A REVIEW ON DESIGN AND DEVELOPMENT OF DECISION SUPPORT SYSTEM FOR RIGHT UNDERSTANDING ABOUT SOME FOOD PRODUCTS SUPPORTED BY ADVERTISEMENT IN INDIA

Priyank Doshi*

Dr. Vimal Pandya**

Abstract: *People are very much affected by adverse effect of food products like noodles, pizza, junk foods etc over long term. We are habituated to buy these products by watching advertisement on Television. They may be harmful for our body. Knowing the fact that overeating habit disturbs our metabolism and causes various deceases like diabetes, blood pressure, obesity and heart problems etc, we are becoming victims of advertisements. The Decision support system (DSS) helps in selection of such food products. The present study deals with development of Decision Support System. The components and characteristics of DSS are reviewed with its implementation in healthcare or related area. The study suggests that the DSS can effectively solve the problem of overeating and obesity by providing them knowledge about those food products with suggestions on their eating habits to develop Right Understanding.*

Keywords: *DSS, Right Understanding, Knowledge, some food products, Advertisement.*

*Research Scholar, Rai University, Saroda, Ta-Dholka, Ahmedabad, Gujrat.

**Department of Computer Science & IT, H.K. Arts College, Ahemedabad, Gujarat.

INTRODUCTION:

People are habituated with buying unnecessary food products by watching advertisement and only for the taste and excitement they are putting their health in danger. It is possible to reduce effect of excitement of advertisement according to Universal Human Value Education (R.R. Gaur) by providing them Right Understanding. They will take decisions on the basis of exploration and their natural acceptance. We can offer smart phone based assistance in the form of Decision Support System which can be used to assist buyer to stop wasting money in such food products with right understanding. This can prohibit exploiting nature (storyofstuff.com), maintains health and saves money. Television and newspaper subconsciously dominates our wishes. Advertisements are easily targeting our children. Especially we want to protect our children from adverse effect of junk foods and harmful chemicals like food color, flavor, preservatives etc. These products are kept for long period using harmful preservatives with adding artificial color and flavor. Obesity, Blood pressure, Diabetics, Cancer and other diseases may be result of this type of eating habits. Right understanding and awareness about food products is the solution of this problem.
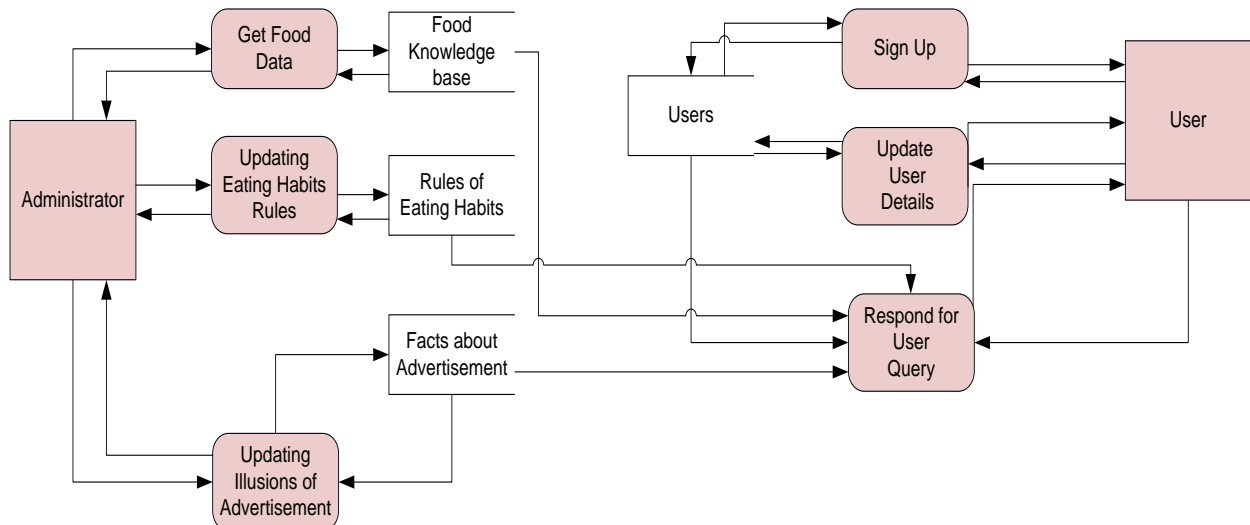

Figure 1

So As shown in figure, we are presenting this study towards the solution in the form of a Decision Support System. User has to provide his details. Using functionalities he would get information about food which is suitable for him/her or not. To respond the query of user details can be used by DSS. Using certain Food Product details, eating habits rules and false impression of advertisement, Right Understanding about that food for him responded.

Attempt is that user decides about his own food product on the basis of his own will by right understanding which should be naturally acceptable for him.

