IMPLEMENTATION OF DECISION SUPPORT SYSTEM IN A WAREHOUSE

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Abstract- Decision making in some point in several situations is a difficult one in many organizations. A Decision Support System (DSS) is a computer-based information system that supports business or organizational decision-making activities. In this paper, the appropriate technique was implemented to quickly make decisions in the organization. By this technique it is easier to categorize the parts of a container a based on customer demand. In the present scenario inventories are normally presented in the production plant. Nowadays every organization is in need of a new technique to categorize the parts based on the demand, from which it we can easily categorize the parts according to its demand period. High demand, medium demand and low demand are the categories the parts has necessitated in each and every organization to tackle the competitive environments across the world. The main objective of this paper is to implement a decision support system in order to categorize the parts and to reduce the inventory in the organization and to increase the profitability of the organization.

Keywords- Decision Support System, HML Analysis, Inventory Management

I. INTRODUCTION

A Decision Support System (DSS) is a computer-based information system that supports business or organizational decision-making activities. DSSs serve the management, operations, and planning levels of an organization (usually mid and higher management) and help to make decisions, which may be rapidly changing and not easily specified in advance (Unstructured and Semi-Structured decision problems). Decision support systems can be either fully computerized, human or a combination of both.
While academics have perceived DSS as a tool to support decision making process, DSS users see DSS as a tool to facilitate organizational processes. Some have extended the definition of DSS to include any system that might support decision making. The main characteristics of DSS are:

1. DSS tends to be aimed at the unstructured, underspecified problem that upper level managers typically face;
2. DSS attempts to combine the use of models or analytic techniques with traditional data access and retrieval functions;
3. DSS specifically focuses on features which make them easy to use by non-computer people in an interactive mode; and
4. DSS emphasizes flexibility and adaptability to accommodate changes in the environment and the decision making approach of the user.

DSSs include knowledge-based systems. A properly designed DSS is an interactive software-based system intended to help decision makers compile useful information from a combination of raw data, documents, and personal knowledge, or business models to identify and solve problems and make decisions.
Typical information that a decision support application might gather and present includes:

- inventories of information assets (including legacy and relational data sources, cubes, data warehouses, and data marts),
- comparative sales figures between one period and the next,
- Projected revenue figures based on product sales assumptions.

II. LITERATURE REVIEW

Transportation optimization usually aims at minimizing the empty load ratios (ELRs) of vehicles. The ELR is the primary reason for high transport costs, considerable pollution, and high energy consumption. In this paper the effectiveness of the DSS and decision-making models is demonstrated by a case of finished vehicle logistic (FVL).

To achieve sustainability in the area of transport we need to view the decision-making process as a whole and consider all the most important socio-economic and environmental aspects involved. Improvements in transport infrastructures have a positive impact on regional development and significant repercussions on the economy, as well as affecting a large number of ecological processes. This paper explained about a DSS to assess the territorial effects of new linear transport infrastructures based on the use of GIS. The TITIM – Transport Infrastructure Territorial Impact Measurement – GIS tool allows these effects to be calculated by evaluating the improvement in accessibility, loss of landscape connectivity, and the impact on other local territorial variables such as

landscape quality, bio-diversity and land-use quality. Due to the growing concern about climate change and environmental sustainability, hybrid renewable energy system (HRES), which refers to a system that combines several renewable power sources and a conventional power generator to cover the power shortage when the renewable power is insufficient, has gained more and more popularity over the decades. A decision support system (DSS) integrating the proposed model and the heuristic is developed as an efficient decision tool to enable effective and efficient energy management of HRES.

In public transportation, the occurrence of unpredictable disturbances (e.g. accidents, delays, traffic congestion, etc.) may affect the expected execution of preset organization and pre-established time tables of transportation resources (buses, trains, metros, trams, etc.). Affected timetables may become useless, or at least deviate from expected behavior and/or performance. To show their feasibility, [4] they have developed a prototype artificial immune system which is able to assist decision makers in performing several disturbance management functions, such as detection of disturbances, construction of reaction strategies, supervised learning and memory of previous experiences with disturbances.

In the dynamic operational environment of courier service, new customer orders and order cancellations continually arrive over time and thus disrupt the optimal routing schedule that was originally designed. This calls for the real-time re-optimization of routes. In this paper [5], they have proposed a prototype of a decision support system (DSS) that integrates a hybrid neighborhood search algorithm to solve the offline and online routing problems arising in courier service.

