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SELECTION OF COLD CHAIN LOGISTICS SERVICE PROVIDER IN PHARMACEUTICAL INDUSTRY WITH REFERENCE TO TRICHY

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ABSTRACT

The empirical study of the selection of cold chain logistics service provider in pharmaceutical industry. Where in this paper for the selection of cold chain logistics service provider is taken for the diabetics drugs (Insulin). The insulin has to be keep in the -2 to -8 degree that has to be maintained and stored then given to retailers for the customer usage. This proper channels has to be properly done and maintained by the third party logistics provider, where for that the selection and decision making purpose AHP and TOPSIS technique are to be used for best service provider.

KEY WORDS: cold chain, pharmaceutical industry, selection, AHP and TOPSIS technique.

I. INTRODUCTION

The third party logistics provider had widely extended their service for the customer satisfaction in the market. The emerging and fast growing in logistic service provider is cold chain, the cold chain logistics (like DHL, TVS logistic services) refers to the transportation of temperature sensitive material along with the supply chain, relies on the thermal and refrigerated packaging methods and logistics planning to protect the value of a shipment. In India the government recognizes that development of cold chain is an essential to move up to upgrade the India's food processing industry and therefor offers many incentives for promoting the growth.

(HEAP, 2006) The cold chain is generally considered as the transport and storage chain between the initial production and the final consumer of temperature-controlled perishable goods. This is not a complete definition, as there are other items carried under temperature control, for example works of art. For the purposes of this paper, only the transport and storage of perishable foodstuffs and pharmaceuticals will be considered.

Whereas those incentives are 100% FDI is allowed through automatic route, then since from

2011-2012, cold chain has been given the infrastructure status, viability gap funding up to 40% of the cost, the monetary and tax benefits of 5% concession on import duty, service tax exemption, excise duty exemption on several items. The subsidy of over 25% to 33% on the cold storage project cost these are been provided by the government.

The Indian cold chain market is highly fragments with more than 3,500 companies in the whole value system. The organized players contributes only 8%-10% of cold chain industry market. The need for cold chain is 11% of world's total vegetables production is accounted by India alone but India's share in global vegetables is only 1.7%. About 127 lakhs tonnes was produced in 2011-2012, but the cold storage capacity is available for 70,000-80,000 tonnes of milk from this 20%-30% of fish production is annually wasted in India.

II. LITERATURE REVIEW

(Bo Wei, 2011) "The Cold Chain Management in Supermarket-- Case Study on the Fresh Food Logistics in a supermarket" The purpose of the paper is to research the cold chain management in supermarket by illustrating

the case of a supermarket in Sweden. It aims to find out how the supermarket handles the fresh food cold chain by the perspective of cost and effectiveness.

(Ravindra Kumar, 2012) **“The cold chain for vaccines”** this paper is about the temperature maintenance of the vaccines during the cold chain logistics. During the transportation and storage the temperature to be maintained because the efficiency of vaccines will be reduced so that they are be maintained properly.

(Jiuyi An, 2013) **“A Review of Literature for Research on Urban Demand Oriented Agri-Food Cold Chain Logistics Management System”** this paper deals with the Agri-food cold chain in China. The agri-food traceability and making researches from the perspective of supply chain, agri-food chain study from the perspectives of supply chain, quality safety, traceability, standardization, technology and urban management.

(Kausar Shafaat, 2013) **“An overview: storage of pharmaceutical products”** this paper is about the study of storage pharmaceutical in pharmacy premises till it reaches the consumer. The proper control of environment conditions are to be maintained during the drugs are transported.

(Yogini Thakker, 1992) **“Storage of vaccines in the community: weak link in the cold chain”** To assess quality of storage of vaccines in the community, Design-Questionnaire survey of general practices and child health clinics, and monitoring of storage temperatures of selected refrigerators.

