ASSIGNMENT NO -2

Supply Chain Management
Of Flower Decoration

SUBJECT- SUPPLY CHAIN MANAGEMENT

GROUP NO-2

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CHAPTERS

1. PRODUCT AND DEMAND

1. PRODUCT DESCRIPTION

Floriculture: Garlands and Flower Decors by integrating the market using an integrated online application software and customized design.

2. PRODUCT SPECIFICATION

Our product mix will have garlands, customizable flower decors, and flower bouquets. Price range of products can vary from 1000 to 5000 Rs as the product will be highly customized and designed as prescribed by the customer. The main flowers we will use in our supply chain are Marigold, Rose, Tuberose and Gladiolus.

3. NEED OF PRODUCT

- In India, tonnes of flowers are used in festival and wedding seasons alone. Traditional loose flowers used for garlands are used in festivals. However, there is growing demand for cut flowers. The method of transportation and sale of cut flowers is very unscientific and tumultuous in India. Much of the cut flower produce is wasted due to lack of refrigeration in both transport and retail sites.
- The target customer is of a social gathering such as weddings and award functions. Large sized and top quality flower decors are used by this customer. The lalbaugcha raja and similar events are also a target.
- The packaging and transportation of flowers from the farms to the retail markets at present is very unscientific. The flowers, depending on the kind, are packed in gunny bags, bamboo baskets, simple cartons or just wrapped in old newspapers and transported to markets. by road, rail or by air. Comparatively, in the global market, flowers are shipped from South America and Africa and transported to assemble in the USA.
- A large number of small and marginal farmers as well as small traders (forming the unorganized sector) are seeking out a living in the sector compared to hi-tech floriculture which is not helping to fulfill the potential increase in efficiency of production.

4. OUR ROLE IN SUPPLY CHAIN

The main emphasis of our supply chain is to integrate online shopping in flower decors supply chain and implement green solutions to reduce waste output of the system.

- To build and operate manufacturing facilities which are agile to adapt to market changes and can produce customized product at high rate.
- To reduce the dominance of middlemen or agents in current floriculture supply chain which will help to reduce cost and improve profit margins to the suppliers.
- As industry is divided into local industries, over role is to unify the whole floriculture and flower decor industry as to provide variety of flower decors to the customer and increase profitability of supply chain.

- To create operation and distribution facilities for keeping the flowers fresh while working and transportation and to reduce the risk in supply chain. Current supply chains lacks this infrastructure facility.
- To provide a green alternative to current supply chain by collecting flower waste and converting it into useful products.
- To implement an online ordering system and database system, to provide easy ordering and tracking facility to customer.

5. DEMAND CHARACTERISTICS

In India, where flower garlands have an important and traditional role in every festival, Hindu deities are decorated with garlands made from different fragrant flowers and leaves. Both fragrant and non-fragrant flowers and religiously-significant leaves are used to make garlands to worship Hindu deities. Hence in india, the flower garlands are required in every house on a daily basis for their daily prayers. The demand of flower garlands is also high in the location near temples and religious places. The demand for the garlands can be divided into two types, the daily demand which can be considered as the base demand for our supply chain and the second is seasonal demand which fluctuates due to various indian festivals.

Flower decors are used in india mostly for wedding decorations and festivals. hence The demand for flower decors is not regular, it depends upon festivals and the wedding season. Every customer requires different types of flower decors hence customization is also important for flower decor product.

In conclusion the uncertainty of demand is low for both of the products. The cut flower decors demand uncertainty is a cyclic trend pattern, hence both the product have different supply chain strategies.

6. CUSTOMER SEGMENTATION

From all of the above targeted customer, we can divide customers into two segments as follows-

- Daily customers- this segment of customers includes those who buy or require garland on a daily basis for their daily prayers. The requirement of garland is constant and they require same type garland every day hence variation in product is not necessary. This customers require same quality in low cost.
- Seasonal customer- this segment of customers includes those who buy or need garland or decors according their requirement. This customers have specific requirements about time of delivery, quality of decor and customization. This customers value the responsiveness of the supply chain. Cost of the product is second priority to them. This customer segment will mostly include decoration contractors.
- Exports: USA and Europe import large amounts of cut flowers from tropical regions such as south america and africa. However, India only shares 0.8% of the exports as cut flower industry is underdeveloped.

