

Supply Chain Management

Case Study- Remington 870

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Executive Summary

This case study examines the supply chain for the Remington 870 shotgun, a renowned firearm in the market. The analysis begins with an overview of the supply chain, detailing the production process and flow of materials from suppliers to end customers. The estimated demand curve for the Remington 870 is derived based on historical sales data, providing insights into consumer purchasing patterns.

A detailed supply strategy is presented, focusing on optimizing supplier relationships and ensuring reliable delivery timelines. To evaluate supplier performance, a scorecard is developed, highlighting key metrics such as quality, cost, and delivery performance. The study also includes a Supplier Improvement Project aimed at enhancing collaboration and performance across key suppliers.

A production plan is outlined based on the demand forecast, ensuring that resources are allocated efficiently to meet customer needs. Inventory management strategies are discussed, with an emphasis on minimizing stockouts and excess inventory through just-in-time practices.

A global supply strategy is proposed, incorporating a diverse network of suppliers and production facilities to reduce risks and increase flexibility. Potential risks in the supply chain, such as geopolitical disruptions and supply shortages, are identified, with mitigation plans to ensure continuity.

Finally, the future of the Remington 870's supply chain is explored, recommending changes in technology integration, sustainability practices, and further diversification to adapt to evolving market conditions. This case study provides a comprehensive analysis of the Remington 870 shotgun supply chain, highlighting key areas for optimization and future growth.

Module 1

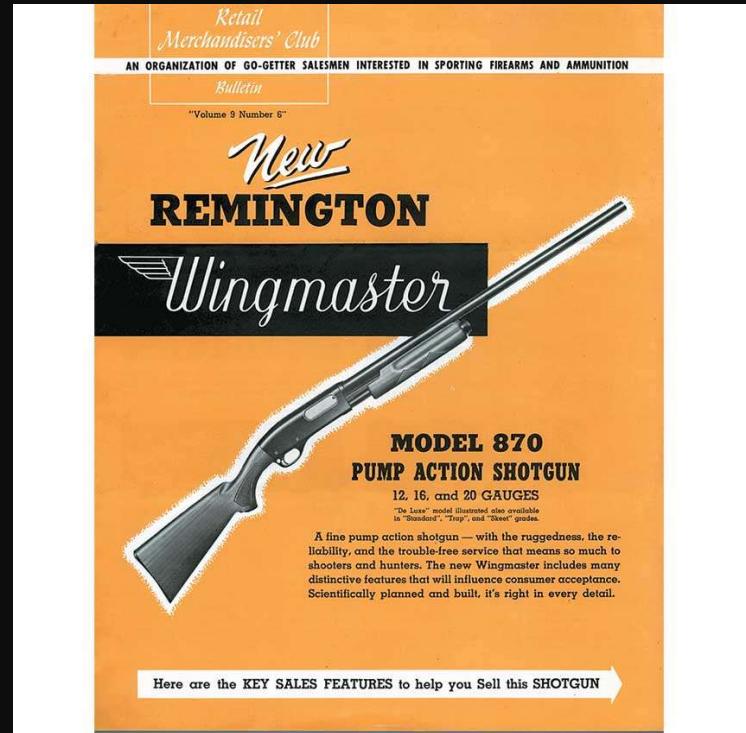
General Overview

Product: Remington 870 Shotgun by Remington

- First implemented in the 1950's
- Leading selling shotgun
- Simple, yet affective design

