

CANNIBALIZATION PROCESS IN REVERSE LOGISTICS

*Reznik V., Savchenko L.
National Aviation University, Kyiv*

Continuous health crises, recessions, environmental and climate breakdown make sustainable procurement essential to building more resilient, sustainable and just societies. The UN's 2030 Agenda for Sustainable Development promotes procurement practices that are sustainable in accordance with national policies and priorities [1, 6].

At the present stage of economic development of Ukraine reverse logistics is considered as an important factor in the development of logistics companies and enterprises, industries and the state as a whole. The organization of reverse logistics processes in Ukraine today is poorly understood. This is due to the fact that most supply chains are focused only on the movement of material flows in the forward direction and do not take into account the possibility of their return in the opposite side. The processing of returned goods flows, as well as their recycling or disposal, involve a large number of problems and costs, which require knowledge and experience in the field of reverse logistics management, as well as an understanding of the relevant infrastructure [2-5].

Cannibalization is the process, that involve the selective disassembly of used goods and inspection of potentially salvageable parts. In reverse logistics, Cannibalization is an operation that falls under the umbrella of recovered parts that aims to take advantage of some of an item's components. Generally, these parts tend to be leveraged for other product recovery processes, such as repairs or remanufacturing [7].

Advantages of Cannibalization:

1. Minimization of environmental impact: leveraging the components of a product whose useful life is over prevents new raw materials from being exploited for the production process. It also reduces energy use as well as air and water pollution.

2. Lower costs: reusing part of a product's components brings down expenses relating to the repair and restoration of other products.

3. Improved brand reputation: society in general and customers in particular are increasingly loyal to businesses that support environmental issues [7].

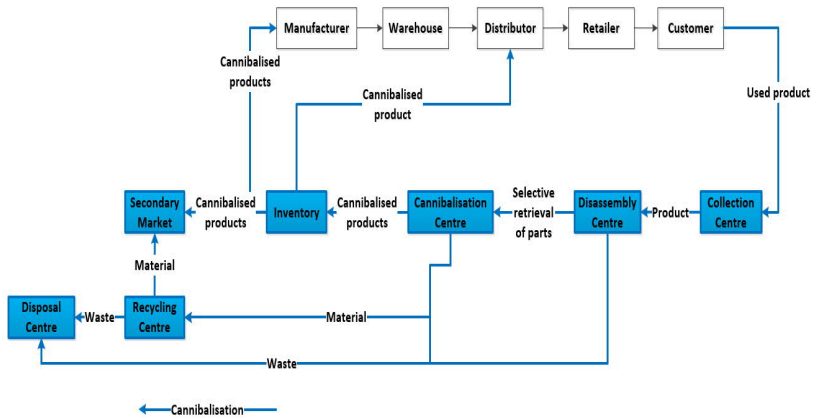


Figure 1 - Cannibalization activities [8]

Disadvantages of Cannibalization (on the example of U.S. military aircraft spare parts):

1. Cannibalization Increases Maintenance Workloads: It increases workloads by effectively doubling the amount of work necessary, compared to simply installing a delivered part. The asset takes twice as long to repair and additional quality inspection is required for the removed part. This significantly increases personnel labor hours and costs.

2. Cannibalization Renders Expensive Assets Unusable Temporarily: Failure to track the exact components removed can result in safety and/or financial issues due to inoperable equipment.

3. Cannibalization Can Result in Mechanical Side Effects: The physical act of removing components from complex assets is also problematic. In executing the removal and replacement, technicians may damage the components or connected systems. For example, removing fuel lines within engines to access fuel regulators or pumps may result in damage to the fuel system, increasing future maintenance costs and down time [9].

Our recommendations to reduce these risks during the Cannibalization procedure is using digital systems of inventory management; electronic database, it will provide total asset visibility and reduce the lack of supply and maintenance integration. For example, company GOLDesp reduces costs spent on Cannibalization of spare parts of military aircrafts and the risks of this procedure by remote tracking of all the Cannibalization procedures by creation and linking of records and work orders due to electronic database and inventory management. This includes enabling access to past and current cannibalization records. This organization also uses the Automated Warehouse technologies.

Also, this organization's system uses the automated notifications of back-orders. So, if the replacement part becomes back-ordered, the system in this case will automatically notify the personnel, who can adjust the status of "Not Mission Capable-Supply," or NMCS, and make a determination on whether or not to cannibalize the part. This procedure will save the time and help to avoid extra work of technical maintenance support.

GOLDesp's material forecasting capabilities ensures spares are readily available to support maintenance activities. This minimizes the need for cannibalization by accurately identifying requirements for new parts in advance, while reducing stockpiling of unnecessary spares [2].

GOLDesp's material forecasting module examines past consumption in order to forecast future consumption and stock levels. It automatically correlates past consumption with completed maintenance/repair work orders over a specific period, supporting minimum and maximum ordering requirements [9].

Conclusion:

So, from the researched above, we can make conclusion, that the GOLDesp company on its example shows how to reduce lacks and risks in Cannibalization procedure in Supply Chain management of the U.S Air Forces. The same inventory management technologies are applicable to reverse Logistics of another companies, not only with military activity. These mechanisms are also applicable for Cannibalization of spare parts in Ukrainian Air Forces.

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