MICRO FULFILLMENT

MARKET PRESSURES DRIVING CHANGE IN RETAILER'S ONLINE OPERATING MODELS

TGW
LIVING LOGISTICS

Online growth outlook

Global forecasts for grocery online growth FY21-FY25

Store estates

Overview of all grocery online operations in US/UK by volume

EBITDA Assessment

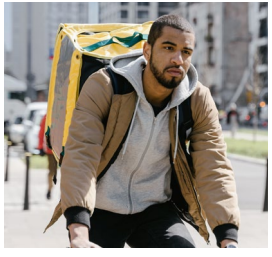
Overview of the profitability status for grocery online

Brand Loyalty

A perspective on the long term value of loyalty in retail

The Value of Choice

A perspective on how range influences basket size



Operating Models

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Online growth outlooks

Over the next five years, global online spending on food and drink will increase from USD 2.5 trillion to over USD 3.9 trillion.

Globally, the worldwide Covid-19 pandemic has accelerated the growth of online grocery shopping significantly. However, as territories exit the pandemic, the lasting impact of this growth has been variable, to say the least.

For Grocers specifically, the North American grocery market is expected to be worth $1,172bn USD by 2025 and the European market $1,008bn USD by the end of the same period. Online grocery shopping is expected to increase from 7.4% to 12.7% of the total market in Europe, and North America is expected to grow from 9.7% to 12.3% over the same period.

Fig. 1
Global ecommerce growth (all sectors) from 2020 to 2025 ($bn USD)

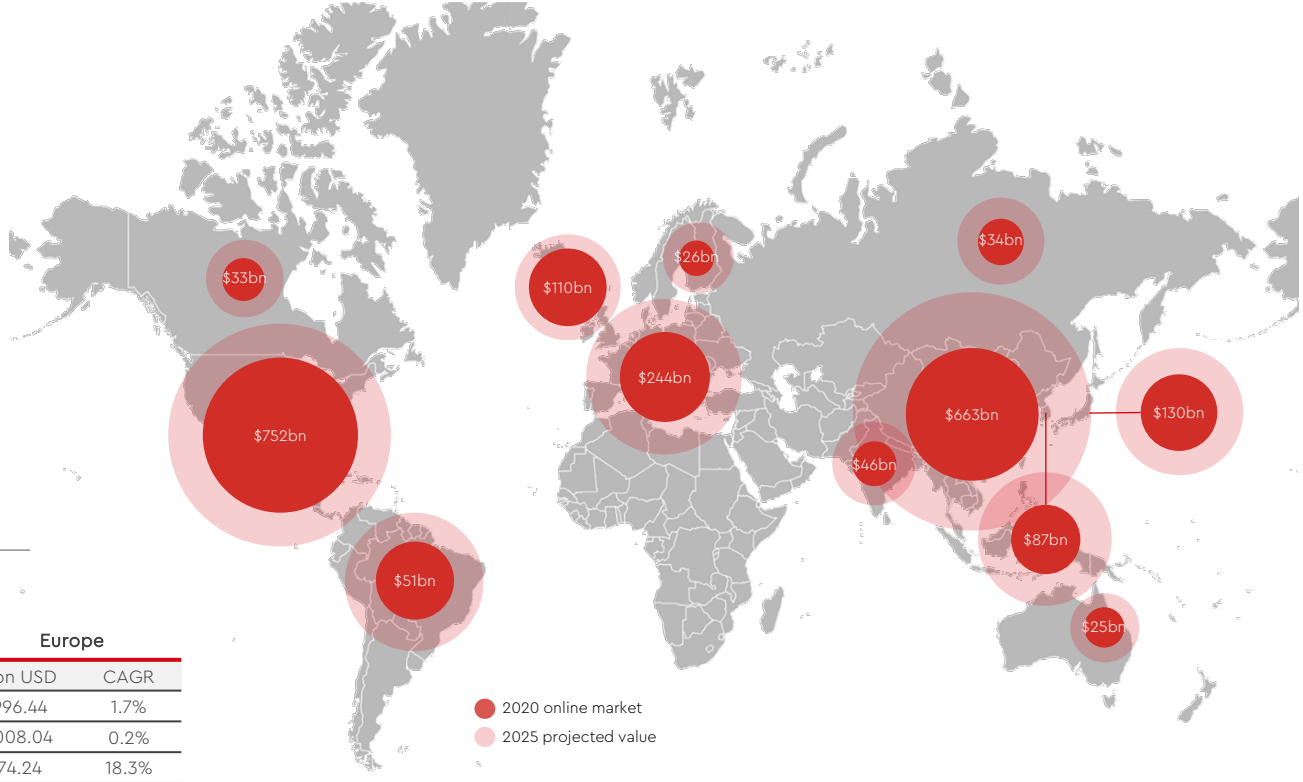
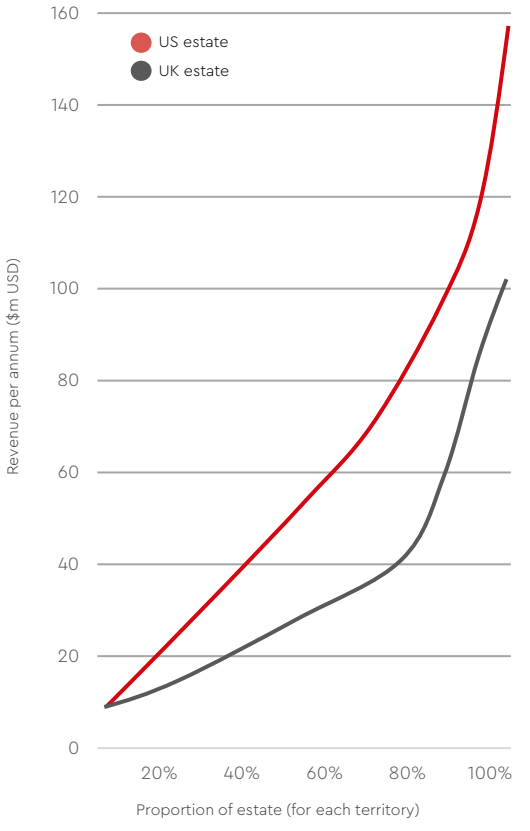


