**Sample of Operations Strategy Matrix**

**Introduction**

North American Plastics manufacturers commercial can liners and custom packaging at their two facilities in Ohio. Products are sold through foodservice, janitorial, and industrial distributors across the United States.

**Operations Strategy**

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| --- | --- | --- | --- | --- |
| **Objective** | **Capacity** | **Supply Network** | **Process Technology** | **Organization /Development** |
| **Quality** | * Separate production facilities for different product types | * Raw Materials * Packaging | * Production Lines * Product Blends | * Quality Control Processes * Training |
| **Speed** | * Product Transfer Between Plants * Make and Hold Ability for Large Customers | * Warehousing * Product Order Mix & Minimums | * New Item or Private Label Set Up Procedures |  |
| **Dependability** | * Warehousing/Production Capabilities * Adequate Inventory Levels | * Multiple Supply Sources | * Inventory Management * ERP Systems | * Standardized transport procedures * Effective communication with customers and operators |
| **Flexibility** | * Broad Product Selection | * Customer Mix and Diversity * New Equipment |  | * Measuring customer feedback allows for enhancement of volume, product, and delivery flexibility |
| **Cost** | * High Volume Production * Product Mix Selection | * Prime and Recycled Resin Options * Packaging Alternatives | * ERP Implementation * Waste Reduction | * Effective and efficient transportation process |

**Capacity**

The VP of Operations oversees the capacity planning for the organization. This pertains to increasing manufacturing capacity by adding new production lines, increasing the number of on-site silos that store raw materials, and approving any additions to our warehousing facilities. Each plant manager is responsible for the daily operational functions and ensuring production and warehouse managers manage inventory levels and daily production requirements to meet preset lead times. The operations team also needs to work closely with sales to understand changes in customer acquisition strategies and new market segments to address changes in demand for both LLDPE and HDPE products and adjust capacity accordingly. Currently, both plants operate at a 70% utilization, with product volume being split evenly between both plants.

*Quality*

The company has two separate manufacturing facilities in Ohio, which are roughly 90 miles apart. The Carrollton facility produces LLDPE can liners, food bags, retail contractor bags, and other custom products. The Euclid location manufacturers HDPE can liners which are mainly used in foodservice and healthcare applications.

The separation of production facilities by the type of plastic they produce allows production teams to operate in a specialized manner. Both use a blown film extrusion process, but due to the varying properties of HDPE and LLDPE resins, they require different equipment and production set up. LLDPE, for example, has a higher melt index and variety of proprietary blends than HDPE. The company also produces a broader selection of products, which require greater customization in the production process, requiring production teams to understand the production modifications to ensure consistent quality between line changes for new SKUs.

*Speed*

The company transfers product between each plant twice a week to consolidate orders for shipment. Most customers order both HDPE and LLDPE products and based on the volume and freight rates, complete orders ship from either location. The product consolidation is managed by each warehouse manager, and the freight director oversees contracts for LTL and truckload carriers. The separation of facilities allows the company to optimize production processes, but it delays shipments due to the extra transfer time. For large customers who have limited product requirements, the company can “make and hold” product for immediate release after signing a stocking agreement. One of the most significant challenges impacting speed of delivery to the customer is the broad selection of products and low minimums on custom and private label items. Many items on a typical customer order include SKUs which require unique production set up or a private label, which prevents efficient order fulfillment. Furthermore, since both production and warehousing facilities are in Ohio, the lead time to the west coast is extended significantly.

*Dependability*

To ensure dependability and continuous operations, the company leverages adequate inventory levels of finished goods at their warehouses. The company also has sixteen silos at their plants and leases several railcars on railroad tracks by each plant to ensure 60-90 raw material inventories. The company also can move some LLDPE production to the Euclid HDPE plant in case of a production disruption.

On the product and customer support side, operations ensure consistency in packaging and lead-times. Both stock and custom products are packaged in previously agreed on corrugated packaging, labels meet NIST requirements for weights and measures, and the product is palletized, shrink-wrapped and loaded onto a truck in a consistent manner.

