

# 11. THE KEY OF SUCCESS FACTOR TO IMPLEMENTATION OF REVERSE LOGISTICS SYSTEM

*By Farida Pulansari*

# THE KEY OF SUCCESS FACTOR TO IMPLEMENTATION OF REVERSE LOGISTICS SYSTEM

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## Abstrak

Xerox and Kodak are two examples of companies that have successfully implemented reverse logistics system. Many factors that have been implemented by Xerox and Kodak, namely are external factor, material, inverse supply chain, system factor until company strategic factor. This paper will explain about modeling systems of each company as well as equality and differences between two companies. The purpose of this paper is as raw model for other companies to participate and implement reverse logistics in order to save and minimize the use of natural resources. Companies can choose the appropriate modeling system with the characteristics of the company, adjusted for several factors, among others, in terms of weakness, strength, competition, and threats that may occur. Therefore successful implementation of reverse logistics from each company would vary from top management as a decision maker to determine any policy, strategy, vision and mission to survive in competition until lower management as operational sections.

Keywords: reverse logistics, modeling system, Xerox, Kodak

## I. INTRODUCTION

Reverse Logistics System can be successfully implemented due to several factors such as external / internal factors, material, inverse supply chain, system and company strategies factors. Because of the limited number of natural resources [1], a company is demanded to implement several concepts such as legislation, social responsibility, corporate imaging, environmental concern, economic benefit and customer awareness. Those concepts hopefully can produce environmentally friendly products and upgrade the value of an item after its end of life is expired to be rinsed and to decrease the impact to the environment as a result of a product and process.

Some techniques have been developed to anticipate the problems above that is how to upgrade the value of a product by using a little of percentage of natural resources, however, the value of that product is the same/nearly the same as a new product through the concepts of: remanufacturing, refurbishing, reuse, recycle and modularity. There have been many advantages gained from some process mentioned above such as Steel Recycling Institute, which is quoted by [2], and giving advantages such: for iron giving 74% impact for energy saving, 90% for the use of natural resources, 97% reduction from mining wastes, 88% reduction for air emission, 70% for water reduction.

According to [3], the relation between value improvement and a process is by means of design of sustainable logistics networks balancing planet and profit. This expression shows that with good logistics design (including in the process and use of material) will be able to balance between the survival of life on the earth planet and the profit gained by a company. From the above mentioned reasons, this paper is made to see how far the factors supporting the success of the implementation of reverse logistics itself as it is carried out by Xerox and Kodak which are successful in Europe based on the survey of [4].

## II. REVERSE LOGISTICS 2

According to [5] from The Council of Logistics Management, reverse logistics is "Process of planning, implementing and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal". This concept shows that reverse logistics is basically not only a process of planning and implementation but also controlling from unsure raw material, work process until a finished product with information as supplement in its management system which will give information about new product, end of life of a product until the process of improving its value. Besides this information will give education about the customer's pattern of life in consuming a product whether it is already suitable or not with the one recommended or making its own pattern so that it will create pollutant/waste which is not supposed to become present. This pattern of life is significant as a research material for a company to know more about a part or component which is often damaged so that they just need to produce that part only without making all the products that will use up the available source.

The scope of Reverse Logistics [6] in a supply chain in which the process of value improvement can be carried out again is some products that meet several requirement such as: Manufacturing return, Commercial return (B2B and B2C), B2B (Short-life product) and B2C (product quality), Product recall, Warranty return, Service return, End-of-use return and End-of-life return. While for the cost factor being spent, there is a research done by [7] that the cost spent by a company resulting from the reverse process is as much as 15-20% per product sold about \$43 billion annually. The statement of [8], is really supporting the reverse logistics method which is a process of product reverse from consumer to company because recycling iron is cheaper than using natural resources. Besides this process is a form of government responsibility to the product waste from iron because it is not recyclable by soil. Some advantages that can be obtained are 74% in energy savings in the production process, 90% in virgin material use, 97% reduction in mining wastes, 88% reduction in air emission, 76% water reduction. For areas with frequent reverse logistics according to the research done by [5] is shown in the following table:

Table 1 : Reverse Area

<span style="background-color: #f0f0f0;">7</span> Reverse Area	% reverse
Electronics	22%
Consumer Goods	17%
All industries	16%
Automotive	14%
Food	14%
Pharmaceutical	3%
Forest products	3%
Software	2%