Fig. 2
Grocer online market growth – absolute and CAGR ($bn USD)

		North America		Europe	
FY	Channel	$bn USD	CAGR	$bn USD	CAGR
2020	Total	1055.6	4.6%	996.44	1.7%
2025	Total	1172.76	2.1%	1008.04	0.2%
2020	Online	102.08	10.1%	74.24	18.3%
2025	Online	143.84	8.2%	127.6	14.7%

Estate assessment

Fig. 3
Breakdown of 1400 UK and 4000 US stores by revenue



In the United States and the United Kingdom, twenty-three retailers control two-thirds of the online grocery market - of these presently; only two are pure-play digital entities.

Globally nearly 90% have all online grocery orders fulfilled by retailers originate from a retail environment designed for Instore shopping.

Looking specifically at the UK, 80% of online fulfillment is currently pushed through the smallest half of stores sizes in the market. In the US, we can see this is broader, with a higher proportion of online orders being fulfilled from larger stores.

The UK network capacity is primarily limited by the capability of the retailers to service and manage their van operation from within their smaller store estate. They do this as well as they can by reshaping the geographies each of the stores serves on a regular cadence – However, whilst this may manage some volume growth in the short term, it is highly detrimental to last-mile fulfillment costs.

The spectrum of operating efficiency between retailers and territories is vast. Many large retailers in the States currently achieving Instore productivity rates of between a third and half of similar-sized UK retailers.

Retailers in the states are not burdened with the high costs of home delivery, with almost 68% of online grocery shoppers choosing a Curbside collection model. There is an excellent opportunity for US grocers in the immediate years ahead to utilise the learning and software from the UK for significant quick wins.

Ultimately, retailers have finite capacity whilst using physical stores for online order fulfilment.

Currently, the options to grow are limited to the development of either stand-alone warehousing solutions within proximity of the customer base that delivered direct (dark stores) or the reconfiguration and investment in technologies and infrastructure to support the medium to long term growth of capacity in their physical stores at the expense of the in-store experience (reduced space or reduced range for example).

In recent years UK retailers have illustrated the difficulties of 'dark store' operations with all of the largest three retailers opening and subsequently closing such operations.

Currently, attention has been turned to Instore options; however, case studies emerge from early trials in this space with inconclusive results.

This report looks at why this may be the case and what other retailers may opt for as an alternative.

EBITDA assessment

Atrato Capital is the investment adviser for Reit, an investment trust that owns over £1bn of supermarket freeholds. Atrato advises us that the uplift in volumes during the pandemic has improved the economics of online grocery shopping, but some key opportunities remain for investors.

The breakthrough has been an increase in the number of drops per delivery as volumes have increased. As a lot of delivery costs are relatively fixed, this is meant a substantial increase in the profitability of online grocery in countries with a higher proportion of delivery.

