Rotterdam School of Management
Erasmus University

RSM Erasmus

Winning at the Marketing-Operations Interface in Omnichannel Retail

Facilitating Profitable, Frictionless, and Sustainable Customer Journeys

Robert P. Rooderkerk, *Associate Professor of Operations Management*

1

Introducing myself

RSM Erasmus

- Associate Professor of Operations Management
- M.Sc. in Econometrics with a logistics specialization (Erasmus University Rotterdam, 2001)
- Ph.D. in Marketing (Tilburg University, 2007)
- Visiting positions
  - HEC Paris (France)
  - Tuck School of Business at Dartmouth (Hanover, NH)
  - Anderson School of Management, UCLA (Los Angeles, CA)
  - Industrial Engineering, University of Florida (Gainesville, FL)
- Academic director of the expertise area Retail Analytics at Erasmus Centre for Data Analytics
- Academic director of the MScBA Business Analytics & Management at RSM
- 20+ years of teaching experience (B.Sc./M.Sc./(E)MBA/PhD)

2

Shaping this workshop

- Assumption: mostly young marketing scholars in attendance
- Goals:
  - Enhance understanding of the Marketing-Operations interface in omnichannel retail
  - Highlight challenges
  - Depict promising avenues for future research, especially for marketing scholars
- Sources:
  - Published research
  - My own work in this domain (published on ongoing)
  - Interactions with global retailers and manufacturers
  - Popular media

3

Let's dive right in

4

Albert Heijn

- Market leader in NL (37% share)
- >1,150 stores + online channel

PICNIC

- E-grocer
- 75% of online revenues split with AH

NielsenIQ (2022)

5

Assortment breadth vs. operational efficiency

# SKUs	**~ 23 K**	**~ 11 K**
Picking costs		**LOWER**

April 2024

6

7

RSM Erasmus

Optimized Vehicle Design

Sustainable

Route- & load-efficient

Time-efficient

8

Assortment breadth vs. operational efficiency

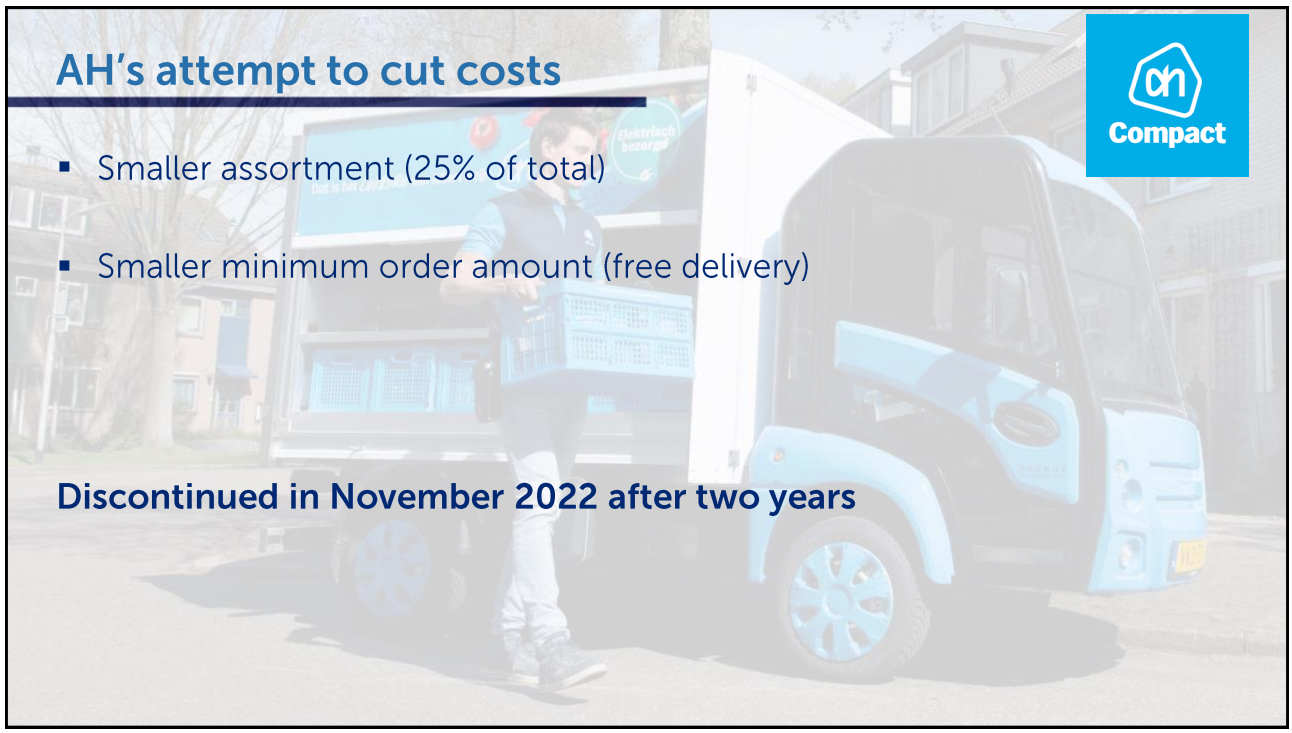
# SKUs	~ 23 K	~ 11 K
Picking costs		LOWER
Stop time/drop	~6 mins	~3 mins
# Deliveries/hour	~4	~8-10
Last mile costs/drop		LOWER

Sources: Niels Agatz, someone from Picnic, interviews with Michiel Muller (co-founder Picnic), EFMI, Superscanner

9

10

AH's attempt to cut costs



- Smaller assortment (25% of total)
- Smaller minimum order amount (free delivery)

Discontinued in November 2022 after two years

11

Senior executive at Ahold Delhaize

"With AH Compact we experienced the challenge that our customers expected the same assortment width they are used to seeing in our stores. This is part of the gains and pains of omnichannel. Picnic does not have this problem since they do not have stores."

12

Take away

The academic literature focuses on the benefits of omnichannel, a cost-benefit angle is often missing

13

Agenda

I. The Marketing-Operations Interface in Omnichannel Retail

II. Reinventing Stores for Omnichannel Retail

III. Omnichannel Fulfillment

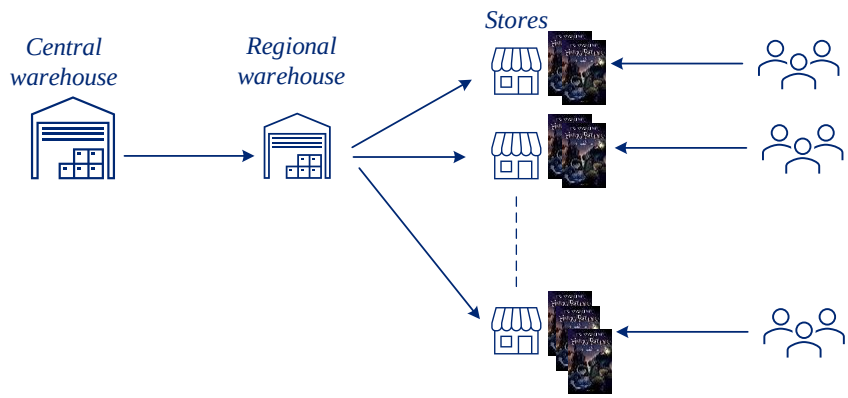
IV. Discussion

14

I. The M-O Interface in Omnichannel Retail

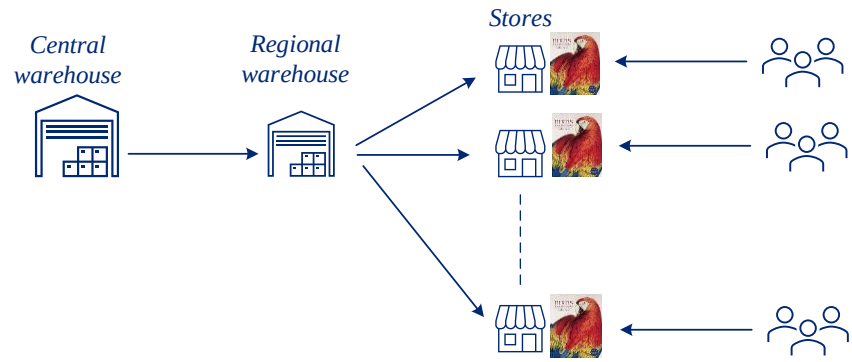
15

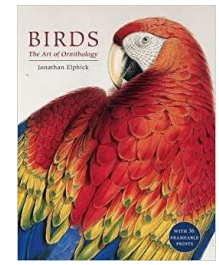
Offline retail: selling popular items



16

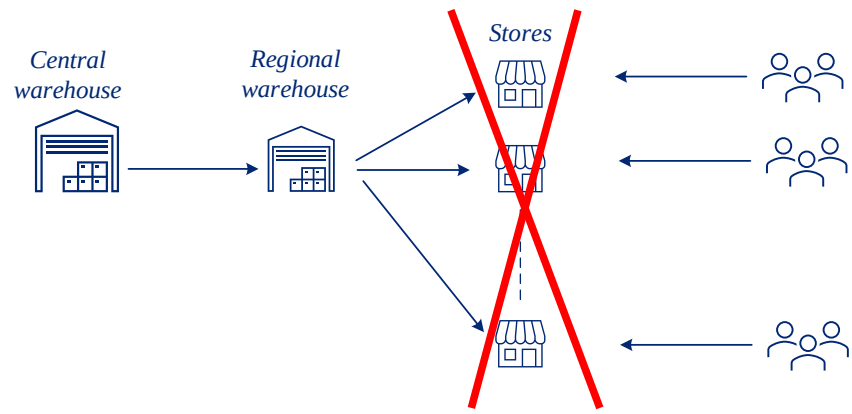
Offline retail: the scattered inventory problem





17

Online retail: less real estate



18

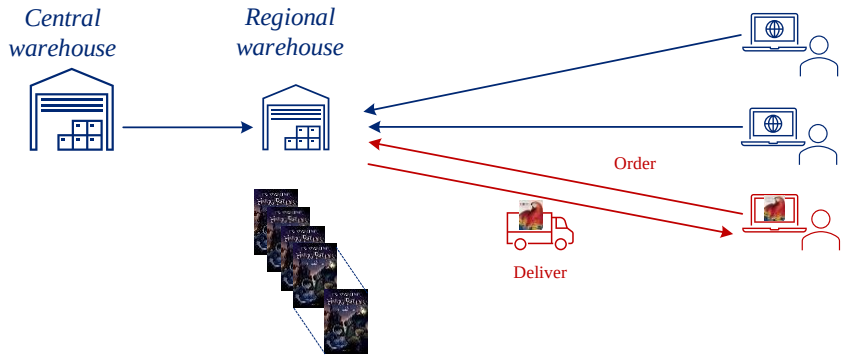
Online retail: less real estate + inventory pooling

19

fulfillment from the warehouse

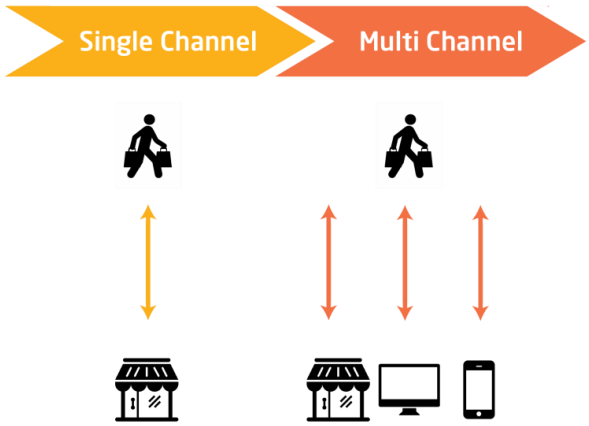
20

fulfillment from the warehouse



21

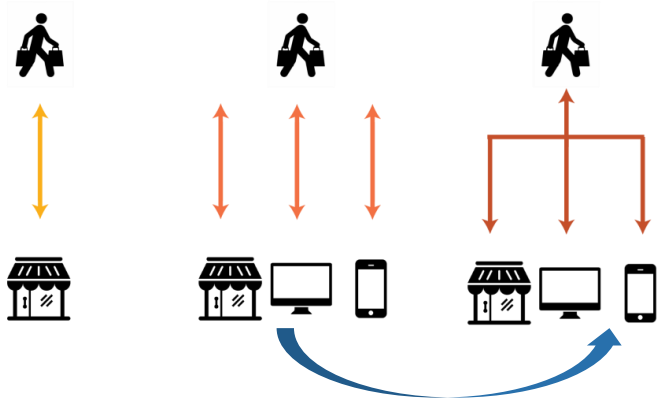
From single to multi channel



22

From multi to cross channel

Single Channel → Multi Channel → Cross Channel



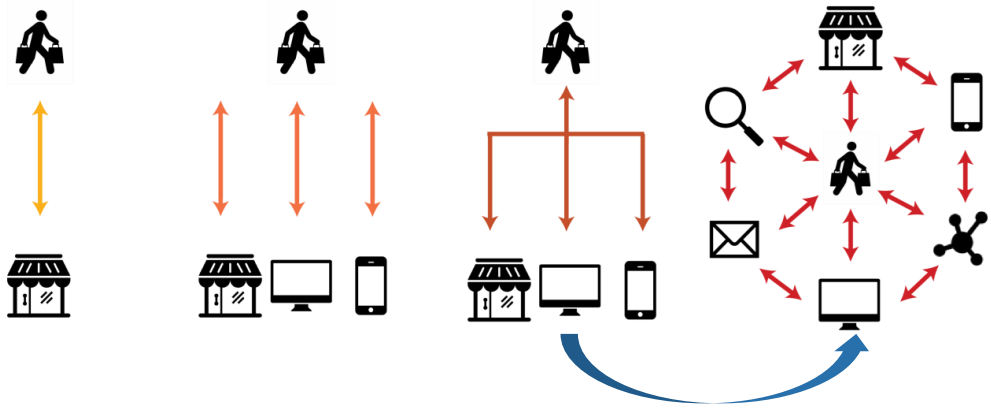
Connecting the channels

e.g., click and collect (BOPS), buy-in-store home delivery

23

From cross to omni channel

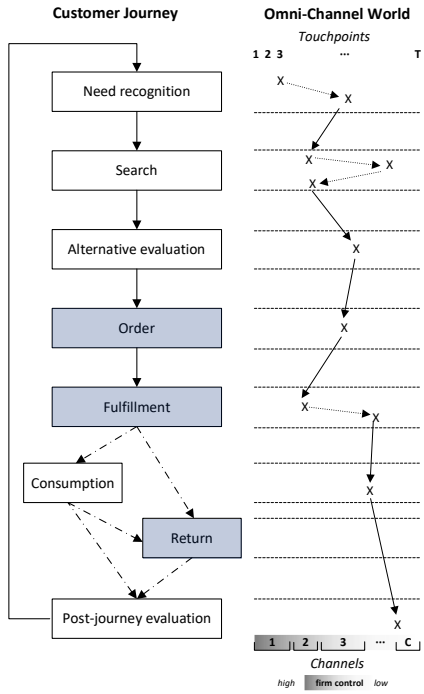
Single Channel → Multi Channel → Cross Channel → Omni Channel



Simultaneity

e.g., in-store targeting, QR codes, etc.