(Nikoi, 2014) **“Supply chain management of Pharmaceutical Industry for Quality Health Care Delivery: consumer Perception of Ernest Chemists Limited as Pharmaceutical Service Provider in Ghana”** in this paper author examine the supply chain of Ernest Chemists Limited and assess consumer perception of degree of availability and affordability of pharmaceutical products in promoting quality health care delivery.

(Rattanawiboonsom, 2014, p.) **“Effective Criteria for Selecting Third-Party logistics Providers: The Case of Thai Automotive Industry”** this study deals with the selection of third party logistics providers in automotive industries. The author conclude with suppliers should improve the performance and to reduce the cost, improve the quality.

(Golam Kabir, 2012) the research paper **“third party logistic service provider selection using fuzzy AHP and TOPSIS method”** in this paper the author has proposed fuzzy AHP and TOPSIS method where, author assumed four third

party logistic service provider from them to make proper decision. These two method are the easy way to find solution with multiple source and six variables are consider as common from the third party logistics provider the author had solved in the paper.

Srikrishna, Sreenivasulu Reddy, Vani (2014) paper **“A New Car Selection in the Market using TOPSIS Technique”** author had taken a particular field as a selection of car with the decision making technique were the variable are been taken then by using the normalized decision making, relative closeness and ranking methodology the best car is been chosen from the four car and arranged accordance with the performance.

III. THIRD PARTY LOGISTICS

The term “Third party logistics (3PL)” (Rattanawiboonsom, 2014) describes to the organizational practices of contracting-out part of all logistics activities that performed in-house. 3PL is always linked with the offering of bundled services rather than only transport or warehousing functions.

(Wilding, 2004) Conclude that the most common reason of outsourcing are: cost reduction, improvement of service level and increase in operational flexibility. Term as “Logistics service Providers (LSP’s)” has been used interchangeably and (Delfmann, 2002) defined LSPs as companies provide logistics services on behalf of other industrial sectors.

The classification of three major groups of 3PL by (Delfmann, 2002) also reflects the development of 3PL companies’ logistics functions: the first group only has standardized and isolated logistics services, such as transportation and warehousing; the second group not only has standardized services, but also has other undifferentiated logistics services for all potential customers according to their customers' wishes; the third group design logistics services and logistics systems according to specific customers’ preferences.

Various logistics activities associated five major functions of 3PL companies: transportation, warehousing, inventory management, order processing and information system, and packaging (Delfmann, 2002) .

IV. COLD CHAIN LOGISTICS

(Maxwell D., 2006) Argue that the both supply chain and cold chain management could be defined under the “umbrella” of the sustainable production and consumption. (Salin V., 2002) The cold chain refers to a physical process that dominates the supply chain logistics of certain processed food. Equipment and facilities are used

in the cold chain to protect the chilled and frozen drugs.

(bishara, 2006) Another definition to the cold chain: “a cold chain is a supply chain of perishable items”. Furthermore a cold chain can be used in many other areas, such as food, pharmaceutical and chemical products. The common thing of those products is the high requirements on the temperature, humidity, light or other particular conditions.

The two main differences between supply chain and the cold chain are: first, compared with supply chain, the cold chain demands a lot on the operating conditions; second, from the production spots to the consuming place, product in the cold chain have the possibility to spoil (joshi R, 2009). Meanwhile the relationship between supply chain and cold chain can be viewed as facilities and conditions demanded in a supply chain (Salin V., 2002) and sustainability is important for both of them (Maxwell D., 2006)

V. COMPOSITION OF THE COLD CHAIN LOGISTICS

Cold chain service of Third party logistics (3PL) companies can be classified into three processes Cold Processing, cold Storage and cold transportation. Were these are said to be composition of the cold chain are given and explained below:

- **COLD PROCESSING**

(James, 2010) Define this process, as primary chilling and secondary cooling. The temperature of this stage is vital factor of safety and quality. Cutting and quick frozen machineries are the needed in this stage and a low temperature workshop is also needed.

- **COLD STORAGE**

(Akdemir, 2008) Cold storage is defined by a process that storing perishable pharmaceuticals, foods or the other items under refrigeration. It is obvious that refrigerator is needed. While during the storage process, the monitor of the product quality should be paid special attention.

