How e-commerce transforms the store and the retail landscape: ‘dark stores’, ‘warestores, and urban logistics

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Reference: OLVO, 2020
E-commerce & the impact of online shopping on retail
E-commerce, a sector that has been growing at double digit rates for more than a decade

Reference: International Post Corporation, 2021
From ‘retail apocalypse’ and ‘death of distance’ to omnichannel, now common practice among a range of stakeholders

Reference: Hänninen et al., 2020
Omnichannel retail has profoundly changed the role of the traditional store, transforming setting and offering

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<thead>
<tr>
<th>Operational offering</th>
<th>Modified store setting</th>
<th>New store setting</th>
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<tbody>
<tr>
<td></td>
<td>Showrooms, zero-inventory stores, digital assortment extension, digital shelf extension, virtual shelf expansion</td>
<td>Click-and-drive, third party access points, lockers, collection points, pick-up stations, delivery points</td>
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<td>Buy online, pick-up in store (BOPIS/BOPS), click-and-collect, curbside pick-up, reserve online, pick-up and pay in store (ROPS)</td>
<td>Stores-on-wheels</td>
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<td>Experience stores, flagship stores, concept stores, pop-up stores, temporary stores, third places</td>
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<td>Cashier-less stores</td>
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Reference: Buldeo Rai, 2022
Operational implications of omnichannel store concepts, from upstream supply flows to downstream delivery flows

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Reference: Buldeo Rai, 2022
Dark stores & quick commerce, deciphering the developments
Retailers ‘turned’ stores ‘dark’ during lockdown, temporarily or permanently, to increase delivery capacity and speed.
Simultaneously, the number of instant grocery delivery start-ups, that rely on dark stores, increased rapidly.

Reference: Skrovan, 2022
Venture capitalists invested nearly $4 billion in instant grocery delivery in 2021, following a strategy of ‘blitzscaling’

Reference: Pitchbook, 2021; 2022
Press coverage focuses on locally present start-ups, but instant grocery delivery is a global phenomenon, some examples
In fact, the instant grocery delivery model finds its origins in Asia and is an established practice in China in particular.
Dark stores of instant grocery delivery start-ups share several characteristics:

- Are overall between 200 m² and 400 m², have limited infrastructural needs and count about five to fifteen employees.
- Target ‘A’ markets, but do not necessarily need ‘A’ locations in those markets.
- Serve neighbourhoods in ten to twenty minutes within a 2 km radius.
- Use two-wheelers, including electric scooters and cargo-bicycles.
- Need parking space as equipment and vehicles are provided.
- Carry about 2,000 product references, about one third from local producers.

Reference: Buldeo Rai, 2022
Transport and land use intensity of dark stores, observations from Getir, Gorillas, Flink and Frichti in February and June 2022

Transport intensity of dark stores on week days

Transport intensity of dark stores on weekend days

= About 1 departure or arrival every 3 minutes

Reference: Buldeo Rai & Schorung, 2022
Transport and land use intensity of dark stores, observations from Getir, Gorillas, Flink and Frichti in February and June 2022

Transport intensity of dark stores on weekend days

= About 1 departure or arrival every minute when dark store/kitchen combined.

Reference: Buldeo Rai & Schorung, 2022
Transport and land use intensity of dark stores, observations from Getir in Paris 11 in February 2022

Regular supplies in small quantities about five pallets

About 11 to 13 vehicles occupy the parking spaces

1,3 deliveries per departure during the week and 1,5 during the weekend

Reference: Buldeo Rai & Schorung, 2022
To deliver on their instant delivery promise for urban markets as a whole, dark stores are needed in numbers to succeed.
From dark store to dark city? Photomontage of Amsterdam by NRC Handelsblad
Growing aversion among local residents, authorities and businesses, referring to noise, space, safety and competition concerns.

Instagram page in Amsterdam

My Bodega Online initiative in New York

Public meeting on reporting unauthorised dark stores in Paris
Live fast, die young?
Instant grocery delivery strategies moving forward

Acquisitions
Partnerships
Services
Dark stores & quick commerce, an illustration of three existing trends in urban logistics
1 - Service differentiation and specialisation
2 - Modal shifts in the last mile and last ‘fifty feet’
3 - Proximity logistics real estate

Design for a new multi-story distribution center in Brooklyn

Micro-hub constructed under the ring road in Paris

Model view of West Truck Terminal redevelopment in Seoul

Reference: Buldeo Rai et al., 2022
Thank you, questions?