24



The omnichannel customer journey

Rooderkerk & Kök (2019), Bijmolt et al. (2021)

25

Take away

Marketing is full of grand theories; these can be applied to operations management (OM) challenges, but also be extended to enhance their applicability to OM

26

The M-O interface: A balancing act

Marketing

Effectiveness

Degree to which resource investments generate revenues in the short and long term

Metrics: ΣCLV, revenue growth,...

Operations

Efficiency

Extent to which the business operations are conducted in a cost-effective manner

Metrics: capacity utilization, inventory health,...

:

:

27

Few ways to achieve efficient operations

- **Resource pooling** – sharing resources across different products, markets, and channels
  - E.g., inventory pooling – using the same inventory to service the physical and online channels
- **High capacity utilization** – using a high proportion of maximum capacity
  - E.g., driving with full trucks

28

The M-O interface in omnichannel retail

The set of decisions related to the **coordination of multiple channels** within or across the same customer journey, aimed at carefully **balancing superior customer journey experience** and **reliable and efficient product flow** during the customer journey.

Rooderkerk, de Leeuw, and Hübner (2023)

29

M-O interface even more important in omnichannel

- Consumers are more involved in fulfillment (decisions)
- Inflated consumer expectations with respect to fulfillment
- More (near) real-time decision making requires functions to be more in concert
- Requires large investments

30

Adding sustainability to the mix

Marketing

Effectiveness

Degree to which resource investments generate revenues in the short and long term

Metrics: Σ CLV, revenue growth,...

Operations

Efficiency

Extent to which the business operations are conducted in a cost-effective manner

Metrics: capacity utilization, inventory health,...

ESG Management

Sustainability

Degree to which all activities in the retail value chain are conducted in a socially and environmentally responsible manner

Metrics: CO2 emissions, ratio CEO/average pay,...

31

32

Take away

Sustainability is an important domain; it will witness an influx of new data sources and would benefit from interdisciplinary collaboration

33

34

II. Reinventing Stores for Omnichannel Retail

35

The reports of my death are greatly exaggerated

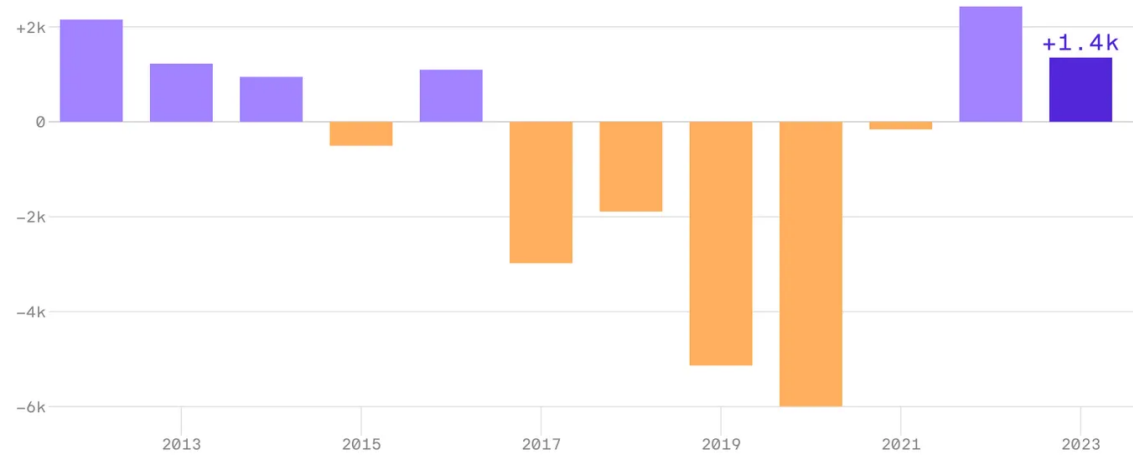
Physical retail

36

Net U.S. retail store openings and closings

AXIOS

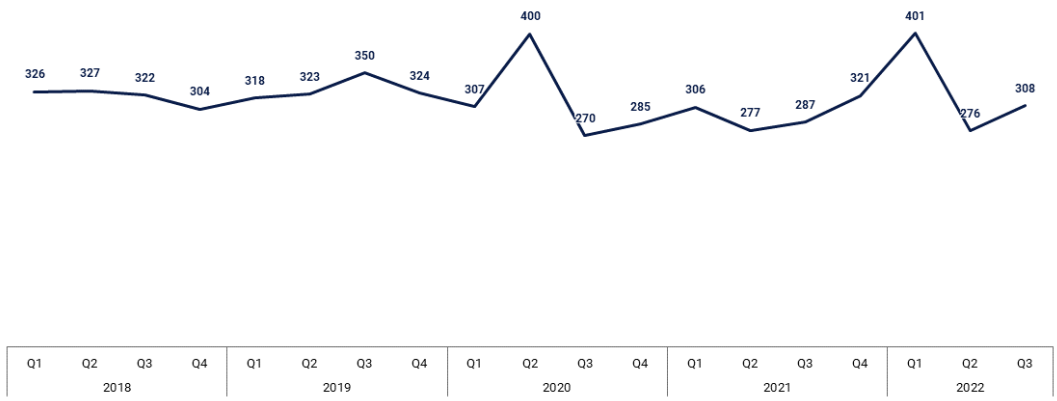
Annually; 2012–2023 YTD



37

New stores and remodels are still top of mind for retail execs

Earnings call mentions of retail store openings, remodels, and new formats



CBINSIGHTS

38

Decoupling

- Omnichannel customer journeys are characterized by a decoupling of channel and function
- The same function can be carried out by different channels, across journeys but also within the same journey
- This has profound effects on how stores organize for assortment, inventory, fulfillment, and returns
- It even changes their format and location

39

Stores do not need inventory to sell

- Omnichannel stores can serve as showrooms, where fulfillment does not necessarily happen in store
- Extreme form: zero-inventory showrooms (e.g., Warby Parker, Bonobos)

40

BONOBOS Guideshop

True showroom: zero inventory

"It is an exact physical representation of the website"

41

Effect on store locations

- The separation of pre-purchase orientation (and purchase) from fulfillment has also started to affect the location of stores

42

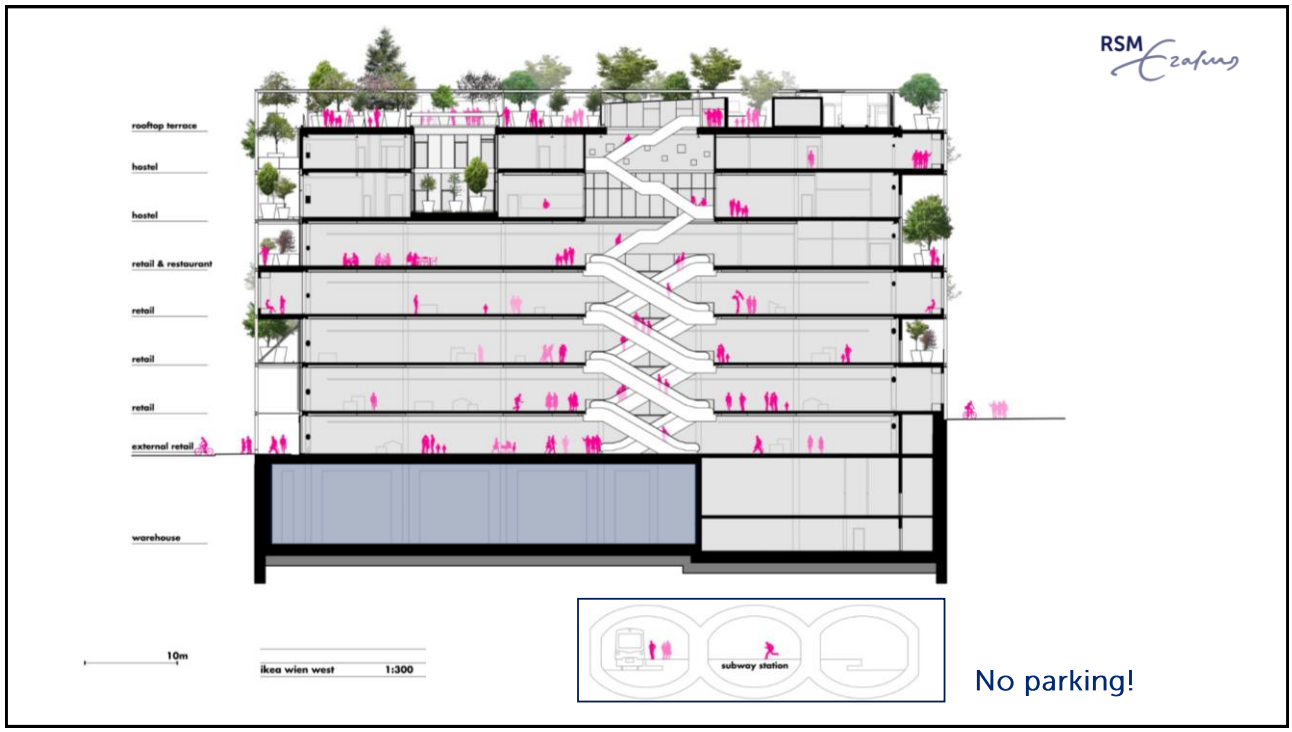

IKEA
Atelier de conception et commande
IKEA
Atelier de conception et commande

43

44


IKEA
TICHY

45


RSM
rooftop terrace
hostel
hostel
retail & restaurant
retail
retail
retail
external retail
warehouse
10m
ikea wien west 1:300
subway station
No parking!

46

MSI

Marketing Science Institute Working Paper Series 2023

Report No. 23-144

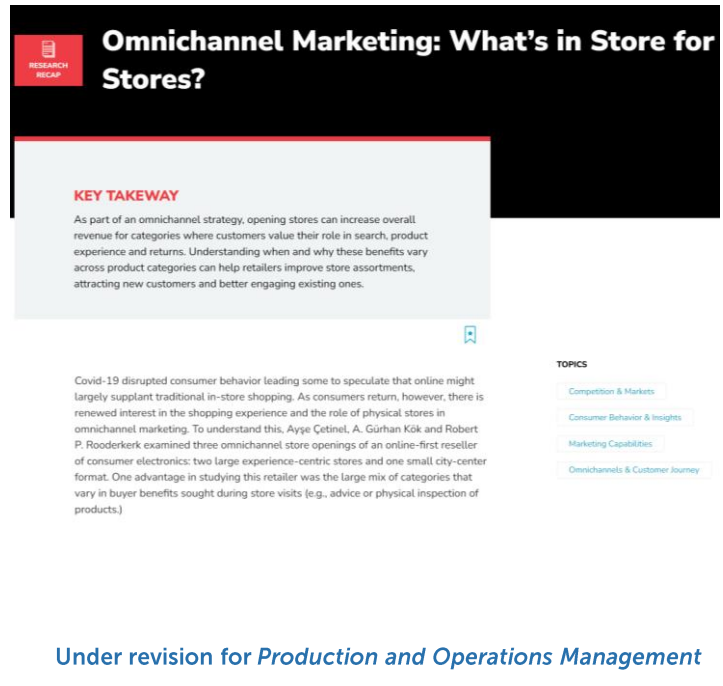
The Value of Experience-Centric Stores in Omnichannel Retail: A Multi-Method Approach at the Category Level

Ayşe Çetinel, A. Gürhan Kök and Robert P. Rooderkerk

"The Value of Experience-Centric Stores in Omnichannel Retail: A Multi-Method Approach at the Category Level"
© 2023

Ayşe Çetinel, A. Gürhan Kök and Robert P. Rooderkerk

MSI Working Papers are Distributed for the benefit of MSI corporate and academic members and the general public. Reports are not to be reproduced or published in any form or by any means, electronic or mechanical, without written permission.



