

ABC Inventory Classification

An Application

Özdemirler

Mehmet DURU

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ABC INVENTORY CLASSIFICATION

AN APPLICATION:

OZDEMIRLER

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ABSTRACT

ABC INVENTORY CLASSIFICATION

AN APPLICATION:

OZDEMIRLER

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ABC inventory classification can result in more effective control of business. In this work, ABC method is applied to Ozdemirler to examine the inventory profile of the store, and to be able to aid the management in allocating control effort among items more effectively.

Keywords: Inventory Control, ABC inventory Classification, Stock Keeping Unit, Distribution By Value

ÖZET

ABC ENVANTER SINIFLANDIRMASI

BİR UYGULAMA:

OZDEMIRLER

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Yüksek Lisans Tezi, Sosyal Bilimler Enstitüsü
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ABC envanter sınıflandırması yönetimde daha etkin kontrol sağlayabilir. Bu çalışmada, Ozdemirler Koll. Şti.'ne ABC metodu uygulanarak, mağazanın envanter profili incelenmiş, ve yöneticilere mamuller arasında daha etkin kontrol dağıtımını yapabilmeleri için yol gösterilmiştir.

Anahtar Kelimeler: Envanter Kontrol, ABC Envanter Sınıflandırması Stok Birimi, Değer Dağılımı

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1. INTRODUCTION

1.1. THE INVENTORY CONCEPT

Inventories represent stock of goods that are held for a short term before being converted into sales. They are one of the most active elements of business operations, and appear on the financial statements of the firms. They have a two-way effect on the financial position of the firm. On one hand, they are assets and therefore represent stored value that, when sold, will generate revenue and profit. On the other hand, inventories are usually a major investment and financed by equity and debt. Therefore, inventory levels directly affect the return on investment, which represents the ratio of profit and the average investment (or level of assets). Return is reduced by the cost of capital while investment is increased by inventory. Thus, unnecessarily high inventory levels have a double negative impact on the return on investment.

Current ratio, the ratio of current assets to current liabilities, which is the most commonly used measure of liquidity, is also highly affected by inventory level changes (7). Since inventories are classified as one of the current assets of an organisation, a reduction in their level lowers assets relative to liabilities. However, the funds freed by a reduction in inventories normally would be used to acquire other types of assets or to reduce liabilities. Such actions directly influence the current ratio.

In the past, "inventories were considered by merchants, producers, and policy makers, primarily as a measure of wealth."(7). At the beginning of this century, an increased emphasis was put on the liquidity of assets, such as inventories, until fast asset turnover became a goal to be pursued in many organisations. But in 1970's high inflation rates, which became common in all world economies, altered the spending patterns of individuals, companies, and governments, and caused a tendency towards inventory increases. Today, most managers recognize the importance of balancing the advantages and disadvantages of carrying inventories. This recognition causes the need for proper inventory control systems which will minimize the cost incurred in the inventory system, attaining at the same time the customer service level specified by the company policies. These two objectives are generally in opposition. High levels of customer service lead to high costs, and low costs usually are accompanied by low levels of customer service. Consequently, most inventory decisions are trade-offs between cost and customer service level (9). The problem is to achieve a balance with stocking decisions, avoiding both overstocking and understocking, neither unnecessarily tying up funds nor causing late deliveries, lost sales and dissatisfied customers.

1.2. FUNCTIONS OF INVENTORY

Inventories are nonproductive assets which earn no return and which are subject to loss, pilferage, obsolescence, and taxes. The main reason for holding inventories is that they cover discontinuities in the supply-demand relationship. In that sense they serve a number of important functions:

1) Inventories are kept on the shelf to satisfy anticipated, but variable customer demand. The exact demand pattern is not known with certainty, and products are therefore stocked to cover the uncertainty involved.

2) Firms that experience seasonal patterns in demand, often build up inventories during off season periods in order to meet overly high requirements that exist during certain periods. This demand pattern results in an inventory buildup followed by a rapid inventory depletion.

3) Inventory may be stockpiled in anticipation of supply disruptions, such as weather, strikes or problems with a supplier.

4) Delayed deliveries and unexpected increases in demand increase the risk of shortages. This risk can be reduced by holding safety stocks, which are stocks in excess of anticipated demand. The safety stock inventory level is a function of the anticipated forecast error and the number of

stock-outs that can be tolerated.

5) In order to minimize the order costs and/or to take advantage of price breaks or quantity discounts or meet the suppliers' minimum order requirements, it may be necessary to buy quantities that exceed immediate usage requirements.

6) At times of price increase expectations, purchases are realized earlier in order to make savings and higher profits in future.

7) In order to allow full loads or consolidation of shipments and more efficient use of containers, it may be more feasible to buy in larger quantities, which result in inventories.(9)

In order to make the best use of these functions of inventories, managers need decision and control systems. This study deals with the utilization of inventory control methods as a management tool.

1.3. PURPOSE OF THE THESIS

The thesis is based on an application made in a retail store that sells building and construction materials. The purpose is to practice the application of ABC inventory classification method. This purpose is matched with the needs of that store towards easing and solving the problems related with managing the great numbers of inventory units. There are nearly 3000 units to control and the only control system used by the store is the physical counting of the items once a year. Since there is no continuous control system, and so no up-to-date inventory data, store management has difficulties in making decisions on allocating time and investment on each item. Currently, such decisions are made on judgemental basis, depending on their past experiences. This is a very time consuming task, and makes it impossible to plan the future and improve the business.

The owners of this store are at the point of deciding on "computerizing the management" and especially the inventory control mechanism. At this stage, the current study concentrates on the means of system-automation feasibility. In fact, this study contains the first stage of implementing an inventory control system, but as it is intended to help management decide on such an issue, it is believed to be sufficient. Extending the content of this effort will be feasible only in case of approval from the management. In this study, we will confine our work to the inventory

classification, and aiding the store management in their decision making regarding the inventory issues.

1.4. BACKGROUND OF THE FIRM

The firm subject to the application of this study is a retail store in the field of construction materials. It was founded in 1964, as "Ozdemir Duru ve Ortaklari Koll. Sti.", in Kadikoy, istanbul.

In sixties, the construction sector was attractive for traders, and the competition was not treathening. The firm made a good start, and formed strong relations with the local construction firms. The rapid growth in sales and profits enabled the firm to move to a bigger (current) store location. The name was changed to "Ozdemirler" in 1970.

The situation changed in seventies. The construction sector was in recession, and the market was influenced by inflation. Another factor contributing to the unattractiveness of the business in 70s was the high competition. Big construction firms segment was captured by the wholesaler firms founded by construction materials manufacturers.

Changing characteristics of the market influenced Ozdemirler, and this was reflected in their customer profile.

Accordingly, the firm faced decreases in their sales volume, and profits. Rather than adapting to the environment, Ozdemirler tried reducing the general expenditures of the store, and this caused them to fall behind the competition.

Their new market segment is the local households. The products appealing to that segment certainly are different from the former segment of construction firms. However, Ozdemirler has not changed the inventory profile which had been its differential advantage since the beginning. They have been carrying 3000 different items, but they can not use this advantage effectively, due to lack of control over the inventory.

1.5. OUTLINE OF THE THESIS

This thesis consists of two main parts; theory and application. In the second chapter, the physical control techniques are examined. Short and long-term objectives of inventory control, and functions necessary for an effective control system are explained and some of the prominent techniques are cited. Function of ABC inventory classification - as a base for the control techniques - is described, and the steps to be followed in classifying the items and controlling each class are listed.

