

# **Productivity Measurement in the Cold Supply Chain Industry**

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## **Abstract**

### **Introduction**

This productivity measurement research was based off of a collection of data from the International Association of Refrigerated Warehouses (IARW) which is part of the Global Cold Chain Alliance, founded in 1891. IARW acts as the third-party association of the temperature controlled warehousing industry. Every two to three years, the International Association of Refrigerated Warehouses conducts a survey to scope the characteristics of the refrigerated warehouse industry. This provided key information about characteristics of the industry in terms of productivity; such as labor hours, wages and contracts, automation and case picks.

### **Methodology**

Data was a descriptive analysis collected and projected through Microsoft Excel software and presented as charts and graphs. The following topics arranged evaluations of data: labor costs by type of employee, wage and fringe benefits; labor costs for regular employees and contracted personnel; employee classifications in refrigerated warehouses; total hours paid by employee classification; case picking activities of IARW membership; labor costs by employee average type warehouse, and labor allocation by employee type Full Time Equivalents (FTE).

### **Data Description**

The findings of this research were a descriptive analysis of warehouses based off a benchmarking survey that gaged the various distributions by size of warehouse. The customers were of a range of diverse geographic location, labor, warehouse size, and type of services. The data was collected to measure productivity in the refrigerated warehouse industry.

### **Results and Impact**

The results of the survey indicated that aside from a few deviations, most cold supply chain warehouses were accomplished with little or no automation. The majority of labor and costs were attributed to regular handling employees, with minimal managerial or technical employees. The research provided insight in to the refrigerated warehouse industry as to how the warehouses were run, where finances were allocated and to whom.

A major focus of this study on productivity was labor distributions. The average number of full time equivalents (FTEs) in a warehouse contained a majority of handling employees. Management, engineering/technical, and other (mostly administrative) employees made up only one-fourth of the labor allocation.

Respondents to the benchmarking survey that reported having some share of operations automated made up 14%, with only four of them claiming 100% warehouse automation. Of those that claimed some automation, an average of 32% of tasks was automated. This information provides a record of changes in refrigerated warehouse logistics from previous data and gives an indication as to the future of the industry.

### **How the Presentation will initiate Conversation**

The presentation will initiate conversation about management and the supply chain. Refrigerated warehouse operations are an important and often unacknowledged member of agriculture field yet very important to the agricultural lifestyle, especially in relation to productivity. This data will start a conversation about economic efficiency of labor in the cold supply chain and is relative to the topic of food waste. In addition, the question will be asked about the future of refrigerated warehouse operations in a rapidly developing technological age where automation is replacing human labor, one wonders why such a small percentage of refrigerated warehouse correspondents utilize it.