RESEARCH RECAP

Omnichannel Marketing: What's in Store for Stores?

KEY TAKEWAY

As part of an omnichannel strategy, opening stores can increase overall revenue for categories where customers value their role in search, product experience and returns. Understanding when and why these benefits vary across product categories can help retailers improve store assortments, attracting new customers and better engaging existing ones.

Covid-19 disrupted consumer behavior leading some to speculate that online might largely supplant traditional in-store shopping. As consumers return, however, there is renewed interest in the shopping experience and the role of physical stores in omnichannel marketing. To understand this, Ayşe Çetinel, A. Gürhan Kök and Robert P. Rooderkerk examined three omnichannel store openings of an online-first reseller of consumer electronics: two large experience-centric stores and one small city-center format. One advantage in studying this retailer was the large mix of categories that vary in buyer benefits sought during store visits (e.g., advice or physical inspection of products.)

TOPICS

Competition & Markets

Consumer Behavior & Insights

Marketing Capabilities

Omnichannels & Customer Journey

Under revision for *Production and Operations Management*

47

Rotterdam School of Management
Erasmus University

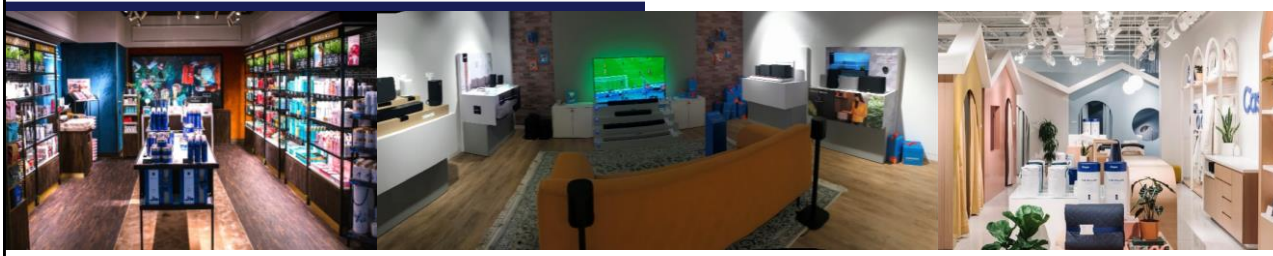
RSM Erasmus

The Value of Experience-Centric Stores in Omnichannel Retail: A Category-Level Perspective

Ayşe Çetinel
Koç University

Gürhan Kök
Koç University

Robert Rooderkerk
RSM, Erasmus University



RSM - a force for positive change

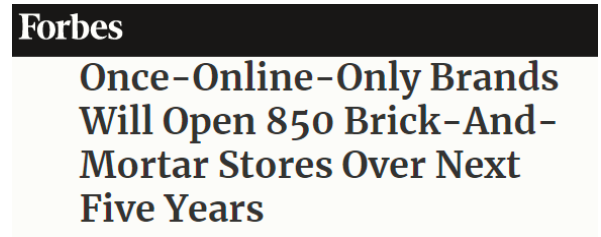
48

Online-first retailers opening stores


THE WALL STREET JOURNAL.

China's Online Shopping Giants Open Thousands of Bricks-and-Mortar Stores

Strategy differs from that of U.S. counterparts, which are moving at a more modest pace


Forbes

Once-Online-Only Brands Will Open 850 Brick-And-Mortar Stores Over Next Five Years

49

Online-first retailers opening stores

- Overcoming friction in online customer journeys

Digital Vertical Native Brands

allbirds WARBY PARKER

- Cost-effective billboards
- Enhance brand awareness

Online multi-brand retailers

amazon wayfair

- Reach another target audience
- Face the risk of competitive showrooming

50

THE WALL STREET JOURNAL.

RSM Ezafung

The stores that retailers are opening today are different. Some are smaller, and more of them offer experiences beyond browsing.

51

Small

RetailSonar

Small, smaller, smallest? Tips from 5 retailers experimenting with high-street shops

Monique Husslage 14 Jun 2021, 02:06

IKEA: from 'blue-box' warehouse stores to town- and city-centre shops

Large, experiential

retail TouchPoints

Canada Goose to Bring Experiential In-Store Snow Room to the U.S.

May 7, 2021 at 11:53 AM EDT By Jessie Dowd

Outerwear retailer **Canada Goose** will open its first California store in fall 2021 at the South Coast Plaza Mall in Costa Mesa, Calif., where it will house its first-ever Snow Room in the U.S.

52

When and *why* is opening stores beneficial

When

- How does the ability to grow total revenues (net revenue uplift) vary with…?
  - store format,
  - time since store opening,
  - customers' distance to the store, and
  - the product category

53

When and *why* is opening stores beneficial

When

- How does the ability to grow total revenues (net revenue uplift) vary with…?
  - store format,
  - time since store opening,
  - customers' distance to the store, and
  - **the product category**

54

When and *why* is opening stores beneficial

When

- How does the ability to grow total net revenues vary with…?
  - store format,
  - time since store opening,
  - customers' distance to the store, and
  - **the product category**

Why

- How does the net revenue uplift come about (e.g., existing vs. new customers)?
- To what extent do the benefits sought by customers explain the variation in net revenue uplift across categories?

55

Study setup

- Opening of one **small, convenience-oriented** and **two large, experience-centric** stores by an online-first consumer electronics retailer in Western Europe
- Leveraging a quasi-experimental design in combination with staggered DiD
- Categories vary substantially in terms of physical dimensions, monetary value, complexity and the value of store experiences

56

Positioning in the literature

	Research Setting [1]						Effect [2]		When [3]				Decomposition [4]		Why	Method [5]
Study	Retail sector	Period (# months)	Retailer Characteristics		Store characteristics		Online channel		Category-level	Store format	Time	Distance	Customer differentiation	Returns		Staggered adoption
			Type	Channels	Experience	Inventory	H	C								
Papers examining cross-channel retailers																
Avery et al., 2012	Apparel	1999-2006 (87 mos)	Single-brand	Catalogue* Online**	Fit & feel experience	On-hand	✓				✓		T			
Wang & Goldfarb, 2017	Apparel	2010-2012 (21 mos)	Single-brand	Online	Fit & feel experience	On-hand	✓	✓			✓		N, E	✓		
Kumar et al., 2019	Apparel	1999-2006 (84 mos)	Single-brand	Online**	Fit & feel experience	On-hand	✓					✓	E	✓		
Papers examining online brands and online retailers																
Bell et al., 2018	Eyewear	2010-2013 (37 mos)	DNVB	Online*	Fit & feel experience	Zero	✓				✓		N	✓		
Zhang et al., 2019	Apparel	2017 (4 mos)	Retail Platform	Online*	Virtual fit experience	Zero	✓				✓		N, E			
Bell et al., 2020	Apparel	2007-2016 (108 mos)	DNVB	Online*	Fit & feel experience	Zero	✓					✓	T	✓		
This study	**Consumer electronics**	**2018-2021 (26 mos)**	**Multi-brand reseller**	**Online***	**Fit & feel, multisensory experience**	**On-hand & zero**		**✓**	**✓**	**✓**	**✓**	**✓**	**N, E, T**	**✓**	**✓**	**✓**

57

Take away

Working at an intersection ⇒ study the literature in different fields*

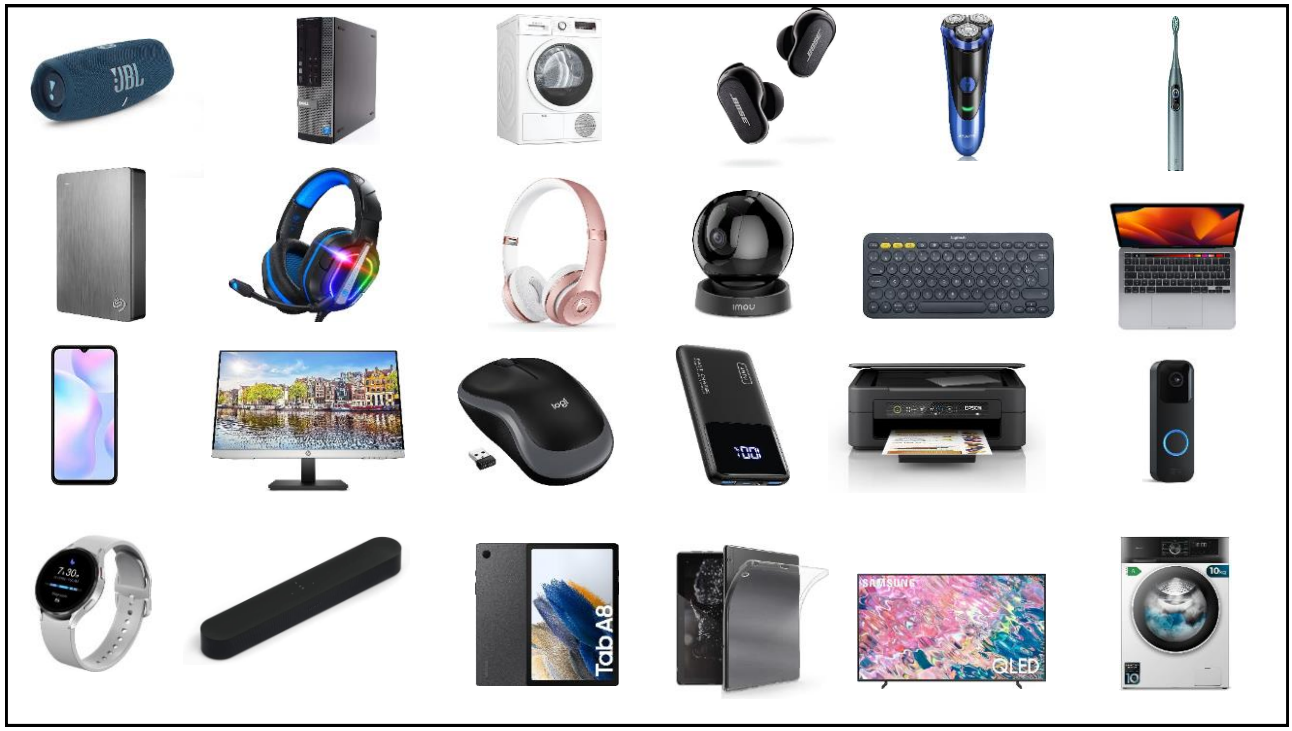
* you never know where Reviewer 2 is coming from ☺

58

Study setup

- Opening of one **small, convenience-oriented** and **two large, experience-centric** stores by an online-first consumer electronics retailer in Western Europe
- Leveraging a **quasi-experimental** design in combination with staggered DiD
- Categories vary substantially in terms of physical dimensions, monetary value, complexity and the value of store experiences
- Both store- and category-level analyses