Decision making in engineering represents a highly complex and therefore challenging process for the involved stakeholders. The high complexity emerges from the combination of a multitude of factors that have to be considered simultaneously within a decision situation. To help decision-makers in dealing with highly complex decisions several decision support tools, methods and systems (DSS) have been developed. One main disadvantage of DSS is the little adaptation to and integration of user needs and attributes. This paper had aimed in providing a multilevel stepwise approach for the management of human and decision situation attribute complexity in order to enable a more effective decision support.

One of the most important issues in Decision Support Systems (DSS) technology is in ensuring their effectiveness and efficiency for future implementations and use. DSS is prominent tool in disaster information system, which allows the authority to provide life safety information directly to the mobile devices of anyone physically located in the evacuation area. After that a personal DSS guides users to a safe point. Due to the large uncertainty in initial conditions and assumptions on underlying process the implementation and evaluation of such DSS are extremely hard, particularly in real environment. In this paper [7] they have proposed a simulation methodology for the evaluation of in-vehicle DSS for emergency evacuation based on transport system and human decision-making modeling.

III. METHODOLOGY

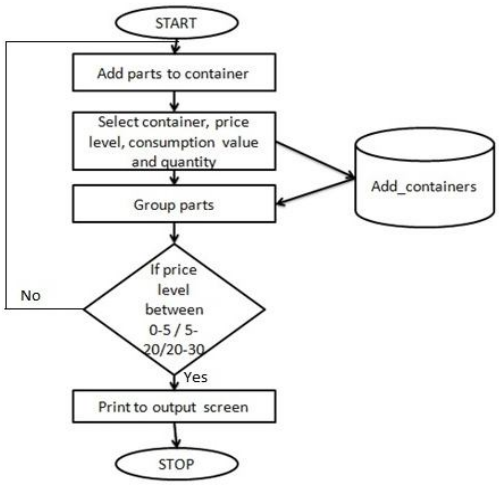

Fig.1 Flow Chart of the Decision Support System

As the programme starts running, it first adds the parts which are present in the various containers to the data base to store it. After adding the parts to the container it selects the container, price level, consumption value and the total quantity required. Then the container is added and the grouping of parts takes place where the parts are grouped according to the price level with the HML analysis. After grouping it goes to the decision support system where it is decided whether the value is within the limit and grouping is done accordingly. When the value is greater than 30, the parts are rejected as 30 is set as the maximum limit. Now the rejected parts are again moved to the first step whereas the accepted parts are grouped and printed as the output file. Thus the grouping of parts is worked with the help of the Decision Support System.

IV. DECISION SUPPORT SYSTEM

The DSS aims to provide a flexible and interactive tool to simultaneously solve offline and online problems. Employing the information technology, the DSS has been designed as a distributed intelligent system that is comprised of an Intranet Server End and a Mobile Client End. The Intranet Server End is responsible for assisting the fleet manager to schedule and re-schedule the courier routing plan, while the Mobile Client End is deployed on the courier's

mobile devices to receive the routing information from the Intranet Server End.

The Intranet Server End consists of three main modules, Data Warehouse, Computational Engine, and User Interface. The offline and online customer requests are collected via the call center and stored in the database in the Data Warehouse. The Computational Engine takes the core responsibility for solving the offline and online courier routing problems.