Third chapter explains the application of ABC classification to Ozdemirler. The procedure followed in sampling, data collection, and clasification is explained and the results are evaluated.

The last chapter describes implications of the application study results, and the further steps that should be taken by the firm.

2. INVENTORY CONTROL TECHNIQUES

2.1 OBJECTIVES OF INVENTORY CONTROL

Companies attempt to achieve a proper balance between the benefits of carrying large inventories and the benefits obtained by reducing inventories to a very low level. The difficulties associated with attaining this balance on a solely judgemental basis, lead the management of the firms to apply "scientific inventory control systems". The long range objective of any effective inventory control system is to increase the total return on total investment employed by the company. Some of the short term objectives are :

- 1) Keeping out-of-stock conditions at a level as low as practical.
- 2) Minimizing the costs of carrying and ordering.
- 3) Maintaining a turnover rate of stocks commensurate with the level of sales activity. (6).

Furthermore, there will be many additional immediate objectives which will be important to management at the particular time. The goal should be to satisfy the maximum number of the specific objectives as well as the general objectives for any inventory control system.

2.2. BASIS FOR INVENTORY DECISIONS

There are many factors which must be considered when establishing stock levels. Some of these factors are:

- 1) The demand for the inventory items must be determined. This may be established from historical records, or it may be based on sales forecasts if they are available. The anticipated demand must allow for fluctuations and must be frequently modified. A simple inventory system is best utilized when inventory movement is relatively steady, and when large random fluctuations are the exceptions. It is important to review demand rates periodically and adjust the inventory levels.

- 2) The lead time for the item must be determined. Lead time is defined as the time period between the order of an item and the moment it is placed in stock for use. It includes ordering lead time as well as vendor production lead time. Like demand, lead times are not always exactly predictable, and, therefore, some allowance for variability must be made.

- 3) Storage facilities: the availability of storage facilities, or the lack of them, will influence decisions regarding inventory levels.

- 4) Another influence on inventory levels is price. Low value items might be purchased in large quantities taking advantage of quantity discounts, while higher value items might be

purchased more frequently in smaller quantities.

5) Carrying, ordering and shortage costs are other factors that must be considered in establishing inventory levels. Carrying (holding) costs include interest, insurance, taxes, depreciation, obsolescence, deterioration, spoilage, pilferage, breakage and storage costs. Carrying costs also include opportunity costs associated with having funds tied up in inventory that could be used elsewhere. Ordering costs are the costs associated with ordering and receiving inventory. They include determining how much is needed, typing up invoices, inspecting goods upon arrival for quality and quantity, and moving the goods to temporary storage. Shortage costs result when demand exceeds the supply of inventory on hand. The costs can include the opportunity cost of not making a sale, loss of customer goodwill, lateness charges, and similar costs. (7).

6) Frequency of engineering changes or the danger of obsolescence: In industries where technological changes are rapid or where style changes usually occur, a big risk is taken when high levels of inventories are maintained.

In the next section as we examine the physical inventory control systems, we will assume that the demand, lead time and the costs are known or estimated, so that we can base our inventory level decisions accordingly.

2.3. INVENTORY CONTROL SYSTEMS

There are numerous systems being used by organizations to control their inventories. In some organizations--due to the characteristics of the inventory items--combinations of several systems may be used together. The most common inventory control systems are :

1) Min-Max System : This system involves continuous review of the inventory. A replenishment is made whenever the inventory position drops to the reorder point. A maximum level of inventory which demand will normally not exceed, and a minimum level which is the margin of safety deemed necessary to prevent out-of-stock conditions from arising is established. When the minimum level is reached, an order is placed. (6).

2) Two-Bin System : In this system the stock of each item is separated into two piles in such a way that one pile contains enough stock to satisfy the demand, and the other pile contains the safety level. When the first pile is finished, the replenishment order is made, and the stock in the second pile is used to cover the demand during lead time. The two-bin system reduces the amount of record keeping, and also makes it unnecessary to take physical counts, since an automatic reorder point has been set up. "One disadvantage of the system appears to occur when a single demand is bigger than the fixed reorder quantity. In such cases, one should

order integer multiples of preset order quantity in order to bring the stock level above the safety stock level." (1)

3) Order Cycling System : In this system the quantities on hand of each item is reviewed periodically by making physical counts. The time periods between each count differs depending on the type of items. At each review period, orders are placed to bring stocks up to predetermined levels. If the demand and the lead times are known with certainty, the amount to be ordered at each review period and the inventory level can be determined by the length of the ordering cycle. But as soon as uncertainty is introduced, safety allowances for unpredictable variations in demand or lead time must be calculated. The greater the variability in demand and the longer the lead time and variability in such lead time, the greater must be these safety allowances. (6).

An advantage of this system is that orders for many items occur at the same time and there can be savings in processing and orders. The disadvantages of the system are the lack of control between reviews, the need to protect against shortages between review periods by carrying extra stock, and the need to make a decision on order quantities at each review.

4) Online Inventory Control System : In case of a computerized inventory control system, every transaction of the stock items are recorded. Whenever an item is removed

from inventory, the date of removal, quantity, material requisition number are recorded, and the new balance on hand is calculated. Such a continuous record keeping procedure keeps the inventory control up-to-date every moment. The difficulty of recording each item, especially in multi-item inventories, usually leads management to make distinctions between the items with respect to their annual-usage-values. This generally leads to a policy of keeping on-line control of the higher value items while utilizing the other predescribed systems for other items.

In order to decide on which items to be controlled by which system, ABC inventory classification is the most commonly used method. "ABC inventory classification is a tool of management for focusing attention on and apply effort in the area that will give the greatest results."(7).

2.4. ABC INVENTORY CLASSIFICATION

In most businesses, a relatively small number of inventory items account for a relatively large percent of the total inventory value. By transferring available control effort from low-value to high-value items, the control effort will result in maximizing the degree of control over the total inventory. The ABC inventory classification system divides the items into categories, and suggests the proper degree of control for each category of items. In doing that, the

criterion used is the "annual-usage-value", which is calculated by multiplying the quantity demanded in a year (past or forecasted) (D), by the unit cost (v) of the item.

The steps to be followed in classifying the items are as follows:

- 1) Obtain the price per unit for each manufactured or purchased item. (v)
- 2) Obtain the demand in units for each item for the past year, or from a forecast for some future period of time. (D)
- 3) Calculate the product of the price per unit (v), and the usage for the item (D). This will yield the annual-usage-value, which is the value of the item going into the company's operations over the period.
- 4) Arrange the items in the order of decreasing annual-usage-value.
- 5) Convert these values into percentages by expressing the value of each item as a percent of the total value of all items.
- 6) Roughly divide the list of values into three groups, namely, A, high-value, B, medium-value, and C, low-value items. (6).

In making that division, a graph with y-axis as "cumulative percentage of total annual usage", and x-axis as "percentage of total number of s.k.u.(stock keeping unit)" can be used. The resulting graph (Figure 1) makes it easier to divide the inventory, since the two points where the slope of the curve changes significantly, reveal the annual-usage-value breaks. Due to the lack of strict rules, the division is determined by applying judgment, supported with experience.

In most cases, class A items come out to be the first 5 to 10 percent of total s.k.u. However; since, those are the high value items, they account for nearly 50 percent of total annual-lira-usage of the population of items under consideration.