59



60

Price

high

low

61

Size

small

large

62

Sensory experiences

a lot

little

63

high

Expertise

low

64

Instant gratification

high

low

65

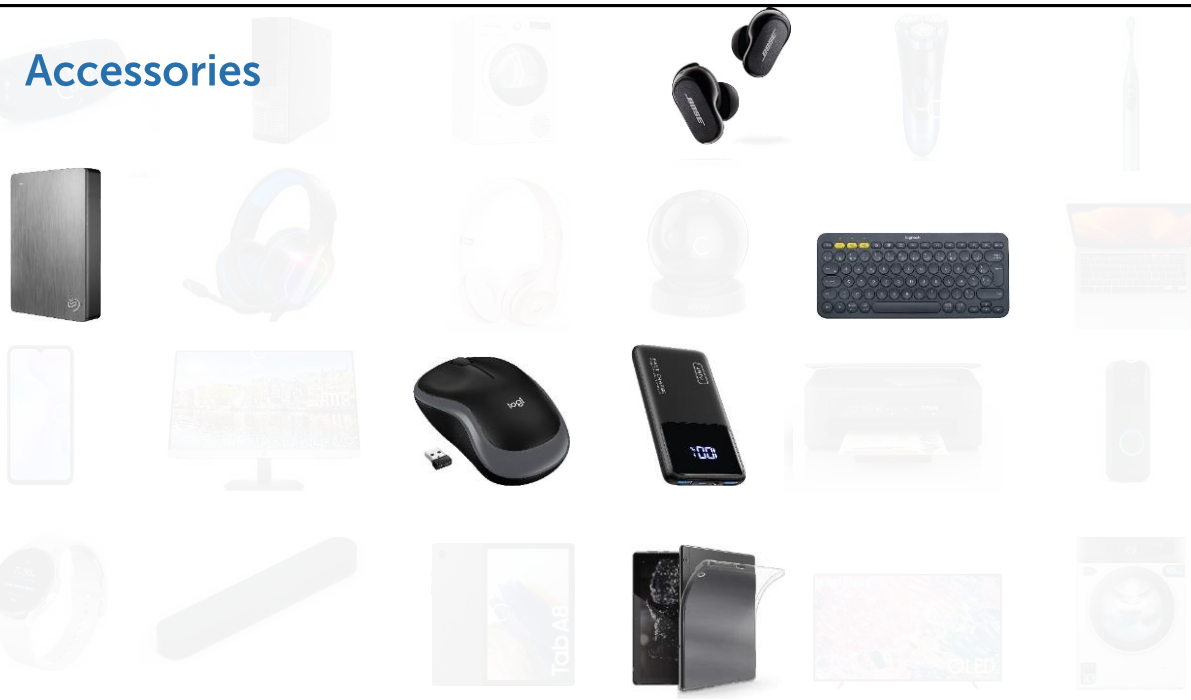
high

Return efficiency

low

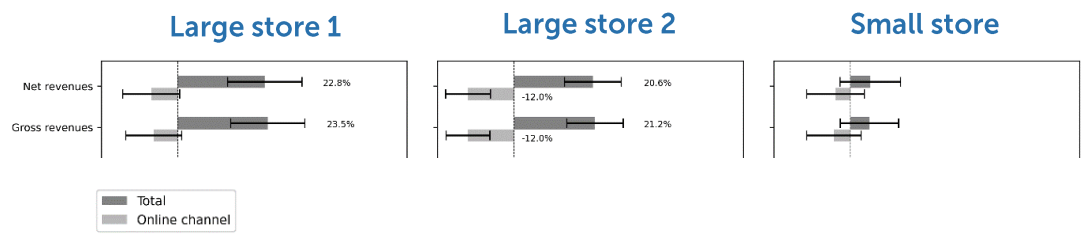
66

Accessories



67

Net vs. gross revenue uplift, total vs. online

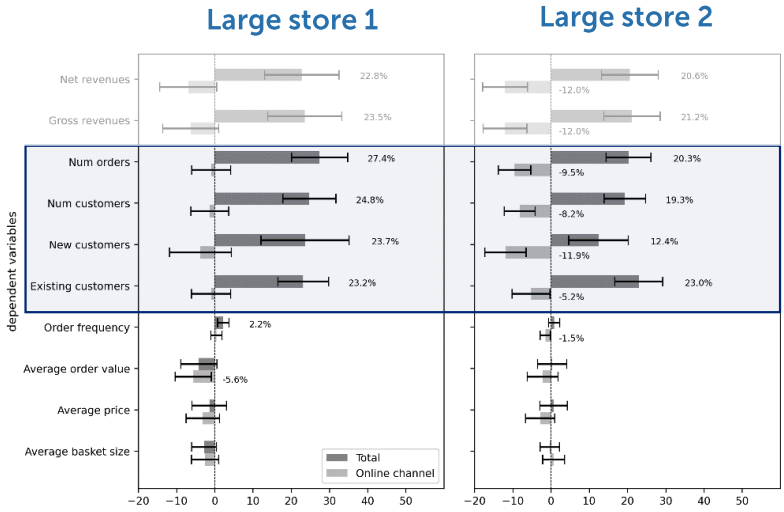


- Sizeable uplift in total net revenues for large stores
- Cannibalization of the online channel
- No substantial uplift for the small store
- Net revenue uplift < gross revenue uplift ⇒ ~ 1% point of return fraction

Store-level results, short-term (0-3 months after opening)

68

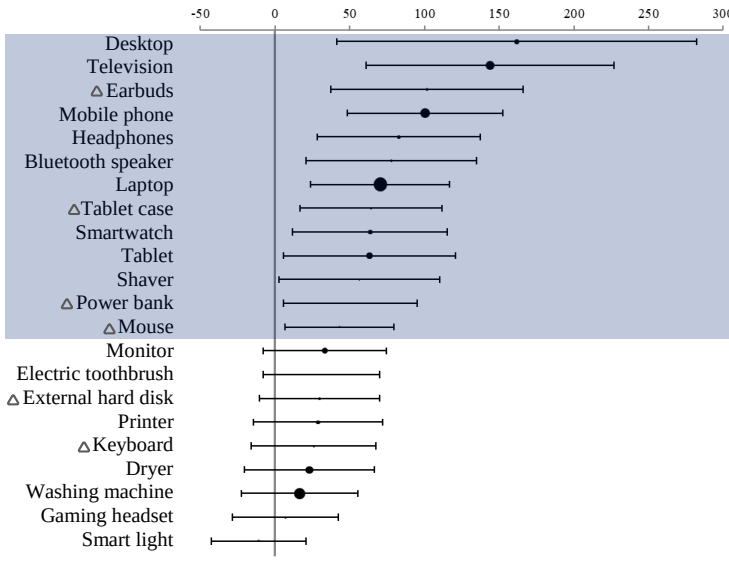
Source of the growth



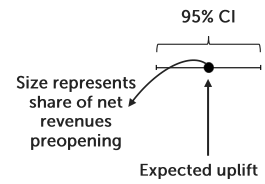
- Primarily through more orders, not order composition
- More effective in customer acquisition
- Increasing engagement of existing customers

69

Total net revenue uplift (in %) per category



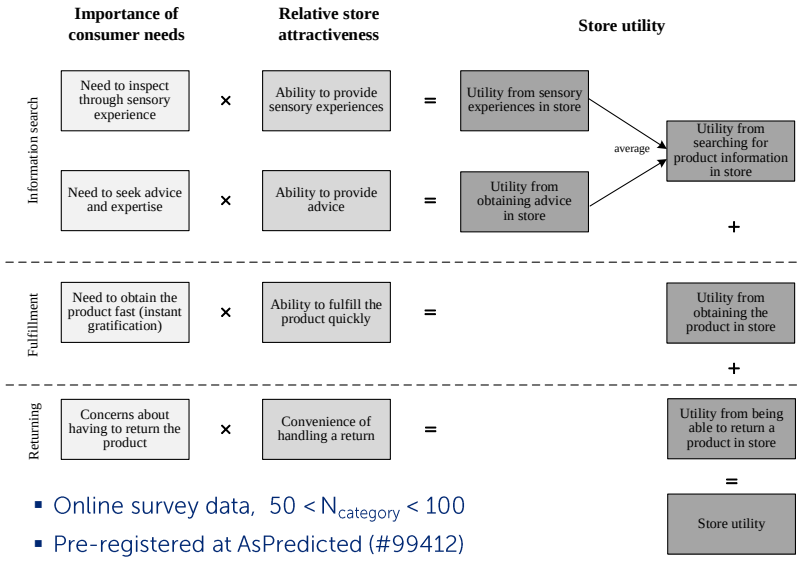
△ = Accessories category



Large store 1, short run

70

Constructing category-level store utilities

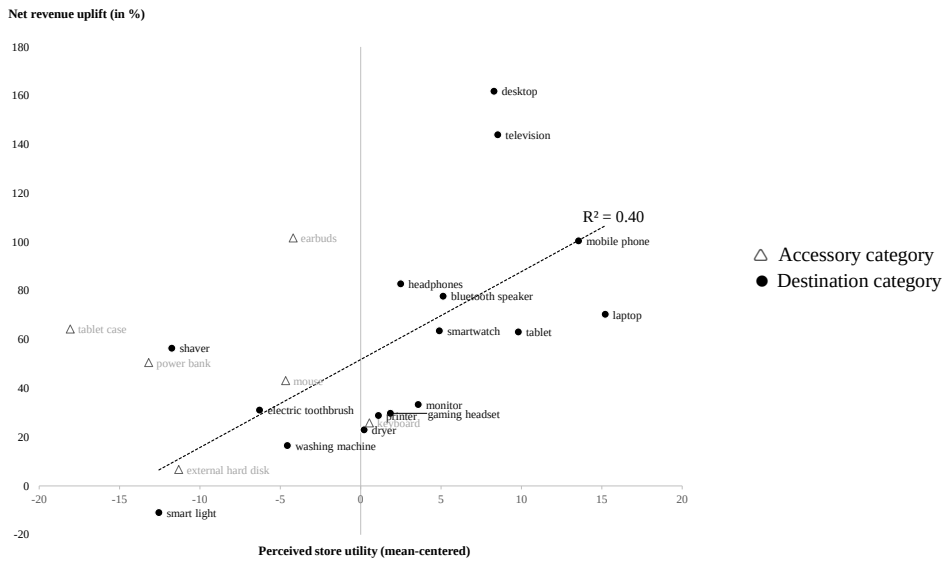


- Online survey data, $50 < N_{category} < 100$
- Pre-registered at AsPredicted (#99412)

Inspired by
Theory of Reasoned Action
(Fishbein & Ajzen, 1975)

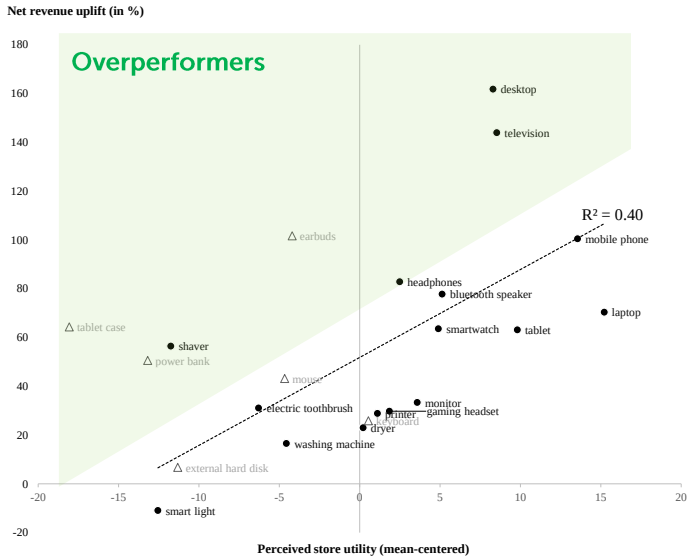
71

Category-level uplift vs. average utility



72

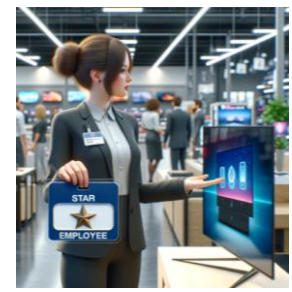
Category-level uplift vs. average utility

