Current thoughts about On-shelf availability (OSA) and Out-of-stocks (OOS) as they affect Retail Logistics

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The UK leads the way in retail replenishment...!

- Fernie and Sparks claimed in 2004 that the UK had one of the most efficient grocery supply chains in the world.

**Oh Yeah...?**

- UK grocery retailers have streamlined their supply chains in order to improve operational efficiencies. This process has been helped by ECR UK being integrated with, and supported by the UK's IGD, formerly the Institute of Grocery Distribution and the fact that the UK and GB are island entities with little or no competition nearby, thus encouraging the growth of oligopolistic retail chains. Ad yet, even the UK's use of ECR is not without its flaws regarding collaboration and relationships between suppliers and retailers.

Are OSA and OOS still issues...?

Tesco's CEO Philip Clarke's "diagnosis of their Christmas 2011 'under-performance' was detailed: not enough staff, queues too long and too many under-stocked shelves. These problems, in theory, are easy for a retailer as rich as Tesco to fix: throw money at the problem. That is the plan, with more – and better trained – staff to be recruited. The cost, though, will frighten shareholders who hadn't considered the Tesco profit machine might become unpredictable."


Novel ideas and research gaps concerning OSA/OOS...

- The retail supply chain process
- Measurement of OSA and OOS
- Changes in the UK food retail sector
- Size of retailer: the multiple v small independent operator
- Products of importance to retailers
- Products of importance to customers
- Location of products
- The ‘demand chain’ versus the supply chain

Grant and Fernie, *European Retail Research* (2009)

Main actors affecting retail and in-store logistics

- Senior Management
- Logisticians
- Marketers
- Consumers

Agenda

- The context:
  - the UK as the world’s leader in replenishment...?
  - the importance of OSA/OOS in retail...
- The ‘reality’ from several research examples...
- A ‘strategic disconnect’ between logistics/SCM, retail senior management, in-store marketing/merchandising and the consumer...?
- Areas of interest, suggestions and future research...
- Some provocative final thoughts...
The impact of stock outs: What do consumers really do...?

6% + 37% + 22% = 65% of consumers don’t patronise the retailer!!
19% + 6% + 22% = 47% of consumers don’t purchase the manufacturer’s product!!


Can there ever be 100% OSA...?
The relationship between inventory levels/service...

• How much money do you want to spend...?
• Marks & Spencer did just that...

Grant et al., Fundamentals of Logistics Management (2006)

OOS response for specific product types (same category)

Decrease in OSA from RDC to store...

A need to overhaul in-store logistics...!

Loss of grocery sales in Europe: €4 billion per annum...!

Gillette, NUS Survey (2007)

ECR Europe (2003)

Overall causes of OOS...?

• Promotional activities*
• Rate of sales
• Inaccurate inventory records
• Shrinkage
• Backroom
• Range density*

*Causes related to marketing...?

Grant and Fernie, ERR (2009)

The largest area for improvement...

• The ‘last 50 yards’ account for 50% of a retailer’s logistics costs...!
• Average grocery retailer’s store staff in Germany spend 43% of their time on replenishment
• However, the best practice retailers only spend 22% of their time and have a 61% lower stock out rate...!

Key issues found...

- **Processes**
  - Lack of integration across different supply chain elements led to optimisation of individual elements rather than the whole; symptomatic of this was high stock holding in stores e.g. 39 weeks of champagne in NI; unsold stock was relocated and led to waste; inventory obsolescence; markdowns and perpetual inventory inaccuracies; promotions management and execution issues led to waste by increasing volatility in demand which extant logistics systems could not handle; forecasting issues led to a lack of trust in forecasting and combined with focus on OSA led to overbuying; total loss calculated at over £950 million p.a.
- **People**
  - KPIs related to margin, profit, markdown, availability, inventory and waste were aligned vertically within functions, not horizontally across the business, leading to poor inventory with a lack of accountability for costs and subsequent implications
- **Technology**
  - Systems applied in store did not support and in many cases worked against OSA and low inventory levels
- **Market/External**
  - Strategy prioritisation of price (EDLP) and OSA (keep shelves full), however commitment to OSA combined with lack of understanding of OSA/inventory relationships led to high stock levels; benchmarking analysis identified retailer performed significantly worse than key competitors in many areas

Suggested solutions...

