Recovery Process and Products Resale

The Case Study of IKEA

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Abstract

IKEA has been taking over as one of the leading furniture retailing companies. The Swedish multinational continues growing and every year increases the number of stores present in the most varied countries. Consequently, the volume of revenues did not stop growing, even at critical moments, as during the financial crisis of 2008. The reasons that lead to this success at global level are varied, but one of them corresponds precisely to the one that will be the focus of the case studied in this paper – the Recovery process.

Obtaining revenue through this process and minimizing the costs associated with items that are not in conditions to be sold (known as transfer type according with IKEA terminology) has led IKEA to differentiate itself from the competition. Each store has a section dedicated to this process, where each item returned, internally or externally, can be repacked and sent back to stock or recovered and sold at a more affordable price in the As-Is section.

Besides the contextualization of the problem under study and the analysis of its fundamental concepts, it is also carried out a literature review that allows a better understanding of the case. Concepts such as supply chain, reverse logistics, repair and repacking are studied given their relevance to the problem studied. The paper continues with the presentation of the methodology to be adopted and the results discussion. Finally, it is concluded with the presentation of the study limitations and the future work to be developed.

Keywords: Recovery, Recovery Index, Reverse Logistics, Repair, Repack

1. Introduction

1.1 Contextualization of the problem

Currently, IKEA stores that have well implemented a recovery process have approximately 25% more profit than those who neglect this process. Recovery is responsible for providing coverage and response to systems and methods of product damage prevention. This process also covers revenue generation techniques from damaged products that would otherwise be recycled or even rendered useless. Recovery is part of one of the primary processes when it comes to meet customer satisfaction. It is only through a permanent interaction of this process with the main store operations that the operational goal of converting visitors in satisfied consumers can be achieved. The goal will always be to achieve the business objective, which is maximizing sales and optimize the profit in the long term.

Stores that can efficiently implement this process ultimately succeed in reducing or

even eliminating problems through their proactivity in prevention measures. One of the main objectives of these stores is to be able to attribute the highest possible value to the recovered products.

Some of the benefits of the recovery process include: increased profits; increased ease of purchase for customers as they can get products at a more affordable price; reduction in environmental impact, which also tends to raise awareness and attract consumers; the recycling costs can be reduced up to 75%.

There are several causes that make the products end in the recovery process and each one is classified according to the transfer type. A transfer type cost is the cost of writing off a product that is not in conditions to be sold. One of the ways to analyse the performance of recovery is to calculate the recovery index that corresponds to the total value of the revenue obtained by the recovery area divided by the total amount of transfer type costs. This index gives information on how much is the value obtained in revenue from second-hand products.

Some of the problems identified during the recovery process, in the specific case of the IKEA store in Alfragide, are related to the lack of human resources, inefficiencies in the use of space, movement, transportation and inventory.

1.2 Goals

The objective is to create a decision support tool in the Recovery process. Ideally, this tool will help workers in the most varied type of decisions that occur throughout the process, such as: establishing the most appropriate price for each item that will be sold in the opportunities section (As-Is); choose to repack an article or send it right away to As-Is; decide to recover an article or send it to recycling.

Subsequently an analysis of the processes in the store of Alfragide is carried out, through the study and mapping and having as special focus the recovery process. Since this area crosses any IKEA store, the purpose will be to develop and then implement a decision-making tool on how to proceed with an article that reaches the recovery area. This tool should take into account a number of factors, such as the business aspect, labor costs, raw material, assembly and repacking time required, rules, guidelines, different merchandise flows, gross margin, Key Performance Indicators (KPI's), human resources planning, among others to be studied. Developing a process cost analysis becomes fundamental in order to know as accurately as possible how to proceed in each decision that has to be made throughout the process.

2. Case Study

2.1 Recovery Process

Recovery is the name given to the area of any IKEA store where recovery and repacking processes are carried out with articles that are not in conditions to be sold – transfer type. This process is one of the most important when it comes to achieve the customer satisfaction. Recovery has the responsibility to provide coverage and response to systems and methods of product damage prevention. This process also covers revenue generation techniques for damaged products that would otherwise be recycled. The main objectives of the recovery process can be synthesized in three crucial points:

- Reduce transfer type costs: specific objectives for different transfer type costs vary from market to market. The common goal is to reduce costs as much as possible and the best way to do this is through prevention - if there is no damage, there is no repair cost.
- Trying to repack as many items as possible: with the right tools, products whose package is damaged can be returned to stock and sold at the original price. On average it takes less time to repack furniture products than to assemble them for As-Is. In this way, the perception of IKEA brand quality is reinforced by the customer.
- Achieve a recovery index of at least 65%: the store is able to recover 65% of the transfer type costs.