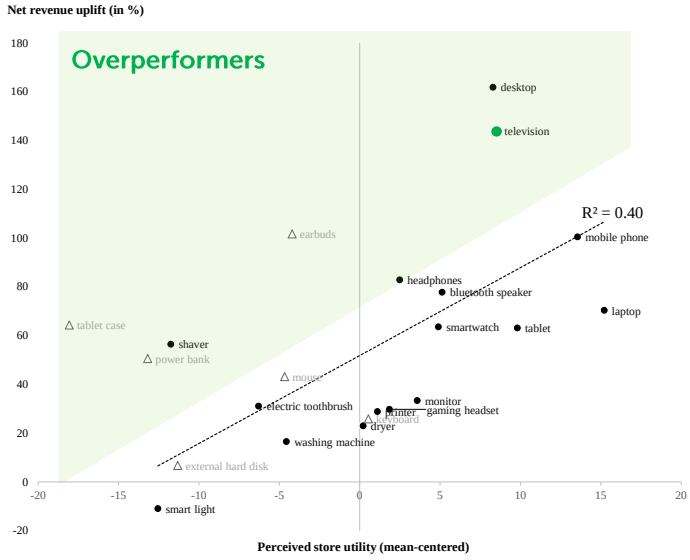


△ Accessory category
● Destination category

73

Category-level uplift vs. average utility

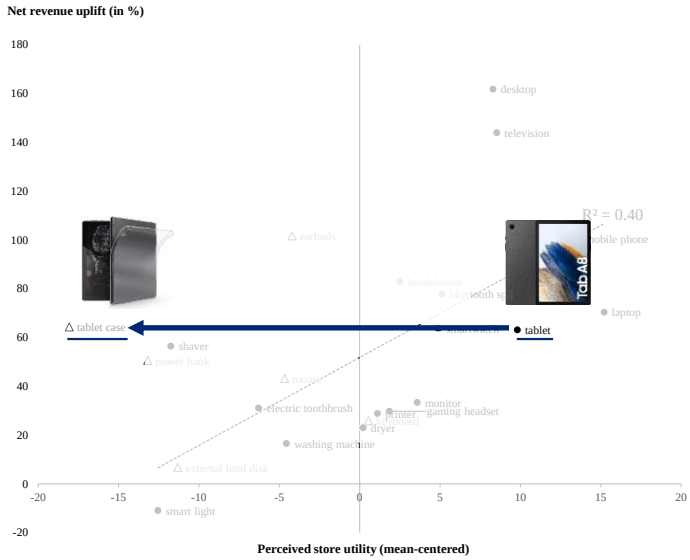




△ Accessory category
● Destination category

74

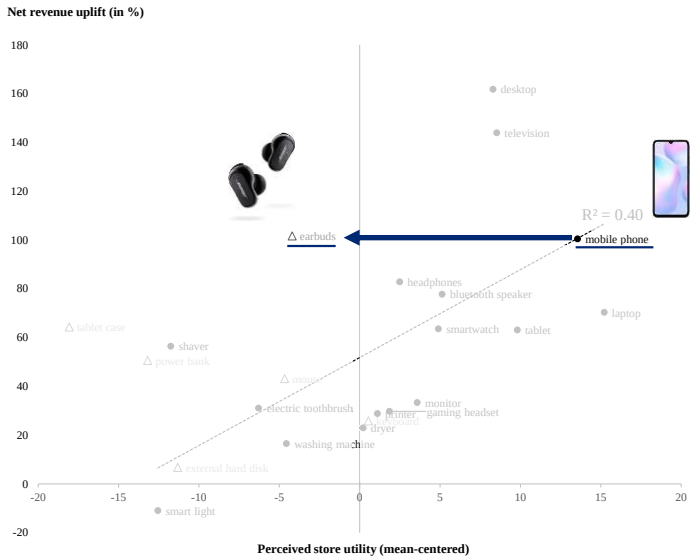
Accessories



△ Accessory category
● Destination category

75

Accessories



△ Accessory category
● Destination category

76

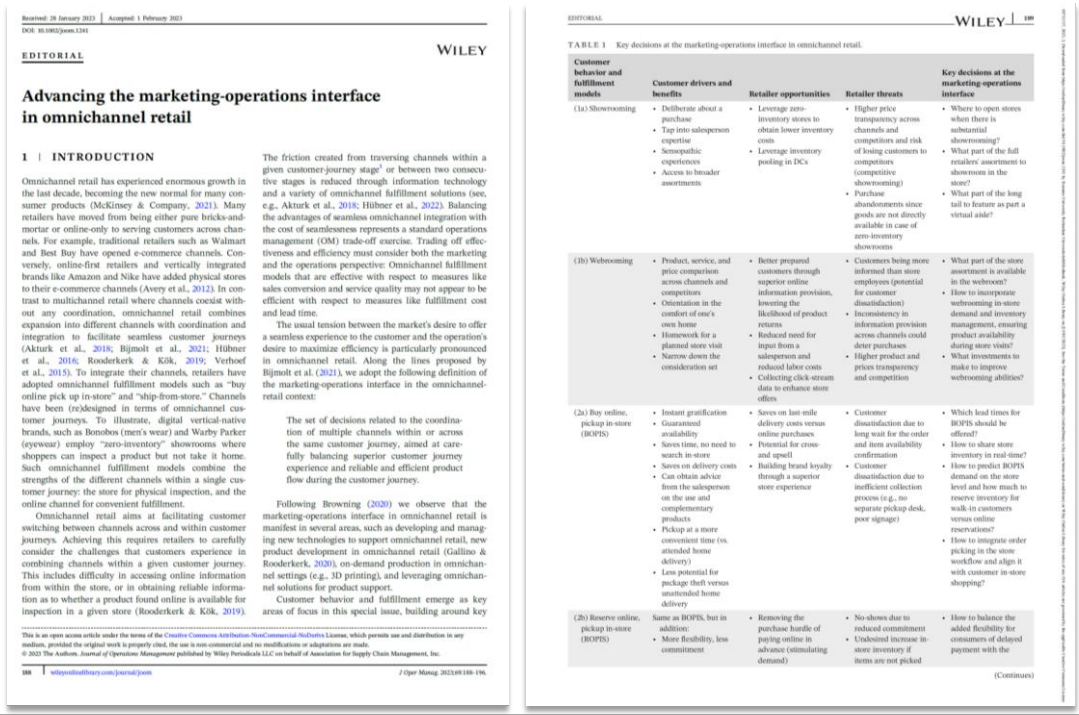
Take away

When working with a corporate partner discuss your results with them (face validity, sense making)

77

III. Omnichannel fulfillment

78



Received: 28 January 2023 | Accepted: 1 February 2023
DOI: 10.1002/joom.1241

EDITORIAL

WILEY

Advancing the marketing-operations interface in omnichannel retail

1 | INTRODUCTION

Omnichannel retail has experienced enormous growth in the last decade, becoming the new normal for many consumer products (McKinsey & Company, 2021). Many retailers have moved from being either pure bricks-and-mortar or online-only to serving customers across channels. For example, traditional retailers such as Walmart and Best Buy have opened e-commerce channels. Conversely, online-first retailers and vertically integrated brands like Amazon and Nike have added physical stores to their e-commerce channels (Avery et al., 2012). In contrast to multichannel retail where channels coexist without any coordination, omnichannel retail combines expansion into different channels with coordination and integration to facilitate seamless customer journeys (Akturk et al., 2018; Bijmolt et al., 2021; Hübner et al., 2016; Rooderkerk & Kök, 2019; Verhoef et al., 2015). To integrate their channels, retailers have adopted omnichannel fulfillment models such as "buy online pick up in-store" and "ship-from-store." Channels have been (re)designed in terms of omnichannel customer journeys. To illustrate, digital vertical-native brands, such as Bonobos (men's wear) and Warby Parker (eyewear) employ "zero-inventory" showrooms where shoppers can inspect a product but not take it home. Such omnichannel fulfillment models combine the strengths of the different channels within a single customer journey: the store for physical inspection, and the online channel for convenient fulfillment.

Omnichannel retail aims at facilitating customer switching between channels across and within customer journeys. Achieving this requires retailers to carefully consider the challenges that customers experience in combining channels within a given customer journey. This includes difficulty in accessing online information from within the store, or in obtaining reliable information as to whether a product found online is available for inspection in a given store (Rooderkerk & Kök, 2019).

The friction created from traversing channels within a given customer-journey stage[1] or between two consecutive stages is reduced through information technology and a variety of omnichannel fulfillment solutions (see, e.g., Akturk et al., 2018; Hübner et al., 2022). Balancing the advantages of seamless omnichannel integration with the cost of seamlessness represents a standard operations management (OM) trade-off exercise. Trading off effectiveness and efficiency must consider both the marketing and the operations perspective. Omnichannel fulfillment models that are effective with respect to measures like sales conversion and service quality may not appear to be efficient with respect to measures like fulfillment cost and lead time.

The usual tension between the market's desire to offer a seamless experience to the customer and the operation's desire to maximize efficiency is particularly pronounced in omnichannel retail. Along the lines proposed by Bijmolt et al. (2021), we adopt the following definition of the marketing-operations interface in the omnichannel-retail context:

> The set of decisions related to the coordination of multiple channels within or across the same customer journey, aimed at carefully balancing superior customer journey experience and reliable and efficient product flow during the customer journey.

Following Browning (2020) we observe that the marketing-operations interface in omnichannel retail is manifest in several areas, such as developing and managing new technologies to support omnichannel retail, new product development in omnichannel retail (Gallino & Rooderkerk, 2020), on-demand production in omnichannel settings (e.g., 3D printing), and leveraging omnichannel solutions for product support.

Customer behavior and fulfillment emerge as key areas of focus in this special issue, building around key

TABLE 1 Key decisions at the marketing-operations interface in omnichannel retail.

Customer behavior and fulfillment models	Customer drivers and benefits	Retailer opportunities	Retailer threats	Key decisions at the marketing-operations interface
(1a) Showrooming	• Deliberate about a purchase • Tap into salesperson expertise • Sensopathic experiences • Access to broader assortments	• Leverage zero-inventory stores to obtain lower inventory costs • Leverage inventory pooling in DCs	• Higher price transparency across channels and competitors and risk of losing customers to competitors (competitive showrooming) • Purchase abandonments since goods are not directly available in case of zero-inventory showrooms	• Where to open stores when there is substantial showrooming? • What part of the full retailers' assortment to showroom in the store? • What part of the long tail to feature as part a virtual aisle?
(1b) Webrooming	• Product, service, and price comparison across channels and competitors • Orientation in the comfort of one's own home • Homework for a planned store visit • Narrow down the consideration set	• Better prepared customers through superior online information provision, lowering the likelihood of product returns • Reduced need for input from a salesperson and reduced labor costs • Collecting click-stream data to enhance store offers	• Customers being more informed than store employees (potential for customer dissatisfaction) • Inconsistency in information provision across channels could deter purchases • Higher product and prices transparency and competition	• What part of the store assortment is available in the webroom? • How to incorporate webrooming in-store demand and inventory management, ensuring product availability during store visits? • What investments to make to improve webrooming abilities?
(2a) Buy online, pickup in-store (BOPIS)	• Instant gratification • Guaranteed availability • Saves time, no need to search in-store • Saves on delivery costs • Can obtain advice from the salesperson on the use and complementary products • Pickup at a more convenient time (vs. attended home delivery) • Less potential for package theft versus unattended home delivery	• Saves on last-mile delivery costs versus online purchases • Potential for cross- and upsell • Building brand loyalty through a superior store experience	• Customer dissatisfaction due to long wait for the order and item availability confirmation • Customer dissatisfaction due to inefficient collection process (e.g., no separate pickup desk, poor signage)	• Which lead times for BOPIS should be offered? • How to share store inventory in real-time? • How to predict BOPIS demand on the store level and how much to reserve inventory for walk-in customers versus online reservations? • How to integrate order picking in the store workflow and align it with customer in-store shopping?
(2b) Reserve online, pickup in-store (ROPIS)	Same as BOPIS, but in addition: • More flexibility, less commitment	• Removing the purchase hurdle of paying online in advance (stimulating demand)	• No-shows due to reduced commitment • Undesired increase in-store inventory if items are not picked	• How to balance the added flexibility for consumers of delayed payment with the

(Continues)

Rooderkerk, de Leeuw, & Hübner (2023)

79

Omnichannel fulfillment

RSM Erasmus

- Buy online, pickup in store (click and collect)
- Reserve online, pickup in store
- Buy in store, ship to home
- Buy in store, return online
- Buy online, return in store
- Ship to store
- Ship from store
- Dropshipping

80

Omnichannel fulfillment

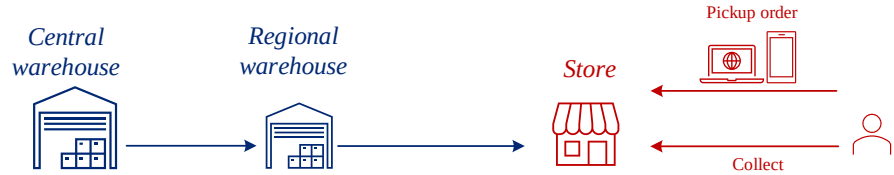
- **Buy online, pickup in store (click and collect)**
- Reserve online, pickup in store
- Buy in store, ship to home
- Buy in store, return online
- **Buy online, return in store**
- Ship to store
- **Ship from store**
- Dropshipping

81

Click & collect

82

Click & collect



83

Walmart drew one in four dollars spent on click and collect — with room to grow in 2022

PUBLISHED THU, DEC 30 2021 7:00 AM EST
UPDATED THU, DEC 30 2021 1:17 PM EST

Melissa Repko
@MELISSA_REPKO

WATCH LIVE

Employees assist customers with online pickup orders at a Walmart Inc. store in Burbank, California, U.S., on Monday, Nov. 19, 2018.
Patrick T. Fallon | Bloomberg | Getty Images

KEY POINTS

- Walmart scored 25.4% of all click-and-collect orders in 2021 — the largest share of any U.S. retailer, according to market data.
- Click and collect, a more profitable e-commerce channel for retailers, has become a powerful sales driver during the pandemic.
- Sales are expected to jump by about 21% to $101 billion in 2022, according to Insider Intelligence.

84

85

Benefits of click & collect to **consumers**

- Instant gratification (I want it now)
- Guarantee availability
- Save time; no need to search, walk through the store
- Save on delivery costs
- Ability to pay with cash
- Obtain advice on the usage of the product upon pickup

86

Benefits of click & collect to **retailers**

- Compared to home delivery it brings the consumer to the store
- This provides several (potential) benefits to the retailer
  - Save on last-mile delivery costs
  - Potential for up-and cross selling at the store
  - Build brand loyalty through store exposure

87

Challenges in offering click & collect

- Inventory accuracy (theft, misplacement)
- Connecting siloed information systems
- If manual store checks are required to ensure they are done fast enough
- Incorporating inventory checks and pickups in a way that does not detract from assisting shoppers in the store

88


ZARA
ABN·AMRO
THE BODY SHOP
Pearle

89


NETHERLANDS
SCAN DE CODE
OF VOER DE CODE HANDMATIG IN
HELP
ZARA
ONLINE
CLEVERON

90

Is click & collect environmentally more sustainable?

