

Claims

1. A computer-implemented system for intelligent distribution of products, the system comprising:
 - a memory storing instructions; and
 - at least one processor configured to execute the instructions for:
 - retrieving, from at least one database;
 - historical order information associated with a plurality of previously fulfilled orders, each previously fulfilled order comprising a stock keeping unit (SKU); and
 - historical fulfillment center data comprising the inbound and outbound shipment history of each fulfillment center of a plurality of fulfillment centers in a region;
 - training a data model with the historical order information to configure the data model to determine:
 - statistics associated with at least one supplier of the SKU; and
 - an expected demand of the SKU;
 - determining, a target inventory of the SKU to satisfy the expected demand, the target inventory comprising:
 - a cycle stock for the SKU; and
 - a safety stock for the SKU;
 - determining, based on the target inventory of the SKU, a regional target inventory of the SKU of the region, the regional target inventory comprising:
 - a regional cycle stock for the SKU; and
 - a regional safety stock for the SKU;
 - generating, based on the received fulfillment center data and the determined statistics, a profile for each fulfillment center, the profile comprising:
 - an inbound capacity;
 - an outbound capacity; and

a current inventory of the SKU;
assigning, based on the profile of each fulfillment center, a portion of the
regional target inventory to each fulfillment center; and
stocking a number of SKUs in each fulfillment center based on the portion.

2. The system of claim 1, wherein assigning a portion of the regional target inventory is further based on a determination that a SKU should be in multiple fulfillment centers.
3. The system of claim 2, wherein the determination that a SKU should be in multiple fulfillment centers is based on the popularity of the SKU in the region.
4. The system of claim 1, wherein assigning a portion of the regional target inventory is further based on an aggregate of generated profiles for each fulfillment center in the plurality of fulfillment centers.
5. The system of claim 1, wherein the at least one processor is further configured to consult a record of current outbound orders of the SKU, and assigning a portion of the regional target inventory is further based on the current inventory of the SKU and the current outbound orders of the SKU.
6. The system of claim 1, wherein the cycle stock is an amount of the SKU determined to meet the expected demand, and the safety stock is an additional amount of the SKU determined to meet an excess of the demand.
7. The system of claim 1, wherein stocking a number of SKUs in each fulfillment center comprises one of:
maintaining the current inventory of the SKU so that it remains equal to the
assigned portion of the regional target inventory of the SKU; or
adjusting the current inventory of the SKU so that it becomes equal to the
assigned portion of the regional target inventory of the SKU.

8. The system of claim 7, wherein maintaining the current inventory comprises one of:
maintaining an inbound quantity of the SKU so that it remains equal to an
outbound quantity of the SKU; or
modifying an inbound quantity of the SKU so that it becomes equal to an
outbound quantity of the SKU.
9. The system of claim 7, wherein adjusting the current inventory comprises
modifying or maintaining an inbound quantity of the SKU for the fulfillment center
so that the current inventory approaches the assigned portion of the of the region
target inventory of the SKU.
10. The system of claim 1, wherein stocking a number of SKUs in each fulfillment
center comprises automatically generating and submitting purchase orders to the
at least one supplier for shipment to the fulfillment center based on the assigned
portion of the regional target inventory.
11. A computer-implemented method for intelligent distribution of products, the
method comprising:
retrieving, from at least one database;
historical order information associated with a plurality of previously
fulfilled orders, each previously fulfilled order comprising a
stock keeping unit (SKU); and
historical fulfillment center data comprising the inbound and
outbound shipment history of each fulfillment center of a
plurality of fulfillment centers in a region;
training a data model with the historical order information to configure the
data model to determine:
statistics associated with at least one supplier of the SKU; and
an expected demand of the SKU;

determining, a target inventory of the SKU to satisfy the expected demand, the target inventory comprising:
a cycle stock for the SKU; and
a safety stock for the SKU;
determining, based on the target inventory of the SKU, a regional target inventory of the SKU of the region, the regional target inventory comprising:
a regional cycle stock for the SKU; and
a regional safety stock for the SKU;
generating, based on the received fulfillment center data and the determined statistics, a profile for each fulfillment center, the profile comprising:
an inbound capacity;
an outbound capacity; and
a current inventory of the SKU;
assigning, based on the profile of each fulfillment center, a portion of the regional target inventory to each fulfillment center; and
stocking a number of SKUs in each fulfillment center based on the portion.