On balance, retailers are now seeing an average of four drops per hour instead of two. They have seized an opportunity to decrease the amount of price investment in promotions and free delivery promotions choosing instead to set realistic delivery charges. A delivery that used to cost a retailer £10 now costs £6, and customer expectations are converging on what is now a reasonable price for delivery.

We can see that picking efficiency in stores is also improved - although we note that this is a less significant factor in the overall cost of E-commerce compared with the delivery costs.

The more fundamental issue now is that the capacity for future growth using Instore models is limited. There are few investment options on the market today, but increased capacity is precisely where it is needed for retailers. The consequence of limited capacity will be that as retailers seek to lock in loyalty, they will serve orders from geographically sub-optimal stores as opposed to turning customers away – this will quickly erode the benefits from increased drops per order.

A more strategic challenge for the retailers with In-store operating models is the ability to offer the entire range to customers. Range availability for customers in this model is limited by the range of the store serving the customer. This means that the retailer is restricting their range and often cannot sell higher cash margin product categories such as non-food, home, and clothing within the same transaction.

To some extent, this has been mollified during the pandemic with an increase in customer willingness to purchase more high cash margin products such as fresh meat and higher gross margin products such as personal care and frozen food.

However, looking further ahead, retailers are still faced with a complex problem between offering excellent speed and great choice.

Fig. 4
EBITDA comparison of operating models

	North America				Europe			
	FY19/20	FY20/21	delta		FY19/20	FY20/21		
In Store Shopping	4%	4%	-	-	4%	4%	-	-
Grocer picks in store	(-5%)	(-2%)	(-6%)	▼	(-3%)	2%	(-2%)	▼
Grocer picks in 'dark store'	(-4%)	(-1%)	(-5%)	▼	(-2%)	1%	(-3%)	▼
3rd party picks in store	(-3%)	0%	(-4%)	▼	(-2%)	1%	(-3%)	▼
Semi automated Central DC	1%	3%	(-1%)	▼	2%	3%	(-1%)	▼
Automated Central DC	2%	4%	0%	▲	2%	4%	0%	▲

Source: Multiple format retailer blended data (ThinkThru)

The value of loyalty

For omnichannel retailers shifting customers to their online channels, they face not just a profitability challenge but also a loyalty challenge.

With fewer barriers to exit, customers are showing that they are much more readily prepared to switch between retailers online compared to when they were previously shopping in-store. Retailers struggle to personalise online services to achieve a stronger emotional brand affiliation than they had previously been able to do through the in-store environment.

Apps cannot replicate a physical visitor's ability to scan a shelf, make substitutions and, crucially, discover things they didn't know they wanted. In fact, according to a recent McKinsey survey, only 13% of customers who tried online grocery in France, Italy, and Germany last year were 'delighted' with the service compared to 19% of the same customers who were delighted when shopping in-store.

Long term customer loyalty is now a top priority for all online grocers – It isn't enough that retailers have enticing offers for new customers to maximise their initial conversion rates, they must also work hard to win back customers they have previously lost while ensuring they do everything they can to reduce switching in the first instance.

When retailers outsource their last-mile services to the third party via apps such as Instacart, they further lose a touchpoint with the customer and, more importantly, critical customer data. Of course, such services are easier to scale up and down with demand and work in spread-out communities where penetration is low.

Maximising customer data e2e in the supply chain is the next step to growing loyalty after personalisation

As many of the retailers in the US now know the answer lies in owning and using customer data appropriately. Many grocers in fact now have the ability to surface new products with a high appeal to customers by shaping a personal experience, but this is just the start.

The same data can also now be used to reshape supplier relationships and improve stock flows. Localised data can save space, cut food waste, make it easier to earn rebates, promote items and offer samples.

None of this will matter, of course, unless the grocer is also offering able customers the service when they want it most – this means moving away from the current limitations and capacity strengths of Instore picking and creating a new, innovative, last-mile delivery model.

Fig. 5
Basket flows across the online grocery sector (UK data)

Low barriers in the sector allow customers to switch between different brands more when shopping online for groceries

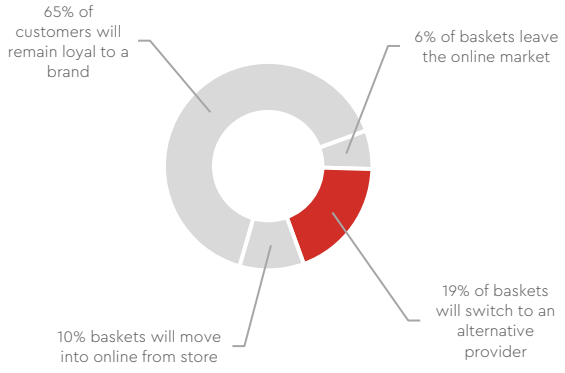
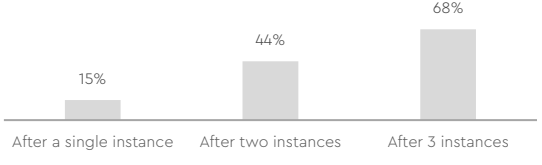


Fig. 6
Customer likelihood of considering an alternative

Customer's consideration levels for alternate service providers increase with each instance of disappointment and it takes significant time for the feelings to subside.