Depends on

- mode of last-mile delivery
- mode of customer transportation
- effect of in-store pickup on return rates
- potential for reducing packaging

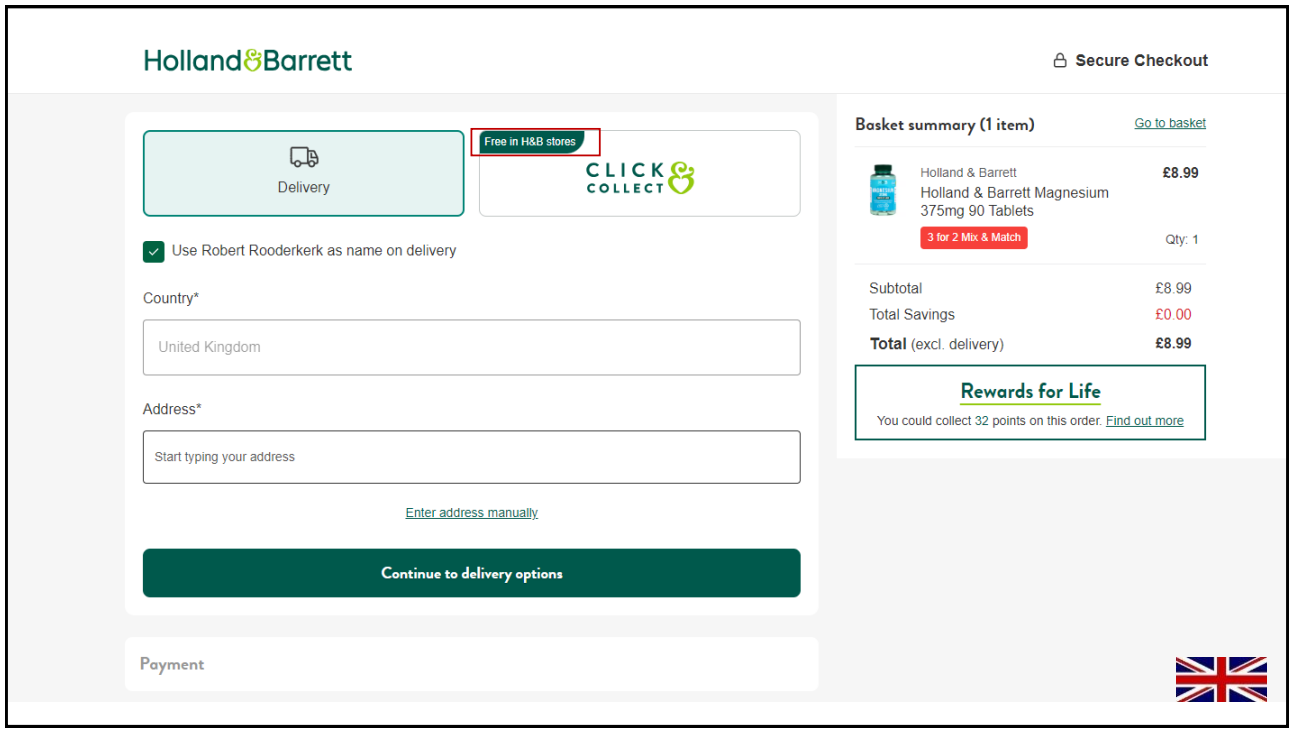
91

92

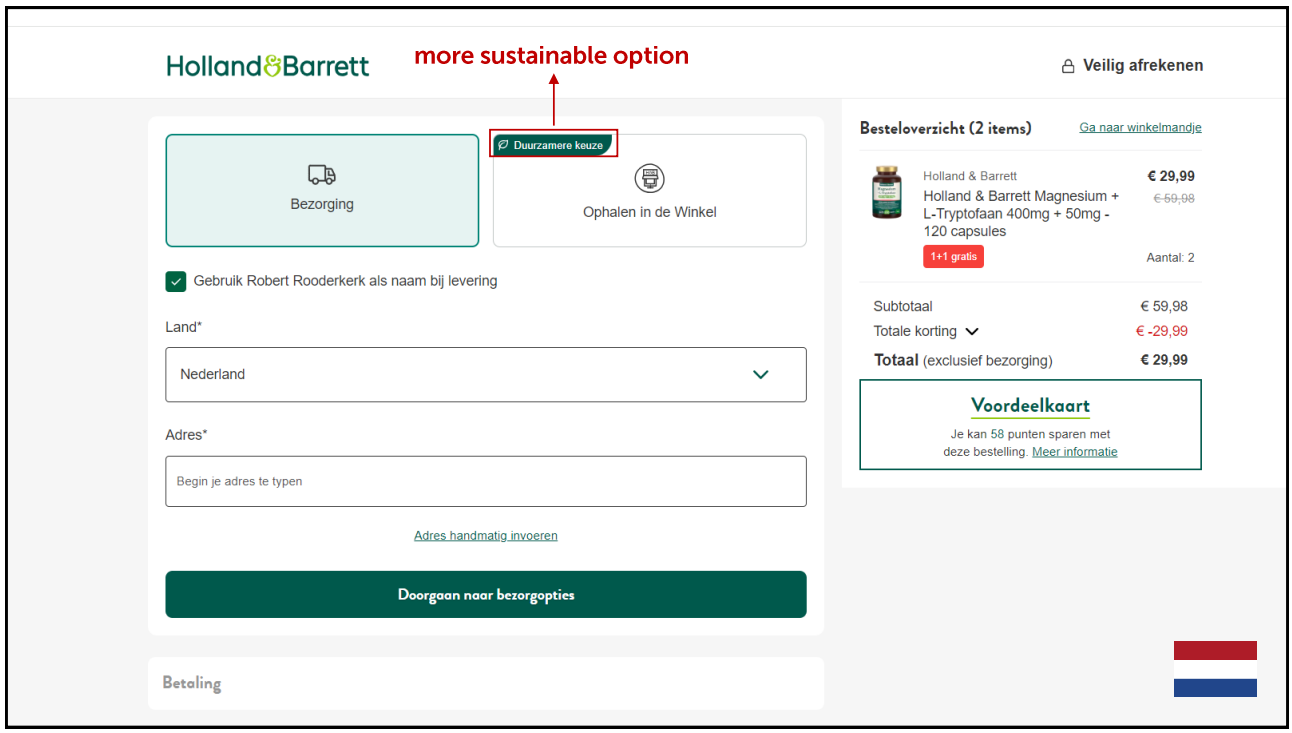
Stimulating click & collect

- Financial incentives
- Green labels/nudges
- Hybrid, e.g., green loyalty points that can be redeemed at some point

93



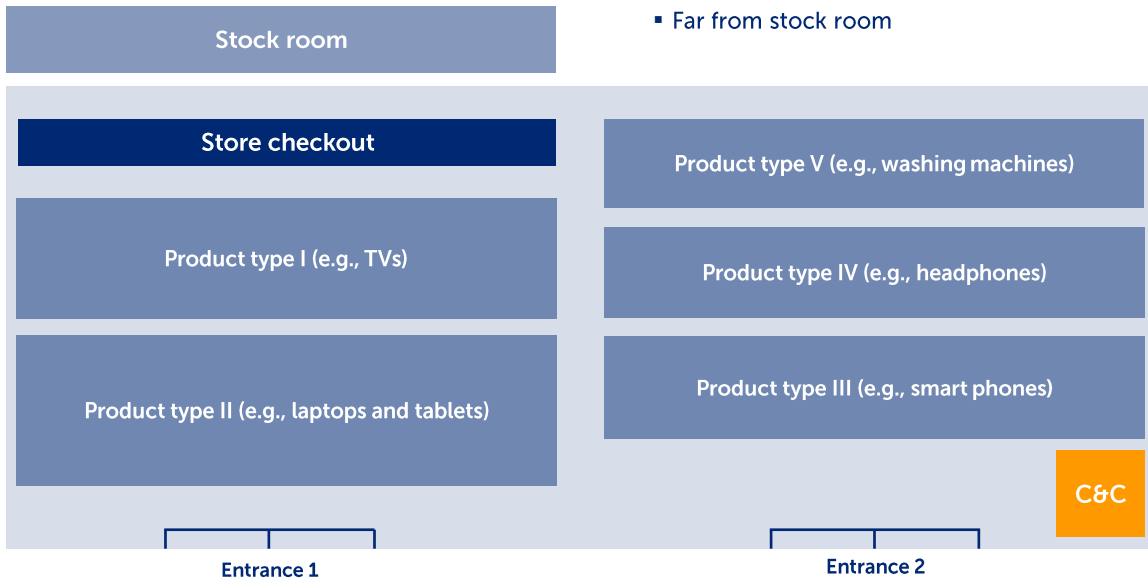
94



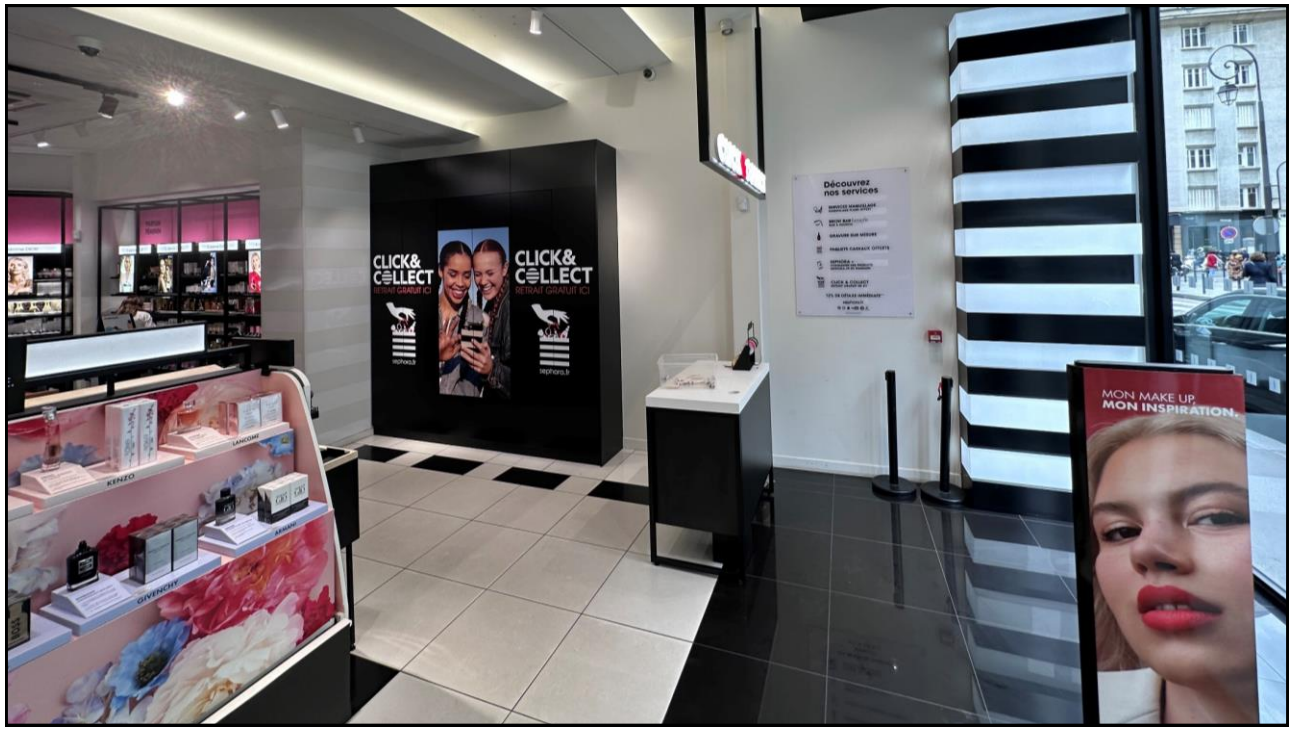
95

Locating Click & Collect in store

- Convenient for customers
- Harder to pool labour resources
- Far from stock room



96



97

Locating Click & Collect in store

- Less convenient for customers
- Potential to pool labor resources w/ checkout
- Closer to stock room
- More potential for cross-sell

Stock room

Store checkout | C&C

Product type I (e.g., TVs)

Product type II (e.g., laptops and tablets)

Product type V (e.g., washing machines)

Product type IV (e.g., headphones)

Product type III (e.g., smart phones)

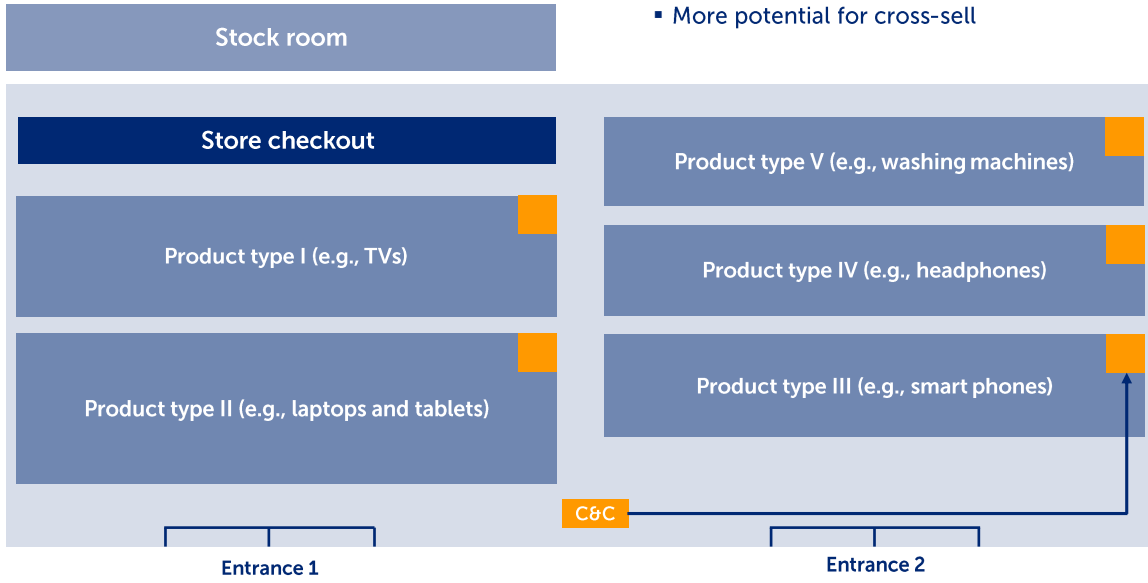
Entrance 1

Entrance 2

98

Locating Click & Collect in store

- Easier to pool labour resources
- Locate order inventory at product worlds?
- More potential for cross-sell