The largest number of s.k.u. fall into class B. Usually more than 50 percent of total s.k.u--that account for most of the remaining 50 percent of the annual-lira-usage--are worthy of being labelled B items in any inventory. This percentage is between 10 to 20 % of the total money tied up.

Class C items make up only a minor part of total inventory investment. This group consists of the items that remain after the A and B classes.

2.4.1. CONTROL OF CLASS A ITEMS

This group of items should receive the most "personalized" attention from management. Routine controls using the mathematical models is not enough, and the art of management becomes important in dealing with them.

Silver and Peterson (1985) suggest the following guidelines for the control of A items:

1) Inventory records should be maintained on a perpetual (transactions recording) basis, particularly for the more expensive items. This need not be through the use of a computer; the relatively small number of A items makes the use of a manual system quite attractive.

2) Keep top management informed. Frequent reports (for example, monthly) should be prepared for at least a portion of the A items.

3) Estimate and influence demand. This can be done in three ways:

a) Manual input to forecasts, for example, knowledge of intentions of important customers.

b) If the demand is of a special planned nature there is no need to carry protection stock. On the other hand, where the demand occurs without warning, some protective stock may be appropriate.

c) Seasonal or random fluctuations can sometimes be

reduced by altering price structures, negotiating with customers, smoothing shipments, and so forth.

4) Estimate and influence supply. Negotiations with suppliers may reduce the average replenishment lead time, its variability, or both.

5) Use "conservative initial provisioning." (7). For class A items which have very high unit values, and relatively low demand rates, the initial provisioning decision becomes particularly necessary. For such items erroneous initial overstocking (due to overestimating the demand) can be extremely expensive. Thus, one should be conservative in initial provisioning.

6) Review decision parameters frequently. Frequent review of such quantities, as the order points and order quantities is advisable for A items.

7) Determine precise values of control quantities. Order quantities of A items should be based on the most exact analysis possible.

8) "Confront shortages as opposed to setting service levels." (7). Rather than setting customer service levels and sitting back, take action to avoid or eliminate the stock-outs immediately. Associated costs of such actions should be taken into account when determining the safety stock levels. On the

other hand, since A items are replenished frequently, it may be satisfactory to operate with very low safety stock. (7).

2.4.2. CONTROL OF CLASS B ITEMS

This group carries the greatest number of items (about 50% of total s.k.u.) in the inventory. The total annual-usage-value (Dv) of these items are less than of class A items, thus they rate a moderate but significant amount of attention.

When a computer facility for inventory control is available, Silver and Peterson (1985) (7) suggest that as many s.k.u. as possible be monitored and controlled by a computer-based system. This seems to be highly attractive in the near future, given the increasing costs of clerical labor and the potential costs of human error, versus the constantly decreasing cost of data processing. Having a larger proportion of s.k.u. on a computer system also has the advantage of making a larger data bank available for more effective and timely management reporting and sales analysis.

If the inventory system is not computerized, management can try to routinize the decision making by use of manual-based clerical systems. Under such circumstances the fraction of s.k.u. classified as B items should be reduced, and the fraction of C items be increased to take advantage of the lower costs of less paperwork and clerical handling.

With or without the computer, the inventory control system of B class items is the "on-line" inventory control system. All transactions will be recorded and the stock-on-hand data will be available and up-to-date each moment. There will still be need for the physical counts, since continuous recording of many items will cause a high probability of error. Annual physical counts may help lower the errors in the inventory records. In computerized systems, the user will be informed (by the computer) for each item reaching its reorder point, and as the ordered items arrive, they will be added to the stock-on-hand, concurrently being subtracted from stock-on-order. (1)

2.4.3. CONTROL OF CLASS C ITEMS

Class C items generally have low totals of replenishment, carrying, and shortage costs. Regardless of the type of control system used, management cannot achieve sizable savings on these costs. Therefore, the inventory control of this group of items should be based on simple procedures, that keep the control costs per s.k.u. quite low, by way of keeping the labor and paperwork per item to a minimum.

"In most cases it may be most appropriate to not maintain any inventory record of a C item, but, instead simply rely on an administrative mechanism for reordering, such as placing an order when the last box in a bin is opened" (7). If an

inventory record is maintained, it should not require recording of each transaction. But, for demand estimation, and order control purposes a record of the dates of placement, and of receipts of replenishment orders, can be kept.

Following inventory control methods can be feasible for class C items:

- 1) Periodic review with a relatively long interval (order-cycling-system)
- 2) Two-bin-system, which requires continuous review but not a physical stock count nor the updating of the stock status.

Grouping of C items that have a common supplier, may be helpful. This method may reduce the ordering costs since when one item in the group needs ordering, several others will be included in the ordering cost.

3. AN APPLICATION : OZDEMIRLER

Application of inventory classification study was aiming to exemplify the advantages of systematizing the inventory control effort of the firm and the potential benefits of continuous control. Since the management of the store felt the need for changes in their business structure, they accepted the idea of evaluating the feasibility of inventory control automation. However, they still were suspicious of the difficulties, and even the impossibilities of such a change. Therefore, the most difficult part of the study was to persuade them into accepting the benefits of scientific management.

3.1. SAMPLE

We limited our classification study to a sample of the total inventory, because there was the probability of rejection of our proposal for the new system. Even though our sample contains only 232 items, they are chosen with care to be able to reflect the inventory profile of the firm to a great extent. The selection of the size of the sample was not based on any criteria other than the judgement of the store management. The literature on this issue accepts the intuitive sample size selection (7). Those items that are totally disregarded by the management are eliminated at the

beginning. Some of the high-value items were also disregarded, due to our perception of unreliable data.

3.2. DATA COLLECTION

Data on the items were collected from the records of the firm. They had annual physical count records for each year, and the purchase invoices. We used 1986 and 1987 inventory records and 1987 invoices. So, our base year was 1987.

1986 records gave us the beginning-inventory, and 1987 records gave us the ending-inventory of each item. Subtracting the beginning from the ending-inventory, and adding the total purchases made during the year, we obtained the annual demand of each item (with the assumption that there was no unsatisfied demand, so that demand was equal to sales) (see Table1 - column 3). As the value of the item, we used the unit cost of the last purchase, and this enabled us to evaluate them on the same basis. Collecting such data revealed that, they were recording the members of an item category in seperated manner, due to the lack of standardization in identification and the counting procedure. This caused us to search all through the records for each item, and bring together the ones that are given more than one name.

3.3. CLASSIFICATION

The first step in classification was to multiply the annual demand (D) of each item (Table 1-column 1), with its value(v)

(Table 1-column 2), and obtain the annual-usage-value (Dv) (column 3). We, then, sorted the previous list of items with respect to annual-usage-value in descending order; that is from highest Dv to lowest (all figures in Table 1 are in sorted order). Next, we listed the cumulatives of the Dv's (column 4), and converted those values into percentages (column 5) in order to express the value of each item as the percentage of the total value of all items. We also converted cumulatives of the number of items to percentages of the total number of items (column 6).

In order to construct the distribution-by-value graph (figure 1), we placed the values in column 5 on y-axis, and column 6 on x-axis, and obtained a concave graph, which helped us in dividing the inventory into classes (A-B-C), and calculating the percentages of each class.

Since there is no specific rule on how to make the division process, we consulted the store management at that stage. Their familiarity and experience with the nature of items, and the already existing examples of ABC classifications in the literature lead us to make the following categorization: The first 22 of the sample of 232 items were identified as Class A, the next 133 items as Class B, and the last 77 items as Class C.

3.4. RESULTS

Such a classification yields the following results, and Figure 2.