- **COLD TRANSPORTATION AND DISTRIBUTION**

(Kuo, 2010) Describes cold chain logistics process as sorting, distributing and transporting various cold, chilled, frozen and fresh products to individual or enterprise consumers, in addition, the customer types are food manufacturer and channel dealer, and the transportation type is refrigerated transportation.

VI. COLD CHAIN IN PHARMACEUTICAL INDUSTRY

Cold chain in the pharmaceutical industry is an important, according to (Mona jaberisdoost, 2013) in pharmaceutical industries, the cold chain plays a major role. Where the supply of drugs, medicine with right quantity and quality to be delivered to right place and customers and at right time.

(shah, 2004) Probably the single most important driver in the pharmaceutical industry is the time-to-market. Companies secure very significant returns in the early life of a successful drug before any competition.

COMPONENTS: (shah, 2004) the pharmaceutical supply chain consist of the one or more of following nodes:

- 1) Primary manufacturing,
- 2) Market warehouse/ distribution centres,
- 3) Wholesalers and
- 4) Retailers/ hospitals.

VII. DATA ANALYSIS

Qualitative method is adapted in this paper. Qualitative method is used to view the nature of the facts and to support the analysis of the phenomenon. It involves the interpretation of a variety of empirical studies, such as case study, personal experience, face to face interview, life story and historical texts (Neergaard H.)

The empirical information was collected by the interview with the manager of pharmaceutical wholesaler. By using the variables the questioner were prepared for the effectiveness of service provided in cold chain logistics

Time delivery: In Pharmaceutical industry, the delivery of drugs according to the demand for the drug and urgency of the drug for the customer’s.

Support service: The support service plays a vital role in the service providers were the up to date information of drug has to be given to the both customer and manufacture.

Responsiveness: Its deals with the maintenance of drugs in cold chain. The maintenance includes temperature and packing.

Price: In pharmaceutical industry, the price plays major role because it deals with the storage cost, transportation and manufacturing cost.

Flexibility: the flexibility in the cold chain is the comfortless of both the manufacturer and wholesaler because they had to maintain the good relationship with the wholesaler and manufacturer.

Reputation & Quality: reputation is one of the major concern because the pharmaceutical industry, drug manufacturer had to

have relationship with many years. The stockist usually purchase drugs or other medicines with reputed manufacturer.

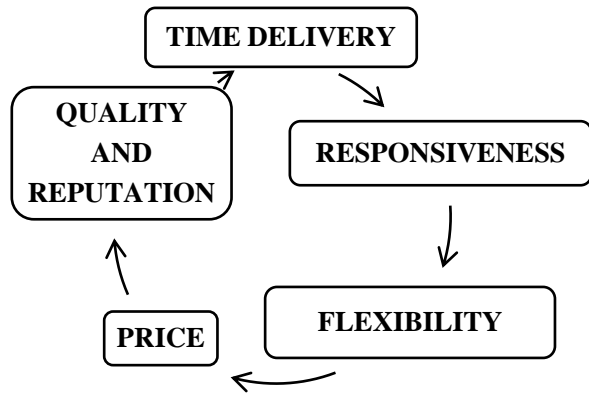


Fig.1 variables for selecting a cold chain service provider

When it comes to quality the insulin that has to be more efficient for the customer when its quality comes it will get perishable and cant used.

(Wagner B.A, 2006) Brings out the idea of “distribution initiative”. It means that companies should take the initiative to develop the distribution network in an establish supply chain. In addition the “distribution initiative” can be achieved by sharing transportation. In the pharmaceutical industry, these insulin are been cold chain service providers.

