



Computer Society of India

Institute Membership No:100859

Dr. SIVANTHI ADITANAR COLLEGE OF ENGINEERING

TIRUCHENDUR

DEPARTMENT OF COMPUTER SCIENCE & *ENGINEERING*

UG & PG

DEAR READER,

IT'S A GREAT PLEASURE TO PRESENT BEFORE YOU THE NEWSLETTER OF COMPUTER SOCIETY OF INDIA STUDENTS' CHAPTER WHICH HELPS THE ENTIRE CSI FRATERNITY TO KNOW THE CSETIVITIES OF THE STUDENTS' CHAPTER FROM TIME TO TIME.

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Computer Society of India Students' Chapter

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S.NO	DATE	EVENT	CHIEF GUEST
1.	4.7.2020	Writing Blogspot Contest	Mrs.P.Chanthiya ,AP/CSE
2.	4.7.2020	Tamil Essay Writing Contest	Mr.R.R.Bhavani, ASP/CSE
3.	17.10.2020	Pencil Art	Dr.G.R.Jainish,ASP/CSE

Events

- 1. Writing Blogspot Contest** was conducted for UG Students of CSE on 4.7.2020.
Mrs.P.Chanthiya ,AP/CSE judged the contest.
- 2. Tamil Essay Writing Contest** was organised for UG Students of CSE on 4.7.2020.
Mr.R.R.Bhavani, ASP/CSE judged the contest.
- 3. Pencil Art** was conducted for the Students of CSE on 17.10.2020.
Dr.G.R.Jainish,ASP/CSE judged the contest

Software Optimization in Supply Chain Management and Resource Planning Proposal

Submitted By- Viknesh III CSE

Detailed analysis of the problem

In order to comprehend the essence of the problem, it is necessary to provide a detailed description of supply chain process from the supplier to the customer. While assessing the vehicle routing, it is imperative to define such aspects the time of loading, the loading capacity of the transport, transport fitness for shipment and the number of loads for transmitting the entire product. Therefore, the problem is to work out an optimal route with optimal shipment size and loading capacity.

Ignorance of these variables can lead to the malfunction of the entire chain of operations and wrong calculations of the required capacities including time and information management. Therefore, the optimization of time and routing can considerably simplify the process of delivery and minimize the time necessary for maintenance of products at inventory level. In addition, it is necessary to assess potential of shipment of sequence.

Technical Description: Introduction of the Technologies and Their Contribution to the Problem Solution

Jotpt.ASP is technological advancement designed for the vehicle routing optimization through standard SOAP interfaces. It has been designed for industrial purposes that are based on ASP.NET (JOpt Advanced Vehicle Routing Component n. p.). The software allows to construct a population of solutions and scenarios and to bring optimization opportunities for various applications.

More importantly, JOpt offers a simple approach to linear distances between the junctions, or nodes. This distance model can automatically be utilized in case a distance matrix is not included. However, it is also possible to insert and exchange real values within the matrix that can enumerate all distances a truck or a car ought to go when passing from point to another (see Appendix 1).

For example if the variables are given in kilometers, it is necessary to distribute the matrix indices as the nodes ID applied to the function setDistMatrixId. Then, this matrix will be provided with the help of addDistaceMatrix. Time matrices are necessary to assess real travel time with respect with various road types. With the help of this matrix, it is also possible to identify the speed of individual vehicle.

Statement of Need

It should be stressed that the proposed software is based on the principle of genetic algorithm that is considered to be one of the most powerful tools of delivery optimization. Therefore, with the utilization of Jopt.ASP it is possible to develop one central optimization center and provide one wide solution to the problem. In addition, this optimization software can allow to integrate into any SOA enterprise by means of supporting multiple optimization task in parallel.

With regard to the above, the goal of the software introduction is improve the quality of deliveries and enhance the calculation of such variable as time distance, load capacity, and fuel energy with regard to road types. In addition, the component can also improve the basic operations between the supply and the customer and minimize the costs for additional equipment.

Proposed Solution

Methods Used for Solving the Problem

The proposed software for route optimization is based on genetic and metric algorithms. Therefore, genetic algorithm is the best method for solving the problem because it is based on stochastic representation of a population of various solutions. In the project under consider, the presented optimization software is based on a real-code genetic algorithm, which implies that the information is presented as vector of real values, traditionally presented by binary system of variables.

Genetic algorithm is based on evolution simulation where a population of abstract solutions for optimization problem develops towards more effective solutions with each iteration. Hence, each iteration is followed by a new solution proposed by JOpt through recombination and mutation. During this process, the program also deprecates the

solutions that have a worse fitness and the ones that perfectly suits the optimization process.

Solution fitness is closely associated with a cost function where all optimization objectives are taken into consideration. In order to direct the solution to desired objective, JOpt.ASP established the priority of different objectives by means of weighting factor identification. Each objective is objective is processed to fit the distance unit. For instance, if the value 1 to each hour exceeding the maximum time allowed will be cost as much as 100 extra km distance within the overall solution.

By calculating the routes carried out by a truck with different shipment weight, JOpt can also calculate fuel energy spent on the entire rout. What is more important is that the program can define optimal schedule for optimal energy efficiency with regard to truck payload and road mileage.

Porter's Generic Strategy

According to Porter (1974), successful business organizations incorporate one or more of the generic strategy options to propel it to success. Among these strategies are cost leadership, focus, and group differentiation.