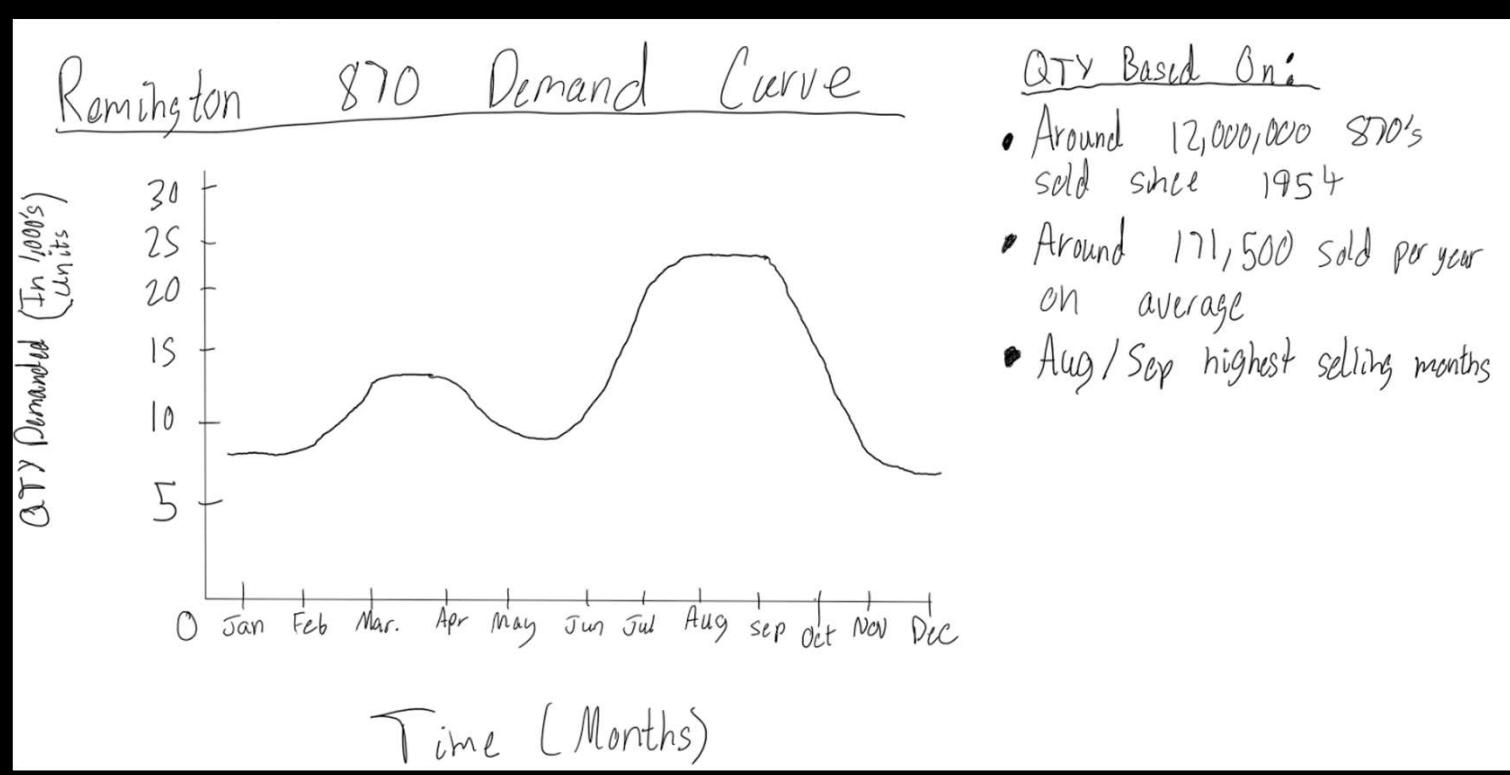
Supply Chain Components/ Focus

- Wooden frame
- Stock
- Barrel
- Trigger
- Pump



Module 2

Demand Curve



Module 3

Supply Strategy (Competitive Landscape)

1. Steel and Metal Suppliers: Companies like Carpenter Technology for materials
2. Barrel Manufacturers: In-house or companies like Krieger Barrels, Criterion Barrels for custom models.
3. Stock Manufacturers: Boyd's Hardwood Gunstocks or synthetic stock makers like Magpul
4. Small Parts: Wolff Springs for recoil springs, Precision Gun Parts for components.
5. Coatings: Cerakote for durable finishes.

Module 3

Supply Strategy (Overview- 5 Forces Analysis)

1. Threat of New Entrants

Barriers to Entry: High

Capital Requirements:

Substantial investment is needed for manufacturing and marketing firearms, which can deter new entrants.