VIII. FLOW OF DISTRIBUTION

The flow of distribution in cold chain of insulin is like straight distribution flow of cold chain. While considering the pharmaceutical industry the manufacturing of drugs/ insulin from single company and received to the different distribution centres and those insulin are sent to single retailer

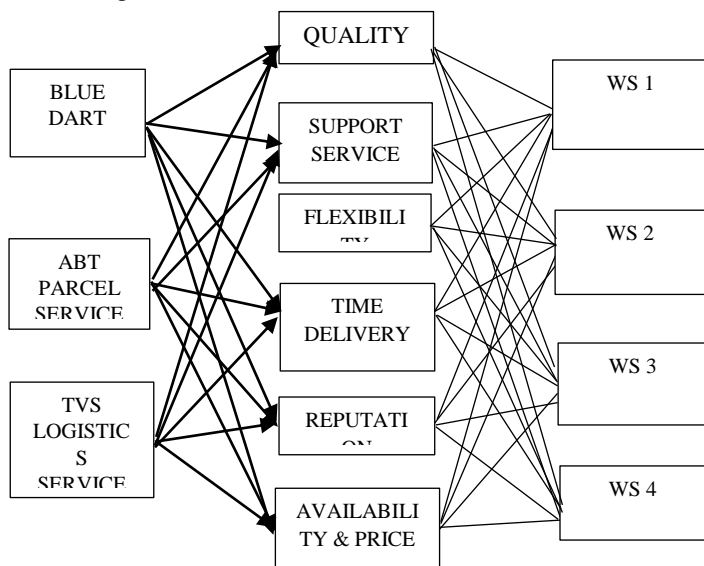


Fig.2 flow of single drug distribution

While in case of multiple volume of products, which will be having multiple manufacturing of single product is received by multiple distribution flow. As shown in figure below manufacturer share the logistics service provider and deliver their product to same distribution centre then finally to one retailer.

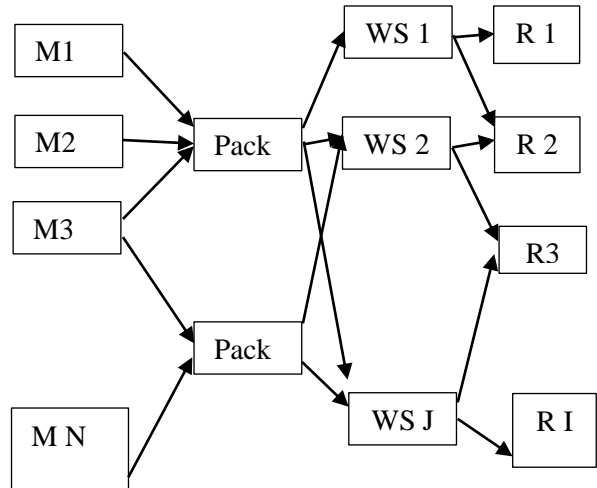
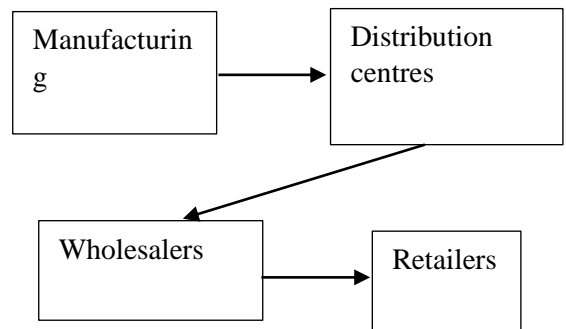


Fig.3 flow of single drug from multiple distribution

IX. PROPOSED MODEL

The proposed model is to select the best cold chain service provider in the pharmaceutical industry.



The major players of cold chain logistics of the pharmaceutical industry in trichy are BLUEDART, ABT parcel service, TVS logistics services, DTDC cargo and parcel service, COLDFEX.

X. CONCLUSION

The selection of cold chain service provider in pharmaceutical industries had been studied and the proposed model is been created by the empirical study. This helps to select the service provider easy by the decision making process method. In future this empirical study can be analysed using the FUZZY TOPSIS and FUZZY AHP techniques. This study helps to understand the concept of cold chain logistics service provider and its players.

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