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An Investigation of Quality Enhancement in Online Shopping and Inventory Maintenance

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Abstract: ***Online shopping is the culture of current e-commerce scenario. It provides lot of choices and opportunities. Every day million of transactions are performed and billion dollars are traded. But the major drawback of online shopping system is latency in order fulfillment and inventory management. There is a imperative for a system to address the time efficiency of the above process. To improve the performance of online commerce here with we propose a model called "ShoppyDo". The Bee colony optimization modes performs stock clustering. The Pathrouter, a greedy algorithm is used to optimize the short path to improves the efficiency. The proposed model address the latency issues in order fulfillment***

Keywords: E-Commerce, Efficiency, ACO algorithm, Resource allocation

I. INTRODUCTION

Both the industrial and general public have benefit from the e-commerce. The e-commerce research address various area like reduce the time to marker, reduce the operational cost, and improve the supply chain and etc., But various literature points out the huge gap between the actual and expected model of e-commerce. This point motives various e-commerce researchers to work towards these problem to make the e-commerce as a successful system. In the year 2004 Gaffar Khan[1] conducted a survey about the usage of e-commerce in insurance companies of Newzeland. The websites of the companies intended to serve the foreign customer but they provide less optimum service for Newzeland customers. The e-commerce industry facing various problems. The existing model having lots of weakness. The clustering of items and allocating them to appropriate location facing lots of problem. Another issues is finding shortest path between various location. In this paper we are proposing a model for clustering and optimize the distance between source and destination. This research propose a Bee Colony Optimization (BCO) model "ShoppyDo" to efficiently completing the orderfull fillment process. It create the items clusters efficiently to place them in shipment. The item with the same territory and nearest territory are grouped into same location. Items with different territory are placed in different clusters.

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The rest of the chapter organizes as follows chapter 2 provide literature survey, chapter 3 represent the algorithms and analysis of the result is given in the chapter 4. Chapter 5 conclude the research work.

II. LITERATURE SURVEY

Abdul Gaffar Khan[1] analyzes benefits and challenges in E-commerce economy. It analyzes various parameters of customer satisfaction. The advancement of information and communication technologies brings lot of challenges. The study analyzes lot of challenges in emerging economy.

Badar Alam Iqbal [2] performs an analysis between E-commerce and mobile commerce In this comparison the mobile commerce is having slight advantage. Quality, cost, Communication and time are the deciding factors in the efficiency of e-commerce. Now mobile commerce is an emerging trend in commerce application.

Cecil Eng Huang Chua[3] surveyed various e-commerce research work. He analyzes various issues of stake holders. The timeliness of the delivery.

Rajneesh Shahjee[4] analyzes the various issues faced by the Indian customer in the electronic market place. This paper also address various business techniques to improve the websites to perform successful e-commerce.

Irene Bertschek[5] discuss the various obstacles in e-business and efforts of people towards the adaption of new e-business era. This paper narrates how a new e-commerce industry adopt the new e-business.

Diyan Ivanov[6] analyze the various limitation in e-commerce implementation in current scenario. He address various drawbacks like security , lack of qualified people and interoperble systems in e-commerce. Shaji Thomas[7] discuss the recent trends in E-commerce like 3G & 4G Technology. This paper describe how technology plays a significant role in e-commerce industry.

III. METHODOLOGY

To enhance the efficiency of the e-commerce the grouping of the selling item is essential. In this paper an efficient model proposed a tool called "ShoppyDo" is proposed. It groups the various item getting the geographical area and items as a input. After the clustering task has been completed it calculates the shortest path by shortest path algorithms in Stage-I. It computes the clustering and short distance.

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In the stage - II the Bee Colony Optimization(BCO) algorithm analyze the parameters such as geographical location and selling items. This algorithm is based on the behaviour of the real bees while searching for the food source. The real bees establishing food sources, rember the source and abdaon the food source once it is done. This algorithm is having many iterations of solution construction. The bee picks up the item based on the distance in repeated cycles. In each iteration a number of bees construct a complete solution by using food source information and forms the group.

In the first step the randomly generated initial food sources position are generated. After initialization the population is used to repeat the cycles onlooker and search bees. The worker bees produces the modification on new sources position and modifies the old one. The nectar amount of new one is greater than new one the it remembers the new one. The nector information is taken from the search bees and chooses the food sources depending on the nectar amount of sources. The nector amount is greater than the previous sources, these bees memorize the new position and abdon the old one. The greedy method based Optimum Path Selector Algorithm is given below.

Stage-I Optimum Path Selector Algorithm

Algorithm Distance Path Finder
Input : S(A,W) Each Vertex with nearest Vertex and its weight
Output : The short distance path.
1. Select a node randomly as first node.
2. Attach it in the binary tree (TR)
3. Compute the outstanding distance of the each vertex in the
queue (T_TV) which are nearest to the tree vertex.
4. Arrange the Vertexes based on the weight value
5. Select the shortest Vertex in the queue and attach it in the tree.
6. Repeat the procedure until the graph is empty.