Hence this are the customer segments that we want to target through our supply chain model.

2. STRATEGY

1. **BUSINESS STRATEGY**

   Garlands are used in massive amounts in Ganesh festivals, and in the current chain most of it is wasted in the seawater. However, by using a business model where these waste flowers can be recycled as manure in farms, sustainability can be achieved to counteract the inflation in garland prices due to rain and economic uncertainties.

   Export and production of cut flowers in India is also underdeveloped due to lack of storage and transport facilities. Uttarakhand is the largest cut flower producer but transport is unreliable. Hence our business strategy is to aid the supply chain with cold storage and transportation system, provide online shopping platform to our customers and to provide a waste collection scheme to collect the flowers which are dead and to send them to recycling facilities to produce manure which is then sent to the flower farms to be used for the next batch of flowers.

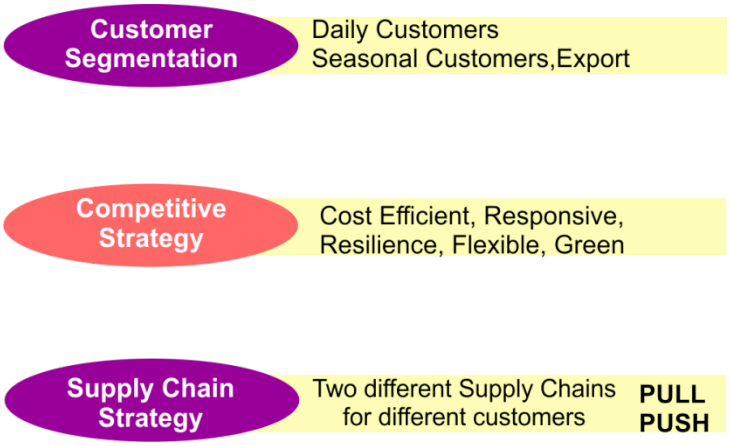
2. **COMPETITIVE STRATEGY**

   Typical flower decor businesses have a 10% profit margin for regular flower shops. Our aim is to increase this upto 20% by targeting special events and custom products.

   Pull system is used for this. A team of flower art designers interact with customers to engender a design of the product. Introduction of ordering systems such as online for cut flowers and contracts with big events such as Lalbaugcha raja.

3. **SUPPLY CHAIN STRATEGY**

   For fulfilling the above customer needs our supply chain should be cost efficient and responsive enough. To do this, we divide the supply chain of the enterprise into two types depending upon the customer they serve. The first supply chain would be make to stock or make to deliver type supply chain. This supply chain will mostly focus on daily customers whose requirement and demand is defined. The second supply chain would be to make to order, this will focus on seasonal customer who requires highly customizable products.



3. THE SUPPLY CHAIN

1. **VALUE CHAIN**

The value chain of the product will include following stages in order to convert flowers which are raw material in our supply chain and garlands or the flower decors which are the end product for which the customer is willing to pay. There's usually a 10-day span from arrival at the floral warehouse to customer delivery, and roughly a 24-day period from the grower to the customer. The lifespan of flowers is 1-2 days without refrigeration after they have bloomed fully. Thus, our aim is to shorten the span to 12 days by eliminating warehousing.

- **Stage 1- Flower farms:**

  The role of this stage is to value chain is to provide the required quality of flower of the required types in required quantity.

  Lead time of 10-12 months is present.

  Importing seeds of exotic flowers from southern hemisphere.

  Loose flowers are grown in the vicinity of delivery, Maharashtra, Andhra Pradesh, West Bengal.

  Cut flowers grown according to standards and stored in 33-35 F storage for transport.

  To eliminate warehousing of flowers used for pull system wholesale or large orders, picking and arranging is done on site.

  Challenges in flower farms are weather, environmental regulations, workforce and capacity.

- **Stage 2- Processing**:

  This stage includes converting flowers into garlands or various kind of decor items. The processing is done by humans only. This reduces set up costs required for various machines. For the processing, decentralised processing units should be set up across the country in order to make decors and garlands according to regions of their locations. The other raw materials required for processing are decoration foams and threads which can be acquired through the various local suppliers. Packaging is done in the processing center only.