2. Bargaining Power of Suppliers

Supplier Concentration:

Moderate.

Switching Costs: Relatively low for standard materials, but higher for specialized components or technologies.

3. Bargaining Power of Buyers

Buyer Information: High.

Product Differentiation: Moderate.

4. Threat of Substitutes

Availability of Alternatives: High.

Performance: While the Remington 870 is known for reliability and versatility, substitutes can meet similar needs for various consumers, particularly in different shooting scenarios.

5. Industry Rivalry

Competitive Landscape: High.

Price Competition: Price competition is prevalent.

Module 3

Supply Strategy (Input: Voice of Customer)

WHAT IS IMPORTANT TO THE CUSTOMERS?

- Reliability
- Versatility
- Ease of Use
- Comfort and Fit
- Price

Module 3

Supply Strategy (Input: Voice of Customer)

Key Product Features

- **Action Type**
- **Gauge Options**
- **Barrel Lengths**
- **Stock Options**

Price

- Affordable considering high quality

Module 3

Supply Strategy (Input: Voice of Customer)

Remington should excel in the following areas of supply based on customer voice:

- Quality Control
- Timely Delivery
- Cost Management
- Innovation
- Communication
- Regulatory Compliance

Module 3

Supply Strategy (Input: Current Supply)

Supply Options

- **Raw Materials:** suppliers of steel and polymers for manufacturing receiver, barrel, and stock
- **Component Suppliers:** Companies that provide triggers, firing pins, etc.
- **Distribution Channels:** Retail Partnerships and D2C options through website.

Quality Assurance Practices

- Regular audits of suppliers.
- In-house testing of materials and components.
- Feedback loops from customers to identify potential quality issues.

Module 3

Supply Strategy (Input: Current Supply)

KPI's

1. On-Time Delivery Performance:

- **Target:** Ideally above 95%.
- **Current Performance:** This can vary but is crucial for maintaining production schedules. A strong supplier network is essential to achieving this KPI.

2. Quality Performance:

- **Defect Rate:** Aiming for less than 1% in manufacturing defects.
- **Customer Return Rate:** Monitoring returns due to quality issues is vital; lower rates indicate better quality assurance processes.

3. Cost Performance:

- **Cost per Unit:** Focus on maintaining competitive production costs while ensuring high-quality standards.
- **Cost Variance:** Monitoring discrepancies between budgeted and actual costs to keep production within financial targets.

Module 3

Supply Strategy (Input: Current Supply)

Supply Reliance

- Leading seller of 12-gauge shotguns in the entire industry
- Large customer to suppliers

Supplier Qualification Criteria

- ISO Certification
- Less than 1% defect rate
- Positive references from other clientele
- Cost competitiveness
- 95% reliability of on time delivery
- Compliance with ATF regulations

Module 3

Supply Strategy (Notable Gaps and Action)

Current most notable gaps in Remington 870 Supply Chain:

1. Supplier Diversification
2. Supply Chain Visibility
3. Inventory Management

Module 4: Supplier Performance Scorecard

Supplier Performance Scorecard: Shotgun Barrel Supplier for Remington 870

Score Summary

- Total Score: ____ / 35
- Supplier Rating:
 - 1-2: Needs Improvement
 - 3: Meets Expectations
 - 4: Exceeds Expectations
 - 5: Excellent

Supplier Performance Scorecard: Shotgun Barrel Supplier for Remington 870

Category	Key Metrics	Target	Score (1-5)	Comments
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1. Quality

- Defect Rate	% of barrels with defects	< 1%	Assess frequency of defects such as misaligned sights, weak joints, or uneven finishes.
- Material Quality	Meets material specifications (durability, strength)	100% compliance	Evaluate adherence to material standards for steel quality and resistance to wear or corrosion.