Classification	No. of s.k.u	Percent s.k.u	Σ Dv (TL)	Σ Dv percent of tot. Dv
A s.k.u with Dv > 1,338,930	22	9.48%	111,794,558	70.5%
B s.k.u with 1,066,240 < Dv < 54,000	133	57.32%	45,312,959	28.6%
C s.k.u with Dv < 48,800	77	33.20%	1,563,674	0.9%
TOTALS	232	100.00%	158,671,191	100.00%

The figures above show that a very small portion of total sample, i.e., 9.48%, is accounting for 70.5% of total value. This is class A. The next set of items is class B, containing 133 items, which is 57.32% of all s.k.u, and constitutes 28.6% of total value. The last group is class C, which proves itself to be very low in total annual-usage-value. The 77 items in this class, which is 33.2% of all s.k.u, account for only 0.9% of total value.

The division points were also traced on the distribution-by-value graph and it was observed that they reflect the points where the slope of the curve changes significantly. This constituted a control of reliability of our classification. The increasing concave nature of DBV curve reveals the different characteristic groups, by its changing slope areas.(Figure 2)

Class A constitutes the part of the curve where the slope is high. This is directly related with high cumulative percentage of Dv of such a small group. Class B items are in the area of a less steep slope, with a long range. High number of items in this group (133), compared with 22 of class A, has much lower percentage of total Dv. This is reflected on the change of the slope. Class C items are placed on the last part of the curve, where the slope is very close to zero. The small percentage of cumulative Dv causes a very slight increase on the y-axis (0.9%).

4. CONCLUSION

The application study was intended to classify the inventory of Ozdemirler with respect to annual-usage-value, in order to set the basis for a feasible inventory control system. The results revealed that practicing the same level of control effort on all items was not feasible. While 10 percent of all items was accounting for 71 percent of total value, 33 percent of items was accounting for only 1 percent. This result is expected to be effective in convincing the store management for implementing appropriate control systems explained in part 2. If the management decides on computerizing the control facilities, the range of class B can be extended to make better use of on-line control.(1).

The sample used in this study contained 232 items. Taking the explained classification procedure as a base, the study needs to be continued to capture total inventory of the store. While doing that, data on order costs, reorder points, and lead times should also be collected or estimated, for the purposes of improving the inventory decision making process as well as inventory control.

The resulting table of items may guide the management in eliminating some of the items from the inventory. Those at the very end of the list seem to be the candidates for that. However the management should take into account the needs of

the customers, the service level, and if the items are complimentary or not.

The classification of the inventory may also help in planning the placement of the items in the store. Class A and B items can be placed in heavy traffic parts , while C items can be stored in the back or the second floor. Groups should not be divided, when placing with respect to classes; that is, if members of a group (i.e. water pipes) are seperated in classification (0.5 inch in class A, 1.25 inch in class B), they should not be placed seperately since this will cause bigger problems in control (5).

This classification study, and allocation of appropriate control effort among classes will certinly improve the current situation of Ozdemirler. Planning the future will be possible with the up-to-date inventory reports available any time, and the investment decisions will have a reliable base.

TABLE 1

CLASS A

NO.	S.K.U. ID.	1 ANN. DEMAND	2 UNIT VALUE	3 DV	4 CUM. DV	5 Cum. % of Tot. ===usage===	6 Cum. % of ====s.k.u.====
1	Cinko Levha	14384.00	1600.00	23014400.00	23014400.00	14.5045	0.4310
2	Izocam 6cm.	890.00	15840.00	14097600.00	37112000.00	23.3892	0.8621
3	Insaat Civisi	27216.00	490.00	13335840.00	50447840.00	31.7940	1.2931
4	Naylon Branda	5802.00	1525.00	8848050.00	59295890.00	37.3703	1.7241
5	Su Saati	532.00	15650.00	8325800.00	67621690.00	42.6175	2.1552
6	El Arabasi	296.00	17500.00	5180000.00	72801690.00	45.8821	2.5862
7	Onduline Oluclu Levha	1478.00	3500.00	5173000.00	77974690.00	49.1423	3.0172
8	Stropor	109.00	40000.00	4360000.00	82334690.00	51.8901	3.4483
9	Gal. Boru 1/2"	3686.00	1128.00	4157808.00	86492498.00	54.5105	3.8793
10	Kalip Kelepcesi	4919.00	600.00	2951400.00	89443898.00	56.3706	4.3103
11	Celik Eyve	108.00	24000.00	2592000.00	92035898.00	58.0042	4.7414
12	Bos Bidon	633.00	4000.00	2532000.00	94567898.00	59.5999	5.1724
13	Silindirli Kilit	353.00	6750.00	2382750.00	96950648.00	61.1016	5.6034
14	Aspirator	42.00	52920.00	2222640.00	99173288.00	62.5024	6.0345
15	Mutlu Kapak Desenli	287.00	7250.00	2080750.00	101254038.00	63.8138	6.4655
16	Yagaurluk	510.00	3500.00	1785000.00	103039038.00	64.9387	6.8966
17	Ziftsan 20/1	162.00	10000.00	1620000.00	104659038.00	65.9597	7.3276
18	Oluclu Mukavva	2612.00	600.00	1567200.00	106226238.00	66.9474	7.7586
19	Gal. Dirsek 1/2"	4341.00	340.00	1475940.00	107702178.00	67.8776	8.1897
20	Kisa Cizme	710.00	1950.00	1384500.00	109086678.00	68.7501	8.6207
21	Gal. Boru 3/4"	1310.00	1045.00	1368950.00	110455628.00	69.6129	9.0517
22	Pimas Boru 100/1000	551.00	2430.00	1338930.00	111794558.00	70.4567	9.4828

CLASS B

23	Esem Banyo Dolabi	40.00	26656.00	1066240.00	112860798.00	71.1287	9.9138
24	Ustupu	1414.00	750.00	1060500.00	113921298.00	71.7971	10.3448
25	Termoteknik 70 lt.	9.00	116000.00	1044000.00	114965298.00	72.4551	10.7759
26	Mutlu Kapak Duz	190.00	5480.00	1041200.00	116006498.00	73.1113	11.2069
27	Bezli Hortum 3/4"	1123.00	905.00	1016315.00	117022813.00	73.7518	11.6379
28	Gal. Boru 1"	626.00	1620.00	1014120.00	118036953.00	74.3909	12.0690
29	Cakmakli Term.	12.00	78600.00	943200.00	118980133.00	74.9853	12.5000
30	Marshallux 5/1	56.00	16250.00	910000.00	119890133.00	75.5589	12.9310
31	Pimas Boru 125/2000	141.00	6400.00	902400.00	120792533.00	76.1276	13.3621
32	Nipei 1/2"	2121.00	400.00	848400.00	121640933.00	76.6623	13.7931
33	Pimas Boru 70/1000	655.00	1260.00	825300.00	122466233.00	77.1824	14.2241
34	Siyah Boru 3/4"	980.00	780.00	764400.00	123230633.00	77.6642	14.6552
35	Pimas Boru 70/2000	302.00	2510.00	758020.00	123988653.00	78.1419	15.0862
36	Inegal Te 1 1/4"	600.00	1250.00	750000.00	124738653.00	78.6146	15.5172
37	Renkis Antipas 5/1	94.00	7850.00	737900.00	125476553.00	79.0796	15.9483
38	Gal. Te 1/2"	1308.00	560.00	732480.00	126209033.00	79.5412	16.3793
39	Siyah Boru 1"	632.00	1133.00	716056.00	126925089.00	79.9925	16.8103
40	Elektrik Sayaci	50.00	14100.00	705000.00	127630089.00	80.4368	17.2414

TABLE 1 CONTD.