*Flexibility*

To compete for new business, the company must create value for customers by having low production minimums for custom products and having the capability to produce new SKUs that meet customer requirements. By the nature of the industry, most custom items are for LLDPE products, which forces the Carrollton plant to be highly flexible. Each production plant operates 24/7, but where the Euclid plant produces only specific products which generate high output, the LLDPE facility requires various line changes to accommodate new products. Operations also must manage inventories of custom packaging, which can need special boxes and pallet requirements; this, in turn, impacts the warehousing capabilities.

*Cost*

From the sales perspective, flexibility is the cost of acquiring a customer. On the operations side, it creates various obstacles. The most optimal option would be to produce large volume and low variety of products to achieve greater economies of scale. The flexible operational demands of customers increase the costs the company has to incur. Each line change slows down production and subsequently leads to higher scrap rates until each line is adjusted. Packaging products in private label boxes also prevent the company to fulfill orders quicker, and the extra inventory leads to higher costs.

**Supply Networks**

*Quality*

The company sources raw materials from various producers and maintains SDS sheets on file to ensure they meet quality requirements. Also, supplies of polyethylene resin get tested for tear and dart impact to ensure consistent film quality of finished product. During the manufacturing process, production managers must consistently adjust product blends to ensure film properties as they can be impacted by the humidity and temperature at the plant. Because some of the products contain recycled resin to meet cost or environmental requirements, plant managers must work diligently with suppliers to ensure quality. The recycled resin can be extracted from various recycled components, and the film properties may not be consistent, which forces operations to include other additives like metallocene to derive steady film strength of the finished product. The operations team must also work diligently with packaging suppliers to ensure reliable corrugated boxes that maintain integrity during transport.

*Speed*

As previously discussed, the requirement to transfer product between plants increases lead-times to customers. Another challenge is that the company relies on third-party carries to deliver product to customers. To offset these challenges, the operations team works with sales to determine which customers can consolidate orders and accept full truckload deliveries, or if there is an option to set up FOB programs with customer handling their freight. Lastly, to increase production and warehousing efficiencies, the sales team tries to improve operational efficiencies by requesting full pallet orders from customers. This allows for quick order fulfillment, reduced cost and time spent consolidating pallets, and leads to faster delivery times.

*Dependability*

Because polyethylene resin constitutes 65% of finished goods costs, the owner of the company and the VP of Operations negotiate short and long-term contracts with global resin suppliers. Each railcar is delivered to each plant based on a pre-set schedule, and the company can extend resin storage on leased railroad tracks in times of increased demand. This helps to mitigate potential raw material shortages. Resin availability and prices are impacted by the hurricane season, supplier plant turnarounds or outages, all of which can lead to supply disruptions across the country. Due to the size and volume the company produces each year, we can buy and store 60-90 days’ worth of resin in anticipation of potential shortages. Other much larger manufacturers can’t possibly lease enough railcars to sustain their output for extended periods.

*Flexibility*

Due to its flexibility to produce a variety of products, the company also services a wide range of customers across multiple market segments. This forces operations to consider different suppliers for packaging and equipment. For example, the company wants to develop heavy-duty contractor bags for retail, for which it needs individual winders to be able to produce 4 and 6 mil films on a coreless roll. Furthermore, the company then needs a packaging supplier that can design and create packaging that maximizes pallet counts and meets customer box design requirements.

*Cost*

Since raw material costs account for a significant portion of the total product cost, the owner and VP of Operations work with suppliers to hedge resin prices ahead of cyclical price changes. The company then delays passing on the cost savings onto customers until production processes through old inventories. Various end-users limit their consumption of corrugated packaging, so the company works with certain customers on shipping gaylord containers packed with can liners to reduce the financial and environmental impact of traditional boxes which are typically used. Lastly, the company works with various resin suppliers to spot buy recycled resin which is cheaper and can be blended with specific products.