The value of choice online

In our recent work on the subject of range, we noted that when analysing 28 stores with an online range offering between 22,000 and 14,000, there is a relationship to the number of items ordered. The upper quartile of these stores outperformed the lower quartile by 8%.

Customers have grown to expect the same great range available in stores when they choose to shop online. This presents a complex issue when customers are not served from the store they used to shop.

Looking at the Pareto analysis alone, You may conclude that less than 1000 SKUs provided 60% of the volume - this may be an encouraging sign for retailers looking to try and reduce the range offered online; however, This is not taking into account the big picture - the reality is that unless retailers can provide at least the same range online as in the store that they face the risk of disappointing customers and ultimately increasing switching away from their brand. Customers are unlikely to consciously compare the full range of one brand to another, but they will compare the online range to the In-store range for a single brand.

Fig. 7
Impact of range size on basket size (28 different in store online operating models)

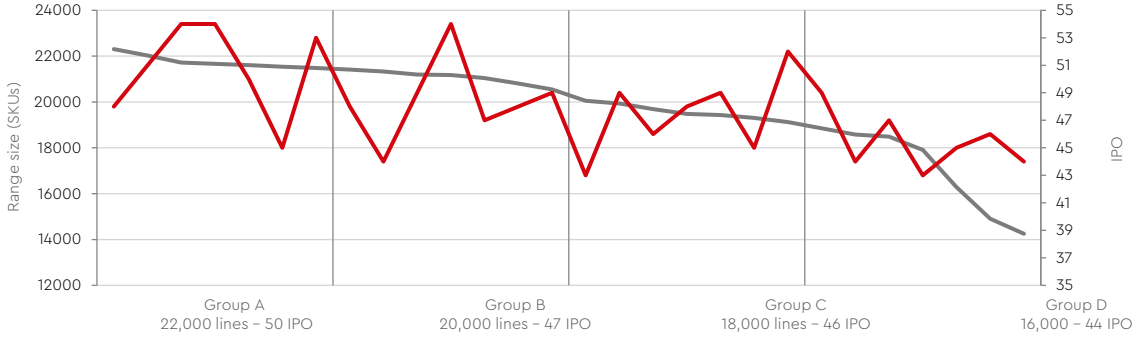
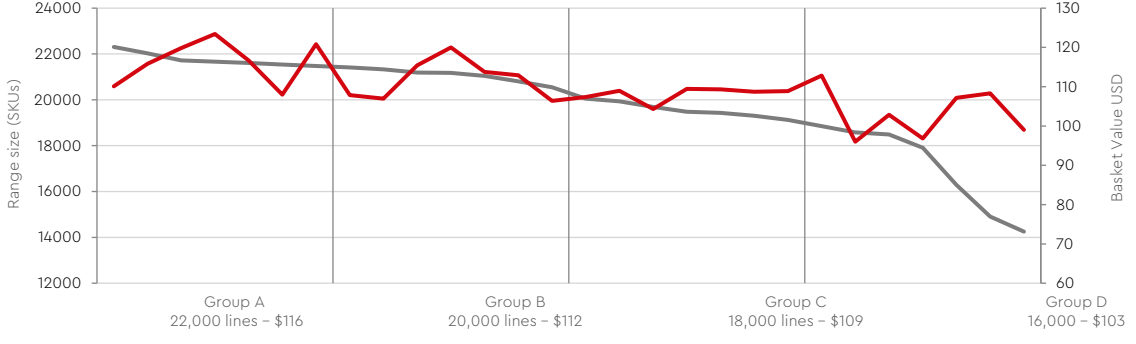