- **Stage 3: Warehousing and packaging**:

  The loose and cut flowers for daily demand are stored in refrigerated storage facilities. Picking, arranging and packing is carried out when orders are received through retailers or app purchase.

This step is vital to prevent wastage of flowers which do not sell in off seasons or economic fluctuations. Thus, this inventory absorbs the little uncertainty of demand.

- **Stage 4- Retailer**

  This stage of value chain includes storing of the garlands and selling them to the customers. The location of retailer plays an important role in responsiveness of supply chain. The cost includes retailing facility cost, storing cost, and operating cost. The retailer is only comes into supply chain of push system, that is daily basis supply.

  Purchasing can be done at retail stores or online, wherein, orders are shipped from refrigerated warehouse.

  The second consumer is a large event such as the Lalbaugcha raja or a millionaire wedding event. Pull system is used for this demand and export contracts.

- **Stage 5 - Waste collection and treatment:**

  This stage includes converting the flower waste collected from customers and processing units into the usable compost which can be used for flower farms. The collection facility and retailer facility can be merged into one facility to reduce cost. The compost machines can be located in this facility in order to treat waste.

  Following is a diagram of value chain stages-

2. OUR COMPETITORS

The flower industry consists of traditional unorganized businesses with a long value chain consisting of agents, and wholesalers and 10% of startups which specialize in door to door delivery. Thus, none of these companies specialize in integrating entire chain from farms to location of decor. The leading flower decor startup is called FTD, it sources flowers from local suppliers and retails them to customers in one-day delivery.

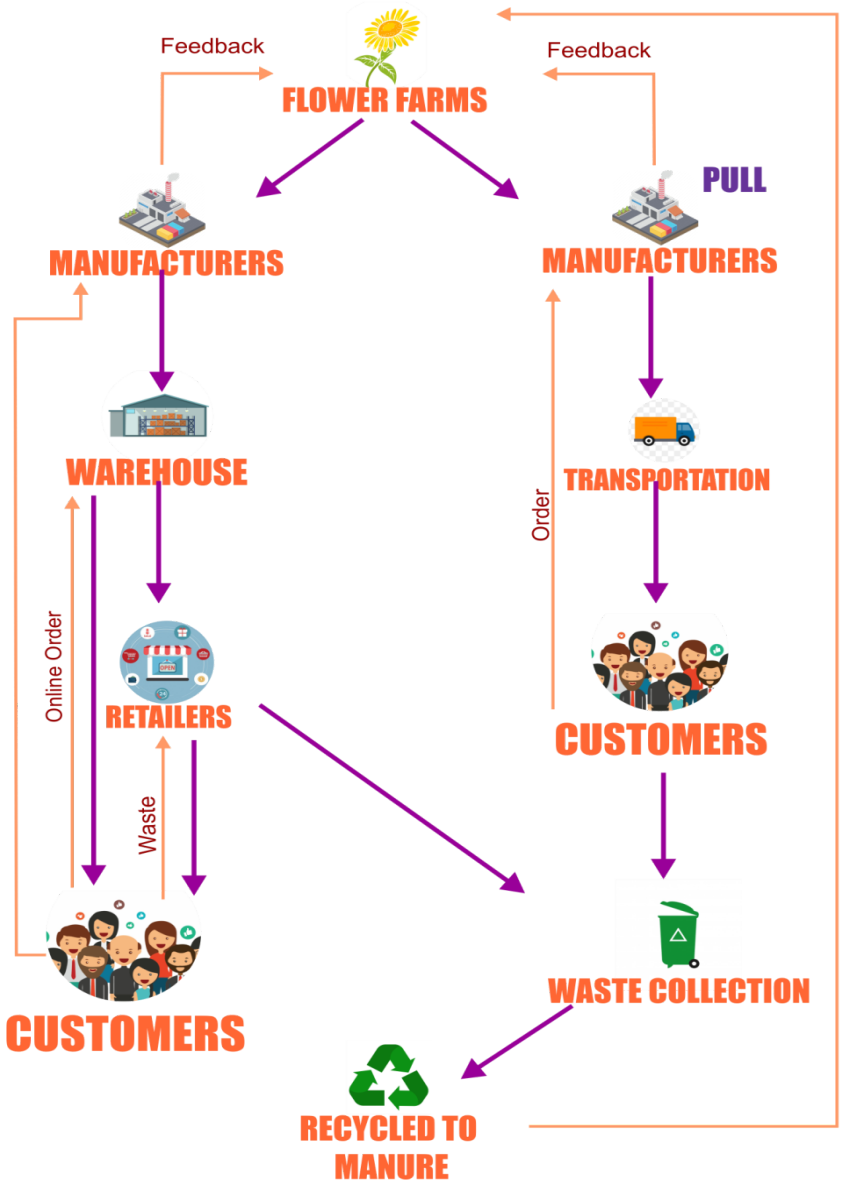
The companies which specialize in wedding flower decor are local family owned businesses with high margins and high costs of procurement for the long chain of agents and wholesalers.

