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A Novel Architecture for Food Recommendation Using Data Mining

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ABSTRACT: Sustenance is basic to all and accordingly to take care of the constantly expanding demand for nourishment numerous eateries have been set up. The principle reason for these eateries is to give nourishment which fulfills the necessities of the client. However with the expansion in the quantity of inns there additionally is an increment in the wastage of nourishment. In this paper we manage administration of various dishes and crude materials. The disseminated information mining and its application to inn benefit configuration include manages the forecast of the sorts of nourishments which the eateries will require every day during the time. In this framework we make utilization of the information mining ideas to get the sustenance forecasts.

Our framework changes over Transactional information into non value-based information for better comprehension of the general population's decisions in sustenance. Our framework additionally helps us to examine the decision of sustenance of individuals in various parts a nation and in various seasons. In the proposed framework we introduce a mechanized expectation of request situations and crude material necessity valuable for the administration division of a lodging. The points of interest of past bills of an eatery or chain of eateries are mulled over in view of the things/dishes sold on particular date and time, number of times and the mix of dishes. Our framework predicts what may be the request of necessities of individual dishes on a particular given time and date.

KEYWORDS: crude materials; transactional information; quantity of inns;

I. INTRODUCTION

Charge information accumulations have enormous measures of information put away in databases. Despite the fact that they give a helpful administration, there is an issue that is absence of information. One case of that is lodgings and eateries. Sustenance is any substance devoured to give wholesome support to the body. It is as a rule of plant or creature inception, and it is an important asset which ought not to be squandered. An eatery is a business which gets ready and serves nourishment and beverages to clients in return for cash, either paid before the feast, after the supper, or with an open record. Eateries utilize prepared culinary specialists who get ready sustenance, and prepared staff called servers to serve the clients. Suppers are for the most part served and eaten on premises. There is wastage of nourishment and its crude materials because of absence of information on the offers of a day. In the hotel business, there arises an issue where the business entity needs to know the food items that are being sold frequently. Not only the food items frequently sold, but other food items bought with that frequently bought food item (customer buying behaviour). Now, how does one relate the food items frequently bought with the raw materials in the hotel business. The concept that we propose here is data mining [4],[5]. Data mining is the process of analysing data from different perspectives & summarizing it into useful information. The emphasis lies on the discovery of previously unknown patterns as opposed to generalizing known patterns to new data. In data mining, association rule is used for discovering interesting relations between variables in large databases [3]. Analysis and presenting strong rules discovered in databases using different measures of interestingness are performed. Based on the concept of strong rules, association rules help in discovering regularities between food items in large scale transaction data recorded by point-of-sale (pos) systems in hotels/restaurants. For example, the rule {roti, nan} => {egg curry} found in the sales data of a hotel/restaurants would indicate that if a customer buys roti and nan together, he or she is likely to also buy egg curry. Such information can be used as the basis for decisions about marketing activities such as, e.g., promotional pricing or wastage of raw materials.

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II. RELATED WORK

There are no correct thought on the buy of the amount of crude materials. The diverse mixes of nourishment are not given much inclination. The menu may contain things which the clients once in a while or never buy. The framework is wasteful when helping visitors/pariahs select their things from the menu going to the inn interestingly. We have many devices and programming for inn upkeep, for example, charge era, online administration and so on. Giving administrations according to the clients need is a testing errand in the present inn/eatery business. Since an expanding quantities of clients leave various follows of their day by day life exercises on the Web, it has progressed toward becoming engaging adventure this new stream of individual information for client profiling. For instance, Asur S and huberman. [1] proposed deducing various essential client characteristics from online networking, while Chang et al. [3] identified client home areas. With regards to the domain of business, Bhatt R et al. [2][1] distinguished if a given tweet has any business goal in light of semantic components, for example, POS. They characterize business goal as general goal to confer business movement. The objective basic our exploration is distinctive since we attempt to foresee whether a given client will buy a given item in what's to come. created item proposal framework that initially identifies if a tweet portrays buy goal and at that point distinguishes statistic attributes of the client from his profile and from online item audits with a specific end goal to prescribe the client positioned rundown of items. At long last, M.- S. Chen, J.- S. Stop, [6] have utilized client profile data in Facebook for foreseeing what item classifications clients will purchase on eBay. They however constrained their way to deal with just the client profile information and to its connection with sustenance buys.

