

Creating Shared Value from Collaborative Logistics Systems: The Cases of ES3 and Flexe



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Collaborative Logistics Systems and Shared Value

- ◆ Collaborative logistics systems refer to individual logistics systems that are interconnected; it is also termed as the “Physical Internet” by Montreuil (2011).
 - ◆ It makes transportation and logistics more efficient and sustainable by enabling the sharing of infrastructure, thereby creating “shared value”.
 - ◆ “Shared value” refers to not only economic value, but also social value; it enhances the competitiveness of a company while reducing societal burdens (Porter and Kramer, 2011).
 - ◆ Two types of CLS: ES3 (shared warehousing and trucking) and Flexe (on-demand warehousing)
- ◆ The development of collaborative logistics systems is currently at a nascent stage.
 - ◆ CLS is a socio-technical system; there are barriers, not just technical, but also social.
- ◆ This research examines both economic and social value created from collaborative logistics systems and highlights the socio-technical barriers that need to be overcome for sharing resources and collaboration by using two case examples: ES3 and Flexe.
 - ◆ We highlight social barriers in particular.

Conceptual Framework

◆ Sharing (or collaborative) economy

- ◆ Refers to a socio-economic system that enables shared access to goods, services, and resources, e.g., data, infrastructure, and talent (Abel, 2013).
- ◆ Characterized as largely market-based, high-impact capital (utilization of resources to their full capacity), and crowd-based networks (capital and labor supplied by crowds of individuals) (Sundararajan, 2016); sharing economy companies, e.g., Uber, Lyft, and Airbnb
- ◆ There are emerging sharing economy companies (collaborative logistics systems)
 - ◆ Unlike sharing resources among individual consumers, these companies (e.g., ES3 and Flexe) make possible resource sharing among separate businesses.

◆ Shared value

- ◆ Creating shared value will be the key to unlocking new business innovations as well as societal and economic progress (Porter and Kramer, 2011).
- ◆ CLS create both economic and social value by making the resource utilization more efficient and flexible and by mitigating societal harms (reducing energy consumption, waste, and pollution).

◆ Socio-technical approach

- ◆ Conceptualizes collaborative logistics systems as a socio-technical system, an open system that is embedded in an environment that affects the way it behaves (Mumford, 2006); Considers technical and social structures as two systems that are both part of one inclusive system.
- ◆ It is a configuration of a set of elements including technology, markets, suppliers, consumers, infrastructure, etc. necessary to fulfill societal functions, co-evolving and interacting each other (Xue, You, and Shao, 2014).

Socio-technical Barriers

- ◇ Once addressed, barriers often become drivers (Lewin, 1939).
- ◇ Technological (or technical) barriers
 - ◇ The development of a neutral platform or infrastructure (digital or physical) that are interoperable and standardized.
- ◇ Social barriers are much harder to address (Cutcher-Gershenfield et al., 2016).
 - ◇ Recognition of the value of collaboration
 - ◇ Trust
 - ◇ When the relationship is occasional or bound in short-term contracts, companies are likely not to collaborate
 - ◇ Lack of incentives
 - ◇ Companies put competitiveness ahead of collaboration and often take positions that can achieve “competitive advantage”.

Case Examples

- ◇ ES3: Shared warehouse and trucking
- ◇ Flexe: On-demand Warehousing

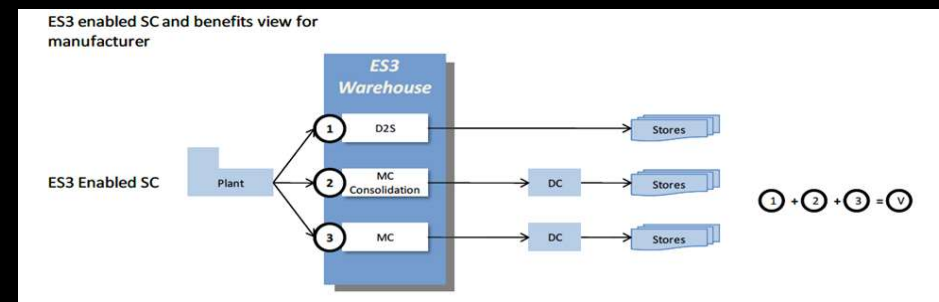
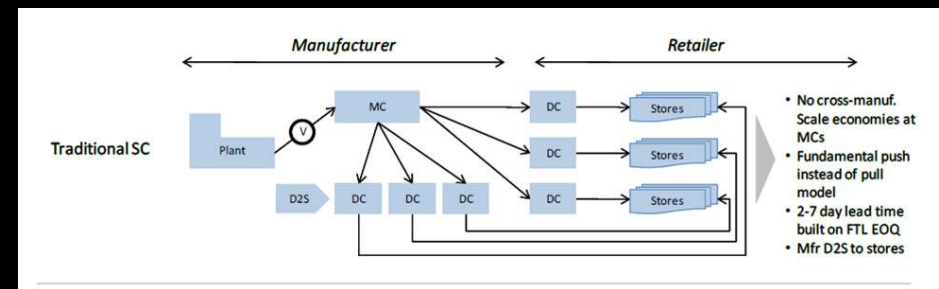
ES3: Shared Warehouse and Trucking