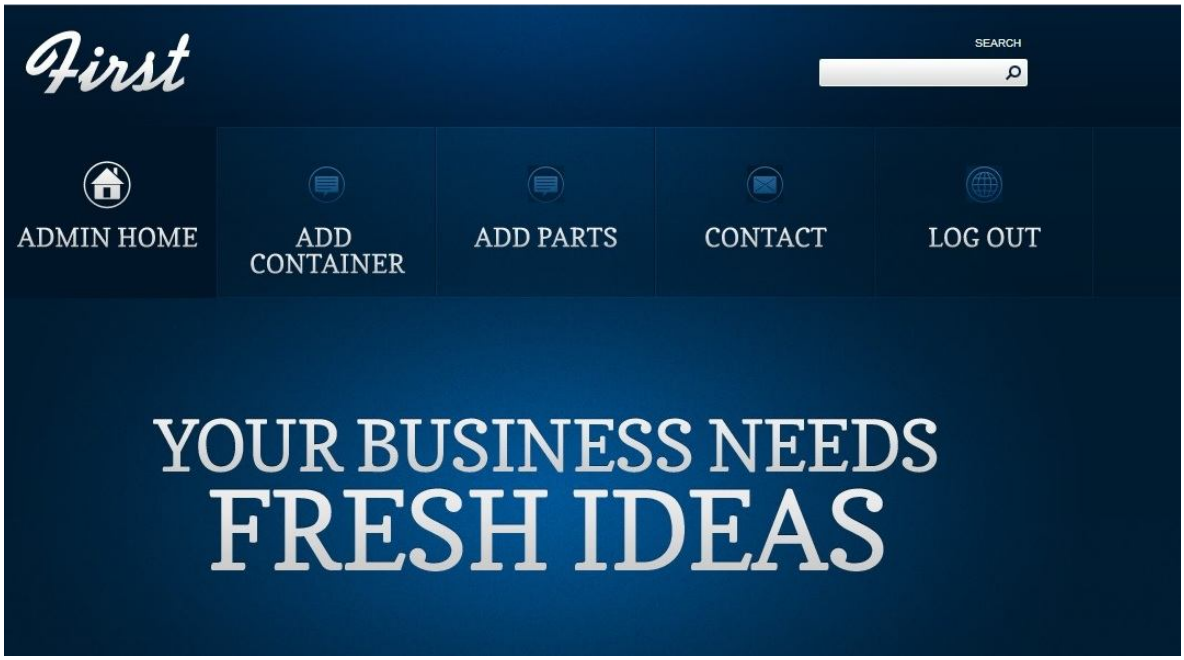

Fig.2 The Admin Panel – INPUT

This is the admin panel where the various decision making tabs are located and we can choose the required tab according to our usage and dependence.

This is adding a container tab where the container is first added for the data base. Here the container name, the price level and the class is given.

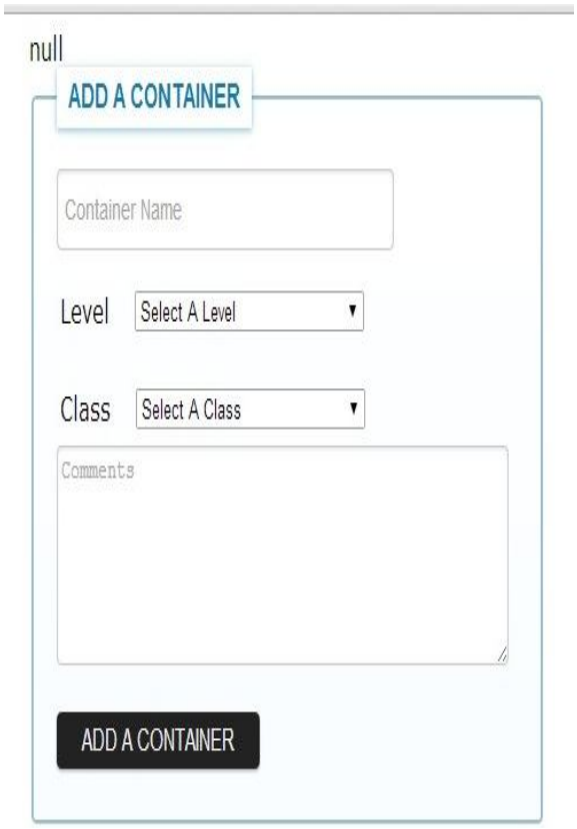

Fig.3 Add the Container

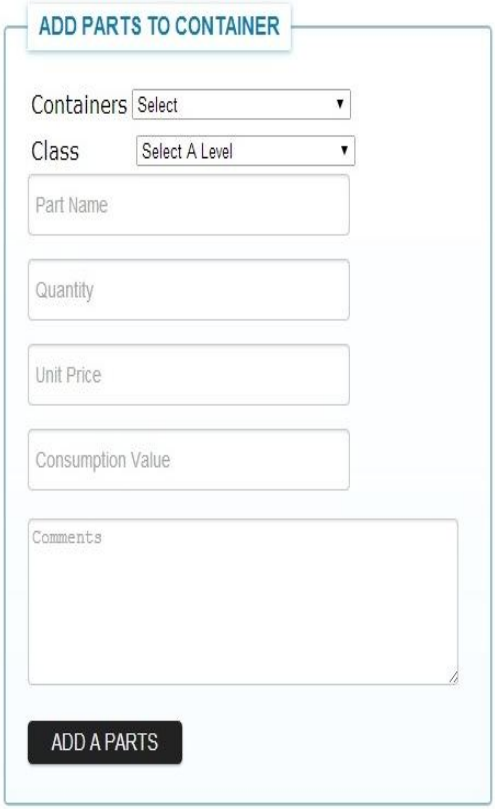

Fig.4 Add Parts to the Container

This is adding the parts to the container tab where the container is selected and the level is being fixed and the part name is also selected. Likewise all the parts are added to the database.