III. PROPOSED SYSTEM

The proposed framework disposes of the issues in the current frameworks. Limits the buy of the crude materials where the amount is plausible. Based upon the client's inclinations towards the menu it gives the client's attributes and their prerequisite. It can be utilized to wipe out the things in the menu which are the minimum looked for after. It can be utilized to foresee the nourishments which the client needs. Our system converts Transactional data into non transactional data for better understanding of the people's choices in food. Our system also helps us to analyze the choice of food of people in different parts a country and in different seasons. In the proposed system we present an automated prediction [1],[2] of order placements and raw material requirement useful for the management department of a hotel.

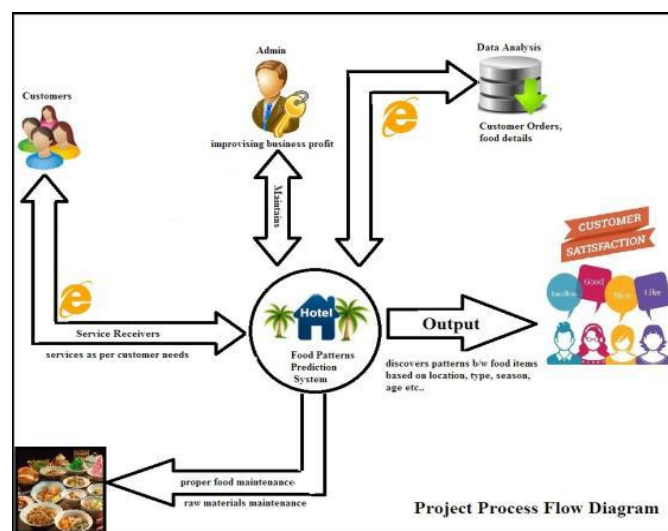


Fig 3.1: project process flow diagram

In figure 3.1 shows the project process flow diagram, there are mainly 3 actors in this work.



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A. Administrator

Administrator is a business entity who maintains entire application, application may contain more than one administrator. here administrator can be viewed the profile of the member, feedback, number of transactions and he can add, delete or update the food, category of food and subcategory of food.

B. Member

Member is a registered user who receives the major services from the application. The major services are predicting customer order patterns based on age, location, food type and season. He can view the recommendation module by this he can order the food,also he can view the orders made by him, rate the system application,post the feedbacks,view the food items.finally the customer converted non transactional data

C. Visitor

Visitor is a customer who visits the application, guest is a one who can access the basic information related to the application

IV.METHODOLOGY

For food patterns prediction we are making use of data analytics technique called as association rules. Association rule[6],[7] is used to discover patterns between objects. In our case objects are food items. Discovering the relationship between food items based on location and time is the major objectives of association rules. Our system converts Transactional data into non transactional data for better understanding of the people's choices in food. Our system also helps us to analyse the choice of food of people in different parts a country and in different seasons.In the proposed system we present an automated prediction of order placements and raw material requirement useful for the management department of a hotel. The details of previous bills of a restaurant or chain of restaurants are taken into consideration based on the items/dishes sold on specific date and time ,number of times and the combination of dishes .our system predicts what might be the order of requirements of individual dishes on a specific given time and date.

Apriori Algorithm

STEP 1: Scan the food data set and determine the support(s) of each item.

STEP 2: Generate L1 (Frequent one item set).

STEP 3: Use L_{k-1}, join L_{k-1} to generate the set of candidate k - item set.

STEP 4: Scan the candidate k item set and generate the support of each candidate k – item set.

STEP 5: Add to frequent item set, until C=Null Set.

STEP 6: For each item in the frequent item set generate all non-empty subsets.