- **Processes**
  - A holistic supply chain approach focusing on optimisation of whole SC process
  - Stock held at DC rather than store level to allow an agile response to volatile demand and variable store sales; successful stores replenished with goods previously held at unsuccessful stores resulting in reduced markdowns needed to sell-off stock
- **People**
  - KPIs aligned horizontally across the business and all KPIs should be enforced
- **Technology**
  - Development of store systems to help reduce management variability between stores, for example stock location systems in back of store
- **Market/External**
  - Strategy prioritisation of price (EDLP) and OSA (keep shelves full), however commitment to OSA combined with lack of understanding of OSA/inventory relationships led to high stock levels; benchmarking analysis identified retailer performed significantly worse than key competitors in many areas

Potential Savings of £250 million p.a.: Retailer said “thanks but no thanks” as EDLP/buyers sacrosanct in their strategy...!

Research e.g. 2: Improving OSA in-store

- Case study of how OSA initiatives from a major grocery retailer’s HQ were implemented at distribution centre (DC) and store level in Scotland
- Monitored impacts across store sizes and product categories
- Assessed the impact of promotions and online shopping on OSA and the situation of convenience stores

Solutions

- Retailer recognised OOS caused by store-related-ordering, forecasting or merchandising/shelving and focused most attention on the ‘last 50 yards’; i.e. between the back stockroom and the shelf
- Started with one store and aligned all processes then established a store operation that focused on the customer with OAS as the prime objective
- In the backyard all stock now stored within the building; marquees emptied and removed
- Re-organised warehouses so that ‘everything has a place’; removed the racking; implemented aisle specific stocking carts for all over stocked lines

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Achievements...

- Retail centric culture created
- Availability - OOS reduced by 75%
- Product wastage reduced by 40%
- Store back stockroom levels reduced by 53%
- Store staff morale significantly improved

Case study findings...

- OSA was similar between the internet shopping store and other comparable Scottish stores (96% v 97%)
- Internet store had several measures to enhance availability: a back stockroom extension and dedicated picking space and daily and weekly reports from personal shoppers to stock control managers in-store
- OSA was better for promotional items compared to non-promotional items (98% v 96%); increased shelf space allocation and closer monitoring of promotions in-store improved OSA
- OSA at convenience stores was much lower than the supermarkets (90% v 97%) and lower than overall UK convenience stores (94%); Scottish stores receive deliveries from the same depots as supermarkets, unlike some of their English counterparts, which means convenience stores are less likely to receive scarce stock from the DC as larger stores get priority

Research e.g. 3: OSA and profitability

- Primary research with a major UK grocery retailer and one of its suppliers in the chilled juice category; part of ECR UK Availability Subgroup activities
- Data collected from internal records of both parties and also from electronic point of sale (EPOS) scanner data and analysed by ourselves and dunnhumby
- Developed a matrix to assist retailers and suppliers in determining and managing optimal levels of OSA with regards to profitability


Methodology

- SKU profitability for both retailer and supplier was calculated as an index to make measures comparable and to ensure confidentiality for each participant; index score of 100 represents the median for the eight SKU sample; Individual SKU scores were calculated as the difference compared to the median and profitability indices ranged from 57 to 163
- OSA was determined using the retailer’s in-stock definition where a store has an SKU in-stock if it has product available for sale at close of trade on a particular day; average OSA for the eight SKUs examined was 96.2% over 27 weeks
- Overall substitutability and loyalty measures were provided by dunnhumby and developed from a database of over 1.2 million consumers; substitutability calculated as an index where the higher the index, the more substitutable products are with each other; loyalty calculated as the proportion of total product spend to total grocery spend by customers who purchased a particular product, again the higher the value, the more loyal consumers are towards a particular product
**Proposed management matrix**

- High loyalty, high substitutability: Area 1
- High loyalty, low substitutability: Area 2
- Low loyalty, high substitutability: Area 3
- Low loyalty, low substitutability: Area 4

**Research e.g. 4: OSA in clothing**

- Most attention in the textile and clothing supply chains has focused upon reducing lead times from offshore suppliers through a combination of lean and agile techniques, e.g. Zara and H&M.
- However not all clothing retailers enjoy such good efforts; at the 2007 ECR UK conference Carey and Staniforth discussed OSA at the House of Fraser (HoF).

