

Optimized Warehouse Management of Perishable Goods for a Food Delivery Company

Team Name: Tech Squad
Project Title : Fresh-O-Fresh

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Abstract

- The need to feed an ever increasing world population makes it necessary to reduce the tons of perishable waste along the food supply chain
- Yet about one third of global fresh fruits and vegetables (FFVs) are thrown away due to their quality.
- It has been a formidable task to handle the perishable food supply chains due to its short lifespan and the possibility of spoilage of the product due to its deterioration nature.

Introduction

- Maintaining high food quality standards is important for product market value, customer happiness and in turn for the long term reputation of the organization.
- With the use of Machine Learning and its algorithms we have created a way for the optimization of the goods so that the wastage of perishable goods can be minimized to a maximum level.
- A Machine Learning system and Cloud both integrated together taking into account supply chain constraints such as minimum or maximum order quantities.





Current Scenario

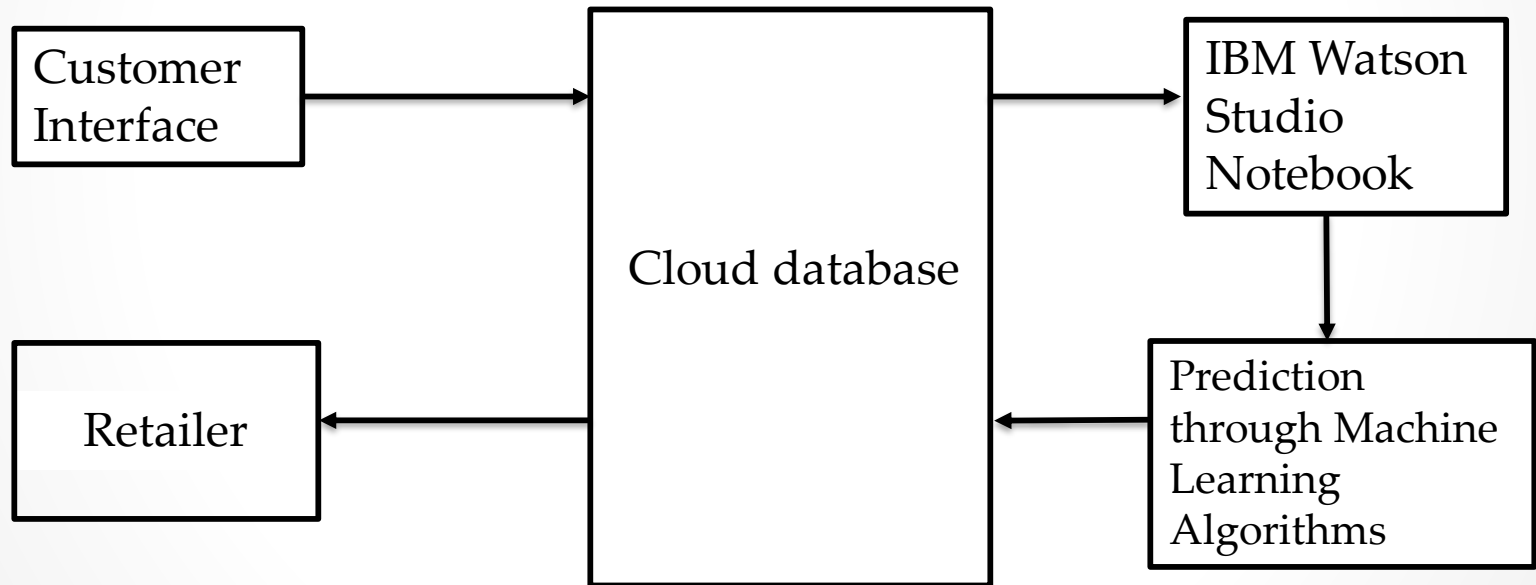
Aim & Target

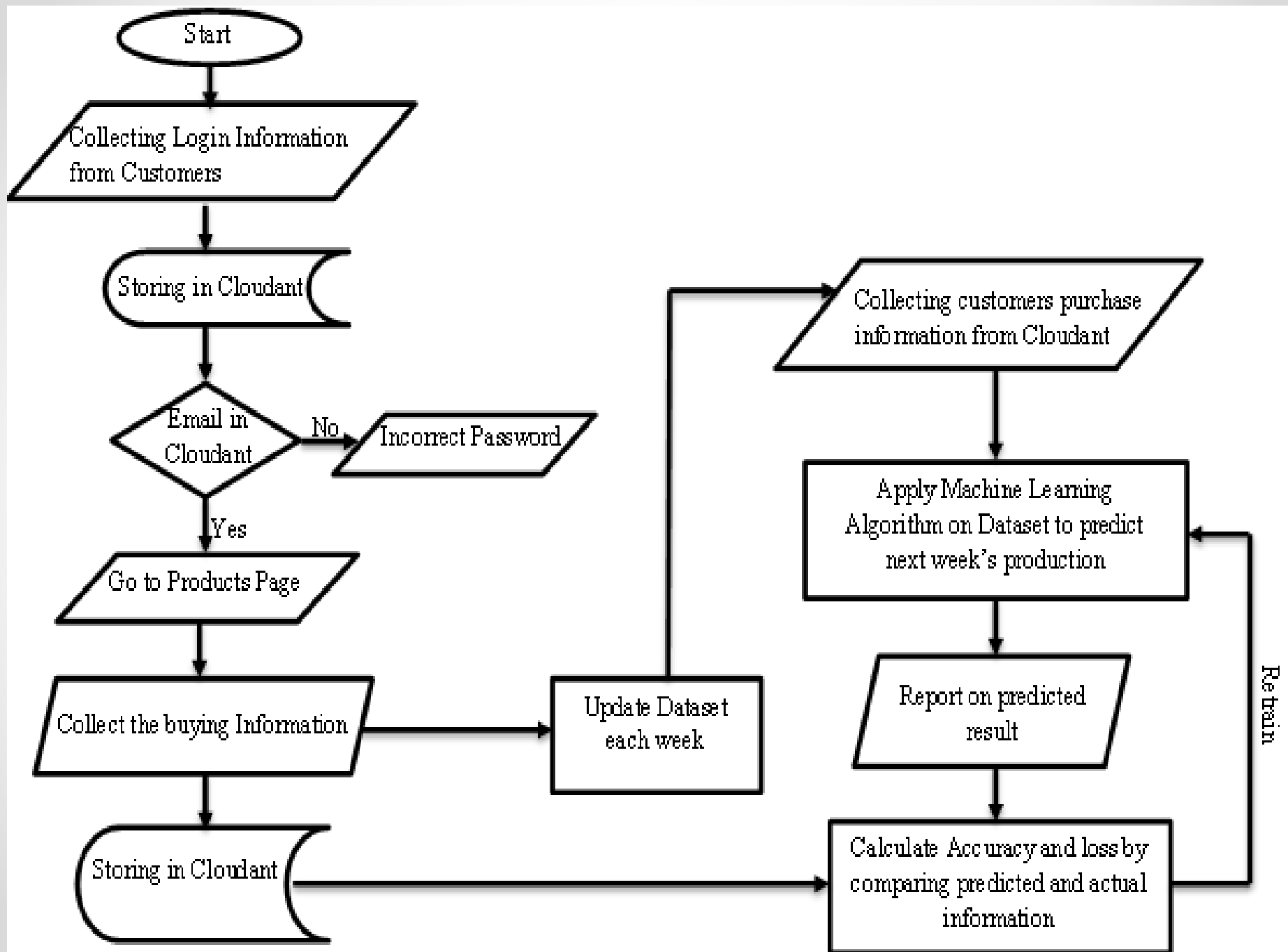
- The aim of this project is to present a predictable order of the perishable supply chain management modeling and optimization approach focusing on loss minimization along the supply chain.

Proposed Solution

- The solution to this problem we have proposed concentrates on both Cloud for collecting dataset and Machine Learning through Python to predict the amount of goods to be ordered in a range of ten weeks.
- We have implemented and integrated the idea of webpage for online shopping and machine learning and cloud-based services.
- This helps both the retailer and customer in a way that the loss for retailers will be minimized with customer satisfaction as the customers get good quality food products.

Block Diagram







Aim in the Future

Implementation

- The data collected from the cart page will be given as the dataset to the Watson Studio Notebook
- With Random Forest Algorithm the model predicts the amount of goods needed for the week
- Then when a retailer requests the predicted amount in UI, the model replies with the amount of goods

Advantages

- ❖ The user interface is user friendly
- ❖ The machine learning prediction is highly reliable