Category	Key Metrics	Target	Score (1-5)	Comments
- Testing Compliance	Passes all durability and performance tests	100% pass rate		How well the barrels perform in real-world and test conditions (e.g., drop tests, extreme weather).
- On-Time Delivery	Percentage of deliveries made on or before the due date	95%+		Measure supplier's ability to meet Remington's production schedule without delays.
- Lead Time Consistency	Time from order to delivery	< 2 weeks		Consistency in meeting agreed-upon lead times for orders.
- Shipping Accuracy	Correct quantities delivered as per order	100% accuracy		Track errors in quantities shipped (over/under shipments).
- Cost Competitiveness	Competitive pricing relative to other suppliers	Top 25% percentile		Compare barrel costs to industry averages or competing suppliers.
- Cost Control Initiatives	Participation in cost reduction programs	Meets agreed targets		Participation in joint efforts to reduce costs (e.g., materials, logistics) without compromising quality.
- Pricing Transparency	Transparency in pricing structure	High transparency		How clear and open the supplier is regarding

Module 4: Supplier Performance Scorecard (2)

Category	Key Metrics	Target	Score (1-5)	Comments	Category	Key Metrics	Target	Score (1-5)	Comments
4. Innovation and Collaboration				cost breakdowns and pricing structure.	- Sustainability Practices	Environmental sustainability efforts	Green initiatives in place		Assess the supplier's commitment to sustainability (e.g., waste reduction, energy-efficient processes).
- Product Innovation	Introduction of new or improved barrel designs	2/year		Number of innovative improvements (e.g., new materials, improved processes) brought to Remington.	7. Relationship and Communication				
- Technical Collaboration	Willingness to collaborate on R&D and improvements	High collaboration		How open the supplier is to working with Remington's engineering team to innovate and improve products.	- Communication Effectiveness	Timeliness and clarity of communications	Very high		Measure how well the supplier communicates regarding order status, potential issues, or improvements.
5. Flexibility and Responsiveness					- Relationship Management	Strength of the relationship and trust	Strong relationship		Evaluate the overall quality of the relationship, collaboration, and trust built with the supplier.
- Order Flexibility	Ability to accommodate changes in order size or schedule	High flexibility		Measure how easily the supplier can adjust to changes in Remington's production needs.					
- Problem Resolution Speed	Time to resolve issues or defects	< 48 hours		Speed and efficiency in addressing issues or production disruptions.					
6. Compliance and Sustainability									
- Regulatory Compliance	Compliance with firearm regulations and safety standards	100% compliance		Adherence to safety and regulatory standards specific to firearms manufacturing.					

Module 5

Supplier Improvement Project

Supplier: Criterion Barrels

Issue: Under the quality section of the supplier scorecard, Criterion Barrels defect rate is at 5% which is off from the <1% goal.

This is unacceptable for the following reasons:

1. Impact on Brand Reputation
2. Increased Costs
3. Customer Dissatisfaction and Safety Risks
4. Strain on Supplier Relationship

Module 5

Supplier Improvement Project

How Remington can help Criterion Barrels improve the defect rate:

1. Supplier Development Programs:

Benefit: consistency in production

2. Joint Quality Improvement Initiatives

Benefit: streamlined processes, waste reduction, manufacturing precision

3. Performance-Based Incentives and Accountability

Benefit: happier employees, increased quality

Remington 870 in Wisconsin

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Company
Demanded QTY	7,500	10,000	12,500	12,500	10,000	10,000	20,000	30,000	25,000	15,000	10,000	7,500	170,000	Remington
Dem. QTY: Barrel	12,500	12,500	10,000	10,000	20,000	30,000	25,000	15,000	10,000	7,500	7,500	10,000	170,000	Criterion Barrels LLC
Dem. QTY: Frame	12,500	10,000	10,000	20,000	30,000	25,000	15,000	10,000	7,500	7,500	10,000	12,500	170,000	Herret's Stocks
Dem. QTY: Firing Pin	10,000	12,500	12,500	10,000	10,000	20,000	30,000	25,000	15,000	10,000	7,500	7,500	170,000	GreTran Rifles
Dem. QTY: Trigger	10,000	12,500	12,500	10,000	10,000	20,000	30,000	25,000	15,000	10,000	7,500	7,500	170,000	GreTran Rifles
Dm. QTY: Rubber But	7,500	10,000	12,500	12,500	10,000	10,000	20,000	30,000	25,000	15,000	10,000	7,500	170,000	MidwayUSA

Demanded QTY Based On:

- Around 12,000,000 870's sold since 1954
- Around 170,000 sold per year on average
- Aug/ Sep historically highest selling months.