99

Take away

Jointly consider what is best for customer, environment, and retailer

100

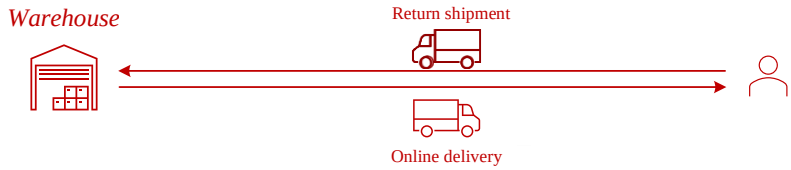
Buy online, return in store

101

Buy online, return by mail

102

Buy online, return by mail



103

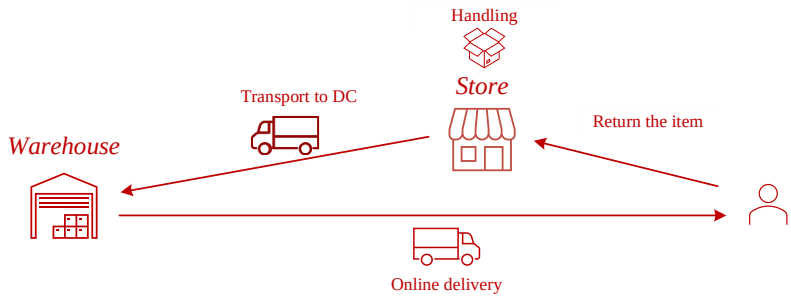
Buy online, return to store (BORIS)

104

Buy online, return to store (BORIS)

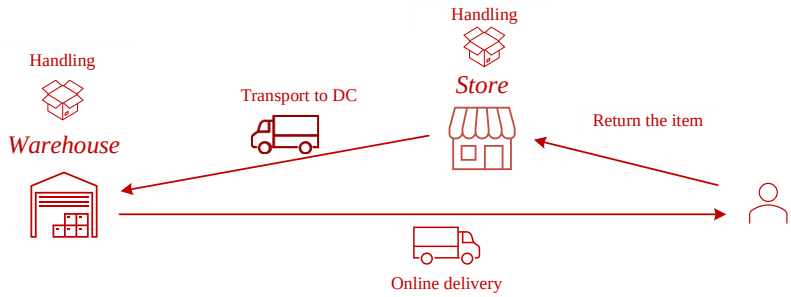
105

Buy online, return to store (BORIS)



106

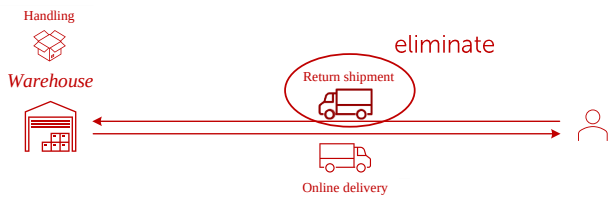
Buy online, return to store (BORIS)



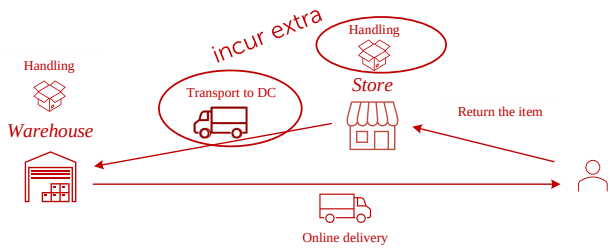
107

Return by mail vs. return in store

Return by mail



Return in store



108

Benefits of BORIS

RSM Ezafung

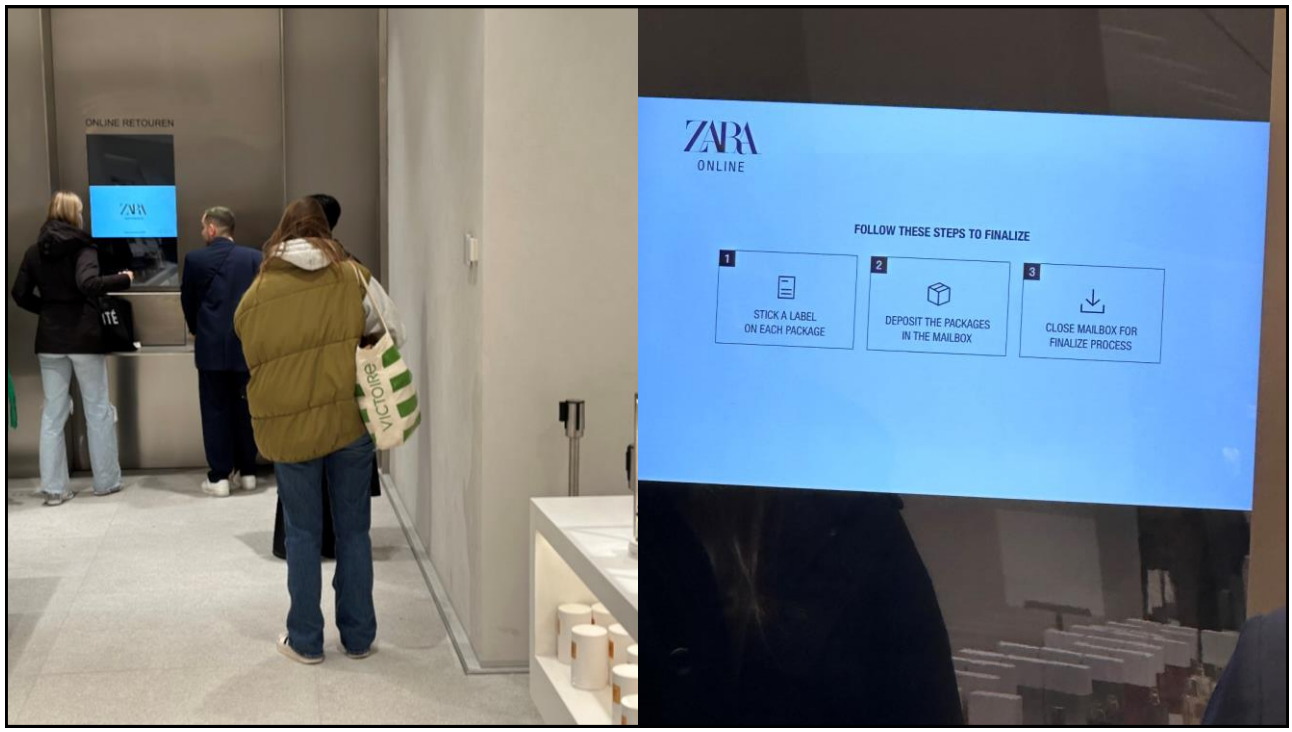
Consumers

- Convenience (instead of repackaging, printing return label and trip to post office)
- Get money back faster

Retailers

- Save on shipping costs (but does it outweigh double handling costs?)
- Opportunity to annihilate return or convert to cross- or upsell
- Increase customer satisfaction
- Cut emissions

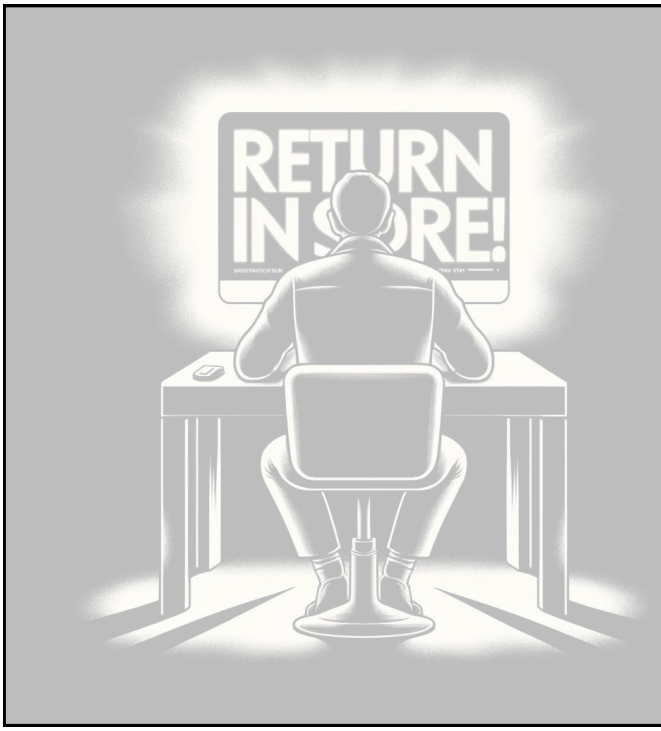
109



110

Despite the many benefits omnichannel retailers do little to advertise the option to customers

111



So, what can retailers do to stimulate in-store returns of online orders?

112

How to stimulate this?

1. **Highlight** the in-store option, make it the **default**, add a green label, etc.
2. Determine the **common reasons** to return an online purchase per category
3. Ask customers to **declare their planned return** online, or in the app
4. When customers declare their return **ask for a reason**
5. Design a **decision tree** that combines item characteristics, reason, and inventory levels in stores nearby to **customize "the nudge"**

   "We have the item in a size smaller in inventory in a store nearby you"*

* One could even consider allowing the customer to reserve the replacement item

113

Take away

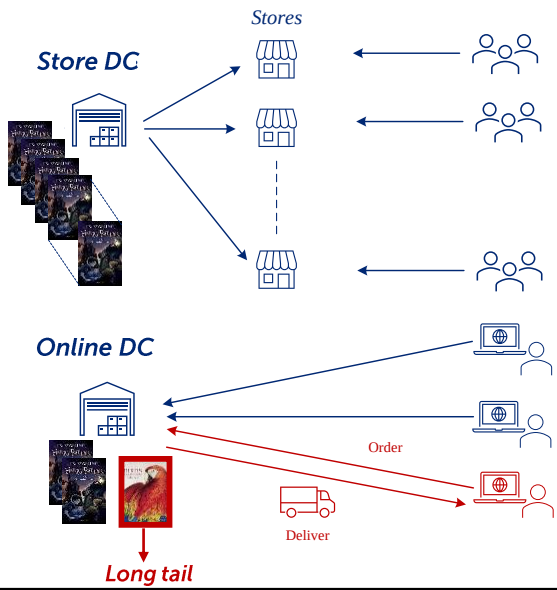
"Retailers are increasingly interested in having consumers use a specific channel. Nudging can be a very effective instrument to achieve this

114

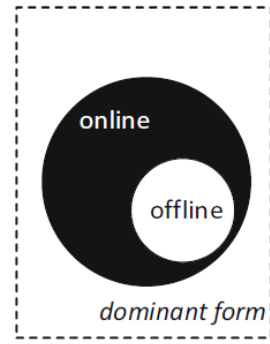
Ship from store

115

Common practice: separate distribution centres (DCs)



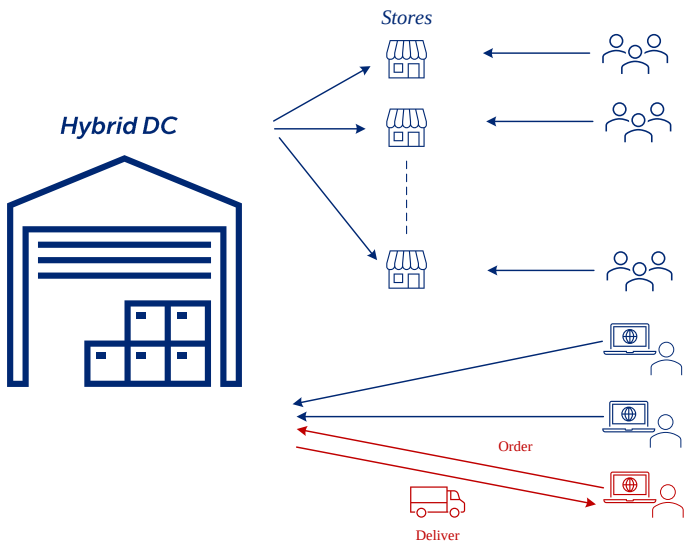
Assortment coordination



Rooderkerk & Kök (2019)

116

Less common: hybrid DC



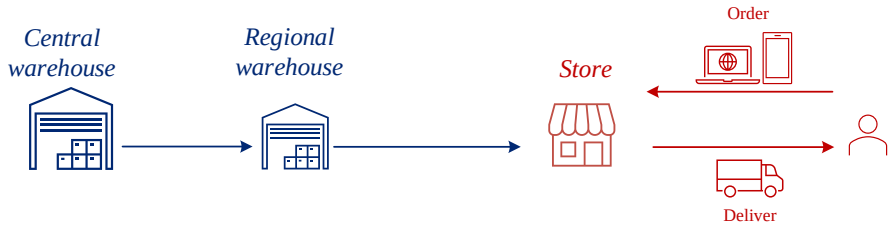
- One building
- Inventory partitioned
- Opportunity to move inventory around ("high handling costs though")

117

Ship from store (SFS)

118

Ship from store (SFS)



119

Benefits of shipping from store

- Pool inventory between online and offline channels
- Deliver faster
- Reduce delivery costs

> As online sales grow, so too does the cost of shipping goods to customers' homes. Retailers are finding it is less expensive to ship items from their stores, which are located closer to where people live. Target Corp. TGT -2.14% ▼, for instance, estimates that it costs on average 40% less to ship orders from its stores, compared with the expense of shipping from its warehouses.
>
> Wall Street Journal, November 25, 2021

120

IV Discussion

121

Summary

- Customer journeys and business models are increasingly **omnichannel**
- The **decoupling** of channel and function increases the need for **alignment** between the **marketing** and **operations** functions
- An effective use of **technology** and **analytics** can detect and remove friction
- Many **interesting challenges** for academic research, further facilitated by an increasing availability of **rich data** sources

122

Take-aways for retail marketing scholars

- Invest in understanding the principles of operations management in retail
- There is a need for more cost-benefit type of analyses in omnichannel retail
- Explore how marketing theory can be applied or extended to retail operations
- Sustainability in retail a great area for research; interdisciplinary work!
- Is what's best for the customer also best for the environment and retailer?
- From omnichannel to optichannel? Nudging channels and fulfillment options
- Lots of new data sources on the horizon (directly or as by product of new tech)

123

Received: 30 June 2020 | Accepted: 5 July 2022

DOI: 10.1111/poms.13813

SPECIAL ISSUE ARTICLE

POMS

The past, present, and future of retail analytics: Insights from a survey of academic research and interviews with practitioners

Robert P. Rooderkerk[1] | Nicole DeHoratius[2] | Andrés Musalem[3]

[1]Department of Technology & Operations Management, Rotterdam School of Management, Erasmus University, Rotterdam, The Netherlands

[2]Booth School of Business, University of Chicago, Chicago, Illinois, USA

[3]Industrial Engineering Department, University of Chile and Instituto Sistemas Complejos de Ingeniería, Santiago, RM, Chile

Correspondence
Robert P. Rooderkerk, Department of Technology & Operations Management, Rotterdam School of Management, Erasmus University, Rotterdam, The Netherlands.
Email: rooderkerk@rsm.nl

Handling Editor: Subodha Kumar

Funding information
ANID, Grant/Award Numbers: AFB180001, Fondecyt 1221554

Abstract
We document the evolution of academic research through a bibliometric analysis of 123 retail analytics articles published in top operations management journals from 2000 to 2020. We isolate nine decision areas via manual coding that we verify using automated text analysis (topic modeling). We track variation across decision areas and method-usage evolution per analytics type, featuring the degree to which big data (e.g., clickstream, social media, product reviews) and analytics suited for these new data sources (e.g., machine learning) are used. Our analysis reveals a rapidly growing field that is evolving in terms of content (decisions, retail sector), data, and methodology. To determine the state of practice, we interviewed global practitioners on the current use of retail analytics. These interviews shed light on the barriers and enablers of adopting advanced analytics in retail. They also highlight what sets companies on the frontier (e.g., Amazon, Alibaba, Walmart) apart from the rest. Combining the insights from our survey of academic research and interviews with practitioners, we provide directions for future academic research that take advantage of the availability of big data.

