Learning Guide - Phase 4 construction of a supply chain

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Table of Contents

List of Tables

List of Figures

Introduction

The livestock and dairy sector is a central component of Puerto Boyacá's economy. The municipality identifies cattle ranching—particularly dual-purpose bovine production for meat and milk—as one of its main productive activities (Alcaldía Municipal de Puerto Boyacá, n.d.). Local commercial activity also includes cattle auctions operated by the Asociación Regional de Ganaderos de Puerto Boyacá [ASOREGAN], which reflects the relevance of organized commercialization and logistics support in the municipality (ASOREGAN, n.d.).

Despite this productive potential, producers may face operational challenges related to transportation coordination, product preservation, temporary storage, distribution planning, and traceability. These elements are especially important for dairy products and other time-sensitive agricultural goods, for which service quality depends on coordinated movement, controlled handling, and timely delivery.

To contribute to the strengthening of this sector, the creation of Magdalena AgroLogistics S.A.S. is proposed. The company is designed to provide specialized logistics services for the livestock and dairy supply chain in the Magdalena Medio region. Its operational model integrates storage, cargo consolidation, transportation coordination, distribution, inventory control, and digital traceability tools to support more efficient and sustainable operations.

This document presents the organizational profile of the company, the design of its national and international supply chain, and an illustrative five-year financial projection. The proposal is intended as an academic exercise to assess the feasibility and potential regional contribution of a specialized logistics service provider.

Objectives

General Objective

To design a logistics services company specialized in the livestock and dairy supply chain of the Magdalena Medio region, contributing to the optimization of storage, transportation, and distribution processes through an efficient and sustainable supply chain.

Specific Objectives

To identify and analyze the logistics needs of the livestock and dairy sector in Puerto Boyacá and its surrounding area.

To design the national and international supply chain of Magdalena AgroLogistics S.A.S., identifying suppliers, logistics processes, and customers.

To establish the storage, transportation, and distribution processes required to support the company's operational efficiency.

To develop a five-year financial projection that includes an income statement, balance sheet, cash flow statement, and internal rate of return (IRR).

To analyze the economic and commercial contribution that the implementation of the company could generate in the Magdalena Medio region.

Worksheet

Company Name

Magdalena AgroLogistics S.A.S.

Mission

Magdalena AgroLogistics S.A.S. is a company located in Puerto Boyacá, dedicated to providing specialized logistics solutions for the livestock and dairy sector of the Magdalena Medio region. Through transportation coordination, storage, cargo consolidation, inventory management, and distribution services, the company seeks to improve supply chain efficiency while supporting product quality and timely delivery. Its commitment is to provide reliable, innovative, and sustainable services that contribute to regional economic development.

Vision

By 2031, Magdalena AgroLogistics S.A.S. aims to become a leading logistics service provider for the livestock and dairy supply chain in the Magdalena Medio region. The company seeks to be recognized for operational excellence, technological innovation, and commitment to sustainability while expanding its logistics network and strengthening commercial relationships with producers, processors, distributors, and national and international markets.

Justification of the Proposal

Puerto Boyacá is characterized by a strong livestock base. The municipal economy describes the municipality’s terrain as favorable for extensive cattle ranching and reports a substantial bovine inventory, supporting the relevance of logistics services focused on meat and dairy activities (Alcaldía Municipal de Puerto Boyacá, n.d.). In addition, weekly auctions organized by ASOREGAN demonstrate the presence of local commercialization dynamics that require reliable movement, handling, and coordination of livestock-related goods (ASOREGAN, n.d.).

Magdalena AgroLogistics S.A.S. is proposed as a logistics support center that can help producers and commercial partners coordinate transportation, temporary storage, distribution, and inventory control. The use of route optimization, traceability, and inventory management tools is intended to improve operational visibility and facilitate more timely decisions within the proposed supply chain.

Importance for the Commercial Sector

The proposal can contribute to commercial integration by connecting producers with processing plants, distribution centers, retail channels, and final consumers. In this academic model, the company's value proposition lies in reducing coordination gaps, supporting controlled product handling, and enabling more organized movement of products across regional markets.

For international operations, market selection should be considered a future opportunity rather than a guaranteed result. Colombian dairy exporters must comply with destination-specific sanitary and documentary requirements, including procedures that may involve the competent authorities and inspection processes (Instituto Colombiano Agropecuario [ICA], n.d.; ProColombia, 2024).

Company Logistics Design

Figura 1

Integrated logistics design of Magdalena AgroLogistics S.A.S.

Note. Own elaboration. The national and international supply-chain flows, potential target markets, technology components, and operational benefits are illustrative elements of the academic proposal. International operations are subject to applicable sanitary, customs, and market-access requirements.