The demand curve starts at its lowest point in late fall and early winter as duck hunting seasons are coming to an end. In the early spring, turkey seasons across North America are approaching, so demand increases to above average production of 12,500 units. In early summer, demand returns to slightly below average but begins to spike between June and mid-July. Demand is at its highest point, nearly double the average, in August and September as duck season is right around the corner. This graph is based on average yearly sales of 171,500 Remington 870's over a 70 year sample size, with the highest selling month historically being

Barrel Demand QTY (Criterion Barrels LLC):

- 1 barrel per gun
- 60 day lead time per barrel
- International supplier

Explanation: Criterion Barrels LLC has the second longest lead time of all suppliers, as the barrel welding process is significant but automated by machine. Transportation adds time.

Gun Frame Demand QTY (Herret's Stocks):

- 1 frame per gun
- 90 day lead time per barrel
- Domestic supplier

Explanation: Herret's stocks has the longest lead time of all suppliers, as the wooden frame is hand shaped and sanded.

Firing Pin Demand QTY (GreTran Rifles):

- 1 pin per gun
- 30 day lead time
- International supplier

Explanation: firing pins are the smallest part but are made of metal and have to be very precise. It takes a little extra time to make for precision reasons, but is still tiny none the less. They're also shipped with the trigger, and assembled simultaneously with the trigger.

Note: There's more parts for the 870 but I highlighted the main
All orders made the first of every month

Trigger Demand QTY (GreTran Rifles):

- 1 trigger per gun
- 30 day lead time per barrel
- International supplier

Explanation: A smaller part to the gun, but still complicated as it is dependent on the firing pin and the welding process is difficult and precise.

Rubber Butt Demand QTY (MidwayUSA):

- 1 rubber butt per gun
- 1 day lead time
- Domestic supplier

Explanation: rubber butt's are easy to make, interchangeable amongst most shotguns, and made near by making transportation LT short.