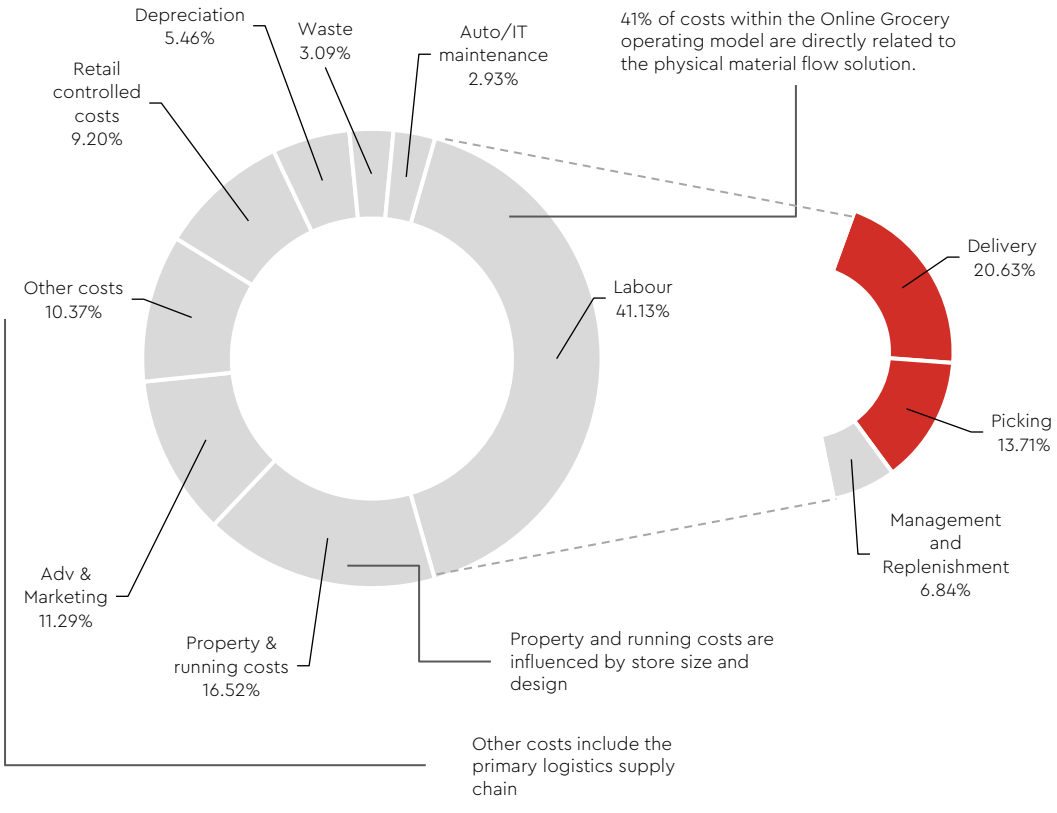
Fig. 8
Impact of range size on basket value (28 different in store online operating models)



Source: Multiple retailer blended data

Example operating model

Fig. 9
Operating model breakdown for a 3,000+ order per day automated fulfillment solution



In this example of a profitable online operation capable of 3000 orders per day, the cost of last-mile services represents the most significant bill for the business. Many investors will challenge that many parts of the operating model are static and difficult to influence.

The application of logistics technology primarily aims to drive improvement in the picking and replenishment aspects of the operation – even a modest improvement in these (30-50% total variable cost-saving) has limited ability to change the overall construction of the operating model – furthermore, it requires the business to justify not only the entire capital investment needed for the equipment purchase but also the ability to define future volume growth – many investors will struggle to do with a degree of accuracy For a particular part of their online estate. This dramatically increases the overall risk of the investment.

In summary - it is only realistic for investors to influence these high costs to the business at the start of their supply chain strategy development. Once the model is created, it would be limited in improving the running costs regardless of future technology developments.

Investment budgeting

Our perspective for investors is driven by the scope of the available technology application and the need to ensure a payback comparable to other investment opportunities.

Based on an across-the-market assessment of technology available today, we conclude that the benefits of adoption range from the low 30s to the high 40s as percentage improvements in variable costs of running an online operation. We believe that there are several alternatives, highly attractive investment areas for retailers looking to invest in ways to improve their online operations. On this basis, we have opted to cap our model with a two-year payback for retailers.