12. The computer-implemented method of claim 11, wherein assigning a portion of the regional target inventory is further based on a determination that the SKU should be in multiple fulfillment centers.
13. The computer-implemented method of claim 11, wherein assigning a portion of the regional target inventory is further based on an aggregate of generated profiles for each fulfillment center in the plurality of fulfillment centers.
14. The computer-implemented method of claim 11, wherein the at least one processor is further configured to consult a record of current outbound orders of the SKU, and assigning a portion of the regional target inventory is further based on the current inventory of the SKU and the current outbound orders of the SKU.

15. The computer-implemented method of claim 11, wherein the cycle stock is an amount of the SKU determined to meet the expected demand, and the safety stock is an additional amount of the SKU determined to meet an excess of the demand.
16. The computer-implemented method of claim 11, wherein stocking a number of SKUs in each fulfillment center comprises one of:
maintaining the current inventory of the SKU so that it remains equal to the
assigned portion of the regional target inventory of the SKU; or
adjusting the current inventory of the SKU so that it becomes equal to the
assigned portion of the regional target inventory of the SKU.
17. The computer-implemented method of claim 16, wherein maintaining the current inventory comprises one of:
maintaining an inbound quantity of the SKU so that it remains equal to an
outbound quantity of the SKU; or
modifying an in inbound quantity of the SKU so that it becomes equal to an
outbound quantity of the SKU.
18. The computer-implemented method of claim 16, wherein adjusting the current inventory comprises modifying or maintaining an inbound quantity of the SKU for the fulfillment center so that the current inventory approaches the assigned portion of the of the region target inventory of the SKU.
19. The computer-implemented method of claim 11, wherein stocking a number of SKUs in each fulfillment center comprises automatically generating and submitting purchase orders to the at least one supplier for shipment to the fulfillment center based on the assigned portion of the regional target inventory.

20. A computer-implemented system for intelligent distribution of products, the system comprising:
- a memory storing instructions; and
 - at least one processor configured to execute the instructions for:
 - retrieving, from at least one database;
 - historical order information associated with a plurality of previously fulfilled orders, each previously fulfilled order comprising a stock keeping unit (SKU); and
 - historical fulfillment center data comprising the inbound and outbound shipment history of each fulfillment center of a plurality of fulfillment centers in a region;
 - training a data model with the historical order information to configure the data model to determine:
 - statistics associated with at least one supplier of the SKU; and
 - an expected demand of the SKU;
 - determining a target inventory of the SKU to satisfy the expected demand, the target inventory comprising:
 - a cycle stock for the SKU; and
 - a safety stock for the SKU;
 - determining, based on the target inventory of the SKU, a regional target inventory of the SKU of the region, the regional target inventory comprising:
 - a regional cycle stock for the SKU; and
 - a regional safety stock for the SKU;
 - generating, based on the received fulfillment center data and the determined statistics, a profile for each fulfillment center, the profile comprising:
 - an inbound capacity;
 - an outbound capacity; and
 - a current inventory of the SKU;

assigning, based on the profile of each fulfillment center, a portion of the regional target inventory to each fulfillment center;
determining, based on the current inventory of the SKU and the portion, whether the current inventory of the SKU meets the assigned portion; and
based on a determination that the current inventory does not meet the assigned portion, controlling an inbound flow of a SKU at each fulfillment center until the current inventory of the SKU meets the assigned portion.