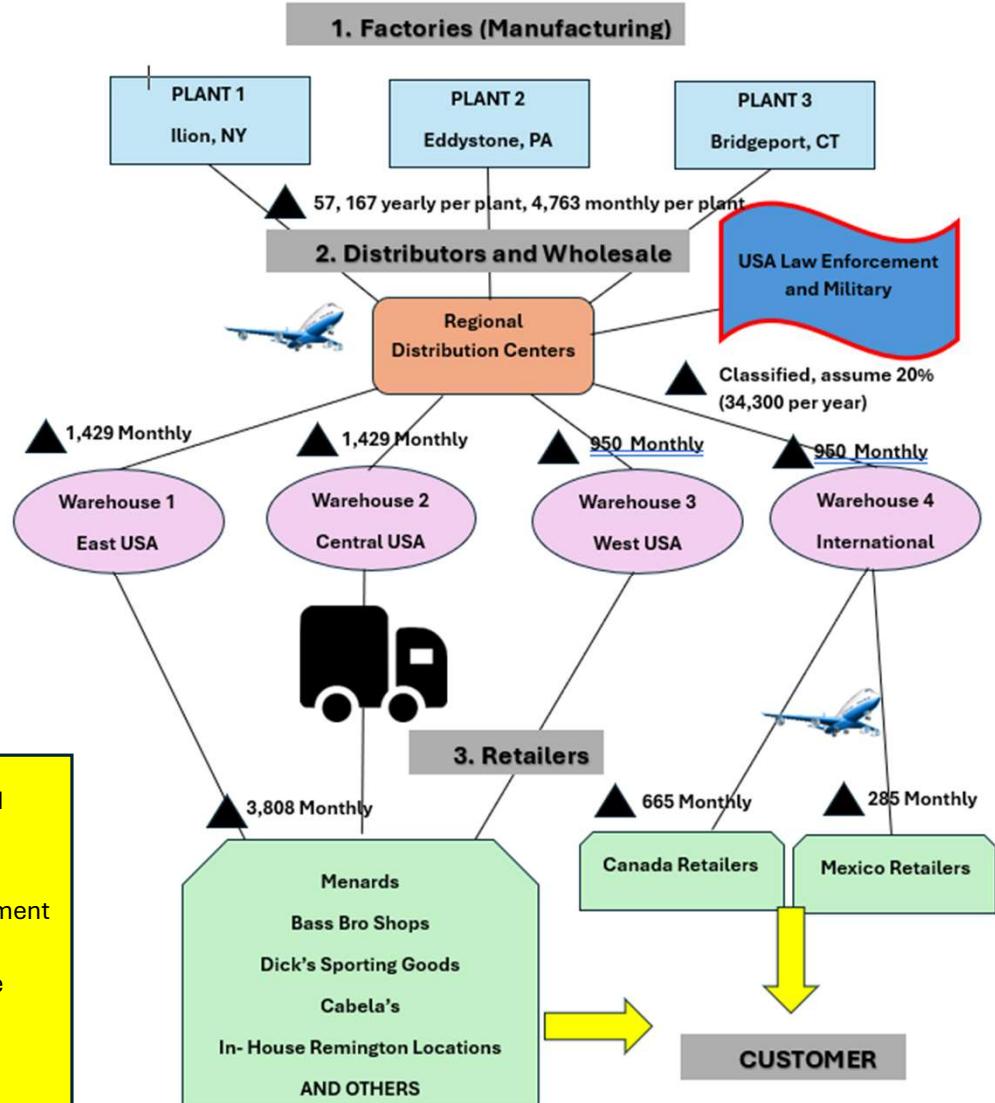
Module 6

Production Plan

Module 7

Inventory Overview

- All Inventory levels across the entire model are 20% higher in February, May, and June, and 20% lower in April, November, and December as hunting seasons are nearing or fading
- An additional 20% of 171,500 is not accounted for but distributed to US Government (assumed, classified info)
- Eastern and Central USA get 30% inventory a piece as there's more guns in these areas, Western USA and international get 20% inventory a piece as there's less.
- Canada gets 70% of international inventory and Mexico gets 30% as Canada has more weapons



Module 8

Global Supply Strategy

Remington- Domestic Only

- Assembly complete across three plants in NY, PA, and CT

There are some international sourcing opportunities.....

1. Barrels

Location: Turkey

2. Wooden Stocks

Location: Southeast Asia (Malaysia, Vietnam)

3. Synthetic Stocks

Location: China

4. Internal Components (Trigger Assemblies, Firing Pins)

Location: Eastern Europe (Czech Republic, Poland)

And there are some which should stay domestic....

1. Receiver

- Priority piece of assembly

2. Assembly and Final Quality Control

- Ensures US standards (best in the world for firearms)

Module 9

Risks and Mitigation

Risks

1. Fluctuations in Material Costs

Cause: Market changes, tariffs, supplier pricing adjustments

Mitigations: long-term supplier agreements, diversified supplier network, alternative materials

2. Supply Chain Disruptions/ Delays

Cause: delays in transportation, global-shipping issues, supplier delays

Mitigations: Safety stock, diversified shipping routes, supplier relationships

3. Quality Control Issues

Cause: raw material quality variability, inconsistent manufacturing processes

Mitigations: supplier audits, increased quality inspections, employee training

Module 10

Future Actions

Future change which will affect Remington: increasing regulations and import/export restrictions on firearm components.

To counteract:

1. Diversify Suppliers
2. Invest in Vertical Integration
3. Compliance Expertise

To capitalize:

1. Market the “MADE IN USA” Advantage
2. Develop a Modular System
3. Eco-Friendly Initiatives

Conclusion