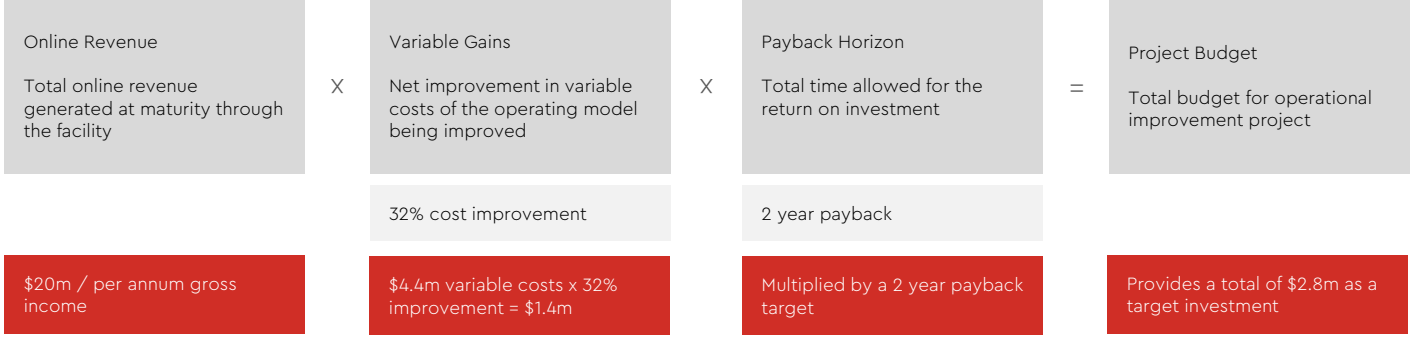
The conclusion is that for a Medium to Large supermarket with strong future online penetration and access to the corresponding delivery infrastructure (var storage), a retailer might reasonably look to invest approximately $2.8 million.

This Investment should represent the entire project cost, including site preparation, project delivery, integration of digital assets and civil work(s) in addition to the investment in any automation.

As most stores will 'cap out' on the storage, movement, and loading of vans, this will likely create a cap on the maximum size of investments in automation technology. If the retailer can also innovate in this space, it may increase investment ceilings.

Ultimately the size of the investment in automation should be determined by the maximum possible market penetration in a specific geography (which will determine the online revenue used for modelling).

Fig. 10
TGW Micro fulfillment investment model



Retailer case studies

Using the TGW micro fulfillment investment model, these examples demonstrate the amount of capital we would recommend to our clients to consider investing in a project to automate online operations in a store environment.

These budgets will seem to many to be significantly lower than automated service providers can currently offer for individual store projects. There are many reasons for this – the innovative state of the market, the lack of experience in such projects, and the complexity that accompanies an installation into a live retail environment. In other reports, we will examine the retailer's options in this situation.

It is important to recap that these budgets are based on variable savings gained from automating picking and replenishment areas of the online operating model. If the solution being considered can address more of the economic model, such as improvements to last-mile costs, or a reduction in fixed operational costs, lower maintenance, or even demonstrable improvements in customer satisfaction did it may be possible to adapt the model to accommodate these and therefore increase the overall size of the investment.

Fig. 11
TGW Micro fulfillment investment model worked examples

European stores, despite being physically smaller on average compared to the US have a greater potential for investment across the range of the store portfolio

		Store Size (m^2)	Sales (m^2)	Store Sales (£m/yr)	Online Market Share	Online Sales (£m GBP)	Orders / week	Peak day orders	Investment cap per store (£m GBP)
Europe (UK)	S	2100	10,821	22.7	12%	2.7	689	116	0.38
	M	3700	8,702	32.2	18%	5.8	1467	247	0.82
	L	6000	7,905	47.3	22%	10.4	2633	444	1.47
	XL	13000	6,834	88.8	28%	24.9	6291	1061	3.50

Stores in North America, whilst larger, tend to serve larger, more distributed geographies. This is a significant factor for this market when considering maximum possible penetration.

		Store Size (m^2)	Sales (m^2)	Store Sales ($m USD/yr)	Online Market Share	Online Sales ($m USD)	Orders / week	Peak day orders	Investment cap per store ($m USD)
North America	M	4700	6,927	32.8	10%	3.3	830	140	0.46
	L	12400	6,705	82.8	10%	8.0	2032	343	1.13
	XL	17600	5,028	88.5	13%	11.5	2911	491	1.62
	XXL	24000	5,028	121.3	12%	14.6	3683	621	2.05

Source: Worked examples of 8 different online store operations for 7 different retailers

Closing statement

TGW has delivered supply chain solutions for clients since 1969 and has managed and advised on logistics assets in excess of 12bn EUR. (as of June 30, 2021).

TGW's award-winning team of industry experts has decades of experience designing, managing, and implementing materials handling strategies for clients worldwide.

The team's approach combines proprietary research with expert management to deliver strategies and solutions which target superior performance and precise outcomes. The team believes that more predictable and repeatable performance can be achieved by thorough market research aimed at removing human behavioural biases in so far as possible. As markets evolve, these strategies are continuously refined and updated to adapt to dynamic market conditions and incorporate ongoing research.