The waste collection of flowers is entirely a new concept and does not exist in the market.

In the USA, flower art designers are employed to design custom decor for purposes such as weddings, hotel decor, award ceremonies, etc. The USA and Europe imports flowers from South America via air transport. India only shares 0.6 % of that export market with Uttarakhand being the leading state.

3. ROLE AND STRATEGY OF ELEMENTS IN SUPPLY CHAIN

For our supply chain we are avoiding traditional supply chain as it takes more time to deliver hence we are using direct farm to retailer progression as follows-



- **Day 1**- order goes to farm and farm ships it to operation/manufacturing centre.
- **Day 2**- flowers arrives at manufacturing, it unloaded and manufacturing starts.
- **Day 3**- complete product is packed and shipped to the distribution centres.
- **Day 4**- arrives at distribution centre and then shipped according to online orders.
- **Day 5**- arrives at retailer and ready to be sold.
  This system reduces time of shipment by 2-3 days giving advantage over competitors and further the requirement of the distribution centre can be reduced by in transport docking method.

The role and strategy of every stage of supply chain should align with common goal of supply chain. Following are role of each stage is explained.

- **Flower farm**
  The strategic role of flower farm in our supply chain is to be able to provide correct quantity and quality of flowers at the low cost. The flower farms should able to supply the flowers according to the demand of enterprise. It should able to supply flower on the basis of forecast provided by manufacturer. Hence the flower farm of the supply chain should be more cost effective as to reduce the overall cost of the end product and gain competitive advantage over other competitors.
- **Manufacturing or processing unit**
  The role of manufacturing in the supply chain is able to mass produce product in push system as to meet the daily demand and reducing the cost of transportation by transporting them in large lots. This will reduce the delivery cost per unit piece. For the decor product, the manufacturing should be agile enough as to be able to adapt and make various types of decorative products. The human workers should be trained to be able to work in both of the above conditions.
- **Packaging and distribution**
  The packaging and distribution can be located near to the manufacturer or it can be located near the retailer. This decision changes from location to location. The packaging units can be located inside the manufacturing facility as this reduces the extra facility cost and improve cost effectiveness. Or in another case it can be located near the retailer to reduce the transportation cost to the retailer. Hence role of this stage will change according to the location and structure of supply chain at that location.
- **Transportation**
  Here also the role of this stage can be different for two different conditions. For the daily supply chain, the transportation should be fast and cost efficient to reduce the cost of end product. And for the decor supply chain, it should be responsive as to be able to transport at various locations as fast as possible,
- **Retailer**
  The strategic role of retailer is able to stock the material. The locations of retailer should be centralised over the target area. Retailer should be able to record and keep the data about customer demand, quantity and price as it helps the whole supply chain for increasing profitability. Another role the retailer plays is it act as waste collector which collects the flower waste from the customer and sends it to waste treatment and recycling plant.
- **Waste treatment**
  The strategic role of this stage is to improve the sustainability of the supply chain. The retailer acts as waste collector, it receives flower waste from customers and send it recycling plant. The recycling plant will convert this waste into compost which can be used by the flower farm. Hence again reduces overall cost of flowers. And reduces the total waste of the supply chain.

4. DISTRIBUTION NETWORK

Step 1 Decide the network

The goal of the supply chain is to be able to distribute our product in every house possible and keeping it cost efficient. the network of our supply chain will be as follows. It includes various stages in both the pull and push type supply chain.

