Identifying the Customer's Most Preferred Product According to the Quality of the Product

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Abstract

This research sought to delve into the consumer perception of quality of a product. This study is generally embarked to determine the age income and educational level of consumers, if it has or no effect on their perception on product quality specifically and their decision to buy the product. It also to find out what influence the consumer in determining the quality of the product as well as to understand if there is a positive relative relationship between price and the product quality, a case study of Kumasi in Ghana West Africa. It was discovered that, consumers have different ideas or perception on the product quality based on their ages, income levels, and, educational background and this goes a long way to influence them on the criteria used in determining the quality of product when making a purchase.

Keywords: Consumer, Perception, Quality, Variables, Consumer behaviour.

I.INTRODUCTION

Consumers purchase a product or service on the basis of satisfying theirrecognized needs (palmer, 2001). The choice of this product to satisfy particular needs depends on the perception of the consumer about the product quality capable of the satisfying that needs. According to Perrault et al (1997)

Many business Managers get wrapped up in the technical details involved in producing a product, but most customers or consumers think about product in terms of the quality and the total satisfaction it provides. The purchasing pattern of customer is known as buying pattern. Studying and analysing this pattern is known as buying pattern analysis. This buying behaviour is not constant and changes according to different factors. Identify the most purchased product of customer by answering the questions like why and how people choose their product. To identify the most purchased product, businessman had to understand the competition by conducting research, analyse product information, create a competitive strategy identify benchmark products and analyse product pages. Machine learning (ML) it

allows software applications to become more accurate in predicting outcomes. To identify mostly purchased product in machine learning attributes like product id, user id, product description and ratings are chosen. Singular value decomposition (SVD) it is a matrix factorization method where it generalizes the decomposition of a square matrix into any matrix. This application develops recommender systems. It finds and recommends many suitable items that would be liked and selected by customers. By applying this algorithm the most purchased product are identified and listed.

II.OBJECTIVES:

This objective is framed in the goal as to find the most purchased product in the day to day life based on the quality of the product. From the collected datasets the unwanted datasets are removed and modified according to the objective. The dataset contains product id, user id, product description, ratings, price, timestamp and quality. It contains price and count of products. The K-means clustering algorithm is used to find groups which have not been explicitly labelled in the data. This can be used to confirm business assumptions about what types of groups exist or to identify unknown groups in complex data sets.

III.RELATED WORK

Consumer behaviour refers to the activities directly involved in obtaining products /services, so it includes the decision-making processes that precede and succeed these actions[13]. young age one begins to have a preference for one product/service over another, as we are confronted with various commercial stimuli that shape our choices [6]. The buying experience increasingly depends on the interaction between the person and the point of sale environment, but it is not just the atmosphere that stimulates the impulsive behaviour of the consumer [8]. The sensory and psychological factors associated with the type of products, the knowledge about them and brand loyalty, often end up overlapping the importance attributed to the physical environment [7]. 40.0% of consumers spend more money than planned, in physical stores compared to 25.0% in online purchases [1]. Compulsive buying behaviour does not depend only on a single variable, but rather on a combination of sociodemographic, emotional, sensory, genetic, psychological, social, and cultural factors. Personality traits also have an important role in impulse buying [9]. The markets are different and characterized by an increased competition, as well a constant innovation in products and services available and a greater number of companies in the same market. In this scenario it is essential to know the consumer well [12]. Machine learning is an evolving branch of computational algorithms that are designed to emulate human intelligence by learning from the surrounding environment [3]. Machine learning addresses the question of how to build computers that improve automatically through experience. It is one of today's most rapidly growing technical fields, lying at the intersection of computer science and statistics, and at the core of artificial intelligence and data salgorith[5]. The popular methods of dimension reduction at present include: principal component analysis (PCA), Singular value decomposition(SVD)[4]. SVD-based approach produced results that were better than a traditional collaborative filtering algorithm most of the time when applied to a Movie data set[11]. SVD-based recommender systems suffer one serious limitation that makes them less suitable for large-scale deployment in E-commerce. The matrix factorization step associated with these systems is