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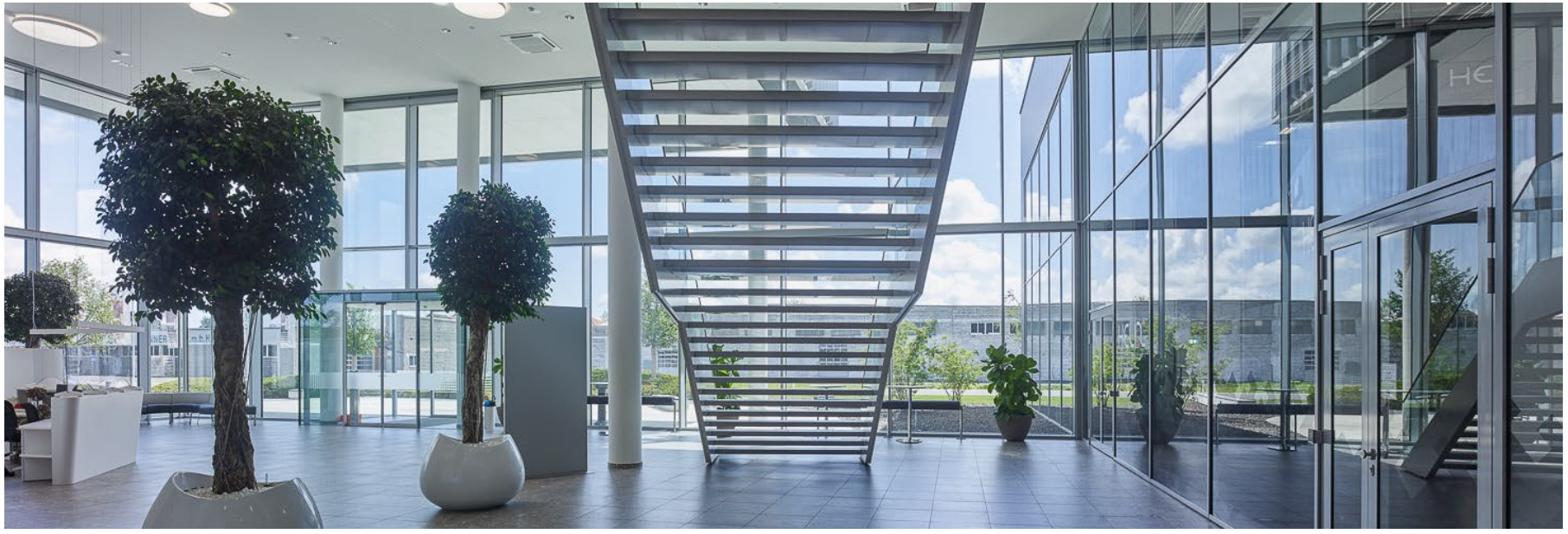

Part of the series - MFC strategies for omnichannel grocery retail organisations

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Performance concepts

In explaining operating models and supply chain concepts we may refer to commonly used methods of calculating performance which are themselves not financial measures. These measures have been defined or specified in the applicable recognised accounting standards (or in other applicable regulations).

For each of these we offer the following definitions:

LPM label	Calculation	Information content
Overall Equipment Effectiveness - OEE	Maximum OEE means 100% Quality (only Good Parts), 100% Performance (as fast as possible), and 100% Availability (no Stop Time).	In supply chain concepts, often the goal of the solution is referred to as a high OEE, meaning that overall the system is offering a blended combination of throughput performance with quality.
Overall Warehousing Rate - OWR or DWR (Direct warehousing rate) - May also be referred to as UPMH	Total units processed into the distribution network, plus total units dispatched, divided by the total number of variable work hours deployed to achieve the work.	The highest level of performance measurement in a logistics network concept is the amount of product that is passed through the network for each hour spent overall in the supply chain. Our definition excludes fixed costs of operating a supply chain business (rent, rates and non-operational labour charges).
Cost / income ratio (%)	Calculated as operating expenses divided by operating income before credit loss expense or release.	This measure provides information about the efficiency of the business by comparing operating expenses with gross income.
Net profit growth (%)	Calculated as the change in net profit attributable to shareholders from continuing operations between current and comparison periods divided by net profit attributable to shareholders from continuing operations of the comparison period.	This measure provides information about profit growth in comparison with the prior period.