This algorithm solves the variation in pheromone and steady the path between the various clusters. The Bee colony optimization techniques are used for clustering.

The optimum path selector decreases the variations in pheromone path. The ultimate graph o creates the clusters based on city and between city . The optimimun short path is generated by the path standardiser algorithm which advances the clustering of the BCO. The enhanced BCO algorithm is given below.

Jayakanthan at al [8] proposed a Ant Colony Optimization ACO based clustering algorithm to improve drawbacks of the e-commerce application. This paper highlights and various drawbacks and methods to address the drawback.

Jayakanthan et al [9] analyze various issues create by the cyber criminals in ecommerce. The paper proposes an effective solution also. In stage the Bee Colony Optimization(BCO) algorithm is used for clustering.

Stage - II Enhanced BCO Clustering Algorithm

Enhanced BCO Clustering Algorithm for Stock Clustering
Initialization the parameters s[j] Max, Min[Sw, Sp, X]
Set the number of bees(ie # of parameters)matrixbee[Workers, Servent, Search]

While(Incrementor Max_j) do

for each j from 1 to NumberofBees do

if matrixbee(1,i)==1) the send search bees to a haphazard food source and FoMs using metamodels

if(good present FoM) then update result (ie FoM) and location (ie parameters Sw, Sp, X)

Else of(beematrix(i,1)==1) then send search bee.

Compute the probability that the food source is good
If probabale value is high then send search to random location for each parameter P and calculate the FOM
If better current FOM then Update the result and location then send the servant bee and pick the best result.
Send the servant to haphazard location and pick the result.
If (the present FoM is better than previous FOM) the update the FoM and Convert Servant bee to Search bee.
If(better current FoM) then update the result and location

IV. IMPLEMENTATION AND EVALUATION

The proposed technique is implemented as a Java Project. In the phase-I the optimim path selector algorithm examine the cities and path lenght and forms the graph of optimum short distance. The proposed method is used by the Enhanced BCO algorithm for clustering. The 'ShoppyDo' tools are implemented as a complete Java project each algorithm is a split class. Various real time sources are used for data collection. Few of them are synthesized data. Separate data set is used for to train and test the system to improve the efficiency.

The following clusters are generated by the algorithm. The different Provinces in United States are examined and groups are generated as given below in the following diagram. The Chicago province countenance the major transactions it contains 43 % in total cluters in USA. Los Angeles and Dallas reports 17% of clusters and Boston have 13% of the transaction. Dallas reports lower transaction the cluster size is 17%.

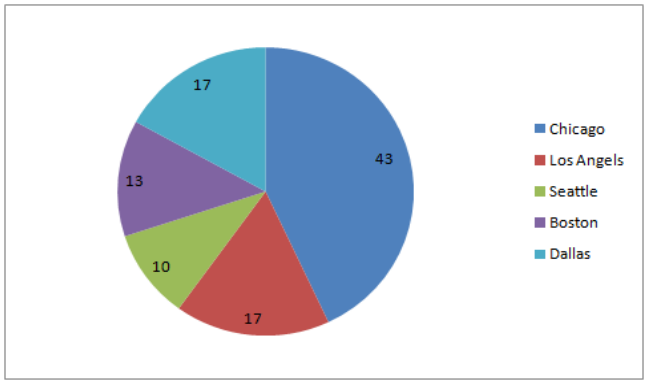

Figure 1 Provinces and Clusters in USA

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The effectives of BCO algorithm is compared with SVM and K-Mean clustering algorithms. A size of 600 transactions are analyzed. The experimental results shows the proposed algorithm forms the clusters efficiently and find the shortest path to shipment. The comparison result shown in the figure 2 justifies the efficiency of the proposed approach than SVM and K-Mean clustering algorithm

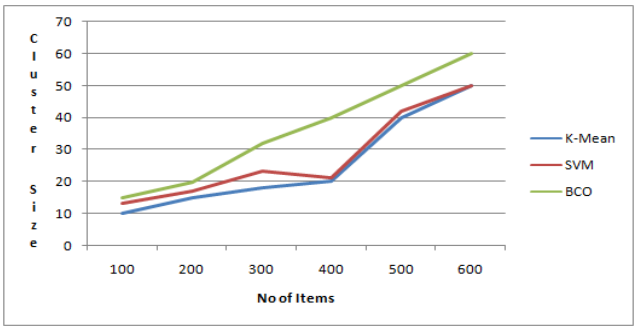

Figure 2 Efficiency of the proposed method.

V. CONCLUSION

Online commerce is a emerging trend in the current scenario. The e-commerce transactions are increased. The group of item and shipment is a major problem. The erroneous transaction and time efficiency are the road block. In this work a methodology. In this research work propose a methodology called “ShoppyDo”. It is the two stage algorithm. In stage one the Optimum Path Selector algorithm the reduce the variation in finding the shortest path. In the Stage - II Enhanced BCO Clustering Algorithm. It form the cluster based on the input variables city and the distance. The proposed algorithm is compared with K-Mean clustering and SVM. The experimental results show the efficiency of the proposed system.

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