

Freight Cost Reduction Project

Hewlett Packard Enterprise

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Abstract

Shipping products from the Caribbean have a limited amount of freight options in comparison with other geographical regions. For HPE Puerto Rico, one of the main business goals for FY23 is to establish initiatives that can help reduce freight costs. This task was achieved using the DMAIC methodology and the use of lean six sigma tools, like the failure mode and effect analysis. By using these tools process governance was established, the projected average cost per pound will be reduced by 33% and the shipping process was improved. The implementation of all these initiatives resulted in a potential cost savings of \$180K for FY23 and other process improvements

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Problem Statement

HPE Puerto Rico's Manufacturing Operations (HPEPR) incur freight costs to ship finished goods to its destinations. As HPEPR is located on an island in the Caribbean, freight options are limited compared to other HPE sites. For HPEPR, one of the main business goals for FY22 is to establish cost-reduction initiatives across the organization. This initiative was selected by the Supply Chain Department as it directly impacts the cost of sale (COS) of HPEPR's businesses.

For HPEPR, the difficulty with the process is that freight charges are reported by the Traffic Department as a lump sum figure and there is not enough granularity available for the supply chain department to identify areas of opportunities. This causes some difficulty to present a clear picture to top management of how freight charges are behaving and where to establish process improvement plans.

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Objectives

- Reduce HPEPR Freight Cost Per Pound
- Optimize total outbound spending.
- Improve historical data reporting methodology.

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DMAIC Methodology

4.1

Define

In Table 1 a critical to quality tree was conducted to determine the determine the client's need and specifically what needs to be addressed.

Table 1 - Critical to Quality Tree

Need	Driver	Critical to Quality Characteristics	Data Source
What does the customer need?	What would that mean (General, hard to measure)?	What would that mean (Specific, easy to measure)?	
Reduced Freight Outbound Cost Per Pound	Optimized carrier usage	Low cost per pound by carrier.	Trax Report/ Logistics Team
	Optimized business	Low cost per pound by business. Controlled usage of expediting services	Trax Report/ Logistics Team

4.2

Measure

A line chart was developed (Figure 1) to identify the cost per pound associated with carriers. Based on this chart, Carrier 1 or C1 provided the lowest cost-per-pound rates across all fiscal year 21.

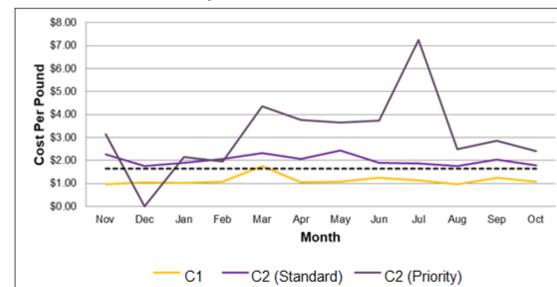


Figure 1 -HPEPR Cost per Pound by Carrier Type

In Figure 2 a pareto chart was developed to have more specific information about the shipment behavior of different businesses and their respective cost per pound. This provided visibility of the business with highest percentage of shipped pounds and with a greater possibility for cost reductions



Figure 2 - Cost Per Pound by Business vs Percentage of Pounds Shipped

4.3

Analyze

A cause-and-effect diagram was conducted for root cause identification (Figure3):

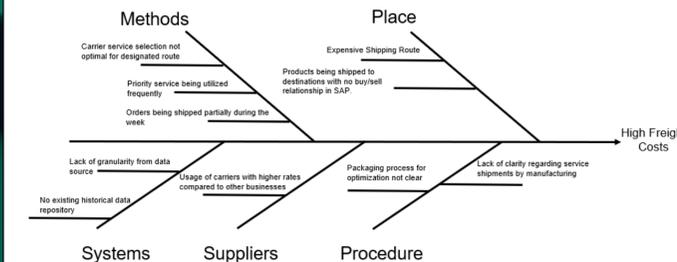


Figure 3- Cause and Effect Diagram

It was determined that the root causes were:

- Lack of freight management strategy
- High utilization of priority shipments
- Lack of packaging strategy
- Invoicing process gap

Root cause identification helps understand what happened in the past but to have a better understanding of what can happen in the future a creation of a failure modes and effects analysis was conducted, The FMEA can be seen in Table 2.

Table 2 - Failure Modes and Effects Analysis

Process Step	Potential Failure Mode	Potential Failure Effects	SEV	Potential Causes	OCC	Current Process Controls	DET	RPN
Assign Carrier usage Guidelines	Assignment of carrier guidelines are not executed	Maintain existing service level agreements	6	Carrier RFG not executed by Traffic department	3	Governance process by Traffic department	3	54
	Communication of negotiation results doesn't reach key personnel.	Continue to utilize carriers with higher rates.	9	Results communicated via email may not reach all key personnel.	6	No controls in effect.	6	324
Plan Shipment	Ship product as priority when there was no need to.	Business impacted will pay a higher cost for freight	6	*Un-clear guideline of service usage *lack of management governance	6	No controls in effect.	6	216
	Plan incorrect amount of units to ship	Customer receives incorrect amount of units.	9	Ship Plan Order created incorrectly	3	Plan orders are automatically generated from Sales Orders in SAP	3	81
Book Shipment	Assign incorrect carrier service for designated route.	Ship product using a carrier with a higher cost per pound.	6	Planner and CEVA not aligned on shipment strategy per business.	6	Verbal agreement on which carrier to use.	6	216
	Use incorrect invoicing billing account	Charges will hit incorrect business.	6	*Account field left blank in shipping documentation. *lack of process knowledge by new planning resources. *Process Oversight by Logistics team.	6	Physical validation by shipping coordinator.	6	216

The analysis showed that there is no formal process to document freight strategies, that there is no governance in place to track priority shipments, and that there is a process gap in the utilization of shipping accounts.

4.4

Improvement

The improvement phase was about the creation of a series of actions defined to improve the freight management process. In Table 3 a comparison of the processes were conducted:

Table 2 - Failure Modes and Effects Analysis

Before	After
Cost per pound available at site level	Cost per pound is available at a business level, region, and service type.
No effective data trend history in place	Data collection system in place to monitor trends and identify process improvement opportunities
Unclear freight strategies	A freight management program was created to identify key areas of opportunities and monitor/control initiatives
No governance of carrier priority service utilization	Governance process was put in effect with SharePoint to track the usage of priority shipments and a passive approval process created
Gap in shipping account usage guideline	A process created and documented in the quality system site to help guide employees on which shipping accounts should be used by business

4.5

Control:

To sustain the gain, several steps were taken to maintain improvement: Project Documentation, Trainings and Monitoring of the cost per pound metrics

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Results

By establishing carrier guidelines specific and optimal for every business, cost per pound will be reduced from an average of \$1.62 to a projected \$1.08. This represents a 33% cost per pound reduction and a total projected saving of \$180K for FY23

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Conclusion

Lean six sigma methodology offers great flexibility in terms of all the scenarios it can be applied. From small manufacturing issues to problems that have high management visibility like the cost per pound metric. By implementing this methodology several improvements were quickly identified and assessed. As a result of this project, the freight management process will now be more robust while also achieving cost-reduction benefits