

# ORDER COMPLETION IN SUPPLY CHAIN VISIBILITY

## AFFILIATION

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**ABSTRACT:** Supply chain has become one of the primary key success factors to deal with increasing complexity of the current business environment. Key component of supply chain visibility is ORDER COMPLETION, it is to predict the whole process completion date which includes all the process in supply chain management from getting order to delivery. If production is simple, we complete it in a less duration date and the process of production is little complex then it will take a longer time.

**KEY WORDS:** Order completion in supply chain, Linear regression, Date.

## I.INTRODUCTION

Supply chain management has become one of the primary key success factors to deal with the increasing complexity of the current business environment. Although supply chain management is a mature discipline, the complexity of actual supply chains has greatly evolved over the last two decades due to the dynamic interaction of a wide range of processes, decisions, and structures, whose understanding becomes essential for gaining a competitive advantage in the marketplace. Supply chain management has become a significant strategic tool for firms striving to improve quality, customer service and competitive success. The supply chain is a set of activities which span enterprise functions from the ordering and receipt of raw materials through the manufacturing of products through the distribution and delivery to the customer.

## II.REVIEW OF LITRATURE

A supply chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers. Supply chains exist in both service and manufacturing organizations, although the complexity of the chain may vary greatly from industry to industry and firm to firm [2]. In today's world, supply chain management (SCM) is a key strategic factor for increasing organizational effectiveness and for better realization of organizational goals such as enhanced competitiveness, better customer care and increased profitability. The era of both globalization of markets and outsourcing has begun, and many companies select supply chain and logistics to manage their operations. Most of these companies realize that, in order to evolve an efficient and effective supply chain, SCM needs to be assessed for its performance [6].

The supply chain concept has become a concern due to global competition and increasing customer demand for value because the Companies try to improve their industrial performance in terms of cost, delays, adaptability, variety and traceability [1]. Thus, the information must be available in real time across the supply chain and this cannot be achieved without an integrated software system for supply chain management. Supply chain members have to collaborate, sharing information for improving customer's satisfaction [4].

In recent years, supply chain management (SCM) and logistics have witnessed tremendous paradigm shifts [8]. The increasing interest in SCM and logistics has been driven by competitive pressure and has led to its eventual elevation to turn into a critical part of company operations and strategy [9].

Intelligent manufacturing is an important direction for manufacturers to improve competitiveness [7]. Logistics connects production processes across the supply chain, which directly affects production efficiency and organizational coordination [10]. Therefore, many manufacturers implement smart logistics transformation to improve the intelligence level of manufacturing processes and supply chain organizations [5]. supply-chain disruptions is informative, it has primarily focused on supply-chain disruptions from a general or high-level view of the phenomenon (e.g. supply-chain uncertainty, risk perceptions) [3].

### III.METHODOLOGY

Order processing is the process or work flow from order placement to delivery. This is a key element of retail order fulfilment, where reliability and accuracy lead to customer satisfaction.

#### A.DATA MINING

Data mining is a process used by companies to turn raw data into useful 'information. By using software to look for patterns in large batches of data, businesses can learn more about their customers to develop more effective marketing strategies, increase sales and decrease costs. Data mining depends on effective data collection, warehousing, and computer processing. Data mining involves exploring and analysing large blocks of information to glean meaningful patterns and trends. It can be used in a variety of ways, such as database marketing, credit risk management, fraud detection, spam Email filtering, or even to discern the sentiment or opinion of users.

#### B. LINEAR REGRESSION

Linear regression is basically a statistical modelling technique which is used to show the relationship between one dependent variable and one or more independent variables. It is one of the most common types of predictive analysis. This type of distribution forms a line, hence this is called linear regression.

### V.RESULT AND DISCUSSION

#### LINEAR REGRESSION

```
In [87]: pred = model.predict(data)
In [88]: from sklearn.metrics import r2_score
In [90]: r2_score(pred,a.DAYS)
Out[90]: 1.0
```

Fig 4.1 R-Squared Value

In the above Fig 4.1, R-squared ( $R^2$ ) is a statistical measure that represents the proportion of the variance for a dependent variable that's explained by an independent variable or variables in a regression model. An R-Squared value of 1.0 would indicate that the variance of the dependent variable being studied is explained by the variance of the independent variable, which means PRODUCTQTY and DAYS are independent.

#### KDE PLOT

```
In [101]: sns.kdeplot(a.DAYS, a.PRODUCTQTY)
Out[101]: <matplotlib.axes._subplots.AxesSubplot at 0x13efa50>
```

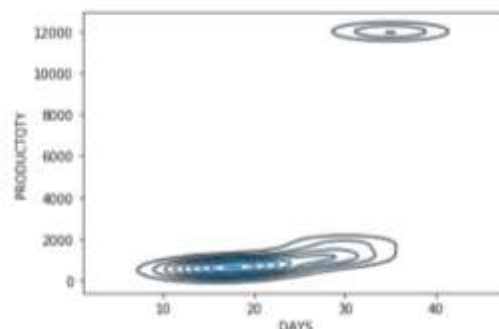


Fig 4.2 KDE Plot

```

In [102]: a.PRODUCTQTY.dtype
Out[102]: dtype('int64')

In [103]: a.DAYS.dtype
Out[103]: dtype('int64')

In [93]: sns.countplot(y=a.DAYS, data=a, color="c")
Out[93]: <matplotlib.axes._subplots.AxesSubplot at 0x1324730>

```

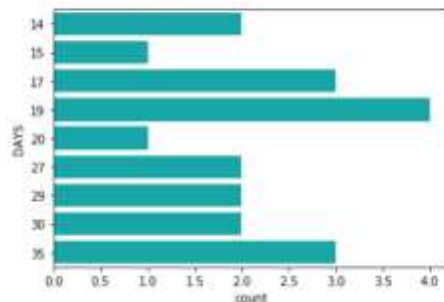


Fig 4.3 Count plot

The above kdeplot and count plot shows the relationship of the variables. We can clearly understand that both are independent variables with the regression line with kde plot and count plot.

## VI.CONCLUSION

The number of orders is less then there is no delay in order completion date. The number of orders increase there will be delay. For 12000 Quantity it takes 40 days to complete the order.

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