A critical analysis and evaluation of the cases study reveals that Netflix had to various extents incorporated these strategies in its business pursuits with each generic strategy contributing to the success or failure of the company in its pursuits. Netflix emphasized on the focus strategy with the other strategies playing a minor role in the firms' pursuits.

The differentiation strategy is where a company concentrates its efforts in developing a single product then invests in identifying and incorporating unique attributes that meet customer needs (Porter, 1974). Porter (1975) asserts that by adding value to a product and creating uniqueness in product to attract customers, customers are likely to purchase the product at a higher price.

That was the case with Netflix. Netflix original move into the market targeted the renting of videos in the movie industry. That strategy could be achieved by the use of recently developed and upcoming internet marketing technology which other companies had not incorporated in their business pursuits.

The case study reveals that Netflix's newly launched website integrated a search engine that enabled each customer to search and access products of one's choice. Netflix's management showed such talent and ingenuity in marketing their products by employing already available and established supply chain infrastructure and technology. One of the infrastructure tools included the US's postal services. The firm incurred slight expenses in delivering the DVD's to the customers as they were light in weight.

In creating value and uniqueness to its products using the group differentiation strategy, Netflix endeavored to characterize its products with value, user friendliness and

convenience, and unique selections. That was evident when Hastings coined a term for their customers that Amazon used to refer to its customers, eBay.

According to Porter (1975), a company that invests in this approach should be led by a well skilled and dedicated team. That was the case with Netflix. Netflix's management was led by Hastings, an entrepreneur at heart.

In addition to that, Porter affirms that a company organized around pursuing excellence and aiming at gaining a greater advantage in the market should have a good reputation should revolve around high product quality and innovation. The case with Netflix is outstanding here. Netflix did not only focus on DVD sales, they had other serious considerations in product innovation. Among these were a focus on video-on-demand and alternatives to VOD.

Porter (1974) argues that a company may not necessarily integrate all the generic characteristics depending on the nature of its business. An analysis of the case study indicates that Netflix did not pay much attention to cost leadership. Some of the pricing models did not work for Netflix.

One such model involved a situation where the firm spent several thousands of dollars in adverts only to gain a paltry income from such an endeavor. Netflix at times charged high rental fees for their online videos which at times drove its customers away. However, technology seems to have paced Netflix at an upper hand compared to other companies involved in the same business pursuits.

However to a large extent, Netflix incorporated the generic aspect of focus strategy. The focus strategy is where a firm concentrates on one firm and later on attempts to manipulate product prices to achieve an advantage over competitors (Porter, 1975). Netflix did not succeed with this strategy to a desirable extent but seems to have lost some customers due to that.

Porter's Five Forces

Netflix entered a market that Porter (1974) affirms is driven by five forces. These include the bargaining power of customers, threat of new entrants, bargaining power of buyers,

threat of substitute products, and rivalry among competing firms. At Netflix, the bargaining buyer of customers was realized when despite intensive marketing activities, the firm earned paltry sums far below their target. Instead of earning the company more customers, thus increasing the revenue, the company was facing a loss.

Customers had driven sense into the company's executives that they could determine a company's profitability and the model they use in pricing their products. This pricing element was evident when some customers felt dissatisfied by the pricing system compelling Netflix to rethink and introduce a new pricing mechanism.

Netflix could counter new entrants by its relentless pursuits to adopt new technologies and integrate them to the service it was offering. That was the case when it entered the field of video-on-demand. Despite the huge investments it had made, Netflix did not realize quick returns as there were no technologies in the form of hardware platforms to support such services. Netflix is noted to have lost a chunk of revenue in advertising these service customers were not willing to pay for.

The case study however reveals that later innovations saw Netflix succeed in this field. One other case was the entry of VOD services and the fierce competition Netflix had to fight off before they could get a foothold in this widely dominated market by Netflix. Netflix swung into action by exploiting new technology platforms that were not characterized by her competitors in gaining a firm foothold.

Another force experience in this industry was the bargaining power of buyers. As discussed above, Netflix had to succumb to buyer's buying behavior as in some instances; new innovations could not be priced as per Netflix's dreams. That was the case with investments and intense marketing campaigns conducted by Netflix for the newly launched services, VOD.

Porter (1975) asserts that companies can endeavor to enter a market by offering substitute products that may serve the needs of current products offered in the market. The case with Netflix is a striking one. The case study reveals that substitute products were too below bar in competing with those offered by Netflix and the company was

now enjoying an undisrupted share of the market. Netflix carefully blended these generic forces to its advantage.

Rivalry among competing firms saw Netflix to be a runaway case. Arguments demonstrate how competitors went to the extent of accusing Netflix of infringing upon copy right laws in offering these videos online. This line of attack was shaken off by Netflix's executives who argued that Netflix was offering these services just like any retail outlet could buy and sell a product, except Netflix was using the new internet technology that these other firms had not put to full use.

Value Chain

Netflix's management was keen at exploiting information technology in incorporating value chain activities in its service. A striking example was when the company's turnaround time for product deliveries was drastically enhanced by the use of appropriate technology.

Each customer who opted to stay or leave the company could be requested to leave an answered questionnaire about their decisions. These could be used to identify the weaknesses inherent in the system and determine new methods of fulfilling customer needs and wants. One such revelation was identified with the company's ever changing rental fees.

Other value chain addition activities spanned the infrastructure the company was using and its implementation of new technologies to enhance value for its customers. Netflix's system product acquisition was also automated, with automated searches using an integrated search engine.

THANK YOU