Facilities Planning and Layout Design

Mini-Project

100 points

Complete this mini project in **groups of three students** using the Excel data provided on Blackboard. Submit your typed responses to the problems below to the Blackboard assignment in a Word file. Within the Word file, for each profile, provide a corresponding table of values or indicate the percentages on the graph, where appropriate. Also attach any data files used to analyze the problem (e.g., Excel and/or Access files).

**PROFILE 1: Demand Profile**

1. Create an **Activity Profile** for all of the SKUs that have been ordered. The value on the y-axis should be the cumulative percentage of the total number of lines shipped, and the value on the x-axis should be the cumulative percentage of the total number of SKUs.
2. Indicate how many SKUs are needed to account for 80% of the picking activity.
3. What percentage of all SKUs ordered is this?
4. How could the information from this profile be used?
5. Create a **Demand Profile**, which is the cumulative percentage of the total number of units shipped versus the cumulative percentage of the total number of SKUs.
6. Indicate how many SKUs are needed to account for 80% of the demand (Quantity shipped).
7. What percentage of all SKUs ordered is this?
8. Comment on the difference between this graph and the one in part a. How would the results inform different decisions?

**PROFILE 2: Lines-per-Order Profile**

1. Create a **Lines-Per-Order Profile** for all of the orders in the database.
2. Change the profile from part a to display only the orders with 25 lines or less.
3. What percentage of orders contains only one line? How might you handle these orders differently than orders with multiple lines?
4. What percentage of orders contains only one item? What warehouse processes could be eliminated for orders that can contain only one item?

**PROFILE 3: Order Quantity Profile**

1. Create an **Order Quantity Profile** showing the percentage of orders that require full cases, broken cases, and a mixture of full and broken cases.
2. What percentage of orders is made up of all full cases? Broken cases? A mixture of full and broken cases?
3. Using this information, how would you design the picking area for these items? For example, would you design a picking area for cases and a separate picking area for broken cases? Include your rationale.

**PROFILE 4: Item Family Profile**

1. Create an **Item Family Profile** for the different product types listed in the Item Master sheet (Belts, Footwear, Jewelry, Neckwear, Outerwear, Shirts, Slacks). For each product family, plot the percentage of orders that consist only of that family. Show the numbers and percentages for each family, either in a table or on your plot.
2. For orders that consist of a single product family, what product type represents the largest percentage of orders? How would you use this information in designing your warehouse?
3. Create a new chart that shows the Item Family Profile for just the top two product types from part a. In addition to these two families, show a third bar on the chart that represents all orders that include just items from the top two product families. (For example, show A, B and AB.)

**PROFILE 5: Unit Load Profile**

1. Create a **Unit Load Profile** for SKU 495770.
2. Where are the significant peaks in this distribution?
3. Given this information, would you recommend making any changes to the current number of units stored per case? Explain your answer.