2.2 Transfer type

A transfer type cost is the cost of writing off the products when they cannot be sold. There are several reasons why products might end up in the recovery area. Whatever the cause, it must be classified according to the type of transfer type - see Table 1. IKEA classifies the transfer types by a 3-digit TT code, which corresponds to a description. A transfer type may origin another transfer type, such as a TT325 that reaches recovery and originates a TT450.

Table 1 –Transfer Type List

Transfer Type	Transfer Type Cause	Responsible
TT310 – Decoration and display withdrawals	Products taken for sales display	Communication and Interior Design
TT320 – Undamaged costumer returns	Products returned by customers in perfect condition that go back to stock	Sales
TT325 – Damaged costumer returns	Damaged products returned by costumers	Sales
TT330 – Quality issues	Used to decrease stocks in products waiting for a decision	Recovery
TT390 – Internal damages	Products damaged in the store	Logistics
TT391 – Damaged on delivery	Products damaged on delivery	Logistics
TT440 – Undamaged and unsellable products	Products that cannot be sold anymore (ex: last pieces; outgoing products)	Sales
TT441 – Lost products	Products that after being sold were forgotten	Business and Operations Manager
TT450 – Recovery back-to-stock	Products that have been written off and then fixed by Recovery. The product can be returned to stock and sold at full price	Recovery
TT456 – Stock adjustments	Thefts, errors recording the transfer type	Business and Operations Manager

2.3 Recovery Index

One of the ways to analyze the performance of this process is to calculate the recovery index that corresponds to the total value of the revenue obtained by the recovery divided by the total amount of transfer type costs - see the mathematic expression used to calculate the Recovery Index (1).

$$\frac{Sales\ in\ As-Is + TT450 + CBTD + CQC}{TT310 + TT325 + TT390 + TT391 + TT440 + TT330 + TT441 + TT456}$$

$$CBTD \Rightarrow Credit\ back\ for\ transport\ damages$$
$$CQC \Rightarrow Credits\ from\ quality\ claims$$

(1)

The revenue generated by the recovery process is obtained by: repacking damaged packages in order to be possible to move the products back to stock (TT450); sale of products recovered through As-Is; credits from transport damages and quality problems.

2.4 Recovery Process Flows

Figure 1 represents the main flows that can be generated from each different type of transfer type.

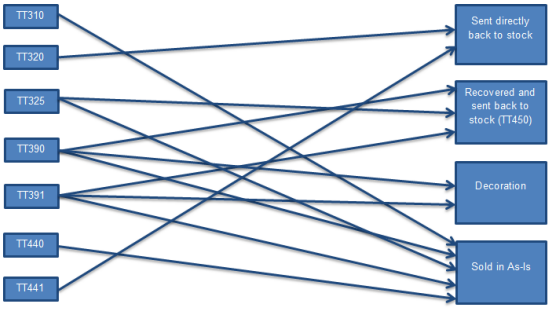

Figure 1 – Different Transfer Type Flows

Whatever the origin of the articles is, they must first be verified by the employees present inside the decision room. After careful consideration, it is decided where to send them. There are six possible endings for each item: sent directly to stock; recovered and sent to stock; used as decoration; sold on As-Is; used as parts and sent for recycling. The last two ones are both possible final destinations for articles that reach the recovery area. They are just not represented in Figure 1 in order to make the comprehension of the scheme simpler. Any article that passes through the recovery area can be sent to the recycling process.

3. Methodology

At this section is presented the methodology proposed to solve the problem under study. It begins with a selection of articles to be studied in the recovery process. After that, the costs that are considered relevant for the problem are established and it is done a brief description of each one. The concepts used in the collection of times are also presented along this section and then used to calculate and present the results shown in section 4. Then, it is presented the technique used to establish the new prices for products sold with a discount in the As-Is zone. Finally, it is presented the proposed decision support tool. The Figure 3 illustrates the methodology used.