CLASS B contd.

NO.	S.K.U. ID.	1 ANN. DEMAND	2 UNIT VALUE	3 DV	4 CUM. DV	5 Cum. % of usage	6 Cum. % of s.k.u.
41	Cam Civisi	254.00	2750.00	698500.00	128328589.00	80.8771	17.6724
42	Ziftsan 5/1	260.00	2640.00	686400.00	129014989.00	81.3096	18.1034
43	Gal. Boru 1 1/2"	293.00	2252.00	659836.00	129674825.00	81.7255	18.5345
44	Siyah Boru 1 1/2"	425.00	1500.00	637500.00	130312325.00	82.1273	18.9655
45	Gal. Boru 1 1/4"	302.00	1967.00	594034.00	130906359.00	82.5017	19.3966
46	Gal. Dirsek 3/4"	1030.00	560.00	576800.00	131483159.00	82.8652	19.8276
47	Pimas Boru 50/1000	709.00	800.00	567200.00	132050359.00	83.2226	20.2586
48	Pimas 100 A.Dirsek	486.00	1113.00	540918.00	132591277.00	83.5635	20.6897
49	Gomme Kilit	621.00	870.00	540270.00	133131547.00	83.9040	21.1207
50	Termodin Yedegi	709.00	750.00	531750.00	133663297.00	84.2392	21.5517
51	Fiam Kilit	40.00	13125.00	525000.00	134188297.00	84.5700	21.9828
52	Kapi Yayi 3	32.00	16000.00	512000.00	134700297.00	84.8927	22.4138
53	Tel Civi	858.00	585.00	501930.00	135202227.00	85.2091	22.8448
54	Diko 60 lt.	4.00	120000.00	480000.00	135682227.00	85.5116	23.2759
55	Pimas 100 K.Dirsek	490.00	969.00	474810.00	136157037.00	85.8108	23.7069
56	Inegal Te 1"	515.00	900.00	463500.00	136620537.00	86.1029	24.1379
57	Krep Cizme	38.00	12000.00	456000.00	137076537.00	86.3903	24.5690
58	Bezli Hortum 1/2"	771.00	584.00	450264.00	137526801.00	86.6741	25.0000
59	Pimas Boru 50/2000	289.00	1541.00	445349.00	137972150.00	86.9548	25.4310
60	Siyah Boru 2"	217.00	2016.00	437472.00	138409622.00	87.2305	25.8621
61	Gal. Dirsek 1"	530.00	810.00	429300.00	138838922.00	87.5010	26.2931
62	Siyah Boru 1 1/4"	339.00	1248.00	423072.00	139261994.00	87.7677	26.7241
63	Kapi Kolu	242.00	1650.00	399300.00	139661294.00	88.0193	27.1552
64	Pimas Boru 100/500	275.00	1425.00	391875.00	140053169.00	88.2663	27.5862
65	Siyah Boru 1/2"	655.00	590.00	386450.00	140439619.00	88.5098	28.0172
66	Kil Paspas 55/100	41.00	9375.00	384375.00	140823994.00	88.7521	28.4483
67	Kil Paspas 40/70	65.00	5875.00	381875.00	141205869.00	88.9928	28.8793
68	Diko 40 lt.	3.00	125000.00	375000.00	141580869.00	89.2291	29.3103
69	Gal. Boru 2"	117.00	3183.00	372411.00	141953280.00	89.4638	29.7414
70	Pimas Boru 125/1000	120.00	3094.00	371280.00	142324560.00	89.6978	30.1724
71	Bezli Hortum 5/8"	546.00	662.00	361452.00	142686012.00	89.9256	30.6034
72	Kovali Soba Amasyali	9.00	38000.00	342000.00	143028012.00	90.1411	31.0345
73	Gal. Te 3/4"	456.00	730.00	332880.00	143360892.00	90.3509	31.4655
74	Kil Paspas 35/60	75.00	4375.00	328125.00	143689017.00	90.5577	31.8966
75	Renkis Antipas 1/1	200.00	1620.00	324000.00	144013017.00	90.7619	32.3276
76	Kil Paspas 60/120	21.00	15000.00	315000.00	144328017.00	90.9604	32.7586
77	Tangit 1/2	107.00	2850.00	304950.00	144632967.00	91.1526	33.1897
78	Toz Boya	442.00	675.00	298350.00	144931317.00	91.3407	33.6207
79	Kapi Yayi 4	17.00	17500.00	297500.00	145228817.00	91.5282	34.0517
80	Cekic 1.500	82.00	3600.00	295200.00	145524017.00	91.7142	34.4828
81	Renkis Astar 5/1	38.00	7700.00	292600.00	145816617.00	91.8986	34.9138
82	Sell. Tiner 4/1	77.00	3800.00	292600.00	146109217.00	92.0830	35.3448
83	Kuzine Amasyali	4.00	73000.00	292000.00	146401217.00	92.2670	35.7759
84	Beton Civisi	551.00	510.00	281010.00	146682227.00	92.4441	36.2069

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TABLE 1 CONTD.

CLASS B contd.

