Supply Chain Document for Robot Manufacturing

Introduction:

This document outlines the supply chain process involved in the manufacturing of a robot. The robot is composed of various components sourced from different suppliers across different regions. The goal is to manufacture a high-quality robot while optimizing costs and ensuring timely delivery.

Robot Components:

1. MG996 Servo Motor
2. Brushless Geared Hub Motor
3. Arduino Uno
4. ESP32
5. Jetson Nano
6. Lidar A2 Delta
7. Ultrasonic Sensor

Manufacturing Process:

The manufacturing process involves assembling the robot components to create a functional robot. The components are sourced from different suppliers based on price, quality, and availability. The production steps include:

1. Component Procurement: Components are ordered from the respective suppliers based on the required quantity for manufacturing.

2. Quality Control: Incoming components are inspected to ensure they meet the required quality standards.

3. Assembly: Skilled technicians assemble the robot using the procured components and following the design specifications.

4. Testing: Each robot undergoes rigorous testing to verify its functionality and performance.

5. Packaging: The robots are securely packaged to protect them during transportation.

Cost Analysis:

Widgets Used in Robot:

Engine:

component	Price (per piece)	Shipping price	Source
MG996 Servo Motor	$2.20	$13.49	Made in China
Brushless Geared Hub Motor	$93.00	$37.00	Made in China

Controllers:

component	Price (per piece)	Shipping price	Source
Arduino Uno	$8.00	$2.85	AliExpress
ESP32	$8.00	$4.50	Alibaba
Jetson Nano	$167.70	$7.40	Amazon

Sensors:

component	Price (per piece)	Shipping price	Source
Lidar A2 Delta	$79.90	$6.00	AliExpress
Ultrasonic Sensor	$6.43	$6.00	Amazon

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Lidar A2 Delta	$79.90	$6.00	AliExpress
Ultrasonic Sensor	$6.43	$6.00	Amazon

Total Cost of Manufacturing One Robot:

Engine:

component	Price (per piece)	Quantity	Total Price
MG996 Servo Motor	$15.69	2	$31.38
Brushless Geared Hub Motor	$130.00	2	$260.00
Total Cost			**$291.38**

Controllers:

component	Price (per piece)	Quantity	Total Price
Arduino Uno	$10.85	5	$54.25
ESP32	$12.50	2	$25.00
Jetson Nano	$175.10	1	$175.1
Total Cost			**$254.35**

Sensors:

component	Price (per piece)	Quantity	Total Price
Lidar A2 Delta	$85.90	1	$85.90
Ultrasonic Sensor	$12.43	1	$12.43
Total Cost			**$98.33**

Part Category	Total Price
Engine	$291.38
Controllers	$254.35
Sensors	$98.33
Total Cost	**$644.06**

The total cost to manufacture one robot amounts to **$644.06.**

Furthermore, you have calculated the total cost of supply chains for manufacturing 40 robots.

Total Cost of Supply Chains to Produce 40 Robots:

Part Category	Total Price
Engine	$11,655.20
Controllers	$10174.00
Sensors	$3,933.20
Total Cost	**$25762.4**

Therefore, the Total Cost of Supply Chains to produce 40 robots is **$25762.4.**

Conclusion:

By efficiently managing the robot manufacturing supply chain, we can produce high-quality robots while maintaining cost-effectiveness and meeting delivery timelines. Regular evaluations and improvements in the supply chain process will ensure the success of our robot manufacturing endeavors.