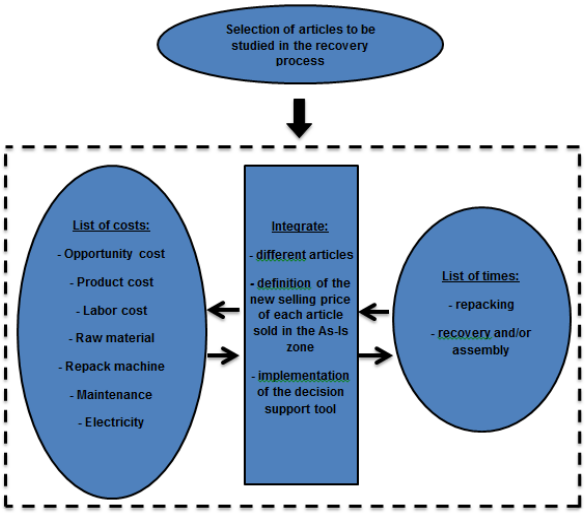

Figure 3 – Methodology

3.1 Articles selection

In order to know which articles should be studied during the recovery process, it is adequate to carry out an ABC analysis, also known as Pareto analysis. According to Pareto (1971), 80% of Italy's wealth was in the hands of 20% of the population. Nowadays, the 80-20 rule can be applied in other contexts, as in the case of inventory management. Using as a reference the nomenclature associated with the term ABC and having as criteria the relation between number and articles present in the area of recovery and revenue generated, Green (1970) classifies A as the most important class, since 80% of the value is generated by 20% of the articles. In relation to class B, 15% of the value is generated by 30% of the articles and, finally, in class C 5% of the value results from the remaining 50% of the articles. Millstein et al. (2014) structured the inventory control through the ABC analysis in three steps:

1) Group the references by groups based on the sales volume (A, B or C);
2) Choose appropriate inventory policies for each group;
3) Gather the shareholders to know if it is possible to use a given inventory policy for each product.

Taking into account the wide variety and size of the sample for the problem concerned, the analysis of the times and costs of repacking, assembling and / or recovery processes will be carried out on the articles in category A, since it is representative of the set of articles which generate higher revenues. The revenue generated on As-Is is the parameter used for the ABC analysis on the items sold in this section. Given the temporal limitation of the work in question and the company's limited availability to enable a more direct analysis of the articles, a top 20 of articles in this category was selected for study. This top represents the articles that originated the highest volume of sales in the As-Is section and to which access, observation and study of repacking, recovery and assembly costs were made possible. Throughout the FY 17 were sold in the As-Is section of the Alfragide store, approximately, 50.000 units. IKEA has approximately 12.000 articles. Considering that a large part of the articles flow that appear in the recovery area comes from returns of articles previously sold in store, this top 20 of sales in As-Is also corresponds to those that are the most selling items in store. In other words, an article that has a high demand ends up by significantly increasing its likelihood of becoming top sales in As-Is, as this section deals mostly with the resale of articles that were once sold in store and subsequently returned.

3.2 List of Costs

There are several costs associated with the recovery process - see Table 2. For each of the costs, this section will show how they can be calculated for the recovery process.

Table 2 – Recovery Process Costs

Cost Type	Amount (€)
Opportunity cost	Variable
Product cost	Variable (depends on the article)
Labor Cost	12 €/hour
Raw Material	1,58 €/piece of cardboard
Repack machine	80000 € (amortized)
Maintenance	5200 €/year
Electricity (€/KWh)	Estimative

Payne et al. (1996) investigate the decision-making process in circumstances where the opportunity cost is under time pressure. Such study becomes suitable for the problem in question, since this type of decisions is part of the day of any collaborator in the recovery area. Research suggests that most of the people have three main ways of responding to situations where they have to make decisions under pressure. According to Zur and Breznitz (1981), there is a tendency to speed up processing, which means that there is less time invested in collecting information from a given item. Next, processing tends to be more selective under stress situations, with a focus on the most important and / or negative information of the alternatives (Wallsten, 1993). Finally, decision strategies may change as pressure increases with time (Payne et al., 1988; Svenson et al., 1990).

The opportunity cost represents the value that a given entity (in this case, IKEA) attributes to the best alternative not chosen in a certain decision. Therefore, the opportunity cost is related to what is waived when making a decision. This type of decision occurs a lot of times in the daily work of an employee present in the recovery area, being of special importance the knowledge of this cost and its implications.