NO.	S.K.U. ID.	1 ANN. DEMAND	2 UNIT VALUE	3 DV	4 CUM. DV	5 Cum. % of Tot. ====usage====	6 Cum. % of ====S.k.u.====
85	Sadosan 1/1	111.00	2500.00	277500.00	146959727.00	92.6190	36.6379
86	Nipel 3/4"	1000.00	260.00	260000.00	147219727.00	92.7829	37.0690
87	Teflon Bant	658.00	380.00	250040.00	147469767.00	92.9405	37.5000
88	Balta	71.00	3500.00	248500.00	147718267.00	93.0971	37.9310
89	Siyah Dirsek 1"	411.00	580.00	238380.00	147956647.00	93.2473	38.3621
90	Pimas Boru 100/250	266.00	890.00	236740.00	148193387.00	93.3965	38.7931
91	Gal. Dirsek 1 1/2"	141.00	1650.00	232650.00	148426037.00	93.5432	39.2241
92	Kat Hidroforu	2.00	115000.00	230000.00	148656037.00	93.6881	39.6552
93	Kil Paspas 50/90	30.00	7625.00	228750.00	148884787.00	93.8323	40.0862
94	Dito 80 lt.	3.00	76000.00	228000.00	149112787.00	93.9760	40.5172
95	Bot Vernik 1/1	81.00	2780.00	225180.00	149337967.00	94.1179	40.9483
96	Kapi Yayi 2	15.00	15000.00	225000.00	149562967.00	94.2597	41.3793
97	Sista Silicon	51.00	4400.00	224400.00	149787367.00	94.4011	41.8103
98	Kil Paspas 30/55	65.00	3450.00	224250.00	150011617.00	94.5424	42.2414
99	Ince Bezir 5/1	42.00	5250.00	220500.00	150232117.00	94.6814	42.6724
100	Cekic 2.000	80.00	2730.00	218400.00	150450517.00	94.8191	43.1034
101	Silindirli Dar Kilit	31.00	6940.00	215140.00	150665657.00	94.9546	43.5345
102	Kil Paspas 45/80	35.00	5875.00	205625.00	150871262.00	95.0842	43.9655
103	Balta sapi	511.00	400.00	204400.00	151075682.00	95.2131	44.3966
104	Siyah Dirsek 3/4"	634.00	320.00	202880.00	151278562.00	95.3409	44.8276
105	Kruva 3/4"	201.00	960.00	192960.00	151471522.00	95.4625	45.2586
106	Ytong Testere	42.00	4500.00	189000.00	151660522.00	95.5816	45.6897
107	Pimas Boru 50/500	348.00	525.00	182700.00	151843222.00	95.6968	46.1207
108	Gal. Dirsek 1 1/4"	120.00	1490.00	178800.00	152022022.00	95.8095	46.5517
109	Sinek Teli 80	680.00	260.00	176800.00	152198822.00	95.9209	46.9828
110	Plastik Hortum 1"	550.00	315.00	173250.00	152372072.00	96.0301	47.4138
111	Nipel 1"	529.00	320.00	169280.00	152541352.00	96.1368	47.8448
112	Marshallux 1/1	54.00	3040.00	164160.00	152705512.00	96.2402	48.2759
113	Cali Supurgesi	1081.00	150.00	162150.00	152867662.00	96.3424	48.7069
114	Konik Rekor 1 1/2"	57.00	2750.00	156750.00	153024412.00	96.4412	49.1379
115	Tapa 1/2"	1540.00	100.00	154000.00	153178412.00	96.5383	49.5690
116	Gal. Manson 1/2"	680.00	225.00	153000.00	153331412.00	96.6347	50.0000
117	Sinek Teli 120	380.00	390.00	148200.00	153479612.00	96.7281	50.4310
118	Celik Civi	4800.00	30.00	144000.00	153623612.00	96.8188	50.8621
119	Izopan Cerceveli	56.00	2560.00	143360.00	153766972.00	96.9092	51.2931
120	Sista Tup Silicon	143.00	975.00	139425.00	153906397.00	96.9971	51.7241
121	Sinek Teli 100	420.00	325.00	136500.00	154042897.00	97.0831	52.1552
122	Siyah Manson 2"	96.00	1300.00	124800.00	154167697.00	97.1617	52.5862
123	Siyah Dirsek 1 1/4"	112.00	1080.00	120960.00	154288657.00	97.2380	53.0172
124	Demirdokum Kati Yakitli	2.00	59000.00	118000.00	154406657.00	97.3123	53.4483
125	Sadosan 3 1/2	21.00	5600.00	117600.00	154524257.00	97.3865	53.8793
126	Renkis Sulyen 1/1	76.00	1530.00	116280.00	154640537.00	97.4597	54.3103
127	Emniyet Kilidi	33.00	3450.00	113850.00	154754387.00	97.5315	54.7414
128	Plastik Hortum 3/4"	625.00	180.00	112500.00	154866887.00	97.6024	55.1724
129	Renkis Sulyen 5/1	19.00	5865.00	111435.00	154978322.00	97.6726	55.6034
130	Kruva 1 1/4"	58.00	1900.00	110200.00	155088522.00	97.7421	56.0345
131	Nisasta	265.00	413.00	109445.00	155197967.00	97.8111	56.4655
132	Esem Sabunluk	54.00	1950.00	105300.00	155303267.00	97.8774	56.8966
133	Pimas 125 K.Dirsek	74.00	1400.00	103600.00	155406867.00	97.9427	57.3276

TABLE 1 CONTD.

CLASS B contd.

NO.	S.K.U. ID.	1 ANN. DEMAND	2 UNIT VALUE	3 DV	4 CUM. DV	5 Cum.%of Tot. ===usage===	6 Cum. % of ====s.k.u.===
134	Siyah Dirsek 1 1/2"	78.00	1320.00	102960.00	155509827.00	98.0076	57.7586
135	Zincir	64.00	1600.00	102400.00	155612227.00	98.0721	58.1897
136	Banyo perdesi	17.00	5750.00	97750.00	155709977.00	98.1337	58.6207
137	Siyah Manson 3/4"	608.00	160.00	97280.00	155807257.00	98.1951	59.0517
138	Aspirator filtresi	161.00	600.00	96600.00	155903857.00	98.2559	59.4828
139	Kalin Bezir 5/1	13.00	7000.00	91000.00	155994857.00	98.3133	59.9138
140	Boncuk tutkal	54.00	1600.00	86400.00	156081257.00	98.3677	60.3448
141	Boya tabancasi	3.00	28600.00	85800.00	156167057.00	98.4218	60.7759
142	Ince Bezir 1/1	78.00	1980.00	84240.00	156251297.00	98.4749	61.2069
143	Nipel 3/8"	276.00	299.00	82524.00	156333821.00	98.5269	61.6379
144	Ishakol 1/1	36.00	2250.00	81000.00	156414821.00	98.5780	62.0690
145	Asansor kazani	6.00	13000.00	78000.00	156492821.00	98.6271	62.5000
146	Demirdoku* Termosifon	1.00	75000.00	75000.00	156567821.00	98.6744	62.9310
147	Konik Rekor 1"	54.00	1250.00	67500.00	156635321.00	98.7169	63.3621
148	Kurek	67.00	1000.00	67000.00	156702321.00	98.7592	63.7931
149	Siyah Manson 1/2"	670.00	100.00	67000.00	156769321.00	98.8014	64.2241
150	Siyah Dirsek 2"	37.00	1700.00	62900.00	156832221.00	98.8410	64.6552
151	Pimas 100 Temizleme	32.00	1772.00	56704.00	156888925.00	98.8768	65.0862
152	Celik Dirsek 59	96.00	585.00	56160.00	156945085.00	98.9121	65.5172
153	Esem Fircali Sabunluk	18.00	3024.00	54432.00	156999517.00	98.9465	65.9483
154	Celik Dirsek 106	54.00	1000.00	54000.00	157053517.00	98.9805	66.3793
155	Konik Rekor 2 1/2"	6.00	9000.00	54000.00	157107517.00	99.0145	66.8103

CLASS C

156	Diko 15 lt.	1.00	48800.00	48800.00	157156317.00	99.0453	67.2414
157	Reduksiyon 3/4"	270.00	170.00	45900.00	157202217.00	99.0742	67.6724
158	Gal. Te 1 1/2"	27.00	1625.00	43875.00	157246092.00	99.1019	68.1034
159	Bally 1/1	19.00	2250.00	42750.00	157288842.00	99.1288	68.5345
160	Nipel 1 1/4"	115.00	370.00	42550.00	157331392.00	99.1556	68.9655
161	Siyah Manson 1"	191.00	220.00	42020.00	157373412.00	99.1821	69.3966
162	Sinek Teli 60	210.00	200.00	42000.00	157415412.00	99.2086	69.8276
163	Pimas Boru 125/500	22.00	1839.00	40458.00	157455870.00	99.2341	70.2586
164	Renkis Macun 1/1	25.00	1600.00	40000.00	157495870.00	99.2593	70.6897
165	Tapa 2 1/2"	33.00	1200.00	39600.00	157535470.00	99.2842	71.1207
166	Konik Rekor 3/4"	41.00	960.00	39360.00	157574830.00	99.3090	71.5517
167	Pimas 125 A.Dirsek	27.00	1412.00	38124.00	157612954.00	99.3331	71.9828
168	Silca Cartus Silicon	8.00	4400.00	35200.00	157648154.00	99.3552	72.4138
169	Bulasik teli	130.00	268.00	34840.00	157682994.00	99.3772	72.8448
170	Kalin Bezir 1/1	24.00	1430.00	34320.00	157717314.00	99.3988	73.2759
171	Nipel 2 1/2"	22.00	1550.00	34100.00	157751414.00	99.4203	73.7069
172	Cekic 0.800	28.00	1200.00	33600.00	157785014.00	99.4415	74.1379
173	Neft 5/1	15.00	2200.00	33000.00	157818014.00	99.4623	74.5690
174	Esem Bornoz Askiligi	39.00	830.00	32370.00	157850384.00	99.4827	75.0000
175	Celik Dirsek 76	32.00	1000.00	32000.00	157882384.00	99.5029	75.4310

TABLE 1 CONTD.