**Process Technology**

*Quality*

Each plant has dedicated lines for specific product types, and line operators are trained to service them to ensure conformance to specs and quality. Each operator keeps a daily log to maintain records of quality control checks, defects and line adjustments which are reviewed by the production manager. Products are checked for the correct case weights, product gauge, opacity, and other measurements. Each product category also has a unique raw material blend mix, which is adjusted by a production manager at each plant. Any changes are recorded in the company’s ERP system, and each line operator receives exact product requirements on their “job traveler” after each PO is sent to production after processing.

*Speed*

The new ERP system was implemented in 2016 with the hope of streamlining all processes across sales, finance, manufacturing, and logistics. The system gives more visibility across the entire funnel, allowing customer service, for example, to view in which production stage is each SKU on an order, and then provide customers with more up-to-date information on the status of their order. The system also allows for better inventory management, from raw materials to finished goods and packaging. On the other hand, creating new items or adding custom notes to each account has become more difficult because the system requires various steps and approvals to implement each change.

Also, the company does not have efficient processes in place that would allow it to be both a flexible and fast supplier. The customization process prevents a quick turnaround time because many of the typical methods are manual.

*Dependability*

The ERP system allows the company to manage better inventory of finished goods and raw materials to adjust purchasing and production schedules.

*Cost*

Besides the ERP system, the company’s process technologies remain very basic. Corrugated boxes to which product is packaged to are still folded and taped by hand. The company still doesn’t use barcodes and handheld scanners regularly to track inventory and primary administrative duties like invoicing and order processing is done by fax. Some of the company’s competitors utilize automatic box folding/taping machines and robotic “pickers” that move pallets of finished product across the production floor to the warehousing area where it gets sorted for shipment. The company would also improve efficiencies and reduce costs by fully integrating EDI into its processes to streamline order processing, billing, and customer shipment notifications.

**Organization/Development**

*Quality*

The company evaluates quality control measures across production and customer service processes on a continual basis. Management personnel is thoroughly trained in the production process to ensure that staff ranging from packers to line operators follow quality control guidelines. Since the company is relatively small, it can maintain a lean management structure that allows for quick response to production challenges. It is also able to implement changes in procedures to reduce waste and redundancy expediently. The relative close distance between both facilities also allows for regular meetings between plant operators to share best practices and address production issues.

*Dependability*

A good business relationship has been built with freight carriers and distributors that allows for stable, dependable, and committed service that helps contribute to a lean supply chain. There is a transportation plan every day, and management is focused on real-time tracking of goods and services and metrics are generated to assist in problem-solving. Great lengths are take in the communication process at every level to ensure operations run as smooth as possible.

*Flexibility*

Customer loyalty is essential to the company and utilizing feedback from customers, distributors and suppliers allow for flexibility and enhance the lean process. Generally, feedback is received via phone or email and is tracked in the CRM system to evaluate performance over time. Data on performance is also compared with internal quality monitoring to ensure internal measures are on par with customer sentiment. Feedback helps identify areas for improvement and setting performance targets for the company. Results are evaluated and implemented to formulate new customer initiatives. Processing feedback assists in providing flexible service for the customers.

*Cost*

With only 150 employees across two facilities, it is imperative to keep each plant running optimally to keep up with demand. The company has been able to contend with high turnover rates by implementing a training program for employees to assist in retention and boost productivity. The training focuses on safety (OSHA guidelines) and the 5S mentality to encourage them to establish best practices. This training has assisted with employee turnover and raised efficiency and reduced product defects while containing costs associated with high turnover rates. The regular safety training has contributed to a reduction in injuries.

Also, implementing employee recognition and linking pay to performance has increased production and reduced turnover. A system is in place to ensure employees are rewarded for exceeding quality and process metrics. Fostering a growth and improvement mindset for employees supports cost reduction and maintenance of the lean outlook in the company.