ABSTRACT

The Apparel manufacturing industry is an important sector in India and is responsible for providing job opportunities and business facilities to both the industrialist and public. In such a scenario, the type of manufacturing must match with the customer requirements. This can be achieved by providing continuous interaction between the management in the manufacturing side and the customers. For this purpose, a new automated apparel recommendation system is necessary to assist in e-shopping. Such a system should provide suitable feedback from the customers to the manufacturer for manufacturing suitable garments. It is useful if there is a system which provides an intelligent recommendation system which performs optimal classification and efficient decision making to support the customers effectively.

In this present research, a study on the correlation between manufacturer, seller and buyer is made. This study identified the Key Success Parameters for a successful apparel manufacturing operation and to stay afloat and grow during such difficult times. This research work tries to list down and analyze the various factors contributing to the success or failure of the apparel manufacturing operations in the current socio economic environment. The main contribution of this work is the provision of manufacturing side analysis and corresponding sales analysis so that the qualities of manufactured apparels are taken care of by the proposed system.
In this present research, a new intelligent apparel recommendation system is proposed for online shopping which can provide suitable feedback to the manufacturer also for manufacturing suitable garments using style classification. The proposed intelligent recommendation system uses an Intelligent Agent based Attribute Selection Algorithm (IAASA) for selecting important features and an effective classification algorithm called Intelligent Agent based Enhanced Multiclass Support Vector Machine (IAEMSV) for effective classification. This proposed system will be helpful to customers, who do not have detailed knowledge about the fashions in the real shop. However, when they want to perform online purchase, they can use this software to select the items. The experimental results obtained from this present research work show that the proposed system helps to choose suitable apparels based on the taste of an individual customer. It makes recommendations of apparels based on past and present sales data on different styles. The system has also been validated using opinion from questionnaires and experts.

The intelligent business expert system proposed and implemented in this work is useful for helping the seller by providing feedback on sales with respect to time for new products or items. For this purpose, this system uses a Time Dependent Association Rule Mining Technique and business rules with time constraints to predict the sales patterns. This helps to provide feedback to the manufacturer and the sales persons on the quantity of items to be produced at each season of a year. In addition, this work uses a market transaction dataset having a large number of features for effective analysis. In order to make the inference faster, a feature selection algorithm called Intelligent Conditional Random Field based Feature Selection Algorithm (ICRFFSA) is used for selecting the optimal number of features. The experimental results obtained from this work show that the performance of the proposed expert system is more accurate and correlates with the survey
obtained using a questionnaire from a large sample of customers who performed online shopping for ordering the products.

The major contribution of this present research work is that an intelligent business decision support system has been proposed for effective apparel selection. For this purpose, a hybrid approach between manufacturer and the customer is proposed by using a combination of an Agent based Attribute Selection Algorithm and an Intelligent Agent based Enhanced Multiclass Support Vector Machine which helps to perform apparel selection more accurately. This system is also supported by a subsystem that consists of an Intelligent Conditional Random Field based Feature Selection algorithm and a Temporal Apriori Algorithm to perform effective inference on the type of garments to be made available to the customer. In addition, a correlation analysis to find the degree of relationship necessary for co-ordination between manufacturer, seller and buyer is performed. Finally, this research work has identified a set of Key Success Parameters for the success of an apparel manufacturing industry so that it can compete with other related industries. Suitable statistical analysis, data analysis using data mining techniques and validation using experts are the key components of the research work carried out for enhancing the performance of apparel sales using recommendations to the manufacturer.