CLASS C contd.

NO.	S.K.U. ID.	1 ANN. DEMAND	2 UNIT VALUE	3 DV	4 CUM. DV	5 Cum. % of Tot. usage	6 Cum. % of s.k.u.
176	Celik Dirsek 69	29.00	1000.00	29000.00	157911384.00	99.5211	75.8621
177	Tangit 1/4	34.00	850.00	28900.00	157940284.00	99.5394	76.2931
178	Renkis Astar 1/1	15.00	1920.00	28800.00	157969084.00	99.5575	76.7241
179	Aluminyum Boya 1/1	13.00	2200.00	28600.00	157997684.00	99.5755	77.1552
180	Gal. Manson 2"	41.00	680.00	27880.00	158025564.00	99.5931	77.5862
181	Soba Kuregi	76.00	350.00	26600.00	158052164.00	99.6099	78.0172
182	Celik Halat 10	24.00	1070.00	25680.00	158077844.00	99.6261	78.4483
183	Tapa 2"	51.00	480.00	24480.00	158102324.00	99.6415	78.8793
184	Bally 1/2	17.00	1375.00	23375.00	158125699.00	99.6562	79.3103
185	Celik Dirsek 63	36.00	624.00	22464.00	158148163.00	99.6704	79.7414
186	Tup Bally Kucuk	78.00	280.00	21840.00	158170003.00	99.6841	80.1724
187	Celik Halat 6	32.00	650.00	20800.00	158190803.00	99.6972	80.6034
188	Nipel 1 1/2"	32.00	650.00	20800.00	158211603.00	99.7104	81.0345
189	Cekic 0.500	24.00	858.00	20592.00	158232195.00	99.7233	81.4655
190	Gal. Manson 3/4"	328.00	60.00	19680.00	158251875.00	99.7357	81.8966
191	Kruva 1"	19.00	960.00	18240.00	158270115.00	99.7472	82.3276
192	Demir Bukme Anahtari 12	15.00	1200.00	18000.00	158288115.00	99.7586	82.7586
193	Gal. Te 1"	26.00	675.00	17550.00	158305665.00	99.7696	83.1897
194	Tup Tangit Kucuk	26.00	670.00	17420.00	158323085.00	99.7806	83.6207
195	Tapa 3/4"	137.00	125.00	17125.00	158340210.00	99.7914	84.0517
196	Bally 1/4	27.00	630.00	17010.00	158357220.00	99.8021	84.4828
197	Gal. Manson 1 1/4"	58.00	270.00	15660.00	158372880.00	99.8120	84.9138
198	Gal. Te 1 1/4"	13.00	1200.00	15600.00	158388480.00	99.8218	85.3448
199	Kruva 2"	45.00	325.00	14625.00	158403105.00	99.8310	85.7759
200	Gal. Manson 1"	144.00	100.00	14400.00	158417505.00	99.8401	86.2069
201	Akarsan Kilit	1.00	14000.00	14000.00	158431505.00	99.8489	86.6379
202	Agac aski	9.00	1500.00	13500.00	158445005.00	99.8574	87.0690
203	Musluk Contasi	2218.00	6.00	13308.00	158458313.00	99.8658	87.5000
204	Cekic 0.400	16.00	813.00	13008.00	158471321.00	99.8740	87.9310
205	Esem Dis Fircalik	6.00	2150.00	12900.00	158484221.00	99.8822	88.3621
206	Konik Rekor 3"	4.00	3100.00	12400.00	158496621.00	99.8900	88.7931
207	Demir Bukme Anahtari 14	12.00	1000.00	12000.00	158508621.00	99.8975	89.2241
208	Siyah Manson 3"	6.00	1900.00	11400.00	158520021.00	99.9047	89.6552
209	Siyah Dirsek 2 1/2"	4.00	2650.00	10600.00	158530621.00	99.9114	90.0862
210	Aluminyum Boya 1/4	21.00	500.00	10500.00	158541121.00	99.9180	90.5172
211	Cekic 0.100	26.00	390.00	10140.00	158551261.00	99.9244	90.9483
212	Zincir Kilidi	30.00	330.00	9900.00	158561161.00	99.9307	91.3793
213	Nipel 2"	11.00	900.00	9900.00	158571061.00	99.9369	91.8103
214	Celik Dirsek 61	15.00	624.00	9360.00	158580421.00	99.9428	92.2414
215	Konik Rekor 1/2"	15.00	600.00	9000.00	158589421.00	99.9485	92.6724
216	Cekic 0.150	21.00	425.00	8925.00	158598346.00	99.9541	93.1034
217	Izolebant	28.00	300.00	8400.00	158606746.00	99.9594	93.5345
218	Bel Kurek	8.00	950.00	7600.00	158614346.00	99.9642	93.9655
219	Demir Bukme Anahtari 10	7.00	1075.00	7525.00	158621871.00	99.9689	94.3966
220	Celik Dirsek 170	3.00	2480.00	7440.00	158629311.00	99.9736	94.8276

TABLE 1 CONTD.

CLASS C contd.

=====		1	2	3	4	5	6
NO.	S.K.U. ID.	ANN. DEMAND	UNIT VALUE	DV	CUM. DV	Cum.%of Tot.	Cum. % of
=====		=====	=====	=====	=====	====usage====	====s.k.u.====
221	Celik Dirsek 88	6.00	1125.00	6750.00	158636061.00	99.9779	95.2586
222	Demir Bulme Anahtari 16	4.00	1500.00	6000.00	158642061.00	99.9816	95.6897
223	Mobilya Vernigi 1/1	5.00	915.00	4575.00	158646636.00	99.9845	96.1207
224	Tapa 1"	24.00	175.00	4200.00	158650836.00	99.9872	96.5517
225	Esem Havluluk	1.00	4180.00	4180.00	158655016.00	99.9898	96.9828
226	Reduksiyon 2 1/2"-2"	8.00	520.00	4160.00	158659176.00	99.9924	97.4138
227	Urgan	17.00	220.00	3740.00	158662916.00	99.9948	97.8448
228	Nipel 3"	1.00	3000.00	3000.00	158665916.00	99.9967	98.2759
229	Celik Dirsek 120	2.00	1000.00	2000.00	158667916.00	99.9979	98.7069
230	Demir Bulme Anahtari 18	1.00	1900.00	1900.00	158669816.00	99.9991	99.1379
231	Alyen anahtar (7)	10.00	90.00	900.00	158670716.00	99.9997	99.5690
232	Celik Dirsek 100	1.00	475.00	475.00	158671191.00	100.0000	100.0000
=====							