KEYWORDS
bibliometrics, big data, business analytics, retail operations, technology

1 | INTRODUCTION TO RETAIL ANALYTICS: DEFINITION AND CLASSIFICATION

The retail industry is a major contributor to global economies (Mou et al., 2018), employing a substantial portion of the labor force in many nations. Given the importance of this industry to economic growth, Fisher et al. (2000) call for an infusion of "rocket science" into retail, citing the need for improved analytical decision-making. In a book published a decade later, Fisher and Raman (2010) hail analytics as the centerpiece of their "new science of retailing." Since the book's publication, interest in the use of analytics has only grown[1], and researchers are publishing papers that use advanced analytics to solve a range of retail-related challenges (Caro et al., 2020). What accounts for this growing interest? Key drivers include (1) ever-increasing data availability (e.g., Point of Sales), (2) the adoption of new technologies yielding new, richer data sources (e.g., traffic sensors, video), and (3) the advent of new business models (online at first, then omnichannel) triggering both hypercompetition and the need to improve decision-making.

To document the evolution of academic research on retail analytics, we conduct bibliometric analyses of retail analytics papers published in top operations management journals. We also characterize the state of retail analytics in practice by conducting interviews with global retailers and retail analytics providers. We assess the progress of retail practice pertaining to analytics and identify barriers to and catalysts for adopting advanced analytics.

Throughout our analyses, we define retail analytics as "an approach to solving problems that starts with *data*, builds *models* to arrive at *decisions* that create *value*" (Bertsimas, 2018) in a retail context. We focus on "*activities involved*

Accepted by Subodha Kumar, after two revisions.

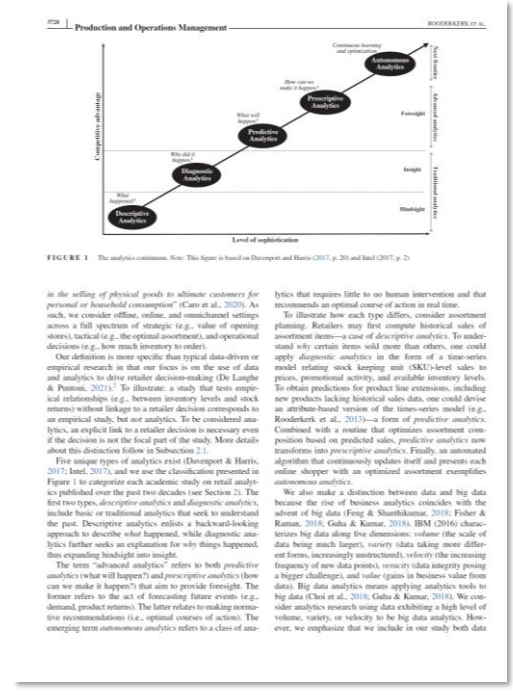


FIGURE 1 The analytics continuum. *Note*: This figure is based on Davenport and Harris (2017, p. 20) and Intel (2017, p. 2)

in the selling of physical goods to ultimate customers for personal or household consumption" (Caro et al., 2020). As such, we consider offline, online, and omnichannel settings across a full spectrum of strategic (e.g., value of opening stores), tactical (e.g., the optimal assortment), and operational decisions (e.g., how much inventory to order).

Our definition is more specific than typical data-driven or empirical research in that our focus is on the use of data and analytics to drive retailer decision-making (De Langhe & Puntoni, 2021).[2] To illustrate: a study that tests empirical relationships (e.g., between inventory levels and stock returns) without linkage to a retailer decision corresponds to an empirical study, but *not* analytics. To be considered analytics, an explicit link to a retailer decision is necessary even if the decision is not the focal part of the study. More details about this distinction follow in Subsection 2.1.

Five unique types of analytics exist (Davenport & Harris, 2017; Intel, 2017), and we use the classification presented in Figure 1 to categorize each academic study on retail analytics published over the past two decades (see Section 2). The first two types, *descriptive analytics* and *diagnostic analytics*, include basic or traditional analytics that seek to understand the past. Descriptive analytics enlists a backward-looking approach to describe *what* happened, while diagnostic analytics further seeks an explanation for *why* things happened, thus expanding hindsight into insight.

The term "advanced analytics" refers to both *predictive analytics* (what will happen?) and *prescriptive analytics* (how can we make it happen?) that aim to provide foresight. The former refers to the act of forecasting future events (e.g., demand, product returns). The latter relates to making normative recommendations (i.e., optimal courses of action). The emerging term *autonomous analytics* refers to a class of analytics that requires little to no human intervention and that recommends an optimal course of action in real time.

To illustrate how each type differs, consider assortment planning. Retailers may first compute historical sales of assortment items—a case of *descriptive analytics*. To understand *why* certain items sold more than others, one could apply *diagnostic analytics* in the form of a time-series model relating stock keeping unit (SKU)-level sales to prices, promotional activity, and available inventory levels. To obtain predictions for product line extensions, including new products lacking historical sales data, one could devise an attribute-based version of the times-series model (e.g., Rooderkerk et al., 2013)—a form of *predictive analytics*. Combined with a routine that optimizes assortment composition based on predicted sales, *predictive analytics* now transforms into *prescriptive analytics*. Finally, an automated algorithm that continuously updates itself and presents each online shopper with an optimized assortment exemplifies *autonomous analytics*.

We also make a distinction between data and big data because the rise of business analytics coincides with the advent of big data (Feng & Shanthikumar, 2018; Fisher & Raman, 2018; Guha & Kumar, 2018). IBM (2016) characterizes big data along five dimensions: *volume* (the scale of data being much larger), *variety* (data taking more different forms, increasingly unstructured), *velocity* (the increasing frequency of new data points), *veracity* (data integrity posing a bigger challenge), and *value* (gains in business value from data). Big data analytics means applying analytics tools to big data (Choi et al., 2018; Guha & Kumar, 2018). We consider analytics research using data exhibiting a high level of volume, variety, or velocity to be big data analytics. However, we emphasize that we include in our study both data

124

Harvard Business Review

Digital Transformation

Why Retailers Fail to Adopt Advanced Data Analytics

by Nicole DeHoratius, Andrés Musalem, and Robert Rooderkerk

February 27, 2023

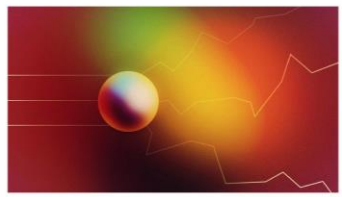


Illustration by Niyi Adeogun

Summary. Advanced analytics have been available to businesses for years and are getting better all the time, but with a few big exceptions most retailers still use very basic tools. They do this even though they understand the advantages that analytics have given their competitors. What is holding them back from more fully embracing analytics? To find out, the authors interviewed 24 global retail executives in the Americas, Europe, and Asia and found that six factors are the primary sticking points. In this article they discuss those six factors and offer retailers some suggestions for how to move forward and profit from what advanced analytics have to offer. close

For years now, executives have been told that advanced analytics can provide better answers to almost every business question. Yet in retail, at least, surprisingly few companies have taken full advantage of the opportunity.

Even as Walmart, Amazon, and a few other leading retailers operate at the leading edge of the analytics frontier, making many important decisions based on an ever-growing supply of real-time and historical data, most of their competitors still use very basic tools that are far better able at tracking where they've *been* than where they should be *going*.

This is already having real consequences for the industry. During the pandemic, McKinsey estimates, the 25 top-performing retailers — most of whom are digital leaders — were 83% more profitable than laggards and took home more than 90% of the sector's gains in market capitalization. Although you cannot prove a negative, it does seem likely that laggards are leaving a lot of money on the table. In grocery retail, for instance, McKinsey estimates that implementing advanced analytics would add 2% to grocers' earnings — a potential windfall for a tough, low-margin business.

This won't come as news to most people. The executives of even the slowest-moving company must be aware at some level that they are missing out. Yet despite understanding the advantages that analytics have given their competitors, and despite knowing that academics and consultants keep developing more and more advanced analytics solutions, most laggards seem unlikely to catch up with the leaders anytime soon.

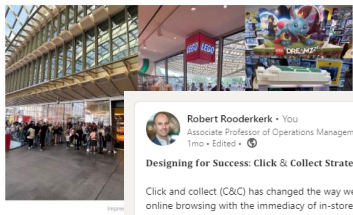
Why are so many companies having such a hard time making this leap forward? What is holding them back?

Six Sticking Points

To find out, we interviewed a diverse set of global retail executives (senior executives of retailers, distributors, consulting firms, and analytics providers active in the Americas, Europe, and Asia). The

RSM Erasmus

125



The LEGO fl
Case study

Robert Rooderkerk
Associate Professor of Operat

September 7, 2023

Open Immersive Reader

Disclaimer: I believe LEGO is
am merely using the LEGO fl
friction that can arise in a st
solutions can help reduce thi

Since arriving in Paris more t
offerings in this metropole,
Group flagship store in Paris
flagship store (A) along with
center of Paris.

Like Comment Sha

Robert Rooderkerk • You
Associate Professor of Operations Management at RSM, Erasmus Univer...
1mo • Edited •

Designing for Success: Click & Collect Strategies Illustrated by Swatch

Click and collect (C&C) has changed the way we shop, marrying the convenience of online browsing with the immediacy of in-store pickup. As businesses continue to evolve in this digital age, understandi
and collect becomes increasingly esse

There are two primary modes of this
Pickup in Store (**BOPIS**) and **Reserve**
the extent that advanced payment is
flexibility that is offered to customers

However, the implementation of C&C
Companies must carefully consider se

• Should the click and collect option
low, to avoid over-promising and unc

• Is payment in advance a necessity f
transaction and pickup process, or dc

• How narrow should the reservation
customer convenience against the ris
claimed?

These decisions shape the effectivene
everything from customer satisfactior

I will illustrate these design dimensior
is offered by Swatch Ltd., leveraging
countries and products. I conclude wi
could ask itself when (further) optimiz
of online browsing data and pickup b
tests are key to answering these ques

Happy to hear how your business is r
turning challenges into opportunities

#RobertOnRetail #ClickAndCollect #

Robert Rooderkerk • You
Associate Professor of Operations Management at RSM, Erasm...
2mo • Edited •

New business models in retail

Retail is rapidly evolving, incorporating new business models that leverage both technology and changing consumer preferences. Direct to Consumer (#dtc) models, exemplified by brands like Warby Parker and Nike, emphasize control over distribution and higher margins, even as some, like Nike, recalibrate strategies to balance direct sales with retailer partnerships. Shop-in-shop concepts, where brands manage a dedicated store area, offer a middle ground, providing brands control while benefiting retailers through rent revenues and brand expertise. MediaMarkt Nederland has built its revamped Rotterdam store, dubbed Tech Village, around this concept, hosting more than 30 brand-operated lighthouse boutiques. They will roll this out in other countries.

Subscription models, offering convenience through automatic replenishment, promise retailers consumer lock-in, predictable demand, and steady revenues, with sustainability considerations in delivery and packaging being crucial for future success. Despite challenges in scaling, such as Unilever's experience with Dollar Shave Club, this model holds potential for growth and sustainability.

#Rental services reflect the shift from ownership to usage, offering significant opportunities across sectors from fashion to furniture. Companies like Rent The Runway ("the closet in the cloud", "the Netflix of fashion") and IKEA ("rent a bedroom") are pioneering this approach, which can also advance sustainability goals.

The #resale market, expected to grow significantly, presents a sustainable

RSM Erasmus

Interested to hear more, follow me on LinkedIn, #RobertOnRetail

126

LinkedIn

127

Thank you

128