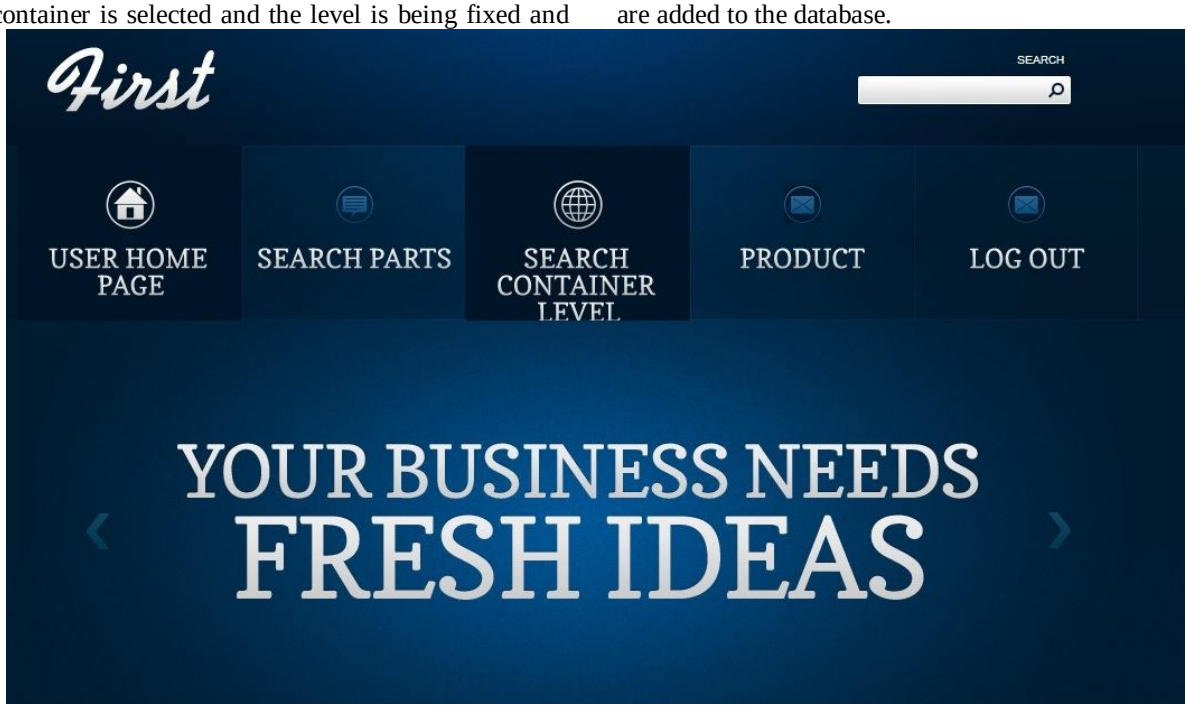

Fig.5 The Admin Panel – OUTPUT

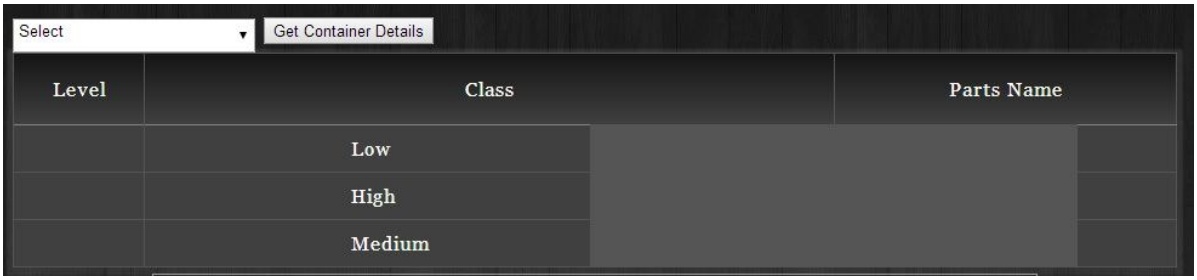

Fig.6 Output Before Selecting the Container

This is the output screen before selecting the respective containers.

Fig.7 Output After Selecting the Container

This is the output screen after the parts are grouped. Here the parts are grouped according to the HML analysis and the parts which are present in the container are shown.

CONCLUSION

Thus the parts which are present inside the container are grouped by the HML classification technique. The Decision Support System is implemented here to categorize parts under HML analysis. For example during the classification in the each container it is noticed that under the container number WCIU9930833, the parts such as the Hose assembly, striker assy-slide, Rail assy are classified under HIGH class of container. This needs more concentration and inventory control has to be done so as to reduce the consumption value. Under the same container, parts

are classified into MEDIUM and LOW CLASS, which need lesser control compared to the HIGH CLASS. Similar classifications are done for other containers, which are by the organization. This gives a clear image about the parts inventory that needs control, so as to realize profits to the industry which is in financial crunch. Thus this system can be implemented anywhere for the similar purposes.

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