RELATED WORK:

DIligenS (Dietary Intelligence System for Personal Diet Formulation and Maintenance) was developed by Mary & Andrew (Mary Tom, 2011). They work upon category like home made meals alone, homemade meals, food purchased from other outlets and Food purchased away from home only. They have defined Family System and process to analyze home meals preparation including Plan and decide meal for a week, select menu and recipe, estimate cost, prepare grocery purchase list and update inventory. They have defined RDI (Recommended Dietary Intake) and worked with users actual Diet and RDI. They have worked in intelligent system using inference rules (if else structure). In this system main Data Layer contains user specific Database, Knowledge base and Real-time database. As a user submits a query it activates inference rules and output are generated. Further (Tom, Mary, 2012) Mary has worked on inference engine using Fuzzy logic to enable it multi criteria Decision Making.

myPace (Julie Barnett, 2014) is an integrative Health Platform for supporting Weight Loss and Maintenance Behaviors. It is used to monitor health using smart phone. In this a face to face consultations between patients and dietitians is possible to record patients regular progress updates. The goal is to implement practical dietetic practice. User can use this for self – reflection goal setting, dietitian can give motivation on achieving small steps or goals.

iHANDs is (Brett Hannan, 2014) developed to receive the user's symptom description, it will search on web and its own knowledge base considering Users health record. They have used information fusion algorithm based on Dempster – Shafer theory to merge the information from various sources. It is bidirectional it can search symptom to cause and vice a versa. Bayesian inference mechanism is used to find confidence level of each cause of system.

A Decision Support System for Employee Healthcare (Chinmoy Mukherjee, 2012) called iHealth, includes support for health checkup facility. In company premises small health care centers are available to cure common problems but adverse effect of this is that employee avoids going for full treatment due to many reasons. This DSS can reduce the cost of employee healthcare and increase health awareness of employees. The main feature is it can schedule appointment with the in house doctor. It provides basic assessment of

employee's health based on symptom. It can follow up health record if referred for outside treatment. It works using questionnaires filled by patients.

Statistical Analysis Service of e-Healthcare Record on iPad System (Chan Yong Park, 2014) proposed for analysis of e-healthcare record. It works upon Apple iPad smart device. Statistical service offered is ANOVA, t-test, chi-square test, correlation analysis and regression analysis. This is generally for doctor and researcher. Generally used for chronic diseases management, ageing independently and statistical analysis.

A counseling system FOODS (Chakkrit Snae, 2008) A Food Oriented Ontology – Driven System developed for menu planning in a restaurant, clinic / hospital or at home. It contains ontology which contains specifications of ingredients, substances, nutrition facts with recommended daily intakes for different regions, dishes and menus. In this users can provide their gender, age, height and weight which will be used to calculate body mass index. It has good interface to choose ingredients, discard specific ingredients, flavor, preparation time etc. It works as an expert system which automatically checks diet plan and logs.

A Pervasive Dietary Data Recording System (Junqing Shang, 2011) advances in dietary assessment using real time recording of food intake. Using video camera and a laser – generated grid of distanced to food surfaces food volumes are calculated. It is implemented on Android OS on a smart phone. It is using web services and MVC framework.

A Security Model and its Application to a Distributed Decision support System for Healthcare (Liang Xiao, 2008) works on a security model that enforce privacy of data security and secure resource access for distributed clinical centers. The data access of this system allows different levels of access rights of users. Patients detail kept secure by generating patient identified (link-anonymised). Each data collecting center could have an associated link-anonymised database as approved by their appropriate ethics committee. Hospital has total rights for own patient, closed clinic centers which are connected to this can have linked anonymised data and other authorized clinics which are connected to this system has totally anonymised data of patient record. The classifier can be generated to for differentiating type, grade, and character and by using different pattern recognition methods and data trained using available cases. Experts can give their opinion on each case record of patients from long distances and treat them well.

Intelligent Ontological Agent for Diabetic Food Recommendation (Chang-Shing Lee, 2008) is based on ontology model. It includes personal ontology filter with its creation, the food fuzzy number creating mechanism, the fuzzy inference mechanism and real time recommendation mechanism. The ontology provides an abstract view of application domain. User can enter data using internet, Personal Healthcare Assistant Management platform handles it. Domain Experts can update this platform using six food groups. Personal Food ontology also includes favorite food, diet goals and profile. Diabetic patient can get dinner as per the Taiwanese ontology considering their personal ontology.

Recipe Recommendation for Diet Considering a User's Schedule and Balance of Nourishment (Yoko MINO, 2009) is not only recommend the recipes that simply reduces the amount of calorie intake but recommends appropriate recipes that flexibly controls that of calorie intake depending on user's schedule. System works by considering schedule, average calorie intake and objectives of evaluation values. It has recipe database and by linear programming recipe can be recommended as an output with constrains of salt, protein, lipid, carbohydrate and vegetable intake. System has used web resources of "Ajinomoto Recipe encyclopedia".

