Carbon auditing conventional and online book supply chains:
As easy as ABC?

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Issues to be addressed

- Boundary issues
- Utilisation factors
- Carbon allocation
- Consumer behaviour
- Other environmental impacts
The Book Supply Chain: Key players and their trading relationships
Location of key players in the UK book industry

- Legacy
- Conglomeration
- Opportunity
- Government funding

- **Publishers HQs**: Glasgow; London; Oxford
- **Distributors DCs**: Abingdon; Basingstoke; Cambridge, Chelmsford, Chichester; Colchester; Glasgow; Grantham; Littlehampton; Northampton; Rugby; Swansea
- **Trade Wholesalers DCs**: Eastbourne; Norwich
- **Retailer-Owned RDCs**: Burton-upon-Trent; Swindon
- **Online Retailers DCs**: Eastborne; Gourock; Milton Keynes; Norwich; Swansea
- **Supermarket Retailers**: Asda; M&S; Morrisons; Sainsbury’s; Tesco; Waitrose
Book Industry Relationships: Conventional

Conventional retail

- 75% + books sourced from publishers via distributors;
- Largest book chains account for 50% of book market share;
- Stock holdings in book stores reduced in recent years;
- Book shelf-life = 30-days.

Source: discussions with leading UK Book Distributor
Book Industry Relationships: Online

Online retail

- British consumers willing to purchase books online;
- Internet accounts for 10% of book market share;
- Online retailers excel at the “long tail” of slow moving books;
- Parcel carrier versus post?

Source: discussions with leading UK Book Distributor
Auditing: How many books? (warehousing)

At a:
- DC
- Wholesaler
- Independent Retailer
- Book Chain

Warehouse energy consumption = 1149 t-CO$_2$ annually

3,250,000 books at any one time
Average storage - 75 days

73g CO$_2$ per book
Auditing: How many books? (trunking operations)

In a:
- Carton (box)
- Roll cage
- Pallet
- Truck

Carton (box) = 40 books
Pallet = 30 cartons (boxes)
Roll cage and truck = 5% books
**Auditing: How many books? (last mile operations)**

**In a:**
- Package (parcel)
- Van

**Package = 1.4 books**
**Van = 160 deliveries (5% books)**
**Round = 8 packages (11 books)**
Auditing: Freight transport

- Conventional: 500km
  - Distance between locations:
    - Printers to Distributors: 170km
    - Printers to Sortation Centre: 330km
    - Sortation Centre to Local Depot: 270km
    - Local Depot to retailers: 55km
    - Local Depot to Consumer: 7km
    - Retailers to Local Depot: 1km

- Online: 1030km
  - Distance between locations:
    - Printers to Sortation Centre: 30km
    - Sortation Centre to Fulfilment Centre: 270km
    - Fulfilment Centre to Local Depot: 430km
    - Local Depot to Consumer: 1km

- Flow types:
  - Forward flow: 
  - Returns: 

Note: The diagram illustrates the logistics flow and the distances involved in both conventional and online freight transport methods.
Consumer book buying behaviour

• High street most likely location to purchase a book;

• Few shoppers make dedicated book buying trips (preferring to buy on impulse or as a break from shopping);

• 33% of adults have purchased books on the web in previous 12-months

“I SAID do you have books on anger management?!!”
Personal travel choices & the impact of Home Delivery

- Shopping trips eliminated
  - Continue to shop for some products

- Remove shopping from multi-purpose trips
  - Browse before buying online

- Shop for other additional / related products
  - Substitute with other car-based travel

- Usually walk / use public transport to shops

Positive | Neutral | Negative

Effects on car traffic
Environmental implications of the Book Industry

1. Packaging issues

- Consumer decisions at time of purchase
- Company policies / shipping arrangements
1. Packaging

- Leading UK wholesaler indicated that packaging accounted for 8-12% of a typical parcel’s weight
- Issue for both retail channels

**Distributors’ packaging**
150g (6 books)

**Online retailer’s packaging**
80g (2 books)
2. Potential for excess new stock

‘Sale or return’ basis to retail supply

Retailer able to return book between 3-months & 15-months after initial publication for credit

Meet the author of
‘The Secrets of Popularity’
3. Reverse logistics – book returns

restock for resale to retailers; refurbish and resale to retailers; resale to remainder merchants; donation to charities; & pulping.

Chartered Institute of Transport (2004)

Little economic incentive to restock book returns
Conclusions

• Book industry is extremely complex, with many trading relationships;
• To date, legacy and financial incentives have strongly influenced the geographical location of key players;
• Mergers and acquisitions have always been a key feature, but currently, the book industry is in a state of flux;
• Several industry-wide practices have an inherently negative impact on the environment;
• Fundamental to any audit is the treatment of the “last mile” comparison.

THE END…?