The product cost corresponds to the value by which IKEA purchased the product which is related to the value of its production. Knowing this cost is fundamental in order to get the profit margin of each article.

The labor cost is obtained having in consideration the salary paid to the different employees that belong to the recovery area. Taking in consideration that operations such as repacking, recovery and / or assembly take a certain time to complete and that associated with it is the intervention of one or more employees, it makes sense that for the problem in question is used the cost per hour. This cost is 12 € / hour.

The raw material cost is also relevant. Though insignificant given the volume of sales generated at an IKEA store, this cost will always be present for any activity that generates a TT450. All the packages that are not in good condition pass through the repacking machine present in the recovery area. The raw material used in the repacking operation is a cardboard piece which is used to produce the new package. The cost per piece is 1.58 €. The orders are made in batches of approximately 700 units, so the estimated cost of a lot is around 1,106 €. The articles studied only need one piece of cardboard to be repacked, so the raw material cost for each article is usually 1.58 €. The repack machine has a cost of 80,000 €. The maintenance cost is 5,200 € per year. The electricity cost is estimated through a relation between the operational costs and the revenues obtained by IKEA at a global level and also the ones obtained from the As-Is section of Alfragide store.

3.3 List of Times

The time analysis will focus on two key processes in the recovery area: repack recovery and / or assembly of an article. Each of these activities requires the presence of at least one employee and the processing time varies according to the article, number of employees and professional experience. Peinado and Graeml (2007) defend that only one time

collection of a certain activity is not sufficient to determine the duration of it. It takes several collections to obtain an arithmetic mean of these times. Thus, the crucial question is to realize how many time collections are necessary for the mean obtained to be statistically acceptable. According to the authors mentioned above, the expression that represents the number of cycles to be timed answers this question (2).

$$N = \left(\frac{Z * R}{Er * d_2 * \bar{x}}\right)^2$$

$N = number\ of\ cicles\ to\ be\ counted$
$Z = normal\ distribution\ coeficient\ for\ a\ certain\ probability$
$R = sample\ amplitud$
$Er = mean\ relative\ error$
$d_2 = coeficient\ based\ on\ the\ number\ of\ timings\ realized$
$\bar{x} = mean\ of\ the\ values\ observed$ (2)

Besides the determination of a task by timing, the study of how to calculate the normal time to perform a task is also relevant to this problem. Each employee, according to their level of experience, fatigue and motivation has a certain way of working that can influence the time it takes to perform a certain activity. Slack et al. (2002) define the evaluation of the rhythm of times observed as being the process by which the worker's speed is evaluated. This evaluation is performed by an observer whose reference is a concept of speed corresponding to the standard performance. The observer should take in consideration factors such as speed of movement, effort, dexterity and consistency. Therefore, when determining the execution time of an operation it is necessary to take into account the speed of each employer while performing a certain task. In order for the time calculation to be more rigorous and accountable for different workers, the speed measurement, although somehow subjective and dependent on the observer's analysis, should be included in the calculations - see normal time calculation expression (3).

$$NT = TT * s$$

$NT = Normal\ Time$
$TT = Time\ Trial$
$s = speed$ (3)

Since it is not possible for a collaborator to work all day without interruption, either by personal needs or by others reasons, there is a need to calculate the standard time. This time corresponds to the multiplication of normal time by a tolerance factor, in order to compensate the period in which the worker was not working. This factor depends on several variables, such as the employee physical characteristics, country, nature and work environment. Peinado and Graeml (2007) argue that what has been observed is the use of tolerances between 15% and 20% of the time for normal jobs and under normal environmental conditions. The expressions below demonstrate the mathematical formulation used to calculate the standard time and the tolerance factor, respectively (4)

$$ST = NT * TF \qquad TF = \frac{1}{1-p}$$

$ST = Standard\ Time$
$NT = Normal\ Time$
$FT = Tolerance\ Factor$
$p = break\ time\ divided\ by\ work\ time$ (4)

3.4. Setting the sales price in As-Is

Table 3 summarizes the discounts that can be applied depending on the type of product sold in As-Is.

Table 3 – Discounts List

Article type	Discount
Coming from exhibition, decoration or discontinued (TT310 e TT440)	15%-25%
Ready to assemble or already assembled and with defects	25%-40%
Packed with defect	40%-60%
Quality defect	30%-50%

3.5 Decision support tool

Given the importance that the top 20 of articles that are presented in section 4.1 represent in the sales volume generated in As-Is, it becomes relevant the development of a tool that allows a better efficiency in the decision-making process by the various employees present in the recovery area.