Decision support system to determine carbohydrate intake of diabetic patients (Patricia Pinter, 2012) treats diabetes by determining diet plans and monitoring food consumption (focusing on carbohydrate intake). It monitors patients well being, gives choice on right therapy. It identifies deterioration of health and alert before the patient's situation gets worse. System gathers fact into database from daily activity, blood pressure, Sugar, ECG, data on meals and gathering questionnaires.

CDSS (Ziming Yin, 2014) (Clinical Decision Support System for Primary Headache Disorder based on Hybrid Intelligent Reasoning) uses clinical guidelines. System works on two databases basically to treat any case, first Rule Base Reasoning and second Case based Reasoning. New case is evaluated by rule-based reasoning; the rules come from clinical guideline. If rule-based reasoning was unable to get accurate answer, case –based reasoning will find the most similar case in case library based on similarity matching. Clinical case treated by symptoms, medical history and diagnosis.

INSPIRED - Intelligent System for a Personalized Diet of Obese Patients with Cancer (Oana Geman, 2014) deals with monitoring, alerting, reminding and evaluation of patients as well

as storage, access and retrieval of medical and personal data. Users may be patient and Physician. System analyze patient's data like weight, height, body mass index, blood pressure, physical activity, type of cancer, treatment, side effect. Overeating is the root cause that is the point of focus and can lead cancer of colon, pancreatic cancer etc. It combines information about the patient's medical history, examination: clinic, anthropometrical measurements, biochemical data or other medical tests. The patient may access INSPIRED using Personalized diet Interface.

Application of Data Mining Techniques in a Personalized diet Recommendation system for Cancer Patients (Wahidah Husain, 2011) integrates the data mining techniques of case based Reasoning to suggest a set of diet plans, Rule – based reasoning to filter out irrelevant cases from the system and Genetic Algorithm to ensure that the diet menus suggested are customized according to each patients personal health conditions. They have focused on the fact that excessive intake of saturated fat may heighten the risk of breast, uterus, ovary and colon cancer, while a serious lack of fiber intake can raise the risk of colon cancer. The system will provide advice to the patient in the form of total nutrition components to be taken daily, as well as suggested dishes for the type of diet menu corresponding to the total nutrition advised. They are using User database, food database and Knowledge Database to store respected data of user, food and feasible data for each case.

KPKMS (Singh, Knowledge - Base Medical Decision Support System for Knee Pain Management, 2013) deals with health care professional in making medical decisions using Inference engine. She gathered user data to store in database and knowledge base, performing analysis on them relevant data and knowledge are extracted. Knowledge & Data Flow directed for Model Selection and implementation. A user utilized and maintains data in the database through the Dialog subsystem and analyzes the performance by using KBMS. It has decision making interface and knowledge update interface. Upon receiving the known facts from the database, the program infers and explains the situation and triggers actions or gives the suggestions for decision making. It uses multi-criteria futuristic decision making methodology. Diagnosis module based on some query to user and using rule structured like if – else type. Exact solution can be derived. Same way this has treatment and Prevention module.

In this Review author (Mukesh Kumar, 2011) authors proposed a DSS for Water Resource Development and Management which works to optimize the water resource which is highly non linear in nature. This system requires huge diversified data consider several scenario. In this DBMS stores, retrieves and modifies the required data. Model analyzes the behavior of the system giving basic support to the decisions on the preferable options.

A Decision Support System for the Management of Greenhouse Tomato Production (Pitam chandra, 2005) is used to function in temperature control for high production of Tomato; this can be helpful to determine production schedule designed to maximize the plant growth, quality and quality of tomato. They have implemented Decision process for the choice of daily set temperatures and same they have implemented for pesticide and an application technique.

DSS for Municipal Solid Waste Management in India: Review (Ohri. A, 2010) Proposed a system which is integrated with geographical information system to optimize collection, transportation, processing and disposal processes. They have used Database Management and Model base management concepts interacting with User interface system which can be used by Planner or Decision Maker.

DSS for Skim Milk Powder Unit of Dairy Plant (Sanjay Kajal, 2011) developed with the help of mathematical modeling using probabilistic approach. Decision matrix facilitates maintenance decision to be made at critical points where repair priority should be given to some particular subsystem of skim milk powder unit.

CONCLUSION:

The available literature indicates that various decision support systems developed in many areas like agriculture, healthcare etc. Particularly in health care some system focusing support to particular deceases like cancer, knee pain, diabetes and according to that they are planning for patient's diet. Some has addressed on obesity which tries to provide healthy diet plan considering their energy consumption and nutrients values. Except all these Right Understanding of eating habits, Right knowledge of certain food products and self control (by natural acceptance) is also necessary than just following a diet plan willingly or unwillingly with assistance. Development of proposed system is essential which can be implemented Android OS based on focusing only certain food products which are not necessary for their health and who are expending money unnecessarily.

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