Company Overview

Magdalena AgroLogistics S.A.S. is a logistics company located in Puerto Boyacá, Colombia, specialized in transportation coordination, storage, cargo consolidation, inventory management, and distribution services for the livestock and dairy sector of the Magdalena Medio region.

National Supply Chain

The proposed national supply chain begins with livestock farmers, dairy producers, animal feed suppliers, and veterinary supply providers. Products and supplies are received at the Puerto Boyacá logistics center, where they are inspected, registered, temporarily stored, consolidated, and prepared for distribution. From there, products are routed to processing plants, distribution centers, supermarkets, and other commercial partners throughout Colombia.

International Supply Chain

The proposed international supply chain begins at the logistics center, where products are consolidated and prepared for export. After processing and packaging, cargo may be routed to the Port of Cartagena for maritime shipment, subject to contractual, customs, and sanitary requirements. The Port of Cartagena has reported containerized exports of dairy products, which illustrates the relevance of specialized port logistics for this type of cargo (Sociedad Portuaria Regional de Cartagena, 2025).

Any export operation involving dairy products must comply with the destination country’s requirements and the procedures established by the competent Colombian authorities; therefore, the markets presented in Figure 1 should be interpreted as potential commercial scenarios, not as confirmed export destinations (ICA, n.d.).

Technology and Big Data

Within the proposed model, digital technologies and Big Data tools support route optimization, inventory visibility, demand forecasting, traceability, and real-time monitoring.

These functions are intended to strengthen operational control and evidence-based decision-making across the supply chain.

Five-Year Financial Projection

The financial projection for Magdalena AgroLogistics S.A.S. is an illustrative academic estimate developed to assess the expected performance and long-term sustainability of the proposed business model. The projection considers expected revenue from transportation coordination, temporary storage, cargo consolidation, inventory management, and distribution services for the livestock and dairy sector.

The model covers a five-year period and includes an initial investment estimate, projected income statement, projected balance sheet, cash flow statement, and internal rate of return (IRR). The values presented are expressed in Colombian pesos (COP) and rely on transparent growth and cost assumptions stated in the notes to the tables.

Initial Investment

Tabla 1

Initial investment requirements

Concept	Amount (COP)
Office and Warehouse Rental Adaptation	35,000,000
Computer Equipment and Software	18,000,000
Inventory and Logistics Management System	12,000,000
Office Furniture and Equipment	8,000,000
Initial Marketing and Business Promotion	10,000,000
Legal Registration and Permits	2,000,000
Initial third-party carrier service contracts	20,000,000
Working Capital	45,000,000
Total Initial Investment	**150,000,000**

Note. Own elaboration. The project adopts an outsourcing model for transportation during the initial operating stage; this reduces the need for direct investment in fleet assets.

The initial operating model relies on certified third-party carriers while the company focuses on supply chain coordination, cargo consolidation, inventory management, temporary storage, route planning, and distribution control. This approach is intended to reduce capital intensity and allow the logistics infrastructure to expand gradually according to demand and financial performance.

Projected Income Statement

Revenue is projected to grow as the company expands its customer base and strengthens its participation in the livestock and dairy sector. The model assumes moderate annual revenue growth and continuous operational improvement.

