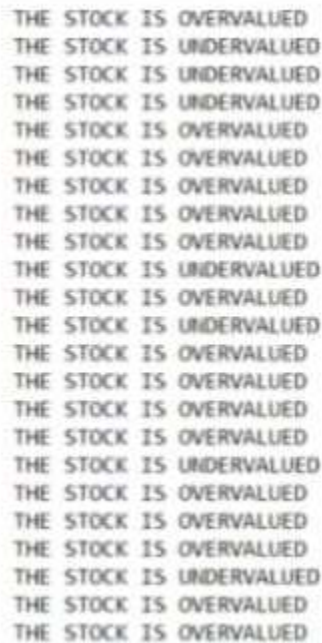


Fig .3 stock quantity and purchase order quantity are plotted using matplotlib.

A scatter plot is a chart type that is normally used to observe and visually display the relationship between variables. It is also known as a scattergram, scatter graph, or scatter chart. Quality Glossary Definition: Scatter diagram. Also called: scatter plot, X-Y graph. The scatter diagram graphs pairs of numerical data, with one variable on each axis, to look for a relationship between them. If the variables are correlated, the points will fall along a line or curve.



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Fig.4

Stocks that have a higher market value compared to its intrinsic value or worth are considered overvalued stocks.

If the price is lower than the value of the assets, the stock is undervalued likewise in this

- If the previous stock quantity is less than order stock quantity its undervalued stock
- If the previous stock quantity is more than order stock quantity its overvalued stock

VI. CONCLUSION AND FURTHER WORK

In this paper, Jupiter notebook from the study of identifying stock level by comparing demand and previous stock with if else statement and visualization process and finding whether its overvalued or undervalued. target service level while maintaining minimal inventory levels to keep operational costs low. It is very important to test the model prior to final implementation to ensure it is working correctly and to determine impact on inventory levels.

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