BrAINWARS 2024

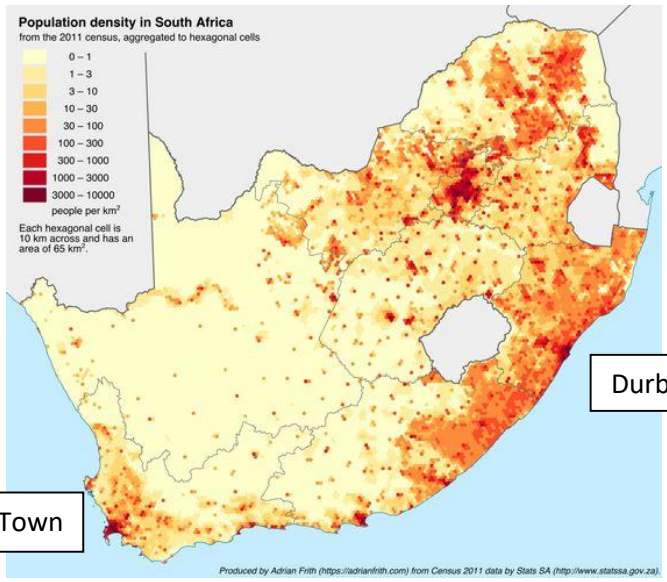
CASE PROBLEM – ROUND 1

Person 1 – Basic Intro, choosing option 1, factors to discuss

- Basic Intro (name + acknowledge to be part of BrainWars 2024 in 5-7 seconds)
- Based on the situation (explain concisely in 10-15 seconds) we will choose **OPTION 1**
- Factors for the most feasible and cost effective supply chain setup are (10 seconds) –
    1. Market Analysis and understanding the geography
    2. Risk Analysis and why option 2 may not be viable
    3. Estimating the costs and

Person 2: Analysis of Cost by Understanding the geography.

- Short intro (name in 5 secs)
- Cape Town (the legislative capital) is the most densely populated City. But having a distribution hub here will be costlier in terms of transporting time.
- Durban is a port city which handles 60 per cent of South Africa's container traffic. It's also densely populated and well connected to the other cities, also Durban is cheaper than the 3 capital cities. So transportation costs will be much less
- So choosing **OPTION 1** and setting a distribution hub in the city of Durban and further more (15) warehouses covering the relevant cities in South Africa, will be the most effective setup



Person 3: Risk Analysis and why option 2 may not be viable

- Any product in the market is subject to being faulty / defective or may malfunction over time or be worn out. So service centers are necessary to be closer to the cities where more number of people can service their wrist band devices.
- Option 2 –
    1. Advantages –
        - Regional Specialization: Each hub can specialize in the specific needs and demands of its region, allowing for tailored inventory and marketing strategies.

- Risk Diversification: Spreading resources across four locations can reduce the risk of a complete halt in operations due to natural disasters, political unrest, or other localized issues.
- **Reduced Long-Distance Transportation Costs**: Having distribution centers in each region can decrease the distance to the customer, potentially lowering shipping costs and times for regional deliveries.
- Streamlined Inventory Management: Managing inventory might be simpler in four large centers than across one main and multiple smaller warehouses, particularly if each region has distinct demand patterns.
- **Potential for Faster Delivery within Regions**: If the hubs are strategically located, they could provide faster delivery services within each respective region, enhancing customer satisfaction.

2. Disadvantages –
   - **Higher Initial Infrastructure Costs**: Setting up four fully equipped distribution centers can be more expensive upfront compared to one main hub with smaller satellite storages.
   - Complex Coordination and Management: Operating four separate hubs requires effective coordination and management, increasing operational complexity and possibly requiring more staff.
   - Underutilization Risk: If demand in a region does not meet projections, the respective distribution hub may be underutilized, leading to wasted resources and higher per-unit costs.
   - Inconsistent Customer Experience: There could be discrepancies in service quality and delivery times between different regions, depending on the efficiency and management of each distribution hub.
   - **Higher Fixed Costs**: Running four distribution centers incurs higher fixed costs, including utilities, rent, and salaries, which the company must pay regardless of sales volume.

Person 4 – Estimating the costs and concluding the video

Estimating the transportation, warehousing, delivery charges, and inventory costs for an IoT-based wristband product from China to South Africa involves several variables and assumptions. Below is a rough estimation based on general industry standards and potential costs. Please note, actual costs can vary significantly based on specific circumstances, such as contractual agreements, fluctuating fuel prices, and exchange rates.

1. Transportation Cost (China to Durban, South Africa):

- **Sea Freight from China to Durban**: Costs can vary depending on the shipping company, time of year, and specific service level, but a standard 20-foot container might cost between $1,500 and $4,000.
- **Insurance and Customs Duties**: This can range from 1% to 5% of the cargo's value, depending on the insurance terms and customs duties applied by South African authorities.

2. Warehousing Cost in Durban:

- **Warehousing Fees**: Depending on the services provided, warehouse costs in Durban can range from $10 to $30 per square meter per month. For a small-to-medium-sized warehouse of 500 square meters, this would translate to approximately $5,000 to $15,000 per month.
- **Handling Charges**: Including unloading from containers, storing, and preparing for further distribution, handling charges might be around $50 to $200 per pallet.

3. Delivery Charges (Durban to 15 other cities):

- **Domestic Transportation**: Costs depend on the distance, mode of transport (truck, rail), and load size. As a rough estimate, transporting goods from Durban to other South African cities can cost between $0.5 to $2 per kilometer per pallet. For 15 cities, this can vary widely; you'd need to calculate based on specific distances.
- **Fuel Surcharges and Toll Fees**: These can add 10-30% to transportation costs, depending on the route and current fuel prices.

4. Inventory Costs:

- **Cost of Capital**: The cost associated with holding inventory, usually calculated as a percentage of the inventory value, commonly between 10% and 25% annually.
- **Shrinkage and Obsolescence**: Depending on the product and security measures in place, assume a 1-5% loss of inventory per year due to damage, theft, or obsolescence.
- **Insurance**: Warehouse and inventory insurance can add an additional 0.5-2% to the cost, based on total inventory value.

Example Calculation:

Let's make some simplified assumptions for illustrative purposes:

- Sea Freight: **$3,000 (for a single container)**
- Warehousing in Durban (monthly): **$10,000**
- Average transportation to one city: $1,000 x 15 cities = **$15,000**
- Inventory Costs: Assuming $100,000 worth of inventory, a 20% annual cost would be $20,000 (approximately **$1,667 monthly**).