Step 2 Define the performance characteristics of the network on the factors

The network is divided into two divisions, the first push type network works on a daily basis. this type, manufacture the product, deliver it according to the retailer and retailer sells them. Hence this type of the network should work fast and it should be cost efficient as per the requirement of customer.

Step 3 Decide the channels of transport, information

The transportation is mainly done by road transport via trucks. For the daily basis supply chain, the transportation from manufacturing facility to retailer should be fast. Hence the distance between retailer and manufacturer or the warehouses should be small. The information about stocks, demands, forecasts and quantity can be shared via a common database in the organization. The data should be shared with each and every component of the supply chain as it will help every stage to plan their activities according to the data.

For the customizable decor, the customer will order through a dedicated mobile app or through website of enterprise. This will provide an easy platform to customer to place an order and generate a data which will help to forecast and do various activities in the organization.

Step 4 Decision of sourcing, pricing

The flowers will out sourced through local flower farmers. The enterprise will have a dedicated supplier policy which helps to improve supplier relations with farmers and also help them to grow through companies facilities and programs. This will help enterprise to acquire good quality of flowers and lower cost. All the other activities such as manufacturing, transportation and retailing in sourced. By doing this activities inside of enterprise, the cost can be easily kept low.

4. THE PROCESS

- **Flower farms**

  Floriculture, or flower farming, is a discipline of horticulture concerned with the cultivation of flowering and ornamental plants for gardens and for floristry, comprising the floral industry. The development, via plant breeding, of new varieties is a major occupation of floriculturists. Floriculture crops include bedding plants, houseplants, flowering garden and pot plants, cut cultivated greens, and cut flowers. Cut flowers are usually sold in bunches or bouquets with cut foliage. The production of cut flowers is specifically known as the cut flower industry. Farming flowers and foliage employs special aspects of floriculture, such as spacing, training and pruning plants for optimal flower harvest; and post-harvest treatment such as chemical treatments, storage, preservation and packaging. In Australia and the United States some species are harvested from the wild for the cut flower marketThe lead time of the process varies from 3 to 11 months depending on the flower. For our supply chain it is important to have dedicated flower farm which produces flowers according to the requirement of the manufacturing unit.

- **The manufacturing and processing facilities**

  As mentioned before, our role in the supply chain is to build and operate manufacturing facilities throughout the country in centrally populated locations as the demand will be more in these areas. The role of manufacturing facilities to acquire flower from farms and convert them into decorative products. The manufacturing facilities can be divided into three sections as follows-

  - Pre-manufacturing section- This section deals with all the process before the actual production starts. The activities include unloading the flower from trucks, cutting the stems and washing them and storing them in the cold storage facility. The pre-manufacturing section works daily for flowers for daily products such as garlands and retail items and works differently for customizable products and decors.
  - Daily production section- This production section works on forecast of demand of daily items. Production of bouquets and garlands are done in batches of similar products. All works are done manually. The finished products are stored in cold storages and flowers are sprayed with water during the entire process to keep them fresh. Finished products are sent to their distribution and retailer section according to their shipment plants.
  - Project based production- This section only works for seasonal demands and high customizable and high output orders. This section directly gets order from customer through online platform including all the specific needs of customers. Order to the supplier are given based on order of the customer and then production starts. Every project will be assigned with a project manager who will be in charge of every activity related to that project from ordering the supplies to delivering it to consumers. This increases the cost but gives correct responsiveness to the customers.

    Other supplies needed for the production such as foams, buckets, threads and ties, plastic covers are acquired through local suppliers.

- **The Transportation Process**

  Transportation is the most important process in the supply chain of fresh flowers and decorations.

  There is a lack of proper cold storage transportation facilities which are essential for the flowers to be kept fresh. The flowers, depending on the kind, are packed in gunny bags, bamboo baskets, simple cartons or just wrapped in old newspapers and transported to the markets by road, rail or air.

However, the government is now providing some assistance for buying refrigerated cargos and built up a large number of export oriented units with excellent facilities of precooling chambers and refrigerated vans.

The optimum temperature for the flowers to be kept fresh is about 33-35F and the flowers need to be delivered to the customers and retailers with 24hrs of processing.