FIGURE 1

DBV CURVE

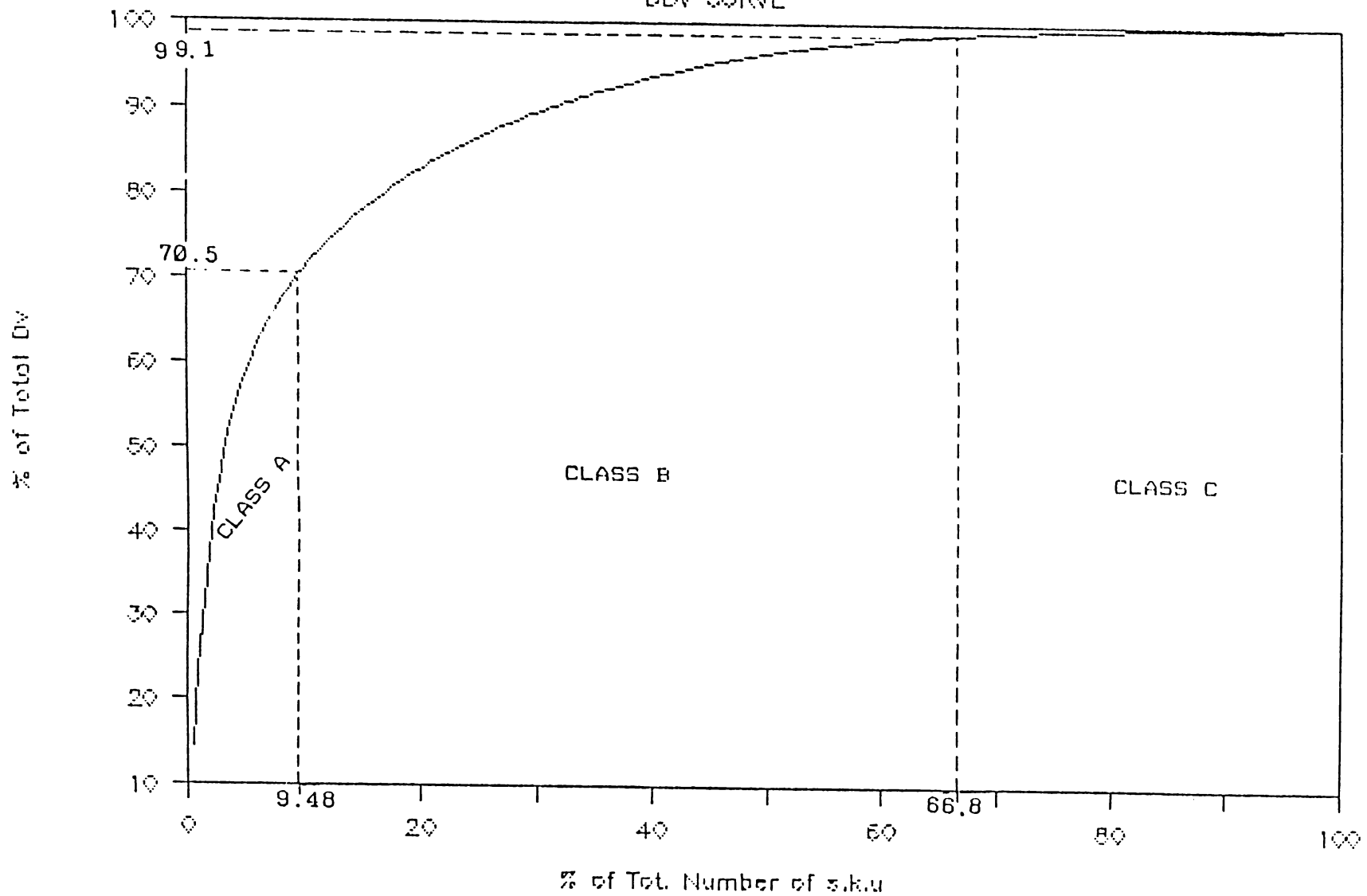
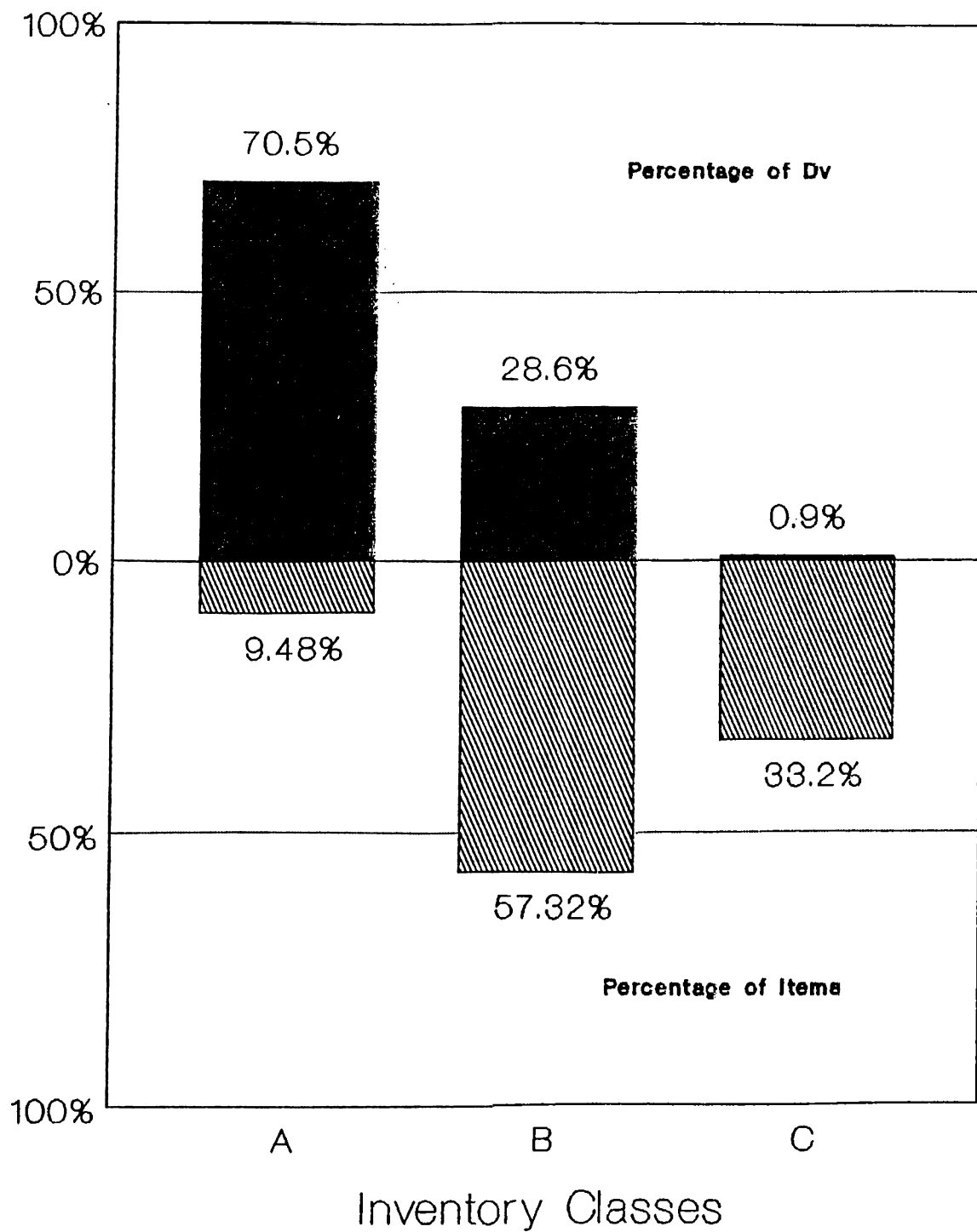


FIGURE 2



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