- ◆ ES3 provides shared infrastructure, such as warehouse and trucking, to both manufacturers and retailers.
- ◆ Founded in 1999 (consumer package goods supply chain).
- ◆ ES3' flagship collaborative warehouse facility (opened in 2002): 5 million square feet
 - ◆ Storage of 400,000 pallets, shipping of more than 300 million cases annually, management of more than 20,000 items.
- ◆ Manufacturers benefit as they avoid owning or investing in fixed assets that are not always at maximum capacity.
- ◆ Trucking facility builds and ships fuller trucks with products from various manufacturers, reducing the number of shipments and wasted space in containers.
- ◆ Retailers lowers the economic order quantity (EOQ), shortening lead times and lowering inventory levels (achieving just-in-time).



ES3: Shared Warehouse and Trucking

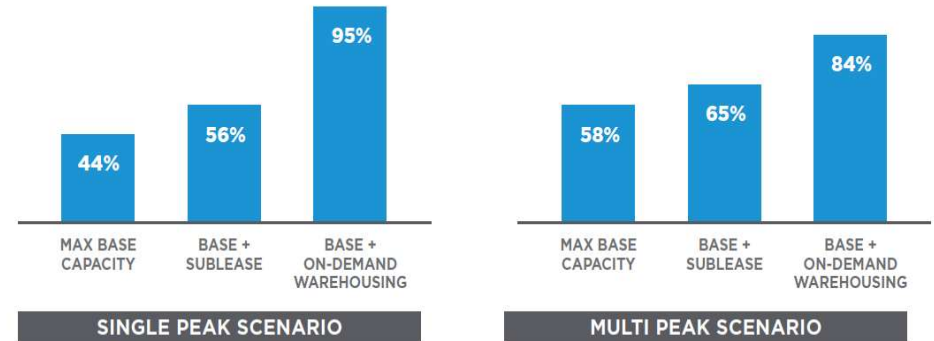
- ◇ ES3' direct-to-store (D2S) program (rolled out in 2010) streamlines the supply chain further by eliminating a distribution center and leg of transportation, as product travels directly to the store.
- ◇ Traditionally a large manufacturer created mixing centers where product from all of its manufacturing facilities was shipped.
 - ◇ Helped to reduce EOQ to a truckload of all items sold by the manufacturer from a truckload shipped from a single manufacturing plant.
- ◇ By combining multiple manufacturers' mixing centers, ES3 allows the reduction of EOQ from a truckload to a case.
 - ◇ It is an end-to-end supply chain solution that is faster, cheaper, and greener than existing supply chain models.
 - ◇ As product variety increases, replenishment orders would continue to be smaller and more frequent.
 - ◇ It makes the benefits of the delivery of just-in-time inventory truly realized—selling a case shipping a case.