**OSA in “back to school” promotion**

- Research to assess the success of a major clothing retailer’s attempt to increase market share during a “back-to-school” children’s wear promotion.
- Stores were asked to achieve 100% availability on the top 20 lines of the range where appropriate.
- An availability champion was allocated to each region to communicate the promotional activity.
- The research selected 12 stores in one region served by the same DC and were accountable to the same regional manager.
- Research involved semi-structured interviews with key personnel in one store; questionnaires were then distributed to customer service assistants in all of the stores in the region; mystery shopping checks were carried out at one store; performance data were collected on OSA through company records. Fernie, Grant, Rawlinson and Corcoran, JBL (under review).
Case study findings

- Recurrent themes from interviews and questionnaires were too much stock in the storeroom; reprocessing or ‘reps’ stock not recovered from stockrooms, fitting rooms and till points; led to errors in re-ordering and stock file inaccuracy; and occasionally wrong stock targeted to the region, especially with regard to colour
- Staff felt that the campaign had not been communicated to shop floor personnel adequately to get ‘buy in’ to achieve OSA goals
- The store where mystery shopping took place only carried 8 out of the 20 lines on promotion; of these lines 3 were unavailable and none of the others had full availability
- Most lines had sizes missing and 3 out of 5 lines not on display were in the stockroom/customer service desk areas
- Average sales floor availability was 73% across all 12 stores; best at 80% and the worst 63%

Research e.g. 5: Other non-grocery OSA

- Exploratory work carried out with national ‘High Street’ retailers
- Over 20 companies approached but only four agreed to participate in the research:
  - Mobile phones
  - Bookstore
  - General merchandiser
  - Electronics
- Interview topics included availability, forecasting, delivery and improvements to OSA / OOS situations


Findings...

Conclusions about the four non-grocery retailers...

- They are not as focused on OSA as grocery retailers
- Major constraints affecting OSA performance are poor supplier performance, lack of system data accuracy, lack of stock investment, and poor in-store replenishment processes
- Little collaboration is taking place to improve OSA performance; few/limited joint initiatives participation
- General merchandiser appeared to be ahead of the other three retailers and may have benefited from adopting techniques and practices used by other large retailers in the grocery sector, however it went out of business in late 2008…!

(Woolworth’s)

- Replication study done in summer 2011 with six more retailers, data still under analysis, however trends appear to be the same five years later…!

Research e.g. 6: Human resources and OSA

- Store operations impact OSA and represent large share of retail SC costs
- Labour is the second largest retailing cost; retail workers are employed at store level and in-store handling accounts for about half of retail operation costs; most in-store logistics operations are performed manually, i.e. human resources despite increasing technology use
- The way human resources are managed impacts a retailer’s OSA performance; managerial systems need store level input and interaction of human resources with these systems influences their outcome
- Study explored these issues at six grocery and non-food retailers in UK, Germany and Austria from employees’ perception of reality, suggesting a social constructionist paradigm; analysis used ‘documentary method’ developed by Bohnsack (2010) originating in educational sciences


Trautrims, Grant and Wong, *JBL* (under review)

Findings...

Model adapted from Kotzab and Teller (2005)
Typology...

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<th>Store-Based Retailing</th>
<th>Outlet</th>
<th>Customer Care Focus</th>
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Operations Focus: Replacement system is designed in a controlled and standardised way for efficient processing and a high throughput of products. Employees concentrate on this process instead of taking time for individual consumer needs. Interaction between employees and the consumer is minimal and mostly in the form of giving information about products or services. The system is designed to minimise interaction with the consumer, ensuring that their needs are met by the system rather than the employee.

Store-Based Retailing: Given more decision-making capacity, employees have more knowledge and judgement essential for operations; store employees interact with the system when and only when data and orders are placed. This system is more flexible and can adapt to the store's specific needs.

Outlet: Interaction is with the consumer and not the system. Replacement system is designed in a way that the employee does not need to interact with it often, but can for specific consumer orders. Employees hardly interact with the replacement system; they put on-shelf what is delivered to the store and they have little or no say in what the products are; correspondingly, they cannot see which products are coming to the store or order products for consumers.

Customer Care Focus: Interaction with the replacement system is with the employee. Employees have detailed knowledge of the products, and can interact with the system for specific consumer orders. Employees interact with the replacement system, giving them a sense of control over the process.