Abbreviations frequently used in our reports

A	
3PL	Third Party Logistics
4PL	Fourth Party Logistics
ABC	Activity Based Costing
ABS	Asset-backed securities
ABM	Activity Based Management
A-IRB	Advanced internal ratings-based
AIV	Alternate investment vehicle
AMO	Advanced Measurement approach
AoA	Articles of association
AOM	Advanced Order Management
APM	Alternative Performance Measure
API	Application Programming Interface
APS	Advanced Planning System
ASF	Available stable funding
AT1	Additional tier 1
ATP	Available to Promise
AuM	Asset under management
B	
BOL	Bill of Lading
BOM	Bill of Materials
BPR	Business Process Reengineering
C	
CAC	Customer Acquisition Cost
CAGR	Compounded Annual Growth Rate
CCAR	Comprehensive Capital Analysis and Review
CCR	Counterpart Credit Risk
CET1	Common Equity Tier 1
CFC	Central fulfillment Centre
CI	Continuous Improvement
CMI	Co-Managed Inventory
CMBS	Commercial mortgage-backed security
C&ORC	Compliance & Operational Risk Control
CPFR	Collaborative Planning and Forecasting Replenishment
CPH	(equipment) cycles per hour
CRM	Customer Relationship Management or Credit Risk Mitigation or Comprehensive Risk Measure.
CRO	Conversion Rate Optimisation
CRP	Capacity Requirements Planning
CRR	Capital Requirements Regulation
CST	Combined Stress Test
D	
DC	Distribution Centre
DMAIC	Define. Measure, Analyise Improvement, Control
DRP	Distribution Resources Planning
E	
EBIT	Earnings Before Interest and Taxes
EBITDA	Earnings Before Interest, Taxes, Depreciation
ECR	Efficient Customer Response
EDI	Electronic Data Interchange
EOQ	Economic Order Quantity
EPS	Earnings per share
ERP	Enterprise Resource Planning
F	
FAK	Freight All Kinds
FEFO	First Expire First Out
FEM	European Federation of Materials Handling
FIFO	First in First Out
FTL	Full Truckload
FTZ	Free Trade Zone
FVA	Funding Valuation Adjustment
FVOCI	Fair value through other comprehensive income
FX	Foreign exchange
FY	Fiscal Year
G	
GDP	Gross Domestic Product
GVA	Gross Value Added
GVW	Gross Vehicle Weight
H	
HQLA	High Quality Liquid Assets
I	
IHC	Intermediate Holding Company
IMA	Internal Model Approach
IMM	Internal Model Method
IRC	Incremental risk charge
IRR	Internal Rate of Return
J	
JIT	Just-In-Time
K	
KPI	Key Performance Indicators
KRT	Key Risk Taker
L	
LAS	Liquidity-adjusted stress
LCR	Liquidity coverage ratio
LIFO	Last In First Out
LO/LO	Lift-on/Lift-off
LTL	Less than Truckload
LTV	Loan to value
M	
M&A	Mergers & Acquisitions
MFC	Micro fulfillment Centre
MPS	Master Production Schedule
MRO	Material Repair and Overhaul
MRP	Material Requirement Planning
MRT	Material Risk Taker
MTTF	Mean time to failure
MTTR	Mean time to repair
N	
NAV	Net asset value
NDC	National Distribution Centre
NIFO	Next In First Out
NII	Net Interest Income
NPV	Net present Value
NVA	Non-Value adding
NVOCC	Non-Vessel Operating Common Carriers
O	
OEE	Overall Equipment Effectiveness
OCA	Own Credit adjusted
OMS	Order Management System
OS&D	Over, short and damaged
OWR	Overall Warehouse Rate
P	
PFE	Potential Future Exposure
PIT	Point in Time
P&L	Profit and Loss
POS	Point of Sale
POD	Point of Delivery
POE	Point of Entry
Q	
QR	Quick Response
QRRE	Qualifying revolving retail exposures
R	
RBC	Risk based capital
RbM	Risk based monitoring
RDC	Regional Distribution Centre
RFID	Radio Frequency Identification
RMR	Retail Management Replenishment
RTV	Retail Management Replenishment
S	
SA	Standardised approach
SaaS	Software as a Service
SCE	Supply Chain Execution
SCM	Supply Chain Management
SCP	Supply Chain Planning
SKU	Stock-Keeping Unit
SICR	Significant increase in credit risk
SRM	Specific Risk Measure
T	
TBTF	Ro big to Fail
TLAC	Total loss absorbing capacity
TMS	Transportation Management System
TOFC	Trailer on Flatcar
TTC	Through the cycle
TQM	Total Quality Management
U	
UFC	Uniform Freight Classification
UPMH	Units per man hour
V	
VaR	Value at risk
VA	Value Adding
VCS	Value Creation System
VMI	Vendor Managed Inventory
W	
WIP	Work in Process
WMS	Warehouse Management System

Important Information: your risks explained

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