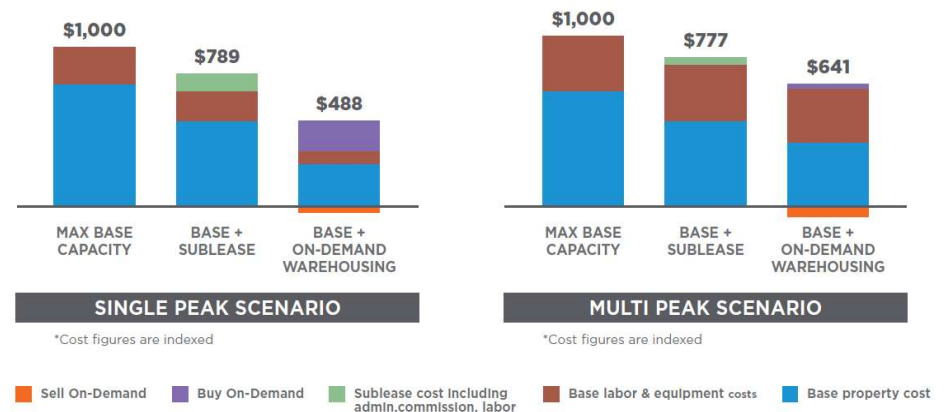
Flexe: On-Demand Warehousing

- ◆ Founded in 2013.
- ◆ Flexe is a cloud-based marketplace that connects warehouse operators and third-party logistics (3PL) providers.
 - ◆ It provides solutions for the fluctuation of the utilization levels of warehousing capacity: excess capacity (sunk costs) and excess inventory.
- ◆ Flexe's on-demand warehousing services creates huge economic and social value
 - ◆ By providing additional capacity (buy space) only when it is needed with no minimums, while also providing an option to deal with over-capacity issues (sell space), companies could improve the utilization of warehouse capacity, thereby saving energy consumed, e.g., less wasted electricity, and monetize what would be otherwise result in wasted space.
- ◆ Matching capacity closely to actual inventory levels drives significantly higher utilization – upwards of nearly 100% improvement in a single peak scenario. Even in a multi-peak situation, on-demand warehousing can drive utilization over 40% higher.

Capacity Utilization



Cost Comparison



Overcoming Socio-Technical Barriers: Interview Data

- ◆ A former Chief Marketing and Strategy Officer at ES3
 - ◆ “We sign confidentiality agreements with each of the participants. We have *strict guidelines about what we can share and what we cannot share.*”
 - ◆ “The challenge is getting more people to understand that sharing is going to be the way forward. This concept of sharing infrastructure is hard for existing supply chain professionals to grasp.”
- ◆ For collaboration (or sharing), they need a neutral platform where they feel comfortable working together and where “*nobody has a home team advantage.*”
- ◆ “What we did was look at, essentially *the cost of the supply chain to the participants before collaboration and after collaboration* and so there’s the economic portion wherein after collaboration you collapse the number of warehouses, reduce the number of warehouses and amount of transportation that there are financial savings that can be passed onto each of the participants.”
- ◆ The business model ES3 developed is so-called “*shopping mall model.*” with which the more space they use, the lower rate they pay.
 - ◆ “ES3’s business model is based on volume made. So the bigger you are, the less you pay.”

Overcoming Socio-Technical Barriers: Interview Data

- ◆ A VP of business development of Flexe
 - ◆ “Managing different levels of complexity that consumers require in warehousing operations is a barrier. Imagine they can just go online and book a shipment in a warehouse, plan a route, move the goods, and all that in a completely automated fashion. The challenge is how we can *make this more automated and seamless*, given that everybody’s supply chain is unique in some way. That’s where we are thinking of the Physical Internet, namely the interconnection of logistics systems that are based on *interoperable and standardized processes*.”
- ◆ They would not share resources (warehouse capacity) unless they recognize the economic and social value created from collaborative logistics systems.
 - ◆ “If you are sitting on an empty space, as warehouse operator, it is a cost. We add *revenue streams to empty footprints by commercializing them* and make them accessible to the demand side of the marketplace. On the customer side, we give our customers *on-demand access to a larger footprint* than they would otherwise have access to. Flexe’s cloud-based platform also streamlines material handling operations. *It requires no technology investments, long-term leases or process interruptions*. Adding warehousing and distribution capacity is now easier, more flexible and more cost effective than ever before.”

Conclusions

- ◆ Collaborative logistics systems creates shared value by providing neutral platforms (physical, digital or both) where participants can share infrastructures (and resources) and collaborate.
 - ◆ Supply chain costs, including inventory handling costs and transportation costs
 - ◆ Societal (environmental) costs, such as carbon emissions and energy consumptions, associated with logistics and transportation
- ◆ However, collaboration is challenging, and the potentials of CLS will not be fully realized unless socio-technical barriers are overcome
 - ◆ Collaboration over competition-oriented conservatism (zero-sum game)
 - ◆ Recognition of the value of collaboration (collaborative advantage)
 - ◆ With the reduction of supply chain cost (non-value adding) through collaboration, activity can be more focused on value-adding, such as managing increasing cost of goods or improving product quality
 - ◆ Demonstration of shared value created
 - ◆ Trust (neutral platforms)
- ◆ Two case examples of ES3 and Flexe, including interviews, demonstrate how shared value could be created from CLS and how socio-technical barriers to CLS could be overcome to create shared value.