Tabla 2

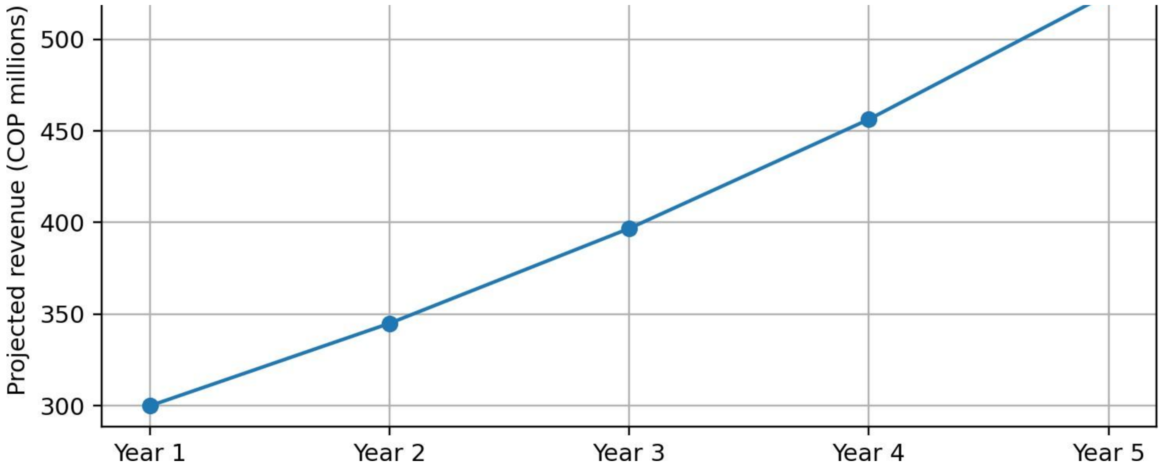
Projected income statement

Concept	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Revenue	300.00	345.00	396.75	456.26	524.70
Operating Costs	180.00	207.00	238.05	273.76	314.82
Operating Expenses	60.00	63.00	66.15	69.46	72.93
Net Profit Before Taxes	**60.00**	**75.00**	**92.55**	**113.05**	**136.95**

Note. Own elaboration. Assumptions: 15% annual revenue growth, operating costs equal to 60% of revenue, and operating expenses increasing by 5% annually. Amounts are expressed in COP millions.

Figura 2

Projected revenue growth (Years 1–5)



Note. Own elaboration based on the revenue projections reported in Table 2. Amounts are expressed in COP millions.

Projected Balance Sheet

The projected balance sheet summarizes the expected financial position of Magdalena AgroLogistics S.A.S. during its first five years of operation. Assets are expected to increase with business growth and retained earnings, while liabilities remain at manageable levels and equity increases progressively.

Tabla 3

Projected balance sheet

Concept	Year 1	Year 2	Year 3	Year 4	Year 5
Current Assets	120.00	150.00	185.00	225.00	270.00
Fixed Assets	30.00	28.00	26.00	24.00	22.00
Total Assets	**150.00**	**178.00**	**211.00**	**249.00**	**292.00**
Current Liabilities	40.00	45.00	50.00	55.00	60.00
Long-Term Liabilities	20.00	18.00	16.00	14.00	12.00
Total Liabilities	**60.00**	**63.00**	**66.00**	**69.00**	**72.00**
Owner’s Equity	90.00	115.00	145.00	180.00	220.00

Total Equity	**90.00**	**115.00**	**145.00**	**180.00**	**220.00**
Total Liabilities and Equity	**150.00**	**178.00**	**211.00**	**249.00**	**292.00**

Note. Own elaboration. Amounts are expressed in COP millions. The table presents the balance-sheet components and the total lines for assets, liabilities, equity, and total liabilities plus equity.

Cash Flow

Tabla 4

Projected cash flow statement

Concept	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Cash Inflows	300.00	345.00	396.75	456.26	524.70
Cash Outflows	240.00	270.00	304.20	343.22	387.75
Net Cash Flow	**60.00**	**75.00**	**92.55**	**113.05**	**136.95**
Cumulative Cash Flow	**60.00**	**135.00**	**227.55**	**340.60**	**477.55**

Note. Own elaboration. Amounts are expressed in COP millions. The cumulative cash flow is the accumulated result of the projected annual net cash flows.

The projected cash flow remains positive throughout the five-year period. In this academic scenario, increasing inflows are associated with growth in logistics services and customer base expansion, while cumulative cash flow indicates the capacity to sustain operations and support progressive reinvestment.

Internal Rate of Return (IRR)

Tabla 5

Cash flows used for the IRR calculation

Period	**Cash Flow (COP millions)**
Initial Investment	-150.00
Year 1	60.00
Year 2	75.00
Year 3	92.55
Year 4	113.05
Year 5	136.95

Note. Own elaboration. Values are expressed in COP millions. The IRR was calculated from the initial investment and the projected annual net cash flows presented in Table 4.

The internal rate of return (IRR) calculated from the projected cash flows is approximately 46.56%. This result indicates that, under the stated assumptions, the proposed business model would generate a return above the initial investment. Because the estimate is based on academic projections, it should be interpreted as a feasibility indicator rather than a guarantee of future performance.

Conclusion

Magdalena AgroLogistics S.A.S. is an academic business proposal that responds to identified logistics needs in the livestock and dairy sector of Puerto Boyacá and the Magdalena Medio region. Its integrated model combines transportation coordination, storage, cargo consolidation, inventory management, route planning, distribution control, and traceability to support more organized and efficient supply-chain operations.

The national and international supply-chain design recognizes Puerto Boyacá's productive context and presents the Port of Cartagena as an illustrative potential route for maritime exports. However, international operations require specific commercial, sanitary, customs, and destination-market validation before implementation.

The five-year projection presents a positive financial scenario, with growing revenue, controlled operating costs, positive cash flows, and an IRR of approximately 46.56%. These results support the academic feasibility of the proposal under the stated assumptions, while emphasizing the need for later validation through market research, operational pilots, and a detailed financial risk assessment.

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