The huge flow of articles joined with the lack of human resources in this section of the Alfragide store means that the time management and the ability to prioritize operations become skills that are crucial. This tool is more consistent the greater the diversity of articles and collection of data made. The principle used to its development is similar to the one proposed by BCG matrix presented by the Boston Consulting Group (BCG). According to Hambrick et al. (1982), companies differentiate their performance and strategy according to the two dimensions studied in the BCG matrix: market share and market growth rate. This model is used by several companies in the analysis of their portfolio / product lines, as well as their different business units. For the problem in question, the allocation of resources will be more focused on the decision of which products should or should not be target of intervention by employees in this area. The main difference between the BCG matrix and the proposed matrix is that the variables used are more relevant to the problem under study. Taking into account the information provided and the data collected, it was considered relevant to establish 4 different matrices - see Figure 4.

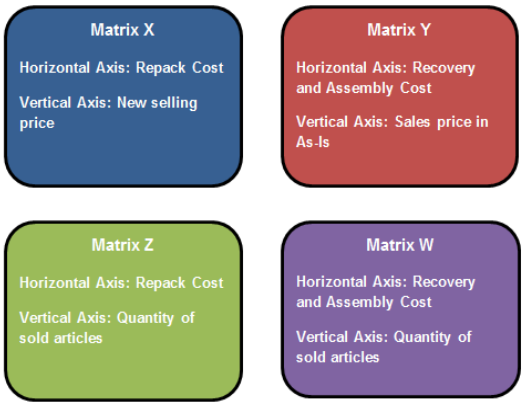

Figure 4 – Support Decision Tools

On Figure 5 it is presented an example of one of the matrices. Some examples of articles are spread in the matrix just as an example of how the matrix will look like after the study of the chosen articles in chapter 4.

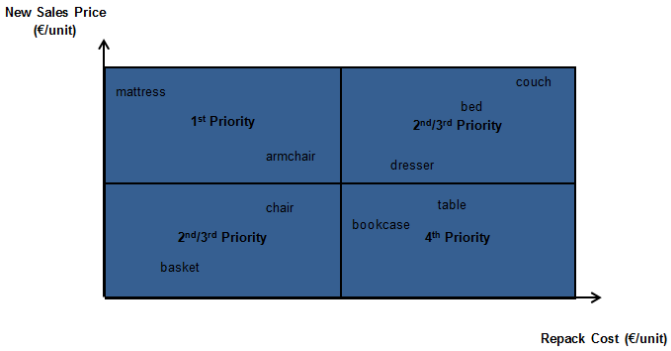

Figure 5 – Matrix X

4. Implementation and Results Discussion

4.1 Articles Top 20

The top 20 of articles that originate the highest volume of sales in the As-Is section are represented on Table 4.

Table 4 - Top 20 Recovery Area

Article Id.	Original Sales Price (€)	Sales Vol. in As-Is (€)	% Sales Vol. in As-Is	Quant. Sold in As-Is (units)
1	299.00 €	1,864.23 €	11.80%	8
2	69.99 €	1,917.77 €	12.14%	34
3	279.00 €	834.88 €	5.29%	4
4	49.99 €	837.81 €	5.30%	21
5	49.99 €	564.54 €	3.57%	14
6	199.00 €	1,132.53 €	7.17%	7
7	329.00 €	1,313.82 €	8.32%	5
8	319.00 €	259.35 €	1.64%	1
9	570.00 €	1,784.13 €	11.30%	4
10	70.00 €	910.56 €	5.76%	16
11	29.99 €	670.6 €	4.25%	28
12	359.00 €	283.74 €	1.80%	1
13	134.00 €	108.94 €	0.69%	1
14	129.00 €	209.76 €	1.33%	2
15	139.00 €	137.4 €	0.87%	1
16	45.00 €	512.22 €	3.24%	14
17	110.00 €	1,073.17 €	6.79%	12
18	149.00 €	121.14 €	0.77%	1
19	499.99 €	1,156.09 €	7.32%	3
20	35.00 €	102.54 €	0.65%	4
Total		**15,795.22 €**	**100%**	**181**

4.2 Times Collection

Table 5 shows the repack times of the articles analyzed.

