

Adaptation of shipment consolidation and distribution network design to omni-channel retailing

In recent times, the emergence of a strong online channel has pushed retailers to rethink their over-all sales strategies. Moving into omni-channel retailing has come with challenges within the distribution network. This thesis investigates the role of shipment consolidation and distribution network design when retailers face the changing landscape.

Historically, retailers have mainly focused on efficient transports to their large brick-and-mortar stores. Scales of economies in terms of transportation was easily achieved by ordering bulk shipments to few locations. However, the level of customer satisfaction achieved by just focusing on big physical stores will no longer be sufficient. The need for new fulfilment methods to reach the customers with their goods, and more urban stores may result in sales cannibalisation, thus, splitting up the flow of goods. This new type of retailing system is called omni-channel retailing. Imagine being a customer who can compare different kind of shoes online before purchasing it in a store, just to find out a week later that the pair of shoes did not satisfy your needs so you return it by mail-order, frictionless. Wow, how cool, right? However, to support the transition from large flows to few locations into separated flows to many locations, the role of the consolidation points need to change. Consolidation points are warehouses which function within the distribution network is to consolidate several unfilled trucks of goods into one truck to reduce the overall transport cost. To further support the shift in the market, the distribution network

design, in terms of warehouses and transportation links need to be redefined to support an omni-channel retailer's distribution needs.

This thesis concludes that the role of consolidation points needs to change in the future. To support omni-channel distribution, it was suggested for the consolidation points to act as cross-docking stations to increase delivery speed and to provide a better product mix for the receivers. A cross-docking station is a type of logistical node where shipments are split up and placed with other shipments in another truck without being stored. However, in this scenario, communication and coordination becomes a barrier since the solution is more complex compared to the current one. Furthermore, this thesis concludes that the distribution network design has to be improved to cope with customer demands in terms of delivery speed and fulfilment methods. To cope with the customer demands, it was suggested to move inventory closer to the customer. By moving the inventory, it is easier to reach the customer in a shorter time span. It is like visiting your local super market rather than the big mega store outside the city.

The thesis was made in collaboration with a leading furniture retailer, IKEA. Thus, the findings of this thesis can be applied to any retailer which finds itself in the transition to omni-channel retailing. Consolidation points and distribution network design have a general appeal which makes it possible to use this thesis as a framework for setting up the distribution network design in the future.