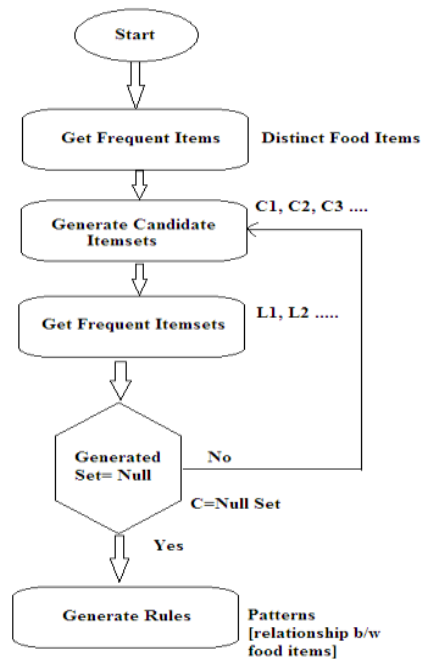
STEP 7: For each non empty subset determine the confidence. If confidence is greater than or equal to this specified confidence .Then add to Strong Association Rule.

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Flow of the Algorithm

Fig 4.1: Flow Diagram of apriori algorithm

V.EXPERIMENTAL RESULTS

In this paper we demonstrate the supervised approach for predicting purchasing activities of the customers in hotels. Knowing the customers interest is the main factor to earn business profits. The expectation of perpetual prediction of patterns among the different food items is done utilizing the apriori algorithm in association rule mining. This forecast is time effective that procedure time relies on upon the previous transactions of the customers.

Input – food items, previous order details, location and season

Output – discovers the relationship between different types of dishes

Minimum Support = 50%

Minimum Confidence = 80%

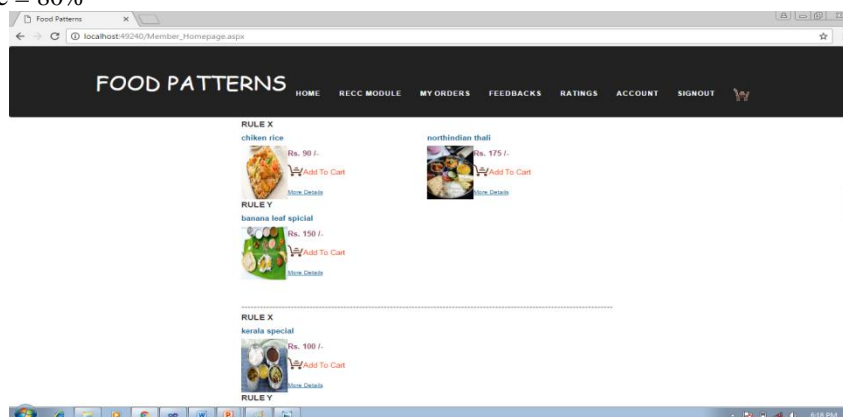


Fig 5.1: Pattern predictions among different food items



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VI. CONCLUSION AND FUTURE WORK

Our system converts Transactional data into non transactional data for better understanding of the people's choices in food. Our system also helps us to analyse the choice of food of people in different parts a country and in different seasons. System improvises the business profits and also customer satisfaction. Anticipating future activities of individual clients is getting to be noticeably conceivable given the huge number of information accessible in inn servers. In this paper we show the administered approach for foreseeing acquiring exercises of the clients in lodgings. Knowing the clients premium is the principle element to win business benefits. So this framework finds the sustenance designs in light of the client's age, sexual orientation, area and so on... Framework is helpful for clients and also business substances. Expectation will be helpful for business elements to deal with the crude materials appropriately. The framework is creative in all prospects. This system application can Develop the Query Module (members can post queries to administrator),online payment Module,Implementing the requirement as generic application which can be accessed by multiple hotel/restaurants..

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BIOGRAPHY

Anitha B R received the Bachelor of engineering in computer science and engineering at BGS institute of technology from VTU in 2015 and pursuing master of technology degree in computer engineering at PESCE mandya affiliated to VTU in 2017.