Table 5 – Repack time

Article Id.	Repack time (min)
2	1:39
4	1:36
5	1:39
6	1:41
8	1:50
10	1:56
11	1:24
13	1:40
15	1:40

The articles that are not represented in table 5 are not subject to the recovery process or were not present during the collection analysis. Table 6 represents the different times calculated for the recovery and assembly process. Three different employees were responsible for this process, so A, B and C identify each of them.

Table 6 – Trial, Normal and Standard Times of Assembled/Recovered articles

Article Id.	Employee	Trial Time	Normal Time	Standard Time
2	C	19:36	14:42	17:12
9	B	27:47	23:37	27:38
11	C	11:15	9:00	10:32
14	B	9:52	11:21	13:17
18	A	10:15	13:20	15:35
19	A	16:07	20:57	24:31
20	A	1:54	2:28	2:53

On the expression below is showed how were calculated the different times collected for the article number 18. The other ones were calculated following the same method. (5)

$$NT = TT * s \quad ST = NT * TF \quad TF = 1{,}17$$

$$TT = 10{:}15 = 615\ seg;$$
$$NT = 615 * 1{,}3 = 799{,}5\ seg \approx 13{:}20$$
$$ST = 799{,}5 * 1{,}17 = 935{,}415\ seg \approx 15{:}35 \quad (5)$$

4.3 Costs Analysis

The repack costs calculated are shown on Table 7. The total cost corresponds to the sum of three other different costs: raw material, repack and product.

Table 7 – Repack Costs

Article Id.	Raw Material Cost (€)	Repack Cost (€)	Product Cost (€)	Total Cost (€)
2	1.58 €	0.0116 €	41.99 €	43.58 €
4	1.58 €	0.0112 €	29.99 €	31.58 €
5	1.58 €	0.0116 €	29.99 €	31.58 €
6	1.58 €	0.0118 €	119.40 €	120.99 €
8	1.58 €	0.0126 €	191.40 €	192.99 €
10	1.58 €	0.0135 €	42.00 €	43.59 €
11	1.58 €	0.0098 €	17.99 €	19.58 €
13	1.58 €	0.0117 €	80.40 €	81.99 €
15	1.58 €	0.0117 €	83.40 €	84.99 €

On the expression below is showed how were calculated the different costs collected for the article number 2. (6)

$$1h = 3600\ seg \Rightarrow 99\ seg\ (1{:}39) \approx 0{,}0275h$$
$$Consumption = 3 * 0{,}0275 = 0{,}0825\ kW$$
$$Repack\ Cost = 0{,}0825 * 0{,}14 \approx 0{,}0116\ € \quad (6)$$

The recovery and assembly costs are presented on Table 8. The labor cost was calculated having in consideration the time necessary to recover an article and the cost per hour (12€/hour) of having an employee processing the operation. Below the Table 8 is showed how was calculated the labor cost. (7) The other articles were calculated following the same method. The article 2 is used as an example.

Table 8 – Recovery and Assembly Costs

Article Id.	Labor Cost (€)	Product Cost (€)	Total Cost (€)
2	3.28 €	41.99 €	45.27 €
9	5.52 €	342.00 €	347.52 €
11	2.16 €	17.99 €	20.15 €
14	2.64 €	77.40 €	80.04 €
18	3.12 €	89.40 €	92.52 €
19	4.92 €	299.99 €	304.91 €
20	0.60 €	21.00 €	21.60 €

$$1h = 3600\ seg \Rightarrow 1031{,}94\ seg \approx 0{,}29h$$
$$Labor\ Cost = 12€ * 0{,}29h = 3{,}28\ € \quad (7)$$

4.4 Implementation of Decision Support Tool

The four figures below represent the matrices presented on the previous chapter having already in consideration the different articles studied in the sections before.