- ❖ It prevents wastage of valuable perishable food products
- ❖ The retailers are benefited as their losses are reduced
- ❖ The customers get good quality food product as retailers buy food products as per their needs

Disadvantages

- ❖ It cannot be implemented based on various seasons
- ❖ At the time of traffic in the cloud, the server may get slowed down

Applications

- ❖ This idea can be used to predict the future sale of a store based on its previous performances.
- ❖ It suggests the required amount of perishable food products to be bought and stored in the warehouse by the retailer for better sales.

Literature Review

S.No	Name of the Paper	Author	Published	Elements
1	Reducing Food Losses by Intelligent Food Logistics	Reiner Jedermann, Mike Nicometo, Ismail Uysal, Walter Lang	2014	Significance of preserving and maintaining the freshness of food products
2	A Literature Review on Machine Learning in Supply Chain Management	Wenzel, Hannah; Smit, Daniel; Sardesai, Saskia	2019	first-expired-first –out (FEFO) in the delivery supply chain

Conclusion

- The retailers will know how much quantity of goods they must need to store in the warehouse and at the same time, there will not be any shortage of goods to sell to the customers.
- The customers will get good quality food products as the retailers buy the products as per the needs of the customers. This improves the customer-retailer relationship.

Future Scope

- Further, Market Basket Analysis can be implemented to suggest the combination of products can be bought together by the customers.
- Also, recommender systems can be included to suggest recommendations to the customers.
- For more accuracy we may also use AI technology with Time Series Analysis which will use Weather Forecasting Algorithm to predict the next ten week purchase with the help of the current week.

References

- Wenzel, Hannah; Smit, Daniel; Sardesai, Saskia (2019) A Literature Review on Machine Learning in Supply Chain Management, Artificial Intelligence and Digital Transformation in Supply Chain Management, Vol. 27, ISBN 978-3-7502-4947-9, pp. 413-441
- Reiner Jedermann, Mike Nicometo, Ismail Uysal, Walter Lang (2014) Reducing Food Losses by Intelligent Food Logistics, Philos Trans A Math Phys Eng Sci., PMCID: PMC4006167

Thank You!



**“The best research will give
the best teaching and
the best teaching will give
the best research”**

“An Innovation with Intelligence rules the World!”