- **The Retailing Process**

  The retailer is responsible for the push side of the supply chain. Where in the retailer receives the supply of flowers/ decorations from the manufacturer as per the demand forecasted throughout the year.

  The retailer is also responsible for the collection of flower waste from the members having a monthly subscription in garland/ flower decoration delivery. The retailer collects the waste and will send it to the recycling facility to recycle the waste on a monthly basis.

- **The Recycling Process for ensuring Green Supply Chain**

  One of our major roles in the supply chain of flower decoration industry is of providing a greener alternative for the existing supply chain.

  This can be done by setting up schemes for the customers to either send the flower waste collected at their households to the recycling center or back to the retailer who can then send it to the recycling center to recycle flower waste into manure which then can be sent back to the flower farms in the trucks which will be going empty back to the flower farms to collect the next batch of orders.

  This will reduce the cultivation cost as well as the overall cost of the product and will also ensure that the supply chain remains environment friendly and that there is no wastage of the dead flowers after usage.

COST AND PRICING OF PRODUCT

The major costs are associated with labour which accounts for 30-40% of cost and intercultural operations that involve crop planning, crop rotation, fertilization account for 20% of the cost incurred in farming. The problems faced can be mitigated by using innovative techniques such as vertical farms and greenhouse farming.

The average cost of cultivation of major flowers such as marigolds, rose, tuberose and gladiolus were Rs.2,57,575, Rs.3,73,675, Rs.1,52,371 and Rs.2,99,087 Per hectare , respectively. The average benefit cost ratio of Marigold, Rose, Tuberose and Gladiolus were 1:1.24, 1:1.40, 1:1.65 and 1:1.52 respectively. Main source of supply of flowers in Chhattisgarh are Bangalore, Nagpur (Maharashtra) and Kolkata (West Bengal).

However, the seeding costs of cultivating flowers are low, most of the costs are associated with transport and preserving of crops.

The costs of refrigerated transport is between 20-50 Rs per quintal. The limits correspond to the short or longer distances. Thus, as the flower product weighs less, cost of transport can be economical.

Further reduction of costs in intercultural practices is obtained by using the manure feed from waste flowers collected. As the product quantity is more for single customer, much of the waste can be recovered by minimal transport costs.

Large size bouquets were the most profitable followed by small and medium size bouquets. Study resulted that value addition of flower is more profitable as compared to loose and cut flowers. Large

size of marigold garland more profitable than the small size garlands. The B.C ratio was 1:1.44 and 1:1.33, respectively.

5. CHALLENGES

Following are the challenges for our supply chain

- **Time Constraint:** Cut flowers should be delivered to the final consumer within 24 hours from the time of his beheading. This beheading is done in the warehouse for daily demand and in the farm for the pre order. Thus, reliable transport is required, whether by air freight or refrigerated trucks.
- **Infrastructure facilities to transport:** According to Hartford Florist Supply, the flowers do best when cooled to 33-35 degrees F at the grower's site, and maintained around that temperature during their entire journey through the cold chain, starting with the truck ride from the grower to the local airport. Hartford Florist Supply said that a cold chain interruption can cause a 30-40% loss of vase life for the flowers, even if they're put back into a cold environment.
- **Reduction in sale of flowers-** flower decoration may provide a pleasant and attractive decor medium but as society is leaning towards environment protection, people are less likely to use flower decors as well garlands for decorative purposes.
- **Operational challenges-**

1) Safety issue: for keeping the freshness of flowers they should be kept and worked in cold environment. This low temperature creates a hostl;e environment for workers.
2) Cleaning the flowers. Safety issue: pesticides poisoning and spine problems.
3) Bunching the flowers (in the cold store): working in impropriate suit in bad conditions.
4) Packing. Safety issue: working in appropriate clothes in cold temperature.
5) Quality of seeds: Procurement of good quality seeds of indigenous flowers is a daunting task as no standards are present. Import duties on exotic seeds from southern hemisphere.
6) Irrigation System: Farming, storage and transport require large amount of water. Although most of this water is reusable, there are no regulations on industry to strive for this.
7) Skilled Manpower: In picking, arranging the orders and supervision of process parameters of farming of flowers.

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