Figure 6 – Matrix Y

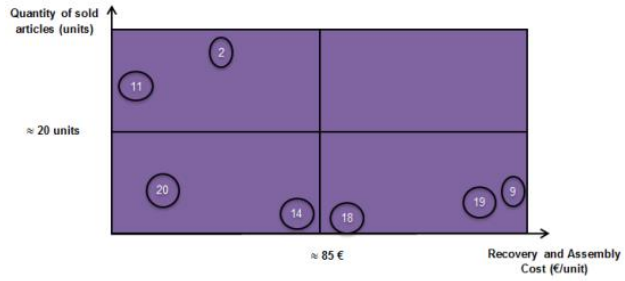

Figure 7 – Matrix W

Figure 8 – Matrix X

Figure 9 – Matrix Z

5. Conclusions

IKEA's Recovery area motto is defined as a process driven by cooperation with a focus on cost prevention and revenue optimization, always with sustainability in mind. The Recovery process is a continuous cycle of damage prevention in order to reduce costs, as well as recovering these costs by obtaining revenue from articles that would no longer be in condition to be sold. Therefore, it is fundamental the analysis of information and the identification of the root causes of the product costs. After that, it is necessary to take actions in order to prevent product damage, reduce costs and increase revenue. The interaction between the various departments and the contribution of all of them is crucial in order to achieve the objectives that each Recovery area proposes. The Recovery Index is particularly important since it represents the revenues that can be obtained from the different costs associated with the various types of transfer type. The analysis of the articles that generate the higher revenue in As-Is (top 20) and the study of the recovery costs related to them has allowed the development of a decision support tool that helps employees in this area during their daily work. Thanks to this tool, it becomes possible to prioritize decisions related to repacking, recovery and assembly processes. The correct implementation of this tool results in an improvement in the efficiency of the recovery processes, as well as in the results obtained from the sales volume generated in As-Is. Taking as an example the articles studied it is possible to conclude that, through the analysis of the matrix Y, the studied variables present a directly proportional and approximately linear relationship. In other words, items that represent a higher assembly and / or recovery cost, are also the ones that are sold at a higher As-Is selling price. Therefore, it is useful to carry out an analysis of the margins that each article represents so that it can be used as a tie-breaking criterion when deciding which item to recover / assemble first. Regarding matrix W, articles 2 and 11 are the ones that deserve priority (upper left quadrant) and 9 and 19 (lower right quadrant) are the last ones to be subjected to the assembly and / or recovery process. However, the matrix X allows to reach a conclusion similar to the one obtained from the analysis to the matrix Y, except that in this case, articles that will be sold back in store and that have passed through a much less expensive process (repacking) are analyzed. Finally, the matrix Z shows that articles 2 and 11 are the priorities (upper left quadrant) and 8 (lower right quadrant) is, with great difference from the others, the one that less attention deserves in the moment of deciding which article has priority in the repacking process. It is important to emphasize once again that, in addition to the costs of repacking, assembly, recovery, selling price and quantities sold, the analysis of opportunity costs, as well as the margins corresponding to each article, should be taken into account in the decision-making process.

5.1 Future Work

The application of the decision support tool aims to assist the employees in the decision making process. The consistency and robustness of this tool depends on the correct registration of the articles and the size of the sample collected. Its success depends on the correct execution of the register made by the employees as well as the care of checking correctly if the articles are already registered in the different matrices. In addition to the implementation of the tool, a list of principles is suggested. If applied, it will promote the optimization and improvement of the As-Is zone efficiency. The principles are divided into six different categories: promote the sale in the As-Is section; the layout and consumer flow; range of articles available; communication; shopping tools (pencil, tape measure, list, bags, catalogs); consumer support. If these principles are successfully applied it is expected to obtain some benefits, such as: more attractive / marketable store; improvement in the efficiency and performance of the recovery department (measured by RI, so an increase in As-Is sales results in an improvement in the value of RI); promotion of sustainability. Some important KPIs that can be studied in order to help obtaining these results are the As-Is sales volume, the percentage of items that are sold in As-Is taking into account the total sales volume of the store and the number of visitors in the As-Is section.

The number of employees present in the recovery area is also one of the points that need to be improved. From the interaction with the several employees present in the area and from the observation of the articles flow through the various rooms that belong to the recovery area, it was possible to observe that the maximum number of employees working on the same shift was five. Taking into account that there are five zones in this area (decision, recovery rooms and back to stock rooms, drop off zone and As-Is) and that the recovery room includes three distinct zones, the ideal number of employees present in this area would be at least seven. Such conclusion comes from the assumption that each of the zones needs at least one employee available. One possible way to fight this issue would be hiring part-time employees in the most critical periods (weekends and holidays). The number of employees and the space occupied by the As-Is area are some aspects that should be studied, given the relevance and growing weight of the As-Is section in the store's total sales volume.

6. References

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