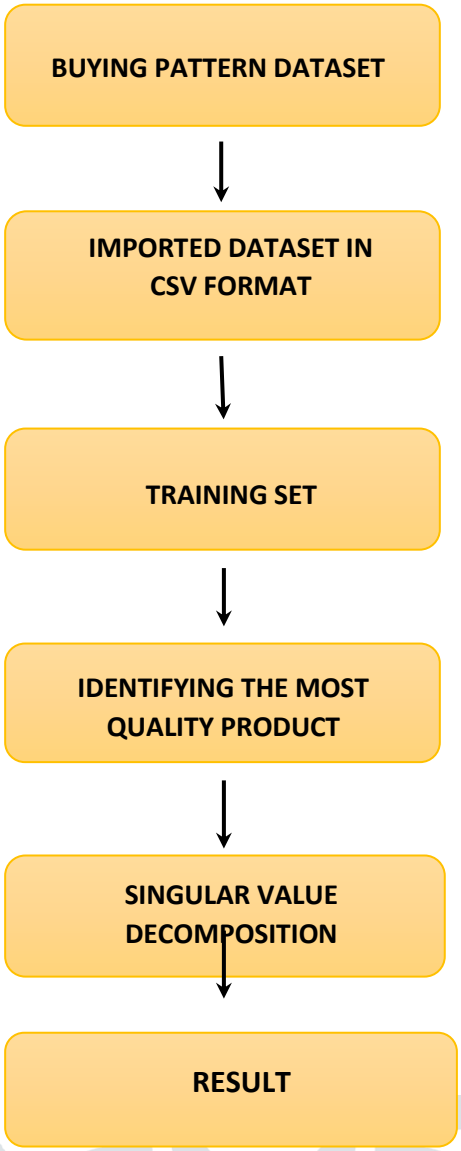
computationally very expensive and is a major stumbling block towards achieving high scalability [2]. ML presents important advantages in terms of predictive performance and identifying undiscovered subpopulations of patients with specific physiology and prognoses [12].

IV. MEHODOLOGY

A. PROPOSED SYSTEM

STEP 1: Imported the dataset, modified the dataset and saved in Excel.csv format.
STEP 2: Used Google colab for executing python coding and removed all unwanted data from dataset.
STEP 3: Then dataset is splitted into training dataset and testing dataset.
STEP 4: Visualization are made in Google colab for better understanding of dataset.
STEP 5: It is used to identify the most purchased product by analysing quality of each product.

IV. WORK FLOW



K-Means Algorithms:

- When considering splitting a cluster, there is no need to consider the whole tree, just look at
- those parts of it that are needed to cover the cluster. X Means implements an extended version of k-
- means by Moore and Pelleg (2000). It uses a Bayesian information criterion for selecting the number
- of clusters and can use kD-trees for speed. We can specify the distance function to use, the minimum
- and maximum number of clusters to consider, and the maximum number of iterations to perform.
- Farthest First is modeled on k-means & implements the farthest-first traversal algorithm.
- MakeDensityBasedClustereris a meta clustered that wraps a clustering algorithm to make it return a
- probability distribution and density. To each cluster and attribute, it fits a discrete distribution or a
- symmetric normal distribution

VI.RESULT

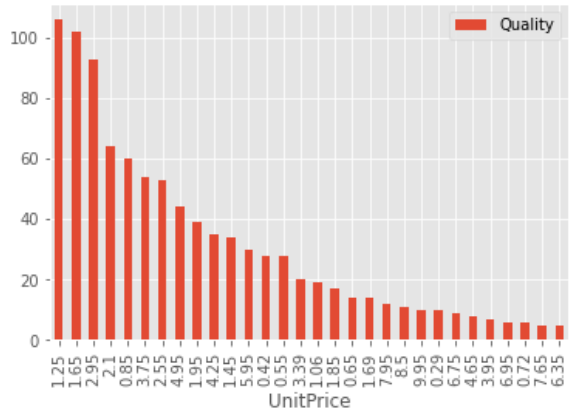


Fig 5.1

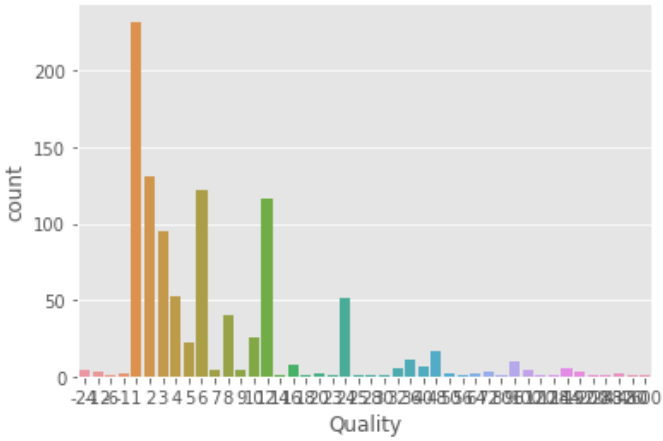


Fig 5.2

- In this paper, in fig 5.1 quality of the product, unit price are compared and this shows the quality of different price range of different products, from this it is understood that medium quality products are purchased less when it is compared with high quality products.
- In fig 5.2 quality and count are taken into consideration x-axis representation quality, y-axis represent the count of the product and the index represents the product description. From this it is understood that product id (9746427962) has been purchased more when it is compared with other products as it has the best quality.

VII. CONCLUSION AND FUTURE WORK

- By importing and modifying the dataset in excel the colab helps to executing the python coding and it removes the unwanted data in dataset .after that , dataset is splitted into training dataset and testing dataset.
- With the help of Google colab the visualization are made to understand the dataset clearly.
- By comparing the product I'd and product description based on quality, we got 10 number of product ids which is highly preferred by the customers due to the best quality.
- It shows the most purchased product by analysing the buying pattern of consumers based on the quality of the product.

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