Amount of Interaction

Low

High

Impact on System

Low

High

Research e.g. 7: Consumer logistics and OSA

- Two pieces of work to investigate the consumer’s role, particularly in light of the internet providing an alternative
- First study findings:
  - Consumer Segmentation: some distinct variables
  - Consumer Logistics Awareness: some awareness of some logistics variables
  - Consumer Logistics Transaction Costs: respondents had little idea of their logistics costs and were not concerned about them
- Second study findings:
  - Convenience time and perceived cost important but no behavioural consequences regarding number of store visits or store patronage; store-related shopper logistics attributes linked to transportation, picking and packing activities relevant to consumers; suggests facilitating their logistics endeavours by making store easy to access, clearly laying out the stores, arranging products and displaying prices clearly, and making enough cash tills available when needed

Teller, Kotzab and Grant, Managing Service Quality (2006)
(Xing, Grant, McKinnon and Fernie, European Journal of Marketing (2011))

Research e.g. 8: The internet and OSA

- Consumer survey of E-Physical Distribution Service Quality model tested with consumers for non-grocery; findings discussed in interviews with third-party logistics service providers (3PLs)

Xing and Grant, JIRDM (2006)
Xing, Grant, McKinnon and Fernie, JIPDLM (2010)

Xing, Grant, McKinnon and Fernie, European Journal of Marketing (2011)

Findings...

- Model constructs and variables validated with consumers; important variables were accurate orders, delivered on-time and in good condition and if not easy return process and prompt collection and replacement; consumers purchased mainly CDs, flowers, books and software; considered ‘pure-players’ better than multi-channel retailers
- LSPs and retailers consider multi-channel retailers are still learning what customer service needs and delivery standards should be in this market; ‘pure-players’ already do so as they comprise the core competitive criteria for them; if they don’t understand them consumers will not return
- ‘Pure-players’ have superior information technology and software systems that enable them to advise consumers better regarding product availability and the delivery process; delivery standards provided by both LSPs and fulfilment specialists are still lacking and should be tightened up and provide more options to consumers
- Consumer dissatisfaction with product condition and returns means retailers need to provide better packaging that can withstand more than the outbound trip and a better collection and return process

General conclusions about the state of OSA...

- The ‘last 50 yards’ appear as a recurrent theme in all examples
- Logistics and supply chain activities have become very sophisticated and replenishment is much improved from manufacturer/supplier to RDC and retail back of store
- However, there seems to be a general breakdown from that point forward as in-store replenishment appears chaotic and unfocussed
- Is there a ‘strategic disconnect’ between senior management, retail logistics and SCM activities, in-store marketing and merchandising and consumers...?
Areas of interest, suggestions and future research...

- How well do senior management, store management, marketing and logistics/SCM functions communicate?
  - What should the strategic goals be?
  - How do they KPIs interact or are they in conflict?
  - Who controls overall OSA/OOS inventory costs, write-downs, etc.?
- Is a retail store nothing more than a warehouse where consumers come to pick, pack and transport inventory to their in-house storage?
  - Do we need hedonic shopping in an era of commodity purchases such as groceries in a 'time-poor' and 'value-rich' economy?
  - And what about the efficient point-of-origin to point-of-consumption in logistics/SCM definitions?
  - Should we treat retail stores like a warehouse and design their systems accordingly, thus turning consumers into logisticians?
- What about human resources in-store?
  - How do you motivate staff on £5.50 an hour to check for gaps and fill them?
  - Should stores have different types of personnel akin to warehouse staff?
  - What about using technology like ‘voice picking’ to provide ‘voice replenishment’?

Some provocative final thoughts...

- Why not ban all fossil fuel traffic in major urban areas and depend only on public transportation like other countries in Europe? What should the level, intensity and ability of such public transportation be and who should pay for it?
- Why not build more motorways across the country to reduce congestion? For example, Scotland central belt v metropolitan Toronto; similar population but 12 lanes of Highway 401 in Canada v A8/M8 fiasco in Scotland. What do we do about NIMBYs and the costs?
- Why not regulate major retailers regarding consumer and retailer relationships, tax evasion, numbers of stores?
- Why not better regulate public transport providers regarding high costs and poor service?
- Why not reduce number of SKUs and variety to reduce logistical and merchandising issues, and consumer confusion and decision-making?

Thank you; any questions or comments...?