Source : Rogers and Tibben, 2002

### III. DISCUSSION

From the research carried out by [9] about the characteristics of a product to determine the strategy of end of life, several product have been chosen as object of research for comparison namely HP, Xerox, Toshiba, Philips and Kodak. The following table will explain about the key of success to the implementation of reverse logistics seen from several factors. The above table shows that for both products that is Xerox and Kodak are tried to be compared to several factors such as from external factors, material factors, inverse supply chain factors, system factors and company strategic factors. The above table also shows how a company designs its strategy starting from the strength, the weakness, the competitors and possible chance which can be enter either with past/old or new product so that the designed strategy can be well implemented in line with the condition of a company. Focus this research is to compare two companies which successfully implemented reverse logistics system based on specification product and relationship of collection center.

Table 2 : Xerox vs. Kodak Characteristics

NO	CHARACTERISTICS	XEROX	KODAK
<b>OBJECT</b>			
1	Object	Photocopy Machine (Document Centre)	Single use camera
2	Characteristics	# Midrange # Digital # Modular	No flash
<b>EXTERNAL FACTORS</b>			
3	Wear-out life (year)	5	4x remanufacturing
4	Design cycle	4	1
5	Technology cycle (year)	2	5
6	Functional complexity	High	Low
7	Technology research focus	Speed, Quality	Flash, Size
8	Reason for Obsolescence	Outdated	Worm-out
9	Company Environmental Design Focus	50% Remanufactured	Build, packaged and sold with an "after-life" in mind
<b>MATERIAL FACTORS</b>			
10	Recycling Value Drivers	Remanufactured Parts	Electronics, Plastics, batteries
11	Penalties Associated	Toner	Batteries
12	End of Life Paths (% number of parts)	Possible	Actual
13	Cleanliness of Products	Low	High
<b>INVERSE SUPPLY CHAIN FACTORS</b>			
14	Responsible to transportation	Xerox	Kodak
15	Trade-in Possibilities	Yes	-
16	Beneficiaries of recycling	Xerox Service Parts	Kodak
<b>SYSTEM FACTORS</b>			
17	Centralized collection center	1 (Logistics Return Center of Xerox)	Many (Fuji, Konica store and ext) Kodak collection center
18	Life Cycle process	Reuse Remanufacturing Refurbishing Recycle	Remanufacturing
19	Decision for Life Cycle process	Reuse parts depend on 4 alternative : machine condition, end of life machine, demand number used parts, and inventory level	All product will be remanufacturing process
20	Business performance	Product & service quality Asset Productivity and Growth Supplier Performance Public Responsibility Financial Performance	
<b>COMPANIES STRATEGY FACTORS</b>			
21	Snapshot of New Strategy	Design, production, inventory management, supplier relations, and staff function	Bolster the return of former Kodak customers, specific market, lure non Kodak users, good price, cannibalization
22	Product specification depend on customer behaviour	Low-Volume Copier High-End Copier Mid-Volume Copier	Super Premium Brands Premium Brand Economy Brand



23	Business Goals and Direction	Customer satisfaction Employee motivation and Satisfaction Market Share Return on Assets	Market share Positioned as a provider of superior quality films
24	Target market	Office Professionals	Professionals Advanced amateurs
25	Funtime Promotion	-	Regularly especially for peak season
26	Market Leader	Photocopy machine	Camera and film

While for the flow of information for Kodak can be described/shown as follows:

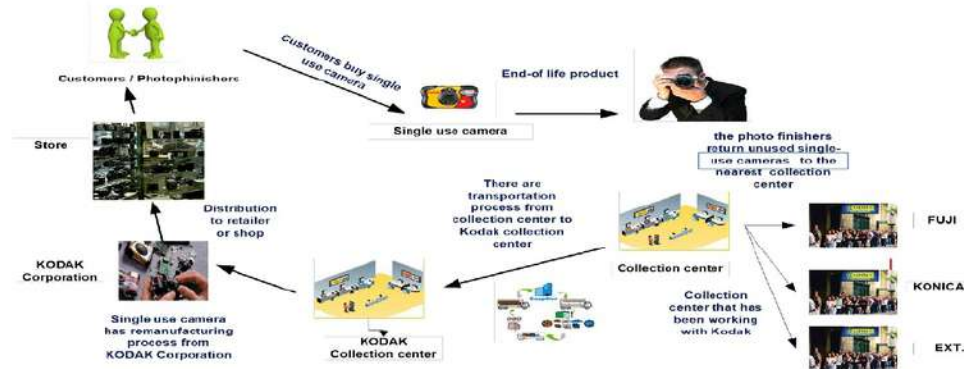


Figure 1 Modeling of information system by Kodak

Figure 1 above shows about the flow of information of reverse logistics by Kodak. After the consumer from Kodak using single use camera has finished (end-of-life happens) so the photofinishers will return their camera to places appointed by Kodak Corp. for example sellers of negative films such as Fuji, Konica etc. From these places the single use camera is brought to the collection centre formally owned by Kodak Corp. and manufacturing process is done at Kodak Company. After that the product resulted from this manufacturing process will sell again its products to consumers when the above condition is analyzed further, the success key of reverse logistics implementation by Kodak, is Kodak does not need to spend more cost to establish a collection centre which will hold all its products when they reach their end of life. However, Kodak has its strategy that is to make cooperation with companies working on negative films so that the photofinishers can return their product to all places appointed, therefore reverse logistics process can save cost and time for Kodak.

The second company which has been successful using reverse logistics is Xerox. The following is the flow of information done by Xerox to its products. The decision of recycling process conducted by Xerox Corp. are reuse, remanufacturing, refurbishing which are based on 4 alternative decisions namely: machine condition as a whole, the age of machine itself, the rate request for reuse part and inventory level.



Figure 2 Modeling of information system by Xerox Corporation

While for alternative process Xerox reuse has several considerations as follows:

- Every product which will be reused requires only minor repair/service
- If the machine is still in good condition, but needs to be split between its parts before the process of remanufacturing is conducted
- The machine is still in good condition but still considering the economical estimation
- Machine with economical estimation, only the material which enables to be recycled

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By using the motto: **easy disassembly, durability, reuse and recycling into product design**, so Xerox Corp has the aim namely Waste Free Product Goals. And the next reverse logistics activities conducted by Xerox Europe's are:

1. Transfer Xerox equipment from end customer to distribution centre owned by Xerox Corp.
2. **Sorting and Grading from Photocopy machine**
3. **Repairing and remanufacturing equipment and parts**
4. **Recycling process and disposal**

These are strategies selected by Xerox Europe Corp. to succeed the implementation of its reverse logistics system. And the more focused one is the government as the institution that issues policy and also support the company's activities to do remanufacturing, reuse, recycling and refurbishing because of dwindling of natural resources and highly caring for the environment so that the case of disposal becomes a crucial factor, therefore Xerox's goals are waste free product goals. While consumer's factor deserves to be given high appreciation because Xerox Europe's has realized that all Xerox products which are going to be sold are products with recycling process from the used product to maintain the existence of natural resources and environmental issues, however the products sold still have the same specification, performance, quality and reliability as those made of natural resources.

Unlike the two companies that have been described previously, the successful implementation of reverse logistics based on product specifications and collection centers rely on connections with others. The following are some companies that successfully implemented reverse logistics based on the determination of the appropriate collection centers such as conducted by the WEEE (Waste Electrical and Electronic Equipment), and case studies on a European pulp and paper companies based on research conducted by [4] and [10]. While the reverse logistics approach with SWOT method has been carried out by a car manufacturer's [2]. In the SWOT analysis used strategy like: strengths, weaknesses, opportunities and threats from the companies concerned to allow good reverse logistics strategy formulation in accordance with the conditions of that company.

#### IV.CONCLUSION

From comparing both companies that implement reverse logistics system between Kodak Corp. and Xerox Corp. the conclusions are:

1. Reverse Logistics System which will be conducted has to be adjusted with the capacity/ability of the company itself so that every company is different
2. The more having cooperation with other companies the more it will get profit especially in terms of finance in the case of collection centre allocation, the easier the consumers to return the products which have their end of life already
3. Consumers can easily return the items/product when the product specification have small size and not heavy, this will enable the consumers to bring back to the nearest collection centre on the other hand, when it is heavy they tend to be lazy to return them
4. A simple product design is needed to make reverse logistics easy to conduct and to save cost because only save parts need mending
5. The shorter of network supply chain its can be the faster the implementation of reverse logistics process
6. The government policy gives much contribution because it gives facilities to companies to make innovation either design or process so that it can help the success of the implementation of reverse logistics

7. Another thing which deserves to be given appreciation is the awareness of Xerox and Kodak consumers to be willing to use product resulted from remanufacturing without complaining whether or not the product made of natural resources. The most important things that the product has the same specification, performance, quality, durability as those made of natural resources, in other words they are aware and care for the environment and global warming.

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